SIEMENS

List Manual

SINAMICS

SINAMICS S120/S150

Edition 07/2018

www.siemens.com/drives

SIEMENS

SINAMICS

SINAMICS S120/S150

List Manual

Valid for

Drive	Firmware version
SINAMICS	5.1 SP1

07/2018

6SL3097-5AP00-0BP0

Legal information

Warning notice system

This Manual contains information which you must observe to ensure your own personal safety as well as to avoid material damage. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to equipment damage have no safety alert symbol. Depending on the hazard level, warnings are indicated in a descending order as follows:

⚠ **DANGER**
indicates that death or serious injury **will** result if proper precautions are not taken.

⚠ **WARNING**
indicates that death or serious injury **could** result if proper precautions are not taken.

⚠ **CAUTION**
indicates that minor personal injury can result if proper precautions are not taken.

NOTICE
indicates that property damage can result if proper precautions are not taken.

If more than one level of danger is simultaneously applicable, the warning notice for the highest level is used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified personnel

The product/system described in this documentation may only be operated by **personnel qualified** for the specific task in accordance with the relevant documentation for the specific task, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

Proper use of Siemens products

Note the following:

⚠ **WARNING**
Siemens products are only permitted to be used for the applications listed in the catalog and in the associated technical documentation. If third-party products and components are used, then they must be recommended or approved by Siemens. These products can only function correctly and safely if they are transported, stored, set up, mounted, installed, commissioned, operated and maintained correctly. The permissible ambient conditions must be adhered to. Notices in the relevant documentation must be observed.

Trademarks

All names identified with ® are registered trademarks of Siemens AG. Any other names used in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.

Disclaimer of liability

We have checked the contents of this publication for consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. The information given in this document is reviewed at regular intervals and any corrections that might be necessary are made in the subsequent editions.

Siemens AG
Division Digital Factory
Postfach 48 48
90026 NUREMBERG
GERMANY

Article number: 6SL3097-5AP00-0BP0
07/2018 Subject to change without prior notice

Preface

SINAMICS documentation

The SINAMICS documentation is structured according to the following categories:

- General documentation/catalogs
- Manufacturer/service documentation

Additional information

Information on the following topics is available under the link:

- Ordering documentation/overview of documentation
- Additional links to download documents
- Using documentation online (find and search in manuals/information).

http://www.siemens.com/motioncontrol/docu

Please send any questions about the technical documentation (e. g. suggestions for improvement, corrections) to the following e-mail address:

docu.motioncontrol@siemens.com

My Documentation Manager

Information on how to produce individual contents for your own machine documentation based on Siemens contents is available under the link:

http://www.siemens.com/mdm

Training

Information about SITRAIN (Siemens Training on products, systems and solutions for automation) is available under the following link:

http://www.siemens.com/sitrain

FAQs

You can find Frequently Asked Questions in the Service&Support pages under Product Support:

http://support.automation.siemens.com

SINAMICS

You can find information on SINAMICS at:

http://www.siemens.com/sinamics

Usage phases and their tools/documents (as an example)

Table V-1 Usage phases and the available tools/documents

Usage phase	Tools/documents
Orientation	SINAMICS S Sales Documentation
Planning/configuration	SIZER Engineering Tool Configuration Manuals, Motors
Deciding/ordering	SINAMICS S Catalogs
Installation/assembly	• SINAMICS S120 Equipment Manual for Control Units and Additional System Components • SINAMICS S120 Equipment Manual for Booksize Power Units • SINAMICS S120 Manual for Booksize Power Units C/D Type • SINAMICS S120 Manual for Chassis Power Units, Air-cooled • SINAMICS S120 Manual for Chassis Power Units, Liquid-cooled • SINAMICS S150 Operating Instructions • SINAMICS S120 Equipment Manual for AC Drives • SINAMICS S120 Manual Combi • SINAMICS S120M Equipment Manual Distributed Drive Technology • SINAMICS HLA System Manual Hydraulic Drive
Commissioning	• STARTER Commissioning Tool • Startdrive commissioning tool • SINAMICS S120 Getting Started with STARTER • SINAMICS S120 Getting Started with Startdrive • SINAMICS S120 Commissioning Manual with STARTER • SINAMICS S120 Commissioning Manual with Startdrive • SINAMICS S120 CANopen Commissioning Manual • SINAMICS S120 Function Manual Drive Functions • SINAMICS S120 Safety Integrated Function Manual • SINAMICS S120/S150 List Manual • SINAMICS S150 Operating Instructions • SINAMICS HLA System Manual Hydraulic Drive
Usage/operation	• SINAMICS S120 Commissioning Manual with STARTER • SINAMICS S120 Commissioning Manual with Startdrive • SINAMICS S120/S150 List Manual • SINAMICS S150 Operating Instructions • SINAMICS HLA System Manual Hydraulic Drive
Maintenance/servicing	• SINAMICS S120 Commissioning Manual with STARTER • SINAMICS S120 Commissioning Manual with Startdrive • SINAMICS S120/S150 List Manual • SINAMICS S150 Operating Instructions

Target group

This documentation is intended for machine manufacturers, commissioning engineers, and service personnel who use the SINAMICS drive system.

Benefits

This documentation contains the comprehensive information about parameters, function diagrams and faults and alarms required to commission and service the system.

This manual should be used in addition to the other manuals and tools provided for the product.

Standard scope

The scope of the functionality described in this document can differ from that of the drive system that is actually supplied.

- It may be possible for other functions not described in this documentation to be executed in the drive system. However, no claim can be made regarding the availability of these functions when the equipment is first supplied or in the event of servicing.
- Functions that are not available in a particular product version of the drive system may be described in the documentation. The functionality of the supplied drive system should only be taken from the ordering documentation.
- Extensions or changes made by the machine manufacturer must be documented by the machine manufacturer.

For reasons of clarity, this documentation does not contain all of the detailed information on all of the product types, and cannot take into consideration every conceivable type of installation, operation and service/maintenance.

Search guides

The following guides are provided to help you locate information in this manual:

Technical Support

Country-specific telephone numbers for technical support are provided at the following Internet address:

http://www.siemens.com/automation/service&support

EC Declaration of Conformity

The EC Declaration of Conformity for the EMC Directive can be found on the Internet at:

http://support.automation.siemens.com/WW/view/de/21901735/134200

Alternatively, you can contact the Siemens office in your region in order to obtain the EC Declaration of Conformity.

Compliance with the General Data Protection Regulation

Siemens respects the principles of data protection, in particular the data minimization rules (privacy by design).

For this product, this means:
The product does not process neither store any person-related data, only technical function data (e.g. time stamps). If the user links these data with other data (e.g. shift plans) or if he stores person-related data on the same data medium (e.g. hard disk), thus personalizing these data, he has to ensure compliance with the applicable data protection stipulations.

Table of contents

Fundamental safety instructions

1

Content

1.1 General safety instructions

WARNING

Danger to life if the safety instructions and residual risks are not observed

If the safety instructions and residual risks in the associated hardware documentation are not observed, accidents involving severe injuries or death can occur.

- Observe the safety instructions given in the hardware documentation.
- Consider the residual risks for the risk evaluation.

WARNING

Malfunctions of the machine as a result of incorrect or changed parameter settings

As a result of incorrect or changed parameterization, machines can malfunction, which in turn can lead to injuries or death.

- Protect the parameterization (parameter assignments) against unauthorized access.
- Handle possible malfunctions by taking suitable measures, e.g. emergency stop or emergency off.

1.2 Warranty and liability for application examples

The application examples are not binding and do not claim to be complete regarding configuration, equipment or any eventuality which may arise. The application examples do not represent specific customer solutions, but are only intended to provide support for typical tasks. You are responsible for the proper operation of the described products. These application examples do not relieve you of your responsibility for safe handling when using, installing, operating and maintaining the equipment.

1.3 Industrial security

Note

Industrial security

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, systems, machines and networks.

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens products and solutions only represent one component of such a concept.

The customer is responsible for preventing unauthorized access to its plants, systems, machines and networks. Systems, machines and components should only be connected to the enterprise network or the internet if and to the extent necessary and with appropriate security measures (e.g. use of firewalls and network segmentation) in place.

Additionally, Siemens' guidance on appropriate security measures should be taken into account. For more information about industrial security, please visit:

Industrial security (http://www.siemens.com/industrialsecurity).

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends to apply product updates as soon as available and to always use the latest product versions. Use of product versions that are no longer supported, and failure to apply latest updates may increase customer's exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Security RSS Feed at:

Industrial security (http://www.siemens.com/industrialsecurity).

WARNING

Unsafe operating states resulting from software manipulation

Software manipulations (e.g. viruses, trojans, malware or worms) can cause unsafe operating states in your system that may lead to death, serious injury, and property damage.

- Keep the software up to date.
- Incorporate the automation and drive components into a holistic, state-of-the-art industrial security concept for the installation or machine.
- Make sure that you include all installed products into the holistic industrial security concept.
- Protect files stored on exchangeable storage media from malicious software by with suitable protection measures, e.g. virus scanners.

Parameters 2

Content

2.1 Overview of parameters

2.1.1 Explanation of the list of parameters

Basic structure of the parameter descriptions

The data in the following example have been chosen at random. The description of a parameter includes as a maximum the information listed below. Some of the information is optional.

The "List of parameters (Page 39)" has the following structure:

- - - - - - - - - - - - Start of example -

pxxxx[0...n]	**BICO: Full parameter name / abbreviated name**		
Drive object (function module)	**Can be changed:** C1(x), C2(x), U, T	**Calculated:** CALC_MOD_REG	**Access level:** 2
	Data type: Unsigned32 / Integer16	**Dyn. index:** CDS, p0170	**Func. diagram:** 8070
	P-Group: Closed-loop control	**Unit group:** 7_1	**Unit selection:** p0505
	Not for motor type: ASM	**Scaling:** p2000	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [Nm]	10.00 [Nm]	0.00 [Nm]

Description: Text

Value:
0: Name and meaning of value 0
1: Name and meaning of value 1
2: Name and meaning of value 2
etc.

Recommendation: Text

Index:
[0] = Name and meaning of index 0
[1] = Name and meaning of index 1
[2] = Name and meaning of index 2
etc.

Bit field:

Bit	**Signal name**	**1 signal**	**0 signal**	**FP**
00	Name and meaning of bit 0	Yes	no	8060
01	Name and meaning of bit 1	Yes	no	
02	Name and meaning of bit 2	Yes	no	8065
	etc.			

Dependency: Text
Refer to: pxxxx, rxxxx
Refer to: Fxxxxx, Axxxxx

Danger: ⚠ **Warning:** ⚠ **Caution:** ⚠ Safety notices with a warning triangle

Notice: Safety notice without a warning triangle

Note: Information that might be useful.

- - - - - - - - - - - - End of example -

The individual pieces of information are described in detail below.

pxxxx[0...n] **Parameter number**

The parameter number is made up of a "p" or "r", followed by the parameter number and the index or bit array (optional).

Examples of representation in the parameter list:

- p... Adjustable parameters (read and write parameters)
- r... Display parameters (read only)
- p0918 Adjustable parameter 918
- p0099[0...3] Adjustable parameter 99, indices 0 to 3
- p1001[0...n] Adjustable parameter 1001, indices 0 to n (n = configurable)
- r0944 Display parameter 944
- r2129.0...15 Display parameter 2129 with bit array from bit 0 (smallest bit) to bit 15 (largest bit)

Other examples of the notation in the documentation:

- p1070[1] Adjustable parameter 1070, index 1
- p2098[1].3 Adjustable parameter 2098, index 1 bit 3
- r0945[2](3) Display parameter 945, index 2 of drive object 3
- p0795.4 Adjustable parameter 795, bit 4

The following applies to adjustable parameters:

The parameter value "when shipped" is specified under "Factory setting" with the relevant unit in square parentheses. The value can be adjusted within the range defined by "Min" and "Max".

The term "linked parameterization" is used in cases where changes to adjustable parameters affect the settings of other parameters.

Linked parameterization can occur, for example, as a result of the following actions and parameters:

- Executing macros

  p0015, p0700, p1000, p1500
- Setting the PROFIBUS telegram (BICO interconnection)

  p0922
- Setting component lists

  p0230, p0300, p0301, p0400
- Automatically calculating and pre-assigning

  p0112, p0340, p0578, p3900
- Restoring the factory settings

  p0970

The following applies to display parameters:

The fields "Min", "Max" and "Factory setting" are specified with a dash "-" and the relevant unit in square parentheses.

Note

The parameter list can contain parameters that are not visible in the expert lists of the particular commissioning software (e. g. parameters for trace functions).

BICO: Full parameter name / abbreviated name

The following abbreviations can appear in front of the BICO parameter name:

- BI: Binector Input
  This parameter is used for selecting the source of a digital signal.
- BO: Binector output
  This parameter is available as a digital signal for interconnection with other parameters.
- CI: Connector Input
  This parameter is used for selecting the source of an "analog" signal.
- CO: Connector output
  This parameter is available as an "analog" signal for interconnection with other parameters.
- CO/BO: Connector/Binector Output
  This parameter is available as an "analog" and digital signal for interconnection with other parameters.

Note

A BICO input (BI/CI) cannot be interconnected with just any BICO output (BO/CO, signal source).
When interconnecting a BICO input using the commissioning software, only the corresponding possible signal sources are listed.

Function diagrams 1020 ... 1030 explain the symbols for BICO parameters and how to deal with BICO technology.

Drive object (function module)

A drive object (DO) is an independent, "self-contained" functional unit that has its own parameters and, in some cases, faults and alarms.

When carrying out commissioning using the commissioning software, you can select/deselect additional functions and their parameters by activating/deactivating function modules accordingly.

Note

References: SINAMICS S120 Function Manual Drive Functions

The parameter list specifies the associated drive object and function module for each individual parameter.

Examples:

- p1070 CI: Main setpoint
  SERVO (extended setpoint), VECTOR
  The parameter is available only in association with drive object SERVO with the "Extended setpoint channel" function module or with drive object VECTOR irrespective of activated function modules.
- p1055 BI: Jog bit 0
  SERVO, VECTOR
  The parameter is available in association with drive objects SERVO and VECTOR irrespective of activated function modules, i.e. it is also available with every activated function module belonging to the respective drive object.

A parameter can belong to one, several, or all drive objects.

The following information relating to "Drive object" and "Function module" can be displayed under the parameter number:

Table 2-1 Data in the "Drive object (function module)" field

Drive object (function module)	Type	Significance
All objects	-	This parameter is used by all drive objects.
A_INF	10	Active Infeed closed-loop control Closed-loop controlled, self-commutated infeed/regenerative feedback unit for generating a constant DC-link voltage
A_INF (supplementary control)	-	Active Infeed with "Additional controls" function module (r0108.3)
A_INF (line transformer)	-	Active Infeed with "Line transformer" function module (r0108.4).
A_INF (rec)	-	Active Infeed with "Recorder" function module (r0108.5).
A_INF (dynamic line buffering)	-	Active Infeed with "Dynamic line buffering" function module (r0108.7).
A_INF (cos phi)		Active Infeed with "cosine phi" function module (r0108.10).
A_INF (line droop control)	-	Active Infeed with "Line droop control" function module (r0108.12).
A_INF (parallel)	-	Active Infeed with "Parallel connection" function module (r0108.15).
A_INF (master/slave)	-	Active Infeed with "Master/Slave" function module (r0108.19).
A_INF (SW_sts)	-	Active Infeed with "Software gating set" function module (r0108.20).
A_INF (Brk Mod Ext)	-	Active Infeed with "Braking Module external" function module (r0108.26).
A_INF (Cooling unit)	-	Active Infeed with "Cooling unit" function module (r0108.28)
A_INF (PN CBE20)	-	Active Infeed with "PROFINET CBE20" function module (r0108.31).
B_INF	30	Basic Infeed closed loop control Unregulated line infeed unit (without regenerative feedback) for rectifying the line voltage of the DC link.
B_INF (rec)	-	Basic Infeed with "Recorder" function module (r0108.5).
B_INF (parallel)	-	Basic Infeed with "Parallel connection" function module (r0108.15).
B_INF (Brk Mod Ext)	-	Basic Infeed with "Braking Module external" function module (r0108.26).
B_INF (Cooling unit)	-	Basic Infeed with "Cooling unit" function module (r0108.28)

Table 2-1 Data in the "Drive object (function module)" field, continued

Drive object (function module)	Type	Significance
B_INF (PN CBE20)	-	Basic Infeed with "PROFINET CBE20" function module (r0108.31).
CU_I	3	Control Unit SINAMICS Integrated (only SIMOTION D4x5-2).
CU_I_D410	201	Control Unit SINAMICS Integrated for SIMOTION D410-2.
CU_LINK	254	Object for Controller Extension 32 (CX32)
CU_NX_CX	4	Controller Extension for boosting the processing performance
CU_S_AC_DP	2	Control Unit SINAMICS S120 AC Drive with PROFIBUS interface.
CU_S_AC_PN	3	Control Unit SINAMICS S120 AC Drive with PROFINET interface.
CU_S120_DP	6	Control Unit SINAMICS S120 with PROFIBUS interface.
CU_S120_DP (CAN)	-	Control Unit SINAMICS S120 with PROFIBUS interface and function module “CAN“ (p0108.29).
CU_S120_DP (COMM BOARD)	-	Control Unit SINAMICS S120 with PROFIBUS interface and "COMM BOARD" function module (p0108.30).
CU_S120_DP (PN CBE20)	-	Control Unit SINAMICS S120 with PROFIBUS interface and "PROFINET CBE20" function module (p0108.31).
CU_S120_PN	4	Control Unit SINAMICS S120 with PROFINET interface.
CU_S120_PN (CAN)	-	Control Unit SINAMICS S120 with PROFINET interface and function module “CAN“ (p0108.29).
CU_S120_PN (COMM BOARD)	-	Control Unit SINAMICS S120 with PROFINET interface and "COMM BOARD" function module (p0108.30).
CU_S120_PN (PN CBE20)	-	Control Unit SINAMICS S120 with PROFINET interface and "PROFINET CBE20" function module (p0108.31).
CU_S150_DP	7	Control Unit SINAMICS S150 with PROFIBUS interface.
CU_S150_DP (CAN)	-	Control Unit SINAMICS S150 with PROFIBUS interface and function module “CAN“ (p0108.29).
CU_S150_DP (COMM BOARD)	-	Control Unit SINAMICS S150 with PROFIBUS interface and "COMM BOARD" function module (p0108.30).
CU_S150_DP (PN CBE20)	-	Control Unit SINAMICS S150 with PROFIBUS interface and "PROFINET CBE20" function module (p0108.31).
CU_S150_PN	5	Control Unit SINAMICS S150 with PROFINET interface.
CU_S150_PN (CAN)	-	Control Unit SINAMICS S150 with PROFINET interface and function module “CAN“ (p0108.29).
CU_S150_PN (COMM BOARD)	-	Control Unit SINAMICS S150 with PROFINET interface and "COMM BOARD" function module (p0108.30).
CU_S150_PN (PN CBE20)	-	Control Unit SINAMICS S150 with PROFINET interface and "PROFINET CBE20" function module (p0108.31).
ENC	300	Object for a DRIVE-CLiQ encoder.
ENC (lin_encoder)	300	Object for a DRIVE-CLiQ encoder with "Linear encoder" function module (r0108.12).
ENC (PN CBE20)	300	Object for a DRIVE-CLiQ encoder with function module "PROFINET CBE20" (r0108.31).
HLA	70	Hydraulic linear drive.

Table 2-1 Data in the "Drive object (function module)" field, continued

Drive object (function module)	Type	Significance
HLA (ESR)	-	Hydraulic linear drive with "Extended Stop and Retract" function module (r0108.9).
HLA (PN CBE20)	-	Hydraulic linear drive with function module "PROFINET CBE20" (r0108.31).
HUB	150	DRIVE-CLiQ Hub Module.
R_INF	21	Renewable Infeed Control Closed-loop controlled, self-commutated infeed/regenerative feedback unit for generating a constant DC-link voltage
R_INF (additional cntrl)	-	Renewable Infeed with "Additional controls" function module (r0108.3)
R_INF (line transformer)	-	Renewable Infeed with "Line transformer" function module (r0108.4).
R_INF (rec)	-	Renewable Infeed with "Recorder" function module (r0108.5).
R_INF (dynamic line buffering)	-	Renewable Infeed with "Dynamic line buffering" function module (r0108.7).
R_INF (cos phi)		Renewable Infeed with "cosine phi" function module (r0108.10).
R_INF (line droop control)	-	Renewable Infeed with "Line droop control" function module (r0108.12).
R_INF (parallel)	-	Renewable Infeed with "Parallel connection" function module (r0108.15).
R_INF (master/slave)	-	Renewable Infeed with "Master/Slave" function module (r0108.19).
R_INF (SW_sts)	-	Renewable Infeed with "Software gating unit" function module (r0108.20).
R_INF (Brk Mod Ext)	-	Renewable Infeed with "Braking Module external" function module (r0108.26).
R_INF (Cooling unit)	-	Renewable Infeed with "Cooling unit" function module (r0108.28)
R_INF (PN CBE20)	-	Renewable Infeed with "PROFINET CBE20" function module (r0108.31).
S_INF	20	Smart Infeed control Unregulated line infeed/feedback unit for generating the DC-link voltage.
S_INF (rec)	-	Smart Infeed with "Recorder" function module (r0108.5).
S_INF (parallel)	-	Smart Infeed with "Parallel connection" function module (r0108.15).
S_INF (Brk Mod Ext)	-	Smart Infeed with "Braking Module external" function module (r0108.26).
S_INF (Cooling unit)	-	Smart Infeed with "Cooling unit" function module (r0108.28).
S_INF (PN CBE20)	-	Smart Infeed with "PROFINET CBE20" function module (r0108.31).
SERVO	11	Servo drive.
SERVO (Ext M_reg)	-	Servo drive with "Extended torque control" function module (r0108.1).
SERVO (pos ctrl)	-	Servo drive with "Closed-loop position control" function module (r0108.3).
SERVO (EPOS)	-	Servo drive with "Basic positioner" function module (r0108.4).
SERVO (rec)	-	Servo drive with "Recorder" function module (r0108.5).
SERVO (DSC spline)	-	Servo drive with function module "DSC with Spline" (r0108.6).
SERVO (APC)	-	Servo drive with "Advanced Positioning Control (APC)" function module (r0108.7).
SERVO (Extended setp)	-	Servo drive with "Extended setpoint channel" function module (r0108.8).
SERVO (ESR)	-	Servo drive with "Extended Stop and Retract" function module (r0108.9).
SERVO (J_estimator)	-	Servo drive with "Moment of inertia estimator" function module (r0108.10).

Table 2-1 Data in the "Drive object (function module)" field, continued

Drive object (function module)	Type	Significance
SERVO (Spin_diag)	-	Servo drive with "Spindle diagnostics" function module (r0108.11). This function module can only be used in conjunction with a Sensor Module Integrated 24 (SMI24).
SERVO (Lin)	-	Servo drive with "Linear motor" function module (r0108.12).
SERVO (Safety rot)	-	Servo drive with "Safety rotary axis" function module (r0108.13).
SERVO (ext brake)	-	Servo drive with "Extended brake control" function module (r0108.14)
SERVO (Tech_ctrl)	-	Servo drive with "Technology controller" function module (r0108.16).
SERVO (ext. msg)	-	Servo drive with "Extended messages/monitoring functions" function module (r0108.17).
SERVO (Ext. I_set_filt)	-	Servo drive with "Extended current setpoint filter" function module (r0108.21).
SERVO (cogging_M_comp)	-	Servo drive with "cogging torque compensation" function module (r0108.22).
SERVO (Dig IO)	-	Servo drive for SINAMICS S120M with "Digital inputs-/outputs" function module (r0108.23)
SERVO (Cooling unit)	-	Servo drive with "Cooling unit" function module (r0108.28).
SERVO (CAN)	-	Servo drive with "CAN" function module (r0108.29).
SERVO (PN CBE20)	-	Servo drive with "PROFINET CBE20" function module (r0108.31).
SERVO_AC	-	Servo drive for SINAMICS S120 AC Drive.
SERVO_I_AC	-	Servo drive for SINAMICS Integrated in SIMOTION D410-2.
TB30	100	Terminal Board 30.
TM120	207	Terminal Module 120.
TM15	203	Terminal Module 15 (SIMOTION D4xx-2 only).
TM150	208	Terminal Module 150.
TM15DI_DO	204	Terminal Module 15 (for SINAMICS).
TM17	202	Terminal Module 17 (SIMOTION D4xx-2 only).
TM31	200	Terminal Module 31.
TM41	201	Terminal Module 41.
TM54F_MA	205	Terminal Module 54F Master.
TM54F_SL	206	Terminal Module 54F Slave.
VECTOR	12	Vector drive.
VECTOR (n/M)	-	Vector drive with "Closed-loop speed/torque control" function module (r0108.2).
VECTOR (pos ctrl)	-	Vector drive with "Position control" function module (r0108.3).
VECTOR (EPOS)	-	Vector drive with "Basic positioner" function module (r0108.4).
VECTOR (rec)	-	Vector drive with "Recorder" function module (r0108.5).
VECTOR (J_estimator)		Vector drive with "Moment of inertia estimator" function module (r0108.10).
VECTOR (Safety rot)	-	Vector drive with "Safety rotary axis" function module (r0108.13).
VECTOR (ext brake)	-	Vector drive with "Extended brake control" function module (r0108.14).

Table 2-1 Data in the "Drive object (function module)" field, continued

Drive object (function module)	Type	Significance
VECTOR (parallel)	-	Vector drive with "Parallel connection" function module (r0108.15).
VECTOR (tech_ctrl)	-	Vector drive with "Technology controller" function module (r0108.16).
VECTOR (Ext. mess.)	-	Vector drive with "Extended messages/monitoring functions" function module (r0108.17).
VECTOR (F3E)	-	Vector drive with "F3E power unit" function module (r0108.26). The power unit is the PM250 for CU310-2 CRANES.
VECTOR (Cooling unit)	-	Vector drive with "Cooling unit" function module (r0108.28).
VECTOR (CAN)	-	Vector drive with "CAN" function module (r0108.29).
VECTOR (PN CBE20)	-	Vector drive with "PROFINET CBE20" function module (r0108.31).
VECTOR_AC	-	Vector drive for SINAMICS S120 AC Drive.
VECTOR_I_AC	-	Vector drive for SINAMICS Integrated in SIMOTION D410-2.

Note

The drive object type is used to identify the drive objects in the drive system (e. g. r0107, r0975[1]).

Can be changed

The "-" sign indicates that the parameter can be changed in any object state and that the change will be effective immediately.

The information "C1(x), C2(x), T, U" ((x): optional) means that the parameter can be changed only in the specified drive unit state and that the change will not take effect until the unit switches to another state. This can be a single state or multiple states.

The following states are available:

- C1(x) Device commissioning — C1: **C**ommissioning **1**

  Device is being commissioned (p0009 > 0).

  Pulses cannot be enabled.

  The parameter can only be changed for the following device commissioning settings (p0009 > 0):

  - C1: Can be changed for all settings p0009 > 0.
  - C1(x): Can be changed only when p0009 = x.

  A modified parameter value does not take effect until the device commissioning mode is exited with p0009 = 0.

- C2(x) Drive object commissioning — C2: **C**ommissioning **2**

  Drive commissioning is in progress (p0009 = 0 and p0010 > 0).

  Pulses cannot be enabled.

  The parameter can only be changed in the following drive commissioning settings (p0010 > 0):

  - C2: Can be changed for all settings p0010 > 0.
  - C2(x): Can only be changed for the settings p0010 = x.

  A modified parameter value does not take effect until drive commissioning mode is exited with p0010 = 0.

- U Operation — U: R**u**n

  Pulses are enabled.

- T Ready — T: Ready **t**o run

  The pulses are not enabled and the state "C1(x)" or "C2(x)" is not active.

Note

Parameter p0009 is CU-specific (belongs to the Control Unit).

Parameter p0010 is drive-specific (belongs to each drive object).

The operating state of individual drive objects is displayed in r0002.

Calculated

Specifies whether the parameter is influenced by automatic calculations.

The calculation attribute defines which activities influence the parameter.

The following attributes exist:

- CALC_MOD_ALL
  - p0340 = 1
  - Project download with commissioning software and send from p0340 = 3
- CALC_MOD_CON
  - p0340 = 1, 3, 4
- CALC_MOD_EQU
  - p0340 = 1, 2
- CALC_MOD_LIM_REF
  - p0340 = 1, 3, 5
  - p0578 = 1
- CALC_MOD_REG
  - p0340 = 1, 3

Note

For p3900 > 0, p0340 = 1 is also called automatically.

After p1910 = 1, p0340 = 3 is also called automatically.

Access level

Specifies the minimum access level required to be able to display and change the relevant parameter. The required access level can be set using p0003.

The system uses the following access levels:

- 1: Standard
- 2: Extended
- 3: Expert
- 4: Service

Note

Parameter p0003 is CU-specific (belongs to the Control Unit).

A higher access level will also include the functions of the lower levels.

Data type

The information on the data type can consist of the following two items (separated by a slash):

- First item

  Data type of the parameter.
- Second item (for binector or connector input only)

  Data type of the signal source to be interconnected (binector/connector output).

Parameters can have the following data types:

- Integer8 I8 8-bit integer number
- Integer16 I16 16-bit integer number
- Integer32 I32 32-bit integer number
- Unsigned8 U8 8 bits without sign
- Unsigned16 U16 16 bits without sign
- Unsigned32 U32 32 bits without sign
- FloatingPoint32 Float 32-bit floating point number

Depending on the data type of the BICO input parameter (signal sink) and BICO output parameter (signal source), the following combinations are possible when creating BICO interconnections:

Table 2-2 Possible combinations of BICO interconnections

	BICO input parameter			
	CI parameter			**BI parameter**
BICO output parameter	**Unsigned32 / Integer16**	**Unsigned32 / Integer32**	**Unsigned32 / FloatingPoint32**	**Unsigned32 / Binary**
CO: Unsigned8	x	x	–	–
CO: Unsigned16	x	x	–	–
CO: Integer16	x	x	r2050, r8850	–
CO: Unsigned32	x	x	–	–
CO: Integer32	x	x	r2060, r8860	–
CO: FloatingPoint32	x	x	x	–
BO: Unsigned8	–	–	–	x
BO: Unsigned16	–	–	–	x
BO: Integer16	–	–	–	x
BO: Unsigned32	–	–	–	x
BO: Integer32	–	–	–	x
BO: FloatingPoint32	–	–	–	–
Legend: x :	BICO interconnection permitted			
–:	BICO interconnection not permitted			
rxxxx:	BICO interconnection is only permitted for the specified CO parameters			

Dynamic index

For parameters with a dynamic index [0...n], the following information is specified here:

- Data set (if available).
- Parameter for the number of indices (n = number - 1).

The following information can be contained in this field:

- "CDS, p0170" (Command Data Set, CDS count)

  Example:

  p1070[0] → main setpoint [command data set 0]

  p1070[1] → main setpoint [command data set 1], etc.
- "DDS, p0180" (Drive Data Set, DDS count)
- "EDS, p0140" (Encoder Data Set, EDS count)
- "MDS, p0130" (Motor Data Set, MDS count)
- "PDS, p0120" (Power unit Data Set, PDS count)
- "p2615" (traversing blocks count)

Data sets can only be created and deleted when p0010 = 15.

Note

Information on the data sets can be taken from the following references:

References: SINAMICS S120 Function Manual Drive Functions
Chapter "Data sets"

Function diagram

The parameter is included in this function diagram. The structure of the parameter function and its relationship with other parameters is shown in the specified function diagram.

P group (only when accessing via BOP (Basic Operator Panel))

Specifies the functional group to which this parameter belongs. The required parameter group can be set via p0004.

Note

Parameter p0004 is CU-specific (belongs to the Control Unit).

Unit, unit group and unit selection

The standard unit of a parameter is specified in square brackets after the values for "Min", "Max", and "Factory setting".

For parameters where the unit can be switched over, the specifications for "Unit group" and "Unit selection" determine the group to which this parameter belongs and with which parameter the unit can be changed over.

Example:

Unit group: 7_1, unit selection: p0505

The parameter belongs to unit group 7_1 and the unit can be changed over using p0505.

Note

Detailed information on changing over units can be found in the following references:

References: /FH1/ SINAMICS S120 Function Manual Drive Functions

References: /BA3/ SINAMICS S150 Operating Instructions

All the potential unit groups and possible unit selections are listed below.

Table 2-3 Unit groups (p0100)

Unit group	Unit selection for p0100 =		Reference variable for %
	0	1	
7_4	Nm	lbf ft	-
8_4	N	lbf	-
14_2	W	HP	-
14_6	kW	HP	-
14_13	W/A	HP/A	-
14_14	W min/1000	HP min/1000	-
14_15	W/A^2	HP/A^2	-
14_16	W min^2/1000^2	HP min^2/1000^2	-
25_1	kgm^2	lb ft^2	-
27_1	kg	lb	-
28_1	Nm/A	lbf ft/A	-
29_1	N/Arms	lbf/Arms	-
30_1	m	ft	-
47_1	kW s/K	HP s/K	-
48_1	W/K	HP/K	-
48_2	W min/1000 K	HP min/1000 K	-
48_3	W min^2/1000^2 K	HP min^2/1000^2 K	-
50_1	K/W	K/HP	-

Table 2-4 Unit groups (p0349)

Unit group	Unit selection for p0349 =		Reference variable for %
	1	2	
15_1	mH	%	$\frac{1000 \cdot p0304}{2 \cdot \pi \cdot \sqrt{3} \cdot p0305 \cdot p0310}$
16_1	Ohm	%	$\frac{p0304}{\sqrt{3} \cdot p0305}$

Table 2-5 Unit groups (p0505)

Unit group	Unit selection for p0505 =				Reference variable for %
	1	2	3	4	
2_1	Hz	%	Hz	%	p2000
2_2	kHz	%	kHz	%	p2000
3_1	1 rpm	%	1 rpm	%	p2000
4_1	m/min	%	ft/min	%	p2000
4_2	m/min	m/min	ft/min	ft/min	-
5_1	Vrms	%	Vrms	%	p2001
5_2	V	%	V	%	p2001
5_3	V	%	V	%	p2001
6_1	mArms	%	mArms	%	p2002
6_2	Arms	%	Arms	%	p2002
6_3	mA	%	mA	%	p2002
6_4	A	%	A	%	p2002
6_5	A	%	A	%	p2002
7_1	Nm	%	lbf ft	%	p2003
7_2	Nm	Nm	lbf ft	lbf ft	-
7_3	Nm	%	lbf ft	%	1.0
8_1	N	%	lbf	%	p2003
8_2	N	N	lbf	lbf	-
8_3	N	%	lbf	%	1.0
14_1	W	%	HP	%	r2004 (drive)
14_3	W	%	HP	%	r2004 (infeed)
14_4	W	%	HP	%	r2004 (drive)
14_5	kW	%	HP	%	r2004 (drive)
14_7	kW	%	HP	%	r2004 (infeed)
14_8	kW	%	HP	%	r2004 (drive)
14_9	W	W	HP	HP	-
14_10	kW	kW	HP	HP	-

Table 2-5 Unit groups (p0505), continued

Unit group	Unit selection for p0505 =				Reference variable for %
	1	2	3	4	
14_11	var	%	var	%	r2004
14_12	kvar	%	kvar	%	r2004
17_1	Nms/rad	%	lbf ft s/rad	%	p2003/p2000
18_1	V/A	%	V/A	%	p2001/p2002
19_1	A/V	%	A/V	%	p2002/p2001
21_1	°C	°C	°F	°F	-
21_2	K	K	°F	°F	-
22_1	m/s^2	m/s^2	ft/s^2	ft/s^2	-
22_2	m/s^2	%	ft/s^2	%	p2007
23_1	Vrms s/m	Vrms s/m	Vrms s/ft	Vrms s/ft	-
24_1	Ns/m	Ns/m	lbf s/ft	lbf s/ft	-
24_2	Ns/m	%	lbf s/ft	%	p2003/p2000
26_1	m/s^3	m/s^3	ft/s^3	ft/s^3	-
39_1	1/s^2	%	1/s^2	%	p2007
49_1	Nm/rad	%	lbf ft/rad	%	p2003

Table 2-6 Unit group (p0595)

Unit group	Unit selection for p0595 =		Reference variable for %
	Value	Unit	
9_1	The values that can be set and the technological units are shown in p0595.		

Parameter values

Min	Minimum value of the parameter [unit]
Max	Maximum value of the parameter [unit]
Factory setting	Value when delivered [unit]
	In the case of a binector/connector input, the signal source of the default BICO interconnection is specified. A non-indexed connector output is assigned the index [0].
	A different value may be displayed for certain parameters (e .g. p1800) at the initial commissioning stage or when establishing the factory settings. Reason: The setting of these parameters is determined by the operating environment of the Control Unit (e. g. depending on converter type, macro, power unit).

Note

For SINAMICS G150/G130/S150, the macros and their settings are provided in the following documentation:

References: SINAMICS G150/G130/S150 Operating Instructions

Not for motor type

Specifies for which motor type this parameter has no significance

ASM	:	Induction motor
PMSM	:	Permanent-magnet synchronous motor
REL	:	Reluctance motor textiles / SIEMOSYN motor
RESM	:	Synchronous reluctance motor
SESM	:	Separately-excited synchronous motor

Normalization

Specification of the reference variable with which a signal value is automatically converted for a BICO interconnection.

The following reference variables are available:

- p2000 … p2007: Reference speed, reference voltage, etc.
- PERCENT: 1.0 = 100 %
- 4000H: 4000 hex = 100 % (wort) or 4000 0000 hex = 100 % (double word)
- p0514: specific normalization

  Refer to the description for p0514[0…9] and p0515[0…19] to p0524[0…19]

Expert list

Specifies whether this parameter is available in the expert list of the specified drive objects in the commissioning software.

1: Parameter exists in the expert list.

0: Parameter does not exist in the expert list.

NOTICE
Users assume full responsibility for using parameters marked "Expert list: 0" (parameter does not exist in the expert list). These parameters and their functionalities have not been tested and no further user documentation is available for them (e. g. description of functions). Moreover, no support is provided for these parameters by "Technical Support" (hotline).

Description

Explanation of the function of a parameter.

Values

Lists the possible values of a parameter.

Recommendation

Information about recommended settings.

Index

The name and meaning of each individual index is specified for indexed parameters.

The following applies to the values (Min, Max, Factory setting) of indexed adjustable parameters:

- Min, Max:

  The adjustment range and unit apply to all indices.
- Factory setting:

  When all indices have the same factory setting, index 0 is specified with the unit to represent all indices.

  When the indices have different factory settings, they are all listed individually with the unit.

Bit array

For parameters with bit arrays, the following information is provided about each bit:

- Bit number and signal name
- Meaning for signal states 1 and 0
- Function diagram (optional)

  The signal is shown in this function diagram.

Dependency

Conditions that must be fulfilled in conjunction with this parameter. Also includes special effects that can occur between this parameter and others.

Where necessary, "See also:" indicates the following information:

- List of other relevant parameters to be considered.
- List of faults and alarms to be considered.

Safety instructions

Important information that must be observed to avoid the risk of physical injury or material damage.

Information that must be observed to avoid any problems.

Information that the user may find useful.

Danger ⚠ The description of this safety notice can be found at the beginning of this manual, see "Legal information (Page 4)".

Warning ⚠ The description of this safety notice can be found at the beginning of this manual, see "Legal information (Page 4)".

Caution ⚠ The description of this safety notice can be found at the beginning of this manual, see "Legal information (Page 4)".

Notice The description of this safety notice can be found at the beginning of this manual, see "Legal information (Page 4)".

Note Information that the user may find useful.

2.1.2 Number ranges of parameters

Note

The following number ranges represent an overview for all of the parameters available for the SINAMICS drive family.

The parameters for the product described in this List Manual are described in detail in "List of parameters (Page 39)".

Parameters are grouped into the following number ranges:

Table 2-7 Number ranges for SINAMICS

Range		Description
From	To	
0000	0099	Display and operation
0100	0199	Commissioning
0200	0299	Power section
0300	0399	Motor
0400	0499	Encoder
0500	0599	Technology and units, motor-specific data, probes
0600	0699	Thermal monitoring, maximum current, operating hours, motor data, central probe
0700	0799	Control Unit terminals, measuring sockets
0800	0839	CDS, DDS data sets, motor changeover
0840	0879	Sequence control (e.g. signal source for ON/OFF1)
0880	0899	ESR, parking, control and status words
0900	0999	PROFIBUS/PROFIdrive
1000	1199	Setpoint channel (e.g. ramp-function generator)
1200	1299	Functions (e.g. motor holding brake)
1300	1399	U/f control
1400	1799	Closed-loop control
1800	1899	Gating unit
1900	1999	Power unit and motor identification
2000	2009	Reference values
2010	2099	Communication (fieldbus)
2100	2139	Faults and alarms
2140	2199	Signals and monitoring
2200	2359	Technology controller
2360	2399	Staging, hibernation
2500	2699	Position control (LR) and basic positioning (EPOS)
2700	2719	Reference values, display

Table 2-7 Number ranges for SINAMICS, continued

Range		Description
From	To	
2720	2729	Load gearbox
2800	2819	Logic operations
2900	2930	Fixed values (e. g. percentage, torque)
3000	3099	Motor identification results
3100	3109	Real-time clock (RTC)
3110	3199	Faults and alarms
3200	3299	Signals and monitoring
3400	3659	Infeed closed-loop control
3660	3699	Voltage Sensing Module (VSM), Braking Module internal
3700	3779	Advanced Positioning Control (APC)
3780	3819	Synchronization
3820	3849	Friction characteristic
3850	3899	Functions (e. g. long stator)
3900	3999	Management
4000	4599	Terminal Board, Terminal Module (e. g. TB30, TM31)
4600	4699	Sensor Module
4700	4799	Trace
4800	4849	Function generator
4950	4999	OA application
5000	5169	Spindle diagnostics
5200	5230	Current setpoint filter 5 ... 10 (r0108.21)
5400	5499	System droop control (e. g. shaft generator)
5500	5599	Dynamic grid support (solar)
5600	5614	PROFIenergy
5900	6999	SINAMICS GM/SM/GL/SL
7000	7499	Parallel connection of power units
7500	7599	SINAMICS SM120
7700	7729	External messages
7770	7789	NVRAM, system parameters
7800	7839	EEPROM read/write parameters
7840	8399	Internal system parameters
8400	8449	Real-time clock (RTC)
8500	8599	Data and macro management
8600	8799	CAN bus
8800	8899	Communication Board Ethernet (CBE), PROFIdrive

Table 2-7 Number ranges for SINAMICS, continued

Range		Description
From	To	
8900	8999	Industrial Ethernet, PROFINET, CBE20
9000	9299	topology
9300	9399	Safety Integrated
9400	9499	Parameter consistency and storage
9500	9899	Safety Integrated
9900	9949	topology
9950	9999	Diagnostics, internal
10000	10199	Safety Integrated
11000	11299	Free technology controller 0, 1, 2
20000	20999	Free function blocks (FBLOCKS)
21000	25999	Drive Control Chart (DCC)
50000	53999	SINAMICS DC MASTER (closed-loop DC current control)
61000	61001	PROFINET

2.2 List of parameters

Product: SINAMICS S120/S150, Version: 5103400, Language: eng
Objects: CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM17, TM15, TM15DI_DO, TM120, TM150, TB30, TM54F_MA, TM54F_SL, ENC, HUB, CU_LINK

r0002 Control Unit operating display / CU op_display

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	117	-

Description: Operating display for the Control Unit (CU).

Value:
0: Operation
10: Ready
20: Wait for run-up
25: Wait for automatic FW update of DRIVE-CLiQ components
31: Commissioning tool download active
33: Remove/acknowledge topology error
34: Exit commissioning mode
35: Carry out first commissioning
70: Initialization
80: Reset active
99: Internal software error
101: Specify topology
111: Insert drive object
112: Delete drive object
113: Change drive object number
114: Change component number
115: Run parameter download
117: Delete component

Notice: For several missing enable signals, the corresponding value with the highest number is displayed.

r0002 Drive operating display / Drv op_display

HLA

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	250	-

Description: Operating display for the drive.

Value:
0: Operation - everything enabled
10: Operation - set "enable setpoint" = "1" (p1142, p1152)
12: Operation - RFG frozen, set "RFG start" = "1" (p1141)
13: Operation - set "enable RFG" = "1" (p1140)
14: Operation - shutoff valve opens, SS2, STOP C
16: Operation - withdraw braking with OFF1 using "ON/OFF1" = "1"
17: Operation - braking with OFF3 can only be interrupted with OFF2
18: Operation - brake on fault, remove fault, acknowledge
21: Ready for operation - set "Enable operation" = "1" (p0852)
23: Ready - set "System pressure available" = "1" (p0864)
31: Ready for switching on - set "ON/OFF1" = "0/1" (p0840)
35: Switching on inhibited - carry out first commissioning (p0010)
41: Switching on inhibited - set "ON/OFF1" = "0" (p0840)
42: Switching on inhibited - set "OC/OFF2" = "1" (p0844, p0845)
43: Switching on inhibited - set "OC/OFF3" = "1" (p0848, p0849)
44: Switching on inhibited - supply STO terminal w/ 24 V (hardware)
45: Switching on inhibited - rectify fault, acknowledge fault, STO
46: Switching on inhibited - exit commissioning mode (p0009, p0010)

60: Drive object deactivated/not operational
70: Initialization
200: Wait for booting/partial booting
250: Device signals a topology error

Dependency: Refer to: r0046

Notice: For several missing enable signals, the corresponding value with the highest number is displayed.

Note: OC: Operating condition

EP: Enable Pulses (pulse enable)

RFG: Ramp-function generator

COMM: Commissioning

MotID: Motor data identification

SS2: Safe Stop 2

STO: Safe Torque Off

r0002 Drive operating display / Drv op_display

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	250	-

Description: Operating display for the drive.

Value:
0: Operation - everything enabled
10: Operation - set "enable setpoint" = "1" (p1142, p1152)
11: Operation - set "enable speed controller" = "1" (p0856)
12: Operation - RFG frozen, set "RFG start" = "1" (p1141)
13: Operation - set "enable RFG" = "1" (p1140)
14: Oper. - MotID, excit. running and/or brake opens, SS2, STOP C
15: Operation - open brake (p1215)
16: Operation - withdraw braking with OFF1 using "ON/OFF1" = "1"
17: Operation - braking with OFF3 can only be interrupted with OFF2
18: Operation - brake on fault, remove fault, acknowledge
19: Operation - armature short-circ./DC brake act. (p1230, p1231)
21: Ready for operation - set "Enable operation" = "1" (p0852)
22: Ready for operation - de-magnetizing running (p0347)
23: Ready for operation - set "Infeed operation" = "1" (p0864)
31: Ready for switching on - set "ON/OFF1" = "0/1" (p0840)
35: Switching on inhibited - carry out first commissioning (p0010)
41: Switching on inhibited - set "ON/OFF1" = "0" (p0840)
42: Switching on inhibited - set "OC/OFF2" = "1" (p0844, p0845)
43: Switching on inhibited - set "OC/OFF3" = "1" (p0848, p0849)
44: Switching on inhibited - supply STO terminal w/ 24 V (hardware)
45: Switching on inhibited - rectify fault, acknowledge fault, STO
46: Switching on inhibited - exit commissioning mode (p0009, p0010)
60: Drive object deactivated/not operational
70: Initialization
200: Wait for booting/partial booting
250: Device signals a topology error

Dependency: Refer to: r0046

Notice: For several missing enable signals, the corresponding value with the highest number is displayed.

Note: OC: Operating condition

EP: Enable Pulses (pulse enable)

RFG: Ramp-function generator

COMM: Commissioning

MotID: Motor data identification

SS2: Safe Stop 2

STO: Safe Torque Off

r0002 Infeed operating display / INF op_display

A_INF, S_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	250	-

Description: Operating display for the infeed.

Value:
0: Operation - everything enabled
21: Ready for operation - set "Enable operation" = "1" (p0852)
31: Ready for switching on - precharging running (p0857)
32: Ready for switching on - set "ON/OFF1" = "0/1" (p0840)
35: Switching on inhibited - carry out first commissioning (p0010)
41: Switching on inhibited - set "ON/OFF1" = "0" (p0840)
42: Switching on inhibited - set "OC/OFF2" = "1" (p0844, p0845)
44: Switching on inhibited - connect 24 V to terminal EP (hardware)
45: Switching on inhibited - remove fault cause, acknowledge fault
46: Switching on inhibited - exit commissioning mode (p0009, p0010)
60: Infeed deactivated/not operational
70: Initialization
200: Wait for booting/partial booting
250: Device signals a topology error

Dependency: Refer to: r0046

Notice: For several missing enable signals, the corresponding value with the highest number is displayed.

Note: OC: Operating condition

EP: Enable Pulses (pulse enable)

COMM: Commissioning

r0002 Infeed operating display / INF op_display

B_INF

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	250	-

Description: Operating display for the infeed.

Value:
0: Operation - everything enabled
31: Ready for switching on - precharging running (p0857)
32: Ready for switching on - set "ON/OFF1" = "0/1" (p0840)
35: Switching on inhibited - carry out first commissioning (p0010)
41: Switching on inhibited - set "ON/OFF1" = "0" (p0840)
42: Switching on inhibited - set "OC/OFF2" = "1" (p0844, p0845)
44: Switching on inhibited - connect 24 V to terminal EP (hardware)
45: Switching on inhibited - remove fault cause, acknowledge fault
46: Switching on inhibited - exit commissioning mode (p0009, p0010)
60: Infeed deactivated/not operational
70: Initialization
200: Wait for booting/partial booting
250: Device signals a topology error

Dependency: Refer to: r0046

Notice: For several missing enable signals, the corresponding value with the highest number is displayed.

Note: OC: Operating condition

COMM: Commissioning

r0002 TM120 operating display / TM120 op_display

TM120

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	250	-

Description: Operating display for Terminal Module 120 (TM120)

Value:
0: Module in cyclic operation
40: Module not in cyclic operation
50: Alarm
60: Fault
70: Initialization
120: Module deactivated
200: Wait for booting/partial booting
250: Device signals a topology error

Notice: For several missing enable signals, the corresponding value with the highest number is displayed.

r0002 TM15 operating display / TM15 op_display

TM15

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	250	-

Description: Operating display for Terminal Module 15 (TM15).

Value:
0: Module in cyclic operation
40: Module not in cyclic operation
50: Alarm
60: Fault
70: Initialization
120: Module deactivated
200: Wait for booting/partial booting
250: Device signals a topology error

Notice: For several missing enable signals, the corresponding value with the highest number is displayed.

r0002 TM150 operating display / TM150 op_display

TM150

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	250	-

Description: Operating display for Terminal Module 150 (TM150)

Value:
0: Module in cyclic operation
40: Module not in cyclic operation
50: Alarm
60: Fault
70: Initialization
120: Module deactivated
200: Wait for booting/partial booting
250: Device signals a topology error

Notice: For several missing enable signals, the corresponding value with the highest number is displayed.

r0002 TM15DI/DO operating display / TM15D op_display

TM15DI_DO

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	250	-

Description: Operating display for Terminal Module 15 (TM15).

Value:
0: Module in cyclic operation
40: Module not in cyclic operation
50: Alarm
60: Fault
70: Initialization
120: Module deactivated
200: Wait for booting/partial booting
250: Device signals a topology error

Notice: For several missing enable signals, the corresponding value with the highest number is displayed.

r0002 TM17 operating display / TM17 op_display

TM17

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	250	-

Description: Operating display for Terminal Module 17 (TM17).

Value:
0: Module in cyclic operation
40: Module not in cyclic operation
50: Alarm
60: Fault
70: Initialization
120: Module deactivated
200: Wait for booting/partial booting
250: Device signals a topology error

Notice: For several missing enable signals, the corresponding value with the highest number is displayed.

r0002 TM31 operating display / TM31 op_display

TM31

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	250	-

Description: Operating display for Terminal Module 31 (TM31).

Value:
0: Module in cyclic operation
40: Module not in cyclic operation
50: Alarm
60: Fault
70: Initialization
120: Module deactivated
200: Wait for booting/partial booting
250: Device signals a topology error

Notice: For several missing enable signals, the corresponding value with the highest number is displayed.

r0002 TM41 operating display / TM41 op_display

TM41	**Can be changed:** -	**Calculated:** -	**Access level:** 1
	Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: -	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	250	-

Description: Operating display for Terminal Module 41 (TM41).

Value:
0: Operation - everything enabled
10: Operation - set "enable setpoint" = "1" (p1142)
12: Operation - RFG frozen, set "RFG start" = "1" (p1141)
13: Operation - set "enable RFG" = "1" (p1140)
18: Operation - brake on fault, remove fault, acknowledge
21: Ready for operation - set "Enable operation" = "1" (p0852)
31: Ready for switching on - set "ON/OFF1" = "0/1" (p0840)
41: Switching on inhibited - set "ON/OFF1" = "1/0" (p0840)
42: Switching on inhibited - set "OC/OFF2" = "1" (p0844)
43: Switching on inhibited - set "OC/OFF3" = "1" (p0848)
45: Switching on inhibited - remove fault cause, acknowledge fault
46: Switching on inhibited - exit commissioning mode (p0009, p0010)
70: Initialization
120: Module deactivated
200: Wait for booting/partial booting
250: Device signals a topology error

Notice: For several missing enable signals, the corresponding value with the highest number is displayed.

Note: OC: Operating condition

RFG: Ramp-function generator

COMM: Commissioning

r0002 TB30 operating display / TB30 op_display

TB30	**Can be changed:** -	**Calculated:** -	**Access level:** 1
	Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: -	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	250	-

Description: Operating display for Terminal Board 30 (TB30).

Value:
0: Module in cyclic operation
40: Module not in cyclic operation
60: Fault
70: Initialization
80: Reset active
120: Module deactivated
200: Wait for run-up
250: Device signals a topology error

Notice: For several missing enable signals, the corresponding value with the highest number is displayed.

r0002 TM54F operating display / TM54F op_display

TM54F_MA, TM54F_SL

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	250	-

Description: Operating display for Terminal Module 54F (TM54F).

Value:
0: Module in cyclic operation
40: Module not in cyclic operation
50: Alarm
60: Fault
70: Initialization
120: Module deactivated
200: Wait for booting/partial booting
250: Device signals a topology error

r0002 Encoder DO operating display / Enc DO op_display

ENC

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	250	-

Description: Operating display for encoder drive object.

Value:
0: Encoder in cyclic operation
35: Carry out first commissioning (p0010)
45: Remove fault cause, acknowledge fault
46: Exit commissioning mode (p0009, p0010)
60: Encoder deactivated
200: Wait for booting/partial booting
250: Device signals a topology error

Notice: For several missing enable signals, the corresponding value with the highest number is displayed.

r0002 DRIVE-CLiQ Hub Module operating display / Hub op_display

HUB

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	250	-

Description: Operating display for the DRIVE-CLiQ Hub Module.

Value:
0: Module in cyclic operation
40: Module not in cyclic operation
50: Alarm
60: Fault
70: Initialization
120: Module deactivated
200: Wait for booting/partial booting
250: Device signals a topology error

Notice: For several missing enable signals, the corresponding value with the highest number is displayed.

p0003 BOP access level / BOP acc_level

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: C1, U, T	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: All groups	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	4	1

Description: Sets the access level for reading and writing parameters via the Basic Operator Panel (BOP).

Value:
1: Standard
2: Extended
3: Expert
4: Service

Note: A higher set access level also includes the lower one.

Access level 1 (standard):

Parameters for simplest possible operations.

Access level 2 (extended):

Parameters to operate the basic functions of the drive unit.

Access level 3 (experts):

Expert know-how is required for these parameters (e.g. BICO parameterization).

Access level 4 (service):

For these parameters, it is necessary that authorized service personnel enter the appropriate password (p3950).

p0004 BOP display filter / BOP disp_filter

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: C2(1), U, T	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: All groups	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	99	0

Description: Sets the display filter for parameters with the Basic Operator Panel (BOP).

Value:
0: All parameters
1: Displays, signals
2: Power unit
3: Motor
4: Encoder/position encoder
5: Technology/units
7: Digital inputs/outputs, commands, sequence control
8: Analog inputs/outputs
10: Setpoint channel/ramp-fct generator
12: Functions
13: U/f control
14: Control
15: Data sets
17: Basic positioner
18: Gating unit
19: Motor identification
20: Communication
21: Faults, alarms, monitoring functions
25: Position control
28: Free function blocks
47: Trace and function generator
50: Technology Extensions
90: Topology
95: Safety Integrated
98: Command Data Sets (CDS)
99: Drive Data Sets (DDS)

Dependency: Refer to: p0003

Notice: The display filter via p0004 provides precise filtering and displays the corresponding parameters only when p0009 and p0010 = 0.

Note: The set access level via p0003 is also relevant for the display filter via p0004.

Examples (assumption: p0009 = p0010 = 0):

p0003 = 1, p0004 = 3

--> Only the parameters for the motor with access level 1 are displayed.

p0003 = 2, p0004 = 3

--> Only the parameters for the motor with access levels 1 and 2 are displayed.

p0005[0...1] BOP operating display selection / BOP op_disp sel

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM17, TM15, TM15DI_DO, TM120, TM150, TB30, TM54F_MA, TM54F_SL, ENC, HUB

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	65535	[0] 2 [1] 0

Description: Sets the parameter number and parameter index for display for p0006 = 2, 4 for the Basic Operator Panel (BOP).

Examples for the SERVO drive object:

p0005[0] = 21, p0005[1] = 0: Actual speed smoothed (r0021)

p0005[0] = 25, p0005[1] = 0: Output voltage smoothed (r0025)

Index: [0] = Parameter number
[1] = Parameter index

Dependency: Refer to: p0006

Note: Procedure:

1.

The parameter number to be displayed should be set in index 0. Only the monitoring parameters (read-only parameters) can be set that actually exist for the actual drive object.

If the set parameter number is not indexed, or if there is an index in index 1 that lies outside the valid range of the set parameter, then index 1 is automatically set to 0.

2.

The index that belongs to the parameter set in index 0 should be set in index 1. The permissible changes in index 1 always depend on the parameter number set in index 0.

p0006 BOP operating display mode / BOP op_ disp mode

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, HLA, TM31, TM41, TM17, TM15, TM15DI_DO, TM120, TM150, TB30, TM54F_MA, TM54F_SL, ENC, HUB

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
4	4	4

Description: Sets the mode of the operating display for the Basic Operator Panel (BOP) in the operating states "ready for operation" and "operation".

Value: 4: p0005

Dependency: Refer to: p0005

Note: Mode 0 ... 3 can only be selected if also r0020, r0021 are available on the drive object.

Mode 4 is available for all drive objects.

p0006 BOP operating display mode / BOP op_ disp mode

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	4	4

Description: Sets the mode of the operating display for the Basic Operator Panel (BOP) in the operating states "ready for operation" and "operation".

Value:
0: Operation --> r0021, otherwise r0020 <--> r0021
1: Operation --> r0021, otherwise r0020
2: Operation --> p0005, otherwise p0005 <--> r0020
3: Operation --> r0002, otherwise r0002 <--> r0020
4: p0005

Dependency: Refer to: p0005

Note: Mode 0 ... 3 can only be selected if also r0020, r0021 are available on the drive object.

Mode 4 is available for all drive objects.

p0007 BOP background lighting / BOP lighting

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [s]	2000 [s]	0 [s]

Description: Sets the delay time until the background lighting of the Basic Operator Panel (BOP) is switched off.

If no keys are actuated, then the background lighting automatically switches itself off after this time has expired.

Note: p0007 = 0: Background lighting is always switched on (factory setting).

p0008 BOP drive object after booting / BOP DO after boot

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	65535	1

Description: Sets the required drive object that is active at the Basic Operator Panel (BOP) after booting.

Note: The value from p0008 initializes the display on the Basic Operator Panel (BOP) at the top left after booting.

The drive object Control Unit is selected using the value 1.

p0009 Device commissioning parameter filter / Dev comm par_filt

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: C1, T	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: All groups	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	10000	1

Description: Sets the device and basic drive commissioning.

By appropriately setting this parameter, those parameters are filtered that can be written into in the various commissioning steps.

Value:
0: Ready
1: Device configuration
2: Defining the drive type/function module
3: Drive base configuration
4: Data set base configuration
29: Device download
30: Parameter reset
50: Install Technology Extension
55: Install Technology Extension
101: Topology input
111: Insert drive object
112: Delete drive object
113: Change drive object number
114: Change component number
115: Parameter download
117: Delete component
10000: Ready (asynchronous)

Notice: For p0009 = 0:

The check and the calculation can take a longer period of time, so that in the worst case scenario, communication with the commissioning tool is interrupted. As a consequence, alternatively p0009 = 10000 can be used.

For p0009 = 10000:

After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

Note: The drives can only be switched on outside the device commissioning (the inverter enabled). In this case, p0009 must be 0 (Ready) and the individual drive objects must have already gone into operation (p0010).

p0009 = 0: ready

When changing into this state, the device configuration is checked and commissioning completed (a new start can be initiated).

p0009 = 1: Device configuration

At the first commissioning of the device, after booting, the device is in the "device configuration" state. To start the internal automatic first commissioning of the drive unit, p0009 should be set to 0 (Ready) after the ID for the actual topology (r0098) was transferred into the ID for the target topology (p0099). To do this, it is sufficient to set a single index value of p0099[x] the same as r0098[x]. Before the device has been completely commissioned, no other parameter can be changed. After the first commissioning was carried out, in this state, when required, other basic device configuration parameters can be adapted (e.g. the basic sampling time in p0110).

p0009 = 2: Defines the drive type / function module

In this state, the drive object types and/or the function modules can be changed or selected for the individual drive objects. To do this, the drive object type can be set using p0107[0...15] and the function can be set using p0108[0...15] (refer to p0101[0...15]).

p0009 = 3: Drive basic configuration

In this state, after the device has been commissioned for the first time, basic changes can be made for the individual drive objects (e.g. sampling times in p0111, p0112, p0115 and the number of data sets in p0120, p0130, p0140, p0170, p0180).

p0009 = 4: Data set basic configuration

In this state, after the device has been commissioned for the first time, for the individual drive objects changes can be made regarding the assignment of the components (p0121, p0131, p0141, p0151, p0161) to the individual data sets and the assignment of the power unit, motor and encoder to the drive data sets (p0185, ...).

p0009 = 29: Device download

In the case of a download via the commissioning tool, the device is automatically brought into this state. After the download has been completed, p0009 is automatically set to 0 (ready). It is not possible to manually set p0009 to this value.

p0009 = 30: Parameter reset

In order to bring the complete unit into the "first commissioning" state or to load the parameters saved using p0977, to start, p0009 must be set to this value. p0976 can then be changed to the required value.

p0009 = 50: configure Technology Extension

After the device has been commissioned for the first time, in this state, Technology Extensions can be activated/deactivated for the individual drive objects (p4956).

p0009 = 55: install Technology Extension

Technology Extensions can be installed/uninstalled in this state.

p0009 = 101: Topology input

In this state, the DRIVE-CLiQ target topology can be entered using p9902 and p9903.

p0009 = 111: Insert drive object

This state allows a new drive object to be inserted using p9911.

p0009 = 112: Delete drive object

This state allows existing drive objects to be deleted using p9912 after the device has been commissioned for the first time.

p0009 = 113: Change drive object number

This state allows the drive object number of existing drive objects to be changed using p9913 after the device has been commissioned for the first time.

p0009 = 114: Change component number

This state allows the component number of existing components to be changed using p9914 after the device has been commissioned for the first time.

p0009 = 115: Parameter download

This state allows the complete device and drive commissioning using the parameter services.

p0009 = 117: Delete component

This state allows components to be deleted using p9917 after the device has been commissioned for the first time.

p0009 = 10000: ready (asynchronous)

When changing into this state, internally p0009 is set = 0. Additional calculations and checks are carried out in the background (asynchronously).

p0010 Drive commissioning parameter filter / Drv comm. par_filt

HLA

Can be changed: C2(1), T	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: All groups	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	10000	1

Description: Sets the parameter filter to commission a drive.

Setting this parameter filters out the parameters that can be written into in the various commissioning steps.

Value:
0: Ready
1: Quick commissioning
2: Valve commissioning
3: Cylinder commissioning
4: Encoder commissioning
5: Technological application/units
11: Function modules
15: Data sets
17: Basic positioner commissioning
25: Position control commissioning
29: Only Siemens internal
30: Parameter reset
95: Safety Integrated commissioning
10000: Ready with immediate feedback signal

Note: The drive can only be switched on outside the drive commissioning (inverter enable). To realize this, this parameter must be set to 0.

By setting p3900 to a value other than 0, the quick commissioning is completed, and this parameter is automatically reset to 0.

Procedure for "Reset parameter": Set p0010 to 30 and p0970 to 1.

p0010 Drive commissioning parameter filter / Drv comm. par_filt

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(1), T	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 2800, 2818
P-Group: All groups	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	10000	1

Description: Sets the parameter filter to commission a drive.

Setting this parameter filters out the parameters that can be written into in the various commissioning steps.

Value:
0: Ready
1: Quick commissioning
2: Power unit commissioning
3: Motor commissioning
4: Encoder commissioning
5: Technological application/units
15: Data sets
17: Basic positioner commissioning
25: Position control commissioning
29: Only Siemens internal
30: Parameter reset
95: Safety Integrated commissioning
10000: Ready with immediate feedback signal

Notice: For p0010 = 10000 the following applies:

After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

Note: The drive can only be switched on outside the drive commissioning (inverter enable). To realize this, this parameter must be set to 0.

By setting p3900 to a value other than 0, the quick commissioning is completed, and this parameter is automatically reset to 0.

Procedure for "Reset parameter": Set p0010 to 30 and p0970 to 1.

p0010 = 10000 corresponds to p0010 = 0. Unlike with p0010 = 0, the parameter modification is applied immediately and the calculations are made in the background. Further parameter modifications cannot be made while the calculations are being performed.

p0010 Infeed commissioning parameter filter / INF comm par_filt

A_INF, S_INF, R_INF, B_INF			
	Can be changed: C2(1), T	**Calculated:** -	**Access level:** 1
	Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: All groups	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	30	1

Description: Sets the parameter filter to commission an infeed unit.

Setting this parameter filters out the parameters that can be written into in the various commissioning steps.

Value:
0: Ready
1: Quick commissioning
2: Power unit commissioning
5: Technological application/units
29: Only Siemens internal
30: Parameter reset

Note: The drive can only be switched on outside the drive commissioning (inverter enable). To realize this, this parameter must be set to 0.

For p3900 not equal to 0, at the end of the quick commissioning, this parameter is automatically reset to 0.

Procedure for "Reset parameter": Set p0010 to 30 and p0970 to 1.

p0010 TM120 commissioning parameter filter / TM120 com par_filt

TM120			
	Can be changed: C2(1), T	**Calculated:** -	**Access level:** 1
	Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: All groups	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	30	0

Description: Sets the parameter filter for commissioning a Terminal Module 120 (TM120).

Setting this parameter filters out the parameters that can be written into in the various commissioning steps.

For the BOP, this setting also causes the read access operations to be filtered.

Value:
0: Ready
29: Only Siemens internal
30: Parameter reset

Dependency: Refer to: p0970

Note: Only the following values are possible: p0010 = 0, 30

Procedure for "Reset parameter": Set p0010 to 30 and p0970 to 1.

p0010 TM15 commissioning parameter filter / TM15 comm par_filt

TM15

Can be changed: C2(1), T	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: All groups	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	30	0

Description: Sets the parameter filter for commissioning a Terminal Module 15 (TM15).

Setting this parameter filters out the parameters that can be written into in the various commissioning steps.

For the BOP, this setting also causes the read access operations to be filtered.

Value:
0: Ready
29: Only Siemens internal
30: Parameter reset

Dependency: Refer to: p0970

Note: Only the following values are possible: p0010 = 0, 30

Procedure for "Reset parameter": Set p0010 to 30 and p0970 to 1.

p0010 TM150 commissioning parameter filter / TM150 com par_filt

TM150

Can be changed: C2(1), T	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: All groups	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	30	0

Description: Sets the parameter filter for commissioning a Terminal Module 150 (TM150).

Setting this parameter filters out the parameters that can be written into in the various commissioning steps.

For the BOP, this setting also causes the read access operations to be filtered.

Value:
0: Ready
29: Only Siemens internal
30: Parameter reset

Dependency: Refer to: p0970

Note: Only the following values are possible: p0010 = 0, 30

Procedure for "Reset parameter": Set p0010 to 30 and p0970 to 1.

p0010 TM15DI/DO commissioning the parameterizing filter / TM15D com par_filt

TM15DI_DO

Can be changed: C2(1), T	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: All groups	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	30	0

Description: Sets the parameter filter for commissioning a Terminal Module 15 (TM15).

Setting this parameter filters out the parameters that can be written into in the various commissioning steps.

For the BOP, this setting also causes the read access operations to be filtered.

Value:
0: Ready
29: Only Siemens internal
30: Parameter reset

Dependency: Refer to: p0970

Note: Only the following values are possible: p0010 = 0, 30

Procedure for "Reset parameter": Set p0010 to 30 and p0970 to 1.

p0010 TM17 commissioning parameter filter / TM17 comm par_filt

TM17

Can be changed: C2(1), T	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: All groups	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	30	0

Description: Sets the parameter filter for commissioning a Terminal Module 17 (TM17).

Setting this parameter filters out the parameters that can be written into in the various commissioning steps.

For the BOP, this setting also causes the read access operations to be filtered.

Value:
0: Ready
29: Only Siemens internal
30: Parameter reset

Dependency: Refer to: p0970

Note: Only the following values are possible: p0010 = 0, 30

Procedure for "Reset parameter": Set p0010 to 30 and p0970 to 1.

p0010 TM31 commissioning parameter filter / TM31 comm par_filt

TM31

Can be changed: C2(1), T	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: All groups	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	30	0

Description: Sets the parameter filter for commissioning a Terminal Module 31 (TM31).

Setting this parameter filters out the parameters that can be written into in the various commissioning steps.

For the BOP, this setting also causes the read access operations to be filtered.

Value:
0: Ready
29: Only Siemens internal
30: Parameter reset

Dependency: Refer to: p0970

Note: Only the following values are possible: p0010 = 0, 30

Procedure for "Reset parameter": Set p0010 to 30 and p0970 to 1.

p0010 TM41 commissioning parameter filter / TM41 comm par_filt

TM41

Can be changed: C2(1), T	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: All groups	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	30	0

Description: Sets the parameter filter for commissioning a Terminal Module 41 (TM41).

Setting this parameter filters out the parameters that can be written into in the various commissioning steps.

For the BOP, this setting also causes the read access operations to be filtered.

Value:
0: Ready
4: Encoder commissioning
5: Technological application/units
29: Only Siemens internal
30: Parameter reset

Dependency: Refer to: p0970

Note: Procedure for "Reset parameter": Set p0010 to 30 and p0970 to 1.

p0010 TB30 commissioning parameter filter / TB30 comm.par_filt

TB30

Can be changed: C2(1), T	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: All groups	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	30	0

Description: Sets the parameter filter for commissioning a Terminal Board 30 (TB30).

Setting this parameter filters out the parameters that can be written into in the various commissioning steps.

For the BOP, this setting also causes the read access operations to be filtered.

Value:
0: Ready
29: Only Siemens internal
30: Parameter reset

Dependency: Refer to: p0970

Note: Procedure for "Reset parameter": Set p0010 to 30 and p0970 to 1.

p0010 TM54F commissioning parameter filter / TM54F com par_filt

TM54F_MA

Can be changed: C2(1), T	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 2891
P-Group: All groups	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	95	0

Description: Sets the parameter filter for commissioning a Terminal Module 54F (TM54F).

Setting this parameter filters out the parameters that can be written into in the various commissioning steps.

For the BOP, this setting also causes the read access operations to be filtered.

Value:
0: Ready
29: Only Siemens internal
30: Parameter reset
95: Safety Integrated commissioning

Dependency: Refer to: p0970

Note: Procedure for "Reset parameter": Set p0010 to 30 and p0970 to 1.

p0010 Encoder DO commissioning parameter filter / EncDO com par_filt

ENC

Can be changed: C2(1), T	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: All groups	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	30	0

Description: Sets the parameter filter to commission an encoder drive object.

Setting this parameter filters out the parameters that can be written into in the various commissioning steps.

For the BOP, this setting also causes the read access operations to be filtered.

Value:
0: Ready
4: Encoder commissioning
5: Technological application/units
29: Only Siemens internal
30: Parameter reset

Note: Procedure for "Reset parameter": Set p0010 to 30 and p0970 to 1.

p0011 BOP password entry (p0013) / BOP passw ent p13

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Functions	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	65535	0

Description: Sets the password for the Basic Operator Panel (BOP).

Dependency: Refer to: p0012, p0013

p0012 BOP password acknowledgment (p0013) / BOP passw ackn p13

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Functions	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	65535	0

Description: Acknowledges the password for the Basic Operator Panel (BOP).

Dependency: Refer to: p0011, p0013

p0013[0...49] BOP user-defined list / BOP list

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM17, TM15, TM15DI_DO, TM120, TM150, TB30, TM54F_MA, TM54F_SL, ENC, HUB	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Functions	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	65535	0

Description: Sets the required parameters to read and write via the Basic Operator Panel (BOP).

Activation:

1. p0003 = 3 (expert).
2. p0013[0...49] = requested parameter number.
3. If required, enter p0011 = password in order to prevent non-authorized deactivation.
4. p0016 = 1 --> activates the selected user-defined list.

Deactivation/change:

1. p0003 = 3 (expert).
2. If required, p0012 = p0011, in order to be authorized to change or deactivate the list.
3. If required p0013[0...49] = required parameter number.
4. p0016 = 1 --> activates the modified user-defined list.
5. p0003 = 0 --> deactivates the user-defined list.

Dependency: Refer to: p0009, p0011, p0012, p0976

Note: The following parameters can be read and written on the Control Unit drive object:

- p0003 (access stage)
- p0009 (device commissioning, parameter filter)
- p0012 (BOP password acknowledgment (p0013))

The following applies for the user-defined list:

- password protection is only available on the drive object Control Unit and is valid for all of the drive objects.
- p0013 cannot be included in the user-defined list for all drive objects.
- p0003, p0009, p0011, p0012, p0976 cannot, for the drive object Control Unit, be included in the user-defined list.
- the user-defined list can be cleared and deactivated "restore factory setting".

A value of 0 means: Entry is empty.

p0015 Macro drive unit / Macro drv unit

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S120_DP, CU_I_D410

Can be changed: C1	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	999999	0

Description: Runs the corresponding macro files.

The selected macro file must be available on the memory card/device memory.

Example:

p0015 = 6 --> the macro file PM000006.ACX is run.

Dependency: Refer to: p0700, p1000, p1500, r8570

Notice: After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

When executing a specific macro, the corresponding programmed settings are made and become active.

Note: The macros in the specified directory are displayed in r8570. r8570 is not in the expert list of the commissioning tool.

Macros available as standard are described in the technical documentation of the particular product.

p0015 Macro drive unit / Macro drv unit

CU_S150_PN, CU_S150_DP

Can be changed: C1	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	999999	1

Description: Runs the corresponding macro files.

The selected macro file must be available on the memory card/device memory.

Example:

p0015 = 6 --> the macro file PM000006.ACX is run.

Dependency: Refer to: p0700, p1000, p1500, r8570

Notice: After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

When executing a specific macro, the corresponding programmed settings are made and become active.

Note: The macros in the specified directory are displayed in r8570. r8570 is not in the expert list of the commissioning tool.

Macros available as standard are described in the technical documentation of the particular product.

p0015 Macro drive object / Macro DO

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM15DI_DO, TM120, TM150

Can be changed: C2(1)	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	999999	0

Description: Runs the corresponding macro files.

The selected macro file must be available on the memory card/device memory.

Example:

p0015 = 6 --> the macro file PM000006.ACX is run.

Dependency: Refer to: p0700, p1000, p1500, r8570

Notice: After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

When executing a specific macro, the corresponding programmed settings are made and become active.

No errors were issued during quick commissioning (p3900 = 1) when writing to parameters of the QUICK_IBN group!

Note: The macros in the specified directory are displayed in r8570. r8570 is not in the expert list of the commissioning tool.

Macros available as standard are described in the technical documentation of the particular product.

p0016 Activate BOP user-defined list / BOP user list act

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: C1, U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: All groups	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Setting for activating/deactivating the user-defined list for the Basic Operator Panel (BOP).

If p0016 = 1, then it is only possible to access parameters in the parameter list (p0013).

Value:
0: BOP user-defined list deactivated
1: BOP user-defined list activated

Dependency: Refer to: p0011, p0012, p0013

Note: The user-defined list can only be deactivated with p0011 = p0012

r0018 Control Unit firmware version / CU FW version

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	4294967295	-

Description: Displays the firmware version of the Control Unit.

Dependency: Refer to: r0128, r0148, r0158, r0197, r0198

Note: Example:

The value 1010100 should be interpreted as V01.01.01.00.

r0019.0...14 CO/BO: Control word BOP / STW BOP

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 9912
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the control word for the Basic Operator Panel (BOP).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	ON / OFF (OFF1)	ON	OFF (OFF1)	-
01	No coast-down / coast-down (OFF2)	No coast down	Coast down (OFF2)	-
02	No Quick Stop / Quick Stop (OFF3)	No Quick Stop	Quick Stop (OFF3)	-
07	Acknowledge fault (0 -> 1)	Yes	No	-
13	Motorized potentiometer raise	Yes	No	-
14	Motorized potentiometer lower	Yes	No	-

r0020 Velocity setpoint smoothed / v_set smth

HLA

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Displays the actual smoothed velocity setpoint at the velocity controller input.

Dependency: Refer to: r0060

Note: Smoothing time constant = 100 ms

The signal is not suitable as a process quantity and may only be used as a display quantity.

The velocity setpoint is available smoothed (r0020) and unsmoothed (r0060).

r0020 Speed setpoint smoothed / n_set smth

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5020, 6799
P-Group: Displays, signals	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the currently smoothed speed setpoint at the input of the speed controller or U/f characteristic (after the interpolator).

Dependency: Refer to: r0060

Note: Smoothing time constant = 100 ms

The signal is not suitable as a process quantity and may only be used as a display quantity.

The speed setpoint is available smoothed (r0020) and unsmoothed (r0060).

r0020 Velocity setpoint smoothed / v_set smth

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5020, 6799
P-Group: Displays, signals	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Displays the currently smoothed velocity setpoint at the input of the velocity controller or U/f characteristic (after the interpolator).

Dependency: Refer to: r0060

Note: Smoothing time constant = 100 ms
The signal is not suitable as a process quantity and may only be used as a display quantity.
The velocity setpoint is available smoothed (r0020) and unsmoothed (r0060).

r0021 CO: Actual velocity smoothed / v_act smooth

HLA

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Displays the smoothed actual value of the piston velocity.
Dependency: Refer to: r0022, r0063
Note: Smoothing time constant = 100 ms
The signal is not suitable as a process quantity and may only be used as a display quantity.
The velocity actual value is available smoothed (r0021, r0022) and unsmoothed (r0063).

r0021 CO: Actual speed smoothed / n_act smooth

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4700, 4710
P-Group: Displays, signals	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the smoothed actual value of the motor speed.
Dependency: Refer to: r0022, r0063
Note: Smoothing time constant = 100 ms
The signal is not suitable as a process quantity and may only be used as a display quantity.
The speed actual value is available smoothed (r0021, r0022) and unsmoothed (r0063).

r0021 CO: Actual velocity smoothed / v_act smooth

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4700, 4710
P-Group: Displays, signals	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Displays the smoothed actual value of the motor velocity.
Dependency: Refer to: r0022, r0063
Note: Smoothing time constant = 100 ms
The signal is not suitable as a process quantity and may only be used as a display quantity.
The velocity actual value is available smoothed (r0021, r0022) and unsmoothed (r0063).

r0021 CO: Actual speed smoothed / n_act smooth

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6799
P-Group: Displays, signals	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the smoothed actual value of the motor speed.
Frequency components from the slip compensation (for induction motors) are not included.
Dependency: Refer to: r0022, r0063

Note: Smoothing time constant = 100 ms

The signal is not suitable as a process quantity and may only be used as a display quantity.

The speed actual value is available smoothed (r0021, r0022) and unsmoothed (r0063).

r0022 Actual velocity smoothed / v_act smooth

HLA

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Displays the smoothed actual value of the piston velocity.

Dependency: Refer to: r0021, r0063

Note: Smoothing time constant = 100 ms

The signal is not suitable as a process quantity and may only be used as a display quantity.

The velocity actual value is available smoothed (r0021, r0022) and unsmoothed (r0063).

r0022 Speed actual value rpm smoothed / n_act rpm smooth

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4700, 4710
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the smoothed actual value of the motor speed.

r0022 is identical to r0021, however, it always has units of rpm and contrary to r0021 cannot be changed over.

Dependency: Refer to: r0021, r0063

Note: Smoothing time constant = 100 ms

The signal is not suitable as a process quantity and may only be used as a display quantity.

The speed actual value is available smoothed (r0021, r0022) and unsmoothed (r0063).

r0022 Actual velocity smoothed / v_act smooth

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4700, 4710
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Displays the smoothed actual value of the motor velocity.

Dependency: Refer to: r0021, r0063

Note: Smoothing time constant = 100 ms

The signal is not suitable as a process quantity and may only be used as a display quantity.

The velocity actual value is available smoothed (r0021, r0022) and unsmoothed (r0063).

r0022 Speed actual value rpm smoothed / n_act rpm smooth

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6799
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the smoothed actual value of the motor speed.

Frequency components from the slip compensation (for induction motors) are not included.

r0022 is identical to r0021, however, it always has units of rpm and contrary to r0021 cannot be changed over.

Dependency: Refer to: r0021, r0063

Note: Smoothing time constant = 100 ms

The signal is not suitable as a process quantity and may only be used as a display quantity.

The speed actual value is available smoothed (r0021, r0022) and unsmoothed (r0063).

r0024 Output frequency smoothed / f_outp smooth

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5300, 5730
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Hz]	- [Hz]	- [Hz]

Description: Displays the smoothed output frequency.

Dependency: Refer to: r0066

Note: Smoothing time constant = 100 ms

The signal is not suitable as a process quantity and may only be used as a display quantity.

The output frequency is available smoothed (r0024) and unsmoothed (r0066).

r0024 Output frequency smoothed / f_outp smooth

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6300, 6799
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Hz]	- [Hz]	- [Hz]

Description: Displays the smoothed output frequency.

Frequency components from the slip compensation (for induction motors) are included.

Dependency: Refer to: r0066

Note: Smoothing time constant = 100 ms

The signal is not suitable as a process quantity and may only be used as a display quantity.

The output frequency is available smoothed (r0024) and unsmoothed (r0066).

r0024 CO: Line supply frequency smoothed / f_line smooth

A_INF, S_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8850, 8950
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Hz]	- [Hz]	- [Hz]

Description: Displays the smoothed line supply frequency.

Dependency: Refer to: r0066

Note: Smoothing time constant = 300 ms

The signal is not suitable as a process quantity and may only be used as a display quantity.

The line frequency is available smoothed (r0024) and unsmoothed (r0066).

A positive sign of the frequency is obtained when the line supply phases U, V and W are connected with the correct phase sequence.

A negative sign of the frequency is obtained when the 3 line phases are interchanged therefore designating a negative direction of the rotating field of the 3-phase line supply voltage.

r0025 CO: Output voltage smoothed / U_outp smooth

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5730, 6300, 6799
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Displays the smoothed output voltage of the power unit.

Dependency: Refer to: r0072

Note: Smoothing time constant = 100 ms

The signal is not suitable as a process quantity and may only be used as a display quantity.

The output voltage is available smoothed (r0025) and unsmoothed (r0072).

r0025[0...4] CO: Input voltage smoothed / U_inp smooth

A_INF, S_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8850, 8950
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Display and connector output for the smoothed actual values of the input voltage.

Index:
[0] = Power unit input terminals (model)
[1] = Line filter input terminals (VSM)
[2] = Line voltage source (model)
[3] = Line voltage source smoothed (model)
[4] = Line voltage source strongly smoothed (model)

Dependency: Refer to: r0072

Note: Smoothing time constant = 300 ms

The signals are not suitable as process quantity and may only be used as display quantities.

The input voltages are available smoothed (r0025) and unsmoothed (r0072).

For r0025[0]:

Pulsed voltage at the line supply input terminals of the power unit.

The value is calculated from the modulation depth r0074, and is therefore only correct in the closed-loop controlled mode and when the pulses are enabled.

For r0025[1]:

Absolute voltage value at the input terminals of the line filter or the connection point of a Voltage Sensing Module (VSM).

If a VSM is not connected, then the value is calculated from the VSM measured values r3661 and r3662 and is therefore equal to 0.

For r0025[2]:

Estimated value for the voltage of the voltage source that is calculated in the voltage model of the line supply PLL.

For r0025[3]:

Smoothed display value of the filtered source voltage from r0072[3].

For r0025[4]:

Smoothed display value of the filtered source voltage from r0072[4].

r0026 CO: DC link voltage smoothed / Vdc smooth

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5730, 8750, 8850, 8950
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the smoothed actual value of the DC link voltage.

Dependency: Refer to: r0070

Notice: For SINAMICS S120 AC Drive (AC/AC) the following applies:

When measuring a DC link voltage < 200 V, for the Power Module (e.g. PM340) a valid measured value is not supplied. In this case, when an external 24 V power supply is connected, a value of approx. 24 V is displayed in the display parameter.

Note: SERVO, VECTOR: Smoothing time constant = 100 ms

The signal is not suitable as a process quantity and may only be used as a display quantity.

The DC link voltage is available smoothed (r0026) and unsmoothed (r0070).

r0026 CO: DC link voltage smoothed / Vdc smooth

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6799, 8750, 8850, 8950
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the smoothed actual value of the DC link voltage.

Dependency: Refer to: r0070

Notice: For SINAMICS S120 AC Drive (AC/AC) the following applies:

When measuring a DC link voltage < 200 V, for the Power Module (e.g. PM340) a valid measured value is not supplied. In this case, when an external 24 V power supply is connected, a value of approx. 24 V is displayed in the display parameter.

Note: SERVO, VECTOR: Smoothing time constant = 100 ms

The signal is not suitable as a process quantity and may only be used as a display quantity.

The DC link voltage is available smoothed (r0026) and unsmoothed (r0070).

r0026 CO: DC link voltage smoothed / Vdc smooth

A_INF, S_INF, R_INF, B_INF

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5730, 6799, 8750, 8850, 8950
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the smoothed actual value of the DC link voltage.

Dependency: Refer to: r0070

Notice: This smoothed signal is not suitable for diagnostics or evaluation of dynamic operations. In this case, the unsmoothed value should be used.

Note: A_INF, B_INF, S_INF: smoothing time constant = 300 ms

The signal is not suitable as a process quantity and may only be used as a display quantity.

The DC link voltage is available smoothed (r0026) and unsmoothed (r0070).

r0027 CO: Absolute actual current smoothed / I_act abs val smth

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5730, 6799, 8850, 8950
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the smoothed absolute actual current value.

Dependency: Refer to: r0068

Notice: This smoothed signal is not suitable for diagnostics or evaluation of dynamic operations. In this case, the unsmoothed value should be used.

Note: A_INF, S_INF, VECTOR: Smoothing time constant = 300 ms

SERVO: Smoothing time constant = 100 ms

The signal is not suitable as a process quantity and may only be used as a display quantity.

The absolute current actual value is available smoothed (r0027) and unsmoothed (r0068).

r0027 CO: Absolute actual current smoothed / I_act abs val smth

B_INF

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8750
P-Group: Displays, signals	**Unit group:** 6_4	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [A]	- [A]	- [A]

Description: Displays the smoothed absolute actual current value.

Dependency: Refer to: r0068

Notice: This smoothed signal is not suitable for diagnostics or evaluation of dynamic operations. In this case, the unsmoothed value should be used.

For Basic Line Modules of chassis format, the displayed value is invalid as these units do not have any current sensing.

Note: Smoothing time constant = 300 ms

The signal is not suitable as a process quantity and may only be used as a display quantity.

The absolute current actual value is available smoothed (r0027) and unsmoothed (r0068).

r0028 Modulation depth smoothed / Mod_depth smth

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5730, 6799, 8950
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the smoothed actual value of the modulation depth.

Dependency: Refer to: r0074

Note: A_INF: Smoothing time constant = 300 ms

SERVO, VECTOR: Smoothing time constant = 100 ms

The signal is not suitable as a process quantity and may only be used as a display quantity.

The modulation depth is available smoothed (r0028) and unsmoothed (r0074).

r0029 Current actual value field-generating smoothed / Id_act smooth

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5730, 6799
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the smoothed field-generating actual current.

Dependency: Refer to: r0076

Note: SERVO: Smoothing time constant = 100 ms

VECTOR: Smoothing time constant = 300 ms

The signal is not suitable as a process quantity and may only be used as a display quantity.

The field-generating current actual value is available smoothed (r0029) and unsmoothed (r0076).

r0029 Reactive current actual value smoothed / I_react smooth

A_INF, S_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8850, 8950
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the smoothed actual value of the reactive current component.

Note: Smoothing time constant = 300 ms

The signal is not suitable as a process quantity and may only be used as a display quantity.

The reactive current actual value is available smoothed (r0029) and unsmoothed (r0076).

r0030 Current actual value torque-generating smoothed / Iq_act smooth

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5730, 6799
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the smoothed torque-generating actual current.

Dependency: Refer to: r0078

Note: SERVO: Smoothing time constant = 100 ms

VECTOR: Smoothing time constant = 300 ms

The signal is not suitable as a process quantity and may only be used as a display quantity.

The following applies for SERVO:

The torque-generating current actual value is available smoothed (r0030 with 100 ms, r0078[1] with p0045) and unsmoothed (r0078[0]).

The following applies for VECTOR:

The torque-generating current actual value is available smoothed (r0030 with 300 ms) and unsmoothed (r0078).

r0030 Current actual value force generating smoothed / Iq_act smooth

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5730, 6799
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the smoothed force-generating actual current.

Dependency: Refer to: r0078

Note: SERVO: Smoothing time constant = 100 ms

VECTOR: Smoothing time constant = 300 ms

The signal is not suitable as a process quantity and may only be used as a display quantity.

The following applies for SERVO:

The force-generating current actual value is available smoothed (r0030 with 100 ms, r0078[1] with p0045) and unsmoothed (r0078[0]).

The following applies for VECTOR:

The torque-generating current actual value is available smoothed (r0030 with 300 ms) and unsmoothed (r0078).

r0030 Active current actual value smoothed / I_active smooth

A_INF, S_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8850, 8950
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the smoothed actual value of the active current components.

Dependency: Refer to: r0078

Note: Smoothing time constant = 300 ms

The signal is not suitable as a process quantity and may only be used as a display quantity.

The active current actual value is available smoothed (r0030) and unsmoothed (r0078).

r0031 Force actual value smoothed / F_act smooth

HLA

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [N]	- [N]	- [N]

Description: Displays the smoothed force setpoint.

Dependency: Refer to: r0080

Note: Smoothing time constant = 100 ms

The signal is not suitable as a process quantity and may only be used as a display quantity.

The force actual value is available smoothed (r0031) and unsmoothed (r0080).

r0031 Actual torque smoothed / M_act smooth

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5730, 6799
P-Group: Displays, signals	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Displays the smoothed torque actual value.

Dependency: Refer to: r0080

Note: Smoothing time constant = 100 ms

The signal is not suitable as a process quantity and may only be used as a display quantity.

The torque actual value is available smoothed (r0031) and unsmoothed (r0080).

r0031 Force actual value smoothed / F_act smooth

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5730, 6799
P-Group: Displays, signals	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [N]	- [N]	- [N]

Description: Displays the smoothed force setpoint.

Dependency: Refer to: r0080

Note: Smoothing time constant = 100 ms

The signal is not suitable as a process quantity and may only be used as a display quantity.

The force actual value is available smoothed (r0031) and unsmoothed (r0080).

r0032 CO: Active power actual value smoothed / P_actv_act smth

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5730, 6799, 8750, 8850, 8950
P-Group: Displays, signals	**Unit group:** 14_10	**Unit selection:** p0505
Not for motor type: -	**Scaling:** r2004	**Expert list:** 1
Min	**Max**	**Factory setting**
- [kW]	- [kW]	- [kW]

Description: Display and connector output for the smoothed actual value of the active power.

Dependency: Refer to: r0082

Notice: This smoothed signal is not suitable for diagnostics or evaluation of dynamic operations. In this case, the unsmoothed value should be used.

Note: Significance for the drive: Power output at the motor shaft

Significance for the infeed: Line power drawn

For A_INF, B_INF and S_INF the following applies:

The active power is available smoothed (r0032 with 300 ms) and unsmoothed (r0082).

The following applies for SERVO:

The active power is available smoothed (r0032 with 100 ms, r0082[1] with p0045) and unsmoothed (r0082[0]).

For VECTOR and VECTORMV, the following applies:

The active power is available smoothed (r0032 with 100 ms) and unsmoothed (r0082).

r0032 CO: Active power actual value smoothed / P_actv_act smth

B_INF

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5730, 6799, 8750, 8850, 8950
P-Group: Displays, signals	**Unit group:** 14_10	**Unit selection:** p0505
Not for motor type: -	**Scaling:** r2004	**Expert list:** 1
Min	**Max**	**Factory setting**
- [kW]	- [kW]	- [kW]

Description: Display and connector output for the smoothed actual value of the active power.

Dependency: Refer to: r0082

Notice: This smoothed signal is not suitable for diagnostics or evaluation of dynamic operations. In this case, the unsmoothed value should be used.

For Basic Line Modules of chassis format, the displayed value is invalid as these units do not have any current sensing.

Note: Significance for the drive: Power output at the motor shaft

Significance for the infeed: Line power drawn

For A_INF, B_INF and S_INF the following applies:

The active power is available smoothed (r0032 with 300 ms) and unsmoothed (r0082).

The following applies for SERVO:

The active power is available smoothed (r0032 with 100 ms, r0082[1] with p0045) and unsmoothed (r0082[0]).

For VECTOR and VECTORMV, the following applies:

The active power is available smoothed (r0032 with 100 ms) and unsmoothed (r0082).

r0033 Torque utilization smoothed / M_util smooth

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8012
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the smoothed torque utilization as a percentage.

The torque utilization is obtained from the required smoothed torque in reference to the torque limit, scaled using p2196.

Note: Smoothing time constant = 100 ms

The signal is not suitable as a process quantity and may only be used as a display quantity.

The torque utilization is available smoothed (r0033) and unsmoothed (r0081).

For M_set total (r0079) > M_max offset (p1532), the following applies:

- demanded torque = M_set total - M_max offset
- actual torque limit = M_max upper effective (r1538) - M_max offset

For M_set total (r0079) <= M_max offset (p1532), the following applies:

- demanded torque = M_max offset - M_set total
- actual torque limit = M_max offset - M_max lower effective (r1539)

For the actual torque limit = 0, the following applies: r0033 = 100 %

For the actual torque limit < 0, the following applies: r0033 = 0 %

r0033 Force utilization smoothed / F_util smooth

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8012
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the smoothed force utilization as a percentage.

The force utilization is obtained from the required smoothed force referred to the force limit.

Note: Smoothing time constant = 100 ms

The signal is not suitable as a process quantity and may only be used as a display quantity.

The force utilization is available smoothed (r0033) and unsmoothed (r0081).

For F_set total (r0079) > F_max offset (p1532), the following applies:

- demanded torque = F_set total - F_max offset
- actual force limit = F_max upper effective (r1538) - F_max offset

For F_set total (r0079) <= F_max offset (p1532), the following applies:

- demanded force = F_max offset - F_set total
- actual force limit = F_max offset - F_max lower effective (r1539)

For the actual force limit = 0, the following applies: r0033 = 100 %

For the actual force limit < 0, the following applies: r0033 = 0 %

r0033 Torque utilization smoothed / M_util smooth

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8012
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the smoothed torque utilization as a percentage.

The torque utilization is obtained from the required smoothed torque in reference to the torque limit, scaled using p2196.

Note: Smoothing time constant = 100 ms

The signal is not suitable as a process quantity and may only be used as a display quantity.

The torque utilization is available smoothed (r0033) and unsmoothed (r0081).

For M_set total (r0079) > 0, the following applies:

- Required torque = M_set total
- Actual torque limit = M_max upper effective (r1538)

For M_set total (r0079) <= 0, the following applies:

- Required torque = - M_set total
- Actual torque limit = - M_max lower effective (r1539)

For the actual torque limit = 0, the following applies: r0033 = 100 %

For the actual torque limit < 0, the following applies: r0033 = 0 %

r0034 CO: Motor utilization thermal / Mot_util therm

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8017, 8019
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Display and connector output for the motor utilization from motor temperature model 1 (I2t) or 3.

For motor temperature model 1 (I2t) (p0612.0 = 1), the following applies:

For firmware version < 4.7 SP6 or p0612.12 = 0:

- r0034 = (motor model temperature - 40 °C) / (p0605 - 40 °C) * 100 %

From firmware version 4.7 SP6 and p0612.12 = 1:

- r0034 = (motor model temperature - p0613) / (p0605 - p0613) * 100 %

For motor temperature model 3 (p0612.2 = 1), the following applies:

- r0034 = (motor model temperature - r5397) / (r5398 - r5397) * 100 %

Dependency: The thermal motor utilization is only determined when the motor temperature model 1 (I2t) or 3 is activated.

The following conditions are a prerequisite for additional information.

- a temperature sensor has not been parameterized (p0600, p0601).
- the current corresponds to the stall current (p0318).
- speed n > 1 [rpm].

For firmware version < 4.7 SP6 or p0612.12 = 0, the following applies:

- the temperature model operates with an ambient temperature of 20 °C.

A motor utilization of 100% is displayed (r0034 = 100 %) when the following conditions are permanently fulfilled:

- the ambient temperature is 40 °C (model 1: p0625 = 40 °C, model 3: p0613 = 40 °C).

From firmware version 4.7 SP6 and p0612.12 = 1, the following applies:

- the ambient temperature can be adapted to the conditions using p0613.

Refer to: p0605, p0611, p0612, p0613, p0627, r0632

Refer to: F07011, A07012

Notice: After the drive is switched on, the system starts to determine the motor temperature with an assumed model value. This means that the value for the motor utilization is only valid after a stabilization time.

Note: Smoothing time constant = 100 ms

The signal is not suitable as a process quantity and may only be used as a display quantity.

For r0034 = -200.0 %, the following applies:

The value is invalid (e.g. the motor temperature model is not activated or has been incorrectly parameterized).

r0035 CO: Motor temperature / Mot temp

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8016, 8017
P-Group: Displays, signals	**Unit group:** 21_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°C]	- [°C]	- [°C]

Description: Display and connector output for the actual temperature in the motor.

Note: For r0035 not equal to -200.0 °C, the following applies:

- this temperature display is valid.
- a KTY/PT1000 temperature sensor is connected.
- the thermal model for the induction motor is activated (p0612 bit 1 = 1 and temperature sensor deactivated: p0600 = 0 or p0601 = 0).

For r0035 equal to -200.0 °C, the following applies:

- this temperature display is not valid (temperature sensor error).
- a PTC sensor or bimetallic NC contact is connected.
- the temperature sensor of the synchronous motor is deactivated (p0600 = 0 or p0601 = 0).

r0035 CO: Temperature input / Temp_input

A_INF, S_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8850, 8950
P-Group: Displays, signals	**Unit group:** 21_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°C]	- [°C]	- [°C]

Description: Displays the temperature currently measured at X21 (booksize) or X41 (chassis).

When using an Active Interface Module (p0220 = 41 ... 45) a bimetallic sensor must be connected up to monitor the temperature. The temperature sensor type is indicated using p0601 and cannot be changed when an Active Interface Module is being used.

Temperature within permissible limit values: r0035 = -50°C

Temperature outside the permissible limit values: r0035 = 250°C

Dependency: Refer to: A06260, F06261, F06262

Notice: The function in r0192.11 must be available in order to obtain a correct display.

Note: For r0035 equal to -200.0 °C, the following applies:

- "no sensor" selected in p0601!

For r0035 equal to -300.0 °C, the following applies:

- a KTY/PT1000 is selected in p0601 but is not connected!
- the temperature display is not valid (temperature sensor error)!

r0035 CO: Temperature input / Temp_input

B_INF

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8750
P-Group: Displays, signals	**Unit group:** 21_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°C]	- [°C]	- [°C]

Description: Displays the temperature currently measured at X21 (booksize) or X41 (chassis).

For a BLM with internal Braking Module, a bimetallic sensor must be connected up to monitor the temperature of the braking resistor. The temperature sensor type is indicated using p0601 and cannot be changed for the existing internal Braking Module.

Temperature within permissible limit values: r0035 = -50°C

Temperature outside the permissible limit values: r0035 = 250°C

Dependency: Refer to: F06907, F06908

Notice: The function in r0192.11 must be available in order to obtain a correct display.

Note: For r0035 equal to -200.0 °C, the following applies:

- "no sensor" selected in p0601!

For r0035 equal to -300.0 °C, the following applies:

- a KTY/PT1000 is selected in p0601 but is not connected!
- the temperature display is not valid (temperature sensor error)!

r0036 CO: Power unit overload I2t / PU overload I2t

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8021
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the power unit overload determined using the I2t calculation.

A current reference value is defined for the I2t monitoring of the power unit. It represents the current that can be conducted by the power unit without any influence of the switching losses (e.g. the continuously permissible current of the capacitors, inductances, busbars, etc.).

If the I2t reference current of the power unit is not exceeded, then an overload (0 %) is not displayed.

In the other case, the degree of thermal overload is calculated, whereby 100% results in a trip.

Dependency: Refer to: p0290, p0294

Refer to: F30005

r0037[0...1] Control Unit temperature / CU temp

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°C]	- [°C]	- [°C]

Description: Displays the measured Control Unit temperature.

An appropriate message is output when the permitted operating temperature is exceeded.

Index: [0] = Actual measured value
[1] = Maximum measured value

Dependency: Refer to: A01009

Notice: Only for internal Siemens troubleshooting.

Note: The value of -200 indicates that there is no measuring signal.

r0037[0...1] CO: HLA temperature / HLA temp

HLA

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°C]	- [°C]	- [°C]

Description: Display and connector output for the measured temperature in the Hydraulic Module.

Fault F30611 with fault value 1950 is output when the permitted operating temperature is exceeded.

An implausible operating temperature value results in fault F30611 with fault value 1951.

Index: [0] = Actual measured value
[1] = Maximum measured value

Notice: Only for internal Siemens troubleshooting.

Note: The value of -200 indicates that there is no measuring signal.

r0037[0...20] CO: Power unit temperatures / PU temperatures

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8021
P-Group: Displays, signals	**Unit group:** 21_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°C]	- [°C]	- [°C]

Description: Display and connector output for the temperature in the power unit.

Index:
[0] = Inverter maximum value
[1] = Depletion layer maximum value
[2] = Rectifier maximum value
[3] = Air intake
[4] = Interior of power unit
[5] = Inverter 1
[6] = Inverter 2
[7] = Inverter 3
[8] = Inverter 4
[9] = Inverter 5
[10] = Inverter 6
[11] = Rectifier 1
[12] = Rectifier 2
[13] = Depletion layer 1
[14] = Depletion layer 2
[15] = Depletion layer 3
[16] = Depletion layer 4
[17] = Depletion layer 5
[18] = Depletion layer 6
[19] = Cooling unit liquid intake
[20] = Capacitor air discharge

Notice: Only for internal Siemens troubleshooting.

Note: The value of -200 indicates that there is no measuring signal.

r0037[0]: Maximum value of the inverter temperatures (r0037[5...10]).

r0037[1]: Maximum value of the depletion layer temperatures (r0037[13...18]).

r0037[2]: Maximum value of the rectifier temperatures (r0037[11...12]).

r0037[20]: the measured value is only determined for r0193.13 = 1.

In the case of a fault, the particular shutdown threshold depends on the power unit, and cannot be read out.

r0038 Power factor smoothed / Cos phi smooth

VECTOR, VECTOR_AC, VECTOR_I_AC, A_INF, S_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6799, 8850, 8950
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the smoothed actual power factor.

Notice: For infeed units, the following applies:

For active powers < 25 % of the rated power, this does not provide any useful information.

Note: Smoothing time constant = 300 ms

The signal is not suitable as a process quantity and may only be used as a display quantity.

Meaning for motor:

- power factor of the basic fundamental signals at the converter output.

Meaning for infeed:

- Power factor at the connection point (r3470, r3471)

r0039[0...2] CO: Energy display / Energy displ

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [kWh]	- [kWh]	- [kWh]

Description: Display and connector output for the energy values at the output terminals of the power unit.

Recommendation: r0042 should be used as process energy display.

Index:
[0] = Energy balance (sum)
[1] = Energy drawn
[2] = Energy fed back

Dependency: Refer to: p0040

Note: For a BICO interconnection, signal source r0039 supplies the floating-point value in Ws.

For index [0]:

Difference between the energy drawn and energy that is fed back.

p0040 Reset energy consumption display / Energy usage reset

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Setting to reset the display in r0039 and r0041.

Procedure:

Set p0040 = 0 --> 1

The displays are reset and the parameter is automatically set to zero.

Dependency: Refer to: r0039

r0041 Energy consumption saved / Energy cons saved

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [kWh]	- [kWh]	- [kWh]

Description: Displays the saved energy referred to 100 operating hours.

Dependency: Refer to: p0040

Note: This display is used for a fluid-flow machine.

The flow characteristic is entered into p3320 ... p3329.

For an operating time of below 100 hours, the display is interpolated up to 100 hours.

r0042[0...2] CO: Process energy display / Proc energy disp

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Wh]	- [Wh]	- [Wh]

Description: Display and connector output for the energy values at the output terminals of the power unit.

Index: [0] = Energy balance (sum)
[1] = Energy drawn
[2] = Energy fed back

Dependency: Refer to: p0043

Note: The signal can be displayed as process variable (scaling: 1 = 1 Wh).

This is enabled in p0043.

The display is also reset with p0040 = 1.

If an enable is present in r0043 when the Control Unit powers up, then the value from r0039 is transferred into r0042.

As r0039 serves as a reference signal for r0042, due to format reasons, the process energy display can only process values of r0039 up to 2147483 kWh. r0039 should also be reset using this value.

p0043 BI: Enable energy usage display / Enab energy usage

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to enable/reset the process energy display in r0042.

BI: p0043 = 1 signal:

The process energy display is enabled in r0042.

Dependency: Refer to: r0042

p0045 Display values smoothing time constant / Disp_val T_smooth

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, S_INF

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4715, 5610, 5730, 6714, 8012
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	10000.00 [ms]	1.00 [ms]

Description: Sets the smoothing time constant for the following display values:

SERVO: r0078[1], r0079[1], r0081 (calculated from the quantities smoothed with p0045), r0082[1].

VECTOR: r0063[1], r0068[1], r0080[1], r0082[1].

p0045 Display values smoothing time constant / Disp_val T_smooth

A_INF, R_INF

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	10000.00 [ms]	150.00 [ms]

Description: Sets the smoothing time constant for the following display values:

r5515[1], r5516[1]

r0046.0...30 CO/BO: Missing enable signal / Missing enable sig

HLA			
	Can be changed: -	**Calculated:** -	**Access level:** 1
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2634
	P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Display and BICO output for missing enable signals that are preventing the closed-loop drive control from being commissioned.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	OFF1 enable missing	Yes	No	-
01	OFF2 enable missing	Yes	No	-
02	OFF3 enable missing	Yes	No	-
03	Operation enable missing	Yes	No	-
07	The 26.5 V supply voltage is missing	Yes	No	-
08	Safety enable missing	Yes	No	-
09	System pressure missing	Yes	No	-
10	Ramp-function generator enable missing	Yes	No	-
11	Ramp-function generator start missing	Yes	No	-
12	Setpoint enable missing	Yes	No	-
16	OFF1 enable internal missing	Yes	No	-
17	OFF2 enable internal missing	Yes	No	-
18	OFF3 enable internal missing	Yes	No	-
19	Power enable internal missing	Yes	No	-
21	STOP2 enable internal missing	Yes	No	-
26	Drive inactive or not operational	Yes	No	-
30	Velocity controller inhibited	Yes	No	-

Dependency: Refer to: r0002

Note: The value r0046 = 0 indicates that all enable signals for this drive are present.

Bit 00 = 1 (enable signal missing), if:

- the signal source in p0840 is a 0 signal.

- there is a "switching on inhibited".

Bit 01 = 1 (enable signal missing), if:

- the signal source in p0844 or p0845 is a 0 signal.

Bit 02 = 1 (enable signal missing), if:

- the signal source in p0848 or p0849 is a 0 signal.

Bit 03 = 1 (enable signal missing), if:

- the signal source in p0852 is a 0 signal.

Bit 07 = 1 (enable signal missing), if:

- the 26.5 V supply voltage is missing (X271).

Bit 08 = 1 (enable signal missing), if:

- safety functions have been enabled and STO is active.

- a safety-relevant signal is present with a STOP A response.

STO enabled via terminals:

- the pulse enable via STO terminal is missing or the signal source in p9620 has a 0 signal.

STO enabled via PROFIsafe or TM54F:

- STO is selected via PROFIsafe or TM54F.

Bit 09 = 1 (enable signal missing), if:

- the signal source in p0864 is a 0 signal.

Bit 10 = 1 (enable signal missing), if:

- the signal source in p1140 is a 0 signal.

Bit 11 = 1 (enable signal missing) if the velocity setpoint is frozen, because:

- the signal source in p1141 is a 0 signal.

Bit 12 = 1 (enable signal missing), if:

- the signal source in p1142 is a 0 signal.

Bit 16 = 1 (enable signal missing), if:
- there is an OFF1 fault response. The system is only enabled if the fault is removed and was acknowledged and the "switching on inhibited" withdrawn with OFF1 = 0.
Bit 17 = 1 (enable signal missing), if:
- commissioning mode is selected (p0009 > 0 or p0010 > 0).
- there is an OFF2 fault response.
- the drive is inactive (p0105 = 0) or is not operational (r7850[DO-Index]=0).
Bit 18 = 1 (enable signal missing), if:
- OFF3 has still not been completed or an OFF3 fault response is present.
Bit 19 = 1 (internal power enable missing), if:
- synchronization is running between the basic clock cycle, DRIVE-CLiQ clock cycle and application clock cycle.
Bit 21 = 1 (enable signal missing), if:
- the power has been enabled and the velocity setpoint has still not been enabled.
Bit 26 = 1 (enable signal missing), if:
- the drive is inactive (p0105 = 0) or is not operational (r7850[DO-Index]=0).
- the function "parking axis" is selected (BI: p0897 = 1 signal)..
- the drive device is in the "PROFIenergy energy-saving mode" (r5600, CU-specific).
Bit 30 = 1 (velocity controller inhibited), if:
- the function generator with deactivated velocity controller is active.
- the measuring function with deactivated velocity controller is active.

r0046.0...31 CO/BO: Missing enable signal / Missing enable sig

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2634
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for missing enable signals that are preventing the closed-loop drive control from being commissioned.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	OFF1 enable missing	Yes	No	7954
01	OFF2 enable missing	Yes	No	-
02	OFF3 enable missing	Yes	No	-
03	Operation enable missing	Yes	No	-
04	Armature short-circuit / DC braking enable missing	Yes	No	7014, 7016
05	STOP2 enable missing	Yes	No	-
08	Safety enable missing	Yes	No	-
09	Infeed enable missing	Yes	No	-
10	Ramp-function generator enable missing	Yes	No	-
11	Ramp-function generator start missing	Yes	No	-
12	Setpoint enable missing	Yes	No	-
16	OFF1 enable internal missing	Yes	No	-
17	OFF2 enable internal missing	Yes	No	-
18	OFF3 enable internal missing	Yes	No	-
19	Pulse enable internal missing	Yes	No	-
20	Armature short-circuit/DC braking internal enable missing	Yes	No	7014, 7016
21	STOP2 enable internal missing	Yes	No	-
25	Function bypass active	Yes	No	-
26	Drive inactive or not operational	Yes	No	-
27	De-magnetizing not completed	Yes	No	-
28	Brake open missing	Yes	No	-
29	Cooling unit ready signal missing	Yes	No	-
30	Speed controller inhibited	Yes	No	-
31	Jog setpoint active	Yes	No	-

Dependency: Refer to: r0002

Note:

The value r0046 = 0 indicates that all enable signals for this drive are present.
Bit 00 = 1 (enable signal missing), if:
- the signal source in p0840 is a 0 signal.
- there is a "switching on inhibited".
Bit 01 = 1 (enable signal missing), if:
- the signal source in p0844 or p0845 is a 0 signal.
Bit 02 = 1 (enable signal missing), if:
- the signal source in p0848 or p0849 is a 0 signal.
Bit 03 = 1 (enable signal missing), if:
- the signal source in p0852 is a 0 signal.
Bit 04 =1 (armature short-circuit active), if:
- the signal source in p1230 has a 1 signal
Bit 05, Bit 06: Being prepared
Bit 08 = 1 (enable signal missing), if:
- safety functions have been enabled and STO is active.
- a safety-relevant signal is present with a STOP A response.
STO enabled via terminals:
- the pulse enable via terminal EP is missing (booksize: X21, chassis: X41), or the signal source in p9620 is for a 0 signal.
STO enabled via PROFIsafe or TM54F:
- STO is selected via PROFIsafe or TM54F.
Bit 09 = 1 (enable signal missing), if:
- the signal source in p0864 is a 0 signal.
Bit 10 = 1 (enable signal missing), if:
- the signal source in p1140 is a 0 signal.
Bit 11 = 1 (enable signal missing) if the speed setpoint is frozen, because:
- the signal source in p1141 is a 0 signal.
- the speed setpoint is entered from jogging and the two signal sources for jogging, bit 0 (p1055) and bit 1 (p1056) have a 1 signal.
Bit 12 = 1 (enable signal missing), if:
- the signal source in p1142 is a 0 signal.
- When activating the function module "basic positioner" (r0108.4 = 1), the signal source in p1142 is set to a 0 signal.
Bit 16 = 1 (enable signal missing), if:
- there is an OFF1 fault response. The system is only enabled if the fault is removed and was acknowledged and the "switching on inhibited" withdrawn with OFF1 = 0.
Bit 17 = 1 (enable signal missing), if:
- commissioning mode is selected (p0009 > 0 or p0010 > 0).
- there is an OFF2 fault response.
- the drive is inactive (p0105 = 0) or is not operational (r7850[DO-Index]=0).
Bit 18 = 1 (enable signal missing), if:
- OFF3 has still not been completed or an OFF3 fault response is present.
Bit 19 = 1 (internal pulse enable missing), if:
- synchronization is running between the basic clock cycle, DRIVE-CLiQ clock cycle and application clock cycle.
Bit 20 =1 (internal armature short-circuit active), if:
- the drive is not in the state "S4: Operation" or "S5x" (refer to function diagram 2610).
- the internal pulse enable is missing (r0046.19 = 0).
Bit 21 = 1 (enable signal missing), if:
The pulses have been enabled and the speed setpoint has still not been enabled, because:
- the holding brake opening time (p1216) has still not expired.
- the motor has still not been magnetized (induction motor).
- the encoder has not been calibrated (U/f vector and synchronous motor)
Bit 22: Being prepared

Bit 26 = 1 (enable signal missing), if:
- the drive is inactive (p0105 = 0) or is not operational (r7850[DO-Index]=0).
- the function "parking axis" is selected (BI: p0897 = 1 signal)..
- all power units of a parallel connection are deactivated (p0125, p0895).
- the drive device is in the "PROFIenergy energy-saving mode" (r5600, CU-specific).

Bit 27 = 1 (enable signal missing), if:
- de-magnetizing has still not been completed (only for vector).

Bit 28 = 1 (enable signal missing), if:
- the holding brake is closed or has still not been opened.

Bit 29 = 1 (enable signal missing), if:
- the cooling unit ready signal via binector input p0266[1] missing.

Bit 30 = 1 (speed controller inhibited), if one of the following reasons is present:
- a 0 signal is available via binector input p0856.
- the function generator with current input is active.
- the measuring function "current controller reference frequency characteristic" is active.
- the pole position identification is active.
- motor data identification is active (only certain steps).

Bit 31 = 1 (enable signal missing), if:
- the speed setpoint from jog 1 or 2 is entered.

r0046.0...31 CO/BO: Missing enable signal / Missing enable sig

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2634
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for missing enable signals that are preventing the closed-loop drive control from being commissioned.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	OFF1 enable missing	Yes	No	7954
01	OFF2 enable missing	Yes	No	-
02	OFF3 enable missing	Yes	No	-
03	Operation enable missing	Yes	No	-
04	Armature short-circuit / DC braking enable missing	Yes	No	7014, 7016
05	STOP2 enable missing	Yes	No	-
08	Safety enable missing	Yes	No	-
09	Infeed enable missing	Yes	No	-
10	Ramp-function generator enable missing	Yes	No	-
11	Ramp-function generator start missing	Yes	No	-
12	Setpoint enable missing	Yes	No	-
16	OFF1 enable internal missing	Yes	No	-
17	OFF2 enable internal missing	Yes	No	-
18	OFF3 enable internal missing	Yes	No	-
19	Pulse enable internal missing	Yes	No	-
20	Armature short-circuit/DC braking internal enable missing	Yes	No	7014, 7016
21	STOP2 enable internal missing	Yes	No	-
25	Function bypass active	Yes	No	-
26	Drive inactive or not operational	Yes	No	-
27	De-magnetizing not completed	Yes	No	-
28	Brake open missing	Yes	No	-
29	Cooling unit ready signal missing	Yes	No	-
30	Velocity controller inhibited	Yes	No	-
31	Jog setpoint active	Yes	No	-

Dependency: Refer to: r0002

Note: The value r0046 = 0 indicates that all enable signals for this drive are present.

Bit 00 = 1 (enable signal missing), if:
- the signal source in p0840 is a 0 signal.
- there is a "switching on inhibited".

Bit 01 = 1 (enable signal missing), if:
- the signal source in p0844 or p0845 is a 0 signal.

Bit 02 = 1 (enable signal missing), if:
- the signal source in p0848 or p0849 is a 0 signal.

Bit 03 = 1 (enable signal missing), if:
- the signal source in p0852 is a 0 signal.

Bit 04 =1 (armature short-circuit active), if:
- the signal source in p1230 has a 1 signal.

Bit 05, Bit 06: Being prepared

Bit 08 = 1 (enable signal missing), if:
- safety functions have been enabled and STO is active.
- a safety-relevant signal is present with a STOP A response.

STO enabled via terminals:
- the pulse enable via terminal EP is missing (booksize: X21, chassis: X41), or the signal source in p9620 is for a 0 signal.

STO enabled via PROFIsafe or TM54F:
- STO is selected via PROFIsafe or TM54F.

Bit 09 = 1 (enable signal missing), if:
- the signal source in p0864 is a 0 signal.

Bit 10 = 1 (enable signal missing), if:
- the signal source in p1140 is a 0 signal.

Bit 11 = 1 (enable signal missing) if the velocity setpoint is frozen, because:
- the signal source in p1141 is a 0 signal.
- the velocity setpoint is entered from jogging and the two signal sources for jogging, bit 0 (p1055) and bit 1 (p1056) have a 1 signal.

Bit 12 = 1 (enable signal missing), if:
- the signal source in p1142 is a 0 signal.
- When activating the function module "basic positioner" (r0108.4 = 1), the signal source in p1142 is set to a 0 signal.

Bit 16 = 1 (enable signal missing), if:
- there is an OFF1 fault response. The system is only enabled if the fault is removed and was acknowledged and the "switching on inhibited" withdrawn with OFF1 = 0.

Bit 17 = 1 (enable signal missing), if:
- commissioning mode is selected (p0009 > 0 or p0010 > 0).
- there is an OFF2 fault response.
- the drive is inactive (p0105 = 0) or is not operational (r7850[DO-Index]=0).

Bit 18 = 1 (enable signal missing), if:
- OFF3 has still not been completed or an OFF3 fault response is present.

Bit 19 = 1 (internal pulse enable missing), if:
- synchronization is running between the basic clock cycle, DRIVE-CLiQ clock cycle and application clock cycle.

Bit 20 =1 (internal armature short-circuit active), if:
- the drive is not in the state "S4: Operation" or "S5x" (refer to function diagram 2610).
- the internal pulse enable is missing (r0046.19 = 0).

Bit 21 = 1 (enable signal missing), if:

The pulses have been enabled and the velocity setpoint has still not been enabled, because:
- the holding brake opening time (p1216) has still not expired.
- the motor has still not been magnetized (induction motor).

Bit 22: Being prepared

Bit 26 = 1 (enable signal missing), if:
- the drive is inactive (p0105 = 0) or is not operational (r7850[DO-Index]=0).
- the function "parking axis" is selected (BI: p0897 = 1 signal)..
- all power units of a parallel connection are deactivated (p0125, p0895).
- the drive device is in the "PROFIenergy energy-saving mode" (r5600, CU-specific).
Bit 27 = 1 (enable signal missing), if:
- de-magnetizing has still not been completed (only for vector).
Bit 28 = 1 (enable signal missing), if:
- the holding brake is closed or has still not been opened.
Bit 29 = 1 (enable signal missing), if:
- the cooling unit ready signal via binector input p0266[1] missing.
Bit 30 = 1 (velocity controller inhibited), if one of the following reasons is present:
- a 0 signal is available via binector input p0856.
- the function generator with current input is active.
- the measuring function "current controller reference frequency characteristic" is active.
- the pole position identification is active.
- motor data identification is active (only certain steps).
Bit 31 = 1 (enable signal missing), if:
- the velocity setpoint from jog 1 or 2 is entered.

r0046.0...31 CO/BO: Missing enable signal / Missing enable sig

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2634
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for missing enable signals that are preventing the closed-loop drive control from being commissioned.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	OFF1 enable missing	Yes	No	7954
01	OFF2 enable missing	Yes	No	-
02	OFF3 enable missing	Yes	No	-
03	Operation enable missing	Yes	No	-
04	Armature short-circuit / DC braking enable missing	Yes	No	-
05	STOP2 enable missing	Yes	No	-
08	Safety enable missing	Yes	No	-
09	Infeed enable missing	Yes	No	-
10	Ramp-function generator enable missing	Yes	No	-
11	Ramp-function generator start missing	Yes	No	-
12	Setpoint enable missing	Yes	No	-
15	QuickStop enable missing	Yes	No	-
16	OFF1 enable internal missing	Yes	No	-
17	OFF2 enable internal missing	Yes	No	-
18	OFF3 enable internal missing	Yes	No	-
19	Pulse enable internal missing	Yes	No	-
20	Armature short-circuit/DC braking internal enable missing	Yes	No	-
21	STOP2 enable internal missing	Yes	No	-
25	Function bypass active	Yes	No	-
26	Drive inactive or not operational	Yes	No	-
27	De-magnetizing not completed	Yes	No	-
28	Brake open missing	Yes	No	-
29	Cooling unit ready signal missing	Yes	No	-
30	Speed controller inhibited	Yes	No	-
31	Jog setpoint active	Yes	No	-

Dependency: Refer to: r0002

Note: The value r0046 = 0 indicates that all enable signals for this drive are present.

Bit 00 = 1 (enable signal missing), if:
- the signal source in p0840 is a 0 signal.
- there is a "switching on inhibited".

Bit 01 = 1 (enable signal missing), if:
- the signal source in p0844 or p0845 is a 0 signal.

Bit 02 = 1 (enable signal missing), if:
- the signal source in p0848 or p0849 is a 0 signal.

Bit 03 = 1 (enable signal missing), if:
- the signal source in p0852 is a 0 signal.

Bit 04 =1 (armature short-circuit active), if:
- the signal source in p1230 has a 1 signal

Bit 05, Bit 06: Being prepared

Bit 08 = 1 (enable signal missing), if:
- safety functions have been enabled and STO is active.
- a safety-relevant signal is present with a STOP A response.

STO enabled via terminals:
- the pulse enable via terminal EP is missing (booksize: X21, chassis: X41), or the signal source in p9620 is for a 0 signal.

STO enabled via PROFIsafe or TM54F:
- STO is selected via PROFIsafe or TM54F.

Bit 09 = 1 (enable signal missing), if:
- the signal source in p0864 is a 0 signal.

Bit 10 = 1 (enable signal missing), if:
- the signal source in p1140 is a 0 signal.

Bit 11 = 1 (enable signal missing) if the speed setpoint is frozen, because:
- the signal source in p1141 is a 0 signal.
- the speed setpoint is entered from jogging and the two signal sources for jogging, bit 0 (p1055) and bit 1 (p1056) have a 1 signal.

Bit 12 = 1 (enable signal missing), if:
- the signal source in p1142 is a 0 signal.
- When activating the function module "basic positioner" (r0108.4 = 1), the signal source in p1142 is set to a 0 signal.

Bit 16 = 1 (enable signal missing), if:
- there is an OFF1 fault response. The system is only enabled if the fault is removed and was acknowledged and the "switching on inhibited" withdrawn with OFF1 = 0.

Bit 17 = 1 (enable signal missing), if:
- commissioning mode is selected (p0009 > 0 or p0010 > 0).
- there is an OFF2 fault response.
- the drive is inactive (p0105 = 0) or is not operational (r7850[DO-Index]=0).

Bit 18 = 1 (enable signal missing), if:
- OFF3 has still not been completed or an OFF3 fault response is present.

Bit 19 = 1 (internal pulse enable missing), if:
- synchronization is running between the basic clock cycle, DRIVE-CLiQ clock cycle and application clock cycle.

Bit 20 =1 (internal armature short-circuit active), if:
- the drive is not in the state "S4: Operation" or "S5x" (refer to function diagram 2610).
- the internal pulse enable is missing (r0046.19 = 0).

Bit 21 = 1 (enable signal missing), if:

The pulses have been enabled and the speed setpoint has still not been enabled, because:
- the holding brake opening time (p1216) has still not expired.
- the motor has still not been magnetized (induction motor).
- the encoder has not been calibrated (U/f vector and synchronous motor)

Bit 22: Being prepared

Bit 26 = 1 (enable signal missing), if:

- the drive is inactive (p0105 = 0) or is not operational (r7850[DO-Index]=0).
- the function "parking axis" is selected (BI: p0897 = 1 signal)..
- all power units of a parallel connection are deactivated (p0125, p0895).
- the drive device is in the "PROFIenergy energy-saving mode" (r5600, CU-specific).

Bit 27 = 1 (enable signal missing), if:

- de-magnetizing has still not been completed (only for vector).

Bit 28 = 1 (enable signal missing), if:

- the holding brake is closed or has still not been opened.

Bit 29 = 1 (enable signal missing), if:

- the cooling unit ready signal via binector input p0266[1] missing.

Bit 30 = 1 (speed controller inhibited), if one of the following reasons is present:

- a 0 signal is available via binector input p0856.
- the function generator with current input is active.
- the measuring function "current controller reference frequency characteristic" is active.
- the pole position identification is active.
- motor data identification is active (only certain steps).

Bit 31 = 1 (enable signal missing), if:

- the speed setpoint from jog 1 or 2 is entered.

r0046.0...29 CO/BO: Missing enable signal / Missing enable sig

A_INF, S_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 8834, 8934
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for missing enable signals that are preventing the closed-loop infeed control from being commissioned.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	OFF1 enable missing	Yes	No	-
01	OFF2 enable missing	Yes	No	-
03	Operation enable missing	Yes	No	-
08	EP terminals enable missing	Yes	No	-
16	OFF1 enable internal missing	Yes	No	-
17	OFF2 enable internal missing	Yes	No	-
19	Pulse enable internal missing	Yes	No	-
26	Infeed inactive or not operational	Yes	No	-
29	Cooling unit ready signal missing	Yes	No	-

Dependency: Refer to: r0002

Note: The value r0046 = 0 indicates that all enable signals for the infeed are present.

Bit 00 = 1 (enable signal missing), if:

- the signal source in p0840 is a 0 signal.
- there is a "switching on inhibited".

Bit 01 = 1 (enable signal missing), if:

- the signal source in p0844 or p0845 is a 0 signal.

Bit 03 = 1 (enable signal missing), if:

- the signal source in p0852 is a 0 signal.

Bit 08 = 1 (enable signal missing), if:

- the pulse enable via terminal EP is missing (booksize: X21, chassis: X41).

Bit 16 = 1 (enable signal missing), if:

- there is an OFF1 fault response. The system is only enabled if the fault is removed and was acknowledged and the "switching on inhibited" withdrawn with OFF1 = 0.

Bit 17 = 1 (enable signal missing), if:

- the commissioning mode is selected (p0009 > 0 or p0010 > 0) or there is an OFF2 fault response or the OFF1 signal source (p0840) is changed.

Bit 19 = 1 (internal pulse enable missing), if:

- synchronization is running between the basic clock cycle, DRIVE-CLiQ clock cycle and application clock cycle.

Bit 26 = 1 (enable signal missing), if:

- the infeed is inactive (p0105 = 0) or is not operational (r7850[DO-Index]=0).
- the infeed is in the "PROFIenergy energy-saving mode" (r5600, CU-specific).

Bit 29 = 1 (enable signal missing), if:

- the cooling unit ready signal via binector input p0266[1] missing.

r0046.0...29 CO/BO: Missing enable signal / Missing enable sig

B_INF

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 8734
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for missing enable signals that are preventing the closed-loop infeed control from being commissioned.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	OFF1 enable missing	Yes	No	-
01	OFF2 enable missing	Yes	No	-
08	EP terminals enable missing	Yes	No	-
16	OFF1 enable internal missing	Yes	No	-
17	OFF2 enable internal missing	Yes	No	-
26	Infeed inactive or not operational	Yes	No	-
29	Cooling unit ready signal missing	Yes	No	-

Dependency: Refer to: r0002

Note: The value r0046 = 0 indicates that all enable signals for the infeed are present.

Bit 00 = 1 (enable signal missing), if:

- the signal source in p0840 is a 0 signal.
- there is a "switching on inhibited".

Bit 01 = 1 (enable signal missing), if:

- the signal source in p0844 or p0845 is a 0 signal.

Bit 16 = 1 (enable signal missing), if:

- there is an OFF1 fault response. The system is only enabled if the fault is removed and was acknowledged and the "switching on inhibited" withdrawn with OFF1 = 0.

Bit 17 = 1 (enable signal missing), if:

- the commissioning mode is selected (p0009 > 0 or p0010 > 0) or there is an OFF2 fault response or the OFF1 signal source (p0840) is changed.

Bit 26 = 1 (enable signal missing), if:

- the infeed is inactive (p0105 = 0) or is not operational (r7850[DO-Index]=0).
- the infeed is in the "PROFIenergy energy-saving mode" (r5600, CU-specific).

Bit 29 = 1 (enable signal missing), if:

- the cooling unit ready signal via binector input p0266[1] missing.

r0047 Identification status / Ident status

HLA

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	200	-

Description: Displays the currently executed step for the motor data identification and the pole position identification.

Value:

0: No measurement
10: Identification pressure offset step 1
11: Identification pressure offset step 2
20: ID: Piston calibration

100: ID: control sense correction step 1
101: ID: control sense correction step 2
102: ID: control sense correction step 3
110: ID: valve offset correction step 1
111: ID: valve offset correction step 2
120: ID: automatic piston calibration step 1
121: ID: automatic piston calibration step 2
130: ID: traversing range detection step 1
131: ID: traversing range detection step 2
140: ID: characteristic measurement start
141: ID: characteristic measurement start position
142: ID: characteristic measurement approach start position
143: ID: characteristic measurement braking phase
144: ID: characteristic meas. wait for pressure accumulator to fill
146: ID: characteristic measurement acceleration
147: ID: characteristic measurement standstill test
148: ID: characteristic measurement settling
149: ID: characteristic measurement
150: ID: characteristic measurement determine edge position
151: ID: characteristic measurement approach edge position
153: ID: characteristic measurement end
160: ID: frictional force measurement start
161: ID: frictional force measurement measure
162: ID: frictional force measurement end
200: ID: exit all measurements

r0047 Identification status / Ident status

SERVO, SERVO_AC, SERVO_I_AC			
	Can be changed: -	**Calculated:** -	**Access level:** 1
	Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	104	-

Description: Displays the currently executed steps or the first step after the enable for the motor identification and pole position identification routines.

Value:
0: No measurement
1: PolID: Wait for brake closing time
2: PolID: Measurement step 1
3: PolID: Measurement step 2
4: PolID: Measurement step 3
5: PolID: Measurement step 4
6: PolID: Measurement stage 2
7: PolID: Measurement evaluation
8: PolID: Measurement end
11: MotID: Inductance measurement, step 1
12: MotID: Inductance measurement, step 2
13: MotID: Inductance measurement evaluation
14: MotID: Resistance measurement evaluation
15: MotID: Fine synchronization step 1
16: MotID: Fine synchronization step 2
17: MotID: Fine synchronization step 3
18: MotID: Fine synchronization end
20: MotID: Rotating inductance measurement step 1
21: MotID: Rotating inductance measurement step 2
22: MotID: Rotating inductance measurement step 3
23: MotID: Rotating inductance measurement step 4
24: MotID: Rotating Inductance measurement evaluation
25: MotID: Rotating Inductance measurement end
30: MotID: Induction motor measurement step 1
31: MotID: Induction motor measurement step 2
32: MotID: Induction motor measurement step 3
33: MotID: Induction motor measurement step 4
34: MotID: Induction motor measurement step 5

35: MotID: Induction motor measurement step 6
36: MotID: Induction motor measurement step 7
37: MotID: Induction motor measurement step 8
38: MotID: Induction motor measurement step 9
40: MotID: Commutating angle step 1
41: MotID: Commutating angle step 2
42: MotID: Commutating angle step 3
43: MotID: Commutating angle step 4
45: MotID: Commutating angle rotating step 1
46: MotID: Commutating angle rotating step 2
47: MotID: Commutating angle rotating step 3
48: MotID: Commutating angle rotating complete
50: MotID: kT determination step 1
51: MotID: kT determination step 2
52: MotID: kT determination step 3
53: MotID: kT determination evaluation
54: MotID: kT determination end
60: MotID: Reluctance constant measurement step 1
61: MotID: Reluctance constant measurement step 2
62: MotID: Reluctance constant measurement step 3
63: MotID: Reluctance constant measurement end
70: MotID: Moment of inertia measurement step 1
71: MotID: Moment of inertia measurement step 2
72: MotID: Moment of inertia measurement step 3
73: MotID: Moment of inertia measurement end
80: MotID: Magnetizing inductance measurement step 1
81: MotID: Magnetizing inductance measurement step 2
82: MotID: Magnetizing inductance measurement step 3
83: MotID: Magnetizing inductance measurement evaluation
84: MotID: Magnetizing inductance measurement end
90: MotID: Saturation characteristic. step 1
91: MotID: Saturation characteristic. step 2
92: MotID: Saturation characteristic. step 3
93: MotID: Saturation characteristic evaluation 1
94: MotID: Saturation characteristic evaluation 2
95: MotID: Saturation characteristic end
96: MotID: Converter model step 1
97: MotID: Converter model step 2
98: MotID: Converter model step 3
99: MotID: Converter model step 4
100: PolID: Motion-based step 1
101: PolID: Motion-based step 2
102: PolID: Motion-based step 3
103: PolID: Motion-based step 4
104: PolID: Motion-based step 5

r0047 Motor data identification and speed controller optimization / MotID and n_opt

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	300	-

Description: Displays the actual status for the motor data identification (stationary measurement) and the speed/velocity controller optimization (rotating measurement).

Value:
0: No measurement
115: Measurement q leakage inductance (part 2)
120: Speed controller optimization (vibration test)
140: Calculate speed controller setting
150: Measurement moment of inertia
170: Measurement magnetizing current and saturation characteristic
190: Speed encoder test
195: Measurement q leakage inductance (part 1)

200: Rotating measurement selected
210: Pole position identification selected
220: identification leakage inductance
230: Identification rotor time constant
240: Identification stator inductance
250: Identification stator inductance LQLD
260: Identification circuit
270: Identification stator resistance
290: Identification valve lockout time
300: Stationary measurement selected

Note: For r0047 = 300:

This value is also displayed if encoder calibration p1990 is selected.

r0049[0...3] Motor data set/encoder data set effective / MDS/EDS effective

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** 8565
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the effective Motor Data Set (MDS) and the effective Encoder Data Sets (EDS).

Index:
[0] = Motor Data Set MDS effective
[1] = Encoder 1 Encoder Data Set EDS effective
[2] = Encoder 2 Encoder Data Set EDS effective
[3] = Encoder 3 Encoder Data Set EDS effective

Dependency: Refer to: p0186, p0187, p0188, p0189, r0838

Note: Value 99 means the following: No encoder assigned (not configured).

r0050.0...3 CO/BO: Command Data Set CDS effective / CDS effective

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM41

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** 8560
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the effective Command Data Set (CDS).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	CDS effective bit 0	ON	OFF	-
01	CDS effective bit 1	ON	OFF	-
02	CDS effective bit 2	ON	OFF	-
03	CDS effective bit 3	ON	OFF	-

Dependency: Refer to: p0810, p0811, r0836

Note: The Command Data Set selected using a binector input (e.g. p0810) is displayed using r0836.

r0051.0...4 CO/BO: Drive Data Set DDS effective / DDS effective

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, TM41, ENC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** 8565
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the effective Drive Data Set (DDS).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DDS effective bit 0	ON	OFF	-
01	DDS effective bit 1	ON	OFF	-
02	DDS effective bit 2	ON	OFF	-
03	DDS effective bit 3	ON	OFF	-
04	DDS effective bit 4	ON	OFF	-

Dependency: Refer to: p0820, p0821, p0822, p0823, p0824, r0837

Note: The drive data set changeover is suppressed when selecting the motor identification, during the rotating measurement, the encoder calibration and the friction characteristic record.

r0056.1...15 CO/BO: Status word, closed-loop control / ZSW cl-loop ctrl

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2526
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status word of the closed-loop control.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
01	De-magnetizing completed	Yes	No	-
04	Magnetizing completed	Yes	No	2701
08	Field weakening active	Yes	No	-
14	Vdc_max controller active	Yes	No	-
15	Vdc_min controller active	Yes	No	-

Note: For bit 04:

The bit is immediately set after switch-on

Exception:

For an induction motor with brake (except for p1215 = 2), the bit is only set when 60% of the reference flux is reached.

r0056.0...15 CO/BO: Status word, closed-loop control / ZSW cl-loop ctrl

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2526
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status word of the closed-loop control.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Initialization completed	Yes	No	-
01	De-magnetizing completed	Yes	No	-
02	Pulse enable available	Yes	No	-
03	Soft starting present	Yes	No	-
04	Magnetizing completed	Yes	No	-
05	Voltage boost when starting	Active	Inactive	6301
06	Acceleration voltage	Active	Inactive	6301
07	Frequency negative	Yes	No	6730

Bit	Signal name	1 signal	0 signal	FP
08	Field weakening active	Yes	No	-
09	Voltage limit active	Yes	No	6714
10	Slip limit active	Yes	No	6310
11	Frequency limit active	Yes	No	6730
12	Current limiting controller voltage output active	Yes	No	-
13	Current/torque limiting	Active	Inactive	6060
14	Vdc_max controller active	Yes	No	6220, 6320
15	Vdc_min controller active	Yes	No	6220, 6320

r0056.0...13 CO/BO: Status word, closed-loop control / ZSW cl-loop ctrl

VECTOR (F3E), VECTOR_AC (F3E), VECTOR_I_AC (F3E)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2526
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status word of the closed-loop control.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Initialization completed	Yes	No	-
01	De-magnetizing completed	Yes	No	-
02	Pulse enable available	Yes	No	-
03	Soft starting present	Yes	No	-
04	Magnetizing completed	Yes	No	-
05	Voltage boost when starting	Active	Inactive	6301
06	Acceleration voltage	Active	Inactive	6301
07	Frequency negative	Yes	No	6730
08	Field weakening active	Yes	No	-
09	Voltage limit active	Yes	No	6714
10	Slip limit active	Yes	No	6310
11	Frequency limit active	Yes	No	6730
12	Current limiting controller voltage output active	Yes	No	-
13	Current/torque limiting	Active	Inactive	6060

r0060 CO: Velocity setpoint before the setpoint filter / v_set before filt

HLA

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4965
P-Group: Displays, signals	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Displays the actual velocity setpoint at the velocity controller input (after the interpolator).

Dependency: Refer to: r0020

Note: The velocity setpoint is available smoothed (r0020) and unsmoothed (r0060).

r0060 CO: Speed setpoint before the setpoint filter / n_set before filt.

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2701, 2704, 5020, 6030, 6799
P-Group: Displays, signals	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the actual speed setpoint at the input of the speed controller or U/f characteristic (after the interpolator).

Dependency: Refer to: r0020

Note: The speed setpoint is available smoothed (r0020) and unsmoothed (r0060).

r0060 CO: Velocity setpoint before the setpoint filter / v_set before filt

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2701, 2704, 5020, 6030, 6799
P-Group: Displays, signals	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Displays the actual velocity setpoint at the input of the velocity controller or U/f characteristic (after the interpolator).

Dependency: Refer to: r0020

Note: The velocity setpoint is available smoothed (r0020) and unsmoothed (r0060).

r0061[0...1] CO: Actual velocity unsmoothed / v_act unsmoothed

HLA

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4965
P-Group: Displays, signals	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Displays the unsmoothed actual velocity values sensed by the encoders.

Index:
[0] = Encoder 1
[1] = Encoder 2

r0061[0...1] CO: Actual speed unsmoothed / n_act unsmoothed

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4700, 4710, 4715
P-Group: Displays, signals	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the unsmoothed actual speed values sensed by the encoders.

Index:
[0] = Encoder 1
[1] = Encoder 2

r0061[0...1] CO: Actual velocity unsmoothed / v_act unsmoothed

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4700, 4710, 4715
P-Group: Displays, signals	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Displays the unsmoothed actual velocity values sensed by the encoders.

Index:
[0] = Encoder 1
[1] = Encoder 2

r0061[0...2] CO: Actual speed unsmoothed / n_act unsmoothed

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4700, 4710, 4715
P-Group: Displays, signals	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the actual speed values sensed by the encoders.

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Note: With a parameterized filter time constant p1441, the speed signal from encoder 1 is displayed corrected by the following error.

The speeds from encoder 2 and 3 are only displayed in U/f operating modes if the function module (speed/torque control) (r0108.2) has been activated.

r0061 CO: Actual speed unsmoothed / n_act unsmoothed

ENC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4700, 4710, 4715
P-Group: Displays, signals	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the unsmoothed actual speed values sensed by the encoders.

Note: The speed actual value within a PROFIBUS cycle (r2064[1]) is averaged and displayed.

r0061 CO: Actual velocity unsmoothed / v_act unsmoothed

ENC (Lin_enc)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4700, 4710, 4715
P-Group: Displays, signals	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Displays the unsmoothed actual velocity values sensed by the encoders.

Note: The velocity actual value within a PROFIBUS cycle (r2064[1]) is averaged and displayed.

r0062	**CO: Velocity setpoint after the filter / v_set after filter**		
HLA	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4965
	P-Group: Displays, signals	**Unit group:** 4_1	**Unit selection:** p0505
	Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [m/min]	- [m/min]	- [m/min]
Description:	Display and connector output for the velocity setpoint after the setpoint filters.		

r0062	**CO: Speed setpoint after the filter / n_set after filter**		
SERVO, SERVO_AC, SERVO_I_AC	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5019, 5020, 5030, 5042, 5210
	P-Group: Displays, signals	**Unit group:** 3_1	**Unit selection:** p0505
	Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [rpm]	- [rpm]	- [rpm]
Description:	Display and connector output for the speed setpoint after the setpoint filters.		

r0062	**CO: Velocity setpoint after the filter / v_set after filter**		
SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5019, 5020, 5030, 5042, 5210
	P-Group: Displays, signals	**Unit group:** 4_1	**Unit selection:** p0505
	Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [m/min]	- [m/min]	- [m/min]
Description:	Display and connector output for the velocity setpoint after the setpoint filters.		

r0062	**CO: Speed setpoint after the filter / n_set after filter**		
VECTOR, VECTOR_AC, VECTOR_I_AC	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6020, 6030, 6031
	P-Group: Displays, signals	**Unit group:** 3_1	**Unit selection:** p0505
	Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [rpm]	- [rpm]	- [rpm]
Description:	Display and connector output for the speed setpoint after the setpoint filters.		

r0063	**CO: Actual velocity smoothed / v_act smooth**		
HLA	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4965
	P-Group: Displays, signals	**Unit group:** 4_1	**Unit selection:** p0505
	Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [m/min]	- [m/min]	- [m/min]
Description:	Display and connector output for the smoothed velocity actual value.		
Dependency:	Refer to: r0021, r0022, r0061, p1441		
Note:	The value in r0063 is smoothed with p1441. The velocity actual value is available smoothed (r0021, r0022) and unsmoothed (r0061).		

r0063 CO: Actual speed smoothed / n_act smooth

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4700, 4710, 5019, 5300, 8019
P-Group: Displays, signals	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Display and connector output for the smoothed speed actual value.

Dependency: Refer to: r0021, r0022, r0061, p1441, p1451

Note: In encoderless operation, the speed actual value is calculated and can be smoothed using p1451.

For operation with encoder, r0063 is smoothed with p1441.

The speed actual value is available smoothed (r0021, r0022) and unsmoothed (r0061).

r0063 CO: Actual velocity smoothed / v_act smooth

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4700, 4710, 5019, 5300, 8019
P-Group: Displays, signals	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Display and connector output for the smoothed velocity actual value.

Dependency: Refer to: r0021, r0022, r0061, p1441, p1451

Note: In encoderless operation, the velocity actual value is calculated and can be smoothed using p1451.

For operation with encoder, r0063 is smoothed with p1441.

The velocity actual value is available smoothed (r0021, r0022) and unsmoothed (r0061).

r0063[0...2] CO: Speed actual value / n_act

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4702, 4715, 6799
P-Group: Displays, signals	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Display and connector output for the speed actual value.

Frequency components from the slip compensation (for induction motors) are not included.

For U/f control and when slip compensation is deactivated (see p1335), the synchronous speed to the output frequency is shown in r0063[0].

Index:
[0] = Unsmoothed
[1] = Smoothed with p0045
[2] = Calculated from f_set - f_slip (unsmoothed)

Dependency: Refer to: r0021, r0022

Note: The speed actual value is calculated in encoderless operation and for U/f control.

For operation with encoder, r0063[0] is smoothed with p1441.

The speed actual value r0063[0] – smoothed with p0045 – is additionally displayed in r0063[1]. r0063[1] can be used as process variable for the appropriate smoothing time constant p0045.

The speed (r0063[2]) calculated from the output frequency and slip can only be compared with the speed actual value (r0063[0]) in the steady-state.

The actual speed (r0063[0]) is available as a display quantity with additional smoothing in r0021.

For U/f control, the mechanical speed calculated from the output frequency and the slip is shown in r0063[2] even if slip compensation is deactivated.

r0063	CO: Speed actual value / n_act		
TM41	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Displays, signals	**Unit group:** 3_1	**Unit selection:** p0505
	Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [rpm]	- [rpm]	- [rpm]

Description: Display and connector output for the smoothed speed actual value.

Note: For Terminal Module 41 (TM41), this value is used to interconnect with standard telegram 3 and is always zero.

r0064	CO: Velocity controller system deviation / v_ctrl sys dev		
HLA	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Displays, signals	**Unit group:** 4_1	**Unit selection:** p0505
	Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [m/min]	- [m/min]	- [m/min]

Description: Displays the actual system deviation of the velocity controller.

Note: With active reference model, the system deviation to the P component of the velocity controller is displayed.

r0064	CO: Speed controller system deviation / n_ctrl sys dev		
SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5040, 6040
	P-Group: Displays, signals	**Unit group:** 3_1	**Unit selection:** p0505
	Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [rpm]	- [rpm]	- [rpm]

Description: Displays the actual system deviation of the speed controller.

Note: In servo control mode with active reference model, the system deviation to the P component of the speed controller is displayed.

r0064	CO: Velocity controller system deviation / v_ctrl sys dev		
SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5040, 6040
	P-Group: Displays, signals	**Unit group:** 4_1	**Unit selection:** p0505
	Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [m/min]	- [m/min]	- [m/min]

Description: Displays the actual system deviation of the velocity controller.

Note: In servo control mode with active reference model, the system deviation to the P component of the velocity controller is displayed.

r0065	Slip frequency / f_Slip		
SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6310, 6700, 6727, 6730, 6732
	P-Group: Displays, signals	**Unit group:** 2_1	**Unit selection:** p0505
	Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [Hz]	- [Hz]	- [Hz]

Description: Displays the slip frequency for induction motors (ASM).

r0066	**CO: Output frequency / f_outp**		
SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5300, 5730, 6300, 6310, 6730, 6731, 6799
	P-Group: Displays, signals	**Unit group:** 2_1	**Unit selection:** p0505
	Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [Hz]	- [Hz]	- [Hz]

Description: Display and connector output for the output frequency of the Motor Module.

Dependency: Refer to: r0024

Note: The output frequency is available smoothed (r0024) and unsmoothed (r0066).

r0066[0...1]	**CO: Line frequency / f_line**		
A_INF, S_INF, R_INF	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8850, 8864, 8950, 8964
	P-Group: Displays, signals	**Unit group:** 2_1	**Unit selection:** p0505
	Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [Hz]	- [Hz]	- [Hz]

Description: Display and connector output for the line frequency.

For index [0]:

Displays the instantaneous value of the line supply PLL.

For index [1]:

Displays the values smoothed with a time constant of 50 ms to monitor the frequency.

Index: [0] = Unsmoothed
[1] = Smoothed

Dependency: Refer to: r0024

Note: The line frequency is also available with an adjustable smoothing (r0024).

A positive sign of the frequency is obtained when the line supply phases U, V, W are connected with the correct phase sequence.

A negative sign of the frequency is obtained when the 3 line phases are interchanged therefore designating a negative direction of the rotating field of the 3-phase line supply voltage.

r0067[0...1]	**CO: Pressure actual value A / Press act val A**		
HLA	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4970
	P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [bar]	- [bar]	- [bar]

Description: Display and connector output for the actual pressure value on side A.

Index: [0] = Unsmoothed
[1] = Smoothed with p0045

r0067 CO: Output current maximum / I_outp max

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5722, 6300, 6301, 6640
P-Group: Displays, signals	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Display and connector output for the maximum output current of the power unit.

Dependency: The maximum output current is determined by the parameterized current limit and the motor and converter thermal protection.

Refer to: p0290, p0640

r0067[0...1] Absolute current value permissible / I_abs val perm

A_INF, S_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the actual permissible absolute line-side current.

Index:
[0] = Motor mode
[1] = Regenerative mode

Dependency: The permissible current is the minimum from the maximum converter current (r0209), the parameterized current limits (p3530 to p3533) as well as the maximum permissible current of line filter (r3534).

Refer to: p3530, p3531, r3534

r0068[0...1] CO: Pressure actual value B / Press act val B

HLA

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4970
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [bar]	- [bar]	- [bar]

Description: Displays the actual pressure value at side B.

Index:
[0] = Unsmoothed
[1] = Smoothed with p0045

r0068 CO: Absolute current actual value / I_act abs val

SERVO, SERVO_AC, SERVO_I_AC, A_INF, S_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5730, 7017, 8017, 8019, 8021, 8850, 8950
P-Group: Displays, signals	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays actual absolute current.

Dependency: Refer to: r0027

Notice: For A_INF, S_INF the following applies:

The value is updated with the current controller sampling time.

The following applies for SERVO:

The value is updated with a sampling time of 1 ms.

Note: Absolute current value = sqrt(Iq^2 + Id^2)

The absolute current actual value is available smoothed (r0027) and unsmoothed (r0068).

r0068[0...1] CO: Absolute current actual value / I_act abs val

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6300, 6714, 6799, 7017, 8017, 8019, 8029, 8021
P-Group: Displays, signals	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays actual absolute current.

Index: [0] = Unsmoothed
[1] = Smoothed with p0045

Dependency: Refer to: r0027

Notice: The value is updated with the current controller sampling time.

Note: Absolute current value = sqrt(Iq^2 + Id^2)

The absolute value of the current actual value is available smoothed (r0027 with 300 ms, r0068[1] with p0045) and unsmoothed (r0068[0]).

r0068 CO: DC current in the DC link / Idc DC link

B_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8021, 8750
P-Group: Displays, signals	**Unit group:** 6_4	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [A]	- [A]	- [A]

Description: Displays the DC current in the DC link.

Dependency: Refer to: r0027

Notice: For Basic Line Modules of chassis format, the displayed value is invalid as these units do not have any current sensing.

Note: The DC current in the DC link is available smoothed (r0027) and unsmoothed (r0068).

r0069 CO: System pressure actual value / Sys press act val

HLA

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [bar]	- [bar]	- [bar]

Description: Display and connector output for the actual value of the system pressure.

r0069[0...8] CO: Phase current actual value / I_phase act val

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5700, 5730, 7008
P-Group: Displays, signals	**Unit group:** 6_5	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [A]	- [A]	- [A]

Description: Displays the measured actual phase currents as peak value.

Index:
[0] = Phase U
[1] = Phase V
[2] = Phase W
[3] = Phase U offset
[4] = Phase V offset
[5] = Phase W offset
[6] = Total U, V, W
[7] = Alpha component
[8] = Beta component

Note: In indices 3 ... 5, the offset currents of the 3 phases, which are added to correct the phase currents, are displayed.

The sum of the 3 corrected phase currents is displayed in index 6.

r0069[0...8] CO: Phase current actual value / I_phase act val

VECTOR, VECTOR_AC, VECTOR_I_AC, A_INF, S_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6730, 6731, 6732, 7983, 7987, 8850, 8950
P-Group: Displays, signals	**Unit group:** 6_5	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [A]	- [A]	- [A]

Description: Display and connector output for the measured actual phase currents as peak value.

Index:
[0] = Phase U
[1] = Phase V
[2] = Phase W
[3] = Phase U offset
[4] = Phase V offset
[5] = Phase W offset
[6] = Total U, V, W
[7] = Alpha component
[8] = Beta component

Note: In indices 3 ... 5, the offset currents of the 3 phases, which are added to correct the phase currents, are displayed.

The sum of the 3 corrected phase currents is displayed in index 6.

r0070[0...1] CO: Valve position voltage setpoint before inversion / U_set before inv

HLA

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4966
P-Group: Displays, signals	**Unit group:** 5_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Display and connector output for the voltage setpoint of the valve position before inversion.

Index:
[0] = Before the manipulated variable filter p180x
[1] = After the manipulated variable filter p180x

Dependency: Refer to: r0071

r0070 CO: Actual DC link voltage / Vdc act val

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5730
P-Group: Displays, signals	**Unit group:** 5_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Display and connector output for the measured actual value of the DC link voltage.

Dependency: Refer to: r0026

Notice: For SINAMICS S120 AC Drive (AC/AC) the following applies:

When measuring a DC link voltage < 200 V, for the Power Module (e.g. PM340) a valid measured value is not supplied. In this case, when an external 24V power supply is connected, a value of approx. 24 V is displayed.

Note: The DC link voltage is available smoothed (r0026) and unsmoothed (r0070).

r0070 CO: Actual DC link voltage / Vdc act val

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6723, 6724, 6730, 6731, 6799
P-Group: Displays, signals	**Unit group:** 5_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Display and connector output for the measured actual value of the DC link voltage.

Dependency: Refer to: r0026

Notice: For SINAMICS S120 AC Drive (AC/AC) the following applies:

When measuring a DC link voltage < 200 V, for the Power Module (e.g. PM340) a valid measured value is not supplied. In this case, when an external 24V power supply is connected, a value of approx. 24 V is displayed.

Note: The DC link voltage is available smoothed (r0026) and unsmoothed (r0070).

r0070 CO: Actual DC link voltage / Vdc act val

A_INF, S_INF, R_INF, B_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8750, 8850, 8910, 8940, 8950, 8964
P-Group: Displays, signals	**Unit group:** 5_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Display and connector output for the measured actual value of the DC link voltage.

Dependency: Refer to: r0026

Note: The DC link voltage is available smoothed (r0026) and unsmoothed (r0070).

r0071[0...1] CO: Valve position voltage setpoint / Valve U_set

HLA

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4966
P-Group: Displays, signals	**Unit group:** 5_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the voltage setpoint for the valve position.

Index: [0] = Unsmoothed
[1] = Smoothed

r0071 Maximum output voltage / U_output max

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6301, 6640, 6700, 6722, 6723, 6724, 6725, 6727
P-Group: Displays, signals	**Unit group:** 5_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Displays the maximum output voltage.

Dependency: The maximum output voltage depends on the actual DC link voltage (r0070) and the maximum modulation depth (p1803).

Note: As the (driven) motor load increases, the maximum output voltage drops as a result of the reduction in DC link voltage.

r0072[0...1] CO: Valve position voltage actual value / Valve U_act

HLA

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 5_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Display and connector output for the voltage actual value of the valve actuator position.

Index:
[0] = Unsmoothed
[1] = Smoothed

r0072 CO: Output voltage / U_output

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5700, 5730, 6730, 6731, 6799
P-Group: Displays, signals	**Unit group:** 5_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Display and connector output for the actual output voltage of the power unit (Motor Module).

Dependency: Refer to: r0025

Note: The output voltage is available smoothed (r0025) and unsmoothed (r0072).

r0072[0...4] CO: Input voltage / U_in

A_INF, S_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8850, 8950
P-Group: Displays, signals	**Unit group:** 5_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Display and connector output for the actual input voltage of the power unit (Line Module).

Index:
[0] = Power unit input terminals (model)
[1] = Line filter input terminals (VSM)
[2] = Line voltage source (model)
[3] = Line voltage source smoothed (model)
[4] = Line voltage source strongly smoothed (model)

Note: The input voltages are available smoothed (r0025) and unsmoothed (r0072).

For r0072[0]:

Displays the pulsed voltage at the line supply input terminals of the power unit.

The value is calculated from the modulation depth (r0074) and is therefore only correct in the closed-loop controlled mode and when the pulses are enabled.

For r0072[1]:

Displays the absolute voltage at the input terminals of the line filter or the connection point of a Voltage Sensing Module (VSM).

If a VSM is not connected, then the value is calculated from the VSM measured values r3661 and r3662 and is therefore equal to 0.

For r0072[2]:

Displays the estimated value for the voltage of the voltage source that is calculated in the voltage model of the line supply PLL.

Input quantities of the model are the measured values of the line currents and the DC link voltage as well as the characteristics of the line filter p0225, p0226 as well as the line inductance p3424.

For r0072[3]:

Displays the smoothed value for the source voltage in r0072[2].

The PT1 smoothing time constant is set in p3472[0, 1].

For r0072[4]:

Displays the strongly smoothed value for the source voltage in r0072[2].

The PT1 smoothing time constant is set in p3472[2].

r0073[0...1] Controller valve position voltage setpoint / Valve U_set

HLA	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4965, 4970
	P-Group: Displays, signals	**Unit group:** 5_2	**Unit selection:** p0505
	Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [V]	- [V]	- [V]

Description: Displays the voltage setpoints for the valve position of the controller.

Index: [0] = Velocity controller
[1] = Force controller

Note: These voltage setpoints have been taken before the characteristic compensation.

r0073 Maximum modulation depth / Modulat_depth max

VECTOR, VECTOR_AC, VECTOR_I_AC	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6723, 6724, 6725
	P-Group: Modulation	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [%]	- [%]	- [%]

Description: Displays the maximum modulation depth.

Dependency: Refer to: p1803

r0074 CO: Piston position with respect to the piston zero point / Piston pos zero

HLA	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: Integer32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Display and connector output for the piston position regarding the piston zero point in encoder fine pulses.

r0074 CO: Modulat_depth / Mod_depth

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5730, 6730, 6731, 6799, 8940, 8950
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Display and connector output for the actual modulation depth.

Dependency: Refer to: r0028

Note: For space vector modulation, 100% corresponds to the maximum output voltage without overcontrol.

Values above 100 % indicate an overcontrol condition - values below 100% have no overcontrol.

The phase voltage (phase-to-phase, rms) is calculated as follows:(r0074 x r0070) / (sqrt(2) x 100 %).

The modulation depth is available smoothed (r0028) and unsmoothed (r0074).

r0075 CO: Current setpoint field-generating / Id_set

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5700, 5714, 5722
P-Group: Displays, signals	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Display and connector output for the field-generating current setpoint (Id_set).

Note: This value is irrelevant for the U/f control mode.

r0075 CO: Current setpoint field-generating / Id_set

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6700, 6714, 6725
P-Group: Displays, signals	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Display and connector output for the field-generating current setpoint (Id_set).

Note: This value is irrelevant for the U/f control mode.

r0075 CO: Reactive current setpoint / I_react_set

A_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7997, 8945, 8946
P-Group: Displays, signals	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Display and connector output for the reactive current setpoint.

Dependency: Refer to: r3471, p3610

Note: The reactive current requirement of a line filter should be covered by the controlled infeed/regenerative feedback so that the converter always operates with a power factor of 1 compared to the line. Setpoint r0075 includes the reactive current for a line filter that depends on the actual operating point (r3471).

If the line phases are reversed and the line voltage therefore has a negative orientation (r0066 < 0), it should be noted that the sign of the reactive current is reversed.

r0076 CO: Current actual value field-generating / Id_act

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5700, 5714, 5730, 6700, 6714, 6799
P-Group: Displays, signals	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Display and connector output for the field-generating current actual value (Id_act).

Dependency: Refer to: r0029

Note: This value is irrelevant for the U/f control mode.

The field-generating current actual value is available smoothed (r0029) and unsmoothed (r0076).

r0076 CO: Reactive current actual value / I_reactive_act

A_INF, S_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8810, 8850, 8910, 8946, 8950
P-Group: Displays, signals	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Display and connector output for the reactive current actual value.

Dependency: Refer to: r0029, r0075

Note: The reactive current actual value is available smoothed (r0029) and unsmoothed (r0076).

r0077 CO: Current setpoint torque-generating / Iq_set

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5700, 5714, 5722
P-Group: Displays, signals	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Display and connector output for the torque/force-generating current setpoint.

Note: This value is irrelevant for the U/f control mode.

r0077 CO: Current setpoint force-generating / Iq_set

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5700, 5714, 5722
P-Group: Displays, signals	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Display and connector output for the force-generating current setpoint.

Note: This value is irrelevant for the U/f control mode.

r0077 CO: Current setpoint torque-generating / Iq_set

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6700, 6710
P-Group: Displays, signals	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Display and connector output for the torque/force-generating current setpoint.

Note: This value is irrelevant for the U/f control mode.

r0077 CO: Active current setpoint / I_active_set

A_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7997, 8910, 8940, 8945
P-Group: Displays, signals	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Display and connector output for the active current setpoint (Iq_set).

r0078[0...1] CO: Current actual value torque-generating / Iq_act

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5700, 5714, 5730
P-Group: Displays, signals	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Display and connector output for the torque-generating current actual value (Iq_act).

Index:
[0] = Unsmoothed
[1] = Smoothed with p0045

Dependency: Refer to: r0030, p0045

Note: These values are irrelevant for the U/f control mode.

The torque-generating current actual value is available smoothed (r0030 with 100 ms, r0078[1] with p0045) and unsmoothed (r0078[0]).

r0078[0...1] CO: Current actual value force-generating / Iq_act

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5700, 5714, 5730
P-Group: Displays, signals	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Display and connector output for the force-generating current actual value (Iq_act).

Index:
[0] = Unsmoothed
[1] = Smoothed with p0045

Dependency: Refer to: r0030, p0045

Note: These values are irrelevant for the U/f control mode.

The force-generating current actual value is available smoothed (r0030 with 100 ms, r0078[1] with p0045) and unsmoothed (r0078[0]).

r0078 CO: Current actual value torque-generating / Iq_act

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6310, 6700, 6714, 6799
P-Group: Displays, signals	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Display and connector output for the torque-generating current actual value (Iq_act).

Dependency: Refer to: r0030

Note: This value is irrelevant for the U/f control mode.

The torque-generating current actual value is available smoothed (r0030 with 300 ms) and unsmoothed (r0078).

r0078 CO: Active current actual value / I_active_act

A_INF, S_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8810, 8850, 8910, 8946, 8950
P-Group: Displays, signals	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Display and connector output for the actual value of the active current.

Dependency: Refer to: r0030

Note: The active current actual value is available smoothed (r0030) and unsmoothed (r0078).

r0079 CO: Total force setpoint / F_set total

HLA

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4970
P-Group: Displays, signals	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [N]	- [N]	- [N]

Description: Display and connector output for the total force setpoint.

r0079[0...1] CO: Torque setpoint total / M_set total

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5610
P-Group: Displays, signals	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Display and connector output for the torque setpoint at the output of the speed controller (before clock cycle interpolation).

Index: [0] = Unsmoothed
[1] = Smoothed with p0045

r0079[0...1] CO: Total force setpoint / F_set total

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5610
P-Group: Displays, signals	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [N]	- [N]	- [N]

Description: Display and connector output for the force setpoint at the output of the velocity controller (before clock cycle interpolation).

Index: [0] = Unsmoothed
[1] = Smoothed with p0045

r0079 CO: Torque setpoint / M_set

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6020, 6060, 6710
P-Group: Displays, signals	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Display and connector output for the torque setpoint at the output of the speed controller.

r0080[0...1] CO: Force actual value / F_act

HLA

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4970
P-Group: Displays, signals	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [N]	- [N]	- [N]

Description: Display and connector output for actual force value.

Index: [0] = Unsmoothed
[1] = Smoothed with p0045

Dependency: Refer to: r0031, p0045

Note: The value is available smoothed (r0031 with 100 ms, r0080[1] with p0045) and unsmoothed (r0080[0]).

r0080 CO: Torque actual value / M_act

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5730
P-Group: Displays, signals	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Display and connector output for actual torque value.

Dependency: Refer to: r0031

Note: The value is available smoothed (r0031) and unsmoothed (r0080).

r0080 CO: Force actual value / F_act

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5730
P-Group: Displays, signals	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [N]	- [N]	- [N]

Description: Display and connector output for actual force value.

Dependency: Refer to: r0031

Note: The force actual value is available smoothed (r0031) and unsmoothed (r0080).

r0080[0...1] CO: Torque actual value / M_act

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6714, 6799
P-Group: Displays, signals	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Display and connector output for actual torque value.

Index:
[0] = Unsmoothed
[1] = Smoothed with p0045

Dependency: Refer to: r0031, p0045

Note: The value is available smoothed (r0031 with 100 ms, r0080[1] with p0045) and unsmoothed (r0080[0]).

r0081 CO: Torque utilization / M_Utilization

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8012
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the torque utilization as a percentage.

The torque utilization is obtained from the required smoothed torque referred to the torque limit.

Dependency: Refer to: r0033

Note: The torque utilization is available smoothed (r0033) and unsmoothed (r0081).

The torque utilization is obtained from the required torque referred to the torque limit as follows:

- Positive torque: r0081 = ((r0079 + p1532) / (r1538 - p1532)) * 100 %
- Negative torque: r0081 = ((-r0079 + p1532) / (-r1539 + p1532)) * 100 %

The calculation of the torque utilization depends on the selected smoothing time constant (p0045).

r0081 CO: Force utilization / F_utilization

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8012
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the force utilization as a percentage.

The force utilization is obtained from the required smoothed force referred to the force limit.

Dependency: Refer to: r0033

Note: The force utilization is available smoothed (r0033) and unsmoothed (r0081).

The calculation of the force utilization depends on the selected smoothing time constant (p0045).

r0081 CO: Torque utilization / M_Utilization

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8012
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the torque utilization as a percentage.

The torque utilization is obtained from the required smoothed torque referred to the torque limit.

Dependency: Refer to: r0033

Note: The torque utilization is available smoothed (r0033) and unsmoothed (r0081).

The torque utilization is obtained from the required torque referred to the torque limit as follows:

- Positive torque: r0081 = (r0079 / r1538) * 100 %
- Negative torque: r0081 = (-r0079 / -r1539) * 100 %

r0082[0...1] CO: Active power actual value / P_act

HLA

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5730
P-Group: Displays, signals	**Unit group:** 14_8	**Unit selection:** p0505
Not for motor type: -	**Scaling:** r2004	**Expert list:** 1
Min	**Max**	**Factory setting**
- [kW]	- [kW]	- [kW]

Description: Displays the instantaneous active power.

Index:
[0] = Unsmoothed
[1] = Smoothed with p0045

Dependency: Refer to: r0032

Note: The active power is available smoothed (r0032 with 100 ms, r0082[1] with p0045) and unsmoothed (r0082[0]).

r0082[0...3] CO: Active power actual value / P_act

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5730
P-Group: Displays, signals	**Unit group:** 14_5	**Unit selection:** p0505
Not for motor type: -	**Scaling:** r2004	**Expert list:** 1
Min	**Max**	**Factory setting**
- [kW]	- [kW]	- [kW]

Description: Displays the instantaneous active power.

Index:
[0] = Unsmoothed
[1] = Smoothed with p0045
[2] = Power drawn
[3] = Power drawn smoothed

Dependency: Refer to: r0032

Note: The mechanical active power is available smoothed (r0032 with 100 ms, r0082[1] with p0045) and unsmoothed (r0082[0]).

For index [3]:

Smoothing time constant = 4 ms

r0082[0...3] CO: Active power actual value / P_act

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5730
P-Group: Displays, signals	**Unit group:** 14_8	**Unit selection:** p0505
Not for motor type: -	**Scaling:** r2004	**Expert list:** 1
Min	**Max**	**Factory setting**
- [kW]	- [kW]	- [kW]

Description: Displays the instantaneous active power.

Index:
[0] = Unsmoothed
[1] = Smoothed with p0045
[2] = Power drawn
[3] = Power drawn smoothed

Dependency: Refer to: r0032

Note: The mechanical active power is available smoothed (r0032 with 100 ms, r0082[1] with p0045) and unsmoothed (r0082[0]).

For index [3]:

Smoothing time constant = 4 ms

r0082[0...2] CO: Active power actual value / P_act

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6714, 6799
P-Group: Displays, signals	**Unit group:** 14_5	**Unit selection:** p0505
Not for motor type: -	**Scaling:** r2004	**Expert list:** 1
Min	**Max**	**Factory setting**
- [kW]	- [kW]	- [kW]

Description: Displays the instantaneous active power.

Index:
[0] = Unsmoothed
[1] = Smoothed with p0045
[2] = Electric power

Dependency: Refer to: r0032

Note: The mechanical active power is available smoothed (r0032 with 100 ms, r0082[1] with p0045) and unsmoothed (r0082[0]).

r0082 CO: Active power actual value / P_act

A_INF, S_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8750, 8850, 8950
P-Group: Displays, signals	**Unit group:** 14_7	**Unit selection:** p0505
Not for motor type: -	**Scaling:** r2004	**Expert list:** 1
Min	**Max**	**Factory setting**
- [kW]	- [kW]	- [kW]

Description: Displays the instantaneous active power.

Dependency: Refer to: r0032

Note: The active power is available smoothed (r0032) and unsmoothed (r0082).

r0082 CO: Active power actual value / P_act

B_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8750, 8850, 8950
P-Group: Displays, signals	**Unit group:** 14_7	**Unit selection:** p0505
Not for motor type: -	**Scaling:** r2004	**Expert list:** 1
Min	**Max**	**Factory setting**
- [kW]	- [kW]	- [kW]

Description: Displays the instantaneous active power.

Dependency: Refer to: r0032

Notice: For Basic Line Modules of chassis format, the displayed value is invalid as these units do not have any current sensing.

Note: The active power is available smoothed (r0032) and unsmoothed (r0082).

r0083 CO: Flux setpoint / Flex setp

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5722
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the flux setpoint.

r0083 CO: Flux setpoint / Flex setp

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the flux setpoint.

r0084 CO: Flux actual value / Flux act val

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5722
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the flux actual value.

r0084[0...1] CO: Flux actual value / Flux act val

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6726, 6730, 6732
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the flux actual value.

Index: [0] = Unsmoothed
[1] = Smoothed

Note: The flux actual value (index 1) smoothed with p1585 is only displayed for separately excited synchronous motors. In the following cases, the unsmoothed flux actual value is also displayed:
- in the range of the current model.
- during the pole position identification.
- for I/f control.
- for a stalled drive.

r0087 CO: Actual power factor / Cos phi act

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6714, 6730, 6732, 6799
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the actual active power factor.

r0088 CO: DC link voltage setpoint / Vdc setpoint

SERVO (Tech_ctrl), SERVO_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), A_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8940, 8964
P-Group: Displays, signals	**Unit group:** 5_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Display and connector output for the DC link voltage setpoint.

r0088 CO: DC link voltage setpoint / Vdc setpoint

VECTOR (Tech_ctrl), VECTOR_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 5_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Display and connector output for the DC link voltage setpoint.

r0089[0...2] Actual phase voltage / U_phase act val

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5730, 6730
P-Group: Displays, signals	**Unit group:** 5_3	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the actual phase voltage.

Index:
[0] = Phase U
[1] = Phase V
[2] = Phase W

Note: The values are determined from the transistor switch-on duration.

p0092	Clock synchronous operation pre-assignment/check / CI sync op pre-as		
CU_I, CU_NX_CX, CU_I_D410	**Can be changed:** C1(1)	**Calculated:** -	**Access level:** 1
	Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: -	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	1	1

Description: Setting to pre-assign/check the sampling times for the internal controller clock cycles for isochronous PROFIdrive operation.

For p0092 = 0:

The controller clock cycles are set without any restrictions by the isochronous PROFIdrive operation (same as for up to V2.3).

When calculating the drive unit utilization (r9976), when using the fixed DCC runtime groups "Receive AFTER IF1 PROFIdrive PZD", "Send BEFORE IF1 PROFIdrive PZD", "Receive AFTER IF2 PZD" (from V4.4) and "Send BEFORE IF2 PZD" (from V4.4), then its maximum computing time load has already been calculated during ramp-up for isochronous operation and taken into account in r9976 (from V4.3).

For p0092 = 1:

The controller clock cycles are set so that isochronous PROFIdrive operation is possible. If it is not possible to change the controller clock cycles of the isochronous PROFIdrive operation, then an appropriate message is output.

The pre-setting of the controller clock cycles can result in a derating of the Motor Module (e.g. p0115[0] = 400 µs --> 375 µs).

When calculating the drive unit utilization (r9976), when using the fixed DCC runtime groups "Receive AFTER IF1 PROFIdrive PZD", "Send BEFORE IF1 PROFIdrive PZD", "Receive AFTER IF2 PZD" (from V4.4) and "Send BEFORE IF2 PZD" (from V4.4), then its maximum computing time load has already been calculated during ramp-up for isochronous operation and taken into account in r9976 (from V4.3).

Value:
0: No isochronous PROFIBUS
1: Isochronous PROFIBUS

Dependency: Refer to: r0110, p0115

Refer to: A01223, A01224

Caution: Only current controller sampling times (p0115[0]) which are integers of 125 µs are permitted for isochronous mode.

For SERVO the following current controller sampling times are also possible:

187.5, 150, 100, 93.75, 75, 62.5, 50, 37.5, 31.25 µs

For VECTOR the following current controller sampling times are also possible:

312.5, 218.75, 200, 187.5, 175, 156.25, 150, 137.5 µs

The additional current controller sampling times must be taken into account when parameterizing the bus for Ti, To and Tdp.

Notice: p0092 only has an influence on the automatic default for the sampling times (p0115) in the drive.

If the sampling times are modified subsequently in expert mode (p0112 = 0), p0092 = 0 should be set so that the new values are not overwritten again by the automatic default when the parameters are downloaded.

The conditions for current controller sampling time for isochronous operation must still be carefully ensured (refer under Caution!).

p0092 Clock synchronous operation pre-assignment/check / CI sync op pre-as

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: C1(1)	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Setting to pre-assign/check the sampling times for the internal controller clock cycles for isochronous PROFIdrive operation.

For p0092 = 0:

The controller clock cycles are set without any restrictions by the isochronous PROFIdrive operation (same as for up to V2.3).

When calculating the drive unit utilization (r9976), when using the fixed DCC runtime groups "Receive AFTER IF1 PROFIdrive PZD", "Send BEFORE IF1 PROFIdrive PZD", "Receive AFTER IF2 PZD" (from V4.4) and "Send BEFORE IF2 PZD" (from V4.4), then its maximum computing time load has already been calculated during ramp-up for isochronous operation and taken into account in r9976 (from V4.3).

For p0092 = 1:

The controller clock cycles are set so that isochronous PROFIdrive operation is possible. If it is not possible to change the controller clock cycles of the isochronous PROFIdrive operation, then an appropriate message is output.

The pre-setting of the controller clock cycles can result in a derating of the Motor Module (e.g. p0115[0] = 400 µs --> 375 µs).

When calculating the drive unit utilization (r9976), when using the fixed DCC runtime groups "Receive AFTER IF1 PROFIdrive PZD", "Send BEFORE IF1 PROFIdrive PZD", "Receive AFTER IF2 PZD" (from V4.4) and "Send BEFORE IF2 PZD" (from V4.4), then its maximum computing time load has already been calculated during ramp-up for isochronous operation and taken into account in r9976 (from V4.3).

Value:
0: No isochronous PROFIBUS
1: Isochronous PROFIBUS

Dependency: Refer to: r0110, p0115

Refer to: A01223, A01224

Caution: ⚠

Only current controller sampling times (p0115[0]) which are integers of 125 µs are permitted for isochronous mode.

For SERVO the following current controller sampling times are also possible:

187.5, 150, 100, 93.75, 75, 62.5, 50, 37.5, 31.25 µs

For VECTOR the following current controller sampling times are also possible:

312.5, 218.75, 200, 187.5, 175, 156.25, 150, 137.5 µs

The additional current controller sampling times must be taken into account when parameterizing the bus for Ti, To and Tdp.

Notice: p0092 only has an influence on the automatic default for the sampling times (p0115) in the drive.

If the sampling times are modified subsequently in expert mode (p0112 = 0), p0092 = 0 should be set so that the new values are not overwritten again by the automatic default when the parameters are downloaded.

The conditions for current controller sampling time for isochronous operation must still be carefully ensured (refer under Caution!).

r0093 CO: Pole position angle electrically scaled / Pole pos el scale

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4710
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2005	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°]	- [°]	- [°]

Description: Displays the scaled electrical pole position angle.

Dependency: Refer to: r0094, p0431, r1778

Notice:	When the pole position angle (r0093) is output via test socket Tx (x = 0, 1, 2) to adjust the encoder (to determine the angular commutation offset) the test socket being used must be parameterized as follows: p0771[x] = r0093 p0777[x] = 0 % p0778[x] = 0 V p0779[x] = 400 % p0780[x] = 4 V p0783[x] = 0 V p0784[x] = 0 For p1821 = 1 (counter-clockwise direction of rotation) the following applies: In order to adjust the encoder using the EMF method, the value, determined using the oscilloscope, must be inverted and then entered in p0431.
Note:	For operation with encoder and pulse suppression, the following applies: - the value is generated from r0094 + 180 °. - this angle can be used to adjust the encoders of synchronous motors. For pulse enable, the following applies: - the value indicates the transformation angle used by the control + 180 °. - this value is, contrary to r0094, also applicable (provides information) for encoderless operation and after a pole position identification routine.

r0094 CO: Piston position actual value / Piston pos act val

HLA

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2005	**Expert list:** 1
Min	**Max**	**Factory setting**
- [mm]	- [mm]	- [mm]

Description:	Display and connector output of the piston position.
Note:	The piston position should be calibrated, so that when the cylinder is completely retracted, zero is displayed and the value increases as it extends. For piston calibration, p1960 (automatic) or p1909 (manual) can be used.

r0094 CO: Transformation angle / Transformat_angle

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4700, 4702, 4710, 6300, 6714, 6730, 6731, 6732
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2005	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°]	- [°]	- [°]

Description:	Displays the transformation angle.
Dependency:	Refer to: r0093, p0431, r1778
Note:	The transformation angle corresponds to the electrical commutation angle. If no pole position identification is carried out (p1982), and the encoder is adjusted, the following applies: The encoder supplies the value and indicates the electrical angle of the flux position (d axis).

r0094 CO: Transformation angle / Transformat_angle

A_INF, S_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8850, 8950
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2005	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°]	- [°]	- [°]

Description: Displays the transformation angle.

Note: The transformation angle corresponds to the line supply angle.

p0097 Select drive object type / Select DO type

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: C1(1)	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Topology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	24	0

Description: Executes an automatic device configuration.

In so doing, p0099, p0107 and p0108 are appropriately set.

Value:
0: No selection
1: Drive object type SERVO
2: Drive object type VECTOR
3: SINAMICS GM (DFEMV & VECTORMV)
4: SINAMICS SM (AFEMV & VECTORMV)
5: SINAMICS GL (VECTORGL)
6: SINAMICS SL (VECTORSL)
12: Drive object type VECTOR parallel circuit
13: Drive object type VECTORMV - GM parallel circuit
14: Drive object type VECTORMV - SM parallel circuit
15: Drive object type DC_CTRL
16: Drive object type SERVO HMI
17: Drive object type VECTOR HMI
24: Drive object type VECTORMV - SM parallel circuit

Dependency: Refer to: r0098, p0099

Refer to: A01330

Note: For p0097 = 0, p0099 is automatically set to the factory setting.

The possible settings are dependent upon the device type.

r0098[0...5] Actual device topology / Device_act topo

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Topology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the automatically detected actual device topology in coded form.

Index:
[0] = DRIVE-CLiQ socket X100
[1] = DRIVE-CLiQ socket X101
[2] = DRIVE-CLiQ socket X102
[3] = DRIVE-CLiQ socket X103
[4] = DRIVE-CLiQ socket X104
[5] = DRIVE-CLiQ socket X105

Dependency: Refer to: p0097, p0099

Note: Topology coding: abcd efgh hex

a = number of Active Line Modules

b = number of Motor Modules

c = number of motors

d = number of encoders (or the line supply voltage sensing for Active Line Modules)

e = number of additional encoders (or the line supply voltage sensing for Active Line Modules)

f = number of Terminal Modules

g = number of Terminal Boards

h = reserved

if the value 0 is displayed in all indices, then components are not detected via DRIVE-CLiQ.

If a value F hex occurs at a position of the coding (abcd efgh hex), then an overflow has occurred.

p0099[0...5] Device target topology / Device_target topo

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: C1(1)	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Topology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the device target topology in coded form (refer to r0098). The setting is made during commissioning.

Deactivated or non-available components are also counted

Index:
[0] = DRIVE-CLiQ socket X100
[1] = DRIVE-CLiQ socket X101
[2] = DRIVE-CLiQ socket X102
[3] = DRIVE-CLiQ socket X103
[4] = DRIVE-CLiQ socket X104
[5] = DRIVE-CLiQ socket X105

Dependency: The parameter can only be written into for p0097 = 0.

To perform an automatic device configuration run, an index of the device target topology must be set to the value of the device actual topology in r0098 for acknowledgment. An index of the device actual topology with a value other than 0 must be selected.

Refer to: p0097, r0098

Refer to: A01330

Note: The parameter can only be set to the values 0, the value of the actual device topology, the value of the actual device target topology and FFFFFFFF hex.

If the value 0 is displayed in all of the indices, then the system has still not been commissioned.

The value FFFFFFFF hex indicates that the topology was not generated by the automatic device configuration, but was commissioned using the commissioning tool (e.g. using parameter download).

p0100 IEC/NEMA Standards / IEC/NEMA Standards

HLA

Can be changed: C2(1, 2)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: SESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Defines whether the converter and motor power settings (e.g. rated motor power, p0307) are expressed in [kW] or [hp].

Depending on the selection, the rated motor frequency (p0310) is either set to 50 Hz or 60 Hz.

For p0100 = 0, the following applies: The power factor (p0308) should be parameterized.

For p0100 = 1, the following applies: The efficiency (p0309) should be parameterized.

Value:
0: IEC (50 Hz line, SI units)
1: NEMA (60 Hz line, US units)

Dependency: If p0100 is changed, all of the rated motor parameters are reset. Only then are possible unit changeovers made.

The units of all motor parameters are changed that are involved in the selection of IEC or NEMA (e.g. r0206, p0307, p0316, r0333, r0334, p0341, p0344, r1493, r1969).

Refer to: r0206, p0206, p0210, p0300, p0304, p0305, p0307, p0308, p0309, p0310, p0311, p0312, p0314, p0320, p0322, p0323, p0335, r0336, r0337, p0338, p1800

Note: The parameter can only be changed for vector control (p0107).

The parameter value is not reset when the factory setting is restored (p0010 = 30, p0970).

p0100 IEC/NEMA Standards / IEC/NEMA Standards

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(1, 2)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: SESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	0	0

Description: Defines whether the motor and drive converter power settings (e.g. rated motor power, p0307) are expressed in [kW].

Value: 0: IEC (50 Hz line, SI units)

Dependency: Refer to: r0206, p0206, p0307, p0308

p0100 IEC/NEMA Standards / IEC/NEMA Standards

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(1, 2)	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: SESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Defines whether the converter and motor power settings (e.g. rated motor power, p0307) are expressed in [kW] or [hp].

Depending on the selection, the rated motor frequency (p0310) is either set to 50 Hz or 60 Hz.

For p0100 = 0, the following applies: The power factor (p0308) should be parameterized.

For p0100 = 1, the following applies: The efficiency (p0309) should be parameterized.

Value:
0: IEC (50 Hz line, SI units)
1: NEMA (60 Hz line, US units)

Dependency: If p0100 is changed, all of the rated motor parameters are reset. Only then are possible unit changeovers made.

The units of all motor parameters are changed that are involved in the selection of IEC or NEMA (e.g. r0206, p0307, p0316, r0333, r0334, p0341, p0344, r1493, r1969).

Refer to: r0206, p0206, p0210, p0300, p0304, p0305, p0307, p0308, p0309, p0310, p0311, p0312, p0314, p0320, p0322, p0323, p0335, r0336, r0337, p0338, p1800

Note: The parameter can only be changed for vector control (p0107).

The parameter value is not reset when the factory setting is restored (p0010 = 30, p0970).

p0101[0...n] Drive object numbers / DO numbers

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: C1(1)	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Topology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	62	0

Description: The parameter contains the object number via which every drive object can be addressed.

The number of an existing drive object is entered into each index.

Value = 0: No drive object is defined.

Note: The numbers are automatically allocated.

For the commissioning tool, this object number cannot be entered using the expert list, but is automatically assigned when inserting an object.

r0102[0...1] Number of drive objects / DO count

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Topology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the number of existing or existing and prepared drive objects.

Index: [0] = Existing drive objects
[1] = Existing and prepared drive objects

Dependency: Refer to: p0101

Note: The numbers of the drive objects are in p0101.

For index [0]:

Displays the number of drive objects that have already been set up.

For index [1]:

Displays the number of drive objects that have already been set up and, in addition, the drive objects that still have to be set up.

p0103[0...n] Application-specific view / Appl_spec view

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: C1(2)	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	999	0

Description: The application-specific view of an existing drive object is entered into each index.

The parameter cannot be changed.

Dependency: Refer to: p0107, r0107

Note: In the non-volatile memory, the application-specific views are defined in files with the following structure:

PDxxxyyy.ACX

xxx: Application-specific view (p0103)

yyy: Type of drive object (p0107)

Example:

PD052011.ACX

--> "011" stands for the drive object, type SERVO

--> "052" is the number of the view for this drive object

r0103 Application-specific view / Appl_spec view

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	65535	-

Description: Displays the application-specific view of the individual drive object.

Dependency: Refer to: p0107, r0107

p0105 Activate/deactivate drive object / DO act/deact

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	1

Description: Setting to activate/deactivate a drive object.

Value:
0: Deactivate drive object
1: Activate drive object

Dependency: Refer to: r0106

Notice: The following applies when activating:

If components are inserted for the first time and the appropriate drive object is activated, then the drive system is automatically booted. To do this, the pulses of all of the drive objects must be suppressed.

p0105 Activate/deactivate drive object / DO act/deact

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM17, TM15DI_DO, TM120, TM150, TB30, ENC, HUB, CU_LINK

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	2	1

Description: Setting to activate/deactivate a drive object.

Value:
0: Deactivate drive object
1: Activate drive object
2: Drive object deactivate and not present

Dependency: When activating drive objects with the safety functions enabled, the following applies:

After reactivating, a warm restart (p0009 = 30, p0976 = 2, 3) or POWER ON should be carried out.

Refer to: r0106

Refer to: A01314

Notice: The following applies when activating:

If components are inserted for the first time and the appropriate drive object is activated, then the drive system is automatically booted. To do this, the pulses of all of the drive objects must be suppressed.

Note: For value = 0, 2:

When a drive object is deactivated it no longer outputs any errors.

If value = 0:

All components of the drive object were completely commissioned and are deactivated using this value. They can be removed from the DRIVE-CLiQ without any error.

If a component has been deactivated, only the component with the correct serial number may be inserted, or none at all.

If value = 1:

All components of the drive object must be available for error-free operation.

If value = 2:

Components of a drive object in a project generated offline and set to this value must never be inserted in the actual topology from the very start. This means that the components are marked to be bypassed in the DRIVE-CLiQ line.

For components that comprise several individual components (e.g. Double Motor Modules), it is not permissible to set just one subset to this value.

p0105 Activate/deactivate drive object / DO act/deact

TM31, TM41, TM15	**Can be changed:** T	**Calculated:** -	**Access level:** 2
	Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	2	1

Description: Setting to activate/deactivate a drive object.

Value:
0: Deactivate drive object
1: Activate drive object
2: Drive object deactivate and not present

Dependency: Refer to: r0106

Refer to: A01314

Warning: A drive that is moved by simulating the inputs of a Terminal Module is brought to a standstill while this parameter is being changed over.

Notice: The following applies when activating:

If components are inserted for the first time and the appropriate drive object is activated, then the drive system is automatically booted. To do this, the pulses of all of the drive objects must be suppressed.

Note: For value = 0, 2:

When a drive object is deactivated it no longer outputs any errors.

If value = 0:

All components of the drive object were completely commissioned and are deactivated using this value. They can be removed from the DRIVE-CLiQ without any error.

If a component has been deactivated, only the component with the correct serial number may be inserted, or none at all.

If value = 1:

All components of the drive object must be available for error-free operation.

If value = 2:

Components of a drive object in a project generated offline and set to this value must never be inserted in the actual topology from the very start. This means that the components are marked to be bypassed in the DRIVE-CLiQ line.

For components that comprise several individual components (e.g. Double Motor Modules), it is not permissible to set just one subset to this value.

p0105 Activate/deactivate drive object / DO act/deact

TM54F_MA, TM54F_SL	**Can be changed:** T	**Calculated:** -	**Access level:** 3
	Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	2	1

Description: Setting to activate/deactivate a drive object.

Value:
0: Deactivate drive object
1: Activate drive object
2: Drive object deactivate and not present

Dependency: TM54F can only be deactivated if all of the drives assigned to it via p10010 have been deactivated or safety on the assigned drives has not be enabled.

When activating drive objects with the safety functions enabled, the following applies:

After reactivating, a warm restart (p0009 = 30, p0976 = 2, 3) or POWER ON should be carried out.

Refer to: r0106

Refer to: A01314

Notice: The following applies when activating:

If components are inserted for the first time and the appropriate drive object is activated, then the drive system is automatically booted. To do this, the pulses of all of the drive objects must be suppressed.

Note: For value = 0, 2:

When a drive object is deactivated it no longer outputs any errors.

If value = 0:

All components of the drive object were completely commissioned and are deactivated using this value. They can be removed from the DRIVE-CLiQ without any error.

If a component has been deactivated, only the component with the correct serial number may be inserted, or none at all.

If value = 1:

All components of the drive object must be available for error-free operation.

If value = 2:

Components of a drive object in a project generated offline and set to this value must never be inserted in the actual topology from the very start. This means that the components are marked to be bypassed in the DRIVE-CLiQ line.

For components that comprise several individual components (e.g. Double Motor Modules), it is not permissible to set just one subset to this value.

r0106 Drive object active/inactive / DO act/inact

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM17, TM15, TM15DI_DO, TM120, TM150, TB30, ENC, HUB, CU_LINK

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	-

Description: Displays the "active/inactive" state of a drive object.

Value:
0: Drive object inactive
1: Drive object active

Dependency: Refer to: p0105

p0107[0...n] Drive object type / DO type

CU_I_D410

Can be changed: C1(2)	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	300	0

Description: The type of an existing drive object is entered into each index.

Value:
0: -
3: SINAMICS I
11: SERVO
12: VECTOR
150: DRIVE-CLiQ Hub Module
200: TM31 (Terminal Module)
201: TM41 (Terminal Module)
202: TM17 High Feature (Terminal Module)
203: TM15 (Terminal Module)
204: TM15 (Terminal Module for SINAMICS)
205: TM54F - Master (Terminal Module)
206: TM54F - Slave (Terminal Module)

207: TM120 (Terminal Module)
208: TM150 (Terminal Module)
300: ENCODER

Dependency: Refer to: p0103, r0103

Caution: If you change this parameter and exit the device commissioning mode, then the complete software will be set up again and all of the previous drive parameter settings are deleted.

Note: The number (p0101) and the associated drive object type are in the same index.

For SINAMICS S a drive object type can only be changed between SERVO and VECTOR. If you change the parameter and exit drive start-up (p0009 from 2 to 0) the drive parameters are set up again.

p0107[0...n] Drive object type / DO type

CU_I, CU_NX_CX

Can be changed: C1(2)	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	300	0

Description: The type of an existing drive object is entered into each index.

Value:
0: -
3: SINAMICS I
4: SINAMICS NX/CX32
10: ACTIVE INFEED CONTROL
11: SERVO
12: VECTOR
20: SMART INFEED CONTROL
21: RENEWABLE INFEED CONTROL
30: BASIC INFEED CONTROL
70: HLA
100: TB30 (Terminal Board)
150: DRIVE-CLiQ Hub Module
200: TM31 (Terminal Module)
201: TM41 (Terminal Module)
202: TM17 High Feature (Terminal Module)
203: TM15 (Terminal Module)
204: TM15 (Terminal Module for SINAMICS)
205: TM54F - Master (Terminal Module)
206: TM54F - Slave (Terminal Module)
207: TM120 (Terminal Module)
208: TM150 (Terminal Module)
254: CU-LINK
300: ENCODER

Dependency: Refer to: p0103, r0103

Caution: If you change this parameter and exit the device commissioning mode, then the complete software will be set up again and all of the previous drive parameter settings are deleted.

Note: The number (p0101) and the associated drive object type are in the same index.

For SINAMICS S a drive object type can only be changed between SERVO and VECTOR. If you change the parameter and exit drive start-up (p0009 from 2 to 0) the drive parameters are set up again.

p0107[0...n] Drive object type / DO type

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S120_DP

Can be changed: C1(2)	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	300	0

Description: The type of an existing drive object is entered into each index.

Value:
0: -
1: SINAMICS S
10: ACTIVE INFEED CONTROL
11: SERVO
12: VECTOR
20: SMART INFEED CONTROL
21: RENEWABLE INFEED CONTROL
30: BASIC INFEED CONTROL
70: HLA
100: TB30 (Terminal Board)
150: DRIVE-CLiQ Hub Module
200: TM31 (Terminal Module)
201: TM41 (Terminal Module)
202: TM17 High Feature (Terminal Module)
203: TM15 (Terminal Module)
204: TM15 (Terminal Module for SINAMICS)
205: TM54F - Master (Terminal Module)
206: TM54F - Slave (Terminal Module)
207: TM120 (Terminal Module)
208: TM150 (Terminal Module)
300: ENCODER

Dependency: Refer to: p0103, r0103

Caution: If you change this parameter and exit the device commissioning mode, then the complete software will be set up again and all of the previous drive parameter settings are deleted.

Note: The number (p0101) and the associated drive object type are in the same index.
For SINAMICS S a drive object type can only be changed between SERVO and VECTOR. If you change the parameter and exit drive start-up (p0009 from 2 to 0) the drive parameters are set up again.

p0107[0...n] Drive object type / DO type

CU_S150_PN, CU_S150_DP

Can be changed: C1(2)	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	300	0

Description: The type of an existing drive object is entered into each index.

Value:
0: -
1: SINAMICS S
10: ACTIVE INFEED CONTROL
12: VECTOR
100: TB30 (Terminal Board)
150: DRIVE-CLiQ Hub Module
200: TM31 (Terminal Module)
201: TM41 (Terminal Module)
202: TM17 High Feature (Terminal Module)
203: TM15 (Terminal Module)
204: TM15 (Terminal Module for SINAMICS)
205: TM54F - Master (Terminal Module)
206: TM54F - Slave (Terminal Module)

207: TM120 (Terminal Module)
208: TM150 (Terminal Module)
300: ENCODER

Dependency: Refer to: p0103, r0103

Caution: If you change this parameter and exit the device commissioning mode, then the complete software will be set up again and all of the previous drive parameter settings are deleted.

Note: The number (p0101) and the associated drive object type are in the same index.

For SINAMICS S a drive object type can only be changed between SERVO and VECTOR. If you change the parameter and exit drive start-up (p0009 from 2 to 0) the drive parameters are set up again.

r0107 Drive object type / DO type

HLA

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
70	70	-

Description: Displays the type of each drive object.

Value: 70: HLA

Dependency: Refer to: p0103, r0103

r0107 Drive object type / DO type

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
11	11	-

Description: Displays the type of each drive object.

Value: 11: SERVO

Dependency: Refer to: p0103, r0103

r0107 Drive object type / DO type

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
12	12	-

Description: Displays the type of each drive object.

Value: 12: VECTOR

Dependency: Refer to: p0103, r0103

r0107 Drive object type / DO type

A_INF

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
10	10	-

Description: Displays the type of each drive object.

Value: 10: ACTIVE INFEED CONTROL

Dependency: Refer to: p0103, r0103

r0107	Drive object type / DO type		
B_INF	**Can be changed:** -	**Calculated:** -	**Access level:** 2
	Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	30	30	-

Description: Displays the type of each drive object.
Value: 30: BASIC INFEED CONTROL
Dependency: Refer to: p0103, r0103

r0107	Drive object type / DO type		
R_INF	**Can be changed:** -	**Calculated:** -	**Access level:** 2
	Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	21	21	-

Description: Displays the type of each drive object.
Value: 21: RENEWABLE INFEED CONTROL
Dependency: Refer to: p0103, r0103

r0107	Drive object type / DO type		
S_INF	**Can be changed:** -	**Calculated:** -	**Access level:** 2
	Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	20	20	-

Description: Displays the type of each drive object.
Value: 20: SMART INFEED CONTROL
Dependency: Refer to: p0103, r0103

r0107	Drive object type / DO type		
TM120	**Can be changed:** -	**Calculated:** -	**Access level:** 2
	Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	207	207	-

Description: Displays the type of each drive object.
Value: 207: TM120 (Terminal Module)
Dependency: Refer to: p0103, r0103

r0107 Drive object type / DO type

TM15

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
203	203	-

Description: Displays the type of each drive object.

Value: 203: TM15 (Terminal Module)

Dependency: Refer to: p0103, r0103

r0107 Drive object type / DO type

TM150

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
208	208	-

Description: Displays the type of each drive object.

Value: 208: TM150 (Terminal Module)

Dependency: Refer to: p0103, r0103

r0107 Drive object type / DO type

TM15DI_DO

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
204	204	-

Description: Displays the type of each drive object.

Value: 204: TM15 (Terminal Module for SINAMICS)

Dependency: Refer to: p0103, r0103

r0107 Drive object type / DO type

TM17

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
202	202	-

Description: Displays the type of each drive object.

Value: 202: TM17 High Feature (Terminal Module)

Dependency: Refer to: p0103, r0103

r0107 Drive object type / DO type

TM31

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
200	200	-

Description: Displays the type of each drive object.
Value: 200: TM31 (Terminal Module)
Dependency: Refer to: p0103, r0103

r0107 Drive object type / DO type

TM41

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
201	201	-

Description: Displays the type of each drive object.
Value: 201: TM41 (Terminal Module)
Dependency: Refer to: p0103, r0103

r0107 Drive object type / DO type

TB30

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
100	100	-

Description: Displays the type of each drive object.
Value: 100: TB30 (Terminal Board)
Dependency: Refer to: p0103, r0103

r0107 Drive object type / DO type

TM54F_MA

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
205	205	-

Description: Displays the type of each drive object.
Value: 205: TM54F - Master (Terminal Module)
Dependency: Refer to: p0103, r0103

r0107 Drive object type / DO type

TM54F_SL

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
206	206	-

Description: Displays the type of each drive object.
Value: 206: TM54F - Slave (Terminal Module)
Dependency: Refer to: p0103, r0103

r0107 Drive object type / DO type

ENC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
300	300	-

Description: Displays the type of each drive object.
Value: 300: ENCODER
Dependency: Refer to: p0103, r0103

r0107 Drive object type / DO type

CU_LINK

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
254	254	-

Description: Displays the type of each drive object.
Value: 254: CU-LINK
Dependency: Refer to: p0103, r0103

r0107 Drive object type / DO type

HUB

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
150	150	-

Description: Displays the type of each drive object.
Value: 150: DRIVE-CLiQ Hub Module
Dependency: Refer to: p0103, r0103

p0108[0...n] Drive objects function module / DO fct_mod

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410	**Can be changed:** C1(2)	**Calculated:** -	**Access level:** 2
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: -	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	0000 0000 0000 0000 0000 0000 0000 0000 bin

Description: The function module of an existing drive object is entered into each index (see p0101, p0107).

The following bits are available for the Control Unit (Index 0):

Bit 18: Free function blocks

Bit 29: CAN

Bit 30: COMM BOARD

Bit 31: PROFINET

For all other drive objects (Index > 0), the significance of the bits should be taken from the display parameters r0108 of the drive object.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	ON	OFF	-
01	Bit 1	ON	OFF	-
02	Bit 2	ON	OFF	-
03	Bit 3	ON	OFF	-
04	Bit 4	ON	OFF	-
05	Bit 5	ON	OFF	-
06	Bit 6	ON	OFF	-
07	Bit 7	ON	OFF	-
08	Bit 8	ON	OFF	-
09	Bit 9	ON	OFF	-
10	Bit 10	ON	OFF	-
11	Bit 11	ON	OFF	-
12	Bit 12	ON	OFF	-
13	Bit 13	ON	OFF	-
14	Bit 14	ON	OFF	-
15	Bit 15	ON	OFF	-
16	Bit 16	ON	OFF	-
17	Bit 17	ON	OFF	-
18	Bit 18	ON	OFF	-
19	Bit 19	ON	OFF	-
20	Bit 20	ON	OFF	-
21	Bit 21	ON	OFF	-
22	Bit 22	ON	OFF	-
23	Bit 23	ON	OFF	-
24	Bit 24	ON	OFF	-
25	Bit 25	ON	OFF	-
26	Bit 26	ON	OFF	-
27	Bit 27	ON	OFF	-
28	Bit 28	ON	OFF	-
29	Bit 29	ON	OFF	-
30	Bit 30	ON	OFF	-
31	Bit 31	ON	OFF	-

Dependency: Active messages can prevent or influence activating a function module.

Refer to: p0171, r0171, p0172, r0172, p0173, r0173

Refer to: A06860, A07089, F13010

Note: A "function module" is a functional expansion of a drive object that can be activated when commissioning.

r0108 Drive objects function module / DO fct_mod

HLA

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the activated function module for the particular drive object.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
02	Speed/torque control / n/M	Activated	Not activated	-
09	Extended Stopping and Retraction / ESR	Activated	Not activated	-
12	Linear motor / Lin	Activated	Not activated	-
18	Free function blocks / FBLOCKS	Activated	Not activated	-
31	PROFINET CBE20 / PN CBE20	Activated	Not activated	-

Dependency: Refer to: p0171, r0171, p0172, r0172, p0173, r0173

Note: A "function module" is a functional expansion of a drive object that can be activated when commissioning.

r0108 Drive objects function module / DO fct_mod

SERVO

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the activated function module for the particular drive object.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
01	Extended torque control / Ext M_ctrl	Activated	Not activated	-
02	Speed/torque control / n/M	Activated	Not activated	-
03	Position control / Pos ctrl	Activated	Not activated	-
04	Basic positioner / EPOS	Activated	Not activated	-
05	Recorder / Rec	Activated	Not activated	-
06	DSC with spline / DSC spline	Activated	Not activated	-
07	Advanced Positioning Control (APC) / APC	Activated	Not activated	-
08	Extended setpoint channel / Ext setp	Activated	Not activated	-
09	Extended Stopping and Retraction / ESR	Activated	Not activated	-
10	Moment of inertia estimator / J_estimator	Activated	Not activated	-
11	Spindle diagnostics / Spin_diag	Activated	Not activated	-
12	Linear motor / Lin	Activated	Not activated	-
13	Safety rotary axis / Safety rot	Activated	Not activated	-
14	Extended brake control / Ext brake	Activated	Not activated	-
16	Technology controller / Tech_ctrl	Activated	Not activated	-
17	Extended messages/monitoring / Ext msg	Activated	Not activated	-
18	Free function blocks / FBLOCKS	Activated	Not activated	-
21	Extended current setpoint filter / Ext I_setp_filt	Activated	Not activated	-
22	Cogging torque compensation / Cog_M_comp	Activated	Not activated	-
23	Digital inputs/outputs / Dig IO	Activated	Not activated	-
28	Cooling unit / Cool_unit	Activated	Not activated	-
29	CAN / CAN	Activated	Not activated	-
31	PROFINET CBE20 / PN CBE20	Activated	Not activated	-

Dependency: Refer to: p0171, r0171, p0172, r0172, p0173, r0173

Note: A "function module" is a functional expansion of a drive object that can be activated when commissioning.

r0108 Drive objects function module / DO fct_mod

SERVO_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the activated function module for the particular drive object.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
01	Extended torque control / Ext M_ctrl	Activated	Not activated	-
02	Speed/torque control / n/M	Activated	Not activated	-
03	Position control / Pos ctrl	Activated	Not activated	-
04	Basic positioner / EPOS	Activated	Not activated	-
05	Recorder / Rec	Activated	Not activated	-
06	DSC with spline / DSC spline	Activated	Not activated	-
07	Advanced Positioning Control (APC) / APC	Activated	Not activated	-
08	Extended setpoint channel / Ext setp	Activated	Not activated	-
09	Extended Stopping and Retraction / ESR	Activated	Not activated	-
10	Moment of inertia estimator / J_estimator	Activated	Not activated	-
11	Spindle diagnostics / Spin_diag	Activated	Not activated	-
12	Linear motor / Lin	Activated	Not activated	-
13	Safety rotary axis / Safety rot	Activated	Not activated	-
14	Extended brake control / Ext brake	Activated	Not activated	-
16	Technology controller / Tech_ctrl	Activated	Not activated	-
17	Extended messages/monitoring / Ext msg	Activated	Not activated	-
18	Free function blocks / FBLOCKS	Activated	Not activated	-
21	Extended current setpoint filter / Ext I_setp_filt	Activated	Not activated	-
22	Cogging torque compensation / Cog_M_comp	Activated	Not activated	-
25	Failsafe inputs/outputs on CU / F-DI F-DO CU	Activated	Not activated	-
28	Cooling unit / Cool_unit	Activated	Not activated	-
31	PROFINET CBE20 / PN CBE20	Activated	Not activated	-

Dependency: Refer to: p0171, r0171, p0172, r0172, p0173, r0173

Note: A "function module" is a functional expansion of a drive object that can be activated when commissioning.

r0108 Drive objects function module / DO fct_mod

SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the activated function module for the particular drive object.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
01	Extended torque control / Ext M_ctrl	Activated	Not activated	-
02	Speed/torque control / n/M	Activated	Not activated	-
05	Recorder / Rec	Activated	Not activated	-
06	DSC with spline / DSC spline	Activated	Not activated	-
07	Advanced Positioning Control (APC) / APC	Activated	Not activated	-
08	Extended setpoint channel / Ext setp	Activated	Not activated	-
09	Extended Stopping and Retraction / ESR	Activated	Not activated	-
10	Moment of inertia estimator / J_estimator	Activated	Not activated	-
11	Spindle diagnostics / Spin_diag	Activated	Not activated	-
12	Linear motor / Lin	Activated	Not activated	-
13	Safety rotary axis / Safety rot	Activated	Not activated	-
14	Extended brake control / Ext brake	Activated	Not activated	-
16	Technology controller / Tech_ctrl	Activated	Not activated	-

17	Extended messages/monitoring / Ext msg	Activated	Not activated	-
18	Free function blocks / FBLOCKS	Activated	Not activated	-
21	Extended current setpoint filter / Ext I_setp_filt	Activated	Not activated	-
22	Cogging torque compensation / Cog_M_comp	Activated	Not activated	-
25	Failsafe inputs/outputs on CU / F-DI F-DO CU	Activated	Not activated	-
28	Cooling unit / Cool_unit	Activated	Not activated	-
31	PROFINET CBE20 / PN CBE20	Activated	Not activated	-

Dependency: Refer to: p0171, r0171, p0172, r0172, p0173, r0173

Note: A "function module" is a functional expansion of a drive object that can be activated when commissioning.

r0108 Drive objects function module / DO fct_mod

VECTOR

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the activated function module for the particular drive object.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
02	Speed/torque control / n/M	Activated	Not activated	-
03	Position control / Pos ctrl	Activated	Not activated	-
04	Basic positioner / EPOS	Activated	Not activated	-
05	Recorder / Rec	Activated	Not activated	-
08	Extended setpoint channel / Ext setp	Activated	Not activated	-
10	Moment of inertia estimator / J_estimator	Activated	Not activated	-
13	Safety rotary axis / Safety rot	Activated	Not activated	-
14	Extended brake control / Ext brake	Activated	Not activated	-
15	Parallel connection / Parallel	Activated	Not activated	-
16	Technology controller / Tech_ctrl	Activated	Not activated	-
17	Extended messages/monitoring / Ext msg	Activated	Not activated	-
18	Free function blocks / FBLOCKS	Activated	Not activated	-
20	Software gating unit / SW_gating unit	Activated	Not activated	-
24	PM330 / PM330	Activated	Not activated	-
26	F3E power unit / F3E	Activated	Not activated	-
28	Cooling unit / Cool_unit	Activated	Not activated	-
29	CAN / CAN	Activated	Not activated	-
31	PROFINET CBE20 / PN CBE20	Activated	Not activated	-

Dependency: Refer to: p0171, r0171, p0172, r0172, p0173, r0173

Note: A "function module" is a functional expansion of a drive object that can be activated when commissioning.

The following bits are only automatically set, if the power units are detected with the appropriate properties.

Bit 15: Parallel connection of identical power units (only automatically set for G130/G150).

Bit 20: Software gating unit (only automatically set when power units are connected in parallel).

Bit 24: Type PM330 power units are presently not supported.

Bit 26: Type PM250 power units with F3E energy recovery are only supported for S120 CRANES.

Bit 28: Power units with liquid cooling.

r0108 Drive objects function module / DO fct_mod

VECTOR_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the activated function module for the particular drive object.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
02	Speed/torque control / n/M	Activated	Not activated	-
03	Position control / Pos ctrl	Activated	Not activated	-
04	Basic positioner / EPOS	Activated	Not activated	-
05	Recorder / Rec	Activated	Not activated	-
08	Extended setpoint channel / Ext setp	Activated	Not activated	-
10	Moment of inertia estimator / J_estimator	Activated	Not activated	-
13	Safety rotary axis / Safety rot	Activated	Not activated	-
14	Extended brake control / Ext brake	Activated	Not activated	-
15	Parallel connection / Parallel	Activated	Not activated	-
16	Technology controller / Tech_ctrl	Activated	Not activated	-
17	Extended messages/monitoring / Ext msg	Activated	Not activated	-
18	Free function blocks / FBLOCKS	Activated	Not activated	-
20	Software gating unit / SW_gating unit	Activated	Not activated	-
24	PM330 / PM330	Activated	Not activated	-
25	Failsafe inputs/outputs on CU / F-DI F-DO CU	Activated	Not activated	-
26	F3E power unit / F3E	Activated	Not activated	-
28	Cooling unit / Cool_unit	Activated	Not activated	-
31	PROFINET CBE20 / PN CBE20	Activated	Not activated	-

Dependency: Refer to: p0171, r0171, p0172, r0172, p0173, r0173

Note: A "function module" is a functional expansion of a drive object that can be activated when commissioning.

The following bits are only automatically set, if the power units are detected with the appropriate properties.

Bit 15: Parallel connection of identical power units (only automatically set for G130/G150).

Bit 20: Software gating unit (only automatically set when power units are connected in parallel).

Bit 24: Type PM330 power units are presently not supported.

Bit 26: Type PM250 power units with F3E energy recovery are only supported for S120 CRANES.

Bit 28: Power units with liquid cooling.

r0108 Drive objects function module / DO fct_mod

VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the activated function module for the particular drive object.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
02	Speed/torque control / n/M	Activated	Not activated	-
05	Recorder / Rec	Activated	Not activated	-
08	Extended setpoint channel / Ext setp	Activated	Not activated	-
10	Moment of inertia estimator / J_estimator	Activated	Not activated	-
13	Safety rotary axis / Safety rot	Activated	Not activated	-
14	Extended brake control / Ext brake	Activated	Not activated	-
15	Parallel connection / Parallel	Activated	Not activated	-
16	Technology controller / Tech_ctrl	Activated	Not activated	-
17	Extended messages/monitoring / Ext msg	Activated	Not activated	-
18	Free function blocks / FBLOCKS	Activated	Not activated	-
20	Software gating unit / SW_gating unit	Activated	Not activated	-
24	PM330 / PM330	Activated	Not activated	-

Bit	Signal name	1 signal	0 signal	FP
25	Failsafe inputs/outputs on CU / F-DI F-DO CU	Activated	Not activated	-
26	F3E power unit / F3E	Activated	Not activated	-
28	Cooling unit / Cool_unit	Activated	Not activated	-
31	PROFINET CBE20 / PN CBE20	Activated	Not activated	-

Dependency: Refer to: p0171, r0171, p0172, r0172, p0173, r0173

Note: A "function module" is a functional expansion of a drive object that can be activated when commissioning.

The following bits are only automatically set, if the power units are detected with the appropriate properties.

Bit 15: Parallel connection of identical power units (only automatically set for G130/G150).

Bit 20: Software gating unit (only automatically set when power units are connected in parallel).

Bit 24: Type PM330 power units are presently not supported.

Bit 26: Type PM250 power units with F3E energy recovery are only supported for S120 CRANES.

Bit 28: Power units with liquid cooling.

r0108 Drive objects function module / DO fct_mod

A_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the activated function module for the particular drive object.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
03	Supplementary closed-loop control / Suppl cl-loop ctrl	Activated	Not activated	-
04	Line transformer / Line transf	Activated	Not activated	-
05	Recorder / Rec	Activated	Not activated	-
07	Dynamic grid support / Dyn. grid support	Activated	Not activated	-
10	Supplementary module cosinus phi / cos phi	Activated	Not activated	-
12	Line droop control / Line droop ctrl	Activated	Not activated	-
15	Parallel connection / Parallel	Activated	Not activated	-
18	Free function blocks / FBLOCKS	Activated	Not activated	-
19	Master/Slave / Master/Slave	Activated	Not activated	-
20	Software gating unit / SW_gating unit	Activated	Not activated	-
26	Braking Module external / Brk Mod ext	Activated	Not activated	-
28	Cooling unit / Cool_unit	Activated	Not activated	-
31	PROFINET CBE20 / PN CBE20	Activated	Not activated	-

Dependency: Refer to: p0171, r0171, p0172, r0172, p0173, r0173

Note: A "function module" is a functional expansion of a drive object that can be activated when commissioning.

r0108 Drive objects function module / DO fct_mod

S_INF, B_INF

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the activated function module for the particular drive object.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
05	Recorder / Rec	Activated	Not activated	-
15	Parallel connection / Parallel	Activated	Not activated	-
18	Free function blocks / FBLOCKS	Activated	Not activated	-
26	Braking Module external / Brk Mod ext	Activated	Not activated	-
28	Cooling unit / Cool_unit	Activated	Not activated	-
31	PROFINET CBE20 / PN CBE20	Activated	Not activated	-

Dependency: Refer to: p0171, r0171, p0172, r0172, p0173, r0173

Note: A "function module" is a functional expansion of a drive object that can be activated when commissioning.

r0108 Drive objects function module / DO fct_mod

TM31, TM41, TM15DI_DO, TM120, TM150, TB30

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the activated function module for the particular drive object.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
18	Free function blocks / FBLOCKS	Activated	Not activated	-
31	PROFINET CBE20 / PN CBE20	Activated	Not activated	-

Dependency: Refer to: p0171, r0171, p0172, r0172, p0173, r0173

Note: A "function module" is a functional expansion of a drive object that can be activated when commissioning.

r0108 Drive objects function module / DO fct_mod

ENC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the activated function module for the particular drive object.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
12	Linear encoder / Lin_enc	Activated	Not activated	-
18	Free function blocks / FBLOCKS	Activated	Not activated	-
31	PROFINET CBE20 / PN CBE20	Activated	Not activated	-

Dependency: Refer to: p0171, r0171, p0172, r0172, p0173, r0173

Note: A "function module" is a functional expansion of a drive object that can be activated when commissioning.

r0110[0...2] Basic sampling times / t_basis

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [µs]	- [µs]	- [µs]

Description: Displays the basic sampling times.

The sampling times are set using p0112 and p0115. The values for the basic sampling times are determined as a result of these settings.

Index:
[0] = Basic sampling time 0
[1] = Basic sampling time 1
[2] = Basic sampling time 2

r0111 Basic sampling time selection / t_basis sel

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the selected basic sampling time for this drive object.

Dependency: Refer to: r0110

p0112 Sampling times pre-setting p0115 / t_sample for p0115

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: C1(3)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	5	3

Description: Pre-assignment of the sampling times in p0115.

The clock cycles for the current controller / speed controller / flux controller / setpoint channel / position controller / positioning / technology controller are pre-assigned as follows:

SINAMICS S, servo drive:

p0112 = 1: 250 / 250 / 250 / 4000 / 2000 / 8000 / 4000 µs (for chassis units)

p0112 = 2: 125 / 250 / 250 / 4000 / 2000 / 8000 / 4000 µs

p0112 = 3: 125 / 125 / 125 / 4000 / 1000 / 4000 / 4000 µs

p0112 = 4: 62.5 / 62.5 / 62.5 / 1000 / 1000 / 2000 / 1000 µs (for S210)

p0112 = 5: 31.25 / 31.25 / 31.25 / 1000 / 1000 / 2000 / 1000 µs

SINAMICS S, Active Infeed (p0112 = 1 not for p0092 = 1):

p0112 = 1: 400 / - / - / 1600 µs (pre-setting for the rated pulse frequency = 2.5 kHz)

p0112 = 2: 250 / - / - / 2000 µs (pre-setting for the rated pulse frequency = 4.0 kHz)

p0112 = 3: 125 / - / - / 2000 µs

p0112 = 4: 125 / - / - / 1000 µs

p0112 = 5: 125 / - / - / 500 µs

SINAMICS S, Smart Infeed (p0112 = 1 not for p0092 = 1):

p0112 = 1: 400 / - / - / 1600 µs (pre-setting for the rated pulse frequency = 2.5 kHz)

p0112 = 2: 250 / - / - / 2000 µs (pre-setting for the rated pulse frequency = 4.0 kHz)

p0112 = 3: 250 / - / - / 2000 µs

p0112 = 4: 250 / - / - / 1000 µs

p0112 = 5: Not possible

SINAMICS S, Basic Infeed, booksize:

p0112 = 4: 250 / - / - / 2000 µs

SINAMICS S, Basic Infeed, chassis:

p0112 = 1: 2000 / - / - / 2000 µs

p0112 = 2: 2000 / - / - / 2000 µs (pre-setting)

p0112 = 3: 2000 / - / - / 2000 µs

p0112 = 4: Not possible

p0112 = 5: Not possible

SINAMICS S/G, vector drive (p0112 = 1 not for p0092 = 1 and not for PM340):

p0112 = 1: 400 / 1600 / 1600 / 1600 / 3200 / 3200 / 3200 µs (for rated pulse frequency = 1.25, 2.5 kHz)

p0112 = 2: 250 / 1000 / 2000 / 1000 / 2000 / 4000 / 4000 µs

p0112 = 3: 250 / 1000 / 1000 / 1000 / 2000 / 4000 / 4000 µs (for rated pulse frequency = 2.0, 4.0 kHz)

SINAMICS S, vector drive:

p0112 = 4: 250 / 500 / 1000 / 500 / 1000 / 2000 / 2000 µs

p0112 = 5: 250 / 250 / 1000 / 500 / 1000 / 2000 / 1000 µs

Value:
0: Expert
1: xLow
2: Low
3: Standard
4: High
5: xHigh

Recommendation: When changing the sampling times of the current and speed controllers (also refer to p0115), then we recommend that after exiting commissioning (p0009 = 0) the controller settings are re-calculated using p0340 = 4.

Dependency: It is prohibited to select a parameter value from p0112 if the associated current controller clock cycle cannot set (e.g. p0112 = 1 is not possible for a vector drive and PM340 power unit).

If, for a servo drive, p112 = 5 is set, then the pulse frequency p1800 is pre-assigned 8 kHz. For D410-2 and vector drive, the current controller sampling time can only be permanently changed for p0112 = 0.

Refer to: p0092

Note: For p0112 = 0 (expert) the individual sampling times in p0115 can be adjusted.

The setting p0112 = 1 cannot be set for a vector drive with power unit type PM340 (refer to r0203).

p0113 Minimum pulse frequency, selection / f_puls min sel

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C1(3)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
2.000 [kHz]	4.000 [kHz]	4.000 [kHz]

Description: The current controller sampling time (p0115[0]) is pre-assigned by selecting the minimum pulse frequency.

Dependency: The parameter can only be changed with p0112 = 0 (expert). For isochronous operation (p0092 = 1) the parameter can only be set so that a current controller sampling time of 125 µs is obtained as an integer number.

The required pulse frequency can be set in p1800 after commissioning (p0009 = p0010 = 0), assuming that this has not been restricted by other conditions (e.g. as a result of p1082, p0310).

Refer to: p0112, r0114, p0115, p1800

Note: The current controller sampling time (p0115[0]) is set to the inverse value of twice the minimum pulse frequency. For p0113 = 2.0 kHz, p0115[0] = 250 µs is set, for p0113 = 4.0 kHz, p0115[0] = 125 µs is set. The current controller sampling time (p0115[0]), calculated from the pulse frequency, is set in a grid of 1.25 µs.

For a power unit type PM340 (refer to r0203), only the values 2.0 and 4.0 kHz can be set.

p0113 Minimum pulse frequency, selection / f_puls min sel

SERVO (Dig IO)

Can be changed: C1(3)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
4.000 [kHz]	4.000 [kHz]	4.000 [kHz]

Description: The current controller sampling time (p0115[0]) is pre-assigned by selecting the minimum pulse frequency.

Dependency: The parameter can only be changed with p0112 = 0 (expert). For isochronous operation (p0092 = 1) the parameter can only be set so that a current controller sampling time of 125 µs is obtained as an integer number.

The required pulse frequency can be set in p1800 after commissioning (p0009 = p0010 = 0), assuming that this has not been restricted by other conditions (e.g. as a result of p1082, p0310).

Refer to: p0112, r0114, p0115, p1800

Note: The current controller sampling time (p0115[0]) is set to the inverse value of twice the minimum pulse frequency. For p0113 = 2.0 kHz, p0115[0] = 250 µs is set, for p0113 = 4.0 kHz, p0115[0] = 125 µs is set. The current controller sampling time (p0115[0]), calculated from the pulse frequency, is set in a grid of 1.25 µs.

For a power unit type PM340 (refer to r0203), only the values 2.0 and 4.0 kHz can be set.

p0113 Minimum pulse frequency, selection / f_puls min sel

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C1(3)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1.000 [kHz]	4.000 [kHz]	2.000 [kHz]

Description: The current controller sampling time (p0115[0]) is pre-assigned by selecting the minimum pulse frequency.

Dependency: The parameter can only be changed with p0112 = 0 (expert). For isochronous operation (p0092 = 1) the parameter can only be set so that a current controller sampling time of 125 µs is obtained as an integer number.

The required pulse frequency can be set in p1800 after commissioning (p0009 = p0010 = 0), assuming that this has not been restricted by other conditions (e.g. as a result of p1082, p0310).

Refer to: p0112, r0114, p0115, p1800

Note: The current controller sampling time (p0115[0]) is set to the inverse value of twice the minimum pulse frequency. For p0113 = 1.0 kHz, p0115[0] = 500 µs is set, for p0113 = 2.0 kHz, p0115[0] = 250 µs is set. The current controller sampling time (p0115[0]), calculated from the pulse frequency, is set in a grid of 1.25 µs.

For a power unit type PM340 (refer to r0203), only the values 1.0 and 2.0 kHz can be set. A value of 1.0 kHz can be set in order to achieve a current controller sampling time of 500µs. However, in this case, the minimum pulse frequency p1800 is limited to 2 kHz.

r0114[0...9] Minimum pulse frequency recommended / f_puls min recom

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [kHz]	- [kHz]	- [kHz]

Description: Displays the recommended values (indices 0 and 1) for the minimum pulse frequency (p0113).

If the system rejects a change to p0113 because the value to be used lies outside the permitted value range, then instead the recommended value from r0114 can be used.

Index:
[0] = If only the actual drive is changed
[1] = If all drives connected to the DRIVE-CLiQ line are changed
[2] = 2nd possible pulse frequency
[3] = 3rd possible pulse frequency
[4] = 4th possible pulse frequency
[5] = 5th possible pulse frequency
[6] = 6th possible pulse frequency
[7] = 7th possible pulse frequency
[8] = 8th possible pulse frequency
[9] = 9th possible pulse frequency

Dependency: Refer to: p0113

Note: After exiting commissioning (p0009 = p0010 = 0), the pulse frequencies calculated from the sampling time p0115[0] are displayed in indices 1 to 9. If additional restrictions do not apply (e.g. as a result of the maximum speed (p1082) or due to having selected an output filter), these can be entered into p1800. The maximum pulse frequency of the power units was already taken into account in r0114.

A value of 0 kHz does not define a recommended pulse frequency.

p0115[0] Sampling time for supplementary functions / t_samp suppl_fct

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: C1(3)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [µs]	16000.00 [µs]	4000.00 [µs]

Description: Sets the basic sampling time for supplementary functions (DCC, free function blocks) on this object.

Only setting values that are an integer multiple of 125 µs are permissible.

Index: [0] = Basic sampling time

p0115[0...6] Sampling times for internal control loops / t_sample int ctrl

HLA

Can be changed: C1(3)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [µs]	16000.00 [µs]	[0] 125.00 [µs] [1] 125.00 [µs] [2] 125.00 [µs] [3] 4000.00 [µs] [4] 1000.00 [µs] [5] 4000.00 [µs] [6] 4000.00 [µs]

Description: Sets the sampling times for the control loops.

The default setting is made using p0112 and can only be individually changed for p0112 = 0 (expert).

Recommendation: When changing the sampling times of the controller (p0115[0]), then we recommend that after exiting commissioning (p0009 = 0) the controller settings are re-calculated using p0340.3 = 1.

Index:
[0] = Controller (velocity/force)
[1] = Reserved
[2] = Reserved
[3] = Setpoint channel
[4] = Position controller
[5] = Positioning
[6] = Technology controller

Dependency: The sampling times can only be separately set if p0112 is 0 (expert). If a sampling time is modified in the expert mode, then all of the sampling times with higher indices are automatically changed in the same ratio as the sampling time itself was changed. Slower time slices are only taken if the calculated sampling time is also permitted. Upper limit is 8 ms.

Higher-level controls must be calculated in integral ratios to lower-level controls (e.g. p0115[1] = N * p0115[0]; where N is an integer number).

The sampling times for setpoint channel (p0115[3]), position controller (p0115[4]), positioning (p0115[5]) and technology controller (p0115[6]) must have at least 2x the value of the controller sampling time (p0115[0]).

Refer to: r0110, r0111, p0112

Note: For function modules that can be activated (e.g. technology controller), the parameters values are pre-assigned.

If sampling times in p0115 are individually changed for p0112 = 0 (expert) then it must always be observed that the selected sampling times of the setpoint channel (p0115[3]), position controller (p0115[4]), positioning (p0115[5]) and technology controller (p0115[6]) are always greater than or equal to twice the controller sampling time (p0115[0]).

p0115[0...6]	Sampling times for internal control loops / t_sample int ctrl		
SERVO, SERVO_AC, SERVO_I_AC, A_INF, S_INF, R_INF, B_INF	**Can be changed:** C1(3)	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [µs]	16000.00 [µs]	[0] 125.00 [µs] [1] 125.00 [µs] [2] 125.00 [µs] [3] 4000.00 [µs] [4] 1000.00 [µs] [5] 4000.00 [µs] [6] 4000.00 [µs]

Description: Sets the sampling times for the control loops.

The default setting is made using p0112 and can only be individually changed for p0112 = 0 (expert).

Recommendation: When changing the sampling times of the current and speed controllers (also refer to p0115), then we recommend that after exiting commissioning (p0009 = 0) the controller settings are re-calculated using p0340 = 4.

Index:
[0] = Current controller
[1] = Speed controller
[2] = Flux controller
[3] = Setpoint channel
[4] = Position controller
[5] = Positioning
[6] = Technology controller

Dependency: The sampling times can only be separately set if p0112 is 0 (expert). If a sampling time is modified in the expert mode, then all of the sampling times with higher indices are automatically changed in the same ratio as the sampling time itself was changed. Slower time slices are only taken if the calculated sampling time is also permitted. Upper limit is 8 ms.

Higher-level controls must be calculated in integral ratios to lower-level controls (e.g. p0115[1] = N * p0115[0]; where N is an integer number). The sampling time of the speed controller (p0115[1]) can have as a maximum a value of 800% of the current controller sampling time (p0115[0]).

For servo drives, the maximum sampling time of the current controller is 250 µs and for vector drives, 500 µs.

The sampling times for setpoint channel (p0115[3]), position controller (p0115[4]), positioning (p0115[5]) and technology controller (p0115[6]) must have at least 2x the value of the current controller sampling time (p0115[0]).

Refer to: r0110, r0111, p0112

Note: For function modules that can be activated (e.g. technology controller), the parameters values are pre-assigned.

For the Active Line Module (ALM) and Smart Line Module (SLM), the current and DC link voltage controllers operate with the same sampling time. For ALM/SLM the maximum current controller sampling time is 400 µs.

For the Basic Line Module (BLM), the DC link voltage measurement operates in the current controller sampling time.

For BLM booksize, only the current controller sampling time of 250 µs is permitted. For BLM chassis, only the current controller sampling time of 2000 µs is permitted.

For power unit type PM340 (r0203), only current controller sampling times of 62.5 µs, 125 µs, 250 µs and 500 µs can be set. The maximum current controller sampling time for servo drives and the minimum current controller sampling time for vector drives is 250 µs.

If sampling times in p0115 are individually changed for p0112 = 0 (expert) then it must always be observed that the selected sampling times of the setpoint channel (p0115[3]), position controller (p0115[4]), positioning (p0115[5]) and technology controller (p0115[6]) are always greater than or equal to twice the current controller sampling time (p0115[0]).

p0115[0...6] Sampling times for internal control loops / t_sample int ctrl

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: C1(3)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [µs]	16000.00 [µs]	[0] 125.00 [µs] [1] 125.00 [µs] [2] 125.00 [µs] [3] 4000.00 [µs] [4] 1000.00 [µs] [5] 4000.00 [µs] [6] 4000.00 [µs]

Description: Sets the sampling times for the control loops.

The default setting is made using p0112 and can only be individually changed for p0112 = 0 (expert).

Recommendation: When changing the sampling times of the current and velocity controllers (p0115), then we recommend that after exiting commissioning (p0009 = 0) the controller settings are re-calculated using p0340 = 4.

Index:
[0] = Current controller
[1] = Velocity controller
[2] = Flux controller
[3] = Setpoint channel
[4] = Position controller
[5] = Positioning
[6] = Technology controller

Dependency: The sampling times can only be separately set if p0112 is 0 (expert). If a sampling time is modified in the expert mode, then all of the sampling times with higher indices are automatically changed in the same ratio as the sampling time itself was changed. Slower time slices are only taken if the calculated sampling time is also permitted. Upper limit is 8 ms.

Higher-level controls must be calculated in integral ratios to lower-level controls (e.g. p0115[1] = N * p0115[0]; where N is an integer number). The sampling time of the velocity controller (p0115[1]) can have as a maximum a value of 800% of the current controller sampling time (p0115[0]).

For servo drives, the maximum sampling time of the current controller is 250 µs and for vector drives, 500 µs.

Refer to: r0110, r0111, p0112

Note: For function modules that can be activated (e.g. technology controller), the parameters values are pre-assigned.

For the Active Line Module (ALM) and Smart Line Module (SLM), the current and DC link voltage controllers operate with the same sampling time. For ALM/SLM the maximum current controller sampling time is 400 µs.

For the Basic Line Module (BLM), the DC link voltage measurement operates in the current controller sampling time.

For BLM booksize, only the current controller sampling time of 250 µs is permitted. For BLM chassis, only the current controller sampling time of 2000 µs is permitted.

For power unit type PM340 (r0203), only current controller sampling times of 62.5 µs, 125 µs, 250 µs and 500 µs can be set. The maximum current controller sampling time for servo drives and the minimum current controller sampling time for vector drives is 250 µs.

If sampling times in p0115 are individually changed for p0112 = 0 (expert) then it must always be observed that the selected sampling times of the setpoint channel (p0115[3]), position controller (p0115[4]), positioning (p0115[5]) and technology controller (p0115[6]) are always greater than or equal to twice the current controller sampling time (p0115[0]).

p0115[0...6]	Sampling times for internal control loops / t_sample int ctrl		
VECTOR, VECTOR_AC, VECTOR_I_AC	**Can be changed:** C1(3)	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [µs]	16000.00 [µs]	[0] 250.00 [µs] [1] 1000.00 [µs] [2] 1000.00 [µs] [3] 1000.00 [µs] [4] 2000.00 [µs] [5] 4000.00 [µs] [6] 4000.00 [µs]

Description: Sets the sampling times for the control loops.

The default setting is made using p0112 and can only be individually changed for p0112 = 0 (expert).

Recommendation: When changing the sampling times of the current and speed controllers (also refer to p0115), then we recommend that after exiting commissioning (p0009 = 0) the controller settings are re-calculated using p0340 = 4.

When adjusting the current controller sampling time, it is recommended to use values that are an integer multiple of 6.25 µs. The sampling times of analog or digital inputs/outputs (see p0799, p4099) should be set to an integer multiple of the current controller sampling time.

If the current controller sampling time is to be reduced with respect to the default setting (e.g. < 250 µs), then it is recommended that the motor data identification (standstill measurement) is executed beforehand, in order to avoid a thermal overload of the power unit as a result of high pulse frequencies (p1800).

Index:
[0] = Current controller
[1] = Speed controller
[2] = Flux controller
[3] = Setpoint channel
[4] = Position controller
[5] = Positioning
[6] = Technology controller

Dependency: Depending on the number and type of vector drives, the sampling times are preset differently.

The sampling times can only be separately set if p0112 is 0 (expert). If a sampling time is modified in the expert mode, then all of the sampling times with higher indices are automatically changed in the same ratio as the sampling time itself was changed. Slower time slices are only taken if the calculated sampling time is also permitted. Upper limit is 8 ms.

Higher-level controls must be calculated in integral ratios to lower-level controls (e.g. p0115[1] = N * p0115[0]; where N is an integer number). The sampling time of the speed controller (p0115[1]) can have as a maximum a value of 800% of the current controller sampling time (p0115[0]).

The sampling times for setpoint channel (p0115[3]), position controller (p0115[4]), positioning (p0115[5]) and technology controller (p0115[6]) must have at least 2x the value of the current controller sampling time (p0115[0]).

The sampling time of the current controller p0115[0] and pulse frequency p1800 are checked at each parameter download, and when necessary changed, if, for p0092 = 1, the current controller sampling time is not an integral multiple of 125 µs or if p0112 is set > 1. For p0092 = 0, the check with p0112 = 0 (= expert) can be deactivated.

Refer to: r0110, r0111, p0112

Note: For function modules that can be activated (e.g. technology controller), the parameters values are pre-assigned.

For power unit type PM340 (r0203), only current controller sampling times of 250 µs or 500 µs can be set. The minimum current controller sampling time is otherwise 125 µs (SINAMICS G: 250 µs), the maximum current controller sampling time is 500 µs. For SINAMICS G, the minimum speed controller sampling time is 1 ms.

Current controller sampling times of less than 250 µs are restricted by the number of drives or by the number of power units connected in parallel (also see F01340).

For chassis power units connected in parallel, it is recommended to connect the DRIVE-CLiQ cables (partially) in parallel between the Control Unit and the individual Motor Modules.

For D410-2, the current controller sampling times can only be permanently changed with p0112 = 0 (e.g. to 250 µs).

p0115[0] Sampling time for supplementary functions / t_samp suppl_fct

TM120

Can be changed: C1(3)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [µs]	16000.00 [µs]	4000.00 [µs]

Description: Sets the sampling times for supplementary functions (DCC, free function blocks) on this object.
Only setting values that are an integer multiple of 125 µs are permissible.

Index: [0] = Basic sampling time

p0115[0] Sampling time for supplementary functions / t_samp suppl_fct

TM31, TM15DI_DO, TM150, TB30

Can be changed: C1(3)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [µs]	16000.00 [µs]	4000.00 [µs]

Description: Sets the sampling times for supplementary functions (DCC, free function blocks) on this object.
Only setting values that are an integer multiple of 125 µs are permissible.

Index: [0] = Basic sampling time

Note: This parameter only applies to set the sampling times of possible supplementary functions.
The sampling times for inputs/outputs must be set in p4099.

p0115[0] Sampling time for supplementary functions / t_samp suppl_fct

TM41

Can be changed: C1(3)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [µs]	16000.00 [µs]	4000.00 [µs]

Description: Sets the sampling times for supplementary functions (DCC, free function blocks) on this object.
Only setting values that are an integer multiple of 125 µs are permissible.

Index: [0] = Basic sampling time

Note: This parameter only applies to set the sampling times of possible supplementary functions.
The sampling times for inputs/outputs or encoder emulation must be set in p4099.

p0115[0] Sampling time for speed detection / t_sample n_det

ENC

Can be changed: C1(3)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
125.00 [µs]	500.00 [µs]	125.00 [µs]

Description: Sets the sampling times for speed detection.

Index: [0] = Basic sampling time

r0116[0...1] Drive object clock cycle recommended / DO_clock recom

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM17, TM15, TM15DI_DO, TB30

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [µs]	- [µs]	- [µs]

Description: Displays the recommended sampling time for the drive objects.

r00116[0] = recommended sampling time:

Recommended value which would then make the complete system operational.

r00116[1] = recommended sampling time:

Recommended value, which after changing other clock cycles on the DRIVE-CLiQ line, would result in an operational system.

Index: [0] = Change only for the actual drive object
[1] = Changing all objects on the DRIVE-CLiQ line

Dependency: Refer to: p0115

p0117 Current controller computing dead time mode / I_ctrl t_dead mode

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	6	6

Description: Sets the mode for the computing dead time of the current controller.

0: Offset (shifted) clocking, minimum computing dead time of each drive, automatic setting

1: Clocking at the same time, the dead time aligns itself to the dead time of the latest drive, automatic setting

2: Manual setting of the computing dead time, early transfer

3: Manual setting of the computing dead time, late transfer

4-6: As for 0-2, however, no early transfers are set for vectors

Dependency: Refer to: p0118

Refer to: A02100

Note: The mode change is not effective until the drive unit is switched on again.

For p0117 = 0:

The times when the setpoints become effective for the individual controls is automatically and individually determined. Another computing dead time is set for each control (closed-loop) (p0118). Current is impressed for the individual controls without any offset with respect to time (improved EMC compatibility).

For p0117 = 1:

The latest closed-loop control determines when the setpoints for each of the individual controls become active. The same computing dead time is set for each control (p0118). Current is impressed (flows) for the individual controls without any offset with respect to time.

For p0117 = 2:

The computing dead time is manually set. The user must optimize the value in p0118.

For p0117 = 3:

The computing dead time is manually set. The user must optimize the value in p0118.

For p0117 = 4 ... 6:
Behavior as for p0117 = 0 ... 2, however for vectors, the earliest times are not determined.

p0118 Current controller computing dead time / I_ctrl t_dead

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [µs]	2000.00 [µs]	0.00 [µs]

Description: This parameter is pre-set as a function of the current controller sampling time (p0115[0]) and normally does not have to be changed.

Dependency: Refer to: p0117

Refer to: A02100

Note: For p0118 <= 0.005 µs, the current controller output is delayed by a complete current controller sampling time (p0115[0]).

After p0118 has been changed, we recommend that the current controller is adapted (p1715).

p0118 Current controller computing dead time / I_ctrl t_dead

VECTOR, HLA, VECTOR_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [µs]	2000.00 [µs]	0.00 [µs]

Description: This parameter is pre-set as a function of the current controller sampling time (p0115[0]) and normally does not have to be changed.

Dependency: Refer to: p0117

Refer to: A02100

Note: For p0118 <= 0.005 µs, the current controller output is delayed by a complete current controller sampling time (p0115[0]).

After p0118 has been changed, we recommend that the current controller is adapted (p1715).

p0120 Number of valve data sets (PDS) / PDS count

HLA

Can be changed: C1(3), C2(15)	**Calculated:** -	**Access level:** 2
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: Data sets	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	1	1

Description: Sets the number of valve data sets (power unit data set PDS).

Dependency: Refer to: p0107, r0107

Note: Only one valve data set is supported.

p0120 Number of Power unit Data Sets (PDS) / PDS count

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM41

Can be changed: C1(3), C2(15)	**Calculated:** -	**Access level:** 2
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: Data sets	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	8	1

Description: Sets the number of Power unit Data Sets (PDS).

The value corresponds to the number of power units connected together for a parallel circuit configuration.

Dependency: Refer to: p0107, r0107

Note: This parameter is only significant for drive objects A_INFEED and VECTOR with a parallel circuit configuration.

p0121[0...n] Power unit component number / PU comp_no

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: C1(4), C2(15)	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Data sets	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	199	0

Description: The power unit data set is assigned to a power unit using this parameter.
This unique component number is assigned when parameterizing the topology.
Only component numbers can be entered into this parameter that correspond to a power unit.

Dependency: Refer to: p0107, r0107

Note: For parallel circuit configurations, the parameter index is assigned to a power unit.

p0124[0...n] Main component detection using LED / M_comp detect LED

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: C2(2), U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Detection of the main components of the drive object selected via the index.

p0124[0...n] Power unit detection via LED / PU detection LED

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: C2(2), U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned8	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Detects the power unit assigned to this drive and data set.

Note: While p0124 = 1, the READY LED flashes green/orange or red/orange with 2 Hz at the appropriate power unit.
For parallel circuit configurations, the parameter index is assigned to a power unit.

p0125[0...n] Activate/deactivate power unit components / PU_comp act/deact

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: C1(4), C2(15), T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Data sets	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	2	1

Description: Setting to activate/deactivate a power unit component.

Value:
0: Deactivate component
1: Activate component
2: Component deactivate and not present

Recommendation: After inserting a component, before activating, first wait for Alarm A01317.

Dependency: Refer to: r0126
Refer to: A01314, A01317

Caution: For a parallel connection, the following applies:

When deactivating individual power units using this parameter, it is not permissible that the power units of the parallel connection involved are connected. Infeed units should be disconnected from the line supply (for example, using a contactor). Motor feeder cables should be disconnected. In addition, defective power units should be disconnected from the DC link.

Notice: It is not permissible to deactivate drive objects with safety functions enabled.

Note: The activation of a component can be rejected if the component was inserted for the first time. In this case, it is only possible to activate the component when the pulses for all of the drive objects are inhibited.

For units connected in parallel, when one of the power units is deactivated, then the enable in p7001 is withdrawn.

For value = 0, 2:

When a component is deactivated it no longer outputs any errors.

If value = 0:

The component was completely commissioned and is deactivated using this value. It can be removed from the DRIVE-CLiQ without any error.

If value = 1:

The component must be available for error-free operation.

If value = 2:

A component in a project generated offline and set to this value must never be inserted in the actual topology from the very start. This means that the component is marked to be bypassed in the DRIVE-CLiQ line.

For components that comprise several individual components (e.g. Double Motor Modules), it is not permissible to set just one subset to this value.

r0126[0...n] Power unit components active/inactive / PU comp act/inact

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Data sets	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	-

Description: Displays the "active/inactive" state of a power unit component.

Value:
0: Component inactive
1: Component active

Dependency: Refer to: p0105, p0125, p0897

r0127[0...n] Power unit EEPROM data version / PU EEPROM version

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the version of the EEPROM data of the power unit.

Dependency: Refer to: r0147, r0157

Note: For parallel circuit configurations, the parameter index is assigned to a power unit.

r0128[0...n] Power unit firmware version / PU FW version

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the firmware version of the power unit.

Dependency: Refer to: r0018, r0148, r0158, r0197, r0198

Note: Example:
The value 1010100 should be interpreted as V01.01.01.00.
For parallel circuit configurations, the parameter index is assigned to a power unit.

p0130 Number of Motor Data Sets (MDS) / MDS count

HLA

Can be changed: C1(3), C2(15)	**Calculated:** -	**Access level:** 2
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** 8575
P-Group: Data sets	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	1	1

Description: Sets the number of Motor Data Sets (MDS).

p0130 Number of Motor Data Sets (MDS) / MDS count

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C1(3), C2(15)	**Calculated:** -	**Access level:** 2
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** 8575
P-Group: Data sets	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	16	1

Description: Sets the number of Motor Data Sets (MDS).

p0131[0...n] Motor component number / Mot comp_no

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C1(4), C2(15)	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Data sets	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	199	0

Description: The motor data set is assigned to a motor using this parameter.
This unique component number is assigned when parameterizing the topology.
Only component numbers can be entered into this parameter that correspond to a motor.

p0133[0...n] Motor configuration / Motor config

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Configuration of the motor when commissioning the motor.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Motor connection type	Delta	Star	-

Dependency: For standard induction motors (p0301 > 10000), bit 0 is automatically pre-assigned the connection type of the selected data set.
For p0100 > 0 (60 Hz rated motor frequency), it is not possible to select bit 1.
Refer to: p0304, p0305

Note: For bit 00:
When changing the bits, the rated motor voltage p0304 and the rated motor current p0305 are automatically converted to the selected connection type (star/delta).
For instance, this can be necessary if an 1LE1 motor is selected using the Article number (MLFB) or code number (p0300 = 100, p0301 = 1x0xx), and the motor connection type does not correspond to that of the data set.

p0139[0...2] Copy Motor Data Set MDS / Copy MDS

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(15)	**Calculated:** -	**Access level:** 2
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** 8575
P-Group: Data sets	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	31	0

Description: Copying a Motor Data Set (MDS) into another.

Index:
[0] = Source motor data set
[1] = Target motor data set
[2] = Start copying procedure

Note: Procedure:

1. In Index 0, enter which motor data set should be copied.
2. In Index 1, enter the motor data set data that is to be copied into.
3. Start copying: set index 2 from 0 to 1.

p0139[2] is automatically set to 0 when copying is completed.

When copying, p0131 is not taken into account.

p0140 Number of Encoder Data Sets (EDS) / EDS count

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C1(3), C2(15)	**Calculated:** -	**Access level:** 2
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** 8570
P-Group: Data sets	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	16	1

Description: Sets the number of Encoder Data Sets (EDS).

Note: When parameterizing the drive with "no encoder" there must be at least one encoder data set (p0140 >= 1).

p0140 Number of VSM data sets / VSM count

A_INF, S_INF, R_INF

Can be changed: C1(3), C2(15)	**Calculated:** -	**Access level:** 4
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** 8570
P-Group: Data sets	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	8	1

Description: Sets the number of VSM data sets.

Note: The value cannot be changed for infeed units; it corresponds to the number of power units connected in parallel.

p0140 Number of Encoder Data Sets (EDS) / EDS count

ENC

Can be changed: C1(3), C2(15)	**Calculated:** -	**Access level:** 2
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** 8570
P-Group: Data sets	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	1	1

Description: Sets the number of Encoder Data Sets (EDS).

Note: When parameterizing the drive with "no encoder" there must be at least one encoder data set (p0140 >= 1).

p0141[0...n]	Encoder interface (Sensor Module) component number / Enc_interf comp_no		
SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC	**Can be changed:** C1(4), C2(15)	**Calculated:** -	**Access level:** 3
	Data type: Unsigned8	**Dyn. index:** EDS, p0140	**Func. diagram:** 4704, 8570
	P-Group: Data sets	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	199	0

Description: This parameter is used to assign the encoder data set to an encoder evaluation (e.g. SMC).

This unique component number is assigned when parameterizing the topology.

Only a component number can be entered that corresponds to an encoder evaluation.

Note: If the encoder evaluation and encoder are integrated (motor with DRIVE-CLiQ), then their component numbers are identical.

For an SMC, different component numbers are assigned for the SMC (p0141) and the (actual) encoder (p0142).

SMC: Sensor Module Cabinet

p0141[0...n]	VSM component number / VSM comp_no		
A_INF, S_INF, R_INF	**Can be changed:** C1(4), C2(15)	**Calculated:** -	**Access level:** 4
	Data type: Unsigned8	**Dyn. index:** p0140	**Func. diagram:** -
	P-Group: Data sets	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	199	0

Description: The VSM data set is assigned to a VSM evaluation using this parameter.

This unique component number is assigned when parameterizing the topology.

Only a component number can be entered that corresponds to a VSM evaluation.

p0142[0...n]	Encoder component number / Encoder comp_no		
SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC	**Can be changed:** C1(4), C2(15)	**Calculated:** -	**Access level:** 3
	Data type: Unsigned8	**Dyn. index:** EDS, p0140	**Func. diagram:** 4704
	P-Group: Data sets	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	199	0

Description: This parameter is used to assign the encoder data set to an encoder.

This assignment is made using the unique component number that was assigned when parameterizing the topology.

Only component numbers can be entered into this parameter that correspond to an encoder.

Note: If the encoder evaluation and encoder are integrated (motor with DRIVE-CLiQ), then their component numbers are identical.

For an SMC, different component numbers are assigned for the SMC (p0141) and the (actual) encoder (p0142).

p0144[0...n]	Sensor Module detection via LED / SM detection LED		
SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC	**Can be changed:** C2(4), U, T	**Calculated:** -	**Access level:** 2
	Data type: Unsigned8	**Dyn. index:** EDS, p0140	**Func. diagram:** -
	P-Group: Encoder	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	1	0

Description: Detects the Sensor Module assigned to this drive and data set.

Note: While p0144 = 1, the READY LED flashes green/orange or red/orange with 2 Hz at the appropriate Sensor Module.

p0144[0...n] Voltage Sensing Module detection via LED / VSM detection LED

A_INF, S_INF, R_INF	**Can be changed:** C2(4), U, T	**Calculated:** -	**Access level:** 3
	Data type: Unsigned8	**Dyn. index:** p0140	**Func. diagram:** -
	P-Group: Encoder	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	1	0

Description: Detects the Voltage Sensing Module (VSM) module assigned to this infeed.

p0145[0...n] Activate/deactivate encoder interface / Enc_intf act/deact

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC	**Can be changed:** C1(4), C2(15), U, T	**Calculated:** -	**Access level:** 2
	Data type: Integer16	**Dyn. index:** EDS, p0140	**Func. diagram:** -
	P-Group: Data sets	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	2	1

Description: Setting to activate/deactivate an encoder interface (Sensor Module).

Value:
0: Deactivate component
1: Activate component
2: Component deactivate and not present

Recommendation: After inserting a component, before activating, first wait for Alarm A01317.

Dependency: Refer to: r0146

Refer to: A01314, A01317

Note: The deactivation of an encoder interface corresponds to the"parking encoder" function and has the same effect.

The activation of a component can be rejected if the component was inserted for the first time.

In this case, it is only possible to activate the component when the pulses for all of the drive objects are inhibited.

With the encoder interface for encoder 1 (motor encoder), the relevant drive object for writing the parameter must be in the "Ready for operation" state.

With the encoder interface for encoders 2 and 3, the parameter can also be written during operation.

For value = 0, 2:

When a component is deactivated it no longer outputs any errors.

If value = 0:

The component was completely commissioned and is deactivated using this value. It can be removed from the DRIVE-CLiQ without any error.

If value = 1:

The component must be available for error-free operation.

If value = 2:

A component in a project generated offline and set to this value must never be inserted in the actual topology from the very start.

For components that comprise several individual components (e.g. Double Motor Modules), it is not permissible to set just one subset to this value.

p0145[0...n] Voltage Sensing Module activate/deactivate / VSM act/deact

A_INF, S_INF, R_INF	**Can be changed:** C1(4), C2(15), T	**Calculated:** -	**Access level:** 2
	Data type: Integer16	**Dyn. index:** p0140	**Func. diagram:** -
	P-Group: Data sets	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	2	1

Description: Setting to activate/deactivate a Voltage Sensing Module (VSM).

Value:
0: Deactivate component
1: Activate component
2: Component deactivate and not present

Recommendation: After inserting a component, before activating, first wait for Alarm A01317.

Dependency: Refer to: r0146

Refer to: A01314, A01317

Note: For chassis infeeds, it is not possible to activate/deactivate the Voltage Sensing Module (VSM) via p0145. The VSM can only be activated/deactivated in the group with the appropriate infeed via p0125[0...n].

The activation of a component can be rejected if the component was inserted for the first time.

In this case, it is only possible to activate the component when the pulses for all of the drive objects are inhibited.

r0146[0...n] Encoder interface active/inactive / Enc_intf act/inact

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Data sets	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	-

Description: Displays the "active" or "inactive" state of an encoder interface (Sensor Module).

Value:
0: Component inactive
1: Component active

Dependency: Refer to: p0105, p0145, p0480, p0897

r0146[0...n] Voltage Sensing Module active/inactive / VSM act/inact

A_INF, S_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** p0140	**Func. diagram:** -
P-Group: Data sets	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	-

Description: Displays the "active" or "inactive" state of a Voltage Sensing Module (VSM).

Value:
0: Component inactive
1: Component active

Dependency: Refer to: p0105, p0145

r0147[0...n] Sensor Module EEPROM data version / SM EEPROM version

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the version of the EEPROM data of the Sensor Module.

Dependency: Refer to: r0127, r0157

Note: Example:

The value 1010100 should be interpreted as V01.01.01.00.

r0147[0...n] Voltage Sensing Module EEPROM data version / VSM EEPROM version

A_INF, S_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the version of the EEPROM data of the Voltage Sensing Module (VSM).

Note: Example:

The value 1010100 should be interpreted as V01.01.01.00.

r0148[0...n] Sensor Module firmware version / SM FW version

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the firmware version of the Sensor Module.

Dependency: Refer to: r0018, r0128, r0158, r0197, r0198

Note: Example:

The value 1010100 should be interpreted as V01.01.01.00.

r0148[0...n] Voltage Sensing Module firmware version / VSM FW version

A_INF, S_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the firmware version of the Voltage Sensing Module (VSM).

Dependency: Refer to: r0018, r0128, r0158, r0197, r0198

Note: Example:

The value 1010100 should be interpreted as V01.01.01.00.

p0150 Number of VSM data sets / VSM dat_sets qty.

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C1(3), C2(15)	**Calculated:** -	**Access level:** 4
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: Data sets	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	2	1

Description: Sets the number of VSM data sets.

p0150 VSM2 data sets selection / VSM2 dat_sets qty

A_INF, S_INF, R_INF

Can be changed: C1(3), C2(15)	**Calculated:** -	**Access level:** 4
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: Data sets	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	2	1

Description: Sets the number of VSM2 data sets.

Dependency: The Voltage Sensing Module 2 (VSM2) can only be used if the "line transformer" function module has been activated (r0108.4 = 1).

For the VSM2, parameters p5460 and following are significant.

Note: The Voltage Sensing Module 2 (VSM2) should always be connected to the primary side of the line transformer if at all possible.

p0151[0...n] Voltage Sensing Module component number / VSM comp_no

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C1(4), C2(15)	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** p0150	**Func. diagram:** -
P-Group: Data sets	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	199	0

Description: The VSM data set is assigned to a VSM evaluation using this parameter.

Note: If two VSM are connected at the Motor Module, then the first (p0151[0]) is assigned to the line voltage measurement (see p3801) and the second, to the motor voltage measurement (see p1200).

p0151[0...n] Voltage Sensing Module 2 component number / VSM2 comp_no

A_INF, S_INF, R_INF

Can be changed: C1(4), C2(15)	**Calculated:** -	**Access level:** 4
Data type: Unsigned8	**Dyn. index:** p0150	**Func. diagram:** -
P-Group: Data sets	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	199	0

Description: The VSM2 data set is assigned to a VSM2 evaluation using this parameter.

Note: A change to this parameter only becomes effective after a warm restart.

p0151 Terminal Module component number / TM comp_no

TM31, TM41, TM17, TM15, TM15DI_DO, TM120, TM150, TM54F_MA, TM54F_SL

Can be changed: C1(4), C2(15)	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: Data sets	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	199	0

Description: Sets the component number for the Terminal Module.

This unique component number is assigned when parameterizing the topology.

Only component numbers can be entered into this parameter that correspond to a Terminal Module.

p0151[0...1] DRIVE-CLiQ Hub Module component number / Hub comp_no

HUB

Can be changed: C1(4), C2(15)	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: Data sets	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	199	0

Description: This parameter is used to assign the data set to a DRIVE-CLiQ Hub Module.

This unique component number is assigned when parameterizing the topology.

Only the numbers of components operated as hubs can be entered in these parameters.

[0] = DRIVE-CLiQ node 1

[1] = DRIVE-CLiQ node 2

p0154[0...n] Voltage Sensing Module 2 detection via LED / VSM2 detection LED

A_INF, S_INF, R_INF

Can be changed: C2(4), U, T	**Calculated:** -	**Access level:** 4
Data type: Unsigned8	**Dyn. index:** p0150	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Detects the Voltage Sensing Module 2 (VSM2) assigned to this infeed.

p0154 Terminal Module detection via LED / TM detection LED

TM31, TM41, TM17, TM15, TM15DI_DO, TM120, TM150, TM54F_MA, TM54F_SL

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Detects the Terminal Module assigned to this drive and data set.

Note: While p0154 = 1, the READY LED flashes green/orange or red/orange with 2 Hz at the appropriate Terminal Module.

p0154 DRIVE-CLiQ Hub Module detection via LED / Hub detection LED

HUB

Can be changed: C2(4), U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Detects any DRIVE-CLiQ Hub Module that has been assigned.

p0155[0...n] Voltage Sensing Module activate/deactivate / VSM act/deact

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C1(4), C2(15), T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** p0150	**Func. diagram:** -
P-Group: Data sets	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	2	1

Description: Setting to activate/deactivate a Voltage Sensing Module (VSM).

Value:
0: Deactivate component
1: Activate component
2: Component deactivate and not present

Recommendation: After inserting a component, before activating, first wait for Alarm A01317.

Dependency: Refer to: r0156

Refer to: A01314, A01317

p0155[0...n] Voltage Sensing Module 2 activate/deactivate / VSM2 act/deact

A_INF, S_INF, R_INF

Can be changed: C1(4), C2(15), T	**Calculated:** -	**Access level:** 4
Data type: Integer16	**Dyn. index:** p0150	**Func. diagram:** -
P-Group: Data sets	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	2	1

Description: Setting to activate/deactivate a Voltage Sensing Module 2 (VSM2).

Value:
0: Deactivate component
1: Activate component
2: Component deactivate and not present

Recommendation: After inserting a component, before activating, first wait for Alarm A01317.

Dependency: Refer to: r0156

Refer to: A01314, A01317

r0156[0...n] Voltage Sensing Module active/inactive / VSM act/inact

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** p0150	**Func. diagram:** -
P-Group: Data sets	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	-

Description: Displays the "active" or "inactive" state of a Voltage Sensing Module (VSM).

Value:
0: Component inactive
1: Component active

Dependency: Refer to: p0155

r0156[0...n] Voltage Sensing Module 2 active/inactive / VSM2 act/inact

A_INF, S_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Integer16	**Dyn. index:** p0150	**Func. diagram:** -
P-Group: Data sets	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	-

Description: Displays the "active" or "inactive" state of a Voltage Sensing Module 2 (VSM2).

Value:
0: Component inactive
1: Component active

Dependency: Refer to: p0155

r0157[0...n] Voltage Sensing Module EEPROM data version / VSM EEPROM version

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** p0150	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the version of the EEPROM data of the Voltage Sensing Module (VSM).

Note: Example:

The value 1010100 should be interpreted as V01.01.01.00.

r0157[0...n] Voltage Sensing Module 2 EEPROM data version / VSM2 EEPROM vers

A_INF, S_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** p0150	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the version of the EEPROM data of the Voltage Sensing Module 2 (VSM2).

Note: Example:

The value 1010100 should be interpreted as V01.01.01.00.

r0157 Terminal Module EEPROM data version / TM EEPROM version

TM31, TM41, TM17, TM15, TM15DI_DO, TM120, TM150, TM54F_MA, TM54F_SL

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the version of the EEPROM data of the Terminal Module.

Dependency: Refer to: r0127, r0147

Note: Example:

The value 1010100 should be interpreted as V01.01.01.00.

r0157 DRIVE-CLiQ Hub Module EEPROM data version / Hub EEPROM version

HUB

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the version of the EEPROM data for the DRIVE-CLiQ Hub Module.

Note: Example:

The value 1010100 should be interpreted as V01.01.01.00.

r0158[0...n] Voltage Sensing Module firmware version / VSM FW version

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** p0150	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the firmware version of the Voltage Sensing Module (VSM).

Dependency: Refer to: r0018, r0128, r0197, r0198

Note: Example:

The value 1010100 should be interpreted as V01.01.01.00.

r0158[0...n] Voltage Sensing Module 2 firmware version / VSM2 FW version

A_INF, S_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** p0150	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the firmware version of the Voltage Sensing Module 2 (VSM2).

Dependency: Refer to: r0018, r0197, r0198

Note: Example:

The value 1010100 should be interpreted as V01.01.01.00.

r0158 Terminal Module firmware version / TM FW version

TM31, TM41, TM17, TM15, TM15DI_DO, TM120, TM150, TM54F_MA, TM54F_SL

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the firmware version of the Terminal Module.

Dependency: Refer to: r0018, r0128, r0148, r0197, r0198

Note: Example:

The value 1010100 should be interpreted as V01.01.01.00.

r0158 DRIVE-CLiQ Hub Module firmware version / Hub FW version

HUB

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the firmware version of the DRIVE-CLiQ Hub Module.

p0161 Valve component number / Valve comp_no

HLA

Can be changed: C1(4), C2(15)	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: Data sets	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	199	0

Description: Sets the component number for the valve.

This unique component number is assigned when parameterizing the topology.

Only component numbers can be entered into this parameter that correspond to a valve.

p0161 HF Damping Module component number / HF Damp comp_no

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C1(4), C2(15)	**Calculated:** -	**Access level:** 4
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: Data sets	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	199	0

Description: Sets the component number for the HF Damping Module.

This unique component number is assigned when parameterizing the topology.

Only component numbers can be entered into this parameter that correspond to an HF Damping Module.

p0161 Option board component number / Opt board comp_no

TB30

Can be changed: C1(4), C2(15)	**Calculated:** -	**Access level:** 4
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: Data sets	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	199	0

Description: Sets the component number for the option board (e.g. Terminal Board 30).

This unique component number is assigned when parameterizing the topology.

Only component numbers can be entered into this parameter that correspond to an option board.

p0162 HF Choke Module component number / HF Choke comp_no

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C1(4)	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	199	0

Description: Sets the component number for the HF Choke Module.

This unique component number is assigned when parameterizing the topology.

Only component numbers can be entered into this parameter that correspond to an HF Choke Module.

p0162 CU-LINK slave component number / CU-LINK comp_no

CU_LINK

Can be changed: C1(4)	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	199	0

Description: Sets the component number for the expansion component (e.g. CX32, NX10) for CU-LINK.

This unique component number is assigned when parameterizing the topology.

p0165 Activate/deactivate filter module / FM act/deact

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C1(4), C2(15), T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Data sets	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	2	1

Description: Setting for activating/deactivating the filter module.

Value:
0: Deactivate component
1: Activate component
2: Component deactivate and not present

Recommendation: After inserting a component, before activating, first wait for Alarm A01317.

Dependency: Refer to: r0166

Refer to: A01314, A01317

Note: The activation of a component can be rejected if the component was inserted for the first time.

In this case, it is only possible to activate the component when the pulses for all of the drive objects are inhibited.

For value = 0, 2:

When a component is deactivated it no longer outputs any errors.

If value = 0:

The component was completely commissioned and is deactivated using this value. It can be removed from the DRIVE-CLiQ without any error.

If value = 1:

The component must be available for error-free operation.

If value = 2:

A component in a project generated offline and set to this value must never be inserted in the actual topology from the very start.

r0166 Filter module active/inactive / FM act/inact

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Data sets	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	-

Description: Displays the "active/inactive" state of a filter module.

Value:
0: Component inactive
1: Component active

Dependency: Refer to: p0165

p0170 Number of Command Data Sets (CDS) / CDS count

HLA, TM41

Can be changed: C1(3)	**Calculated:** -	**Access level:** 2
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	1	1

Description: Sets the number of Command Data Sets (CDS).

Note: It is possible to toggle between command parameters (BICO parameters) using this data set changeover.

p0170 Number of Command Data Sets (CDS) / CDS count

SERVO, SERVO_AC, SERVO_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: C1(3)	**Calculated:** -	**Access level:** 2
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	2	1

Description: Sets the number of Command Data Sets (CDS).

Note: It is possible to toggle between command parameters (BICO parameters) using this data set changeover.

p0170 Number of Command Data Sets (CDS) / CDS count

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C1(3)	**Calculated:** -	**Access level:** 2
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
2	4	2

Description: Sets the number of Command Data Sets (CDS).

Note: It is possible to toggle between command parameters (BICO parameters) using this data set changeover.

p0171[0...n] Drive objects function module 1 / DO fct_mod 1

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: C1(2)	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 0000 0000 0000 0000 bin

Description: The function module of an existing drive object is entered into each index (see p0101, p0107).

The following bits are available in p0171 for the Control Unit (Index 0):

- still none

For all other drive objects (Index > 0), the significance of the bits should be taken from the display parameters r0171 of the drive object.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	ON	OFF	-
01	Bit 1	ON	OFF	-
02	Bit 2	ON	OFF	-
03	Bit 3	ON	OFF	-
04	Bit 4	ON	OFF	-
05	Bit 5	ON	OFF	-
06	Bit 6	ON	OFF	-
07	Bit 7	ON	OFF	-
08	Bit 8	ON	OFF	-
09	Bit 9	ON	OFF	-
10	Bit 10	ON	OFF	-
11	Bit 11	ON	OFF	-
12	Bit 12	ON	OFF	-
13	Bit 13	ON	OFF	-
14	Bit 14	ON	OFF	-
15	Bit 15	ON	OFF	-
16	Bit 16	ON	OFF	-
17	Bit 17	ON	OFF	-
18	Bit 18	ON	OFF	-
19	Bit 19	ON	OFF	-
20	Bit 20	ON	OFF	-
21	Bit 21	ON	OFF	-

22	Bit 22	ON	OFF	-
23	Bit 23	ON	OFF	-
24	Bit 24	ON	OFF	-
25	Bit 25	ON	OFF	-
26	Bit 26	ON	OFF	-
27	Bit 27	ON	OFF	-
28	Bit 28	ON	OFF	-
29	Bit 29	ON	OFF	-
30	Bit 30	ON	OFF	-
31	Bit 31	ON	OFF	-

Dependency: Active messages can prevent or influence activating a function module.

Refer to: p0108, r0108, p0172, r0172, p0173, r0173

Refer to: A06860, A07089, F13010

Note: A "function module" is a functional expansion of a drive object that can be activated when commissioning.

r0171 Drive objects function module 1 / DO fct_mod 1

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM15DI_DO, TM120, TM150, TB30, ENC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the activated function module for the particular drive object.

Dependency: Refer to: p0108, r0108, p0172, r0172, p0173, r0173

Note: A "function module" is a functional expansion of a drive object that can be activated when commissioning.

p0172[0...n] Drive objects function module 2 / DO fct_mod 2

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: C1(2)	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 0000 0000 0000 0000 bin

Description: The function module of an existing drive object is entered into each index (see p0101, p0107).

The following bits are available in p0172 for the Control Unit (Index 0):

- still none

For all other drive objects (Index > 0), the significance of the bits should be taken from the display parameters r0172 of the drive object.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	ON	OFF	-
01	Bit 1	ON	OFF	-
02	Bit 2	ON	OFF	-
03	Bit 3	ON	OFF	-
04	Bit 4	ON	OFF	-
05	Bit 5	ON	OFF	-
06	Bit 6	ON	OFF	-
07	Bit 7	ON	OFF	-
08	Bit 8	ON	OFF	-
09	Bit 9	ON	OFF	-
10	Bit 10	ON	OFF	-
11	Bit 11	ON	OFF	-
12	Bit 12	ON	OFF	-
13	Bit 13	ON	OFF	-
14	Bit 14	ON	OFF	-
15	Bit 15	ON	OFF	-
16	Bit 16	ON	OFF	-

17	Bit 17	ON	OFF	-
18	Bit 18	ON	OFF	-
19	Bit 19	ON	OFF	-
20	Bit 20	ON	OFF	-
21	Bit 21	ON	OFF	-
22	Bit 22	ON	OFF	-
23	Bit 23	ON	OFF	-
24	Bit 24	ON	OFF	-
25	Bit 25	ON	OFF	-
26	Bit 26	ON	OFF	-
27	Bit 27	ON	OFF	-
28	Bit 28	ON	OFF	-
29	Bit 29	ON	OFF	-
30	Bit 30	ON	OFF	-
31	Bit 31	ON	OFF	-

Dependency: Active messages can prevent or influence activating a function module.

Refer to: p0108, r0108, p0171, r0171, p0173, r0173

Refer to: A06860, A07089, F13010

Note: A "function module" is a functional expansion of a drive object that can be activated when commissioning.

r0172 Drive objects function module 2 / DO fct_mod 2

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM15DI_DO, TM120, TM150, TB30, ENC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the activated function module for the particular drive object.

Dependency: Refer to: p0108, r0108, p0171, r0171, p0173, r0173

Note: A "function module" is a functional expansion of a drive object that can be activated when commissioning.

p0173[0...n] Drive objects function module 3 / DO fct_mod 3

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: C1(2)	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 0000 0000 0000 0000 bin

Description: The function module of an existing drive object is entered into each index (see p0101, p0107).

The following bits are available in p0173 for the Control Unit (Index 0):

- still none

For all other drive objects (Index > 0), the significance of the bits should be taken from the display parameters r0173 of the drive object.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	ON	OFF	-
01	Bit 1	ON	OFF	-
02	Bit 2	ON	OFF	-
03	Bit 3	ON	OFF	-
04	Bit 4	ON	OFF	-
05	Bit 5	ON	OFF	-
06	Bit 6	ON	OFF	-
07	Bit 7	ON	OFF	-
08	Bit 8	ON	OFF	-
09	Bit 9	ON	OFF	-
10	Bit 10	ON	OFF	-
11	Bit 11	ON	OFF	-

12	Bit 12	ON	OFF	-
13	Bit 13	ON	OFF	-
14	Bit 14	ON	OFF	-
15	Bit 15	ON	OFF	-
16	Bit 16	ON	OFF	-
17	Bit 17	ON	OFF	-
18	Bit 18	ON	OFF	-
19	Bit 19	ON	OFF	-
20	Bit 20	ON	OFF	-
21	Bit 21	ON	OFF	-
22	Bit 22	ON	OFF	-
23	Bit 23	ON	OFF	-
24	Bit 24	ON	OFF	-
25	Bit 25	ON	OFF	-
26	Bit 26	ON	OFF	-
27	Bit 27	ON	OFF	-
28	Bit 28	ON	OFF	-
29	Bit 29	ON	OFF	-
30	Bit 30	ON	OFF	-
31	Bit 31	ON	OFF	-

Dependency: Active messages can prevent or influence activating a function module.

Refer to: p0108, r0108, p0171, r0171, p0172, r0172

Refer to: A06860, A07089, F13010

Note: A "function module" is a functional expansion of a drive object that can be activated when commissioning.

r0173 Drive objects function module 3 / DO fct_mod 3

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM15DI_DO, TM120, TM150, TB30, ENC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the activated function module for the particular drive object.

Dependency: Refer to: p0108, r0108, p0171, r0171, p0172, r0172

Note: A "function module" is a functional expansion of a drive object that can be activated when commissioning.

p0180 Number of Drive Data Sets (DDS) / DDS count

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, TM41

Can be changed: C1(3), C2(15)	**Calculated:** -	**Access level:** 2
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** 8565
P-Group: Data sets	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	32	1

Description: Sets the number of Drive Data Sets (DDS).

p0186[0...n] Motor Data Sets (MDS) number / MDS number

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C1(4), C2(15)	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** DDS, p0180	**Func. diagram:** 8575
P-Group: Data sets	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	15	0

Description: Using the parameter, each Drive Data Set (= index) is assigned the associated Motor Data Set (MDS).

The parameter value therefore corresponds to the number of the assigned motor data set.

p0187[0...n] Encoder 1 encoder data set number / Enc 1 EDS number

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C1(4), C2(15)	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** DDS, p0180	**Func. diagram:** 4700, 8570
P-Group: Data sets	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	99	99

Description: Assign a drive data set (= index) the corresponding encoder data set (EDS) for encoder 1.

The value corresponds to the number of the assigned encoder data set.

Example:

Encoder 1 in drive data set 2 should be assigned encoder data set 0.

--> p0187[2] = 0

Notice: Writing to p0187 is rejected if the pole position identification is selected (p1982 = 1) and additional data sets with the same MDS data set (p0186) are available, which however have a different encoder data set number in p0187.

If all data sets with this MDS p0187 are to be changed, then the pole position identification of the data sets involved should be temporarily deselected (p1982 = 0), p0187 changed for all MDS data sets and then the pole position identification reselected (p1982 = 1).

If a motor with pole position identification is to be operated with two different encoders, then for this motor, two motor data sets should be introduced.

Note: A value of 99 means that no encoder has been assigned to this drive data set (not configured).

p0187[0...n] Encoder 1 encoder data set number / Enc 1 EDS number

VECTOR, HLA, VECTOR_AC, VECTOR_I_AC

Can be changed: C1(4), C2(15)	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** DDS, p0180	**Func. diagram:** 4700, 8570
P-Group: Data sets	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	99	99

Description: Assign a drive data set (= index) the corresponding encoder data set (EDS) for encoder 1.

The value corresponds to the number of the assigned encoder data set.

Example:

Encoder 1 in drive data set 2 should be assigned encoder data set 0.

--> p0187[2] = 0

Note: A value of 99 means that no encoder has been assigned to this drive data set (not configured).

p0188[0...n] Encoder 2 encoder data set number / Enc 2 EDS number

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C1(4), C2(15)	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** DDS, p0180	**Func. diagram:** 4700, 8570
P-Group: Data sets	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	99	99

Description: Assign a drive data set (= index) the corresponding encoder data set (EDS) for encoder 2.

The value corresponds to the number of the assigned encoder data set.

Example:

Encoder 2 in drive data set 2 should be assigned to encoder data set 1.

--> p0188[2] = 1

Note: A value of 99 means that no encoder has been assigned to this drive data set (not configured).

p0189[0...n] Encoder 3 encoder data set number / Enc 3 EDS number

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C1(4), C2(15)	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** DDS, p0180	**Func. diagram:** 4700, 8570
P-Group: Data sets	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	99	99

Description: Assign a drive data set (= index) the corresponding encoder data set (EDS) for encoder 3.

The value corresponds to the number of the assigned encoder data set.

Note: A value of 99 means that no encoder has been assigned to this drive data set (not configured).

r0192 Power unit firmware properties 1 / PU FW property 1

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the properties supported by the power unit firmware.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Edge modulation possible	Yes	No	-
01	Free telegram can be selected	Yes	No	-
02	Smart mode possible for Active Line Module	Yes	No	-
03	Safety Integrated possible for VECTOR	Yes	No	-
05	Thermal model expanded	Yes	No	-
06	Liquid cooling	Yes	No	-
07	SERVO pulse frequency changeover DDS-dependent	Yes	No	-
08	Simulation mode possible	Yes	No	-
09	Internal armature short-circuit possible	Yes	No	-
10	Autonomous internal armature short-circuit possible	Yes	No	-
11	Infeed temperature inputs X21.1/2	Yes	No	-
12	Integral scaled to half the gating unit clock cycle freq.	Yes	No	-
13	Filtering thermal power unit current limit possible	Yes	No	-
14	Reserved	Yes	No	-
15	PT100 temperature evaluation possible	Yes	No	-
16	Gating unit with pulse frequency wobbulation possible	Yes	No	-
17	Compound braking possible	Yes	No	-
18	Extended voltage range possible	Yes	No	-
19	Gating unit available with current limitation control	Yes	No	-
20	Component status possible	Yes	No	-
21	Temperature evaluation via Motor Module / CU terminals possible	Yes	No	-
22	Reduced device supply voltage possible	Yes	No	-
23	Current measurement oversampling available	Yes	No	-
24	Parking keeping the relevant data is available	Yes	No	-
25	Internal fan operating hours counter available	Yes	No	-
26	Software gating unit supported in the Control Unit	Yes	No	-
27	Current controller dynamics higher	Yes	No	-

28	DC link voltage compensation in the power unit.	Yes	No	-
29	Voltage measurement	Yes	No	-
30	Gating unit with all-phase current limiting	Yes	No	-

Dependency: Refer to: r0193

Notice: This information represents the characteristics/features of the power unit firmware. It does not provide information/data about the characteristics/features of the hardware (e.g. bit 06 = 1 means that although the firmware supports "liquid cooling", a power unit with liquid cooling does not have to be used).

Note: For bit 09:

The Motor Module supports the internal armature short-circuit. The function is internally required for voltage protection (p1231 = 3).

For bit 10:

The Motor Module supports the autonomous internal voltage protection.

If the "internal voltage protection" function is activated (p1231 = 3) the Motor Module decides autonomously - using the DC link voltage - as to whether the short-circuit is activated.

For bit 23:

The component supports the detection of current actual values (and the detection of valve close durations) with double clocking and phase shift.

r0192 Power unit firmware properties 1 / PU FW property 1

VECTOR, VECTOR_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the properties supported by the power unit firmware.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Edge modulation possible	Yes	No	-
01	Free telegram can be selected	Yes	No	-
02	Smart mode possible for Active Line Module	Yes	No	-
03	Safety Integrated possible for VECTOR	Yes	No	-
05	Thermal model expanded	Yes	No	-
06	Liquid cooling	Yes	No	-
07	SERVO pulse frequency changeover DDS-dependent	Yes	No	-
08	Simulation mode possible	Yes	No	-
09	Internal armature short-circuit possible	Yes	No	-
10	Autonomous internal armature short-circuit possible	Yes	No	-
11	Infeed temperature inputs X21.1/2	Yes	No	-
12	Integral scaled to half the gating unit clock cycle freq.	Yes	No	-
13	Filtering thermal power unit current limit possible	Yes	No	-
14	DC link compensation possible in power unit	Yes	No	-
15	PT100 temperature evaluation possible	Yes	No	-
16	Gating unit with pulse frequency wobbulation possible	Yes	No	-
17	Compound braking possible	Yes	No	-
18	Extended voltage range possible	Yes	No	-
19	Gating unit available with current limitation control	Yes	No	-
20	Component status possible	Yes	No	-
21	Temperature evaluation via Motor Module / CU terminals possible	Yes	No	-
22	Reduced device supply voltage possible	Yes	No	-
23	Current measurement oversampling available	Yes	No	-
24	Parking keeping the relevant data is available	Yes	No	-

25	Internal fan operating hours counter available	Yes	No	-
26	Software gating unit supported in the Control Unit	Yes	No	-
27	Current controller dynamics higher	Yes	No	-
28	Reserved			-
29	Voltage measurement	Yes	No	-
30	Gating unit with all-phase current limiting	Yes	No	-

Dependency: Refer to: r0193

Notice: This information represents the characteristics/features of the power unit firmware. It does not provide information/data about the characteristics/features of the hardware (e.g. bit 06 = 1 means that although the firmware supports "liquid cooling", a power unit with liquid cooling does not have to be used).

Note: For bit 09:

The Motor Module supports the internal armature short-circuit. The function is internally required for voltage protection (p1231 = 3).

For bit 10:

The Motor Module supports the autonomous internal voltage protection.

If the "internal voltage protection" function is activated (p1231 = 3) the Motor Module decides autonomously - using the DC link voltage - as to whether the short-circuit is activated.

For bit 23:

The component supports the detection of current actual values (and the detection of valve close durations) with double clocking and phase shift.

r0193 Power unit firmware properties 2 / PU FW property 2

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the properties supported by the power unit firmware.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
01	Component trace	Yes	No	-
06	PT1000 temperature sensor evaluation	Yes	No	-
08	Reduced undervoltage threshold during precharging	Yes	No	-
09	Switchover to 1-phase line voltage	Yes	No	-
10	Wobbulation with extended pulse frequency	Yes	No	-
12	DC link forming	Yes	No	-
13	Capacitor air discharge temperature monitoring available	Yes	No	-
14	Red. switching frequency at rated frequency L/dvdt filter use	Yes	No	-

Dependency: Refer to: r0192

Note: For bit 13:

The set bit also indicates that the wear counter of the heat sink fan (r0277) is based on a model for the service life.

r0194[0...n] VSM properties / VSM properties

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** p0150	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the properties supported by the Voltage Sensing Module (VSM).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Reserved	Yes	No	-

r0194[0...n] VSM properties / VSM properties

A_INF, S_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the properties supported by the Voltage Sensing Module (VSM).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Reserved	Yes	No	-

r0196[0...255] Topology component status / Top comp stat

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status of the components.

r0196[0]: group status of all components

r0196[1]: Status of component with component number 1

...

r0196[255]: Status of component with component number 255

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Component status bit 0	High	Low	-
01	Component status bit 1	High	Low	-
02	Component status bit 2	High	Low	-
03	Component status bit 3	High	Low	-
04	Component state	Active	Inactive/parking	-
06	Topology problem active	Yes	No	-
07	Part of the target topology	Yes	No only act topo	-
08	Alarm present	Yes	No	-
09	Safety message present	Yes	No	-
10	Fault present	Yes	No	-
11	Alarm class bit 0	High	Low	-
12	Alarm class bit 1	High	Low	-
13	Maintenance required	Yes	No	-
14	Maintenance urgently required	Yes	No	-
15	Fault gone/can be acknowledged	Yes	No	-

Note: For bit 03 ... 00:

Bit 3, 2, 1, 0 = 0, 0, 0, 0 --> component not available.

Bit 3, 2, 1, 0 = 0, 0, 0, 1 --> power up, non-cyclic DRIVE-CLiQ communication (LED = orange).

Bit 3, 2, 1, 0 = 0, 0, 1, 0 --> operating mode, cyclic DRIVE-CLiQ communication (LED = green).

Bit 3, 2, 1, 0 = 0, 0, 1, 1 --> alarm (LED = green).

Bit 3, 2, 1, 0 = 0, 1, 0, 0 --> fault (LED = red).

Bit 3, 2, 1, 0 = 0, 1, 0, 1 --> detection via LED and operating mode (LED = green/orange).

Bit 3, 2, 1, 0 = 0, 1, 1, 0 --> detection via LED and alarm (LED = green/orange).

Bit 3, 2, 1, 0 = 0, 1, 1, 1 --> detection via LED and fault (LED = red/orange).

Bit 3, 2, 1, 0 = 1, 0, 0, 0 --> firmware being downloaded (LED = green/red with 0.5 Hz).

Bit 3, 2, 1, 0 = 1, 0, 0, 1 --> firmware download completed, wait for POWER ON (LED = green/red with 2.0 Hz).

For bits 12 ... 11:

These status bits are used for the classification of internal alarm classes and are intended for diagnostic purposes only on certain automation systems with integrated SINAMICS functionality.

r0197[0...1] Bootloader version / Bootloader vers

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the bootloader version.
Index 0:
Displays the bootloader version.
Index 1:
Displays the bootloader version 3 (for CU320-2 and CU310-2)
A value of 0 indicates that bootloader 3 is not available.

Dependency: Refer to: r0018, r0128, r0148, r0158, r0198

Note: Example:
The value 1010100 should be interpreted as V01.01.01.00.

r0198[0...2] BIOS/EEPROM data version / BIOS/EEPROM vers

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the BIOS and EEPROM data version.
r0198[0]: BIOS version
r0198[1]: EEPROM data version EEPROM 0
r0198[2]: EEPROM data version EEPROM 1

Dependency: Refer to: r0018, r0128, r0148, r0158, r0197

Note: Example:
The value 1010100 should be interpreted as V01.01.01.00.

p0199[0...24] Drive object name / DO name

All objects

Can be changed: C1	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	65535	0

Description: Freely assignable name for a drive object.
For the commissioning tool, this name cannot be entered using the expert list, but is specified in the configuration wizards. The object name can be subsequently modified in the Project Navigator using standard Windows resources.

Note: The parameter is not influenced by setting the factory setting.

r0200[0...n] Power unit code number actual / PU code no. act

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the unique code number of the power unit.

Note: r0200 = p0201: No power unit found

For parallel circuit configurations, the parameter index is assigned to a power unit.

p0201[0...n] Power unit code number / PU code no

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(2)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	65535	0

Description: Sets the actual code number from r0200 to acknowledge the power unit being used.

When commissioned for the first time, the code number is automatically transferred from r0200 into p0201.

Dependency: Refer to: F07815

Notice: When p0201 = 10000, the rated power unit data is reloaded and dependent parameters are set (e.g. p0205, p0210, p0230, p0857, p1800). p0201 is then automatically assigned the value of r0200 if the code number of the power unit could be read. A warm start must be performed after this procedure (automatically if necessary).

Note: The parameter is used to identify when the drive is being commissioned for the first time.

The power unit commissioning can only be exited (p0201 = r0200), if the actual and acknowledged code numbers are identical (p0010 = 2). However, if the comparator in p9906 or p9908 is at 2 (low) or 3 (minimum), the power unit commissioning is automatically set to p0201 = r0200 upon exiting.

When the code number is changed, the connection voltage (p0210) is checked and, if necessary, adjusted.

For parallel circuit configurations, the parameter index is assigned to a power unit.

p0201[0...n] Power unit code number / PU code no

A_INF, S_INF, R_INF, B_INF

Can be changed: C2(2)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	65535	0

Description: Sets the actual code number from r0200 to acknowledge the power unit being used.

When commissioned for the first time, the code number is automatically transferred from r0200 into p0201.

Dependency: Refer to: F07815

Note: The parameter is used to identify when the drive is being commissioned for the first time.

The power unit commissioning can only be exited (p0201 = r0200), if the actual and acknowledged code numbers are identical (p0010 = 2).

For parallel circuit configurations, the parameter index is assigned to a power unit.

r0203[0...15] Firmware package name / FW pkg name

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the name of the firmware package on the memory card/device memory.

r0203[0]: Name character 1

...

r0203[15]: Name character 16

For the commissioning tool, the ASCII characters are displayed uncoded.

Notice: An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.

r0203[0...n] Actual power unit type / PU actual type

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
2	400	-

Description: Displays the type of power unit found.

Value:

2: MICROMASTER 440
3: MICROMASTER 411
4: MICROMASTER 410
5: MICROMASTER 436
6: MICROMASTER 440 PX
7: MICROMASTER 430
100: SINAMICS S
101: SINAMICS S (value)
102: SINAMICS S (combi)
103: SINAMICS S120M (distributed)
112: PM220 (SINAMICS G120)
113: PM230 (SINAMICS G120)
114: PM240 (SINAMICS G120/S120)
115: PM250 (SINAMICS G120/S120)
116: PM260 (SINAMICS G120)
118: SINAMICS G120 Px
120: PM340 (SINAMICS S120/G120)
126: SINAMICS ET200PRO
130: PM250D (SINAMICS G120D)
133: SINAMICS G120C
135: SINAMICS PMV40
136: SINAMICS PMV60
137: SINAMICS PMV80
138: SINAMICS G110M
140: Reserved
141: SINAMICS S210
150: SINAMICS G
151: PM330 (SINAMICS G120)
200: SINAMICS GM
250: SINAMICS SM
260: SINAMICS MC
270: SINAMICS W180
300: SINAMICS GL
350: SINAMICS SL
400: SINAMICS DCM

Note: For parallel circuit configurations, the parameter index is assigned to a power unit.

r0204[0...n] Power unit hardware properties / PU HW property

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the properties supported by the power unit hardware.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Device type	DC/AC device	AC/AC device	-
01	RFI filter available	Yes	No	-
02	Active Line Module available	Yes	No	-
03	Smart Line Module available	Yes	No	-
04	Basic Line Module available with thyristor bridge	Yes	No	-
05	Basic Line Module available with diode bridge	Yes	No	-
06	Liquid cooling with cooling unit (chassis PU)	Yes	No	-
07	F3E regenerative feedback into the line supply	Yes	No	-
08	Internal Braking Module	Yes	No	-
09	Different cooling type supported	Yes	No	-
12	Safe Brake Control (SBC) supported	No	Yes	-
13	Safety Integrated supported	Yes	No	-
14	Internal LC output filter	Yes	No	-
15	Line voltage	1-phase	3-phase	-

Note: For parallel circuit configurations, the parameter index is assigned to a power unit.

r0204[0...n] Power unit hardware properties / PU HW property

A_INF, S_INF, R_INF, B_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the properties supported by the power unit hardware.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Device type	DC/AC device	AC/DC device	-
01	RFI filter available	Yes	No	-
02	Active Line Module available	Yes	No	-
03	Smart Line Module available	Yes	No	-
04	Basic Line Module available with thyristor bridge	Yes	No	-
05	Basic Line Module available with diode bridge	Yes	No	-
06	Liquid cooling with cooling unit (chassis PU)	Yes	No	-
07	F3E regenerative feedback into the line supply	Yes	No	-
08	Internal Braking Module	Yes	No	-
09	Different cooling type supported	Yes	No	-
12	Safe Brake Control (SBC) supported	No	Yes	-
13	Safety Integrated supported	Yes	No	-
14	Internal LC output filter	Yes	No	-
15	Line voltage	1-phase	3-phase	-

Note: For parallel circuit configurations, the parameter index is assigned to a power unit.

p0205[0...n] Valve rated voltage / Valve Un

HLA

Can be changed: C2(1, 2)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.500 [V]	15.000 [V]	10.000 [V]

Description: Sets the rated voltage for the valve.

Dependency: Refer to: p1832, p1850, p1851

Note: The output valve voltage is between -p0205 + offset (p1832) and p0205 + offset (p1832).

Additional voltage limiting is possible via p1850 and p1851.

p0205 Power unit application / PU application

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(1, 2)	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	7	6

Description: Overloading the load duty cycles applies under the prerequisite that before and after the overload, the drive converter is operated with its base load current - in this case, a load duty cycle of 300 s is used as basis.

For booksize drive units, the following applies:

Only the setting p0205 = 0 can be selected. In this particular case, the base load current has a load duty cycle of 150 % for 60 s and 176 % for 30 s.

For chassis units, the following applies:

The base load current for a low overload condition is based on a load duty cycle 110 % for 60 s and 150 % for 10 s.

The base load current for a high overload condition is based on a load duty cycle 150 % for 60 s and 160 % for 10 s.

Value:
0: Load duty cycle with high overload
1: Load duty cycle with low overload
6: S1 continuous duty (for servo drives)
7: S6 load duty cycle (for servo drives)

Note: When the parameter is changed, all of the motor parameters and the control mode are pre-assigned according to the selected application.

The parameter has no influence when calculating the thermal overload.

p0205 can only be changed to the settings that are saved in the power unit EEPROM.

The parameter value is not reset when the factory setting is restored (see p0010 = 30, p0970).

p0206[0...n] Valve transition point flow rate / Valve trans flow

HLA

Can be changed: C2(1, 2)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.2 [%]	95.0 [%]	10.0 [%]

Description: Sets the flow rate at the transition point of the valve.

Dependency: Pre-assignment of p1839 and p1842.

r0206[0...4] Rated power unit power / PU P_rated

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, B_INF

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** 14_6	**Unit selection:** p0100
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [kW]	- [kW]	- [kW]

Description: Displays the rated power unit power for various load duty cycles.

Index:
[0] = Rated value
[1] = Load duty cycle with low overload
[2] = Load duty cycle with high overload
[3] = S1 cont duty cyc
[4] = S6 load duty cycle

Dependency: IECdrives (p0100 = 0): Units kW

NEMA drives (p0100 = 1): Units hp

Refer to: p0100, p0205

r0206[0...4] Rated power unit power / PU P_rated

R_INF

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** 14_6	**Unit selection:** p0100
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [kW]	- [kW]	- [kW]

Description: Displays the rated power unit power for various load duty cycles.

Index:
[0] = Rated value
[1] = Load duty cycle with low overload
[2] = Load duty cycle with high overload
[3] = S1 cont duty cyc
[4] = S6 load duty cycle

Dependency: IECdrives (p0100 = 0): Units kW

NEMA drives (p0100 = 1): Units hp

Refer to: p0100, p0205

Note: The active power is valid for cos phi = 1 for the line voltage specified on the type plate.

p0207[0...n] Valve transition point voltage / Valve trans U

HLA

Can be changed: C2(1, 2)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.2 [%]	95.0 [%]	10.0 [%]

Description: Sets the voltage at the transition point of the valve.

r0207[0...4] Rated power unit current / PU PI_rated

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8021
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the rated power unit power for various load duty cycles.

Index: [0] = Rated value
[1] = Load duty cycle with low overload
[2] = Load duty cycle with high overload
[3] = S1 cont duty cyc
[4] = S6 load duty cycle

Dependency: Refer to: p0205

r0207[0...4] Rated power unit current / PU PI_rated

A_INF, S_INF, R_INF, B_INF

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8021
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the rated power unit power for various load duty cycles.

Index: [0] = Rated value
[1] = Load duty cycle with low overload
[2] = Load duty cycle with high overload
[3] = S1 cont duty cyc
[4] = S6 load duty cycle

Dependency: Refer to: p0205

Note: The following applies for booksize power units:

The display value corresponds to the rated DC link current at 600 V (according to the SINAMICS S120 Manual).

For chassis power units, the following applies:

The display value corresponds to the rated input current at the rated line voltage (according to the SINAMICS S120 Manual).

p0208[0...n] Valve rated flow rate / Valve Vn

HLA

Can be changed: C2(1, 2)	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [ltr/min]	1000.000 [ltr/min]	0.000 [ltr/min]

Description: Sets the nominal flow rate for the valve.

r0208 Rated power unit line supply voltage / PU U_rated

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Displays the rated line supply voltage of the power unit.

r0208 = 400: 380 - 480 V +/-10 %

r0208 = 500: 500 - 600 V +/-10 %

r0208 = 690: 660 - 690 V +/-10 %

For the Basic Line Module (BLM) the following applies:

r0208 = 690: 500 - 690 V +/-10 %

p0209[0...n] Valve rated pressure drop / Valve Pn

HLA

Can be changed: C2(1, 2)	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1.0 [bar]	300.0 [bar]	35.0 [bar]

Description: Sets the nominal pressure drop per control edge for the valve.

r0209[0...4] Power unit maximum current / PU I_max

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8750, 8850, 8950
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the maximum output current of the power unit.

Index:
[0] = Catalog
[1] = Load duty cycle with low overload
[2] = Load duty cycle with high overload
[3] = S1 load duty cycle
[4] = S6 load duty cycle

Dependency: Refer to: p0205

p0210 Drive unit line supply voltage / U_connect

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(2), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1 [V]	63000 [V]	600 [V]

Description: Sets the drive unit supply voltage.

AC/AC unit: The rms value of the phase-to-phase line supply voltage should be entered.

DC/AC unit: The rated DC voltage of the connection busbar should be entered.

Dependency: Set p1254, p1294 (automatic detection of the Vdc switch-on levels) = 0.

The switch-in thresholds of the Vdc_max controller (r1242, r1282) are then directly determined using p0210.

Notice: If, in the switched-off state (pulse inhibit), the supply voltage is higher than the entered value, the Vdc controller may be automatically deactivated in some cases to prevent the motor from accelerating the next time the system is switched on. In this case, an appropriate alarm A07401 is output.

Note: Setting ranges for p0210 as a function of the rated power unit voltage:

U_rated = 400 V:

- p0210 = 380 ... 480 V (AC/AC), 510 ... 720 V (DC/AC)

U_rated = 500 V:

- p0210 = 500 ... 600 V (AC/AC), 675 ... 900 V (DC/AC)

U_rated = 660 ... 690 V:

- p0210 = 660 ... 690 V (AC/AC), 890 ... 1035 V (DC/AC)

U_rated = 500 ... 690 V:

- p0210 = 500 ... 690 V (AC/AC), 675 ... 1035 V (DC/AC)

The precharging switch-in threshold for the DC link voltage (Vdc) is calculated from p0210:

Vdc_pre = p0210 * 0.82 * 1.35 (AC/AC)

Vdc_pre = p0210 * 0.82 (DC/AC)

The undervoltage thresholds for the DC link voltage (Vdc) are calculated from p0210 as a function of the rated power unit voltage:

U_rated = 400 V:

- U_min = p0210 * 0.78 (AC/AC) > 330 V, p0210 * 0.60 (DC/AC) > 380 V

U_rated = 500 V:

- U_min = p0210 * 0.76 (AC/AC) > 410 V

U_rated = 660 ... 690 V:

- U_min = p0210 * 0.82 (AC/AC) > 565 V, p0210 * 0.63 (DC/AC) > 650 V

U_rated = 500 ... 690 V:

- U_min = p0210 * 0.82 (AC/AC) > 420 V, p0210 * 0.63 (DC/AC) > 480 V

p0210 Drive unit line supply voltage / U_connect

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(2), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1 [V]	63000 [V]	600 [V]

Description: Sets the drive unit supply voltage.

AC/AC unit: The rms value of the phase-to-phase line supply voltage should be entered.

DC/AC unit: The rated DC voltage of the connection busbar should be entered.

Dependency: Set p1254, p1294 (automatic detection of the Vdc switch-on levels) = 0.

The switch-in thresholds of the Vdc_max controller (r1242, r1282) are then directly determined using p0210.

The parameter can be reduced to p0210 = 100 V if p0212.0 = 1 has been set.

Refer to: p0212

Notice: If, in the switched-off state (pulse inhibit), the supply voltage is higher than the entered value, the Vdc controller may be automatically deactivated in some cases to prevent the motor from accelerating the next time the system is switched on. In this case, an appropriate alarm is output (A07401).

For SINAMICS S150 devices, the supply voltage is calculated from the line supply voltage (p0210 of the infeed), and is overwritten each time that the line supply voltage changes.

Note: Setting ranges for p0210 as a function of the rated power unit voltage:

U_rated = 400 V:

- p0210 = 380 ... 480 V (AC/AC), 510 ... 720 V (DC/AC)

U_rated = 500 V:

- p0210 = 500 ... 600 V (AC/AC), 675 ... 900 V (DC/AC)

U_rated = 660 ... 690 V:

- p0210 = 660 ... 690 V (AC/AC), 890 ... 1035 V (DC/AC)

U_rated = 500 ... 690 V:

- p0210 = 500 ... 690 V (AC/AC), 675 ... 1035 V (DC/AC)

The precharging switch-in threshold for the DC link voltage (Vdc) is calculated from p0210:

Vdc_pre = p0210 * 0.82 * 1.35 (AC/AC)

Vdc_pre = p0210 * 0.82 (DC/AC)

The undervoltage thresholds for the DC link voltage (Vdc) are calculated from p0210 as a function of the rated power unit voltage:

U_rated = 400 V:

- U_min = p0210 * 0.78 (AC/AC) > 330 V, p0210 * 0.60 (DC/AC) > 380 V

U_rated = 500 V:

- U_min = p0210 * 0.76 (AC/AC) > 410 V

U_rated = 660 ... 690 V:

- U_min = p0210 * 0.82 (AC/AC) > 565 V, p0210 * 0.63 (DC/AC) > 650 V

U_rated = 500 ... 690 V:

- U_min = p0210 * 0.82 (AC/AC) > 420 V, p0210 * 0.63 (DC/AC) > 480 V

p0210 Drive unit line supply voltage / U_connect

A_INF, S_INF, R_INF	**Can be changed:** C2(1, 2)	**Calculated:** -	**Access level:** 1
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8860, 8960
	P-Group: Converter	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	70 [Vrms]	1000 [Vrms]	400 [Vrms]

Description: Sets the drive unit supply voltage (3-ph. AC).

The value corresponds to the rms value of the phase-to-phase rated line supply voltage.

Dependency: Refer to: p3400

Warning:

If the infeed is continually in the controlled mode with high DC link voltages (p3510 > 660 V), depending on the particular application, this can damage the connected motors that have not been specified for these high voltages.

Before an active infeed with a line supply voltage p0210 > 415 V goes into pulsed operation it must be ensured that all of the components connected to the DC link can be permanently operated with DC link voltages exceeding 660 V.

Controlled operation of booksize power units for p0210 > 415 V is possible if the maximum steady-state DC link voltage (p0280) is increased as follows:

p0280 >= 1.5 x p0210 and p0280 > 660 V

In this case, the setpoint of the DC link voltage p3510 is not automatically adapted. We recommend p3510 = 1.5 x p0210.

Closed-loop voltage controlled operation is active with p3400.0 = 0 and p3400.3 = 1.

Notice: For p0210 > 415 V for booksize power units with a supply voltage of 3-ph. 380 ... 480 V, the Smart Mode is automatically activated (p3400.0 = 1); this is because in the voltage-controlled mode, the maximum permissible steady-state DC link voltage (p0280) would otherwise be exceeded.

For booksize power units with supply voltage of 3-ph. 380 ... 480 V AC, the following applies:

380 V <= p0210 <= 400 V --> Pre-assignment, setpoint for the DC link voltage: p3510 = 600 V

401 V <= p0210 <= 415 V --> Pre-assignment, setpoint for the DC link voltage: p3510 = 625 V

416 V <= p0210 <= 480 V --> Smart Mode with non-regulated DC link voltage: p3510 = 1.35 x p0210

Note: When pre-assigning the setpoint for the DC link voltage (p3510), the following is generally valid:

p3510 = 1.5 x p0210

The voltage range for the supply voltage depends on the type and the voltage class of the power unit.

The following applies for the normal range of the supply voltage:

400 V devices: 380 V <= p0210 <= 480 V

690 V devices: 660 V <= p0210 <= 690 V

500/690 V devices: 500 V <= p0210 <= 690 V

Further, for the following devices an extended voltage range downwards can be set:

Booksize devices:

ALM, 400 V device: 180 V <= p0210

SLM, 400 V device: 180 V <= p0210

80 kW / 120 kW ALM with internal and external cooling are excluded.

For ALM with 6SL3130-7TE28-0Axx, 6SL3130-7TE31-2Axx, 6SL3131-7TE28-0Axx, 6SL3131-7TE31-2Axx, the following applies:

380 V <= p0210

Chassis devices:

ALM, 400 V device: 180 V <= p0210 <= 480 V

ALM, 500/690 V device: 380 V <= p0210 <= 690 V

p0210 Drive unit line supply voltage / U_connect

B_INF	**Can be changed:** C2(1, 2)	**Calculated:** -	**Access level:** 1
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8760
	P-Group: Converter	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	70 [Vrms]	1000 [Vrms]	400 [Vrms]

Description: Sets the drive unit supply voltage (3-ph. AC).

The value corresponds to the rms value of the phase-to-phase rated line supply voltage.

Dependency: The parameter can be reduced to p0210 = 70 V if p0212.0 is set.

Notice: When connected to 3-ph. 230 V AC (only booksize units) the following must be observed:

- the undervoltage and overvoltage limits change (r0296, r0297).
- when using the internal braking chopper of Basic Line Modules (20 or 40 kW) the threshold when the braking chopper becomes active is reduced to 385 V. When using an external braking chopper, it must be ensured that a suitable activation threshold is used.
- all of the components connected to this DC link must also be adapted to the low line supply voltage. It is especially important that the rated DC voltage of all of the drives connected to this DC link is set with p0210 (e.g. p0210(SERVO) = 1.35 x p0210(B_INF) = 310 V).
- it is not possible to use a Control Supply Module (CSM) to generate a 24 V supply from the DC link, as the minimum continuous DC link voltage should not be below 430 V.

Note: The supply voltage range depends on the voltage class of the power unit.

400 V chassis units: 380 V <= p0210 <= 480 V

690 V chassis units: 500 V <= p0210 <= 690 V

400 V booksize units can also be connected to 3-ph. 230 V AC:

400 V booksize units: 180 V <= p0210 <= 480 V

A reduced supply voltage up to 70 V is possible if p0212.0 = 1 has been set.

p0211[0...n] Valve, flow rate ratio A to B side / Flowrate_ratio A/B

HLA	**Can be changed:** C2(1, 2)	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
	P-Group: Converter	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.500	2.000	1.000

Description: Sets the flow rate ratio from the A side to the B side.

p0211 Rated line frequency / Rated line freq

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)	**Can be changed:** C2(3), T	**Calculated:** -	**Access level:** 4
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Motor	**Unit group:** -	**Unit selection:** -
	Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	10 [Hz]	100 [Hz]	60 [Hz]

Description: Sets the rated line frequency.

Note: The frequency corresponds to the stator frequency of the exciter when supplied from a three-phase AC power controller for a separately excited synchronous machine with reverse field excitation.

p0211 Rated line frequency / Rated line freq

A_INF, S_INF, R_INF

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8864, 8964
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
10 [Hz]	100 [Hz]	50 [Hz]

Description: Sets the rated line frequency for the infeed.

Dependency: Refer to: p3409

Notice: For p3409 = 1, the following applies:

After operation has been enabled, the rated line supply frequency (p0211) is automatically set to a value of 50 Hz or 60 Hz corresponding to the currently measured frequency. This means that the parameter value of p0211 is, under certain circumstances, changed.

For p3409 = 0, the following applies:

The system does not change parameter p0211.

p0212 Power unit configuration / PU config

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(2)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Sets the power unit configuration.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Drive unit line supply voltage reduced	Yes	No	-
01	External precharging present	Yes	No	-

Dependency: For bit 00:

Reduced supply voltages are only possible for booksize and chassis power units (DC/AC).

Bit 0 = 1 can only be set if r0192.22 = 1.

For bit 01 = 1:

The external precharging setting only affects the DC/AC power units.

Caution: For bit 00:

Working with reduced input voltages deactivates undervoltage detection.

Note: For bit 00 = 0:

It is not possible to reduce the supply voltage in p0210.

For bit 00 = 1:

With this setting the supply voltage in p0210 can be reduced to 100 V.

For bit 01 = 0:

There is no external precharging of the DC/AC Motor Modules. The precharging monitoring is bypassed.

For bit 01 = 1:

There is external precharging of the DC/AC Motor Modules. The precharging monitoring is calculated.

p0212 Power unit configuration / PU config

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(2)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 bin

Description: Sets the power unit configuration.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Drive unit line supply voltage reduced	Yes	No	-
01	External precharging present	Yes	No	-
03	Automatically adapt Vdc_max limit	No	Yes	-
05	Contactor display inputs/outputs status	Yes	No	9814

Dependency: For bit 00:

Reduced supply voltages are only possible for booksize and chassis power units (DC/AC).

Bit 0 = 1 can only be set if r0192.22 = 1.

For bit 01 = 1:

The external precharging setting only affects the DC/AC power units.

For bit 03 = 1:

The automatic adaptation (reduction) of the Vdc max limit is deactivated (only for chassis power units). Bit 3 only has an effect, if bit 0 is simultaneously set.

Refer to: r0192, p0210

Caution: For bit 00:

Working with reduced input voltages deactivates undervoltage detection.

For bit 03:

If the automatic setting of the Vdc max limit is deactivated, then all of the components connected to the DC link must be suitable for the maximum DC link voltage of the power unit (e.g. 820 V for 400 V units).

Note: For bit 00 = 0:

It is not possible to reduce the supply voltage in p0210.

For bit 00 = 1:

With this setting the supply voltage in p0210 can be reduced to 100 V.

Booksize PU: only for operating mode p1300 = 19

Chassis PU: only for operating mode p1300 > 19 and closed-loop DC voltage control

For bit 01 = 0:

There is no external precharging of the DC/AC Motor Modules. The precharging monitoring is bypassed.

For bit 01 = 1:

There is external precharging of the DC/AC Motor Modules. The precharging monitoring is calculated.

For bit 03 = 0:

The DC link voltage limit is calculated from p0210.

For bit 03 = 1:

The DC link voltage limit is set to the maximum value of the power unit.

For bit 05 = 1:

The status of the inputs/outputs for the power unit contactors is displayed in r0256.

This only applies to chassis power units with 3 AC line connection and line contactors.

The status display is only effective after parameter save and POWER ON.

p0212 Power unit configuration / PU config

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: C2(2)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 bin

Description: Sets the power unit configuration.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Drive unit line supply voltage reduced	Yes	No	-
01	External precharging present	Yes	No	-
03	Automatically adapt Vdc_max limit	No	Yes	-
05	Contactor display inputs/outputs status	Yes	No	9814
06	Reduction of the permissible minimum voltage during precharging	Yes	No	-

Dependency: For bit 00:

Reduced supply voltages are only possible for booksize and chassis power units (DC/AC).

Bit 0 = 1 can only be set if r0192.22 = 1.

For bit 01 = 1:

The external precharging setting only affects the DC/AC power units.

For bit 03 = 1:

The automatic adaptation (reduction) of the Vdc max limit is deactivated (only for chassis power units). Bit 3 only has an effect, if bit 0 is simultaneously set.

Refer to: r0192, p0210

Caution: For bit 00:

Working with reduced input voltages deactivates undervoltage detection.

For bit 03:

If the automatic setting of the Vdc max limit is deactivated, then all of the components connected to the DC link must be suitable for the maximum DC link voltage of the power unit (e.g. 820 V for 400 V units).

Note: For bit 00 = 0:

It is not possible to reduce the supply voltage in p0210.

For bit 00 = 1:

With this setting the supply voltage in p0210 can be reduced to 100 V.

Booksize PU: only for operating mode p1300 = 19

Chassis PU: only for operating mode p1300 > 19 and closed-loop DC voltage control

For bit 01 = 0:

There is no external precharging of the DC/AC Motor Modules. The precharging monitoring is bypassed.

For bit 01 = 1:

There is external precharging of the DC/AC Motor Modules. The precharging monitoring is calculated.

For bit 03 = 0:

The DC link voltage limit is calculated from p0210.

For bit 03 = 1:

The DC link voltage limit is set to the maximum value of the power unit.

For bit 05 = 1:

The status of the inputs/outputs for the power unit contactors is displayed in r0256.

This only applies to chassis power units with 3 AC line connection and line contactors.

The status display is only effective after parameter save and POWER ON.

For bit 06:

Precharging via the Motor Module is activated using this bit. To do this, while precharging, the undervoltage threshold for the pulse enable is reduced.

Precharging via the Motor Module can only be activated for S120 devices for separately excited synchronous generators where the DC link voltage control has been preselected (technology controller function module).

p0212 Power unit configuration / PU config

A_INF, S_INF, R_INF

Can be changed: C2(2)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 bin

Description: Sets the power unit configuration.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Drive unit line supply voltage reduced	Yes	No	-
05	Contactor display inputs/outputs status	Yes	No	9814

Dependency: For bit 00:

Reduced supply voltages to 100 V are only possible for booksize power units.

Supply voltages reduced down to 180 V are only possible for A_infeed power units (500 V - 690 V).

Bit 0 = 1 can only be set if r0192.22 = 1.

Caution: For bit 00:

Working with reduced input voltages correspondingly reduces undervoltage detection.

This function may only be used by personnel with expert knowledge!

Note: For bit 00 = 0:

400 V units: It is not possible to reduce the supply voltage in p0210 to below 180 V.

690 V units: It is not possible to reduce the supply voltage in p0210 to below 380 V.

For bit 00 = 1:

400 V units (Booksize): With this setting, the supply voltage in p0210 can be reduced down to 70 V.

690 V units (Chassis): With this setting, the supply voltage in p0210 can be reduced down to 180 V.

The activation of this function is retentively saved in the unit and for incorrect design of the application can result in loss of warranty!

For bit 05 = 1:

The status of the inputs/outputs for the power unit contactors is displayed in r0256.

This only applies to chassis power units with 3 AC line connection and line contactors.

The status display is only effective after parameter save and POWER ON.

p0212 Power unit configuration / PU config

B_INF

Can be changed: C2(2)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 bin

Description: Sets the power unit configuration.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Drive unit line supply voltage reduced	Yes	No	-
02	Reserved	Yes	No	-
05	Contactor display inputs/outputs status	Yes	No	9814

Dependency: For bit 00:

Reduced supply voltages are only possible on booksize power units.

Bit 0 = 1 can only be set if r0192.22 = 1.

Refer to: r0192, p0210

Caution: For bit 00:

Working with reduced input voltages correspondingly reduces undervoltage detection.

This function may only be used by personnel with expert knowledge!

Note: For bit 00 = 0:

It is not possible to reduce the supply voltage in p0210 to below 180 V.

For bit 00 = 1:

With this setting the supply voltage in p0210 can be reduced to 70 V.

Bit 0 = 1 can only be set for booksize power units with a rated power of up to 40 kW.

The activation of this function is retentively saved in the unit and for incorrect design of the application can result in loss of warranty!

For bit 02:

Reserved. It is not permissible to set to 1.

For bit 05 = 1:

The status of the inputs/outputs for the power unit contactors is displayed in r0256.

This only applies to chassis power units with 3 AC line connection and line contactors.

The status display is only effective after parameter save and POWER ON.

p0216[0...n] Valve natural frequency / Valve fn

HLA

Can be changed: C2(1, 2)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** 4966
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1.0 [Hz]	1000.0 [Hz]	150.0 [Hz]

Description: Sets the natural frequency for the valve.

p0217[0...n] Valve damping / Valve D

HLA

Can be changed: C2(1, 2)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.400	1.000	0.800

Description: Sets the damping for the valve.

p0218[0...n] Cylinder safety configuration / Cyl safety config

HLA

Can be changed: C2(1, 2)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0111 bin

Description: Sets the configuration for the cylinder safety circuit.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Close shutoff valve for power inhibit (PI)	Yes	No	-
01	Shutdown control valve supply for power inhibit (PI)	Yes	No	4990
02	Valve feedback signal available	Yes	No	-
03	Invert valve feedback signal	Yes	No	-

Note: PI: power inhibit

For bit 01 = 0 and power inhibit:

When the control valve is switched in, the valve setpoint is interlocked to 0. If bit 0 = 0 (shutoff valve for power inhibit does not close) the drive can drift.

p0220 Hydraulic oil modulus of elasticity / Hydr_oil e_module

HLA

Can be changed: C2(1, 2)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1000.0 [bar]	21000.0 [bar]	11000.0 [bar]

Description: Sets the value of the modulus of elasticity for the hydraulic oil being used.

Note: The value defines the compressibility of the hydraulic fluid.

p0220[0...1] Infeed line filter type / INF line filt type

A_INF, R_INF

Can be changed: C2(1, 2)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 8950
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	119	0

Description: Sets the line filter type for the Active Line Module (ALM).

For an Active Line Module (ALM), a line filter (Active Interface Module, AIM) with the appropriate rating is automatically selected and the line filter type (p0220) preset as follows:

- "booksize" format: p0220 = 41 ... 45
- "Chassis" format: p0220 = 10 ... 29 or 78 ... 105
- "Chassis-ULMA" format: p0220 = 110 ... 140

Based on the line filter type, filter capacitance (p0221), filter resistance (p0222), line-side filter reactor (p0228) as well as inductance (p0223) and the resistance (p0224) of the commutation reactor are preassigned. Further, the setting of the pulse frequency wobbulation is also preassigned (p1810.2, p1810.4, p1811) for which the AIM is dimensioned.

For the selected filter, controller settings (p3421, p3422, p3424) are newly preassigned suitable values. As a consequence, it is recommended that a line and DC link identification routing with automatic controller setting is carried out (p3410 >= 4).

Value:

0: No line filter
1: Wideband Line Filter booksize 400 V 16 kW (6SL3000-0BE21-6AA0)
2: Wideband Line Filter booksize 400 V 36 kW (6SL3000-0BE23-6AA0)
3: Wideband Line Filter booksize 400 V 55 kW (6SL3000-0BE25-5AA0)
4: Wideband Line Filter booksize 400 V 80 kW (6SL3000-0BE28-0AA0)
5: Wideband Line Filter booksize 400 V 120 kW (6SL3000-0BE31-2AA0)
10: AIM F 400 V 132 kW 160 kW (6SL3300-7TE32-6Ax0)
11: AIM G 400 V 235 kW (6SL3300-7TE33-8Ax0)
12: AIM G 400 V 300 kW (6SL3300-7TE35-0Ax0)
13: AIM H 400 V 380 kW 500 kW (6SL3300-7TE38-4Ax0)
14: AIM J 400 V 630 kW 900 kW (6SL3300-7TE41-4Ax0)
15: AIM F 690 V 150 kW (6SL3300-7Tx31-4Ax0)
16: AIM G 690 V 330 kW (6SL3300-7Tx33-1Ax0)
17: AIM H 690 V 630 kW (6SL3300-7Tx35-8Ax0)
18: AIM J 690 V 800 kW (6SL3300-7Tx37-4Ax0)
19: AIM J 690 V 1100 kW 1400 kW (6SL3300-7Tx41-3Ax0)
20: AIM F 400 V 132kW 160kW (6SL3300-7TE32-6Ax1)
21: AIM G 400 V 235 kW (6SL3300-7TE33-8Ax1)
22: AIM G 400 V 300 kW (6SL3300-7TE35-0Ax1)
23: AIM H 400 V 380 kW 500 kW (6SL3300-7TE38-4Ax1)
24: AIM J 400 V 630 kW 900 kW (6SL3300-7TE41-4Ax1)
25: AIM F 690 V 150 kW (6SL3300-7Tx31-4Ax1)
26: AIM G 690 V 330 kW (6SL3300-7Tx33-1Ax1)
27: AIM H 690 V 630 kW (6SL3300-7Tx35-8Ax1)
28: AIM J 690 V 800 kW (6SL3300-7Tx37-4Ax1)
29: AIM J 690 V 1100 kW 1400 kW (6SL3300-7Tx41-3Ax1)
31: Basic Line Filter booksize 400 V 16 kW (6SL3000-0BE21-6DA0)
32: Basic Line Filter booksize 400 V 36 kW (6SL3000-0BE23-6DA0)
33: Basic Line Filter booksize 400 V 55 kW (6SL3000-0BE25-5DA0)
34: Basic Line Filter booksize 400 V 80 kW (6SL3000-0BE28-0DAx)

35: Basic Line Filter booksize 400 V 120 kW (6SL3000-0BE31-2DAx)
41: AIM 400 V 16 kW (6SL3100-0BE21-6AB0)
42: AIM 400 V 36 kW (6SL3100-0BE23-6AB0)
43: AIM 400 V 55 kW (6SL3100-0BE25-5AB0)
44: AIM 400 V 80 kW (6SL3100-0BE28-0AB0)
45: AIM 400 V 120 kW (6SL3100-0BE31-2AB0)
78: AIM LC 400 V 630 kW 900 kW (6SL3305-7TE41-4AA3)
87: AIM LC 690 V 630 kW 800 kW (6SL3305-7TG37-4AA3)
88: AIM LC 690 V 900 kW 1100 kW (6SL3305-7TG41-0AA3)
89: AIM LC 690 V 1400 kW (6SL3305-7TG41-3AA3)
90: AIM LC 690 V 1700 kW (6SL3305-7TG41-6AA3)
100: AIM LC 400 V 380 kW 500 kW (6SL3305-7TE38-4AA5 / -xAA7)
101: AIM LC 400 V 630 kW 900 kW (6SL3305-7TE41-4AA5 / -xAA7)
102: AIM LC 690 V 630 kW 800 kW (6SL3305-7TG37-4AA5 / -xAA7)
103: AIM LC 690 V 900 kW 1100 kW (6SL3305-7TG41-0AA5 / -xAA7)
104: AIM LC 690 V 1400 kW (6SL3305-7TG41-3AA5 / -xAA7)
105: AIM LC 690 V 1700 kW (6SL3305-7TG41-6AA5 / -xAA7)
114: AIM FS2 400 V 400 kW (6SL3301-7TE36-4AA0)
117: AIM FS4 400 V 630 kW (6SL3301-7TE41-0AA0)
119: AIM FS4+ 400 V 900 kW (6SL3301-7TE41-4AA0)

Index: [0] = Line filter
[1] = Line filter optional

Dependency: Refer to: p3665

Caution: "Booksize" format:

When using an Active Interface Module (AIM), it is absolutely necessary that the terminals for the temperature switch between the Active Interface Module (X121.1/2) and the Active Line Module (X21.1/2) are connected.

"Chassis" format:

When connecting AIMs in parallel, if the last position of the Article number (MLFB) is different, then the temperature sensor type must be manually set (p3665).

Notice: After changing the filter selection, it may be necessary to again make special settings regarding the modulation type (p1810, p1811).

The following applies for p0220 = 110 ... 140: These line filter types have been designed for operation with pulse frequency wobbulation (p1810.2 = 1, p1810.4 = 0, p1811 = 10%), and they only satisfy operation in compliance with the standard under this precondition. Further, the pulse frequency (p1800) can be increased - depending on the power unit - to additionally reduce the line harmonics.

Note: The maximum filter current is indicated in r3534, and acts as apparent current limit for the closed-loop control.

For booksize units, when using an Active Interface Module in p0220[0] it is also possible to use a Basic Filter that is parameterized in p0220[1].

The setting of the filter capacitance (p0221) and filter resistance (p0222) - derived from p0220[0, 1] - are required in the closed-loop voltage controlled mode to automatically compensate the filter reactive current.

For two power ratings, the same line filter is used for both power ratings.

p0221 System pressure / p_system

HLA

Can be changed: C2(1, 2)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [bar]	10000.0 [bar]	0.0 [bar]

Description: Sets the system pressure that the drive unit supplies.

p0221[0...1] Infeed filter capacitance / INF C_filter

A_INF, R_INF

Can be changed: C2(1, 2)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8950
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [µF]	100000.00 [µF]	0.00 [µF]

Description: Sets the filter capacitance of the line filter (connected in a delta configuration).

Index:
[0] = Line filter
[1] = Line filter optional

Note: When a Siemens line filter is used (p0220) this parameter is automatically pre-set with the correct value.

For a parallel circuit, the value corresponds to the capacitance of a power unit.

Index 0 refers to the first line filter from p0220[0].

Index 1 refers to the optional second line filter from p0220[1].

p0222[0...n] Valve precontrol pressure / Valve p_prectrl

HLA

Can be changed: C2(1, 2)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [bar]	350.0 [bar]	0.0 [bar]

Description: Sets the precontrol pressure for precontrolled valve.

For a value = 0, the following applies:

Directly controlled (not precontroled) valve.

For values not equal to 0, the following applies:

Precontrol pressure for the precontrolled valve.

Note: The natural frequency of the precontrolled valve is obtained from the valve natural frequency multiplied by the square root of the precontrolled pressure divided by 100 bar.

p0222[0...1] Infeed filter resistance / INF R_filter

A_INF, R_INF

Can be changed: C2(1, 2)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00000 [ohm]	100.00000 [ohm]	0.00000 [ohm]

Description: Sets the filter resistance in series with the filter capacitance.

Index:
[0] = Line filter
[1] = Line filter optional

Note: When a Siemens line filter is used (p0220) this parameter is automatically pre-set with the correct value.

For a parallel circuit, the value corresponds to the resistance of a power unit.

Index 0 refers to the first line filter from p0220[0].

Index 1 refers to the optional second line filter from p0220[1].

p0223 Infeed inductance between filter and power unit / INF L filter/PU

A_INF, S_INF, R_INF

Can be changed: C2(1, 2)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8850, 8950
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.001 [mH]	1000.000 [mH]	2.100 [mH]

Description: Sets the inductance between the filter and power unit.

Note: The parameter is automatically pre-assigned depending on the power unit being used and matches the specified Siemens line reactors.

For a parallel circuit, the value corresponds to the inductance of a power unit.

The controller settings (p3421, p3424) are overwritten according to p0223. In the case that p0223 is subsequently changed, it is always recommended that a line and DC link identification routine with automatic controller setting is carried out (p3410 >= 4).

p0224 Infeed resistance between filter and power unit / INF R filter/PU

A_INF, S_INF, R_INF

Can be changed: C2(1, 2)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8850, 8950
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00000 [ohm]	100.00000 [ohm]	0.00100 [ohm]

Description: Sets the resistance between the filter and power unit

Note: The parameter is automatically pre-assigned depending on the power unit being used and matches the specified Siemens line reactors.

For a parallel circuit, the value corresponds to the resistance of a power unit.

p0225 Infeed inductance between line supply and filter / INF L line/filter

A_INF, S_INF, R_INF

Can be changed: C2(1, 2)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8850, 8950
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.001 [mH]	1000.000 [mH]	0.001 [mH]

Description: Sets the inductance between line supply and filter.

Note: The value must be, for example, appropriately increased if an additional inductance (reactor or transformer is installed in front of the filter).

The controller settings (p3421, p3424) are overwritten according to p0225. In the case that p0225 is subsequently changed, it is always recommended that a line and DC link identification routine with automatic controller setting is carried out (p3410 >= 4).

p0226 Infeed resistance between line supply and filter / INF R line/filter

A_INF, S_INF, R_INF

Can be changed: C2(1, 2)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8850, 8950
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ohm]	100.00 [ohm]	0.00 [ohm]

Description: Sets the resistance between the line supply and filter.

Note: The value must be, for example, appropriately increased if an additional resistor is installed in front of the filter.

p0227 Infeed DC link capacitance, power unit / INF C

A_INF, S_INF, R_INF

Can be changed: C2(1, 2)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8850, 8950
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.20 [mF]	1000.00 [mF]	1.00 [mF]

Description: Sets the total DC link capacitance.

Note: The total DC link capacitance of a DC link group comprises the sum of the sub-capacitances of all motor/infeed modules and the additional DC link capacitors.

The controller setting (p3422) is overwritten according to p0227. In the case that p0227 is subsequently changed, it is always recommended that a line and DC link identification routine with automatic controller setting is carried out (p3410 >= 4).

p0228 Infeed filter inductance line side / INF L_Filt L-side

A_INF, S_INF, R_INF

Can be changed: C2(1, 2)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8850, 8950
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [mH]	1000.000 [mH]	0.000 [mH]

Description: Sets the inductance of a line reactor in the filter.

Note: Contrary to p0225, this inductance is in the filter itself, and in the case that active infeed units are connected in parallel, this inductance becomes part of the parallel connection.

For a parallel connection, the following applies:

In the case of a single connection (r7000 = 1), the inductance value is entered in p0228.

The controller settings (p3421, p3424) are overwritten according to p0228. In the case that p0228 is subsequently changed, it is always recommended that a line and DC link identification routine with automatic controller setting is carried out (p3410 >= 4).

p0230[0...n] Manipulated variable inhibit time / Manip var t_inhib

HLA

Can be changed: C2(2), T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	1000 [ms]	300 [ms]

Description: Setting the manipulated variable inhibit time.

The manipulated variable inhibit time starts after controlling the shutoff valve (opening) or after switching-on the power supply voltage of the control valve and during this time keeps the velocity setpoint at zero.

Note: For p0218.1 = 1 (shutdown control valve supply for power inhibit), the following applies:

The system waits for the manipulated variable inhibit time to expire – also after the close command for the shutoff valve – and then the power supply voltage of the control valve is shut down.

For p0218.0 = 0 (do not close shutoff valve for power inhibit) and p0218.1 = 0 (do not switch off control valve supply for power inhibit), the following applies:

Parameter p0230 is not effective.

p0230	**Drive filter type motor side / Drv filt type mot**		
VECTOR, VECTOR_AC, VECTOR_I_AC	**Can be changed:** C2(1, 2)	**Calculated:** -	**Access level:** 1
	Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Converter	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	4	0

Description: Sets the type of the filter at the motor side.

Value:
0: No filter
1: Motor reactor
2: dv/dt filter
3: Sine-wave filter Siemens
4: Sine-wave filter third-party

Dependency: The following parameters are influenced using p0230:

p0230 = 1:

--> p0233 (power unit, motor reactor) = filter inductance

p0230 = 3:

--> p0233 (power unit, motor reactor) = filter inductance

--> p0234 (power unit sine-wave filter capacitance) = filter capacitance

--> p0290 (power unit overload response) = inhibit pulse frequency reduction

--> p1082 (maximum speed) = Fmax filter / pole pair number

--> p1800 (pulse frequency) >= nominal pulse frequency of the filter

--> p1802 (modulator modes) = space vector modulation without overcontrol

--> p1811 (modulator configuration) = wobbulation amplitude

--> p1909 (motor data identification, control word) = only Rs measurement

p0230 = 4:

--> p0290 (power unit overload response) = inhibit pulse frequency reduction

--> p1802 (modulator modes) = space vector modulation without overcontrol

--> p1811 (modulator configuration) = wobbulation amplitude

--> p1909 (motor data identification, control word) = only Rs measurement

The user must set the following parameters according to the data sheet of the sine-wave filter and also the user must check whether they are permitted.

--> p0233 (power unit, motor reactor) = filter inductance

--> p0234 (power unit sine-wave filter capacitance) = filter capacitance

--> p1082 (maximum speed) = Fmax filter / pole pair number

--> p1800 (pulse frequency) >= nominal pulse frequency of the filter

Refer to: p0233, p0234, p0290, p1082, r1082, p1800, p1802

Note: Only motor reactor filter type can be selected for a synchronous reluctance motor (RESM).

if a filter type cannot be selected, then this filter type is not permitted for the Motor Module.

p0230 = 1:

The output frequency of booksize power units with output reactors is restricted to 120 Hz, for blocksize and chassis power units, to 150 Hz. The maximum pulse frequency for booksize and blocksize power units is 4 kHz, for chassis power units, twice the rated pulse frequency (2.5 kHz or 4 kHz).

p0230 = 2:

Chassis power units with dv/dt filter, depending on the rated pulse frequency, may be operated with a maximum pulse frequency of p1800 = 2.5 kHz or 4 kHz. The output frequency is limited to 150 Hz.

p0230 = 3:

Sine-wave filters with a rated pulse frequency of 1.25 or 2.5 kHz should only be operated with a current controller sampling time p0115[0] = 400 µs, sine-wave filters with a rated pulse frequency of 2 or 4 kHz with p0115[0] = 250 µs.

The sine-wave filter cannot be selected if the current controller sampling time has not been appropriately set.

Chassis power units with sine-wave filter are limited to output frequencies of 115 Hz or 150 Hz.

p0231[0...n] Power enable inhibit time / Pow_enab t_inhib

HLA

Can be changed: C2(2), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	300 [ms]	100 [ms]

Description: Sets the inhibit time for the shutoff valve after the power enable.
If a shutoff valve is being used (p0218.0/.1 = 1), then the following applies:
Sets the time that the control valve requires to go to the center position from the failsafe position.
If a shutoff valve is not being used, the following applies:
Set the time to zero.

Dependency: Refer to: p0230

p0232[0...n] Valve monitoring time / Valve t_monit

HLA

Can be changed: C2(2), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1 [ms]	1000 [ms]	50 [ms]

Description: Sets the monitoring time for the valve.

p0233 Power unit motor reactor / PU mot reactor

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(2), U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [mH]	1000.000 [mH]	0.000 [mH]

Description: Enter the inductance of a filter connected at the power unit output.

Dependency: This parameter is automatically pre-set when you select a filter via p0230 if a SIEMENS filter is defined for the power unit.
Refer to: p0230

Note: The parameter cannot be changed if the power unit has an internal sine-wave filter.

p0233 Power unit motor reactor / PU mot reactor

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(2), U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [mH]	1000.000 [mH]	0.000 [mH]

Description: Enter the inductance of a filter connected at the power unit output.

Dependency: This parameter is automatically pre-set when you select a filter via p0230 if a SIEMENS filter is defined for the power unit.
Refer to: p0230

Note: When exiting the quick commissioning using p3900 = 1, the parameter value is set to the value of the defined SIEMENS filter or to zero. For this reason, the parameter value of a third-party filter only has to be entered outside the commissioning phase (p0010 = 0) and then the controller calculation (p0340 = 3) is carried out.

p0234 Power unit sine-wave filter capacitance / PU sine filter C

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(2), U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [µF]	1000.000 [µF]	0.000 [µF]

Description: Enters the capacitance of a sine-wave filter connected at the power unit output.

Dependency: This parameter is automatically pre-set when you select a filter via p0230 if a SIEMENS filter is defined for the power unit.

Refer to: p0230

Note: The parameter value includes the sum of all of the capacitances of a phase connected in series (phase - ground).

The parameter cannot be changed if the power unit has an internal sine-wave filter.

p0234 Power unit sine-wave filter capacitance / PU sine filter C

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(2), U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [µF]	1000.000 [µF]	0.000 [µF]

Description: Enters the capacitance of a sine-wave filter connected at the power unit output.

Dependency: This parameter is automatically pre-set when you select a filter via p0230 if a SIEMENS filter is defined for the power unit.

Refer to: p0230

Note: The parameter value includes the sum of all of the capacitances of a phase connected in series (phase - ground).

When exiting the quick commissioning using p3900 = 1, the parameter value is set to the value of the defined SIEMENS filter or to zero. For this reason, the parameter value of a third-party filter only has to be entered outside the commissioning phase (p0010 = 0).

p0235 Motor reactor in series number / L_mot in SeriesQty

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(1, 2)	**Calculated:** -	**Access level:** 1
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	3	1

Description: Sets the number of reactors connected in series at the power unit output.

Dependency: Refer to: p0230

Notice: The reactor inductances should be the same.

If the number of motor reactors connected in series does not correspond to this parameter value, then this can result in an unfavorable control behavior.

r0238 Internal power unit resistance / PU R internal

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [ohm]	- [ohm]	- [ohm]

Description: Displays the internal resistance of the power unit (IGBT and line resistance).

Note: For a parallel circuit, the value corresponds to the resistance of a power unit.

p0240[0...n] Pressure sensor A reference value at 10 V / Sensor A ref 10V

HLA	**Can be changed:** C2(3), U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
	P-Group: Motor	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	50.0 [bar]	1000.0 [bar]	200.0 [bar]

Description: Sets the reference value for pressure sensor A to 10 V.

p0241[0...n] Pressure sensor A offset correction / Sensor A offs

HLA	**Can be changed:** C2(3), U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
	P-Group: Motor	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-5000.000 [bar]	5000.000 [bar]	0.000 [bar]

Description: Sets the offset correction for pressure sensor A

Dependency: After changing the reference value (p0240) this value must be adapted.

Refer to: p0240

p0242[0...n] Pressure sensor B reference value at 10 V / Sensor B ref 10V

HLA	**Can be changed:** C2(3), U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
	P-Group: Motor	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	50.0 [bar]	1000.0 [bar]	200.0 [bar]

Description: Sets the reference value for pressure sensor B to 10 V.

p0243[0...n] Pressure sensor B offset correction / Sensor B offs

HLA	**Can be changed:** C2(3), U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
	P-Group: Motor	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-5000.000 [bar]	5000.000 [bar]	0.000 [bar]

Description: Sets the offset correction for pressure sensor B

Dependency: Refer to: p0242

Note: After changing the reference value (p0242) this value must be adapted.

p0244[0...n] Pressure sensor P reference value at 10 V / Sensor P ref 10V

HLA	**Can be changed:** C2(3), U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
	P-Group: Motor	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	50.0 [bar]	1000.0 [bar]	200.0 [bar]

Description: Sets the reference value for pressure sensor P (system pressure) to 10 V.

p0245[0...n] Pressure sensor P offset correction / Sensor P offs_corr

HLA			
	Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
	P-Group: Motor	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-5000.000 [bar]	5000.000 [bar]	0.000 [bar]

Description: Sets the offset correction for pressure sensor P (system pressure).

Dependency: Refer to: p0244

Note: After changing the reference value (p0244) this value must be adapted.

p0246 CI: System pressure external / Sys pressure ext

HLA			
	Can be changed: C2(3), T	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Motor	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source for the external system pressure.

Dependency: Refer to: r0069

Note: For several hydraulic drives with the same system pressure, and only one system pressure measurement, the value can be interconnected from another axis via this connector input.

To do this, the following BICO interconnection should be set:

p0264 (axis without system pressure measurement) = r0069 (axis with system pressure measurement).

CI: p0246 = 0:

The analog measurement of its own axis is effective (p0244, p0245).

CI: p0246 > 0:

The value of the source is accepted, and displayed in r0069 of its own axis.

p0247 Voltage measurement configuration / U_mes config

VECTOR, VECTOR_AC, VECTOR_I_AC			
	Can be changed: C2(2), U, T	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Converter	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	0000 0000 bin

Description: Sets the configuration for the voltage measurement.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
05	Use voltage measured values for flying restart	Yes	No	-

Warning: For p0247.5 = 1 (only for induction motors):

If the Voltage Sensing Module (VSM) is connected to the line voltage, then the line frequency is interpreted as speed. In this case, the flying restart function cannot be used together with VSM and the bit should be set to 0.

If only one VSM is connected at the Motor Module, line synchronization must be deactivated (p3800 = 0), in order to be able to use flying restart together with VSM. If two VSMs are connected, the second VSM is used for flying restart.

Note: The functions are only available if the Motor Module is assigned a Voltage Sensing Module (VSM) (p0150, p0151).

p0249 Power unit cooling type / PU cool type

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, S_INF

Can be changed: C2(1, 2)	**Calculated:** -	**Access level:** 4
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the cooling type for booksize compact power units.

This therefore defines whether for these power units, the internal air cooling is shut down and instead, the "Cold-Plate" cooling type is used.

Value:
0: Air cooling int
1: Cold-Plate

Note: For booksize compact power units, there is a 4 at the 5th position of the Article number.

The parameter is irrelevant for all other power unit types.

p0251[0...n] Power unit heat sink fan operating hours counter / PU fan t_oper

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [h]	4294967295 [h]	0 [h]

Description: Displays the operating hours of the heat sink fan in the power unit.

The number of hours operated can only be reset to 0 in this parameter (e.g. after a fan has been replaced).

Dependency: Refer to: p0252, r0277

Refer to: A30042

Note: For r0193.13 = 0, the following applies:

For liquid-cooled chassis power units, the operating hours of the inner fan are displayed in p0251 and not in p0254.

p0252 Power unit heat sink fan operating time maximum / PU fan t_oper max

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: T	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [h]	500000 [h]	40000 [h]

Description: Sets the maximum operating time of the heat sink fan in the power unit.

The monitoring is deactivated with p0252 = 0.

Dependency: Refer to: p0251, r0277

Refer to: A30042

Notice: For firmware version < 5.1 of the power unit, the value is limited to 65535 hours.

For multi-axis power units, the same value must be entered for all axes.

Note: For power units with a model for the fan service life, the shortest conceivable service life is permanently saved. If p0252 is set to a value not equal to 0, then this saved value is always indicated in p0252.

p0254[0...n] Operating hours counter power unit fan inside the converter / PU inner fan t_op

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [h]	4294967295 [h]	0 [h]

Description: Displays the power unit fan operating hours of the internal fan in the power unit.

The number of hours operated can only be reset to 0 in this parameter (e.g. after a fan has been replaced).

Dependency: Refer to: A30042

Note: For r0193.13 = 0, the following applies:

For liquid-cooled chassis power units, the operating hours of the inner fan are displayed in p0251 and not in p0254.

p0255[0...7] Power unit contactor monitoring time / PU cont t_monit

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1 [ms]	65535 [ms]	[0] 0 [ms] [1] 0 [ms] [2] -1 [ms] [3] -1 [ms] [4...7] 0 [ms]

Description: Sets the monitoring time for internal monitoring of the contactor feedback contacts.

For a value 0.0 or negative values, the particular monitoring is deactivated.

For index [0...3]:

Is used to monitor the delay time between the control and feedback signals of the particular contactor.

For index [4...7]:

Is used for simultaneity monitoring for a parallel connection. After a contactor has been opened or closed, this checks whether, after the monitoring time has expired, all contactors of the parallel connection have assumed the same state.

For index [2, 3]:

The value -1.0 means that the particular opening time is taken from Index 0 or 1.

Index:
[0] = Precharging contactor closing time
[1] = Bypass contactor closing time
[2] = Precharging contactor opening time
[3] = Bypass contactor opening time
[4] = Simultaneity precharging contactor closing time
[5] = Simultaneity bypass contactor closing time
[6] = Simultaneity precharging contactor opening time
[7] = Simultaneity bypass contactor opening time

Dependency: Refer to: r0256

Refer to: F05118, F05119, F30060, F30061

Notice: For index [4...7]:

The simultaneity monitoring is only activate after parameter save and POWER ON.

Note: - this parameter is only effective for chassis power units with 3 AC line connection and line contactors.

- the simultaneity monitoring can only be activated for a parallel connection.
- the feedback signal input of an open bypass contactor must be displayed in r0256 = 0.
- the feedback signal input of an open precharging contactor must be displayed in r0256 = 1.
- Determining practical monitoring times can be supported by a tracing r0256.

For power unit firmware version less than 4.6, the following applies:

There are no separate monitoring times for the delay time between opening and closing. In this case, the maximum of the opening time and closing time is effective.

r0256.0...31 CO/BO: Power unit contactor inputs/outputs status / PU contact IO stat

VECTOR, VECTOR_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9814
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status of the inputs/outputs of the power unit contactors.

The display is activated in p0212.5.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	PDS0 precharging/line contactor control output	High	Low	-
01	PDS0 precharging/line contactor feedback signal input	High	Low	-
02	PDS0 bypass contactor control output	High	Low	-
03	PDS0 bypass contactor feedback signal input	High	Low	-
04	PDS1 precharging/line contactor control output	High	Low	-
05	PDS1 precharging/line contactor feedback signal input	High	Low	-
06	PDS1 bypass contactor control output	High	Low	-
07	PDS1 bypass contactor feedback signal input	High	Low	-
08	PDS2 precharging/line contactor control output	High	Low	-
09	PDS2 precharging/line contactor feedback signal input	High	Low	-
10	PDS2 bypass contactor control output	High	Low	-
11	PDS2 bypass contactor feedback signal input	High	Low	-
12	PDS3 precharging/line contactor control output	High	Low	-
13	PDS3 precharging/line contactor feedback signal input	High	Low	-
14	PDS3 bypass contactor control output	High	Low	-
15	PDS3 bypass contactor feedback signal input	High	Low	-
16	PDS4 precharging/line contactor control output	High	Low	-
17	PDS4 precharging/line contactor feedback signal input	High	Low	-
18	PDS4 bypass contactor control output	High	Low	-
19	PDS4 bypass contactor feedback signal input	High	Low	-
20	PDS5 precharging/line contactor control output	High	Low	-
21	PDS5 precharging/line contactor feedback signal input	High	Low	-
22	PDS5 bypass contactor control output	High	Low	-
23	PDS5 bypass contactor feedback signal input	High	Low	-
24	PDS6 precharging/line contactor control output	High	Low	-
25	PDS6 precharging/line contactor feedback signal input	High	Low	-
26	PDS6 bypass contactor control output	High	Low	-
27	PDS6 bypass contactor feedback signal input	High	Low	-
28	PDS7 precharging/line contactor control output	High	Low	-

29	PDS7 precharging/line contactor feedback signal input	High	Low	-
30	PDS7 bypass contactor control output	High	Low	-
31	PDS7 bypass contactor feedback signal input	High	Low	-

Dependency: Refer to: p0212

Note: This parameter is only effective for chassis power units with 3 AC line connection and line contactors.

PDS: Power unit Data Set

p0260 Cooling unit starting time 1 / RKA start time 1

SERVO (Cool_unit), VECTOR (Cool_unit), SERVO_AC (Cool_unit), VECTOR_AC (Cool_unit), SERVO_I_AC (Cool_unit), VECTOR_I_AC (Cool_unit), A_INF (Cool_unit), S_INF (Cool_unit), R_INF (Cool_unit), B_INF (Cool_unit)

Can be changed: C2(2), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9795
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [s]	60.0 [s]	5.0 [s]

Description: Sets starting time 1 to monitor the cooling unit after switch-on command.

After switching on, the following signals must be present within starting time 1:

- "RKA switched on"
- "RKA liquid flow OK"

When a fault occurs, an appropriate message is output.

Dependency: Refer to: F49152, F49153

Note: RKA: cooling system

p0261 Cooling unit starting time 2 / RKA start time 2

SERVO (Cool_unit), VECTOR (Cool_unit), SERVO_AC (Cool_unit), VECTOR_AC (Cool_unit), SERVO_I_AC (Cool_unit), VECTOR_I_AC (Cool_unit), A_INF (Cool_unit), S_INF (Cool_unit), R_INF (Cool_unit), B_INF (Cool_unit)

Can be changed: C2(2), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9795
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [s]	1200.0 [s]	180.0 [s]

Description: Sets starting time 2 to monitor the cooling unit after switch-on command.

After switching on, the following signals must be present within starting time 2:

- "RKA conductivity, no fault"
- "RKA conductivity, no alarm"

When a fault occurs, an appropriate message is output.

Dependency: Refer to: p0266

Refer to: F49151

p0262 Cooling unit fault conductivity delay time / RKA cond t_del

SERVO (Cool_unit), VECTOR (Cool_unit), SERVO_AC (Cool_unit), VECTOR_AC (Cool_unit), SERVO_I_AC (Cool_unit), VECTOR_I_AC (Cool_unit), A_INF (Cool_unit), S_INF (Cool_unit), R_INF (Cool_unit), B_INF (Cool_unit)

Can be changed: C2(2), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9795
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [s]	30.0 [s]	0.0 [s]

Description: Sets the delay time for the fault "RKA: Conductive limit value exceeded" during operation.

The fault is only output if the conductivity during operation exceeds the permissible fault value, and the value remains at this level for longer than is set in this parameter.

Dependency: Refer to: F49151, A49171

p0263 Cooling unit fault liquid flow delay time / RKA flow t_del

SERVO (Cool_unit), VECTOR (Cool_unit), SERVO_AC (Cool_unit), VECTOR_AC (Cool_unit), SERVO_I_AC (Cool_unit), VECTOR_I_AC (Cool_unit), A_INF (Cool_unit), S_INF (Cool_unit), R_INF (Cool_unit), B_INF (Cool_unit)

Can be changed: C2(2), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9795
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [s]	20.0 [s]	3.0 [s]

Description: Sets the delay time for the fault "RKA: Liquid flow too low".

The fault is only output if the cause is present for a time longer than is set in this parameter.

Dependency: Refer to: F49153

p0264 Cooling unit run-on time / RKA run-on time

SERVO (Cool_unit), VECTOR (Cool_unit), SERVO_AC (Cool_unit), VECTOR_AC (Cool_unit), SERVO_I_AC (Cool_unit), VECTOR_I_AC (Cool_unit), A_INF (Cool_unit), S_INF (Cool_unit), R_INF (Cool_unit), B_INF (Cool_unit)

Can be changed: C2(2), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9795
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [s]	180.0 [s]	30.0 [s]

Description: Sets the run-up time of the cooling unit after a switch-off command.

r0265.0...3 BO: Cooling unit control word / RKA STW

SERVO (Cool_unit), VECTOR (Cool_unit), SERVO_AC (Cool_unit), VECTOR_AC (Cool_unit), SERVO_I_AC (Cool_unit), VECTOR_I_AC (Cool_unit), A_INF (Cool_unit), S_INF (Cool_unit), R_INF (Cool_unit), B_INF (Cool_unit)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and binector output for the cooling unit control word.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Switch on cooling unit	Switch on	Switch off	-
01	Message converter off	OFF	ON	-
02	Acknowledge faults	Acknowledgment	No acknowledgment	-
03	Leakage sensing OK	No leaked liquid	Leaked liquid	-

p0266[0...7] BI: Cooling unit feedback signals signal source / RKA fdbk S_src

SERVO (Cool_unit), VECTOR (Cool_unit), SERVO_AC (Cool_unit), VECTOR_AC (Cool_unit), SERVO_I_AC (Cool_unit), VECTOR_I_AC (Cool_unit), A_INF (Cool_unit), S_INF (Cool_unit), R_INF (Cool_unit), B_INF (Cool_unit)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal sources for the feedback signals from the cooling unit.

Index:
[0] = Cooling unit switched on
[1] = Cooling unit ready for switching on
[2] = Cooling unit no alarm present
[3] = Cooling unit no fault present
[4] = Cooling unit no leaked liquid
[5] = Cooling unit liquid flow OK
[6] = Cooling unit conductivity < fault threshold
[7] = Cooling unit conductivity < alarm threshold

r0267.0...7 BO: Cooling unit status word / RKA ZSW

SERVO (Cool_unit), VECTOR (Cool_unit), SERVO_AC (Cool_unit), VECTOR_AC (Cool_unit), SERVO_I_AC (Cool_unit), VECTOR_I_AC (Cool_unit), A_INF (Cool_unit), S_INF (Cool_unit), R_INF (Cool_unit), B_INF (Cool_unit)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status word of the cooling unit.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	RKA switched on	Yes	No	-
01	RKA ready for switching on	Yes	No	-
02	RKA no alarm present	Yes	No	-
03	RKA no fault present	Yes	No	-
04	RKA no leaked fluid	Yes	No	-
05	RKA liquid flow OK	Yes	No	-
06	RKA conductivity no fault	Yes	No	9974
07	RKA conductivity no alarm	Yes	No	9974

Dependency: Refer to: p0266

r0277[0...n] Power unit heat sink fan wear counter / PU fan wear_count

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the wear counter of the heat sink fan in the power unit.

After a fan has been replaced, the wear can be reset by setting parameter p0251 to 0.

The wear counter is deactivated with p0252 = 0.

Dependency: Refer to: p0251, p0252

Refer to: A30042

Note: - for r0193.13 = 1, the wear counter is based on a model for the service life. For r0193.13 = 0, the value is determined as quotient from p0251 and p0252.

- for r0193.13 = 0, a 0 is displayed in the wear counter if the operating hours counter/wear counter was deactivated using p0252 = 0.

p0278 DC link voltage undervoltage threshold reduction / Vdc U_under red

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(2), T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-80 [V]	0 [V]	0 [V]

Description: Sets the absolute value by which the threshold to initiate the undervoltage fault (F30003) is reduced.

Dependency: Refer to: p0210, r0296

Refer to: F30003

Notice: When using a Control Supply Module (CSM) for 24 V supply from the DC link, the minimum continuous DC link voltage may not lie below 430 V. DC link voltages in the range 300 ... 430 V are permissible up to a duration of 1 min.

For chassis power units, this parameter has no significance.

Note: The resulting shutdown threshold can be read in r0296 and is dependent on the selected rated voltage (p0210) and the power unit being used.

p0279 DC link voltage offset alarm threshold / Vdc offs A thresh

A_INF, S_INF, R_INF, B_INF

Can be changed: C2(2), T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8760, 8864, 8964
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [V]	500 [V]	0 [V]

Description: Sets the voltage threshold to initiate alarm A06810.

The value represents an offset so that the alarm threshold is obtained from the total of r0296 and p0279.

Dependency: Refer to: p0210, r0296

Refer to: A06810

Note: The absolute value of the undervoltage threshold r0296 depends on the selected unit supply voltage (p0210).

p0280 DC link voltage maximum steady-state / Vdc_max stat

A_INF, R_INF

Can be changed: C2(1, 2), T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8940, 8964
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
50 [V]	1500 [V]	660 [V]

Description: Sets the maximum steady-state DC link voltage. When the DC link voltage setpoint reaches the threshold, alarm A06800 is output.

The setpoint for the DC link voltage in p3510 is limited to the value in p0280.

The voltage can be increased (boosted) using the modulation depth reserve controller. The modulation depth reserve (p3480) can be too low if p0210 (drive unit supply voltage) was incorrectly parameterized, a line overvoltage condition is present or a high reactive current is required.

Dependency: Refer to: p0210

Refer to: A06800

Warning: Before increasing the voltage limit for pulsed operation of a controlled booksize infeed with line supply voltages p0210 > 415 V it should be checked whether the motors connected to the DC link are specified for the higher motor voltages.

The warning information associated with p0210 must be carefully observed.

Caution: All motors connected to the DC link must be rated for the maximum DC link voltage set in this parameter.

Notice: For chassis power units, for the extended line supply voltage range from 500 V to 690 V, the value in p0280 is automatically adapted if the line supply voltage in p0210 is changed. The individual parameter setting for p0280 is then lost and if necessary must be re-entered.

Note: A brief dynamic increase of the DC link voltage does not result in an alarm.

Pre-setting values:

380 ... 480 V booksize devices: 660 V

380 ... 480 V chassis devices: 750 V

500 ... 690 V chassis devices: 0.875 * p0210 + 502 V

Maximum values:

380 ... 480 V booksize devices: 785 V

380 ... 480 V chassis devices: 785 V

500 ... 690 V chassis devices: 1130 V

p0281 Line supply overvoltage alarm threshold / U_l_over A thresh

A_INF, S_INF, R_INF

Can be changed: C2(2), T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8860, 8960
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
100 [%]	200 [%]	110 [%]

Description: Sets the alarm threshold for a line supply overvoltage condition.

The setting is made as a percentage of the drive unit supply voltage (p0210).

Dependency: Refer to: p0211, p0221, p0222, p0223, p0224, p0225, p0226

Note: If synchronizing voltages are not detected, the line supply voltage is estimated using a model. It is therefore important to ensure that drive unit data is correctly specified.

p0282 Line supply undervoltage alarm threshold / U_l_under A thresh

A_INF, S_INF, R_INF

Can be changed: C2(2), T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8860, 8960
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
10 [%]	100 [%]	85 [%]

Description: Sets the alarm threshold for a line undervoltage condition.

The setting is made as a percentage of the drive unit supply voltage (p0210).

Dependency: Refer to: p0222, p0224, p0225, p0226, p3421, p3422

Refer to: A06105

Note: If synchronizing voltages are not detected, the line supply voltage is estimated using a model. It is therefore important to ensure that drive unit data is correctly specified.

p0283 Line supply undervoltage shutdown (trip) threshold / U_l_under tr_thrsh

A_INF, S_INF, R_INF

Can be changed: C2(1, 2), T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8860, 8960
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
10 [%]	100 [%]	75 [%]

Description: Sets the shutdown threshold for the line supply undervoltage.

The setting is made as a percentage of the drive unit supply voltage (p0210).

Dependency: Refer to: p0282

Refer to: F06100

Notice: For booksize Active Line Modules, the following applies:

When operated without Active Interface Module (p0220 not equal to 41 ... 45), the minimum shutdown threshold is 75 %.

p0284 Line supply frequency exceeded alarm threshold / f_l_exc A thresh

A_INF, S_INF, R_INF

Can be changed: C2(2), T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8864, 8964
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
100.0 [%]	300.0 [%]	110.0 [%]

Description: Sets the alarm threshold for an excessively high line frequency.

Dependency: Set as a percentage of the rated line frequency.

Refer to: p0211

p0285 Line supply frequency undershot alarm threshold / f_l_under A thresh

A_INF, S_INF, R_INF

Can be changed: C2(2), T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8864, 8964
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	100.0 [%]	90.0 [%]

Description: Sets the alarm threshold for an excessively low line frequency.

Dependency: Set as a percentage of the rated line frequency.

Refer to: p0211

p0287[0...1] Ground fault monitoring shutdown threshold / Gnd flt threshold

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	100.0 [%]	[0] 6.0 [%] [1] 16.0 [%]

Description: Sets the shutdown thresholds for the ground fault monitoring.

The setting is made as a percentage of the maximum current of the power unit (r0209).

Index: [0] = During precharging
[1] = Regular

Dependency: Refer to: F30021

Note: The parameter only applies to booksize and chassis power units.

Sets the thresholds:

- the prerequisite is at least firmware version 2.2 of the power unit.

Deactivate ground fault monitoring:

- Sequence: --> p0287[1] = 0 --> p0287[0] = 0
- irrespective of the firmware version of the power unit.

r0289 CO: Maximum power unit output current / PU I_outp max

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Display and connector output for the maximum actual output current of the power unit.

For this value, derating factors are taken into account.

p0290 Power unit overload response / PU overld response

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(2), T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 8021
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	13	0

Description: Sets the response to a thermal overload condition of the power unit.

The following quantities can result in a response to thermal overload:

- heat sink temperature (r0037[0]).

- chip temperature (r0037[1]).

- power unit overload I2t (r0036).

Possible measures to avoid thermal overload:

- reduce the output current limit r0289 and r0067 (for closed-loop speed/velocity or torque/force control) or the output frequency (for U/f control indirectly via the output current limit and the intervention of the current limiting controller).

- reduce the pulse frequency.

A reduction, if parameterized, is always realized after an appropriate alarm is output.

Value:

0: Reduce output current
1: No reduction shutdown when overload threshold is reached
2: Reduce the pulse frequency and output current
3: Reduce the pulse frequency
10: Automatic output current reduction
12: Automatic pulse frequency and output current reduction
13: Automatic pulse frequency reduction

Dependency: For a thermal power unit overload, an appropriate alarm or fault is output, and r2135.15 or r2135.13 set.

Settings, where the pulse frequency is reduced, are not possible if the "Extended torque control" function module (r0108.1) is activated.

For p0290 = 2, 3:

These responses are only applicable for blocksize power units.

For p0290 = 10:

This response is only applicable for booksize power units.

For p0290 = 12, 13:

These responses are only applicable for booksize or blocksize power units.

Refer to: r0036, r0037, p0108, r0108, p0230, r2135

Refer to: A05000, A05001, A07805

Notice: If the thermal overload of the power unit is not sufficiently reduced by the actions taken, the drive is always shut down. This means that the power unit is always protected irrespective of the setting of this parameter.

Note: Under overload conditions, the current and torque limit are reduced, and therefore the motor is braked and forbidden speed ranges (e.g. minimum speed p1080 and suppression [skip] speeds p1091 ... p1094) can be passed through.

When the motor data identification routine is selected, parameter p0290 cannot be changed.

For p0290 = 0, 2, 12:

This is setting is only practical if the load decreases with decreasing speed (e.g. for applications with variable torque such as for pumps and fans).

For p0290 = 2, 3, 12, 13:

The I2t overload detection of the power unit does not influence the response "Reduce pulse frequency".

For p0290 = 10, 12, 13:

The possible load duty cycles, calculated based on the previous model (p0290 = 0, 1, 2, 3) for booksize power units cannot be transferred in every case. This is the reason that we recommend that you contact our application support department if you are uncertain about dimensioning the device.

p0290	**Power unit overload response / PU overld response**		
VECTOR, VECTOR_AC, VECTOR_I_AC	**Can be changed:** C2(2), T	**Calculated:** -	**Access level:** 3
	Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 8021
	P-Group: Converter	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	13	0

Description: Sets the response to a thermal overload condition of the power unit.

The following quantities can result in a response to thermal overload:

- heat sink temperature (r0037[0]).

- chip temperature (r0037[1]).

- power unit overload I2t (r0036).

Possible measures to avoid thermal overload:

- reduce the output current limit r0289 and r0067 (for closed-loop speed/velocity or torque/force control) or the output frequency (for U/f control indirectly via the output current limit and the intervention of the current limiting controller).

- reduce the pulse frequency.

A reduction, if parameterized, is always realized after an appropriate alarm is output.

Value:

0: Reduce output current
1: No reduction shutdown when overload threshold is reached
2: Reduce the pulse frequency and output current
3: Reduce the pulse frequency
10: Automatic output current reduction
12: Automatic pulse frequency and output current reduction
13: Automatic pulse frequency reduction

Dependency: If a sine-wave filter is parameterized as output filter (p0230 = 3, 4), then only responses can be selected without reducing the pulse frequency (p0290 = 0, 1, 10).

For a thermal power unit overload, an appropriate alarm or fault is output, and r2135.15 or r2135.13 set.

For p0290 = 10:

This response is only applicable for booksize power units.

For p0290 = 12, 13:

These responses are applicable for booksize, blocksize and chassis power units.

Refer to: r0036, r0037, p0108, r0108, p0230, r2135

Refer to: A05000, A05001, A07805

Notice: If the thermal overload of the power unit is not sufficiently reduced by the actions taken, the drive is always shut down. This means that the power unit is always protected irrespective of the setting of this parameter.

Note: Under overload conditions, the current and torque limit are reduced, and therefore the motor is braked and forbidden speed ranges (e.g. minimum speed p1080 and suppression [skip] speeds p1091 ... p1094) can be passed through.

When the motor data identification routine is selected, parameter p0290 cannot be changed.

For p0290 = 0, 2, 12:

This is setting is only practical if the load decreases with decreasing speed (e.g. for applications with variable torque such as for pumps and fans).

For p0290 = 2, 3, 12, 13:

The I2t overload detection of the power unit does not influence the response "Reduce pulse frequency".

For p0290 = 10, 12, 13:

The possible load duty cycles, calculated based on the previous model (p0290 = 0, 1, 2, 3) for booksize power units cannot be transferred in every case. This is the reason that we recommend that you contact our application support department if you are uncertain about dimensioning the device.

r0293 CO: Power unit alarm threshold model temperature / PU A_thr mod_temp

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8021
P-Group: Converter	**Unit group:** 21_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°C]	- [°C]	- [°C]

Description: Temperature alarm threshold for the difference from the chip and heat sink temperature in the thermal model.

Dependency: Refer to: r0037

Refer to: F30024

Note: The parameter is only relevant for chassis power units.

p0294 Power unit alarm with I2t overload / PU I2t alrm thresh

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF

Can be changed: C2(2), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8021
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
10.0 [%]	100.0 [%]	95.0 [%]

Description: Sets the alarm threshold for the I2t power unit overload.

Drive:

If this threshold is exceeded, an overload alarm is generated and the system responds as parameterized in p0290.

Infeed:

When the threshold value is exceeded, only an overload alarm is output.

Dependency: Refer to: r0036, p0290

Refer to: A07805

Note: The I2t fault threshold is 100 %. If this value is exceeded, fault F30005 is output.

p0294 Power unit alarm with I2t overload / PU I2t alrm thresh

B_INF

Can be changed: C2(2), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8021
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
10.0 [%]	100.0 [%]	95.0 [%]

Description: Sets the alarm threshold for the I2t power unit overload.

Dependency: Refer to: r0036

Refer to: A07805

Note: The parameter is only relevant for booksize units!

p0295 Fan run-on time / Fan run-on time

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: C2(2), U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [s]	600 [s]	0 [s]

Description: Sets the fan run-on time after the pulses for the power unit have been canceled.

Note: - Under certain circumstances, the fan can continue to run for longer than was set (e.g. as a result of the excessively high heat sink temperature).

- For values less than 1 s, a 1 s run on time for the fan is active.

r0296 DC link voltage undervoltage threshold / Vdc U_lower_thresh

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Threshold to detect a DC link undervoltage.

If the DC link voltage falls below this threshold, the drive unit is tripped due to a DC link undervoltage condition.

Dependency: Refer to: p0278

Refer to: F30003

Note: The value depends on the device type and the selected device rated voltage (p0210).

For booksize drive units, the following applies:

The undervoltage threshold can be reduced with p0278.

r0296 DC link voltage undervoltage threshold / Vdc U_lower_thresh

A_INF, S_INF, R_INF, B_INF

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 8750, 8760, 8850, 8864, 8950, 8964
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Threshold to detect a DC link undervoltage.

If the DC link voltage falls below this threshold, the drive unit is tripped due to a DC link undervoltage condition.

Dependency: Refer to: F30003

Note: The value depends on the device type and the selected device rated voltage (p0210).

r0297 DC link voltage overvoltage threshold / Vdc U_upper_thresh

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 8750, 8760, 8850, 8864, 8950, 8964
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Threshold to detect a DC link overvoltage.

If the DC link voltage exceeds the threshold specified here, the drive unit is tripped due to DC link overvoltage.

Dependency: Refer to: F30002

p0300[0...n]	**Motor type selection / Mot type sel**		
SERVO, SERVO_AC, SERVO_I_AC	**Can be changed:** C2(1, 3)	**Calculated:** -	**Access level:** 1
	Data type: Integer16	**Dyn. index:** MDS, p0130	**Func. diagram:** -
	P-Group: Motor	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	10100	0

Description: Selects the motor type or start to read in the motor parameters for a motor with DRIVE-CLiQ (p0300 = 10000).

For p0300 < 10000 the following applies:

The first digit of the parameter value always defines the general motor type and corresponds to the third-party motor belonging to a motor list:

1 = rotating induction motor

2 = rotating synchronous motor

3 = linear induction motor (reserved)

4 = linear synchronous motor

The type information must be entered to filter motor-specific parameters and to optimize the operating characteristics and behavior. For example, for synchronous motors, power factor (p0308) is neither used nor displayed (in the BOP/AOP).

The following applies for values < 100:

Motor data must be manually entered.

The following applies for values >= 100:

Motor data are automatically loaded from an internal list.

Value:

0: No motor
1: Induction motor
2: Synchronous motor
4: Synchronous motor linear
102: 1PH2 induction motor
103: 1PH3 induction motor
104: 1PH4 induction motor
107: 1PH7 induction motor
108: 1PH8 induction motor
111: xxxx induction motor OEM
134: 1PM4 induction motor
136: 1PM6 induction motor
166: 1PL6 induction motor
191: 2SP1 induction motor
200: 1PH8 synchronous motor
206: 1FT6 synchronous motor
207: 1FT7 synchronous motor
222: xxxx synchronous motor OEM
231: 1FG1 synchronous geared motor
232: 1FE2 synchronous motor
236: 1FK6 synchronous motor
237: 1FK7 synchronous motor
261: 1FE1 synchronous motor
272: 1FK2 synchronous motor
276: 1FS6 synchronous motor
283: 1FW3 synchronous motor
286: 1FW6 synchronous motor
291: 2SP1 synchronous motor
401: 1FN1 synchronous motor linear
403: 1FN3 synchronous motor linear
406: 1FN6 synchronous motor linear
444: xxxx synchronous motor linear OEM
10000: Motor with DRIVE-CLiQ
10001: Motor with DRIVE-CLiQ 2nd data set
10100: Motor with DRIVE-CLiQ (only read in motor data)

Dependency: When the motor type is changed, the code number in p0301 may be reset to 0.

If p0300 is changed during quick commissioning (p0010 = 1), then the matching technological application (p0500) is automatically pre-assigned. This does not occur when commissioning the motor (p0010 = 3). If p0300 = 10000 is written for a parameter download, p0500 is pre-assigned with DRIVE-CLiQ corresponding to the motor type.

Refer to: p0301

Notice: If a catalog motor is selected (p0300 >= 100) and an associated motor code number (p0301), then the parameters that are associated with this list cannot be changed (write protection). The write protection is canceled if the motor type p0300 is set to a non-Siemens motor that matches p0301 (e.g. p0300 = 2 for p0301 = 2xxxx). Write protection is automatically canceled when the results of motor data identification are copied to the motor parameters.

The motor type of a catalog motor corresponds to the upper three digits of the code number or the following assignment (if the particular motor type is listed):

Type/code number ranges

102 / 102xx, 122xx

103 / 103xx

104 / 104xx, 114xx, 124xx

107 / 107xx, 117xx, 127xx

108 / 108xx, 118xx, 128xx, 138xx, 148xx, 158xx

134 / 134xx, 144xx, 154xx

136 / 136xx, 146xx, 156xx

166 / 166xx, 176xx, 186xx

191 / 191xx

200 / 200xx, 210xx, 220xx

206 / 206xx, 216xx, 226xx

207 / 207xx, 217xx, 227xx

231 / 231xx, 241xx, 251xx

232 / 232xx, 242xx, 252xx

235 / 235xx, 245xx, 255xx

237 / 237xx, 247xx, 257xx

261 / 261xx, 262xx, 263xx

283 / 283xx, 293xx

286 / 286xx, 296xx

403 / 403xx, 413xx

406 / 406xx, 416xx, 426xx

For OEM motors:

111 / 111xx, 112xx, 113xx

222 / 222xx, 223xx, 224xx

444 / 444xx, 445xx, 446xx

Note: With p0300 = 10000, for a motor with DRIVE-CLiQ, the motor parameters are automatically downloaded, with p0300 = 10001, the motor parameters of a second data set (if available).

If a motor type has not been selected (p0300 = 0), then the drive commissioning routine cannot be exited.

A motor type with a value above p0300 >= 100 describes motors for which a motor parameter list exists.

Motor types with a value below p0300 < 100 correspond to the selection of a third-party motor. When appropriately selected, this means that the motor parameters are pre-assigned the settings for a third-party motor.

This also applies for parameters for a motor with DRIVE-CLiQ. In this case p0300 can only be set to p0300 = 10000 or 10001 (read motor parameters) or to the corresponding non-Siemens motor (first digit of the motor code number) in order to be able to cancel the write protection.

With p0300 = 10100, when the system powers up, for a motor with DRIVE-CLiQ, the motor data are loaded, without subsequently newly calculating the control parameters. This means that control parameters that are already optimized are kept. To load the data, motor code number p0301 must match the code number of the connected encoder r0302.

p0300[0...n] Motor type selection / Mot type sel

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** MDS, p0130	**Func. diagram:** 6310
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	10001	0

Description: Selects the motor type or starts to read in the motor parameters for a motor with DRIVE-CLiQ (p0300 = 10000 or 10001, if there is a second data set).

For p0300 < 10000 the following applies:

The first digit of the parameter value always defines the general motor type and corresponds to the third-party motor belonging to a motor list:

1 = induction motor

2 = synchronous motor

5 = synchronous motor separately excited

7 = SIEMOSYN motor

8 = reluctance motor (for textile applications)

xx = motor without code number

xxx = motor with code number

The type information must be entered to filter motor-specific parameters and to optimize the operating characteristics and behavior. For example, for synchronous motors, power factor (p0308) is neither used nor displayed (in the BOP/AOP).

The following applies for values < 100:

Motor data must be manually entered.

The following applies for values >= 100:

Motor data are automatically loaded from an internal list.

Value:

0: No motor
1: Induction motor
2: Synchronous motor
5: Synchronous motor separately excited
6: Synchronous reluctance motor
7: SIEMOSYN synchronous motor
8: Reluctance motor textile
10: 1LE1 induction motor (not a code number)
11: 1LA1 induction motor (not a code number)
12: 1LE2 induction motor (not a code number)
13: 1LG6 induction motor (not a code number)
14: 1xx1 SIMOTICS FD induction motor (not a code number)
15: 1LA5 induction motor (not a code number)
16: 1LA6 induction motor (not a code number)
17: 1LA7 induction motor (not a code number)
18: 1xx8 SIMOTICS TN induction motor (not a code number)
19: 1LA9 induction motor (not a code number)
100: 1LE1 induction motor
101: 1PC1 induction motor
102: 1PH2 induction motor
104: 1PH4 induction motor
105: 1LE5 induction motor
107: 1PH7 induction motor
108: 1PH8 induction motor
111: xxxx induction motor OEM
134: 1PM4 induction motor
136: 1PM6 induction motor
166: 1PL6 induction motor
222: xxxx synchronous motor OEM
264: 1FW4 synchronous motor
283: 1FW3 synchronous motor
600: 1FP1 standard reluctance motor

603: 1FP3 synchronous reluctance motor OEM
10000: Motor with DRIVE-CLiQ
10001: Motor with DRIVE-CLiQ 2nd data set

Dependency: Motors, selection 206, 236, 237 cannot be operated (also not as motor with DRIVE-CLiQ).

p0300 = 5 cannot be selected with SINAMICS G.

When the motor type is changed, the code number in p0301 may be reset to 0.

p0300 = 12 can only be selected for p0100 = 1 (NEMA).

When selecting p0300 = 10 ... 19, parameters p0335, p0626, p0627, and p0628 of the thermal motor model are pre-assigned as a function of p0307 and p0311.

When selecting a 1FW4 motor – if the motor database permits this – when exiting commissioning, then p1750.5 is automatically set. This is the reason that after exiting commissioning, all parameters must be saved and a warm restart must be initiated (e.g. p0009 = 30, p0976 = 3).

Refer to: p0301

Caution: A permanent-magnet synchronous motor cannot be operated with an SSI encoder without HTL/TTL track.

A separately excited synchronous motor can only be operated with an SSI encoder if this is used as the second encoder and an HTL/TTL encoder is used as the first encoder.

Notice: If a catalog motor is selected (p0300 >= 100) and an associated motor code number (p0301), then the parameters that are associated with this list cannot be changed (write protection). The write protection is canceled if the motor type p0300 is set to a non-Siemens motor that matches p0301 (e.g. p0300 = 2 for p0301 = 2xxxx). Write protection is automatically canceled when the results of motor data identification are copied to the motor parameters.

The motor type of a catalog motor corresponds to the upper three digits of the code number or the following assignment (if the particular motor type is listed):

Type/code number ranges

100 / 100xx, 110xx, 120xx, 130xx, 140xx, 150xx, 160xx, 170xx, 180xx, 190xx

101 / 101xx

102 / 102xx, 122xx

104 / 104xx, 114xx, 124xx

105 / 105xx

107 / 107xx, 117xx, 127xx

108 / 108xx, 118xx, 128xx, 138xx, 148xx, 158xx

134 / 134xx, 144xx, 154xx

136 / 136xx, 146xx, 156xx

166 / 166xx, 176xx, 186xx

264 / 264xx, 274xx, 284xx, 294xx

283 / 283xx, 293xx

For OEM motors:

111 / 111xx, 112xx, 113xx

222 / 222xx, 223xx, 224xx

For 1PQ8 motors (p0300 = 18) the fan type p0335 should be set to 5.

Note: With p0300 = 10000, for a motor with DRIVE-CLiQ, the motor parameters are automatically downloaded, with p0300 = 10001, the motor parameters of a second data set (if available).

If a motor type has not been selected (p0300 = 0), then the drive commissioning routine cannot be exited.

A motor type with a value above p0300 >= 100 describes motors for which a motor parameter list exists.

Motor types with a value below p0300 < 100 correspond to the selection of a third-party motor. When appropriately selected, this means that the motor parameters are pre-assigned the settings for a third-party motor.

This also applies for parameters for a motor with DRIVE-CLiQ. In this case p0300 can only be set to p0300 = 10000 or 10001 (read motor parameters) or to the corresponding non-Siemens motor (first digit of the motor code number) in order to be able to cancel the write protection.

p0301[0...n] Motor code number selection / Mot code No. sel

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 1
Data type: Unsigned16	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: SESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	65535	0

Description: The parameter is used to select a motor from a motor parameter list.

When changing the code number (with the exception to the value 0), all of the motor parameters are pre-assigned from the internally available parameter lists.

Dependency: Code numbers can only be selected for motor types that correspond to the motor type selected in p0300. For 1PH2, 1PH4, 1PH7, 1PM4, 1PM6, 1FT6 motors, code numbers are also possible, whose fourth decimal position is greater by a value of 1 or 2 than the matching motor type in p0300. For 1FE1 motors, the third decimal position can be higher by a value of 1.

Refer to: p0300

Note: The motor code number can only be changed if the matching catalog motor was first selected in p0300.

For a motor with DRIVE-CLiQ, p0301 cannot be changed. In this case, p0301 is automatically written to the code number of the motor parameter read in (r0302) if p0300 is set to 10000.

When selecting a catalog motor (p0300 >= 100), drive commissioning can only be exited if a code number is selected.

If, for direct drives, the motor code number (p0301) is changed, this does not automatically result in the angular commutation offset being determined (p0431).

p0301[0...n] Motor code number selection / Mot code No. sel

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 1
Data type: Unsigned16	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: SESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	65535	0

Description: The parameter is used to select a motor from a motor parameter list.

When changing the code number (with the exception to the value 0), all of the motor parameters are pre-assigned from the internally available parameter lists.

Dependency: Code numbers can only be selected for motor types that correspond to the motor type selected in p0300.

Refer to: p0300

Note: The motor code number can only be changed if the matching catalog motor was first selected in p0300.

When selecting a catalog motor (p0300 >= 100), drive commissioning can only be exited if a code number is selected.

p0301[0...n] Motor code number selection / Mot code No. sel

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 1
Data type: Unsigned16	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: SESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	65535	0

Description: The parameter is used to select a motor from a motor parameter list.

When changing the code number (with the exception to the value 0), all of the motor parameters are pre-assigned from the internally available parameter lists.

Dependency: Code numbers can only be selected for motor types that correspond to the motor type selected in p0300. For 1PH2, 1PH4, 1PH7, 1PM4, 1PM6, 1FT6 motors, code numbers are also possible, whose fourth decimal position is greater by a value of 1 or 2 than the matching motor type in p0300. For 1FE1 motors, the third decimal position can be higher by a value of 1.

Refer to: p0300

Note: The motor code number can only be changed if the matching catalog motor was first selected in p0300.

For a motor with DRIVE-CLiQ, p0301 cannot be changed. In this case, p0301 is automatically written to the code number of the motor parameter read in (r0302) if p0300 is set to 10000.

When selecting a catalog motor (p0300 >= 100), drive commissioning can only be exited if a code number is selected.

r0302[0...n] Motor code number of motor with DRIVE-CLiQ / Mot code mot w/ DQ

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the motor code number from the saved motor data from a motor with DRIVE-CLiQ.

Note: Drive commissioning can only be exited if the code number that was downloaded (r0302) matches the stored code number (p0301). If the numbers differ, then the motor data set should be re-loaded using p0300 = 10000.

The motor data are always expected from the first encoder that is assigned to the drive data sets (refer to p0187 = encoder 1) data set number.

The value is not updated cyclically but only on specific events (e.g. update DRIVE-CLiQ device).

r0302 = 0: No motor with DRIVE-CLiQ found

r0303[0...n] Motor with DRIVE-CLiQ status word / Motor w DQ ZSW

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status word of the automatic motor parameter sensing of a motor with DRIVE-CLiQ.

Motor parameter sensing takes place in the following events if the SMI is connected to the Motor Module and the encoder is activated (p0145):

- Warm restart
- downloading projects.
- POWER ON (switch-off/switch-on).
- where p0300 = 10000, 10001.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Motor data set selected	MDS1	MDS0	-
01	Motor connection type	Delta	Star	-
02	Windings can be changed	Yes	No	-
03	Windings can be changed number	2	0	-

Dependency: Refer to: p0145, p0300

Note: SMI: SINAMICS Sensor Module Integrated

p0304[0...n] Rated motor voltage / Mot U_rated

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [Vrms]	20000 [Vrms]	0 [Vrms]

Description: Sets the rated motor voltage (rating plate).

Dependency: Refer to: p0349

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: When the parameter value is entered the connection type of the motor (star-delta) must be taken into account.

p0304[0...n] Rated motor voltage / Mot U_rated

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 6301, 6724
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [Vrms]	20000 [Vrms]	0 [Vrms]

Description: Sets the rated motor voltage (rating plate).

Dependency: Refer to: p0349

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: When the parameter value is entered the connection type of the motor (star-delta) must be taken into account.

When commissioned for the first time or after the factory settings have been restored, the parameter is preassigned a value that matches the power unit; this value also depends on the set standard (IEC/NEMA, p0100).

p0305[0...n] Rated motor current / Mot I_rated

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Arms]	10000.00 [Arms]	0.00 [Arms]

Description: Sets the rated motor current (rating plate).

Dependency: Refer to: p0349

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

If p0305 is changed during quick commissioning (p0010 = 1), then the maximum current p0640 is pre-assigned accordingly. This is not the case when commissioning the motor (p0010 = 3).

Note: When the parameter value is entered the connection type of the motor (star-delta) must be taken into account.

p0305[0...n] Rated motor current / Mot I_rated

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 6301
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Arms]	10000.00 [Arms]	0.00 [Arms]

Description: Sets the rated motor current (rating plate).

Dependency: Refer to: p0349

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

If p0305 is changed during quick commissioning (p0010 = 1), then the maximum current p0640 is pre-assigned accordingly. This is not the case when commissioning the motor (p0010 = 3).

If the rated motor current exceeds twice the maximum drive converter current (r0209), then the maximum current is reduced due to the current harmonics that increase overproportionally (r0067).

Note: When the parameter value is entered the connection type of the motor (star-delta) must be taken into account.

When commissioned for the first time or after the factory settings have been restored, the parameter is preassigned a value that matches the power unit; this value also depends on the set standard (IEC/NEMA, p0100).

p0306[0...n]	**Number of motors connected in parallel / Motor qty**		
SERVO, SERVO_AC, SERVO_I_AC	**Can be changed:** C2(1, 3)	**Calculated:** -	**Access level:** 1
	Data type: Unsigned8	**Dyn. index:** MDS, p0130	**Func. diagram:** -
	P-Group: Motor	**Unit group:** -	**Unit selection:** -
	Not for motor type: RESM	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	1	10	1

Description: Sets the number (count) of motors that can be operated in parallel using one motor data set.

Depending on the motor number entered, internally an equivalent motor is calculated.

The following should be carefully observed for motors connected in series:

The following rating plate data should only be entered for one motor:

- resistances and inductances: p0350, p0352, p0353, p0354, p0356, p0357, p0358, p0360
- currents: p0305, p0318, p0320, p0323, p0325, p0329, p0338, p0391, p0392
- torques/forces: p0312, p0319
- power ratings: p0307
- masses/moments of inertia: p0341, p0344

All other parameters take into account the replacement/equivalent motor (e.g. r0331, r0370, r0373, r0374).

Recommendation: For motors connected in parallel, external thermal protection should be provided for each individual motor.

Dependency: Refer to: r0331, r0370, r0373, r0374, r0376, r0377, r0382

Caution: ⚠

The motors to be connected up in parallel must be of the same type and the same size (power rating) (identical Article No. [MLFB]).

The mounting regulations when connecting motors in parallel must be carefully maintained! Especially for synchronous motors, the pole position of motors that are rigidly coupled with one another (mechanically) must be identical.

The number of motors set must correspond to the number of motors that are actually connected in parallel.

After changing p0306, it is imperative that the control parameters are adapted (e.g. using automatic calculation with p0340 = 1).

For synchronous motors connected in parallel with p1300 >= 20, be following applies:

- the individual motors must be mechanically coupled with one another and the EMF must be aligned to one another.

For induction motors that are connected in parallel, but which are not mechanically coupled with one another, then the following applies:

- an individual motor must not be loaded beyond its stall point.

Notice: If p0306 is changed during quick commissioning (p0010 = 1), then the maximum current p0640 is appropriately pre-assigned. This is not the case when commissioning the motor (p0010 = 3).

p0306[0...n]	**Number of motors connected in parallel / Motor qty**		
VECTOR, VECTOR_AC, VECTOR_I_AC	**Can be changed:** C2(1, 3)	**Calculated:** -	**Access level:** 1
	Data type: Unsigned8	**Dyn. index:** MDS, p0130	**Func. diagram:** -
	P-Group: Motor	**Unit group:** -	**Unit selection:** -
	Not for motor type: SESM, RESM	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	1	50	1

Description: Number of motors that can be operated in parallel using one motor data set.

Depending on the motor number entered, internally an equivalent motor is calculated.

The following should be carefully observed for motors connected in series:

The following rating plate data should only be entered for one motor:

- resistances and inductances: p0350 ... p0361
- currents: p0305, p0320, p0323, p0325, p0329, p0389, p0390, p0391, p0392
- power ratings: p0307
- masses/moments of inertia: p0341, p0344

All other parameters take into account the replacement/equivalent motor (e.g. r0331, r0333).

Recommendation: For motors connected in parallel, external thermal protection should be provided for each individual motor.

Dependency: Refer to: r0331

Caution:

The motors to be connected up in parallel must be of the same type and the same size (power rating) (identical Article No. [MLFB]).

The mounting regulations when connecting motors in parallel must be carefully maintained! Especially for synchronous motors, the pole position of motors that are rigidly coupled with one another (mechanically) must be identical.

The number of motors set must correspond to the number of motors that are actually connected in parallel.

After changing p0306, it is imperative that the control parameters are adapted (e.g. using automatic calculation with p0340 = 1).

For synchronous motors connected in parallel with p1300 >= 20, be following applies:

- the individual motors must be mechanically coupled with one another and the EMF must be aligned to one another.

For induction motors that are connected in parallel, but which are not mechanically coupled with one another, then the following applies:

- an individual motor must not be loaded beyond its stall point.

Notice: If p0306 is changed during quick commissioning (p0010 = 1), then the maximum current p0640 is appropriately pre-assigned. This is not the case when commissioning the motor (p0010 = 3).

Note: Only operation with U/f characteristic makes sense if more than 10 identical motors are connected in parallel.

Separately excited synchronous motors must not be connected in parallel.

Synchronous and reluctance motors that are not coupled with one another align themselves when the pulses are switched in. If the motors have different load levels, then equalization currents flow between the motors.

p0307[0...n] Rated motor power / Mot P_rated

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** 14_6	**Unit selection:** p0100
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [kW]	100000.00 [kW]	0.00 [kW]

Description: Sets the rated motor power (rating plate).

Dependency: IECdrives (p0100 = 0): Units kW

NEMA drives (p0100 = 1): Units hp

Refer to: p0100

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

p0307[0...n] Rated motor power / Mot P_rated

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** 14_6	**Unit selection:** p0100
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-100000.00 [kW]	100000.00 [kW]	0.00 [kW]

Description: Sets the rated motor power (rating plate).

Dependency: IECdrives (p0100 = 0): Units kW

NEMA drives (p0100 = 1): Units hp

Refer to: p0100

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: For generators, a negative rated power should be entered.

When commissioned for the first time or after the factory settings have been restored, the parameter is preassigned a value that matches the power unit; this value also depends on the set standard (IEC/NEMA, p0100).

p0308[0...n] Rated motor power factor / Mot cos phi rated

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	1.000	0.000

Description: Sets the rated motor power factor (cos phi, rating plate).

For a parameter value of 0.000, the power factor is internally calculated and displayed in r0332.

Dependency: This parameter is only available for IEC motors (p0100 = 0).

Refer to: p0100, p0309, r0332

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: The parameter is not used for synchronous motors (p0300 = 2xx).

p0308[0...n] Rated motor power factor / Mot cos phi rated

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-0.990	1.000	0.000

Description: Sets the rated motor power factor (cos phi, rating plate).

For a parameter value of 0.000, the power factor is internally calculated and displayed in r0332.

Dependency: This parameter is only available for IEC motors (p0100 = 0).

Refer to: p0100, p0309, r0332

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

For separately excited synchronous motors (p0300 = 5) negative values for the power factor are interpreted as overexcitation.

For all other motor types, the sign is ignored.

Note: The parameter is not used for synchronous motors (p0300 = 2xx).

When commissioned for the first time or after the factory settings have been restored, the parameter is preassigned a value that matches the power unit; this value also depends on the set standard (IEC/NEMA, p0100).

p0309[0...n] Rated motor efficiency / Mot eta_rated

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	99.9 [%]	0.0 [%]

Description: Sets the rated motor efficiency (rating plate).

For a parameter value of 0.0, the power factor is internally calculated and displayed in r0332.

Dependency: This parameter is only visible for NEMA motors (p0100 = 1, 2).

Refer to: p0100, p0308, r0332

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: The parameter is not used for synchronous motors (p0300 = 2xx).

p0310[0...n] Cylinder piston diameter / Cyl piston diam

HLA			
	Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
	P-Group: Motor	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.0 [mm]	2500.0 [mm]	0.0 [mm]

Description: Sets the piston diameter of the hydraulic cylinder.

p0310[0...n] Rated motor frequency / Mot f_rated

SERVO, SERVO_AC, SERVO_I_AC			
	Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 1
	Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
	P-Group: Motor	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [Hz]	3000.00 [Hz]	0.00 [Hz]

Description: Sets the rated motor frequency (rating plate).

Dependency: The number of pole pairs (r0313) is automatically re-calculated when the parameter is changed (together with p0311), if p0314 = 0.

If p0310 is changed during quick commissioning (p0010 = 1), then the maximum speed p1082, which is also associated with quick commissioning, is pre-assigned accordingly.

Refer to: p0311, r0313, p0313, p0314

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

If p0310 is changed during quick commissioning (p0010 = 1), the maximum speed p1082, which is also associated with quick commissioning, is pre-assigned accordingly. This is not the case when commissioning the motor (p0010 = 3).

Note: For synchronous motors, the parameter is not required and must therefore be pre-assigned zero. For p0310 = 0, it is not possible to calculate the pole pair; instead, it must be entered in p0314.

p0310[0...n] Rated motor frequency / Mot f_rated

VECTOR, VECTOR_AC, VECTOR_I_AC			
	Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 1
	Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 6301
	P-Group: Motor	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.000 [Hz]	3000.000 [Hz]	0.000 [Hz]

Description: Sets the rated motor frequency (rating plate).

Dependency: The number of pole pairs (r0313) is automatically re-calculated when the parameter is changed (together with p0311), if p0314 = 0.

The rated frequency is restricted to values between 1.00 Hz and 650.00 Hz.

Refer to: p0311, r0313, p0313, p0314

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

If p0310 is changed during quick commissioning (p0010 = 1), the maximum speed p1082, which is also associated with quick commissioning, is pre-assigned accordingly. This is not the case when commissioning the motor (p0010 = 3).

Note: When commissioned for the first time or after the factory settings have been restored, the parameter is preassigned a value that matches the power unit; this value also depends on the set standard (IEC/NEMA, p0100).

p0311[0...n] Cylinder piston rod diameter A side / Cyl PistRodDiam A

HLA

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [mm]	2400.0 [mm]	0.0 [mm]

Description: Sets the piston rod diameter on the A side.

p0311[0...n] Rated motor speed / Mot n_rated

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [rpm]	210000.0 [rpm]	0.0 [rpm]

Description: Sets the rated motor speed (rating plate).

Dependency: If p0311 is changed and for p0314 = 0, the pole pair (r0313) is re-calculated automatically.

Refer to: p0310, r0313, p0313, p0314

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

If p0311 is changed during quick commissioning (p0010 = 1), the maximum speed p1082, which is also associated with quick commissioning, is pre-assigned accordingly. This is not the case when commissioning the motor (p0010 = 3).

p0311[0...n] Rated motor velocity / Mot v_rated

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [m/min]	6000.0 [m/min]	0.0 [m/min]

Description: Sets the rated motor velocity (rating plate).

Dependency: The pole pair width is set in p0315.

Refer to: p0310, r0313, p0313, p0314

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

If p0311 is changed during quick commissioning (p0010 = 1), the maximum speed p1082, which is also associated with quick commissioning, is pre-assigned accordingly. This is not the case when commissioning the motor (p0010 = 3).

p0311[0...n] Rated motor speed / Mot n_rated

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	0.00 [rpm]

Description: Sets the rated motor speed (rating plate).

For VECTOR the following applies (p0107):

For p0311 = 0, the rated motor slip of induction motors is internally calculated and displayed in r0330.

It is especially important to correctly enter the rated motor speed for vector control and slip compensation for U/f control.

Dependency: If p0311 is changed and for p0314 = 0, the pole pair (r0313) is re-calculated automatically.

Refer to: p0310, r0313, p0313, p0314

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

If p0311 is changed during quick commissioning (p0010 = 1), the maximum speed p1082, which is also associated with quick commissioning, is pre-assigned accordingly. This is not the case when commissioning the motor (p0010 = 3).

Note: When commissioned for the first time or after the factory settings have been restored, the parameter is preassigned a value that matches the power unit; this value also depends on the set standard (IEC/NEMA, p0100).

p0312[0...n] Cylinder piston rod diameter B side / Cyl rod diam B

HLA

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [mm]	2400.0 [mm]	0.0 [mm]

Description: Sets the piston rod diameter on the B side.

p0312[0...n] Rated motor torque / Mot M_rated

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(3)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** 7_4	**Unit selection:** p0100
Not for motor type: ASM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Nm]	1000000.00 [Nm]	0.00 [Nm]

Description: Sets the rated motor torque (rating plate).

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

p0312[0...n] Rated motor force / Mot F_rated

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: C2(3)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** 8_4	**Unit selection:** p0100
Not for motor type: ASM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [N]	1000000.00 [N]	0.00 [N]

Description: Sets the rated motor force (rating plate).

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

p0313[0...n] Cylinder piston stroke / Cyl pist stroke

HLA

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [mm]	6000.0 [mm]	0.0 [mm]

Description: Enter the piston stroke of the hydraulic cylinder.

r0313[0...n] Motor pole pair number, actual (or calculated) / Mot PolePairNo act

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** MDS, p0130	**Func. diagram:** 5300
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the number of motor pole pairs. The value is used for internal calculations.

r0313 = 1: 2-pole motor

r0313 = 2: 4-pole motor, etc.

Dependency: For p0314 > 0, the entered value is displayed in r0313.

For p0314 = 0, the pole pair number (r0313) is automatically calculated from the rated frequency (p0310) and the rated speed (p0311).

Refer to: p0310, p0311, p0314

Note: For the automatic calculation, the pole pair number is set to the value of 2 if the rated speed or the rated frequency is zero.

r0313[0...n] Motor pole pair number, actual (or calculated) / Mot PolePairNo act

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** MDS, p0130	**Func. diagram:** 5300
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the number of motor pole pairs. The value is used for internal calculations.

r0313 = 1: 2-pole motor

r0313 = 2: 4-pole motor, etc.

Dependency: For p0314 > 0, the entered value is displayed in r0313.

For p0314 = 0, the pole pair number (r0313) is automatically calculated from the rated power (p0307), rated frequency (p0310) and rated speed (p0311).

Refer to: p0307, p0310, p0311, p0314

Note: For the automatic calculation, the pole pair number is set to the value of 2 if the rated speed or the rated frequency is zero.

p0314[0...n] Cylinder dead volume A side / Cyl_dead vol A

HLA

Can be changed: C2(1, 3), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [cm³]	200000.0 [cm³]	0.0 [cm³]

Description: Sets the cylinder dead volume on the A side.

p0314[0...n] Motor pole pair number / Mot pole pair No.

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 1
Data type: Unsigned16	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	4000	0

Description: Sets the motor pole pair number.

p0314 = 1: 2-pole motor

p0314 = 2: 4-pole motor, etc.

Dependency: For p0314 = 0, the pole pair number is automatically calculated from the rated frequency (p0310) and the rated speed (p0311) and displayed in r0313.

Notice: If p0314 is changed during quick commissioning (p0010 = 1), the maximum speed p1082, which is also associated with quick commissioning, is pre-assigned accordingly. This is not the case when commissioning the motor (p0010 = 3).

For induction motors, the value need only be input if the rated data of a generator is entered therefore resulting in a negative rated slip. In this case, the number of pole pairs in r0313 is too low by 1 and must be manually corrected.

p0314[0...n] Motor pole pair number / Mot pole pair No.

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the motor pole pair number.

p0314 = 1: 2-pole motor

p0314 = 2: 4-pole motor, etc.

Dependency: For p0314 = 0, the pole pair number is automatically calculated from the rated frequency (p0310) and the rated speed (p0311) and displayed in r0313.

Notice: If p0314 is changed during quick commissioning (p0010 = 1), the maximum speed p1082, which is also associated with quick commissioning, is pre-assigned accordingly. This is not the case when commissioning the motor (p0010 = 3).

For induction motors, the value need only be input if the rated data of a generator is entered therefore resulting in a negative rated slip. In this case, the number of pole pairs in r0313 is too low by 1 and must be manually corrected.

p0315[0...n] Cylinder dead volume B side / Cyl_dead vol B

HLA

Can be changed: C2(1, 3), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [cm³]	200000.0 [cm³]	0.0 [cm³]

Description: Sets the cylinder dead volume on the B side.

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

p0315[0...n] Motor pole pair width / MotPolePair width

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1.00 [mm]	1000.00 [mm]	30.00 [mm]

Description: Sets the pole pair width of the linear motor.

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

p0316[0...n] Motor torque constant / Mot kT

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(1, 3), U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** 28_1	**Unit selection:** p0100
Not for motor type: ASM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [Nm/A]	4000.000 [Nm/A]	0.000 [Nm/A]

Description: Sets the torque constant of the synchronous motor.

p0316 = 0:

The torque constant is calculated from the motor data.

p0316 > 0:

The selected value is used as torque constant.

Dependency: Refer to: r0334, r1937

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: This parameter is not used for induction motors (p0300 = 1xx).

p0316[0...n] Motor force constant / Mot kT

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: C2(1, 3), U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** 29_1	**Unit selection:** p0100
Not for motor type: ASM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [N/Arms]	150000.000 [N/Arms]	0.000 [N/Arms]

Description: Sets the force constant of the synchronous motor.

p0316 = 0:

The force constant is calculated from the motor data.

p0316 > 0:

The selected value is used as force constant.

Dependency: Refer to: r0334, r1937

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

p0316[0...n] Motor torque constant / Mot kT

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(1, 3), U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** 28_1	**Unit selection:** p0100
Not for motor type: ASM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [Nm/A]	400.000 [Nm/A]	0.000 [Nm/A]

Description: Sets the torque constant of the synchronous motor.

p0316 = 0:

The torque constant is calculated from the motor data.

p0316 > 0:

The selected value is used as torque constant.

Dependency: Refer to: r0334

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: This parameter is not used for induction motors (p0300 = 1xx).

p0317[0...n] Motor voltage constant / Mot kE

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(3)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [Vrms]	240000.0 [Vrms]	0.0 [Vrms]

Description: Sets the voltage constant for synchronous motors.

Units for rotating synchronous motors: Vrms/(1000 rpm), phase-to-phase

Dependency: Refer to: r1938

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: This parameter is not used for induction motors (p0300 = 1xx).

p0317[0...n] Motor voltage constant / Mot kE

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: C2(3)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [Vrms s/m]	50000.0 [Vrms s/m]	0.0 [Vrms s/m]

Description: Sets the voltage constant for synchronous motors.

Units for linear synchronous motors: Vrms s/m, phase

Dependency: Refer to: r1938

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

p0318[0...n] Motor stall current / Mot I_standstill

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(3)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 8017
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Arms]	10000.00 [Arms]	0.00 [Arms]

Description: Sets the stall current for synchronous motors (p0300 = 2xx).

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: The parameter is used for the I2t monitoring of the motor (refer to p0611).

This parameter is not used for induction motors (p0300 = 1xx).

p0318[0...n] Motor stall current / Mot I_standstill

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 8017
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Arms]	10000.00 [Arms]	0.00 [Arms]

Description: Sets the stall current for synchronous motors (p0300 = 2xx), as well as for synchronous reluctance motors (p0300 = 6xx).

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: The parameter is used for the I2t monitoring of the motor (refer to p0611).

This parameter is not used for induction motors (p0300 = 1xx).

For synchronous reluctance motors, the current corresponds to a winding temperature increase of 105 K at a speed of 20 % of the rated speed.

p0319[0...n] Motor stall torque / Mot M_standstill

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(3)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** 7_4	**Unit selection:** p0100
Not for motor type: ASM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Nm]	100000.00 [Nm]	0.00 [Nm]

Description: Sets the standstill (stall) torque for rotating synchronous motors (p0300 = 2xx).

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: This parameter is not used for induction motors (p0300 = 1xx).

This parameter value is not evaluated from a control-related perspective.

p0319[0...n] Motor stall force / Mot F_standstill

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: C2(3)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** 8_4	**Unit selection:** p0100
Not for motor type: ASM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [N]	100000.00 [N]	0.00 [N]

Description: Sets the standstill (stall) force for linear synchronous motors (p0300 = 4xx).

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: This parameter value is not evaluated from a control-related perspective.

p0320[0...n] Motor rated magnetizing current/short-circuit current / Mot I_mag_rated

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 5722
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [Arms]	5000.000 [Arms]	0.000 [Arms]

Description: Induction motors:

Sets the rated motor magnetizing current.

For p0320 = 0.000 the magnetizing current is internally calculated and displayed in r0331.

Synchronous motors:

Sets the rated motor short-circuit current.

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: The magnetization current p0320 for induction motors (not for catalog motors) is reset when quick commissioning is exited with p3900 > 0.

VECTOR:

If, for induction motors, the magnetizing current p0320 is changed outside the commissioning phase (p0010 > 0), then the magnetizing inductance p0360 is changed so that the EMF r0337 remains constant.

p0322[0...n] Maximum motor speed / Mot n_max

SERVO, SERVO_AC, SERVO_I_AC (Spin_diag), SERVO_I_AC

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [rpm]	210000.0 [rpm]	0.0 [rpm]

Description: Sets the maximum motor speed.

Dependency: Refer to: p1082, r1082

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

If p0322 is changed during quick commissioning (p0010 = 1), the maximum speed p1082, which is also associated with quick commissioning, is pre-assigned accordingly. This is not the case when commissioning the motor (p0010 = 3).

Note: The parameter has no significance for a value of p0322 = 0.

p0322[0...n] Motor maximum velocity / Mot v_max

SERVO (Lin, Spin_diag), SERVO_AC (Lin, Spin_diag), SERVO_I_AC (Lin, Spin_diag)

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [m/min]	2000.0 [m/min]	0.0 [m/min]

Description: Sets the maximum motor velocity.

Dependency: Refer to: p1082, r1082

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

If p0322 is changed during quick commissioning (p0010 = 1), the maximum speed p1082, which is also associated with quick commissioning, is pre-assigned accordingly. This is not the case when commissioning the motor (p0010 = 3).

Note: The parameter has no significance for a value of p0322 = 0.

p0322[0...n] Maximum motor speed / Mot n_max

SERVO (Spin_diag), SERVO_AC (Spin_diag)

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [rpm]	260000.0 [rpm]	0.0 [rpm]

Description: Sets the maximum motor speed.

Dependency: Refer to: p1082, r1082

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

If p0322 is changed during quick commissioning (p0010 = 1), the maximum speed p1082, which is also associated with quick commissioning, is pre-assigned accordingly. This is not the case when commissioning the motor (p0010 = 3).

Note: The parameter has no significance for a value of p0322 = 0.

p0322[0...n] Maximum motor speed / Mot n_max

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [rpm]	210000.0 [rpm]	0.0 [rpm]

Description: Sets the maximum motor speed.

Dependency: Refer to: p1082, r1082

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

If p0322 is changed during quick commissioning (p0010 = 1), the maximum speed p1082, which is also associated with quick commissioning, is pre-assigned accordingly. This is not the case when commissioning the motor (p0010 = 3).

Note: The parameter has no significance for a value of p0322 = 0.

p0323[0...n] Maximum motor current / Mot I_max

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 5722
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Arms]	20000.00 [Arms]	0.00 [Arms]

Description: Sets the maximum permissible motor current (e.g. de-magnetizing current for synchronous motors).

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

If p0323 is changed during quick commissioning (p0010 = 1), then the maximum current p0640 is pre-assigned accordingly. This is not the case when commissioning the motor (p0010 = 3).

Note: The parameter has no effect for induction motors.

For synchronous motors, a value must always be entered for the maximum motor current.

p0323 is a motor data. The user-selectable current limit is entered into p0640.

p0323[0...n] Maximum motor current / Mot I_max

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Arms]	20000.00 [Arms]	0.00 [Arms]

Description: Sets the maximum permissible motor current (e.g. de-magnetizing current for synchronous motors).

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

If p0323 is changed during quick commissioning (p0010 = 1), then the maximum current p0640 is pre-assigned accordingly. This is not the case when commissioning the motor (p0010 = 3).

Note: The parameter has no effect for induction motors.

The parameter has not effect for synchronous motors if a value of 0.0 is entered. The user-selectable current limit is entered into p0640.

p0324[0...n] Winding maximum speed / Winding n_max

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [rpm]	210000.0 [rpm]	0.0 [rpm]

Description: Sets the maximum speed for the winding.

The following applies when calculating the maximum speed (p1082):

- for p0324 = 0 or p0532 = 0, p0322 is used.
- for p0324 > 0 and p0532 > 0, the minimum value from the two parameters is used.

Dependency: Refer to: p0322, p0532, p1082, r1082

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

If p0324 is changed during quick commissioning (p0010 = 1), then the maximum speed p1082, which is also associated with quick commissioning, is pre-assigned appropriately. This is not the case when commissioning the motor (p0010 = 3).

p0324[0...n] Winding maximum velocity / Winding v_max

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [m/min]	1300.0 [m/min]	0.0 [m/min]

Description: Sets the maximum velocity for the winding.

The following applies when calculating the maximum velocity (p1082):

- for p0324 = 0 or p0532 = 0, p0322 is used.
- for p0324 > 0 and p0532 > 0, the minimum value from the two parameters is used.

Dependency: Refer to: p0322, p0532, p1082, r1082

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

If p0324 is changed during quick commissioning (p0010 = 1), then the maximum velocity p1082, which is also associated with quick commissioning, is pre-assigned appropriately. This is not the case when commissioning the motor (p0010 = 3).

p0324[0...n] Winding maximum speed / Winding n_max

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [rpm]	210000.0 [rpm]	0.0 [rpm]

Description: Sets the maximum speed for the winding.

The following applies when calculating the maximum speed (p1082):

- for p0324 = 0 or p0532 = 0, p0322 is used.
- for p0324 > 0 and p0532 > 0, the minimum value from the two parameters is used.

Dependency: Refer to: p0322, p0532, p1082, r1082

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

If p0324 is changed during quick commissioning (p0010 = 1), then the maximum speed p1082, which is also associated with quick commissioning, is pre-assigned appropriately. This is not the case when commissioning the motor (p0010 = 3).

p0325[0...n] Motor pole position identification current 1st phase / Mot PolID I 1st Ph

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [Arms]	10000.000 [Arms]	0.000 [Arms]

Description: Sets the current for the 1st phase of the two-stage technique for pole position identification routine.

The current of the 2nd phase is set in p0329.

The two-stage technique is selected with p1980 = 4.

Dependency: Refer to: p0329, p1980, p1981, p1982, p1983, r1984, r1985, r1986, r1987, p1990, r1992

Refer to: F07995

Notice: When the motor code (p0301) is changed, it is possible that p0325 is not pre-assigned.

p0325 can be pre-assigned using p0340 = 3.

Note: The value is automatically pre-assigned for the following events:

- For p0325 = 0 and automatic calculation of the closed-loop control parameters (p0340 = 1, 2, 3).
- for quick commissioning (p3900 = 1, 2, 3).

p0326[0...n] Motor stall torque correction factor / Mot M_stall_corr

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
5 [%]	300 [%]	60 [%]

Description: Sets the correction factor for the stall torque/force at a 600 V DC link voltage.

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (p0300).

The reference value for this parameter is inversely proportional to the leakage inductance of the motor (p0353, p0354, p0356).

The following applies for firmware version 2.6 SP2 and higher:

If leakage inductances are changed for motor data identification, the value in p0326 is automatically adapted to maintain the stall torque.

p0326[0...n] Motor stall force correction factor / Mot F_stall_corr

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
5 [%]	300 [%]	60 [%]

Description: Sets the correction factor for the stall force at a 600 V DC link voltage.

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (p0300).

The reference value for this parameter is inversely proportional to the leakage inductance of the motor (p0353, p0354, p0356).

The following applies for firmware version 2.6 SP2 and higher:

If leakage inductances are changed for motor data identification, the value in p0326 is automatically adapted to maintain the stall torque.

p0327[0...n] Optimum motor load angle / Mot phi_load opt

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 5722, 6721
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [°]	135.0 [°]	90.0 [°]

Description: Sets the optimum load angle for synchronous motors with reluctance torque (e.g. 1FE motors).

SERVO: The load angle is measured at 1.5 x rated motor current.

VECTOR: The load angle is measured at the rated motor current.

Dependency: Refer to: r1947

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: This parameter has no significance for induction motors.

For synchronous motors without reluctance torque, a angle of 90 degrees must be set.

When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (p0300).

p0328[0...n] Motor reluctance torque constant / Mot kT_reluctance

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000.00 [mH]	1000.00 [mH]	0.00 [mH]

Description: Sets the reluctance torque constant for synchronous motors with reluctance torque (e.g. 1FE ... motors).

This parameter has no significance for induction motors.

Dependency: Refer to: r1939

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: For synchronous motors without reluctance torque, the value 0 must be set.

p0328[0...n] Motor reluctance force constant / Mot kT_reluctance

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000.00 [mH]	1000.00 [mH]	0.00 [mH]

Description: Sets the reluctance force constant for synchronous motors with reluctance force (e.g. 1FE ... motors).

This parameter has no significance for induction motors.

Dependency: Refer to: r1939

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: For synchronous motors without reluctance torque, the value 0 must be set.

p0329[0...n] Motor pole position identification current / Mot PolID current

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Arms]	10000.00 [Arms]	0.00 [Arms]

Description: Sets the current for the pole position identification routine (p1980 = 1).

For a two-stage technique (p1980 = 4), the current is set for the 2nd phase.

The current for the 1st phase is set in p0325.

Dependency: The following applies for vector drives:

If a maximum current (p0323) was not parameterized, then p0329 is limited to the rated motor current.

Refer to: p0325, p1980, p1981, p1982, p1983, r1984, r1985, r1986, r1987, p1990, r1992

Refer to: F07995

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

r0330[0...n] Rated motor slip / Mot slip_rated

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Hz]	- [Hz]	- [Hz]

Description: Displays the rated motor slip.

Dependency: The rated slip is calculated from the rated frequency, rated speed and number of pole pairs.

Refer to: p0310, p0311, r0313, p0313

Note: The parameter is not used for synchronous motors (p0300 = 2xx).

r0331[0...n] Actual motor magnetizing current/short-circuit current / Mot I_mag_rtd act

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 5722, 6722, 6724
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Induction motor:

Displays the rated magnetizing current from p0320.

For p0320 = 0, the internally calculated magnetizing current is displayed.

Synchronous motor:

Displays the rated short-circuit current from p0320.

Dependency: If p0320 was not entered, then the parameter is calculated from the rating plate parameters.

Note: In the case of multi-motor operation r0331 is increased by the factor p0306 compared to p0320.

r0332[0...n] Rated motor power factor / Mot cos phi rated

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the rated power factor for induction motors.

For IEC motors, the following applies (p0100 = 0):

For p0308 = 0, the internally calculated power factor is displayed.

For p0308 > 0, this value is displayed.

For NEMA motors, the following applies (p0100 = 1, 2):

For p0309 = 0, the internally calculated power factor is displayed.

For p0309 > 0, this value is converted into the power factor and displayed.

Dependency: If p0308 is not entered, the parameter is calculated from the rating plate parameters.

Note: The parameter is not used for synchronous motors (p0300 = 2xx).

r0333[0...n] Rated motor torque / Mot M_rated

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** 7_4	**Unit selection:** p0100
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Displays the rated motor torque.

Dependency: IEC drives (p0100 = 0): unit Nm

NEMA drives (p0100 = 1): unit lbf ft

Note: For induction and reluctance motors, r0333 is calculated from p0307 and p0311.

For synchronous motors, r0333 is calculated from p0305, p0316, p0327 and p0328. The result can deviate from the input in p0312. If p0316 = 0, then r0333 = p0312 is displayed.

In the case of multi-motor operation r0333 is increased by the factor p0306 compared to the rated torque of an individual motor.

r0333[0...n] Rated motor force / Mot F_rated

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** 8_4	**Unit selection:** p0100
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [N]	- [N]	- [N]

Description: Displays the rated motor force.

Dependency: IECdrives (p0100 = 0): Units N

NEMA drives (p0100 = 1): unit lbf

Note: For synchronous motors, r0333 is calculated from p0305, p0316, p0327 and p0328. The result can deviate from the input in p0312. For p0316 = 0, r0333 = p0312 is displayed.

r0334[0...n] Actual motor-torque constant / Mot kT act

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** 28_1	**Unit selection:** p0100
Not for motor type: ASM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Nm/A]	- [Nm/A]	- [Nm/A]

Description: Displays the torque constant of the synchronous motor used.

Dependency: IEC drives (p0100 = 0): unit Nm / A

NEMA drives (p0100 = 1): unit lbf ft / A

Refer to: p0316

Note: This parameter is not used for induction motors (p0300 = 1xx).

For synchronous motors, parameter r0334 = p0316 is displayed. For p0316 = 0, r0334 is calculated from p0305 and p0312.

r0334[0...n] Actual motor force constant / Mot kT act

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** 29_1	**Unit selection:** p0100
Not for motor type: ASM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [N/Arms]	- [N/Arms]	- [N/Arms]

Description: Displays the force constant of the synchronous motor used.

Dependency: IEC drives (p0100 = 0): unit N / A

NEMA drives (p0100 = 1): unit lbf / A

Refer to: p0316

Note: For synchronous motors, parameter r0334 = p0316 is displayed. For p0316 = 0, r0334 is calculated from p0305 and p0312.

r0334[0...n] Actual motor-torque constant / Mot kT act

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** 28_1	**Unit selection:** p0100
Not for motor type: ASM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Nm/A]	- [Nm/A]	- [Nm/A]

Description: Displays the torque constant of the synchronous motor used.

Dependency: IEC drives (p0100 = 0): unit Nm / A

NEMA drives (p0100 = 1): unit lbf ft / A

Refer to: p0316

Note: This parameter is not used for induction motors (p0300 = 1xx).

For synchronous motors, parameter r0334 = p0316 is displayed. For p0316 = 0, r0334 is calculated from p0305 and p0312 or p0305, p0307, and p0311.

p0335[0...n] Motor cooling type / Mot cool type

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(1, 3), T	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	128	0

Description: Sets the motor cooling system used.

Value:
0: Natural ventilation
1: Forced cooling
2: Liquid cooling
4: Natural ventilation and internal fan
5: Forced cooling and internal fan
6: Liquid cooling and internal fan
128: No fan

Dependency: For 1LA5 and 1LA7 motors (p0300), the parameter is pre-set as a function of p0307 and p0311.

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: The parameter influences the thermal 3-mass motor model.

1LA1 and 1LA8 motors are characterized by the fact that they have an internal rotor fan. This "internal cooling" lies within the motor frame and is not visible. Air is not directly exchanged with the motor ambient air.

For 1PQ8 motors, p0335 should be set to 5 as these motors are force-ventilated motors.

The setting p0335 = 128 applies for 1LA7 motors, frame size 56 (these are operated without a fan).

r0336[0...n] Actual rated motor frequency / Mot f_rated act

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Hz]	- [Hz]	- [Hz]

Description: Displays the rated frequency of the motor.

For p0310 > 0, this value is displayed.

Dependency: Refer to: p0311, p0314

Note: For p0310 = 0 or for synchronous motors, the rated motor frequency r0336 is calculated from the rated speed and the pole pair number.

For p0310 > 0, this value is displayed (not for synchronous motors).

r0337[0...n] Rated motor EMF / Mot EMF_rated

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Displays the rated EMF of the motor.

Note: EMF: Electromotive force

r0337[0...n] Rated motor EMF / Mot EMF_rated

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Vrms s/m]	- [Vrms s/m]	- [Vrms s/m]

Description: Displays the rated EMF of the motor.

Note: EMF: Electromotive force

p0338[0...n] Motor limit current / Mot I_limit

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Arms]	10000.00 [Arms]	0.00 [Arms]

Description: Sets the motor limit current for synchronous motors (for a 600 V DC link voltage).

Using this current, the maximum torque is achieved at the rated speed (voltage limit characteristic).

Dependency: If p0338 is changed during quick commissioning (p0010 = 1), then the maximum current p0640 is appropriately pre-assigned. This is not the case when commissioning the motor (p0010 = 3).

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

r0339[0...n] Rated motor voltage / Mot U_rated

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Displays the rated motor voltage.

Note: For induction motors (p0300 = 1xx) the parameter is set to p0304.

For synchronous motors, parameter r0339 = p0304 is displayed. If p0304 = 0, then r0339 is calculated from p0305 and p0316.

p0340[0...n] Automatic parameter calculation / Auto par calc

HLA

Can be changed: C2(1, 3), T	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 bin

Description: Setting to automatically calculate the corresponding values from the valve, cylinder and system data.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Pre-assign reference values	Yes	No	-
01	Pre-assign loop gain and natural frequencies	Yes	No	-
02	Pre-assign characteristic values	Yes	No	-
03	Pre-assign controller values	Yes	No	-
04	Pre-assign limit values	Yes	No	-

Notice: The following parameters are influenced using p0340:

p0340.0 = 1:

- p2000 ... p2003

p0340.1 = 1:

- p0350 ... p0354, p1475, p1570 ... p1572, p1700, p1830, p1831, p3998

p0340.2 = 1:

- p1833, p1834, p1836, p1837, p1839 ... p1848

p0340.3 = 1:

- p1400.5, p1433, p1434, p1460 ... p1467, p1715 ... p1719, p1820

p0340.4 = 1:

- p1082, p1083, p1086, p1520, p1521, p1532, p1850, p1851, p2162, p2177

Note: When quick commissioning is exited using p3900 = 3, p0340 is automatically called = 1 1111 bin.

At the end of the calculations, p0340 is automatically set to 0.

p0340[0...n] Automatic calculation motor/control parameters / Calc auto par

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(3), T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	5	0

Description: Setting to automatically calculate motor parameters and U/f open-loop and closed-loop control parameters from the rating plate data.

Value:
0: No calculation
1: Complete calculation
2: Calculation of equivalent circuit diagram parameters
3: Calculation of closed-loop control parameters
4: Calculation of controller parameters
5: Calculation of technological limits and threshold values

Notice: After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

The following parameters are influenced using p0340:

The parameters designated with (*) are not overwritten for catalog motors (p0300 > 100).

SERVO:

p0340 = 1:

--> All of the parameters influenced for p0340 = 2, 3, 4, 5

--> p0341 (*)

--> p0344, p0600, p0640, p1082, p2000, p2001, p2002, p2003, p2005, p2007

p0340 = 2:

--> p0350 (*), p0354 (*), p0356 (*), p0358 (*), p0360 (*)

--> p0625 (matching p0350), p0626 ... p0628

p0340 = 3:

--> All of the parameters influenced for p0340 = 4, 5

--> p0325 (is only calculated for p0325 = 0)

--> p0348 (*) (is only calculated for p0348 = 0)

--> p0441, p0442, p0443, p0444, p0445 (only for 1FT6, 1FK6, 1FK7 motors)

--> p0492, p1082, p1980, p1319, p1326, p1327, p1612, p1752, p1755

p0340 = 4:

--> p0118, p1441, p1460, p1462, p1463, p1464, p1465, p1470, p1472, p1590, p1592, p1596, p1656, p1657, p1658, p1659, p1715, p1717

--> p1461 (for p0348 > p0322, p1461 is set to 100 %)

--> p1463 (for p0348 > p0322, p1463 is set to 400 %)

p0340 = 5:

--> p1037, p1038, p1520, p1521, p1530, p1531, p2140 ... p2142, p2148, p2150, p2155, p2161 ... p2164, p2175, p2177, p2194, p3820 ... p3829

VECTOR:

p0340 = 1:

--> All of the parameters influenced for p0340 = 2, 3, 4, 5

--> p0341 (*)

--> p0344, p0600, p0640, p1082, p1145, p1231, p1232, p1281, p1333, p1335, p1349, p1360, p1362, p1441, p1442, p1576, p1577, p1609, p1610, p1611, p1619, p1620, p1621, p1654, p1726, p1825, p1828 ... p1832, p1901, p1909, p1959, p2000, p2001, p2002, p2003, p2005, p2007, p3806. p3927, p3928

p0340 = 2:

--> p0350 (*), p0354 ... p0361 (*), p0652 ... p0660

--> p0625 (matching p0350)

p0340 = 3:

--> All of the parameters influenced for p0340 = 4, 5

--> p0346, p0347, p0492, p0622, p1262, p1320 ... p1327, p1582, p1584, p1612, p1616, p1744, p1748, p1749, p1755, p1756, p2178

p0340 = 4:

--> p1290, p1292, p1293, p1299, p1338, p1339, p1340, p1341, p1345, p1346, p1460, p1461, p1462, p1463, p1464, p1465, p1470, p1472, p1590, p1592, p1600, p1628, p1629, p1630, p1643, p1703, p1715, p1717, p1740, p1756, p1757, p1760, p1761, p1764, p1767, p1780, p1781, p1783, p1785, p1786, p1795, p7036, p7037, p7038

p0340 = 5:

--> p0260 ... p0264, p1037, p1038, p1520, p1521, p1530, p1531, p1574, p1750, p1802, p1803, p2140, p2141, p2142, p2148, p2150, p2155, p2161 ... p2164, p2175, p2177, p2194, p3207, p3208, p3236, p3237, p3806, p3815, p3820 ... p3829

Note: The calculation is not performed, if the power unit is deactivated.

p0340 = 1 contains the calculations of p0340 = 2, 3, 4, 5 without overwriting the motor parameters from the Siemens motor lists (p0301 > 0).

p0340 = 2 calculates the motor parameters (p0350 ... p0360), but only if it does not involve a Siemens catalog motor (p0301 = 0).

p0340 = 3 contains the calculations of p0340 = 4, 5.

p0340 = 4 only calculates the controller parameters.

p0340 = 5 only calculates the controller limits.

When quick commissioning is exited using p3900 > 0, p0340 is automatically set to 1.

At the end of the calculations, p0340 is automatically set to 0.

If the STARTER commissioning tool writes a 3 into p0340 when "Downloading to target device", then this corresponds to a "Complete calculation of the motor/control parameters without equivalent circuit diagram data". The same calculations are carried out as for p0340 = 1, however, without the equivalent circuit diagram parameters of the motor (p0340 = 2), the motor moment of inertia (p0341) and the motor mass (p0344).

For third-party linear synchronous motors (p0300 = 4) equivalent circuit diagram data are not calculated (p0340 = 2).

p0340 Automatic calculation control parameters / Calc auto par

A_INF, S_INF, R_INF

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	2	0

Description: Setting to reset and automatically calculate filter and control (closed-loop) parameters.

Value:
0: No calculation
1: Complete re-calculation of control parameters with COMM data
2: Reset control parameters

Notice: After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

The following parameters are influenced using p0340:

p0340 = 1:

--> All of the parameters influenced for p0340 = 2

--> p3421 = p0223, p0225

--> p3422 = p0227

--> p3424 = p0225

--> p3415, p3425, p3555, p3614, p3620, p3622 are reset to the factory settings dependent on the particular unit.

p0340 = 2:

--> p3560, p3562, p3564, p3603, p3615 and p3617 are reset to the factory setting.

For S_INF, these control parameters are not available.

Note: When quick commissioning is exited using p3900 > 0, p0340 is automatically set to 1.

At the end of the calculations, p0340 is automatically set to 0.

p0341[0...n] Cylinder weight / Cyl weight

HLA	**Can be changed:** C2(1, 3), U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
	P-Group: Motor	**Unit group:** 27_1	**Unit selection:** p0100
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.000000 [kg]	100000.000000 [kg]	0.000000 [kg]

Description: Sets the inertia mass.

p0341[0...n] Motor moment of inertia / Mot M_inert

SERVO, SERVO_AC, SERVO_I_AC	**Can be changed:** C2(3), U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 5042, 5210, 6020, 6030, 6031
	P-Group: Motor	**Unit group:** 25_1	**Unit selection:** p0100
	Not for motor type: REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [kgm²]	- [kgm²]	- [kgm²]

Description: Sets the motor moment of inertia (without load).

Dependency: IEC drives (p0100 = 0): unit kg m^2

NEMA drives (p0100 = 1): unit lb ft^2

The parameter value is included, together with p0342, in the rated starting time of the motor.

Refer to: p0342, r0345, p0345

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: SERVO:

p0341 * p0342 + p1498 influence the speed/torque precontrol in encoderless operation.

VECTOR:

The product of p0341 * p0342 is used when the speed controller (p0340 = 4) is calculated automatically.

p0341[0...n] Motor weight / Mot weight

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 5042, 5210
P-Group: Motor	**Unit group:** 27_1	**Unit selection:** p0100
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [kg]	- [kg]	- [kg]

Description: Sets the high moments of inertia (without load).

Dependency: IEC drives (p0100 = 0): unit kg m^2

NEMA drives (p0100 = 1): unit lb ft^2

The parameter value is included, together with p0342, in the rated starting time of the motor.

Refer to: p0342, r0345, p0345

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: p0341 * p0342 + p1498 influence the speed/torque precontrol in encoderless operation.

p0341[0...n] Motor moment of inertia / Mot M_inert

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 5042, 5210, 6020, 6030, 6031
P-Group: Motor	**Unit group:** 25_1	**Unit selection:** p0100
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000000 [kgm²]	100000.000000 [kgm²]	0.000000 [kgm²]

Description: Sets the motor moment of inertia (without load).

Dependency: IEC drives (p0100 = 0): unit kg m^2

NEMA drives (p0100 = 1): unit lb ft^2

The parameter value is included, together with p0342, in the rated starting time of the motor.

Refer to: p0342, r0345, p0345

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: SERVO:

p0341 * p0342 + p1498 influence the speed/torque precontrol in encoderless operation.

VECTOR:

The product of p0341 * p0342 is used when the speed controller (p0340 = 4) is calculated automatically.

p0342[0...n] Ratio between the total and motor moment of inertia / Mot MomInert Ratio

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 5042, 5210
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1.000	10000.000	1.000

Description: Sets the ratio between the total moment of inertia (load + motor) and the intrinsic motor moment of inertia (no load).

Dependency: Refer to: p0341, r0345, p0345, p1498

Note: (p0341 * p0342) + p1498 influence the speed/torque precontrol (active in encoderless operation or for p1402.4 = 1).

p0342[0...n] Ratio between the total and motor moment of inertia / Mot MomInert Ratio

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 5042, 5210
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1.000	10000.000	1.000

Description: Sets the ratio between the total mass (load + motor) and the intrinsic motor mass (no load).

Dependency: Refer to: p0341, r0345, p0345, p1498

Note: (p0341 * p0342) + p1498 influence the velocity/force precontrol (active in encoderless operation or for p1402.4 = 1).

p0342[0...n] Ratio between the total and motor moment of inertia / Mot MomInert Ratio

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 6020, 6030, 6031
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1.000	10000.000	1.000

Description: Sets the ratio between the total moment of inertia (load + motor) and the intrinsic motor moment of inertia (no load).

Dependency: This means that together with p0341, the rated starting time of the motor is calculated.

Refer to: p0341, r0345, p0345, p1498

Note: The product of p0341 * p0342 is used when the speed controller (p0340 = 4) is calculated automatically.

p0343[0...n] Valve/cylinder configuration / Valve/cyl config

HLA

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Sets the configuration for valve and cylinder.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Valve/cylinder connection configuration	Valve A at cyl B	Valve A at cyl A	-
01	Cylinder mounting type	Piston rod	Cylinder	-

Note: For bit 00:

The firmware does not evaluate this bit.

For bit 01:

For bit = 0, the cylinder is stationary, the mass that is moved is attached to the piston rod.

For bit = 1, the piston rod is stationary, the mass that is moved is attached to the cylinder.

p0343[0...n] Rated motor current identified / Mot I_rated ident

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3), T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Arms]	10000.00 [Arms]	0.00 [Arms]

Description: Displays the identified rated motor current.

p0344[0...n] Cylinder mounting position A side / Cyl mount pos A

HLA

Can be changed: C2(3), T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-90.0 [°]	90.0 [°]	0.0 [°]

Description: Adjustment of the mounting position referred to the A side of the cylinder.

Note: The mounting position specifies to what extent the forces due to weight of the moved mass is taken into account when calculating the loop gain and the maximum retraction/extension.

p0344[0...n] Motor weight (for the thermal motor model) / Mot weight th mod

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(3), T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 8018
P-Group: Motor	**Unit group:** 27_1	**Unit selection:** p0100
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [kg]	50000.0 [kg]	0.0 [kg]

Description: Sets the motor weight.

Dependency: IEC drives (p0100 = 0): unit kg

NEMA drives (p0100 = 1): unit lb

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: The parameter influences the thermal 3 mass model of the induction motor.

The parameter is not used for synchronous motors (p0300 = 2xx).

p0345[0...n] Required damping controlled axis / Damped ctrl axis

HLA

Can be changed: C2(3), T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.200	2.000	0.700

Description: Sets the required damping for the controlled axis.

With this value, for "Calculate controller data", the control loop (gain, integral time, rate time) is calculated.

r0345[0...n] Nominal motor starting time / Mot t_start_rated

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [s]	- [s]	- [s]

Description: Displays the rated motor starting time.

This time corresponds to the time from standstill up to reaching the motor rated speed and the acceleration with motor rated torque (r0333).

Dependency: Refer to: r0313, p0313, r0333, r0336, p0341, p0342

p0346[0...n] Line length A side / Line length A

HLA

Can be changed: C2(3), T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [mm]	10000.0 [mm]	0.0 [mm]

Description: Sets the hydraulic line length on the A side.

Dependency: Refer to: p0347

p0346[0...n] Motor excitation build-up time / Mot t_excitation

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-20.000 [s]	20.000 [s]	0.000 [s]

Description: Sets the excitation build-up time of the motor.

This involves the delay time between enabling the pulses and enabling the ramp-function generator. The induction motor is magnetized during this time.

Caution: If there is insufficient magnetization under load or if the acceleration rate is too high, then an induction motor can stall (refer to the note). This is especially true for sensorless vector control or U/f control.

Notice: If the parameter is set to 0 s for separately excited synchronous motors (p0300 = 5), then an excitation current setpoint is generated even if the drive is switched off. In the base speed range, this is the no-load excitation current (p0389). In the field-weakening range, the value is reduced with the inverse value of the actual speed. An excitation current setpoint is not generated during de-magnetizing (p0347) and if an encoder fault is detected.

When starting or executing a flying restart for a separately excited synchronous motor without encoder or with incremental encoder, then the voltage induced in the stator by the excitation current pulse is used to determine the rotor position.

The length of the ramp is pre-assigned from the motor data for p0346 = 0 s. If it crystallizes out that this time is too short, then it can be extended by entering a negative value in p0346, whereby otherwise, the excitation behavior corresponds with that for p0346 = 0 s.

For all other motor types, p0346 is internally limited downwards to 0 s.

Note: The parameter is calculated using p0340 = 1, 3.

For induction motors, the result depends on the rotor time constant (r0384). If this time is excessively reduced, this can result in an inadequate magnetizing of the induction motor. This is the case if the current limit is reached while building up magnetizing. For induction motors, the parameter cannot be set to 0 s (internal limit: 0.1 * r0384).

For permanent-magnet synchronous motors and vector control, the value depends on the stator time constant (r0386). Here, it defines the time to establish the current for encoderless operation immediately after the pulses have been enabled.

The current to excite the induction motor can be limited in p0644.

p0347[0...n] Line length B side / Line length B

HLA

Can be changed: C2(3), T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [mm]	10000.0 [mm]	0.0 [mm]

Description: Sets the hydraulic line length on the B side.

Dependency: Refer to: p0346

p0347[0...n] Motor de-excitation time / Mot t_de-excitat

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	20.000 [s]	0.000 [s]

Description: Sets the de-magnetizing time (for induction motors) after the inverter pulses have been canceled.

The inverter pulses cannot be switched in (enabled) within this delay time.

For SERVO, the de-excitation time is only used for DC current braking.

Note: The parameter is calculated using p0340 = 1, 3.

For induction motors, the result depends on the rotor time constant (r0384).

if this time is shortened too much, then this can result in an inadequate de-magnetizing of the induction motor and in an overcurrent condition when the pulses are subsequently enabled (only when the flying restart function is activated and the motor is rotating).

p0347[0...n] Motor de-excitation time / Mot t_de-excitat

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	20.000 [s]	0.000 [s]

Description: Sets the de-magnetizing time (for induction motors) after the inverter pulses have been canceled.

The inverter pulses cannot be switched in (enabled) within this delay time.

Note: The parameter is calculated using p0340 = 1, 3.

For induction motors, the result depends on the rotor time constant (r0384).

if this time is shortened too much, then this can result in an inadequate de-magnetizing of the induction motor and in an overcurrent condition when the pulses are subsequently enabled (only when the flying restart function is activated and the motor is rotating).

p0348[0...n] Internal line diameter / Line_inner diam

HLA

Can be changed: C2(3), T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [mm]	100.0 [mm]	5.0 [mm]

Description: Sets the internal line diameter for the A and B sides.

p0348[0...n] Speed at the start of field weakening Vdc = 600 V / n_strt field weak

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 5722
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [rpm]	210000.0 [rpm]	0.0 [rpm]

Description: Sets the speed at the start of field weakening for a DC link voltage of 600 V.

Dependency: Refer to: p0320, r0331

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

p0348[0...n] Velocity at the start of field weakening Vdc = 600 V / v_strt field weak

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 5722
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [m/min]	1300.0 [m/min]	0.0 [m/min]

Description: Sets the velocity at the start of field weakening for a DC link voltage of 600 V.

Dependency: Refer to: p0320, r0331

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

p0349 System of units motor equivalent circuit diagram data / Unit_sys mot ESB

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(3)	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	2	1

Description: Sets the actual system of units for motor equivalent circuit diagram data.

Value:
1: System of units, physical
2: System of units, referred

Dependency: The parameter can only be changed in an offline project using the commissioning tool.

Refer to: p0304, p0305, p0310

Note: The reference parameter for resistances of the rated motor impedance Z = p0304 / (1.732 * p0305) is in the % units system.

Inductances are converted into a resistance using the factor 2 * Pi * p0310.

If a reference parameter (p0304, p305, p0310) is zero, then it is not possible to make a changeover to "referred" values (per unit values).

p0350[0...n] Damping uncontrolled axis / Damp unctrl axis

HLA

Can be changed: C2(3), T	**Calculated:** CALC_MOD_EQU	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.010	2.000	0.100

Description: Sets the damping for the uncontrolled axis.

p0350[0...n] Motor stator resistance cold / Mot R_stator cold

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_EQU	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** 16_1	**Unit selection:** p0349
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00000 [ohm]	2000.00000 [ohm]	0.00000 [ohm]

Description: Sets the stator resistance of the motor at ambient temperature p0625 (phase value).

Dependency: Refer to: p0625, r1912

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: The motor identification routine determines the stator resistance from the total stator resistance minus the cable resistance (p0352).

p0351[0...n]	**Piston position natural frequency minimum / Piston pos fn min**		
HLA	**Can be changed:** C2(3), T	**Calculated:** CALC_MOD_EQU	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
	P-Group: Motor	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.0 [mm]	3000.0 [mm]	0.0 [mm]

Description: Sets the piston position for minimum natural frequency.

p0352[0...n]	**Axis natural frequency A side / Axis fn A**		
HLA	**Can be changed:** C2(3), T	**Calculated:** CALC_MOD_EQU	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
	P-Group: Motor	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	1.0 [Hz]	2000.0 [Hz]	1.0 [Hz]

Description: Sets the natural frequency for the axis on the A side.

p0352[0...n]	**Cable resistance / R_cable**		
SERVO, SERVO_AC, SERVO_I_AC	**Can be changed:** C2(3), U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
	P-Group: Motor	**Unit group:** 16_1	**Unit selection:** p0349
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00000 [ohm]	120.00000 [ohm]	0.00000 [ohm]

Description: Resistance of the power cable between the Motor Module and motor.

Caution: The cable resistance should be entered prior to motor data identification. If it is used subsequently, the difference by which p0352 was changed must be subtracted from the stator resistance p0350 or motor data identification must be repeated.

Note: The parameter influences the temperature adaptation of the stator resistance.

The motor identification routine does not change the cable resistance. This is subtracted from the total measured stator resistance in order to calculate the stator resistance (p0350, p0352).

The cable resistance is reset when quick commissioning is exited with p3900 > 0.

p0352[0...n]	**Cable resistance / R_cable**		
VECTOR, VECTOR_AC, VECTOR_I_AC	**Can be changed:** C2(3), U, T	**Calculated:** -	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
	P-Group: Motor	**Unit group:** 16_1	**Unit selection:** p0349
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00000 [ohm]	120.00000 [ohm]	0.00000 [ohm]

Description: Resistance of the power cable between the Motor Module and motor.

Dependency: Refer to: p7003

Caution: The cable resistance should be entered prior to motor data identification. If it is used subsequently, the difference by which p0352 was changed must be subtracted from the stator resistance p0350 or motor data identification must be repeated.

Notice: Parallel circuits with one winding system (p7003 = 0):

p0352 includes the feeder cable resistance of an individual Motor Module. The total feeder cable resistance is obtained from p0352 divided by the number of activated Motor Modules (refer to r0395).

Parallel circuits with multi-winding system (p7003 = 1):

p0352 includes the complete feeder cable resistance and is directly added to the stator resistance (refer to r0395).

Note: The parameter influences the temperature adaptation of the stator resistance.

The motor identification sets the cable resistance to 20% of the measured total resistance if p0352 is zero at the time that the measurement is made. If p0352 is not zero, then the value is subtracted from the measured total stator resistance to calculate stator resistance p0350. In this case, p0350 is a minimum of 10% of the measured value.

Exception:

For parallel circuit configurations with one winding system (p07003 = 0), the cable resistance is directly measured. It is important to note that only the component of an individual Motor Module is entered into p0352.

The cable resistance is reset when quick commissioning is exited with p3900 > 0.

p0353[0...n] Axis natural frequency center / Axis fn center

HLA

Can be changed: C2(3), T	**Calculated:** CALC_MOD_EQU	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1.0 [Hz]	2000.0 [Hz]	1.0 [Hz]

Description: Sets the axis natural frequency at the center position.

p0353[0...n] Motor series inductance / Mot L_series

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** 15_1	**Unit selection:** p0349
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [mH]	1000000.000 [mH]	0.000 [mH]

Description: Sets the series inductance.

Note: For the automatic calculation with p0340 = 1 or 3, the calculation of p0348 is influenced by p0353 if p0348 was 0.

For the automatic calculation with p0340 = 1, 3 or 4, the calculation of p1715 is influenced by p0353.

The series inductance is reset when quick commissioning is exited with p3900 > 0.

The reference value for p0326 is inversely proportional to the leakage inductance of the motor (p0353, p0354, p0356).

p0353[0...n] Motor series inductance / Mot L_series

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** 15_1	**Unit selection:** p0349
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [mH]	1000000.000 [mH]	0.000 [mH]

Description: Sets the series inductance.

Note: For the automatic calculation with p0340 = 1, 3 or 4, the calculation of p1715 is influenced by p0353.

The series inductance is reset when quick commissioning is exited with p3900 > 0.

p0354[0...n] Axis natural frequency B side / Axis fn B

HLA

Can be changed: C2(3), T	**Calculated:** CALC_MOD_EQU	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1.0 [Hz]	2000.0 [Hz]	1.0 [Hz]

Description: Sets the natural frequency for the axis on the B side.

p0354[0...n] Motor rotor resistance cold / damping resistance d axis / Mot R_r cold/R_D d

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_EQU	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** 16_1	**Unit selection:** p0349
Not for motor type: PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00000 [ohm]	300.00000 [ohm]	0.00000 [ohm]

Description: Sets the rotor/secondary section resistance of the motor at the ambient temperature p0625.

For separately excited synchronous motors: Sets the damping resistance in the rotor direction (d-axis).

This parameter value is automatically calculated using the motor model (p0340 = 1, 2) or using the motor data identification routine (p1910) (not for separately excited synchronous motors).

Dependency: Refer to: p0625

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: The parameter is not used for synchronous motors (p0300 = 2xx).

The reference value for p0326 is inversely proportional to the leakage inductance of the motor (p0353, p0354, p0356).

p0354[0...n] Motor rotor resistance cold / damping resistance d axis / Mot R_r cold/R_D d

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_EQU	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 6727
P-Group: Motor	**Unit group:** 16_1	**Unit selection:** p0349
Not for motor type: PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00000 [ohm]	300.00000 [ohm]	0.00000 [ohm]

Description: Sets the rotor/secondary section resistance of the motor at the ambient temperature p0625.

For separately excited synchronous motors: Sets the damping resistance in the rotor direction (d-axis).

This parameter value is automatically calculated using the motor model (p0340 = 1, 2) or using the motor data identification routine (p1910) (not for separately excited synchronous motors).

Dependency: Refer to: p0625

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: The parameter is not used for synchronous motors (p0300 = 2xx).

p0355[0...n] Motor damping resistance q axis / Mot R_damp q

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_EQU	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 6727
P-Group: Motor	**Unit group:** 16_1	**Unit selection:** p0349
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00000 [ohm]	300.00000 [ohm]	0.00000 [ohm]

Description: Sets the damping resistance of the separately excited synchronous motor quadrature to the rotor direction (q axis).

This parameter value is automatically calculated using the motor model (p0340 = 1, 2).

p0356[0...n] Motor stator leakage inductance / Mot L_stator leak.

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_EQU	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** 15_1	**Unit selection:** p0349
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00000 [mH]	1000.00000 [mH]	0.00000 [mH]

Description: This parameter value is automatically calculated using the motor model (p0340 = 1, 2) or using the motor identification routine (p1910).

Induction motor, separately excited synchronous motor: Sets the rotor leakage inductance of the motor.

Synchronous motor: Sets the stator quadrature axis inductance of the motor.

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: The reference value for p0326 is inversely proportional to the leakage inductance of the motor (p0353, p0354, p0356).

p0356[0...n] Motor stator leakage inductance / Mot L_stator leak.

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_EQU	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** 15_1	**Unit selection:** p0349
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00000 [mH]	1000.00000 [mH]	0.00000 [mH]

Description: This parameter value is automatically calculated using the motor model (p0340 = 1, 2) or using the motor identification routine (p1910).

Induction motor, separately excited synchronous motor: Sets the rotor leakage inductance of the motor.

Synchronous motor: Sets the stator quadrature axis inductance of the motor.

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: If the stator leakage inductance (p0356) for induction motors is changed outside the commissioning phase (p0010 > 0), the magnetizing inductance (p0360) is automatically adapted to the new EMF (r0337). You are then advised to repeat the measurement for the saturation characteristic (p1960).

For permanent-magnet synchronous motors (p0300 = 2), this is the non-saturated value and is, therefore, ideal for a low current.

p0357[0...n] Motor stator inductance d axis / Mot L_stator d

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_EQU	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** 15_1	**Unit selection:** p0349
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00000 [mH]	1000.00000 [mH]	0.00000 [mH]

Description: Sets the stator direct-axis inductance of the synchronous motor.

This parameter value is automatically calculated using the motor model (p0340 = 1, 2) or using the motor identification routine (p1910).

Note: The parameter is not used for separately excited synchronous motors (p0300 = 5).

For permanent-magnet synchronous motors (p0300 = 2), this is the non-saturated value and is ideal for a low current.

p0358[0...n] Motor rotor leakage inductance / damping inductance d axis / Mot L_r leak / LDd

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_EQU	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** 15_1	**Unit selection:** p0349
Not for motor type: PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00000 [mH]	1000.00000 [mH]	0.00000 [mH]

Description: Sets the rotor/secondary section leakage inductance of the motor.

For separately excited synchronous motors: Sets the damping inductance in the rotor direction (d-axis).

This value is automatically calculated using the motor model (p0340 = 1, 2) or using the motor identification routine (p1910) (not for separately excited synchronous motors).

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: The parameter is not used for synchronous motors (p0300 = 2xx).

VECTOR:

If the rotor leakage inductance (p0358) for induction motors is changed outside the commissioning phase (p0010 > 0), then the magnetizing inductance (p0360) is automatically adapted to the new EMF (r0337). You are then advised to repeat the measurement for the saturation characteristic (p1960).

p0358[0...n] Motor rotor leakage inductance / damping inductance d axis / Mot L_r leak / LDd

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_EQU	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 6727
P-Group: Motor	**Unit group:** 15_1	**Unit selection:** p0349
Not for motor type: PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00000 [mH]	1000.00000 [mH]	0.00000 [mH]

Description: Sets the rotor/secondary section leakage inductance of the motor.

For separately excited synchronous motors: Sets the damping inductance in the rotor direction (d-axis).

This value is automatically calculated using the motor model (p0340 = 1, 2) or using the motor identification routine (p1910) (not for separately excited synchronous motors).

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: The parameter is not used for synchronous motors (p0300 = 2xx).

VECTOR:

If the rotor leakage inductance (p0358) for induction motors is changed outside the commissioning phase (p0010 > 0), then the magnetizing inductance (p0360) is automatically adapted to the new EMF (r0337). You are then advised to repeat the measurement for the saturation characteristic (p1960).

p0359[0...n] Motor damping inductance q axis / Mot L_damp q

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_EQU	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 6727
P-Group: Motor	**Unit group:** 15_1	**Unit selection:** p0349
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00000 [mH]	1000.00000 [mH]	0.00000 [mH]

Description: Sets the damping inductance of the separately excited synchronous motor quadrature to the rotor direction (q axis).

This parameter value is automatically calculated using the motor model (p0340 = 1, 2).

p0360[0...n] Motor magnetizing inductance/magn. inductance d axis saturated / Mot Lh/Lh d sat

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_EQU	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** 15_1	**Unit selection:** p0349
Not for motor type: PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00000 [mH]	10000.00000 [mH]	0.00000 [mH]

Description: Sets the magnetizing inductance of the motor.

For separately excited synchronous motors: Sets the saturated magnetizing inductance in the rotor direction (d-axis).

This parameter value is automatically calculated using the motor model (p0340 = 1, 2) or using the motor identification routine (p1910) (not for separately excited synchronous motors).

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: The parameter is not used for synchronous motors (p0300 = 2xx).

p0360[0...n] Motor magnetizing inductance/magn. inductance d axis saturated / Mot Lh/Lh d sat

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_EQU	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 6727
P-Group: Motor	**Unit group:** 15_1	**Unit selection:** p0349
Not for motor type: PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00000 [mH]	10000.00000 [mH]	0.00000 [mH]

Description: Sets the magnetizing inductance of the motor.

For separately excited synchronous motors: Sets the saturated magnetizing inductance in the rotor direction (d-axis).

This parameter value is automatically calculated using the motor model (p0340 = 1, 2) or using the motor identification routine (p1910) (not for separately excited synchronous motors).

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: The parameter is not used for synchronous motors (p0300 = 2xx).

p0361[0...n] Motor magnetizing inductance q axis saturated / Mot L_magn q sat

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_EQU	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 6727
P-Group: Motor	**Unit group:** 15_1	**Unit selection:** p0349
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00000 [mH]	10000.00000 [mH]	0.00000 [mH]

Description: Sets the saturated magnetizing inductance of the separately excited synchronous motor quadrature to the rotor direction (q axis).

This parameter value is automatically calculated using the motor model (p0340 = 1, 2).

p0362[0...n] Motor saturation characteristic flux 1 / Mot saturat.flux 1

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 6723, 6726
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
10.0 [%]	800.0 [%]	60.0 [%]

Description: The saturation characteristic (flux as mapping of current) is defined using 4 points.

This parameter specifies the y coordinate (flux) for the 1st value pair of the characteristic.

Induction motors (ASM) and separately excited synchronous motors (SESM):

The saturation characteristic describes the mapping of the magnetizing current onto the motor flux.

The parameter sets the first motor flux as a [%] referred to the rated motor flux.

Permanent magnet synchronous motors (PMSM):

The saturation characteristic describes the mapping of the stator quadrature axis current onto the stator quadrature axis flux.

The parameter sets the first stator quadrature axis flux as a [%] referred to the product of the unsaturated quadrature inductance (p0356) and the rated motor current.

Dependency: The following applies for the flux values:

p0362 < p0363 < p0364 < p0365

The following applies for the stator quadrature axis flux values (PMSM):

20 % < p0362 < p0363 < p0364 < p0365

Refer to: p0366

Notice: For permanent magnet synchronous motors (PMSM):

If the parameters are not set as specified, i.e. not in ascending order and to more than 20 %, the unsaturated quadrature inductance (p0356) is always used for quadrature axis flux calculation purposes.

Note: For induction motors, p0362 = 100 % corresponds to the rated motor flux.

For separately excited synchronous motors p0362 = 100% corresponds to an induced terminal voltage with the magnitude of the rated motor voltage (under no-load conditions at the synchronous speed).

With permanent-magnet synchronous motors, p0362 = 100 % corresponds to the product of the unsaturated quadrature inductance (p0356) and the rated motor current (p0305).

When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (p0300).

p0363[0...n] Motor saturation characteristic flux 2 / Mot saturat.flux 2

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 6723, 6726
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
10.0 [%]	800.0 [%]	85.0 [%]

Description: The saturation characteristic (flux as mapping of current) is defined using 4 points.

This parameter specifies the y coordinate (flux) for the 2nd value pair of the characteristic.

Induction motors (ASM) and separately excited synchronous motors (SESM):

The saturation characteristic describes the mapping of the magnetizing current onto the motor flux.

The parameter sets the second motor flux as a [%] referred to the rated motor flux.

Permanent magnet synchronous motors (PMSM):

The saturation characteristic describes the mapping of the stator quadrature axis current onto the stator quadrature axis flux.

The parameter sets the second stator quadrature axis flux as a [%] referred to the product of the unsaturated quadrature inductance (p0356) and the rated motor current.

Dependency: The following applies for the flux values:

p0362 < p0363 < p0364 < p0365

The following applies for the stator quadrature axis flux values (PMSM):

20 % < p0362 < p0363 < p0364 < p0365

Refer to: p0367

Notice: For permanent magnet synchronous motors (PMSM):

If the parameters are not set as specified, i.e. not in ascending order and to more than 20 %, the unsaturated quadrature inductance (p0356) is always used for quadrature axis flux calculation purposes.

Note: For induction motors, p0363 = 100 % corresponds to the rated motor flux.

For separately excited synchronous motors p0363 = 100% corresponds to an induced terminal voltage with the magnitude of the rated motor voltage (under no-load conditions at the synchronous speed).

With permanent-magnet synchronous motors, p0362 = 100 % corresponds to the product of the unsaturated quadrature inductance (p0356) and the rated motor current (p0305).

When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (p0300).

p0364[0...n] Motor saturation characteristic flux 3 / Mot saturat.flux 3

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 6723, 6726
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
10.0 [%]	800.0 [%]	115.0 [%]

Description: The saturation characteristic (flux as mapping of current) is defined using 4 points.

This parameter specifies the y coordinate (flux) for the 3rd value pair of the characteristic.

Induction motors (ASM) and separately excited synchronous motors (SESM):

The saturation characteristic describes the mapping of the magnetizing current onto the motor flux.

The parameter sets the third motor flux as a [%] referred to the rated motor flux.

Permanent magnet synchronous motors (PMSM):

The saturation characteristic describes the mapping of the stator quadrature axis current onto the stator quadrature axis flux.

The parameter sets the third stator quadrature axis flux as a [%] referred to the product of the unsaturated quadrature inductance (p0356) and the rated motor current.

Dependency: The following applies for the flux values:

p0362 < p0363 < p0364 < p0365

The following applies for the stator quadrature axis flux values (PMSM):

20% < p0362 < p0363 < p0364 < p0365

Refer to: p0368

Notice: For permanent magnet synchronous motors (PMSM):

If the parameters are not set as specified, i.e. not in ascending order and to more than 20 %, the unsaturated quadrature inductance (p0356) is always used for quadrature axis flux calculation purposes.

Note: For induction motors, p0364 = 100 % corresponds to the rated motor flux.

For separately excited synchronous motors p0364 = 100% corresponds to an induced terminal voltage with the magnitude of the rated motor voltage (under no-load conditions at the synchronous speed).

With permanent-magnet synchronous motors, p0362 = 100 % corresponds to the product of the unsaturated quadrature inductance (p0356) and the rated motor current (p0305).

When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (p0300).

p0365[0...n] Motor saturation characteristic flux 4 / Mot saturat.flux 4

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 6723, 6726
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
10.0 [%]	800.0 [%]	125.0 [%]

Description: The saturation characteristic (flux as mapping of current) is defined using 4 points.

This parameter specifies the y coordinate (flux) for the 4th value pair of the characteristic.

Induction motors (ASM) and separately excited synchronous motors (SESM):

The saturation characteristic describes the mapping of the magnetizing current onto the motor flux.

The parameter sets the fourth motor flux as a [%] referred to the rated motor flux.

Permanent magnet synchronous motors (PMSM):

The saturation characteristic describes the mapping of the stator quadrature axis current onto the stator quadrature axis flux.

The parameter sets the fourth stator quadrature axis flux as a [%] referred to the product of the unsaturated quadrature inductance (p0356) and the rated motor current.

Dependency: The following applies for the flux values:

p0362 < p0363 < p0364 < p0365

The following applies for the stator quadrature axis flux values (PMSM):

20 % < p0362 < p0363 < p0364 < p0365

Refer to: p0369

Notice: For permanent magnet synchronous motors (PMSM):

If the parameters are not set as specified, i.e. not in ascending order and to more than 20 %, the unsaturated quadrature inductance (p0356) is always used for quadrature axis flux calculation purposes.

Note: For induction motors, p0365 = 100 % corresponds to the rated motor flux.

For separately excited synchronous motors p0365 = 100% corresponds to an induced terminal voltage with the magnitude of the rated motor voltage (under no-load conditions at the synchronous speed).

With permanent-magnet synchronous motors, p0362 = 100 % corresponds to the product of the unsaturated quadrature inductance (p0356) and the rated motor current (p0305).

When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (p0300).

p0366[0...n] Motor saturation characteristic I_mag 1 / Mot sat. I_mag 1

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 6723, 6726
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
5.0 [%]	800.0 [%]	50.0 [%]

Description: The saturation characteristic (flux as mapping of current) is defined using 4 points.

This parameter specifies the x coordinate for the 1st value pair of the characteristic.

Induction motors (ASM) and separately excited synchronous motors (SESM):

The saturation characteristic describes the mapping of the magnetizing current onto the motor flux.

The parameter sets the first magnetizing current as a [%] referred to the rated magnetizing current r0331 (ASM), which in turn is referred to the no-load excitation current (SESM).

Permanent magnet synchronous motors (PMSM):

The saturation characteristic describes the mapping of the stator quadrature axis current onto the stator quadrature axis flux.

The parameter sets the first stator quadrature axis current as a [%] referred to the rated motor current (p0305).

Dependency: The following applies for the magnetizing currents:

p0366 < p0367 < p0368 < p0369

The following applies for the stator quadrature axis current values (PMSM):

20 % < p0366 < p0367 < p0368 < p0369

Refer to: p0362

Notice: For permanent magnet synchronous motors (PMSM), the following applies:

If the parameters are not set as specified, i.e. not in ascending order and to more than 20 %, the unsaturated quadrature inductance (p0356) is always used for quadrature axis flux calculation purposes.

Note: When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (p0300).

p0367[0...n] Motor saturation characteristic I_mag 2 / Mot sat. I_mag 2

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 6723, 6726
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
5.0 [%]	800.0 [%]	75.0 [%]

Description: The saturation characteristic (flux as mapping of current) is defined using 4 points.

This parameter specifies the x coordinate for the 2nd value pair of the characteristic.

Induction motors (ASM) and separately excited synchronous motors (SESM):

The saturation characteristic describes the mapping of the magnetizing current onto the motor flux.

The parameter sets the second magnetizing current as a [%] referred to the rated magnetizing current r0331 (ASM), which in turn is referred to the no-load excitation current (SESM).

Permanent magnet synchronous motors (PMSM):

The saturation characteristic describes the mapping of the stator quadrature axis current onto the stator quadrature axis flux.

The parameter sets the second stator quadrature axis current as a [%] referred to the rated motor current (p0305).

Dependency: The following applies for the magnetizing currents:

p0366 < p0367 < p0368 < p0369

The following applies for the stator quadrature axis current values (PMSM):

20 % < p0366 < p0367 < p0368 < p0369

Refer to: p0363

Notice: For permanent magnet synchronous motors (PMSM), the following applies:

If the parameters are not set as specified, i.e. not in ascending order and to more than 20 %, the unsaturated quadrature inductance (p0356) is always used for quadrature axis flux calculation purposes.

Note: When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (p0300).

p0368[0...n] Motor saturation characteristic I_mag 3 / Mot sat. I_mag 3

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 6723, 6726
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
5.0 [%]	800.0 [%]	150.0 [%]

Description: The saturation characteristic (flux as mapping of current) is defined using 4 points.

This parameter specifies the x coordinate for the 3rd value pair of the characteristic.

Induction motors (ASM) and separately excited synchronous motors (SESM):

The saturation characteristic describes the mapping of the magnetizing current onto the motor flux.

The parameter sets the third magnetizing current as a [%] referred to the rated magnetizing current r0331 (ASM), which in turn is referred to the no-load excitation current (SESM).

Permanent magnet synchronous motors (PMSM):

The saturation characteristic describes the mapping of the stator quadrature axis current onto the stator quadrature axis flux.

The parameter sets the third stator quadrature axis current as a [%] referred to the rated motor current (p0305).

Dependency: The following applies for the magnetizing currents:

p0366 < p0367 < p0368 < p0369

The following applies for the stator quadrature axis current values (PMSM):

20 % < p0366 < p0367 < p0368 < p0369

Refer to: p0364

Notice: For permanent magnet synchronous motors (PMSM), the following applies:

If the parameters are not set as specified, i.e. not in ascending order and to more than 20 %, the unsaturated quadrature inductance (p0356) is always used for quadrature axis flux calculation purposes.

Note: When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (p0300).

p0369[0...n] Motor saturation characteristic I_mag 4 / Mot sat. I_mag 4

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 6723, 6726
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
5.0 [%]	800.0 [%]	210.0 [%]

Description: The saturation characteristic (flux as mapping of current) is defined using 4 points.

This parameter specifies the x coordinate for the 4th value pair of the characteristic.

Induction motors (ASM) and separately excited synchronous motors (SESM):

The saturation characteristic describes the mapping of the magnetizing current onto the motor flux.

The parameter sets the fourth magnetizing current as a [%] referred to the rated magnetizing current r0331 (ASM), which in turn is referred to the no-load excitation current (SESM).

Permanent magnet synchronous motors (PMSM):

The saturation characteristic describes the mapping of the stator quadrature axis current onto the stator quadrature axis flux.

The parameter sets the fourth stator quadrature axis current as a [%] referred to the rated motor current (p0305).

Dependency: The following applies for the magnetizing currents:

p0366 < p0367 < p0368 < p0369

The following applies for the stator quadrature axis current values (PMSM):

20 % < p0366 < p0367 < p0368 < p0369

Refer to: p0365

Notice: For permanent magnet synchronous motors (PMSM), the following applies:

If the parameters are not set as specified, i.e. not in ascending order and to more than 20 %, the unsaturated quadrature inductance (p0356) is always used for quadrature axis flux calculation purposes.

Note: When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (p0300).

r0370[0...n] Motor stator resistance cold / Mot R_stator cold

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** 16_1	**Unit selection:** p0349
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [ohm]	- [ohm]	- [ohm]

Description: Displays the motor stator resistance at an ambient temperature (p0625).

The value does not include the cable resistance.

Dependency: Refer to: p0625

r0372[0...n] Total power unit cable resistance / PU cable R tot

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** 16_1	**Unit selection:** p0349
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [ohm]	- [ohm]	- [ohm]

Description: Displays the total cable resistance between Motor Module and motor, as well as the internal converter resistance.

Dependency: Refer to: r0238, p0352

r0373[0...n] Motor rated stator resistance / Mot R_stator rated

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** 16_1	**Unit selection:** p0349
Not for motor type: PMSM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [ohm]	- [ohm]	- [ohm]

Description: Displays the rated motor stator resistance at rated temperature (total of p0625 and p0627).

Dependency: Refer to: p0627

Note: The parameter is not used for synchronous motors (p0300 = 2xx).

r0374[0...n] Motor rotor resistance cold / damping resistance d axis / Mot R_r cold/R_D d

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** 16_1	**Unit selection:** p0349
Not for motor type: PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [ohm]	- [ohm]	- [ohm]

Description: Displays the rotor/secondary section resistance of the motor for the ambient temperature p0625.

For separately excited synchronous motors:

Displays the damping resistance in the rotor direction (d-axis).

Dependency: Refer to: p0625

Note: The parameter is not used for synchronous motors (p0300 = 2xx).

r0375[0...n] Motor damping resistance q axis / Mot R_damp q

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** 16_1	**Unit selection:** p0349
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [ohm]	- [ohm]	- [ohm]

Description: Displays the damping resistance of the separately excited synchronous motor quadrature to the rotor direction (q axis).

r0376[0...n] Rated motor rotor resistance / Mot rated R_rotor

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** 16_1	**Unit selection:** p0349
Not for motor type: PMSM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [ohm]	- [ohm]	- [ohm]

Description: Displays the nominal rotor / secondary section resistance of the motor at the rated temperature.

The rated temperature is the sum of p0625 and p0628.

Dependency: Refer to: p0628

Note: The parameter is not used for synchronous motors (p0300 = 2xx).

r0377[0...n] Motor leakage inductance total / Mot L_leak total

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 6640
P-Group: Motor	**Unit group:** 15_1	**Unit selection:** p0349
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [mH]	- [mH]	- [mH]

Description: Displays the total stray inductance of the motor.

Induction motor:

Displays the stator leakage inductance of the motor including the series inductance (p0353).

Synchronous motor:

Displays the stator quadrature axis inductance of the motor including the series inductance (p0353).

r0377[0...n] Motor leakage inductance total / Mot L_leak total

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 6640
P-Group: Motor	**Unit group:** 15_1	**Unit selection:** p0349
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [mH]	- [mH]	- [mH]

Description: Displays the total stray inductance of the motor.

Induction motor, separately excited synchronous motor:

Displays the stator leakage inductance of the motor, including the series inductance (p0353) and the motor reactor (p0233).

Synchronous motor:

Displays the stator quadrature inductance, including the series inductance (p0353) and the motor reactor (p0233).

r0378[0...n] Motor stator inductance d axis / Mot L_stator d

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** 15_1	**Unit selection:** p0349
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [mH]	- [mH]	- [mH]

Description: Displays the stator longitudinal inductance of the synchronous motor including the series inductance (p0353) and the motor reactor (p0233).

Note: The parameter is not used for separately excited synchronous motors (p0300 = 5).

r0380[0...n] Motor damping inductance d axis / Mot L_damp d

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** 15_1	**Unit selection:** p0349
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [mH]	- [mH]	- [mH]

Description: Displays the damping inductance of the separately excited synchronous motor in the rotor direction (d-axis).

r0381[0...n] Motor damping inductance q axis / Mot L_damp q

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** 15_1	**Unit selection:** p0349
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [mH]	- [mH]	- [mH]

Description: Displays the damping inductance of a separately excited synchronous motor quadrature to the rotor direction (q axis).

r0382[0...n] Motor magnetizing inductance transformed / Lh d axis saturated / Mot L_m tr/Lhd sat

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** 15_1	**Unit selection:** p0349
Not for motor type: PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [mH]	- [mH]	- [mH]

Description: Displays the magnetizing inductance of the motor.

For separately excited synchronous motors:

Displays the saturated magnetizing inductance in the rotor direction (d-axis).

Note: The parameter is not used for synchronous motors (p0300 = 2xx).

r0383[0...n] Motor magnetizing inductance q axis saturated / Mot L_magn q sat

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** 15_1	**Unit selection:** p0349
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [mH]	- [mH]	- [mH]

Description: Displays the saturated magnetizing inductance of a separately excited synchronous motor quadrature to the rotor direction (q axis).

r0384[0...n] Motor rotor time constant / damping time constant d axis / Mot T_rotor/T_Dd

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 6722
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [ms]	- [ms]	- [ms]

Description: Displays the rotor time constant.

For separately excited synchronous motors:

Displays the damping time constant to the rotor direction (d axis).

Note: The parameter is not used for synchronous motors.

The value is calculated from the total of the inductances on the rotor side (p0358, p0360) divided by the rotor/damping resistance (p0354). The temperature adaptation of the rotor resistance for induction motors is not taken into account.

r0385[0...n] Motor damping time constant q axis / Mot L_damping q

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [ms]	- [ms]	- [ms]

Description: Displays the damping time constant of a separately excited synchronous motor quadrature to the rotor direction (q axis).

Note: The value is calculated from the total of the inductances on the damping side (p0359, p0361) divided by the damping resistance (p0355).

r0386[0...n] Motor stator leakage time constant / Mot T_stator leak

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [ms]	- [ms]	- [ms]

Description: Displays the stator leakage time constant.

Note: The value is calculated from the total of all leakage inductances (p0233*, p0353, p0356, p0358) divided by the total of all motor resistances (p0350, p0352, p0354). The temperature adaptation of the resistances is not taken into account.

* only applies for VECTOR (r0107).

r0387[0...n] Motor stator leakage time constant q axis / Mot T_Sleak /T_Sq

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [ms]	- [ms]	- [ms]

Description: Displays the stator leakage time constant quadrature to the rotor direction (q axis).

Note: The value is calculated from the total of all leakage inductances (p0233, p0356, p0359) divided by the total of all motor resistances (p0350, p0352, p0355).

The temperature adaptation of the resistances is not taken into account.

p0388[0...n] Motor stall torque correction factor for p1402.6 = 1 / Mot M_stallCorrNew

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(1, 3), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
5 [%]	300 [%]	140 [%]

Description: Sets the correction factor for the stall torque for a DC link voltage of 600 V and p1402.6 = 1.

For p1402.6 = 0, this correction factor is set with p0326.

A value of p0388 that is set too low results in an unnecessarily low stall power limit.

The controller corrects a value that is set too high.

In the stall power range, r1549[1] can be used to check whether the controller the influences the value.

The value is sufficiently high if the controller intervention in r1549[1] is visible in the stall power range.

If p0388 is too low, then r1549[1] remains zero in the stall power range.

Note: The reference values for p0326 and p0388 differ.

p0389[0...n] Excitation rated no-load current / Exc I_noload_rated

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 6727
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [A]	10000.00 [A]	0.00 [A]

Description: Sets the rated no-load current (I_F0) for the excitation.

p0390[0...n] Rated excitation current / Exc I_rated

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 6727
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [A]	10000.00 [A]	0.00 [A]

Description: Setting the rated current (I_F) of the controlled excitation rectifier (DC master).

p0391[0...n] Current controller adaptation starting point Kp / I_adapt pt Kp

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 5714
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Arms]	6000.00 [Arms]	0.00 [Arms]

Description: Sets the starting point of the current-dependent current controller adaptation where the current controller gain p1715 is effective.

Dependency: Refer to: p0392, p0393, p1402, p1715

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: For p0393 = 100 % or p1402.2 = 0, the current controller adaptation is disabled and p1715 is effective over the entire range.

p0391[0...n] Current controller adaptation starting point Kp / I_adapt pt Kp

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 6714
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Arms]	6000.00 [Arms]	0.00 [Arms]

Description: Sets the starting point of the current-dependent current controller adaptation where the current controller gain p1715 is effective.

Dependency: Refer to: p0392, p0393, p1402, p1715

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (p0300).

p0392[0...n] Current controller adaptation starting point Kp adapted / I_adapt pt Kp adap

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 5714
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Arms]	6000.00 [Arms]	0.00 [Arms]

Description: Sets the starting point of the current-dependent current controller adaptation where the adapted current controller gain p1715 x p0393 is effective.

Dependency: Refer to: p0391, p0393, p1402, p1715

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: For p0393 = 100 % or p1402.2 = 0, the current controller adaptation is disabled and p1715 is effective over the entire range.

p0392[0...n] Current controller adaptation starting point Kp adapted / I_adapt pt Kp adap

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 6714
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Arms]	6000.00 [Arms]	0.00 [Arms]

Description: Sets the starting point of the current-dependent current controller adaptation where the adapted current controller gain p1715 x p0393 is effective.

Dependency: Refer to: p0391, p0393, p1402, p1715

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (p0300).

p0393[0...n] Current controller adaptation p gain adaptation / I_adapt Kp adapt

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 5714
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	1000.00 [%]	100.00 [%]

Description: Sets the factor for the current controller P gain in the adaptation range (current > p0392).

The value is referred to p1715.

Dependency: Refer to: p0391, p0392, p1402, p1715

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: For p0393 = 100 % or p1402.2 = 0, the current controller adaptation is disabled and p1715 is effective over the entire range.

p0393[0...n] Current controller adaptation P gain scaling / I_adapt Kp scal

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 6714
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	1000.00 [%]	100.00 [%]

Description: Sets the factor for the current controller P gain in the adaptation range (e.g. r0078 > p0392, if p0392 > p0391).

The value is referred to p1715.

Dependency: Refer to: p0391, p0392, p1402, p1715

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: For p0393 = 100 % or p1402.2 = 0, the current controller adaptation is disabled and p1715 is effective over the entire range.

When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (p0300).

r0395[0...n] Actual stator resistance / R_stator act

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 6301, 6730, 6731, 6732
P-Group: Motor	**Unit group:** 16_1	**Unit selection:** p0349
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [ohm]	- [ohm]	- [ohm]

Description: Displays the actual stator resistance (phase value).

The parameter value also contains the temperature-independent cable resistance.

Dependency: In the case of induction motors the parameter is also affected by the motor temperature model.

Refer to: p0350, p0352, p0620

Note: In each case, only the stator resistance of the active Motor Data Set is included with the stator temperature of the thermal motor model.

r0396[0...n] Actual rotor resistance / R_rotor act

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 6730
P-Group: Motor	**Unit group:** 16_1	**Unit selection:** p0349
Not for motor type: PMSM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [ohm]	- [ohm]	- [ohm]

Description: Displays the actual rotor/secondary section resistance (phase value).

The parameter is affected by the motor temperature model.

Dependency: Refer to: p0354, p0620

Note: In each case, only the rotor resistance of the active Motor Data Set is included with the rotor temperature of the thermal motor model.

This parameter is not used for synchronous motors (p0300 = 2xx).

p0397[0...n] Angle magnetic decoupling maximum angle / Magn decpl max_ang

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_EQU	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-90.0 [°]	90.0 [°]	90.0 [°]

Description: Maximum angle when calculating the polynomial function to decouple the magnetic flux axes for permanent-magnet synchronous motors (see p0398, p0399).

p0398[0...n] Angle magn decoupling (cross saturation) coeff 1 / Magn decoupl C1

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_EQU	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-10.000000	10.000000	0.000000

Description: The magnetic cross coupling of the motor's d and q axes caused by saturation (current-dependent) leads to an angle offset affecting the axis system d'q'; this decouples the magnetic quantities.

The angle offset can be described as a 3rd order polynomial function of the load current consumed:

phiOffset = f(C1*iq + C3*iq^3)

This parameter is the coefficient C1; it describes the linear load impact effect.

p0399[0...n] Angle magn decoupling (cross saturation) coeff 3 / Magn decoupl C3

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_EQU	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-10.000000	10.000000	0.000000

Description: The magnetic cross coupling of the motor's d and q axes caused by saturation (current-dependent) leads to an angle offset affecting the axis system d'q'; this decouples the magnetic quantities.

The angle offset can be described as a 3rd order polynomial function of the load current consumed:

phiOffset = f(C1*iq + C3*iq^3)

This parameter is the coefficient C3; it describes the cubic load impact effect.

p0400[0...n] Encoder type selection / Enc_typ sel

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC	**Can be changed:** C2(1, 4)	**Calculated:** -	**Access level:** 1
	Data type: Integer16	**Dyn. index:** EDS, p0140	**Func. diagram:** 4700, 4704
	P-Group: Encoder	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	10100	0

Description: Selects the encoder from the list of encoder types supported.

Value:
0: No encoder
202: DRIVE-CLiQ encoder AS20, singleturn
204: DRIVE-CLiQ encoder AM20, multiturn 4096
212: DRIVE-CLiQ encoder AS21, singleturn
214: DRIVE-CLiQ encoder AM21, multiturn 4096
222: DRIVE-CLiQ encoder AS22, singleturn
224: DRIVE-CLiQ encoder AM22, multiturn 4096
242: DRIVE-CLiQ encoder AS24, singleturn
244: DRIVE-CLiQ encoder AM24, multiturn 4096
1001: Resolver 1 speed
1002: Resolver 2 speed
1003: Resolver 3 speed
1004: Resolver 4 speed
2001: 2048, 1 Vpp, A/B C/D R
2002: 2048, 1 Vpp, A/B R
2003: 256, 1 Vpp, A/B R
2004: 400, 1 Vpp, A/B R
2005: 512, 1 Vpp, A/B R
2006: 192, 1 Vpp, A/B R
2007: 480, 1 Vpp, A/B R
2008: 800, 1 Vpp, A/B R
2010: 18000, 1 Vpp, A/B R distance-coded
2012: 420, 1 Vpp, A/B R
2013: 675, 1 Vpp, A/B R
2051: 2048, 1 Vpp, A/B, EnDat, Multiturn 4096
2052: 32, 1 Vpp, A/B, EnDat, Multiturn 4096
2053: 512, 1 Vpp, A/B, EnDat, Multiturn 4096
2054: 16, 1 Vpp, A/B, EnDat, Multiturn 4096
2055: 2048, 1 Vpp, A/B, EnDat, Singleturn
2081: 2048, 1 Vpp, A/B, SSI, Singleturn
2082: 2048, 1 Vpp, A/B, SSI, Multiturn 4096
2083: 2048, 1 Vpp, A/B, SSI, singleturn, error bit
2084: 2048, 1 Vpp, A/B, SSI, multiturn 4096, error bit
2110: 4000 nm, 1 Vpp, A/B R distance-coded
2111: 20000 nm, 1 Vpp, A/B R distance-coded
2112: 40000 nm, 1 Vpp, A/B R distance-coded
2151: 16000 nm, 1 Vpp, A/B, EnDat, resolution 100 nm
3001: 1024 HTL A/B R
3002: 1024 TTL A/B R
3003: 2048 HTL A/B R
3005: 1024 HTL A/B
3006: 1024 TTL A/B
3007: 2048 HTL A/B
3008: 2048 TTL A/B
3009: 1024 HTL A/B unipolar
3011: 2048 HTL A/B unipolar
3020: 2048 TTL A/B R, with sense
3081: SSI, Singleturn, 24 V
3082: SSI, Multiturn 4096, 24 V
3088: 1024, HTL, A/B, SSI, singleturn
3090: 4096, HTL, A/B, SSI, Singleturn
3109: 2000 nm, TTL, A/B R distance-coded
9999: User-defined
10000: Identify encoder

10050: Encoder with EnDat2.x interface identified
10051: DRIVE-CLiQ encoder identified
10058: Digital encoder (absolute) identified
10059: Digital encoder (incremental) identified
10100: Identify encoder (waiting)

Notice: An encoder type with p0400 < 9999 defines an encoder for which there is an encoder parameter list.

When selecting a catalog encoder (p0400 < 9999) the parameters from the encoder parameter list cannot be changed (write protection). To remove write protection, the encoder type should be set to a third-party encoder (p0400 = 9999).

Note: The connected encoder can be identified by setting p0400 to 10000 or 10100. This means that the encoder must support this, and is possible in the following cases:

- motor with DRIVE-CLiQ
- encoder with EnDat interface
- DRIVE-CLiQ encoder
- encoder with SSI interface (only 10100)

The encoder data (e.g. pulse number p0408) can only be changed when p0400 = 9999.

When using an encoder with track A/B and zero pulse, as standard, fine synchronization is not set using a zero mark. If, for a synchronous motor, fine synchronization is to be realized using a zero mark, then the following must be executed:

- set p0400 to 9999
- set p0404.15 to 1

Prerequisite:

Coarse synchronization must be selected (e.g. pole position identification) and the zero pulse of the encoder must be either mechanically or electronically (p0431) adjusted to the pole position.

For p0400 = 10000 the following applies:

The connected encoder is identified. If an identification is not possible, then p0400 is set to 0.

For p0400 = 10100 the following applies:

The connected encoder is identified. If identification is not possible, then p0400 remains set = 10100, and the system waits until identification is possible.

p0402[0...n] Gearbox type selection / Gearbox type sel

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: C2(1, 4)	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	10100	9999

Description: Selects the gearbox type to pre-set the inversion and the gearbox factor.

Measuring gear factor = motor or load revolutions / encoder revolutions.

Value:
1: Gearbox 1:1 not inverted
2: Gearbox 2:7 inverted
3: Gearbox 4:17 inverted
4: Gearbox 2:10 inverted
9999: Gearbox user-defined
10000: Identify gearbox
10100: Identify gearbox

Dependency: Refer to: p0410, p0432, p0433

Note: For p0402 = 1:

Automatic setting of p0410 = 0000 bin, p0432 = 1, p0433 = 1.

For p0402 = 2:

Automatic setting of p0410 = 0011 bin, p0432 = 7, p0433 = 2.

For p0402 = 3:

Automatic setting of p0410 = 0011 bin, p0432 = 17, p0433 = 4.

For p0402 = 4:

Automatic setting of p0410 = 0011 bin, p0432 = 10, p0433 = 2.

For p0402 = 9999:

No automatic setting of p0410, p0432, p0433. The parameters should be manually set.

For p0402 = 10000:

It is only possible to identify the gearbox type for a motor with DRIVE-CLiQ. Parameters p0410, p0432 and p0433 are set corresponding to the identified gearbox. If an identification is not possible, then p0402 is set to 9999.

p0404[0...n] Encoder configuration effective / Enc_config eff

SERVO, HLA, SERVO_AC, SERVO_I_AC, ENC

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** EDS, p0140	**Func. diagram:** 4010, 4704
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 0000 0000 0000 0000 bin

Description: Settings for the basic encoder properties.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Linear encoder	Yes	No	-
01	Absolute encoder	Yes	No	-
02	Multiturn encoder	Yes	No	-
03	Track A/B square-wave	Yes	No	-
04	Track A/B sine	Yes	No	-
05	Track C/D	Yes	No	-
06	Hall sensor	Yes	No	-
08	EnDat encoder	Yes	No	-
09	SSI encoder	Yes	No	-
10	DRIVE-CLiQ encoder	Yes	No	-
11	Digital encoder	Yes	No	-
12	Equidistant zero mark	Yes	No	-
13	Irregular zero mark	Yes	No	-
14	Distance-coded zero mark	Yes	No	-
15	Commutation with zero mark (not ASM)	Yes	No	-
16	Acceleration	Yes	No	-
17	Track A/B analog	Yes	No	-
20	Voltage level 5 V	Yes	No	-
21	Voltage level 24 V	Yes	No	-
22	Remote sense (only SMC30)	Yes	No	-
23	Resolver excitation	Yes	No	-

Notice: This parameter is automatically preassigned for encoders from the encoder list and for identify encoder (p0400).

When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.

Note: ZM: Zero mark

SMC: Sensor Module Cabinet

If a technique to determine the commutation information/data has not been selected (e.g. track C/D, Hall sensor), and the encoder pulse number is an integer multiple of the pole number, then the following applies:

The track A/B is adjusted to match the magnetic position of the motor.

For bit 01, 02 (absolute encoder, multiturn encoder):

These bits can only be selected for EnDat encoders, SSI encoders or DRIVE-CLiQ encoders.

For bit 10 (DRIVE-CLiQ encoder):

This bit is only used for the large-scale integrated DRIVE-CLiQ encoders that provide their encoder data directly in DRIVE-CLiQ format without converting this data. This bit is not, therefore, set for first-generation DRIVE-CLiQ encoders.

For bit 12 (equidistant zero mark):

The zero marks occur at regular intervals (e.g. rotary encoder with 1 zero mark per revolution or linear encoder with constant zero mark distance).

The bit activates monitoring of the zero mark distance (p0424/p0425, linear/rotary) or in the case of the linear encoder with 1 zero mark and p0424 = 0 zero mark monitoring is activated.

For bit 13 (irregular zero mark):

The zero marks occur at irregular intervals (e.g. a linear scale with only 1 zero mark in the traversing range). The zero mark distance is not monitored.

For bit 14 (distance-coded zero mark):

The distance (clearance) between two or several consecutive zero marks allows the absolute position to be calculated.

For bit 15 (commutation with zero mark):

Only applicable for synchronous motors.

The function can be de-selected by priority via p0430.23.

For distance-coded zero marks, the following applies:

The phase sequence of the C/D track (if available) must be the same as the phase sequence of the encoder (A/B track).

The phase sequence of the Hall signal (if available) must be the same as the phase sequence of the motor. Further, the position of the Hall sensor must be mechanically adjusted to the motor EMF.

The fine synchronization is only started after two zero marks have been passed.

p0404[0...n] Encoder configuration effective / Enc_config eff

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** EDS, p0140	**Func. diagram:** 4010, 4704
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 0000 0000 0000 0000 bin

Description: Settings for the basic encoder properties.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Linear encoder	Yes	No	-
01	Absolute encoder	Yes	No	-
02	Multiturn encoder	Yes	No	-
03	Track A/B square-wave	Yes	No	-
04	Track A/B sine	Yes	No	-
05	Track C/D	Yes	No	-
06	Hall sensor	Yes	No	-
08	EnDat encoder	Yes	No	-
09	SSI encoder	Yes	No	-
10	DRIVE-CLiQ encoder	Yes	No	-
11	Digital encoder	Yes	No	-
12	Equidistant zero mark	Yes	No	-
13	Irregular zero mark	Yes	No	-
14	Distance-coded zero mark	Yes	No	-
15	Commutation with zero mark (not ASM)	Yes	No	-
16	Acceleration	Yes	No	-
17	Track A/B analog	Yes	No	-
20	Voltage level 5 V	Yes	No	-
21	Voltage level 24 V	Yes	No	-
22	Remote sense (only SMC30)	Yes	No	-
23	Resolver excitation	Yes	No	-

Notice: This parameter is automatically preassigned for encoders from the encoder list and for identify encoder (p0400).

When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.

If an SSI encoder (bit 9 = 1) is used as motor encoder for permanent-magnet synchronous motors, then this is only permissible in conjunction with an additional A/B track (bit 3 = 1 or bit 4 = 1).

Note: ZM: Zero mark

SMC: Sensor Module Cabinet

If a technique to determine the commutation information/data has not been selected (e.g. track C/D, Hall sensor), and the encoder pulse number is an integer multiple of the pole number, then the following applies:

The track A/B is adjusted to match the magnetic position of the motor.

For bit 01, 02 (absolute encoder, multiturn encoder):

These bits can only be selected for EnDat encoders, SSI encoders or DRIVE-CLiQ encoders.

For bit 10 (DRIVE-CLiQ encoder):

This bit is only used for the large-scale integrated DRIVE-CLiQ encoders that provide their encoder data directly in DRIVE-CLiQ format without converting this data. This bit is not, therefore, set for first-generation DRIVE-CLiQ encoders.

For bit 12 (equidistant zero mark):

The zero marks occur at regular intervals (e.g. rotary encoder with 1 zero mark per revolution or linear encoder with constant zero mark distance).

The bit activates monitoring of the zero mark distance (p0424/p0425, linear/rotary) or in the case of the linear encoder with 1 zero mark and p0424 = 0 zero mark monitoring is activated.

For bit 13 (irregular zero mark):

The zero marks occur at irregular intervals (e.g. a linear scale with only 1 zero mark in the traversing range). The zero mark distance is not monitored.

For bit 14 (distance-coded zero mark):

The distance (clearance) between two or several consecutive zero marks allows the absolute position to be calculated.

For bit 15 (commutation with zero mark):

Only applicable for synchronous motors.

The function can be de-selected by priority via p0430.23.

For distance-coded zero marks, the following applies:

The phase sequence of the C/D track (if available) must be the same as the phase sequence of the encoder (A/B track).

The phase sequence of the Hall signal (if available) must be the same as the phase sequence of the motor. Further, the position of the Hall sensor must be mechanically adjusted to the motor EMF.

The fine synchronization is only started after two zero marks have been passed.

p0405[0...n] Square-wave encoder track A/B / Sq-wave enc A/B

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** EDS, p0140	**Func. diagram:** 4704
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 1111 bin

Description: Settings for the track A/B in a square-wave encoder.

For square-wave encoders, p0404.3 must also be 1.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Signal	Bipolar	Unipolar	-
01	Level	TTL	HTL	-
02	Track monitoring	A/B <> -A/B	None	-
03	Zero pulse	Same as A/B track	24 V unipolar	-
04	Switching threshold	High	Low	-
05	Pulse/direction	Active	Inactive	-

Notice: This parameter is automatically preassigned for encoders from the encoder list and for identify encoder (p0400).

When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.

Note: For bit 02:

When the function is activated, track monitoring can be deactivated by setting p0437.26.

For bit 05:

When the function is activated, a frequency setpoint and a direction for traveling can be entered via an encoder interface.

p0407[0...n] Linear encoder grid division / Enc grid div

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** EDS, p0140	**Func. diagram:** 4010, 4704
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [nm]	250000000 [nm]	16000 [nm]

Description: Sets the grid division for a linear encoder.

In conjunction with the values in p0418/p0419, the grid division defines the transfer format for position actual values Gn_XIST1 (r0482) and Gn_XIST2 (r0483).

Notice: This parameter is automatically preassigned for encoders from the encoder list and for identify encoder (p0400).

When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.

Note: The lowest permissible value is 250 nm.

This value does not always correspond to the grid division of the measuring device. For a DRIVE-CLiQ encoder, a value is entered here that facilitates optimum transfer of the resolution (p0422).

p0408[0...n] Rotary encoder pulse number / Rot enc pulse No.

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** EDS, p0140	**Func. diagram:** 4010, 4704
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	16777215	2048

Description: Sets the number of pulses for a rotary encoder.

In conjunction with the values in p0418/p0419, the pulse number defines the transfer format for position actual values Gn_XIST1 (r0482) and Gn_XIST2 (r0483).

Notice: This parameter is automatically preassigned for encoders from the encoder list and for identify encoder (p0400).

When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.

Note: The smallest permissible value is 1 pulse.

The number of pole pairs for a resolver is entered here.

This value does not always correspond to the pulse number of the measuring device. For a DRIVE-CLiQ encoder, a value is entered here that facilitates optimum transfer of the resolution (p0423).

p0408 TM41 encoder emulation pulse number / Enc_emul puls No.

TM41

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9674, 9676
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
32	16384	2048

Description: Sets the pulse number output from the encoder emulation.

Note: For p4408 = 0, the following applies:

Parameters p0408 and p0418 have a double significance. They define the format of the position actual value from the original encoder (TM41 input) and the format of the TM41 output.

In this case, the zero mark is only correctly output, if the two parameters p0408 and p0418 for the TM41 and the encoder interconnected at p4420 have the same setting.

p0410[0...n] Encoder inversion actual value / Enc inv act value

HLA

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** EDS, p0140	**Func. diagram:** 4965
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Setting to invert actual values.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Invert velocity actual value	Yes	No	4710, 4711, 4715
01	Invert position actual value	Yes	No	4704

Note: The inversion influences the following parameters:

Bit 00: r0061, r0063, r0094

Bit 01: r0482, r0483

p0410[0...n] Encoder inversion actual value / Enc inv act value

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** EDS, p0140	**Func. diagram:** 4704, 4710, 4711, 4715
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Setting to invert actual values.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Invert speed actual value	Yes	No	4710, 4711, 4715
01	Invert position actual value	Yes	No	4704

Note: The inversion influences the following parameters:

Bit 00: r0061, r0063 (exception: encoderless control), r0094

Bit 01: r0482, r0483

p0410[0...n] Encoder inversion actual value / Enc inv act value

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin), ENC (Lin_enc)

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** EDS, p0140	**Func. diagram:** 4704, 4710, 4711, 4715
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Setting to invert actual values.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Invert velocity actual value	Yes	No	4710, 4711, 4715
01	Invert position actual value	Yes	No	4704

Note: The inversion influences the following parameters:

Bit 00: r0061, r0063 (exception: encoderless control), r0094

Bit 01: r0482, r0483

p0411[0...n] Measuring gear configuration / Meas gear config

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: C2(4)	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** EDS, p0140	**Func. diagram:** 4704
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Sets the configuration for position tracking of a measuring gear.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Measuring gear activate position tracking	Yes	No	-
01	Axis type	Linear axis	Rotary axis	-
02	Measuring gear reset position	Yes	No	-
03	Meas. gearbox, activate pos. tracking for incremental encoders	Yes	No	-

Notice: For p0411.3 = 1 the following applies:

If position tracking is activated for incremental encoders, only the position actual value is stored. Axis or encoder motion is not detected when deactivated! Any tolerance window entered in p0413 has no effect.

Note: For the following events, the non-volatile, saved position values are automatically reset:

- when an encoder replacement has been identified.
- when changing the configuration of the Encoder Data Set (EDS).

p0412[0...n] Measuring gear absolute encoder rotary revolutions virtual / Abs rot rev

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: C2(4)	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** EDS, p0140	**Func. diagram:** 4704
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	4194303	0

Description: Sets the number of rotations that can be resolved for a rotary encoder with activated position tracking of the measuring gear.

Dependency: This parameter is only of significance for an absolute encoder (p0404.1 = 1) with activated position tracking (p0411.0 = 1) and for an incremental encoder with activated position tracking (p0411.3 = 1).

Note: The resolution that is set must be able to be represented using r0483.

For rotary axes/modulo axes, the following applies:

p0411.0 = 1:

This parameter is pre-set with p0421 and can be changed.

p0411.3 = 1:

The parameter value is pre-set to the highest possible value. The highest possible value depends on the pulse number (p0408) and the fine resolution (p0419).

For linear axes, the following applies:

p0411.0 = 1:

This parameter is pre-assigned with p0421, expanded by 6 bits for multiturn information (maximum number of overflows) and cannot be changed.

p0411.3 = 1:

The parameter value is pre-set to the highest possible value. The highest possible value depends on the pulse number (p0408) and the fine resolution (p0419).

p0413[0...n]	Measuring gear position tracking tolerance window / Pos track window		
SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC	**Can be changed:** C2(4)	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** EDS, p0140	**Func. diagram:** -
	P-Group: Encoder	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00	4294967300.00	0.00

Description: Sets a tolerance window for position tracking.

After the system is switched on, the difference between the saved position and the actual position is determined, and depending on this, the following is initiated:

Difference within the tolerance window --> The position is reproduced as a result of the encoder actual value.

Difference outside the tolerance window --> An appropriate message is output.

Dependency: Refer to: F31501, F32501, F33501

Caution: Rotation, for example through a complete encoder range is not detected.

Note: The value is entered in integer (complete) encoder pulses.

For p0411.0 = 1, the value is automatically pre-assigned quarter of the encoder range.

Example:

Quarter of the encoder range = (p0408 * p0421) / 4

It is possible that the tolerance window may not be able to be precisely set due to the data type (floating point number with 23 bit mantissa).

p0414[0...n]	Redundant coarse position value relevant bits (identified) / Relevant bits		
SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC	**Can be changed:** C2(4)	**Calculated:** -	**Access level:** 3
	Data type: Unsigned16	**Dyn. index:** EDS, p0140	**Func. diagram:** -
	P-Group: Encoder	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	16	16

Description: Sets the number of relevant bits for the redundant coarse position value.

p0415[0...n]	Gx_XIST1 Coarse position safe most significant bit (identified) / Gx_XIST1 safe MSB		
SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC	**Can be changed:** C2(4)	**Calculated:** -	**Access level:** 3
	Data type: Unsigned16	**Dyn. index:** EDS, p0140	**Func. diagram:** -
	P-Group: Encoder	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	31	14

Description: Sets the bit number for the safe most significant bit (MSB) of the Gx_XIST1 coarse position.

Note: MSB: Most Significant Bit

p0416[0...n]	Non safety-relevant meas. steps position value POS1 (detected) / nsrPos1		
SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC	**Can be changed:** C2(4)	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** EDS, p0140	**Func. diagram:** -
	P-Group: Encoder	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	4294967295	22000

Description: Sets the non safety-relevant measuring steps of POS1.

Dependency: Refer to: r0473, p9513

p0417[0...n] Encoder safety comparison algorithm (detected) / Safety comp_algo

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	255

Description: Sets the comparison algorithm for the encoder position monitoring functions.

Value:
0: Reserved
10: Reserved
11: DQL linear non-binary safety algorithm
12: SMC30 safety algorithm
255: Safety algorithm unknown

Dependency: Refer to: p9541

p0418[0...n] Fine resolution Gx_XIST1 (in bits) / Enc fine Gx_XIST1

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** EDS, p0140	**Func. diagram:** 4010, 4704
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
2	18	11

Description: Sets the fine resolution in bits of the incremental position actual values.

Note: The parameter applies for the following process data:

- Gx_XIST1
- Gx_XIST2 for reference mark or flying measurement

The fine resolution specifies the fraction between encoder pulses. Depending on the physical measurement principle, an encoder pulse can be broken down into a different number of fractions (e.g. squarewave encoder: 2 bit = resolution 4, sin/cos encoder: Typical 11 bit = resolution 2048).

For a squarewave encoder, with the factory setting, the least significant bits have the value zero, i.e. they do not supply any useful information.

For especially high quality measuring systems, the fine resolution must be increased corresponding to the available accuracy.

p0418 TM41 encoder emulation fine resolution Gx_XIST1 (in bits) / Enc fine Gx_XIST1

TM41

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** 9674, 9676
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
2	18	11

Description: Sets the fine resolution in bits of the position actual value (r0479, r0482).

Note: For p4408 = 0, the following applies:

Parameters p0408 and p0418 have a double significance. They define the format of the position actual value from the original encoder (TM41 input) and the format of the TM41 output.

In this case, the zero mark is only correctly output, if the two parameters p0408 and p0418 for the TM41 and the encoder interconnected at p4420 have the same setting.

p0419[0...n] Fine resolution absolute value Gx_XIST2 (in bits) / Enc fine Gx_XIST2

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** EDS, p0140	**Func. diagram:** 4704, 4710
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
2	18	9

Description: Sets the fine resolution in bits of the absolute position actual values.

Dependency: Refer to: p0418

Note: This parameter applies to process data Gx_XIST2 when reading the absolute value.

p0420[0...n] Encoder connection / Enc_connection

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: C2(4)	**Calculated:** -	**Access level:** 4
Data type: Unsigned16	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Selecting the encoder connection.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	SUB-D	Yes	No	-
01	Terminal	Yes	No	-

p0421[0...n] Absolute encoder rotary multiturn resolution / Enc abs multiturn

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** EDS, p0140	**Func. diagram:** 4704
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	4294967295	4096

Description: Sets the number of rotations that can be resolved for a rotary absolute encoder.

Notice: This parameter is automatically preassigned for encoders from the encoder list and for identify encoder (p0400).

When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.

p0422[0...n] Absolute encoder linear measuring step resolution / Enc abs meas step

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** EDS, p0140	**Func. diagram:** 4704
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [nm]	4294967295 [nm]	100 [nm]

Description: Sets the resolution of the absolute position for a linear absolute encoder.

Notice: This parameter is automatically preassigned for encoders from the encoder list and for identify encoder (p0400).

When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.

Note: The serial protocol of an absolute encoder provides the position with a certain resolution (e.g. 100 nm). This value must be entered here.

p0423[0...n] Absolute encoder rotary singleturn resolution / Enc abs singleturn

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC	**Can be changed:** C2(4)	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** EDS, p0140	**Func. diagram:** 4704
	P-Group: Encoder	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	1073741823	8192

Description: Sets the number of measuring steps per revolution for a rotary absolute encoder.

The resolution refers to the absolute position.

Notice: This parameter is automatically preassigned for encoders from the encoder list and for identify encoder (p0400).

When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.

p0424[0...n] Encoder linear zero mark distance / Enc lin ZM_dist

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC	**Can be changed:** C2(4)	**Calculated:** -	**Access level:** 3
	Data type: Unsigned16	**Dyn. index:** EDS, p0140	**Func. diagram:** -
	P-Group: Encoder	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0 [mm]	65535 [mm]	20 [mm]

Description: Sets the distance between two zero marks for a linear encoder.

This information is used for zero mark monitoring.

Notice: This parameter is automatically preassigned for encoders from the encoder list and for identify encoder (p0400).

When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.

Note: For distance-coded zero marks this parameter signifies the basic distance.

p0425[0...n] Encoder rotary zero mark distance / Enc rot dist ZM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC	**Can be changed:** C2(4)	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** EDS, p0140	**Func. diagram:** 4704, 8570
	P-Group: Encoder	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	16777215	2048

Description: Sets the distance in pulses between two zero marks for a rotary encoder.

This information is used for zero mark monitoring.

Notice: This parameter is automatically preassigned for encoders from the encoder list and for identify encoder (p0400).

When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.

Note: For distance-coded zero marks this parameter signifies the basic distance.

p0426[0...n] Encoder zero mark differential distance / Enc ZM Dif_dist

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC	**Can be changed:** C2(4)	**Calculated:** -	**Access level:** 3
	Data type: Unsigned16	**Dyn. index:** EDS, p0140	**Func. diagram:** -
	P-Group: Encoder	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	1	65535	1

Description: Sets the differential pitch for distance-coded zero marks (signal periods).

The value corresponds to jump displacement of "zero mark with interference".

Dependency: This function can only be used when a Sensor Module property is available (r0459.9 = 1).

Notice: This parameter is automatically preassigned for encoders from the encoder list and for identify encoder (p0400).

When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.

p0427[0...n] Encoder SSI baud rate / Enc SSI baud rate

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [kHz]	65535 [kHz]	100 [kHz]

Description: Sets the baud rate for an SSI encoder.

Notice: This parameter is automatically preassigned for encoders from the encoder list and for identify encoder (p0400).

When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.

Note: SSI: Synchronous Serial Interface

p0428[0...n] Encoder SSI monoflop time / Enc SSI t_monoflop

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [µs]	65535 [µs]	30 [µs]

Description: Sets the minimum delay time between two data transfers of the absolute value for an SSI encoder.

Notice: This parameter is automatically preassigned for encoders from the encoder list and for identify encoder (p0400).

When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.

p0429[0...n] Encoder SSI configuration / Enc SSI config

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 bin

Description: Sets the configuration for an SSI encoder.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Transfer code	Binary code	Gray code	-
02	Transfer absolute value twice	Yes	No	-
06	Data line during the monoflop time	High level	Low level	-

Notice: This parameter is automatically preassigned for encoders from the encoder list and for identify encoder (p0400).

When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.

Note: For bit 06:

The quiescent signal level of the data line corresponds to the inverted, set level.

p0430[0...n]	Sensor Module configuration / SM config		
SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC	**Can be changed:** C2(4)	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** EDS, p0140	**Func. diagram:** -
	P-Group: Encoder	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	1110 0000 0000 1000 0000 0000 0000 0000 bin

Description: Sets the configuration of the Sensor Module.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
17	Burst oversampling	Yes	No	-
18	Continuous oversampling (reserved)	Yes	No	-
19	Safety position actual value sensing	Yes	No	-
20	Speed calculation mode (only SMC30)	Incremental diff	Flank time meas	-
21	Zero mark tolerance	Yes	No	-
22	Rotor position adaptation	Yes	No	-
23	De-select commutation with zero mark	Yes	No	-
24	Commutation with selected zero mark	Yes	No	-
25	Switch off encoder voltage supply during parking	Yes	No	-
27	Extrapolate position values	Yes	No	-
28	Cubic correction	Yes	No	-
29	Phase correction	Yes	No	-
30	Amplitude correction	Yes	No	-
31	Offset correction	Yes	No	-

Notice: A bit-wise configuration is only possible if the corresponding property is also present in r0458.

Note: For bit 17 (burst oversampling):

- if bit = 1, burst oversampling is switched on.

For bit 18 (continuous oversampling):

- if bit = 1, continuous oversampling is switched on.

For bit 19 (Safety position actual value sensing):

- if bit = 1, the Safety position actual value is transferred in the cyclic telegram.

For bit 20 (speed calculation mode):

- if bit = 1, the speed is calculated via incremental difference without extrapolation.
- if bit = 0, the speed is calculated via edge time measurement with extrapolation. p0453 is effective in this mode.

For bit 21 (zero mark tolerance):

- if bit = 1, a one-off zero mark distance error is tolerated. In the event of a defect, the fault F3x100/F3x101 does not appear, but alarm A3x400/A3x401 does.

For bit 22 (rotor position adaptation):

- if bit = 1, the rotor position is corrected automatically. The correction speed is +/-1/4 encoder pulse per zero mark distance.

For bit 23 (de-select commutation with zero mark):

- the bit should only be set for encoders that have not been adjusted.

For bit 24 (commutation with selected zero mark):

- if bit = 1, the commutation position is corrected via a selected zero mark.

For bit 25 (disconnect the encoder power supply on parking):

- if bit = 1, the encoder power supply is switched off on parking (0 V).
- if bit = 0, the encoder power supply is not switched off on parking, it is reduced from 24 V to 5 V.

For bit 27 (extrapolate position values):

- if bit = 1, the extrapolation of the position values is activated.

For bit 28 (cubic correction);

- if bit = 1, the cubic correction for track A/B sine is activated.

For bit 29 (phase correction):

- if bit = 1, the phase correction for track A/B sine is activated.

For bit 30 (amplitude correction):

- if bit = 1, the amplitude correction for track A/B sine is activated.

For bit 31 (offset correction):

- if bit = 1, the offset correction for track A/B sine is activated.

p0430[0...n] Sensor Module configuration / SM config

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin), ENC (Lin_enc)

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1110 0000 0000 1000 0000 0000 0000 0000 bin

Description: Sets the configuration of the Sensor Module.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
17	Burst oversampling	Yes	No	-
18	Continuous oversampling (reserved)	Yes	No	-
19	Safety position actual value sensing	Yes	No	-
20	Velocity calculation mode (only SMC30)	Incremental diff	Flank time meas	-
21	Zero mark tolerance	Yes	No	-
22	Rotor position adaptation	Yes	No	-
23	De-select commutation with zero mark	Yes	No	-
24	Commutation with selected zero mark	Yes	No	-
25	Switch off encoder voltage supply during parking	Yes	No	-
27	Extrapolate position values	Yes	No	-
28	Cubic correction	Yes	No	-
29	Phase correction	Yes	No	-
30	Amplitude correction	Yes	No	-
31	Offset correction	Yes	No	-

Notice: A bit-wise configuration is only possible if the corresponding property is also present in r0458.

Note: For bit 17 (burst oversampling):

- if bit = 1, burst oversampling is switched on.

For bit 18 (continuous oversampling):

- if bit = 1, continuous oversampling is switched on.

For bit 19 (Safety position actual value sensing):

- if bit = 1, the Safety position actual value is transferred in the cyclic telegram.

For bit 20 (speed calculation mode):

- if bit = 1, the speed is calculated via incremental difference without extrapolation.
- if bit = 0, the speed is calculated via edge time measurement with extrapolation. p0453 is effective in this mode.

For bit 21 (zero mark tolerance):

- if bit = 1, a one-off zero mark distance error is tolerated. In the event of a defect, the fault F3x100/F3x101 does not appear, but alarm A3x400/A3x401 does.

For bit 22 (rotor position adaptation):

- if bit = 1, the rotor position is corrected automatically. The correction speed is +/-1/4 encoder pulse per zero mark distance.

For bit 23 (de-select commutation with zero mark):

- the bit should only be set for encoders that have not been adjusted.

For bit 24 (commutation with selected zero mark):

- if bit = 1, the commutation position is corrected via a selected zero mark.

For bit 25 (disconnect the encoder power supply on parking):

- if bit = 1, the encoder power supply is switched off on parking (0 V).
- if bit = 0, the encoder power supply is not switched off on parking, it is reduced from 24 V to 5 V.

For bit 27 (extrapolate position values):

- if bit = 1, the extrapolation of the position values is activated.

For bit 28 (cubic correction);

- if bit = 1, the cubic correction for track A/B sine is activated.

For bit 29 (phase correction):
- if bit = 1, the phase correction for track A/B sine is activated.
For bit 30 (amplitude correction):
- if bit = 1, the amplitude correction for track A/B sine is activated.
For bit 31 (offset correction):
- if bit = 1, the offset correction for track A/B sine is activated.

p0431[0...n] Angular commutation offset / Ang_com offset

SERVO, HLA, SERVO_AC, SERVO_I_AC

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-180.00 [°]	180.00 [°]	0.00 [°]

Description: Sets the angular commutation offset.

Dependency: The value is taken into account in r0094.

Refer to: r0094, r1778

Notice: When the firmware is upgraded from V2.3 to V2.4 or higher, the value must be reduced by 60° if all the following conditions are fulfilled:

- the motor is a synchronous motor (p0300 = 2, 2xx, 4, 4xx).
- the encoder is a resolver (p0404.23 = 1).
- the actual speed value is inverted (p0410.0 = 1).

The angular commutation offset cannot be generally taken from other drive systems. As a minimum - the sign of the offset determined for SIMODRIVE 611 digital and SIMODRIVE 611 universal must be reversed for SINAMICS (p0431 (SINAMICS) = -p1016 (SIMODRIVE)).

Note: Angular commutation offset, angular difference between electrical position of encoder and flux position.

For p0404.5 = 1 (track C/D) the following applies:

The angular offset in p0431 acts on track A/B, the zero mark on track C/D.

For p0404.6 = 1 (Hall sensor) the following applies:

The angular offset in p0431 acts on track A/B and the zero mark.

p0431[0...n] Angular commutation offset / Ang_com offset

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-180.00 [°]	180.00 [°]	0.00 [°]

Description: Sets the angular commutation offset.

Dependency: The value is taken into account in r0094.

Refer to: r0094, r1778

Notice: When the firmware is upgraded from V2.3 to V2.4 or higher, the value must be reduced by 60° if all the following conditions are fulfilled:

- the motor is a synchronous motor (p0300 = 2, 2xx, 4, 4xx).
- the encoder is a resolver (p0404.23 = 1).
- the actual speed value is inverted (p0410.0 = 1).

The angular commutation offset cannot be generally taken from other drive systems. As a minimum - the sign of the offset determined for SIMODRIVE 611 digital and SIMODRIVE 611 universal must be reversed for SINAMICS (p0431 (SINAMICS) = -p1016 (SIMODRIVE)).

Note: Angular commutation offset, angular difference between electrical position of encoder and flux position.

For p0404.5 = 1 (track C/D) the following applies:

The angular offset in p0431 acts on track A/B, the zero mark on track C/D.

For p0404.6 = 1 (Hall sensor) the following applies:

The angular offset in p0431 acts on track A/B and the zero mark.

p0432[0...n] Gearbox factor encoder revolutions / Grbx_fact enc_rev

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC			
	Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
	Data type: Integer32	**Dyn. index:** EDS, p0140	**Func. diagram:** -
	P-Group: Encoder	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	1	1048576	1

Description: Sets the encoder revolutions for the gearbox factor of the encoder evaluation.

The gearbox factor specifies the ratio between the encoder shaft and motor shaft (for motor encoders) or between the encoder shaft and the load.

Dependency: This parameter can only be set for p0402 = 9999.

Refer to: p0402, p0410, p0433

Note: Negative gearbox factors should be implemented with p0410.

p0433[0...n] Gearbox factor motor/load revolutions / Grbx_fact mot_rev

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC			
	Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
	Data type: Integer32	**Dyn. index:** EDS, p0140	**Func. diagram:** -
	P-Group: Encoder	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	1	1048576	1

Description: Sets the motor and load revolutions for the gearbox factor of the encoder evaluation.

The gearbox factor specifies the ratio between the encoder shaft and motor shaft (for motor encoders) or between the encoder shaft and the load.

Dependency: This parameter can only be set for p0402 = 9999.

Refer to: p0402, p0410, p0432

Note: Negative gearbox factors should be implemented with p0410.

p0434[0...n] Encoder SSI error bit / Enc SSI error bit

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC			
	Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
	Data type: Unsigned16	**Dyn. index:** EDS, p0140	**Func. diagram:** -
	P-Group: Encoder	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	65535	0

Description: Sets the position and level of the error bit in the SSI protocol.

Notice: The bit may only be positioned before (p0446) or after (p0448) the absolute value in the SSI protocol.

Note: Value = dcba

ba: Position of the error bit in the protocol (0 ... 63).

c: Level (0: Low level, 1: High level).

d: Status of the evaluation (0: Off, 1: On with 1 error bit, 2: On with 2 error bits ... 9: On with 9 error bits).

For several error error bits, the following applies:

- the position specified under ba and the additional bits are assigned increasing consecutively.
- the level set under c applies to all error bits.

Example:

p0434 = 1013

--> The evaluation is switched in and the error bit is at position 13 with a low level.

p0434 = 1113

--> The evaluation is switched in and the error bit is at position 13 with a high level.

p0435[0...n] Encoder SSI alarm bit / Enc SSI alarm bit

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	65535	0

Description: Sets the position and level of the alarm bit in the SSI protocol.

Notice: The bit may only be positioned before (p0446) or after (p0448) the absolute value in the SSI protocol.

Note: Value = dcba

ba: Position of the alarm bit in protocol (0 ... 63).

c: Level (0: Low level, 1: High level).

d: Status of the evaluation (0: Off, 1: On with 1 alarm bit, 2: On with 2 alarm bits ... 9: On with 9 alarm bits).

The following applies for several alarm bits:

- the position specified under ba and the additional bits are assigned increasing consecutively.
- the level set under c applies to all error bits.

Example:

p0435 = 1014

--> The evaluation is switched in and the alarm bit is at position 14 with a low level.

p0435 = 1114

--> The evaluation is switched in and the alarm bit is at position 14 with a high level.

p0436[0...n] Encoder SSI parity bit / Enc SSI parity bit

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	65535	0

Description: Sets the position and parity of the parity bit in the SSI protocol.

Notice: The bit may only be positioned before (p0446) or after (p0448) the absolute value in the SSI protocol.

Note: Value = dcba

ba: Position of the parity bit in the protocol (0 ... 63).

c: Parity (0: even, 1: uneven).

d: State of the evaluation (0: Off, 1: On).

Example:

p0436 = 1015

--> The evaluation is switched in and the parity bit is at position 15 with even parity.

p0436 = 1115

--> The evaluation is switched in and the parity bit is at position 15 with uneven parity.

p0437[0...n] Sensor Module configuration extended / SM config ext

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0011 0000 0000 0000 0000 1000 0000 0000 bin

Description: Sets the extended configuration of the Sensor Module.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Data logger	Yes	No	-
01	Zero mark edge detection	Yes	No	-
02	Correction position actual value XIST1	Yes	No	-
04	Edge evaluation bit 0	Yes	No	-
05	Edge evaluation bit 1	Yes	No	-
06	Freeze the speed actual value for dn/dt errors	Yes	No	-
07	Do not accumulate the number of incorrect pulses	Yes	No	-
11	Fault handling after PROFIdrive	Yes	No	-
12	Activate additional messages	Yes	No	-
13	Support absolute position for incremental encoder	Yes	No	4750
22	Resolution absolute position as factor	Yes	No	-
25	Deselect monitoring multiturn representation in Gx_XIST2	Yes	No	-
26	Deselect track monitoring	Yes	No	-
28	EnDat linear encoder monitoring incremental/absolute	Yes	No	-
29	EnDat encoder initialization with high accuracy	Yes	No	-
31	Analog unipolar track monitoring	Yes	No	-

Dependency: Refer to: p0430, r0459

Note: A value of zero is displayed if an encoder is not present.

For bit 00:

When the data logger (trace) is activated, in the case of a fault, data before and after the event are recorded (traced) and saved in files on the non-volatile memory medium. Experts can then evaluate this data.

For bit 01:

If bit = 0, the zero mark is evaluated by ANDing tracks A and B and the zero mark.

For bit = 1, the zero mark is evaluated depending on the direction of rotation detected. For a positive direction of rotation, the positive edge of the zero mark is considered and for a negative direction of rotation, the negative edge of the zero mark.

For bit 02:

When the bit is set, for a deviation less than the tolerance window for the zero mark (p4681, p4682), the pulse number is corrected. If the bit is not set, encoder fault F3x131 is triggered.

For bits 05, 04:

The actual hardware only supports 1x or 4x signal evaluation.

Bit 5/4 = 0/0: Signal evaluation per period, 4x.

Bit 5/4 = 1/0: signal evaluation per period, 4x with speed calculation over the complete pulse.

Bit 5/4 = 0/1: Signal evaluation per period, 1x.

Bit 5/4 = 1/1: Illegal setting.

For bit 06:

If the function is active, when dn/dt monitoring responds, the speed actual value is internally frozen for a time equivalent to two current controller sampling times. The rotor position continues to be integrated. The actual value is then re-enabled after this time has expired.

For bit 07:

When the bit is not set, the incorrect pulses that have occurred up until now are accumulated in p4688.

When the bit is not set, p4688 indicates the incorrect pulses that have still not been corrected.

For bit 11:

If the bit is set, the Sensor Module checks within a certain time grid whether the fault cause is still present. This enables the Sensor Module to switch from the fault state to the operating state and provide valid actual values automatically. The faults are displayed until the user acknowledges them.

For bit 12:

Additional fault messages can be activated for extended fault diagnostics.

For bit 13:

When the bit is set, for an incremental encoder with zero mark, the absolute value in Gn_XIST2 can be requested via Gn_STW.13. The absolute value is only valid after passing the zero mark.

For bit 22:

When the bit is set, the resolution of the absolute position in the serial protocol is set using distribution factor in p4630. The resolution for the absolute position is then calculated using p0407/p4630.

For bit 26:

Track monitoring is deactivated for the square-wave encoders when the bit is set, even if the monitoring function is selected in p0405.2.

For bit 28:

Monitoring of the difference between incremental and absolute position in the case of linear encoders.

For bit 29:

When the bit is set, the EnDat encoder is initialized under a certain speed and, therefore, with high accuracy. If initialization at a higher speed is requested, fault F31151, F32151, or F33151 is output.

For bit 31:

When monitoring is active, the levels of the individual track signals and the corresponding inverted track signals are monitored separately.

p0437[0...n] Sensor Module configuration extended / SM config ext

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin), ENC (Lin_enc)

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0011 0000 0000 0000 0000 1000 0000 0000 bin

Description: Sets the extended configuration of the Sensor Module.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Data logger	Yes	No	-
01	Zero mark edge detection	Yes	No	-
02	Correction position actual value XIST1	Yes	No	-
04	Edge evaluation bit 0	Yes	No	-
05	Edge evaluation bit 1	Yes	No	-
06	Freeze the speed actual value for dn/dt errors	Yes	No	-
07	Do not accumulate the number of incorrect pulses	Yes	No	-
11	Fault handling after PROFIdrive	Yes	No	-
12	Activate additional messages	Yes	No	-
13	Support absolute position for incremental encoder	Yes	No	4750
22	Resolution absolute position as factor	Yes	No	-
25	Deselect monitoring multiturn representation in Gx_XIST2	Yes	No	-
26	Deselect track monitoring	Yes	No	-
28	EnDat linear encoder monitoring incremental/absolute	Yes	No	-
29	EnDat encoder initialization with high accuracy	Yes	No	-
31	Analog unipolar track monitoring	Yes	No	-

Dependency: Refer to: p0430, r0459

Note: A value of zero is displayed if an encoder is not present.

For bit 00:

When the data logger (trace) is activated, in the case of a fault, data before and after the event are recorded (traced) and saved in files on the non-volatile memory medium. Experts can then evaluate this data.

For bit 01:

If bit = 0, the zero mark is evaluated by ANDing tracks A and B and the zero mark.

For bit = 1, the zero mark is evaluated depending on the direction detected. For a positive direction, the positive edge of the zero mark is considered and for a negative direction, the negative edge of the zero mark.

For bit 02:

When the bit is set, for a deviation less than the tolerance window for the zero mark (p4681, p4682), the pulse number is corrected. If the bit is not set, encoder fault F3x131 is triggered.

For bits 05, 04:

Bit 5/4 = 0/0: Signal evaluation per period, 4x.

Bit 5/4 = 1/0: Signal evaluation per period, 4x.

Bit 5/4 = 0/1: Signal evaluation per period, 1x.

Bit 5/4 = 1/1: Illegal setting.

For bit 06:

If the function is active, when dn/dt monitoring responds, the velocity actual value is internally frozen for a time equivalent to two current controller sampling times. The rotor position continues to be integrated. The actual value is then re-enabled after this time has expired.

For bit 07:

When the bit is not set, the incorrect pulses that have occurred up until now are accumulated in p4688.

When the bit is not set, p4688 indicates the incorrect pulses that have still not been corrected.

For bit 29:

When the bit is set, the EnDat encoder is initialized under a certain velocity and, therefore, with high accuracy. If initialization at a higher velocity is requested, fault F31151, F32151, or F33151 is output.

For bit 31:

When monitoring is active, the levels of the individual track signals and the corresponding inverted track signals are monitored separately.

p0438[0...n] Squarewave encoder filter time / Enc t_filt

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [µs]	100.00 [µs]	0.64 [µs]

Description: Sets the filter time for a squarewave encoder.

The hardware of the squarewave encoder only supports the following values:

0: No filtering

0.04 µs

0.64 µs

2.56 µs

10.24 µs

20.48 µs

Dependency: Refer to: r0452

Notice: If the filter time is too long, the track signals A/B/R may be suppressed and the appropriate messages output.

Note: The most suitable filter time depends on the number of pulses and maximum speed of the square-wave encoder.

The filter time is automatically corrected to the next value when entering a non-specified value. In this case, no message is output.

The effective filter time is displayed in r0452.

p0439[0...n] Encoder ramp-up time / Enc ramp-up time

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	65535 [ms]	0 [ms]

Description: Sets the ramp-up time for the encoder.

The encoder supplies stable track signals once this time has elapsed.

Dependency: This function can only be used when a Sensor Module property is available (r0459.9 = 1).

Notice: This parameter is automatically preassigned for encoders from the encoder list and for identify encoder (p0400).

p0440[0...n] Copy encoder serial number / Copy enc ser_no

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Copies the actual serial number of the encoder belonging to this Encoder Data Set (EDS) to p0441 ... p0445.

Example:

For p0440[0] = 1, the serial number of the encoder belonging EDS0 is copied to p0441[0] ... p0445[0].

Value:
0: No action
1: Transfer serial number

Dependency: Refer to: p0441, p0442, p0443, p0444, p0445, r0460, r0461, r0462, r0463, r0464, p1990

Note: For encoders with serial number, encoder replacement is monitored in order to request angular commutation calibration (adjustment) for motor encoders and absolute calibration for direct measuring systems with absolute value data. The serial number, which from then onwards is used for monitoring purposes, can be transferred using p0440.

Copying is automatically started in the following cases:

1.) When commissioning 1FT6, 1FK6, 1FK7 motors.

2.) When writing into p0431.

3.) For p1990 = 1.

p0440 is automatically set to 0 when the copying has been completed.

In order to permanently accept the copied values, it is necessary to save in a non-volatile fashion (p0977).

p0441[0...n] Encoder commissioning serial number part 1 / Enc comm ser_no 1

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: C2(4)	**Calculated:** CALC_MOD_ALL	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Serial number part 1 of the encoder for the commissioning.

Dependency: Refer to: p0440, p0442, p0443, p0444, p0445, r0460, r0461, r0462, r0463, r0464

Refer to: F07414

Note: A value of zero is displayed if an encoder is not present.

p0442[0...n] Encoder commissioning serial number part 2 / Enc comm ser_no 2

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: C2(4)	**Calculated:** CALC_MOD_ALL	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Serial number part 2 of the encoder for the commissioning.

Dependency: Refer to: p0440, p0441, p0443, p0444, p0445, r0460, r0461, r0462, r0463, r0464
Refer to: F07414

Note: A value of zero is displayed if an encoder is not present.

p0443[0...n] Encoder commissioning serial number part 3 / Enc comm ser_no 3

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: C2(4)	**Calculated:** CALC_MOD_ALL	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Serial number part 3 of the encoder for the commissioning.

Dependency: Refer to: p0440, p0441, p0442, p0444, p0445, r0460, r0461, r0462, r0463, r0464
Refer to: F07414

Note: A value of zero is displayed if an encoder is not present.

p0444[0...n] Encoder commissioning serial number part 4 / Enc comm ser_no 4

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: C2(4)	**Calculated:** CALC_MOD_ALL	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Serial number part 4 of the encoder for the commissioning.

Dependency: Refer to: p0440, p0441, p0442, p0443, p0445, r0460, r0461, r0462, r0463, r0464
Refer to: F07414

Note: A value of zero is displayed if an encoder is not present.

p0445[0...n] Encoder commissioning serial number part 5 / Enc comm ser_no 5

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: C2(4)	**Calculated:** CALC_MOD_ALL	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Serial number part 5 of the encoder for the commissioning.

Dependency: Refer to: p0440, p0441, p0442, p0443, p0444, r0460, r0461, r0462, r0463, r0464
Refer to: F07414

Note: A value of zero is displayed if an encoder is not present.

p0446[0...n] Encoder SSI number of bits before the absolute value / Enc SSI bit before

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	65535	0

Description: Sets the number of bits before the absolute value in the SSI protocol.

Notice: This parameter is automatically preassigned for encoders from the encoder list and for identify encoder (p0400).

When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.

Note: For example, error bit, alarm bit or parity bit can be positioned at these bits.

p0447[0...n] Encoder SSI number of bits absolute value / Enc SSI bit val

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	65535	25

Description: Sets the number of bits for the absolute value in the SSI protocol.

Notice: This parameter is automatically preassigned for encoders from the encoder list and for identify encoder (p0400).

When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.

p0448[0...n] Encoder SSI number of bits after the absolute value / Enc SSI bit after

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	65535	0

Description: Sets the number of bits after the absolute value in the SSI protocol.

Notice: This parameter is automatically preassigned for encoders from the encoder list and for identify encoder (p0400).

When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.

Note: For example, error bit, alarm bit or parity bit can be positioned at these bits.

p0449[0...n] Encoder SSI number of bits filler bits / Enc SSI fill bits

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	65535	1

Description: Sets the number of filler bits for double absolute value transfer in the SSI protocol.

Dependency: Refer to: p0429

Notice: This parameter is automatically preassigned for encoders from the encoder list and for identify encoder (p0400).

When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.

Note: This parameter is only of significance for p0429.2 = 1.

r0451[0...2] Commutation angle factor / Enc commut_factor

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 4710
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the relationship between the electrical and mechanical pole positions.

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Note: A value of zero is displayed if an encoder is not present.

r0452[0...2] Squarewave encoder filter time display / Enc t_filt displ

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [µs]	- [µs]	- [µs]

Description: Displays the effective filter time for a squarewave encoder.
The filter time is set using p0438.

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Dependency: Refer to: p0438

Note: A value of zero is displayed if an encoder is not present.

r0452 Squarewave encoder filter time display / Enc t_filt displ

ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [µs]	- [µs]	- [µs]

Description: Displays the effective filter time for a squarewave encoder.
The filter time is set using p0438.

Dependency: Refer to: p0438

Note: A value of zero is displayed if an encoder is not present.

p0453[0...n] Pulse encoder evaluation zero speed measuring time / Enc_ev n_0 t_meas

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.10 [ms]	10000.00 [ms]	1000.00 [ms]

Description: Sets the measuring time for evaluating zero speed.
If no pulses are detected from track A/B during this time, a speed actual value of zero is output.

Dependency: Refer to: r0452

Note: This function is required for slow-running motors so that actual speeds close to zero can be output correctly.

p0454[0...n] Sensor Module configuration extended Part 2 / SM config ext 2

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Sets the extended configuration Part 2 of the Sensor Module.

Dependency: Refer to: r0457

r0455[0...2] Encoder configuration recognized / Enc_config recog

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the detected encoder configuration.

In this case, the encoder must automatically support the function (e.g. encoder with EnDat interface).

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Linear encoder	Yes	No	-
01	Absolute encoder	Yes	No	-
02	Multiturn encoder	Yes	No	-
03	Track A/B square-wave	Yes	No	-
04	Track A/B sine	Yes	No	-
05	Track C/D	Yes	No	-
06	Hall sensor	Yes	No	-
08	EnDat encoder	Yes	No	-
09	SSI encoder	Yes	No	-
10	DRIVE-CLiQ encoder	Yes	No	-
11	Digital encoder	Yes	No	-
12	Equidistant zero mark	Yes	No	-
13	Irregular zero mark	Yes	No	-
14	Distance-coded zero mark	Yes	No	-
15	Commutation with zero mark (not ASM)	Yes	No	-
16	Acceleration	Yes	No	-
17	Track A/B analog	Yes	No	-
20	Voltage level 5 V	Yes	No	-
21	Voltage level 24 V	Yes	No	-
22	Remote sense (only SMC30)	Yes	No	-
23	Resolver excitation	Yes	No	-

Dependency: Refer to: p0404

Note: ZM: Zero mark

This parameter is only used for diagnostics.

A value of zero is displayed if an encoder is not present.

For bit 20, 21 (voltage level 5 V, voltage level 24 V):

The voltage level cannot be detected. Therefore, these bits are always set to 0.

r0455 Encoder configuration recognized / Enc_config recog

ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the detected encoder configuration.
In this case, the encoder must automatically support the function (e.g. encoder with EnDat interface).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Linear encoder	Yes	No	-
01	Absolute encoder	Yes	No	-
02	Multiturn encoder	Yes	No	-
03	Track A/B square-wave	Yes	No	-
04	Track A/B sine	Yes	No	-
05	Track C/D	Yes	No	-
06	Hall sensor	Yes	No	-
08	EnDat encoder	Yes	No	-
09	SSI encoder	Yes	No	-
10	DRIVE-CLiQ encoder	Yes	No	-
11	Digital encoder	Yes	No	-
12	Equidistant zero mark	Yes	No	-
13	Irregular zero mark	Yes	No	-
14	Distance-coded zero mark	Yes	No	-
15	Commutation with zero mark (not ASM)	Yes	No	-
16	Acceleration	Yes	No	-
17	Track A/B analog	Yes	No	-
20	Voltage level 5 V	Yes	No	-
21	Voltage level 24 V	Yes	No	-
22	Remote sense (only SMC30)	Yes	No	-
23	Resolver excitation	Yes	No	-

Dependency: Refer to: p0404

Note: ZM: Zero mark
This parameter is only used for diagnostics.
A value of zero is displayed if an encoder is not present.
For bit 20, 21 (voltage level 5 V, voltage level 24 V):
The voltage level cannot be detected. Therefore, these bits are always set to 0.

r0456[0...2] Encoder configuration supported / Enc_config supp

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the encoder configuration supported by the Sensor Module.

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Linear encoder	Yes	No	-
01	Absolute encoder	Yes	No	-
02	Multiturn encoder	Yes	No	-
03	Track A/B square-wave	Yes	No	-
04	Track A/B sine	Yes	No	-
05	Track C/D	Yes	No	-
06	Hall sensor	Yes	No	-
08	EnDat encoder	Yes	No	-

09	SSI encoder	Yes	No	-
10	DRIVE-CLiQ encoder	Yes	No	-
11	Digital encoder	Yes	No	-
12	Equidistant zero mark	Yes	No	-
13	Irregular zero mark	Yes	No	-
14	Distance-coded zero mark	Yes	No	-
15	Commutation with zero mark (not ASM)	Yes	No	-
16	Acceleration	Yes	No	-
17	Track A/B analog	Yes	No	-
20	Voltage level 5 V	Yes	No	-
21	Voltage level 24 V	Yes	No	-
22	Remote sense (only SMC30)	Yes	No	-
23	Resolver excitation	Yes	No	-

Dependency: Refer to: p0404

Note: ZM: Zero mark

This parameter is only used for diagnostics.

A value of zero is displayed if an encoder is not present.

r0456 Encoder configuration supported / Enc_config supp

ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the encoder configuration supported by the Sensor Module.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Linear encoder	Yes	No	-
01	Absolute encoder	Yes	No	-
02	Multiturn encoder	Yes	No	-
03	Track A/B square-wave	Yes	No	-
04	Track A/B sine	Yes	No	-
05	Track C/D	Yes	No	-
06	Hall sensor	Yes	No	-
08	EnDat encoder	Yes	No	-
09	SSI encoder	Yes	No	-
10	DRIVE-CLiQ encoder	Yes	No	-
11	Digital encoder	Yes	No	-
12	Equidistant zero mark	Yes	No	-
13	Irregular zero mark	Yes	No	-
14	Distance-coded zero mark	Yes	No	-
15	Commutation with zero mark (not ASM)	Yes	No	-
16	Acceleration	Yes	No	-
17	Track A/B analog	Yes	No	-
20	Voltage level 5 V	Yes	No	-
21	Voltage level 24 V	Yes	No	-
22	Remote sense (only SMC30)	Yes	No	-
23	Resolver excitation	Yes	No	-

Dependency: Refer to: p0404

Note: ZM: Zero mark

This parameter is only used for diagnostics.

A value of zero is displayed if an encoder is not present.

r0457[0...2] Sensor Module properties extended Part 2 / SM prop ext 2

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the extended properties part 2, supported by the Sensor Module.

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Reserved	Yes	No	-
02	Shift factor XIST2 supported	Yes	No	-

Dependency: Refer to: p0454

Note: A value of zero is displayed if an encoder is not present.

r0457 Sensor Module properties extended Part 2 / SM prop ext 2

ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the extended properties part 2, supported by the Sensor Module.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Reserved	Yes	No	-
02	Shift factor XIST2 supported	Yes	No	-

Dependency: Refer to: p0454

Note: A value of zero is displayed if an encoder is not present.

r0458[0...2] Sensor Module properties / SM properties

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 4704
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Sets the Sensor Module configuration.

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Encoder data available	Yes	No	-
01	Motor data available	Yes	No	-
02	Temperature sensor connection available	Yes	No	-
03	Connection for PTC for motor with DRIVE-CLiQ also available	Yes	No	-
04	Module temperature available	Yes	No	-
05	Absolute encoder p0408/p0421 no power of 2	Yes	No	-
06	Sensor Module permits parking/unparking	Yes	No	-
07	Hall sensor can be combined with actual value inversion	Yes	No	-

08	Evaluation through several temperature channels possible	Yes	No	-
09	Encoder fault and its associated information available	Yes	No	-
10	Speed diagnostics in the Sensor Module	Yes	No	-
11	Configuring without park state possible	Yes	No	-
12	Extended functions available	Yes	No	-
13	Extended encoder fault handling	Yes	No	-
14	Extended singleturn/multiturn information available	Yes	No	-
15	Evaluation function reserve	Yes	No	-
16	Pole position identification	Yes	No	-
17	Burst oversampling	Yes	No	-
18	Continuous oversampling	Yes	No	-
19	Safety position actual value sensing	Yes	No	-
20	Extended speed calculation being used (only SMC30)	Yes	No	-
21	Zero mark tolerance	Yes	No	-
22	Rotor position adaptation	Yes	No	-
23	Commutation with zero mark can be de-selected	Yes	No	-
24	Commutation with selected zero mark	Yes	No	-
25	Disconnection of encoder power supply on parking supported	Yes	No	-
26	Parking with temperature evaluation	Yes	No	-
27	SSI position value extrapolation	Yes	No	-
28	Cubic correction	Yes	No	-
29	Phase correction	Yes	No	-
30	Amplitude correction	Yes	No	-
31	Offset correction	Yes	No	-

Dependency: Refer to: p0437, p0600, p0601

Note: A value of zero is displayed if an encoder is not present.

For bit 11:

When the property is set, the following parameters can be changed without the actual value in the encoder interface becoming invalid (state r0481.14 = 1 "parking encoder active"):

p0314, p0315, p0430, p0431, p0441, p0442, p0443, p0444, p0445

For bit 12:

The extended functions can be configured using p0437.

For bit 13:

Encoder faults can be acknowledged via Gn_STW.15.

For bit 14:

Only for internal Siemens use.

For bit 23:

When the property is set, commutation with zero mark can be de-selected using p0430.23.

For bit 24:

If the property is set, commutation to the selected zero mark can be carried out.

r0458[0...2] Sensor Module properties / SM properties

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 4704
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Sets the Sensor Module configuration.

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Encoder data available	Yes	No	-
01	Motor data available	Yes	No	-
02	Temperature sensor connection available	Yes	No	-
03	Connection for PTC for motor with DRIVE-CLiQ also available	Yes	No	-
04	Module temperature available	Yes	No	-
05	Absolute encoder p0408/p0421 no power of 2	Yes	No	-
06	Sensor Module permits parking/unparking	Yes	No	-
07	Hall sensor can be combined with actual value inversion	Yes	No	-
08	Evaluation through several temperature channels possible	Yes	No	-
09	Encoder fault and its associated information available	Yes	No	-
10	Velocity diagnostics in the Sensor Module	Yes	No	-
11	Configuring without park state possible	Yes	No	-
12	Extended functions available	Yes	No	-
13	Extended encoder fault handling	Yes	No	-
14	Extended singleturn/multiturn information available	Yes	No	-
15	Evaluation function reserve	Yes	No	-
16	Pole position identification	Yes	No	-
17	Burst oversampling	Yes	No	-
18	Continuous oversampling	Yes	No	-
19	Safety position actual value sensing	Yes	No	-
20	Extended velocity calculation available (only SMC30)	Yes	No	-
21	Zero mark tolerance	Yes	No	-
22	Rotor position adaptation	Yes	No	-
23	Commutation with zero mark can be de-selected	Yes	No	-
24	Commutation with selected zero mark	Yes	No	-
25	Disconnection of encoder power supply on parking supported	Yes	No	-
26	Parking with temperature evaluation	Yes	No	-
27	SSI position value extrapolation	Yes	No	-
28	Cubic correction	Yes	No	-
29	Phase correction	Yes	No	-
30	Amplitude correction	Yes	No	-
31	Offset correction	Yes	No	-

Dependency: Refer to: p0437, p0600, p0601

Note: A value of zero is displayed if an encoder is not present.

For bit 11:

When the property is set, the following parameters can be changed without the actual value in the encoder interface becoming invalid (state r0481.14 = 1 "parking encoder active"):

p0314, p0315, p0430, p0431, p0441, p0442, p0443, p0444, p0445

For bit 12:

The extended functions can be configured using p0437.

For bit 13:

Encoder faults can be acknowledged via Gn_STW.15.

For bit 14:

Only for internal Siemens use.

For bit 23:

When the property is set, commutation with zero mark can be de-selected using p0430.23.

For bit 24:

If the property is set, commutation to the selected zero mark can be carried out.

r0458 Sensor Module properties / SM properties

ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 4704
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Sets the Sensor Module configuration.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Encoder data available	Yes	No	-
01	Motor data available	Yes	No	-
02	Temperature sensor connection available	Yes	No	-
03	Connection for PTC for motor with DRIVE-CLiQ also available	Yes	No	-
04	Module temperature available	Yes	No	-
05	Absolute encoder p0408/p0421 no power of 2	Yes	No	-
06	Sensor Module permits parking/unparking	Yes	No	-
07	Hall sensor can be combined with actual value inversion	Yes	No	-
08	Evaluation through several temperature channels possible	Yes	No	-
09	Encoder fault and its associated information available	Yes	No	-
10	Speed diagnostics in the Sensor Module	Yes	No	-
11	Configuring without park state possible	Yes	No	-
12	Extended functions available	Yes	No	-
13	Extended encoder fault handling	Yes	No	-
14	Extended singleturn/multiturn information available	Yes	No	-
15	Evaluation function reserve	Yes	No	-
16	Pole position identification	Yes	No	-
17	Burst oversampling	Yes	No	-
18	Continuous oversampling	Yes	No	-
19	Safety position actual value sensing	Yes	No	-
20	Extended speed calculation being used (only SMC30)	Yes	No	-
21	Zero mark tolerance	Yes	No	-
22	Rotor position adaptation	Yes	No	-
23	Commutation with zero mark can be de-selected	Yes	No	-
24	Commutation with selected zero mark	Yes	No	-
25	Disconnection of encoder power supply on parking supported	Yes	No	-
26	Parking with temperature evaluation	Yes	No	-
27	SSI position value extrapolation	Yes	No	-
28	Cubic correction	Yes	No	-
29	Phase correction	Yes	No	-
30	Amplitude correction	Yes	No	-
31	Offset correction	Yes	No	-

Dependency: Refer to: p0437, p0600, p0601

Note: A value of zero is displayed if an encoder is not present.

For bit 11:

When the property is set, the following parameters can be changed without the actual value in the encoder interface becoming invalid (state r0481.14 = 1 "parking encoder active"):

p0314, p0315, p0430, p0431, p0441, p0442, p0443, p0444, p0445

For bit 12:

The extended functions can be configured using p0437.

For bit 13:

Encoder faults can be acknowledged via Gn_STW.15.

For bit 14:
Only for internal Siemens use.
For bit 23:
When the property is set, commutation with zero mark can be de-selected using p0430.23.
For bit 24:
If the property is set, commutation to the selected zero mark can be carried out.

r0458 Sensor Module properties / SM properties

ENC (Lin_enc)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 4704
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Sets the Sensor Module configuration.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Encoder data available	Yes	No	-
01	Motor data available	Yes	No	-
02	Temperature sensor connection available	Yes	No	-
03	Connection for PTC for motor with DRIVE-CLiQ also available	Yes	No	-
04	Module temperature available	Yes	No	-
05	Absolute encoder p0408/p0421 no power of 2	Yes	No	-
06	Sensor Module permits parking/unparking	Yes	No	-
07	Hall sensor can be combined with actual value inversion	Yes	No	-
08	Evaluation through several temperature channels possible	Yes	No	-
09	Encoder fault and its associated information available	Yes	No	-
10	Velocity diagnostics in the Sensor Module	Yes	No	-
11	Configuring without park state possible	Yes	No	-
12	Extended functions available	Yes	No	-
13	Extended encoder fault handling	Yes	No	-
14	Extended singleturn/multiturn information available	Yes	No	-
15	Evaluation function reserve	Yes	No	-
16	Pole position identification	Yes	No	-
17	Burst oversampling	Yes	No	-
18	Continuous oversampling	Yes	No	-
19	Safety position actual value sensing	Yes	No	-
20	Extended velocity calculation available (only SMC30)	Yes	No	-
21	Zero mark tolerance	Yes	No	-
22	Rotor position adaptation	Yes	No	-
23	Commutation with zero mark can be de-selected	Yes	No	-
24	Commutation with selected zero mark	Yes	No	-
25	Disconnection of encoder power supply on parking supported	Yes	No	-
26	Parking with temperature evaluation	Yes	No	-
27	SSI position value extrapolation	Yes	No	-
28	Cubic correction	Yes	No	-
29	Phase correction	Yes	No	-
30	Amplitude correction	Yes	No	-
31	Offset correction	Yes	No	-

Dependency: Refer to: p0437, p0600, p0601

Note: A value of zero is displayed if an encoder is not present.

For bit 11:

When the property is set, the following parameters can be changed without the actual value in the encoder interface becoming invalid (state r0481.14 = 1 "parking encoder active"):

p0314, p0315, p0430, p0431, p0441, p0442, p0443, p0444, p0445

For bit 12:

The extended functions can be configured using p0437.

For bit 13:

Encoder faults can be acknowledged via Gn_STW.15.

For bit 14:

Only for internal Siemens use.

For bit 23:

When the property is set, commutation with zero mark can be de-selected using p0430.23.

For bit 24:

If the property is set, commutation to the selected zero mark can be carried out.

r0459[0...2] Sensor Module properties extended / SM prop ext

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the extended properties supported by the Sensor Module.

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Data logger	Yes	No	-
01	Zero mark edge detection	Yes	No	-
02	Correction position actual value XIST1	Yes	No	-
04	Edge evaluation bit 0	Yes	No	-
05	Edge evaluation bit 1	Yes	No	-
06	Freeze the speed actual value for dn/dt errors	Yes	No	-
07	Accumulate uncorrected encoder pulses	Yes	No	-
09	Function p0426, p0439 supported	Yes	No	-
10	Pulse/direction interface	Yes	No	-
11	Fault handling after PROFIdrive	Yes	No	-
12	Activate additional messages	Yes	No	-
13	Absolute position for incremental encoder supported	Yes	No	-
14	Spindle functionality	Yes	No	-
15	Additional temperature sensor available	Yes	No	-
16	Internal encoder temperature available	Yes	No	-
17	Extended multiturn resolution	Yes	No	-
18	PT1000 temperature sensor evaluation	Yes	No	-
22	Resolution absolute position as factor	Yes	No	-
23	Commutation with 180°	Yes	No	-
24	Multiturn via battery	Yes	No	-
25	Deselect monitoring multiturn representation in Gx_XIST2	Yes	No	-
26	Track monitoring de-selection	Yes	No	-
28	EnDat linear encoder monitoring incremental/absolute	Yes	No	-
29	EnDat encoder initialization with high accuracy	Yes	No	-
30	Extended functions available	Yes	No	-
31	Analog unipolar track monitoring	Yes	No	-

Dependency: Refer to: p0437

Note: A value of zero is displayed if an encoder is not present.

For bit 09:

Parameter p0426 or p0439 has been modified. These functions are not supported by the connected Sensor Module.

r0459[0...2] Sensor Module properties extended / SM prop ext

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the extended properties supported by the Sensor Module.

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Data logger	Yes	No	-
01	Zero mark edge detection	Yes	No	-
02	Correction position actual value XIST1	Yes	No	-
04	Edge evaluation bit 0	Yes	No	-
05	Edge evaluation bit 1	Yes	No	-
06	Freeze actual velocity for dn/dt errors	Yes	No	-
07	Accumulate uncorrected encoder pulses	Yes	No	-
09	Function p0426, p0439 supported	Yes	No	-
10	Pulse/direction interface	Yes	No	-
11	Fault handling after PROFIdrive	Yes	No	-
12	Activate additional messages	Yes	No	-
13	Absolute position for incremental encoder supported	Yes	No	-
14	Spindle functionality	Yes	No	-
15	Additional temperature sensor available	Yes	No	-
16	Internal encoder temperature available	Yes	No	-
17	Extended multiturn resolution	Yes	No	-
18	PT1000 temperature sensor evaluation	Yes	No	-
22	Resolution absolute position as factor	Yes	No	-
23	Commutation with 180°	Yes	No	-
24	Multiturn via battery	Yes	No	-
25	Deselect monitoring multiturn representation in Gx_XIST2	Yes	No	-
26	Track monitoring de-selection	Yes	No	-
28	EnDat linear encoder monitoring incremental/absolute	Yes	No	-
29	EnDat encoder speed monitoring on initialization	Yes	No	-
30	Extended functions available	Yes	No	-
31	Analog unipolar track monitoring	Yes	No	-

Dependency: Refer to: p0437

Note: A value of zero is displayed if an encoder is not present.

For bit 09:

Parameter p0426 or p0439 has been modified. These functions are not supported by the connected Sensor Module.

r0459 Sensor Module properties extended / SM prop ext

ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the extended properties supported by the Sensor Module.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Data logger	Yes	No	-
01	Zero mark edge detection	Yes	No	-
02	Correction position actual value XIST1	Yes	No	-
04	Edge evaluation bit 0	Yes	No	-
05	Edge evaluation bit 1	Yes	No	-
06	Freeze the speed actual value for dn/dt errors	Yes	No	-
07	Accumulate uncorrected encoder pulses	Yes	No	-
09	Function p0426, p0439 supported	Yes	No	-
10	Pulse/direction interface	Yes	No	-
11	Fault handling after PROFIdrive	Yes	No	-
12	Activate additional messages	Yes	No	-
13	Absolute position for incremental encoder supported	Yes	No	-
14	Spindle functionality	Yes	No	-
15	Additional temperature sensor available	Yes	No	-
16	Internal encoder temperature available	Yes	No	-
17	Extended multiturn resolution	Yes	No	-
18	PT1000 temperature sensor evaluation	Yes	No	-
22	Resolution absolute position as factor	Yes	No	-
23	Commutation with 180°	Yes	No	-
24	Multiturn via battery	Yes	No	-
25	Deselect monitoring multiturn representation in Gx_XIST2	Yes	No	-
26	Track monitoring de-selection	Yes	No	-
28	EnDat linear encoder monitoring incremental/absolute	Yes	No	-
29	EnDat encoder initialization with high accuracy	Yes	No	-
30	Extended functions available	Yes	No	-
31	Analog unipolar track monitoring	Yes	No	-

Dependency: Refer to: p0437

Note: A value of zero is displayed if an encoder is not present.

For bit 09:

Parameter p0426 or p0439 has been modified. These functions are not supported by the connected Sensor Module.

r0459 Sensor Module properties extended / SM prop ext

ENC (Lin_enc)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the extended properties supported by the Sensor Module.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Data logger	Yes	No	-
01	Zero mark edge detection	Yes	No	-
02	Correction position actual value XIST1	Yes	No	-
04	Edge evaluation bit 0	Yes	No	-

05	Edge evaluation bit 1	Yes	No	-
06	Freeze actual velocity for dn/dt errors	Yes	No	-
07	Accumulate uncorrected encoder pulses	Yes	No	-
09	Function p0426, p0439 supported	Yes	No	-
10	Pulse/direction interface	Yes	No	-
11	Fault handling after PROFIdrive	Yes	No	-
12	Activate additional messages	Yes	No	-
13	Absolute position for incremental encoder supported	Yes	No	-
14	Spindle functionality	Yes	No	-
15	Additional temperature sensor available	Yes	No	-
16	Internal encoder temperature available	Yes	No	-
17	Extended multiturn resolution	Yes	No	-
18	PT1000 temperature sensor evaluation	Yes	No	-
22	Resolution absolute position as factor	Yes	No	-
23	Commutation with 180°	Yes	No	-
24	Multiturn via battery	Yes	No	-
25	Deselect monitoring multiturn representation in Gx_XIST2	Yes	No	-
26	Track monitoring de-selection	Yes	No	-
28	EnDat linear encoder monitoring incremental/absolute	Yes	No	-
29	EnDat encoder initialization with high accuracy	Yes	No	-
30	Extended functions available	Yes	No	-
31	Analog unipolar track monitoring	Yes	No	-

Dependency: Refer to: p0437

Note: A value of zero is displayed if an encoder is not present.

For bit 09:

Parameter p0426 or p0439 has been modified. These functions are not supported by the connected Sensor Module.

r0460[0...2] Encoder serial number part 1 / Enc ser_no 1

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the actual serial number part 1 of the appropriate encoder.

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Dependency: Refer to: p0441, p0442, p0443, p0444, p0445, r0461, r0462, r0463, r0464

r0460 Encoder serial number part 1 / Enc ser_no 1

ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the actual serial number part 1 of the appropriate encoder.

Dependency: Refer to: p0441, p0442, p0443, p0444, p0445, r0461, r0462, r0463, r0464

r0461[0...2] Encoder serial number part 2 / Enc ser_no 2

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the actual serial number part 2 of the appropriate encoder.

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Dependency: Refer to: p0441, p0442, p0443, p0444, p0445, r0460, r0462, r0463, r0464

r0461 Encoder serial number part 2 / Enc ser_no 2

ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the actual serial number part 2 of the appropriate encoder.

Dependency: Refer to: p0441, p0442, p0443, p0444, p0445, r0460, r0462, r0463, r0464

r0462[0...2] Encoder serial number part 3 / Enc ser_no 3

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the actual serial number part 3 of the appropriate encoder.

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Dependency: Refer to: p0441, p0442, p0443, p0444, p0445, r0460, r0461, r0463, r0464

r0462 Encoder serial number part 3 / Enc ser_no 3

ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the actual serial number part 3 of the appropriate encoder.

Dependency: Refer to: p0441, p0442, p0443, p0444, p0445, r0460, r0461, r0463, r0464

r0463[0...2] Encoder serial number part 4 / Enc ser_no 4

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the actual serial number part 4 of the appropriate encoder.

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Dependency: Refer to: p0441, p0442, p0443, p0444, p0445, r0460, r0461, r0462, r0464

r0463 Encoder serial number part 4 / Enc ser_no 4

ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the actual serial number part 4 of the appropriate encoder.

Dependency: Refer to: p0441, p0442, p0443, p0444, p0445, r0460, r0461, r0462, r0464

r0464[0...2] Encoder serial number part 5 / Enc ser_no 5

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the actual serial number part 5 of the appropriate encoder.

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Dependency: Refer to: p0441, p0442, p0443, p0444, p0445, r0460, r0461, r0462, r0463

r0464 Encoder serial number part 5 / Enc ser_no 5

ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the actual serial number part 5 of the appropriate encoder.

Dependency: Refer to: p0441, p0442, p0443, p0444, p0445, r0460, r0461, r0462, r0463

r0465[0...27] Encoder 1 identification number/serial number / Enc1 ID_no/Ser_no

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC			
	Can be changed: -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Encoder	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the identification/serial number of encoder 1.

Index 0 = first character of the identification number

...

Index x = 20 hex (blank) --> separation between the identification number of serial number

Index x + 1 = 2F hex (slash) --> separation between the identification number of serial number

Index x + 2 = 20 hex (blank) --> separation between the identification number of serial number

Index x + 3 = first character of the serial number

...

Index y with contents = last character of the serial number

Dependency: Refer to: r0460, r0461, r0462, r0463, r0464

Notice: An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.

Note: The individual characters of the identification number/serial number are available coded as ASCII characters.

r0466[0...27] Encoder 2 identification number/serial number / Enc2 ID_no/Ser_no

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC			
	Can be changed: -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Encoder	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the identification/serial number of encoder 2.

Index 0 = first character of the identification number

...

Index x = 20 hex (blank) --> separation between the identification number of serial number

Index x + 1 = 2F hex (slash) --> separation between the identification number of serial number

Index x + 2 = 20 hex (blank) --> separation between the identification number of serial number

Index x + 3 = first character of the serial number

...

Index y with contents = last character of the serial number

Dependency: Refer to: r0460, r0461, r0462, r0463, r0464

Notice: An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.

Note: The individual characters of the identification number/serial number are available coded as ASCII characters.

r0467[0...27] Encoder 3 identification number/serial number / Enc3 ID_no/Ser_no

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the identification/serial number of encoder 3.

Index 0 = first character of the identification number

...

Index x = 20 hex (blank) --> separation between the identification number of serial number

Index x + 1 = 2F hex (slash) --> separation between the identification number of serial number

Index x + 2 = 20 hex (blank) --> separation between the identification number of serial number

Index x + 3 = first character of the serial number

...

Index y with contents = last character of the serial number

Dependency: Refer to: r0460, r0461, r0462, r0463, r0464

Notice: An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.

Note: The individual characters of the identification number/serial number are available coded as ASCII characters.

r0469[0...2] Absolute encoder linear measuring step / Enc lin meas step

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [nm]	- [nm]	- [nm]

Description: Displays the resolution of the absolute position for a linear absolute encoder.

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Dependency: Refer to: p0422, p9514

r0469 Absolute encoder linear measuring step / Enc lin meas step

ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [nm]	- [nm]	- [nm]

Description: Displays the resolution of the absolute position for a linear absolute encoder.

Dependency: Refer to: p0422, p9514

r0470[0...2] Redundant coarse position value valid bits / Valid bits

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the valid bits of the redundant coarse position value.

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Dependency: Refer to: p9323, p9523

r0470 Redundant coarse position value valid bits / Valid bits

ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the valid bits of the redundant coarse position value.

Dependency: Refer to: p9323, p9523

r0471[0...2] Redundant coarse position value fine resolution bits / Fine bit

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the number of valid bits for the fine resolution of the redundant coarse position value.

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Dependency: Refer to: p9324, p9524

r0471 Redundant coarse position value fine resolution bits / Fine bit

ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the number of valid bits for the fine resolution of the redundant coarse position value.

Dependency: Refer to: p9324, p9524

r0472[0...2] Redundant coarse position value relevant bits / Relevant bits

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the number of relevant bits for the redundant coarse position value.

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

r0472 Redundant coarse position value relevant bits / Relevant bits

ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the number of relevant bits for the redundant coarse position value.

r0473[0...2] Non safety-relevant measuring steps position value pos1 / nsrPos1

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the non safety-relevant measuring steps of POS1.

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Dependency: Refer to: p0416, p9513

r0473 Non safety-relevant measuring steps position value pos1 / nsrPos1

ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the non safety-relevant measuring steps of POS1.

Dependency: Refer to: p0416, p9513

r0474[0...2] Redundant coarse position value configuration / Red pos config

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the encoder configuration for the redundant coarse position value.

Index: [0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Incrementer	Yes	No	-
01	Encoder CRC least significant byte first	Yes	No	-
02	Redundant coarse position val. most significant bit left-aligned	Yes	No	-
04	Binary comparison not possible	Yes	No	-
05	Single-channel encoder	Yes	No	-

Dependency: Refer to: p9315, p9515

r0474 Redundant coarse position value configuration / Red pos config

ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the encoder configuration for the redundant coarse position value.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Incrementer	Yes	No	-
01	Encoder CRC least significant byte first	Yes	No	-
02	Redundant coarse position val. most significant bit left-aligned	Yes	No	-
04	Binary comparison not possible	Yes	No	-
05	Single-channel encoder	Yes	No	-

Dependency: Refer to: p9315, p9515

r0475[0...2] Gx_XIST1 coarse position safe most significant bit / Gx_XIST1 safe MSB

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the bit number for the safe most significant bit (MSB) of the Gx_XIST1 coarse position.

Index: [0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Note: MSB: Most Significant Bit

r0475 Gx_XIST1 coarse position safe most significant bit / Gx_XIST1 safe MSB

ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the bit number for the safe most significant bit (MSB) of the Gx_XIST1 coarse position.

Note: MSB: Most Significant Bit

p0476[0...n] Piston zero point calibration value / Piston 0 pt calib

HLA

Can be changed: C2(4), T	**Calculated:** -	**Access level:** 3
Data type: Integer32	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-2147483648	2147483647	0

Description: Sets the position offset to the piston zero point in fine pulses.

The piston position is displayed in r0094.

Dependency: Refer to: r0094, p1909, p1959, p1960

Note: The calibration value can be determined using p1959/p1960 (automatic) or p1909 (manual).

r0477[0...2] CO: Measuring gear position difference / Meas gear pos diff

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the position difference before the measuring gear between switching off and switching on.

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Dependency: Refer to: F31501, F32501, F33501

Note: The increments are displayed in the format the same as r0483. The position difference should be read in encoder increments.

r0477 CO: Measuring gear position difference / Meas gear pos diff

ENC

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the position difference before the measuring gear between switching off and switching on.

Dependency: Refer to: F31501, F32501, F33501

Note: The increments are displayed in the format the same as r0483. The position difference should be read in encoder increments.

r0479[0...2] CO: Diagnostics encoder position actual value Gn_XIST1 / Diag Gn_XIST1

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 4704
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output for the encoder actual position value Gn_XIST1 according to PROFIdrive for diagnostics.

In contrast to r0482, the value is updated in each DRIVE-CLiQ basic clock cycle and displayed with sign.

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Caution: Following ramping-up or after a data set changeover, the new value is present at connector inputs which are interconnected to connector output r0479 and under certain circumstances take 100 ms to become available.

Reason:

These interconnections are updated in the background, unlike interconnections involving other connector outputs (e.g. CO: r0482).

The value is immediately available when non-cyclically reading r0479 (e.g. via the expert list).

r0479 CO: TM41 encoder emulation diagnostics Gn_XIST1 / Diag Gn_XIST1

TM41

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 9674, 9676
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output for the encoder actual position value Gn_XIST1 according to PROFIdrive for diagnostics.

In contrast to r0482, the value is updated in each DRIVE-CLiQ basic clock cycle and displayed with sign.

r0479 CO: Diagnostics encoder position actual value Gn_XIST1 / Diag Gn_XIST1

ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 4704
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output for the encoder actual position value Gn_XIST1 according to PROFIdrive for diagnostics.

In contrast to r0482, the value is updated in each DRIVE-CLiQ basic clock cycle and displayed with sign.

Caution: Following ramping-up or after a data set changeover, the new value is present at connector inputs which are interconnected to connector output r0479 and under certain circumstances take 100 ms to become available.

Reason:

These interconnections are updated in the background, unlike interconnections involving other connector outputs (e.g. CO: r0482).

The value is immediately available when non-cyclically reading r0479 (e.g. via the expert list).

p0480[0...2] CI: Encoder control word Gn_STW signal source / Enc Gn_STW S_src

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(4), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Integer16	**Dyn. index:** -	**Func. diagram:** 4700, 4720, 4750
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the encoder control word Gn_STW according to PROFIdrive.

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Note: When the function module "basic positioner" (r0108.4 = 1) is activated, the following BICO interconnection is established:

CI: p0480[0] = r2520[0], CI: p0480[1] = r2520[1] and CI: p0480[2] = r2520[2]

p0480 CI: Encoder control word Gn_STW signal source / Enc Gn_STW S_src

ENC

Can be changed: C2(4), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Integer16	**Dyn. index:** -	**Func. diagram:** 4700, 4720, 4750
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the encoder control word Gn_STW according to PROFIdrive.

Note: When the function module "basic positioner" (r0108.4 = 1) is activated, the following BICO interconnection is established:

CI: p0480[0] = r2520[0], CI: p0480[1] = r2520[1] and CI: p0480[2] = r2520[2]

r0481[0...2] CO: Encoder status word Gn_ZSW / Enc Gn_ZSW

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 4010, 4704, 4730, 4750
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the encoder status word Gn_ZSW according to PROFIdrive.

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Function 1 active	Yes	No	-
01	Function 2 active	Yes	No	-
02	Function 3 active	Yes	No	-
03	Function 4 active	Yes	No	-
04	Value 1	Displayed in r0483	Not present	-
05	Value 2	Displayed in r0483	Not present	-
06	Value 3	Displayed in r0483	Not present	-
07	Value 4	Displayed in r0483	Not present	-
08	Measuring probe 1 deflected	Yes	No	-
09	Measuring probe 2 deflected	Yes	No	-
11	Encoder fault acknowledge active	Yes	No	9676
13	Absolute value cyclically	Displayed in r0483	No	-
14	Parking encoder active	Yes	No	-
15	Encoder fault	Displayed in r0483	None	-

Notice: Information on Gn_STW/Gn_ZSW can, e.g. be found in the following literature:

SINAMICS S120 Function Manual Drive Functions

Note: For bit 14:

Displays the acknowledgment for "activate parking encoder" (Gn_STW.14 = 1) or encoder position actual value (Gn_XIST1) invalid.

For bit 14, 15:

r0481.14 = 1 and r0481.15 = 0 can have one of the following causes:

- the encoder is parked.
- the encoder is deactivated.
- the encoder is being commissioned.
- no parameterized encoder available.
- encoder data set is being changed over.

r0481.14 = 1 and r0481.15 = 1 has the following significance:

An encoder error has occurred and the encoder position actual value (Gn_XIST1) is invalid.

r0481 CO: TM41 encoder emulation status word Gn_ZSW / Enc Gn_ZSW

TM41

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 9676
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the encoder status word Gn_ZSW according to PROFIdrive.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Function 1 active	Yes	No	-
01	Function 2 active	Yes	No	-
02	Function 3 active	Yes	No	-
03	Function 4 active	Yes	No	-
04	Value 1	Displayed in r0483	Not present	-
05	Value 2	Displayed in r0483	Not present	-
06	Value 3	Displayed in r0483	Not present	-
07	Value 4	Displayed in r0483	Not present	-
08	Measuring probe 1 deflected	Yes	No	-
09	Measuring probe 2 deflected	Yes	No	-
11	Encoder fault acknowledge active	Yes	No	9676
13	Absolute value cyclically	Displayed in r0483	No	-
14	Parking encoder active	Yes	No	-
15	Encoder fault	Displayed in r0483	None	-

Notice: Information on Gn_STW/Gn_ZSW can, e.g. be found in the following literature:

SINAMICS S120 Function Manual Drive Functions

Note: For p4401 = 0, the following applies:

For Terminal Module 41 (TM41), this value is used to interconnect with standard telegram 3 and is always zero.

For p4401 = 1, the following applies:

r0481.0 indicates as to whether the zero mark synchronization is active.

r0481.4 indicates whether the zero mark of the incremental encoder was found.

r0481.14 indicates whether the output of track A/B is activated.

r0481 CO: Encoder status word Gn_ZSW / Enc Gn_ZSW

ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 4704, 4730, 4750
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the encoder status word Gn_ZSW according to PROFIdrive.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Function 1 active	Yes	No	-
01	Function 2 active	Yes	No	-
02	Function 3 active	Yes	No	-
03	Function 4 active	Yes	No	-
04	Value 1	Displayed in r0483	Not present	-
05	Value 2	Displayed in r0483	Not present	-
06	Value 3	Displayed in r0483	Not present	-
07	Value 4	Displayed in r0483	Not present	-
08	Measuring probe 1 deflected	Yes	No	-
09	Measuring probe 2 deflected	Yes	No	-
11	Encoder fault acknowledge active	Yes	No	9676
13	Absolute value cyclically	Displayed in r0483	No	-
14	Parking encoder active	Yes	No	-
15	Encoder fault	Displayed in r0483	None	-

Notice: Information on Gn_STW/Gn_ZSW can, e.g. be found in the following literature:
SINAMICS S120 Function Manual Drive Functions

Note: For bit 14:
Displays the acknowledgment for "activate parking encoder" (Gn_STW.14 = 1) or encoder position actual value (Gn_XIST1) invalid.
For bit 14, 15:
r0481.14 = 1 and r0481.15 = 0 can have one of the following causes:
- the encoder is parked.
- the encoder is deactivated.
- the encoder is being commissioned.
- no parameterized encoder available.
- encoder data set is being changed over.
r0481.14 = 1 and r0481.15 = 1 has the following significance:
An encoder error has occurred and the encoder position actual value (Gn_XIST1) is invalid.

r0482[0...2] CO: Encoder actual position value Gn_XIST1 / Enc Gn_XIST1

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 4700, 4702, 4704, 4735, 4740, 4750
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output for the encoder actual position value Gn_XIST1 according to PROFIdrive.

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Note: - this value is reset if necessary when the "parking encoder" (r0481.14) function is de-selected.
- in this value, the measuring gear (p0432, p0433) is only taken into account when the position tracking is activated (p0411.0 = 1).
- the update time for the position control (EPOS) corresponds to the position controller clock cycle (p0115[4]).
- the update time in isochronous operation corresponds to the bus cycle time r2064[1].
- the update time in isochronous operation and with position control (EPOS) corresponds to the position controller sampling time (p0115[4]).
- the update time in non-isochronous operation or without position control (EPOS) must be determined from the default bus cycle time and the minimum cycle time:
The default bus cycle time is the lowest common multiple (LCM) of all current controller sampling times (p0115[0]) in the drive group (infeed + drives).
The minimum cycle time is four times the maximum of all current controller sampling times (p0115[0]) in the drive group (infeed + drives).
If the minimum cycle time is greater than the default bus cycle time, then the update time corresponds to the minimum cycle time; otherwise, the update time corresponds to the default bus cycle time.
The minimum update time is 1 ms.
Example 1: infeed, servo
Default bus cycle time = KGV(250 µs, 125 µs) = 250 µs
Minimum cycle time = 4 * MAX(250 µs, 125 µs) = 4 * 250 µs = 1 ms
-> update time = 1 ms
Example 2: infeed, servo, vector
Default bus cycle time = KGV(250 µs, 125 µs, 400 µs) = 2 ms
Minimum cycle time = 4 * MAX(250 µs, 125 µs, 400 µs) = 4 * 400 µs = 1.6 ms
-> update time = 2 ms

r0482 CO: TM41 encoder emulation position actual value Gn_XIST1 / Enc Gn_XIST1

TM41

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output for the encoder actual position value Gn_XIST1 according to PROFIdrive.

r0482 CO: Encoder actual position value Gn_XIST1 / Enc Gn_XIST1

ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 4704, 4735, 4740, 4750
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output for the encoder actual position value Gn_XIST1 according to PROFIdrive.

Note: - this value is reset if necessary when the "parking encoder" (r0481.14) function is de-selected.

- in this value, the measuring gear (p0432, p0433) is only taken into account when the position tracking is activated (p0411.0 = 1).

- the update time for the position control (EPOS) corresponds to the position controller clock cycle (p0115[4]).

- the update time in isochronous operation corresponds to the bus cycle time r2064[1].

- the update time in isochronous operation and with position control (EPOS) corresponds to the position controller sampling time (p0115[4]).

- the update time in non-isochronous operation or without position control (EPOS) must be determined from the default bus cycle time and the minimum cycle time:

The default bus cycle time is the lowest common multiple (LCM) of all current controller sampling times (p0115[0]) in the drive group (infeed + drives).

The minimum cycle time is four times the maximum of all current controller sampling times (p0115[0]) in the drive group (infeed + drives).

If the minimum cycle time is greater than the default bus cycle time, then the update time corresponds to the minimum cycle time; otherwise, the update time corresponds to the default bus cycle time.

The minimum update time is 1 ms.

Example 1: infeed, servo

Default bus cycle time = KGV(250 µs, 125 µs) = 250 µs

Minimum cycle time = 4 * MAX(250 µs, 125 µs) = 4 * 250 µs = 1 ms

-> update time = 1 ms

Example 2: infeed, servo, vector

Default bus cycle time = KGV(250 µs, 125 µs, 400 µs) = 2 ms

Minimum cycle time = 4 * MAX(250 µs, 125 µs, 400 µs) = 4 * 400 µs = 1.6 ms

-> update time = 2 ms

r0483[0...2] CO: Encoder actual position value Gn_XIST2 / Enc Gn_XIST2

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 4704, 4750
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the encoder actual position value Gn_XIST2 according to PROFIdrive.

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Notice: The encoder position actual value must be requested using the encoder control word Gn_STW.13.

Note: - in this value, the measuring gear (p0432, p0433) is only taken into account when the position tracking is activated (p0411.0 = 1).

- if GxZSW.15 = 1 (r0481), then an error code with the following significance is located in Gx_XIST2 (r0483):

1: Encoder fault.

2: Possible position shift in Gx_XIST1.

3: Encoder parking not possible.

4: Cancellation, reference block search (e.g. reference mark not available or input terminal for external zero mark not set). Zero mark is requested, however according to p0404.12/13/14 there is no zero mark (alarm A07565).

5: Cancellation, fetch reference value (e.g. illegal change from reference mark search to flying measurement).

6: cancellation, flying measurement (e.g. input terminal for probe not set).

7: Cancellation, fetch measured value (e.g. illegal change from flying measurement to reference mark search).

8: Abort, absolute value transfer.

3841: Function not supported.

4097: Abort, reference mark search due to an initialization error. Possible cause: defective Control Unit hardware.

4098: Abort, flying measurement due to an initialization error. Possible cause: defective Control Unit hardware.

4099: Abort, reference mark search due to a measuring error. Possible cause: too many measuring pulses have occurred.

4100: Abort, flying measurement due to a measuring error. Possible cause: too many measuring pulses have occurred.

r0483 CO: TM41 encoder emulation position actual value Gn_XIST2 / Enc Gn_XIST2

TM41

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the encoder actual position value Gn_XIST2 according to PROFIdrive.

Notice: The encoder position actual value must be requested using the encoder control word Gn_STW.13.

Note: SIMOTION (p4400 = 0) operating mode:

This value is used for interconnection with standard telegram 3 and is always zero.

SINAMICS (p4400 = 1) operating mode:

Once automatic zero mark synchronization is complete, the position of the zero mark of the leading encoder is displayed in this parameter. The leading encoder is interconnected via connector input p4420.

r0483 CO: Encoder actual position value Gn_XIST2 / Enc Gn_XIST2

ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 4704, 4750
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the encoder actual position value Gn_XIST2 according to PROFIdrive.

Notice: The encoder position actual value must be requested using the encoder control word Gn_STW.13.

Note: - in this value, the measuring gear (p0432, p0433) is only taken into account when the position tracking is activated (p0411.0 = 1).

- if GxZSW.15 = 1 (r0481), then an error code with the following significance is located in Gx_XIST2 (r0483):

1: Encoder fault.

2: Possible position shift in Gx_XIST1.

3: Encoder parking not possible.

4: Cancellation, reference block search (e.g. reference mark not available or input terminal for external zero mark not set). Zero mark is requested, however according to p0404.12/13/14 there is no zero mark (alarm A07565).

5: Cancellation, fetch reference value (e.g. illegal change from reference mark search to flying measurement).

6: cancellation, flying measurement (e.g. input terminal for probe not set).

7: Cancellation, fetch measured value (e.g. illegal change from flying measurement to reference mark search).

8: Abort, absolute value transfer.

3841: Function not supported.

4097: Abort, reference mark search due to an initialization error. Possible cause: defective Control Unit hardware.

4098: Abort, flying measurement due to an initialization error. Possible cause: defective Control Unit hardware.

4099: Abort, reference mark search due to a measuring error. Possible cause: too many measuring pulses have occurred.

4100: Abort, flying measurement due to a measuring error. Possible cause: too many measuring pulses have occurred.

r0484[0...2] CO: Redundant coarse encoder position + CRC / Enc red pos+CRC

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the redundant coarse encoder position including CRC (Cyclic Redundancy Check).

Upper 16 bits:

CRC over the redundant coarse encoder position.

Lower 16 bits:

Redundant coarse encoder position.

On an SMx Sensor Module, the encoder coarse position count direction is opposite to r0482 (encoder actual value Gn_XIST1). The value contains 2 bit fine resolution.

With a DRIVE-CLiQ encoder, the encoder coarse position count direction is the same as r0482.

Index: [0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Dependency: The values are valid when the safety position actual value sensing is activated (p0430.19 = 1).

Refer to: p0430

Note: This absolute value does not change, contrary to r0482, when de-selecting the function "parking axis".

r0484 CO: Redundant coarse encoder position + CRC / Enc red pos+CRC

ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the redundant coarse encoder position including CRC (Cyclic Redundancy Check).

Upper 16 bits:

CRC over the redundant coarse encoder position.

Lower 16 bits:

Redundant coarse encoder position.

On an SMx Sensor Module, the encoder coarse position count direction is opposite to r0482 (encoder actual value Gn_XIST1). The value contains 2 bit fine resolution.

With a DRIVE-CLiQ encoder, the encoder coarse position count direction is the same as r0482.

Dependency: The values are valid when the safety position actual value sensing is activated (p0430.19 = 1).

Refer to: p0430

Note: This absolute value does not change, contrary to r0482, when de-selecting the function "parking axis".

r0485[0...2] CO: Measuring gear encoder raw value incremental / Enc raw val incr

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the raw value of the incremental encoder actual value before the measuring gear.

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

r0485 CO: Measuring gear encoder raw value incremental / Enc raw val incr

ENC

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the raw value of the incremental encoder actual value before the measuring gear.

r0486[0...2] CO: Measuring gear encoder raw value absolute / Enc raw val abs

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the raw value of the absolute encoder actual value before the measuring gear.

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

r0486 CO: Measuring gear encoder raw value absolute / Enc raw val abs

ENC

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the raw value of the absolute encoder actual value before the measuring gear.

r0487[0...2] Diagnostic encoder control word Gn_STW / Enc Gn_STW

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 4700, 4704, 4720, 4740
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the encoder control word Gn_STW according to PROFIdrive for diagnostics.

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Request function 1	Yes	No	-
01	Request function 2	Yes	No	-
02	Request function 3	Yes	No	-
03	Request function 4	Yes	No	-
04	Request command bit 0	Yes	No	-
05	Request command bit 1	Yes	No	-
06	Request command bit 2	Yes	No	-
07	Flying measurement mode/search for reference mark	Flying measurement	Reference marks	-
13	Request absolute value cyclic	Yes	No	-
14	Request parking encoder	Yes	No	-
15	Request acknowledge encoder fault	Yes	No	-

Notice: Information on Gn_STW/Gn_ZSW should be taken from the corresponding product documentation.

Note: The signal source for the encoder control word is set with p0480.

r0487 Diagnostic encoder control word Gn_STW / Enc Gn_STW

ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 4700, 4704, 4720, 4740
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the encoder control word Gn_STW according to PROFIdrive for diagnostics.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Request function 1	Yes	No	-
01	Request function 2	Yes	No	-
02	Request function 3	Yes	No	-
03	Request function 4	Yes	No	-
04	Request command bit 0	Yes	No	-
05	Request command bit 1	Yes	No	-
06	Request command bit 2	Yes	No	-
07	Flying measurement mode/search for reference mark	Flying measurement	Reference marks	-
13	Request absolute value cyclic	Yes	No	-
14	Request parking encoder	Yes	No	-
15	Request acknowledge encoder fault	Yes	No	-

Notice: Information on Gn_STW/Gn_ZSW should be taken from the corresponding product documentation.

Note: The signal source for the encoder control word is set with p0480.

p0488[0...2] Measuring probe 1 input terminal / Meas probe 1 inp

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC	**Can be changed:** C2(4), U, T	**Calculated:** -	**Access level:** 3
	Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 4740
	P-Group: Encoder	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	8	0

Description: Sets the input terminal to connect probe 1.

Value:
0: No measuring probe
1: DI/DO 9 (X122.10/X121.8)
2: DI/DO 10 (X122.12/X121.10)
3: DI/DO 11 (X122.13/X121.11)
4: DI/DO 13 (X132.10/X131.2)
5: DI/DO 14 (X132.12/X131.4)
6: DI/DO 15 (X132.13/X131.5)
7: DI/DO 8 (X122.9/X121.7)
8: DI/DO 12 (X132.9/X131.1)

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Dependency: Refer to: p0489, p0490, p0728

Caution: In order to prevent incorrect measurement values, these parameters may not be written during an active measurement.

Notice: Regarding the terminal designation:

The first designation is valid for CU320, the second for CU310.

To select the values:

For CX32, NX10 and NX15, only DI/DO 8, 9, 10, 11 can be selected as fast inputs (refer to the Equipment Manual).

Note: DI/DO: Bidirectional Digital Input/Output

The terminal must be set as input (p0728).

Refer to the encoder interface for PROFIdrive.

If parameterization is rejected, check whether the terminal is already being used in p0580, p0680, p2517 or p2518.

p0488[0...2] Measuring probe 1 input terminal / Meas probe 1 inp

SERVO (Dig IO)	**Can be changed:** C2(4), U, T	**Calculated:** -	**Access level:** 3
	Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 4740
	P-Group: Encoder	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	51	0

Description: Sets the input terminal to connect probe 1.

Value:
0: No measuring probe
1: DI/DO 9 (X122.10/X121.8)
2: DI/DO 10 (X122.12/X121.10)
3: DI/DO 11 (X122.13/X121.11)
4: DI/DO 13 (X132.10/X131.2)
5: DI/DO 14 (X132.12/X131.4)
6: DI/DO 15 (X132.13/X131.5)
7: DI/DO 8 (X122.9/X121.7)
8: DI/DO 12 (X132.9/X131.1)
50: DI/DO 0 distributed (X3.2)
51: DI/DO 1 distributed (X3.4)

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Dependency: Refer to: p0489, p0490, p0728

Caution: In order to prevent incorrect measurement values, these parameters may not be written during an active measurement.

Notice: Regarding the terminal designation:
The first designation is valid for CU320, the second for CU310.
To select the values:
For CX32, NX10 and NX15, only DI/DO 8, 9, 10, 11 can be selected as fast inputs (refer to the Equipment Manual).

Note: DI/DO: Bidirectional Digital Input/Output
The terminal must be set as input (p0728).
Refer to the encoder interface for PROFIdrive.
If parameterization is rejected, check whether the terminal is already being used in p0580, p0680, p2517 or p2518.

p0488 Measuring probe 1 input terminal / Meas probe 1 inp

ENC

Can be changed: C2(4), U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 4740
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	8	0

Description: Sets the input terminal to connect probe 1.

Value:
0: No measuring probe
1: DI/DO 9 (X122.10/X121.8)
2: DI/DO 10 (X122.12/X121.10)
3: DI/DO 11 (X122.13/X121.11)
4: DI/DO 13 (X132.10/X131.2)
5: DI/DO 14 (X132.12/X131.4)
6: DI/DO 15 (X132.13/X131.5)
7: DI/DO 8 (X122.9/X121.7)
8: DI/DO 12 (X132.9/X131.1)

Dependency: Refer to: p0489, p0490, p0728

Caution: In order to prevent incorrect measurement values, these parameters may not be written during an active measurement.

Notice: Regarding the terminal designation:
The first designation is valid for CU320, the second for CU310.
To select the values:
For CX32, NX10 and NX15, only DI/DO 8, 9, 10, 11 can be selected as fast inputs (refer to the Equipment Manual).

Note: DI/DO: Bidirectional Digital Input/Output
The terminal must be set as input (p0728).
Refer to the encoder interface for PROFIdrive.
If parameterization is rejected, check whether the terminal is already being used in p0580, p0680, p2517 or p2518.

p0489[0...2] Measuring probe 2 input terminal / Meas probe 2 inp

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(4), U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 4740
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	8	0

Description: Sets the input terminal to connect probe 2.

Value:
0: No measuring probe
1: DI/DO 9 (X122.10/X121.8)
2: DI/DO 10 (X122.12/X121.10)
3: DI/DO 11 (X122.13/X121.11)
4: DI/DO 13 (X132.10/X131.2)
5: DI/DO 14 (X132.12/X131.4)

	6: DI/DO 15 (X132.13/X131.5) 7: DI/DO 8 (X122.9/X121.7) 8: DI/DO 12 (X132.9/X131.1)
Index:	[0] = Encoder 1 [1] = Encoder 2 [2] = Encoder 3
Dependency:	Refer to: p0488, p0490, p0728
Caution:	In order to prevent incorrect measurement values, these parameters may not be written during an active measurement.
Notice:	Regarding the terminal designation: The first designation is valid for CU320, the second for CU310. To select the values: For CX32, NX10 and NX15, only DI/DO 8, 9, 10, 11 can be selected as fast inputs (refer to the Equipment Manual).
Note:	DI/DO: Bidirectional Digital Input/Output The terminal must be set as input (p0728). Refer to the encoder interface for PROFIdrive. If parameterization is rejected, check whether the terminal is already being used in p0580, p0680, p2517 or p2518.

p0489[0...2] Measuring probe 2 input terminal / Meas probe 2 inp

SERVO (Dig IO)			
	Can be changed: C2(4), U, T	**Calculated:** -	**Access level:** 3
	Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 4740
	P-Group: Encoder	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	51	0

Description:	Sets the input terminal to connect probe 2.
Value:	0: No measuring probe 1: DI/DO 9 (X122.10/X121.8) 2: DI/DO 10 (X122.12/X121.10) 3: DI/DO 11 (X122.13/X121.11) 4: DI/DO 13 (X132.10/X131.2) 5: DI/DO 14 (X132.12/X131.4) 6: DI/DO 15 (X132.13/X131.5) 7: DI/DO 8 (X122.9/X121.7) 8: DI/DO 12 (X132.9/X131.1) 50: DI/DO 0 distributed (X3.2) 51: DI/DO 1 distributed (X3.4)
Index:	[0] = Encoder 1 [1] = Encoder 2 [2] = Encoder 3
Dependency:	Refer to: p0488, p0490, p0728
Caution:	In order to prevent incorrect measurement values, these parameters may not be written during an active measurement.
Notice:	Regarding the terminal designation: The first designation is valid for CU320, the second for CU310. To select the values: For CX32, NX10 and NX15, only DI/DO 8, 9, 10, 11 can be selected as fast inputs (refer to the Equipment Manual).
Note:	DI/DO: Bidirectional Digital Input/Output The terminal must be set as input (p0728). Refer to the encoder interface for PROFIdrive. If parameterization is rejected, check whether the terminal is already being used in p0580, p0680, p2517 or p2518.

p0489 Measuring probe 2 input terminal / Meas probe 2 inp

ENC

	Can be changed: C2(4), U, T	**Calculated:** -	**Access level:** 3
	Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 4740
	P-Group: Encoder	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	8	0

Description: Sets the input terminal to connect probe 2.

Value:
0: No measuring probe
1: DI/DO 9 (X122.10/X121.8)
2: DI/DO 10 (X122.12/X121.10)
3: DI/DO 11 (X122.13/X121.11)
4: DI/DO 13 (X132.10/X131.2)
5: DI/DO 14 (X132.12/X131.4)
6: DI/DO 15 (X132.13/X131.5)
7: DI/DO 8 (X122.9/X121.7)
8: DI/DO 12 (X132.9/X131.1)

Dependency: Refer to: p0488, p0490, p0728

Caution: In order to prevent incorrect measurement values, these parameters may not be written during an active measurement.

Notice: Regarding the terminal designation:

The first designation is valid for CU320, the second for CU310.

To select the values:

For CX32, NX10 and NX15, only DI/DO 8, 9, 10, 11 can be selected as fast inputs (refer to the Equipment Manual).

Note: DI/DO: Bidirectional Digital Input/Output

The terminal must be set as input (p0728).

Refer to the encoder interface for PROFIdrive.

If parameterization is rejected, check whether the terminal is already being used in p0580, p0680, p2517 or p2518.

p0490 Invert measuring probe or equivalent zero mark / Pr or ZM_equiv inv

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

	Can be changed: C2(4), U, T	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 4740
	P-Group: Encoder	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	0000 0000 0000 0000 bin

Description: Setting to invert the digital input signals to connect a measuring probe or an equivalent zero mark.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
08	DI/DO 8 (X122.9/X121.7)	Inverted	Not inverted	-
09	DI/DO 9 (X122.10/X121.8)	Inverted	Not inverted	-
10	DI/DO 10 (X122.12/X121.10)	Inverted	Not inverted	-
11	DI/DO 11 (X122.13/X121.11)	Inverted	Not inverted	-
12	DI/DO 12 (X132.9/X131.1)	Inverted	Not inverted	-
13	DI/DO 13 (X132.10/X131.2)	Inverted	Not inverted	-
14	DI/DO 14 (X132.12/X131.4)	Inverted	Not inverted	-
15	DI/DO 15 (X132.13/X131.5)	Inverted	Not inverted	-

Dependency: Refer to: p0488, p0489, p0493, p0495, p0728

Notice: To select the values:

For CX32, NX10 and NX15, only DI/DO 8, 9, 10, 11 can be selected as fast inputs (refer to the Equipment Manual).

Regarding the terminal designation:

The first designation is valid for CU320, the second for CU310.

Note: The terminal must be set as input.

When the measuring probe or the equivalent zero mark is inverted, this has no effect on the status displays of the digital inputs (r0721, r0722, r0723).

DI/DO: Bidirectional Digital Input/Output

p0491 Motor encoder fault response ENCODER / Fault resp ENCODER

HLA, TM41

Can be changed: C2(4), T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	5	0

Description: Sets the behavior for the ENCODER fault response (motor encoder).

This means, for example, if an encoder fault occurs, encoderless operation can be automatically selected with a shutdown behavior that can be selected.

Value:
0: Encoder fault results in OFF2
1: Enc fault results in encoderless oper. and oper. continues
2: Encoder fault results in encoderless operation and OFF1
3: Encoder fault results in encoderless operation and OFF3
4: Encoder fault results in an armature short-cct int/DC braking
5: Enc fault results in encoderless op, operation continues, alarm

Dependency: The following parameters are relevant for encoderless operation.

Refer to: p0341, p0342, p1470, p1472, p1517, p1612, p1755

Refer to: F07575

Caution: For a value = 1, 2, 3, 5 the following applies:

- encoderless operation must have been started.
- if, for synchronous motors, an encoder fault occurs below the switchover speed p1755, when switching over to encoderless operation, the motor can stall.

For a value = 1, 5 the following applies:

- in spite of the motor encoder fault that has occurred, the motor continues to operate.

Note: For a value = 1, 2, 3, 5 the following applies:

- Refer to the status signal "encoderless operation due to a fault" (BO: r1407.13).
- if, with r1407.13 = 1, a different drive data set is selected (e.g. interconnection from p0820), then the open-loop or closed-loop control type p1300 of this data set must match that of the original data set (e.g. p1300 = 21). Encoderless closed-loop controlled operation is kept when changing over.

For a value = 4, the following applies:

- the value can only be set for all motor data sets when p1231 = 3, 4.
- For synchronous motors, an armature short circuit is initiated on an encoder fault.
- For induction motors, DC braking is initiated on an encoder fault. DC braking must be commissioned (p1232, p1233, p1234).

For a value = 5, the following applies:

Same function as for value = 1.

However, faults are output as alarm and the message bit "Fault active" (r2139.3) is not set. The encoder fault has to be acknowledged via the encoder interface in order to resume operation with encoder.

p0491 Motor encoder fault response ENCODER / Fault resp ENCODER

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(4), T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	5	0

Description: Sets the behavior for the ENCODER fault response (motor encoder).

This means, for example, if an encoder fault occurs, encoderless operation can be automatically selected with a shutdown behavior that can be selected.

Value:
0: Encoder fault results in OFF2
1: Enc fault results in encoderless oper. and oper. continues
2: Encoder fault results in encoderless operation and OFF1
3: Encoder fault results in encoderless operation and OFF3
4: Encoder fault results in an armature short-cct int/DC braking
5: Enc fault results in encoderless op, operation continues, alarm

Dependency: The following parameters are relevant for encoderless operation.

Refer to: p0341, p0342, p1470, p1472, p1517, p1612, p1755

Refer to: F07575

Caution: For a value = 1, 2, 3, 5 the following applies:

- encoderless operation must have been started.

- if, for synchronous motors, an encoder fault occurs below the switchover speed p1755, when switching over to encoderless operation, the motor can stall.

For a value = 1, 5 the following applies:

- in spite of the motor encoder fault that has occurred, the motor continues to operate.

Note: For a value = 1, 2, 3, 5 the following applies:

- for encoderless operation the following condition must be fulfilled: p1800 >= 1 / (4 * p0115[0])

- Refer to the status signal "encoderless operation due to a fault" (BO: r1407.13).

- if, with r1407.13 = 1, a different drive data set is selected (e.g. interconnection from p0820), then the open-loop or closed-loop control type p1300 of this data set must match that of the original data set (e.g. p1300 = 21). Encoderless closed-loop controlled operation is kept when changing over.

For a value = 4, the following applies:

- the value can only be set for all motor data sets when p1231 = 3, 4.

- For synchronous motors, an armature short circuit is initiated on an encoder fault.

- For induction motors, DC braking is initiated on an encoder fault. DC braking must be commissioned (p1232, p1233, p1234).

p0491 Motor encoder fault response ENCODER / Fault resp ENCODER

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(4), T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	5	0

Description: Sets the behavior for the ENCODER fault response (motor encoder).

This means, for example, if an encoder fault occurs, encoderless operation can be automatically selected with a shutdown behavior that can be selected.

Value:

0: Encoder fault results in OFF2
1: Enc fault results in encoderless oper. and oper. continues
2: Encoder fault results in encoderless operation and OFF1
3: Encoder fault results in encoderless operation and OFF3
4: Encoder fault results in an armature short-cct int/DC braking
5: Enc fault results in encoderless op, operation continues, alarm

Dependency: The following parameters are relevant for encoderless operation.

Refer to: p0341, p0342, p1470, p1472, p1517, p1612, p1755

Refer to: F07575

Caution: For a value = 1, 2, 3, 5 the following applies:

- encoderless operation must have been started.

For a value = 1, the following applies:

- in spite of the motor encoder fault that has occurred, the motor continues to operate.

Note: For a value = 1, 2, 3, 5 the following applies:

- Refer to the status signal "encoderless operation due to a fault" (BO: r1407.13).

- if, with r1407.13 = 1, a different drive data set is selected (e.g. interconnection from p0820), then the open-loop or closed-loop control type p1300 of this data set must match that of the original data set (e.g. p1300 = 21). Encoderless closed-loop controlled operation is kept when changing over.

- not possible for separately excited synchronous motors (p0300 = 5).

For a value = 4, the following applies:

- the value can only be set for all motor data sets when p1231 = 3, 4.

- For synchronous motors, an armature short circuit is initiated on an encoder fault.

- For induction motors, DC braking is initiated on an encoder fault. DC braking must be commissioned (p1232, p1233, p1234).

For a value = 5, the following applies:

Same function as for value = 1.

However, faults are output as alarm and the message bit "Fault active" (r2139.3) is not set. The encoder fault has to be acknowledged via the encoder interface in order to resume operation with encoder.

p0492 Square-wave encoder max. velocity difference per sampling cycle / v_dif max/samp_cyc

HLA

Can be changed: C2(4), U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [m/min]	210000.00 [m/min]	0.00 [m/min]

Description: Sets the maximum permissible speed difference between two computing cycles when square-wave encoders are evaluated.

The drive is switched off if this value is exceeded.

Dependency: Refer to: F31118, A31418, F32118, A32418, F33118, A33418

Note: The velocity change monitoring is deactivated for a value = 0.0.

If the set maximum velocity difference is only exceeded for one sampling time, then an appropriate alarm is output.

However, if the maximum speed difference is exceeded over several sampling times, then a corresponding fault is output.

p0492 Square-wave encoder maximum speed difference per sampling cycle / n_dif max/samp_cyc

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(4), U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	0.00 [rpm]

Description: Sets the maximum permissible speed difference within the current controller sampling time for squarewave encoders.

When the value is exceeded, depending on p0491, either encoderless closed-loop speed/torque control is selected or the drive is switched off.

Dependency: Refer to: F31118, A31418, F32118, A32418, F33118, A33418

Note: For a value of 0.0, the speed change monitoring is disabled.

if the set maximum speed difference is only exceeded for one sampling time of the current controller, then an appropriate alarm is output. However, if the maximum speed difference is exceeded over several sampling times, then a corresponding fault is output.

The speed actual value used for the monitoring is a floating average between p0115[0] and p0115[1].

p0492 Square-wave encoder max. velocity difference per sampling cycle / v_dif max/samp_cyc

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: C2(4), U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [m/min]	1000.00 [m/min]	0.00 [m/min]

Description: Sets the maximum permissible speed difference between two computing cycles when square-wave encoders are evaluated.

When the value is exceeded, depending on p0491, either encoderless closed-loop velocity/force control is selected or the drive is switched off.

Dependency: Refer to: F31118, A31418, F32118, A32418, F33118, A33418

Note: For a value of 0.0, velocity change monitoring is disabled.

When half of the parameter value is exceeded, an alarm is already generated and the velocity change is limited to this.

p0492 Maximum speed difference per sampling cycle / n_dif max/samp_cyc

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(4), U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	0.00 [rpm]

Description: Sets the maximum permissible speed difference within the current controller sampling time.

Dependency: Refer to: r1408

Refer to: F07902, F31118, A31418, F32118, A32418, F33118, A33418

Note: For a value of 0.0, the speed change monitoring is disabled.

The following applies for square-wave encoders:

If the speed difference exceeds the threshold value p0492, depending on p0491, either encoderless closed-loop speed/torque control is selected or the drive is switched off with fault F3x118.

The following applies for other speed encoders:

If the speed difference exceeds threshold value p0492, in order to avoid subsequent faults, the old speed actual value is kept and after time p2178 shut down with fault F07902 (motor stalled).

p0492 Square-wave encoder maximum speed difference per sampling cycle / n_dif max/samp_cyc

ENC

Can be changed: C2(4), U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	0.00 [rpm]

Description: Sets the maximum permissible speed difference within the current controller sampling time for squarewave encoders.

Dependency: Refer to: F31118, A31418

Note: For a value of 0.0, the speed change monitoring is disabled.

if the set maximum speed difference is only exceeded for one sampling time of the current controller, then an appropriate alarm is output. However, if the maximum speed difference is exceeded over several sampling times, then a corresponding fault is output.

p0492 Square-wave encoder max. velocity difference per sampling cycle / v_dif max/samp_cyc

ENC (Lin_enc)

Can be changed: C2(4), U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [m/min]	1000.00 [m/min]	0.00 [m/min]

Description: Sets the maximum permissible velocity difference within the current controller sampling time for square-wave encoders.

Dependency: Refer to: F31118, A31418

Note: For a value of 0.0, velocity change monitoring is disabled.

if the set maximum velocity difference is only exceeded for one sampling time of the current controller, then an appropriate alarm is output. However, if the maximum speed difference is exceeded over several sampling times, then a corresponding fault is output.

p0493[0...n] Zero mark selection input terminal / ZM_sel inp_term

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(4), U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	8	0

Description: Sets the input terminal for selecting the reference mark via BERO/switching signal when performing referencing with several zero marks.

The encoder interface supplies the position of the reference mark, which was detected immediately after the positive edge of the BERO signal.

Value:
0: No selection via BERO
1: DI/DO 9 (X122.10/X121.8)
2: DI/DO 10 (X122.12/X121.10)
3: DI/DO 11 (X122.13/X121.11)
4: DI/DO 13 (X132.10/X131.2)
5: DI/DO 14 (X132.12/X131.4)
6: DI/DO 15 (X132.13/X131.5)
7: DI/DO 8 (X122.9/X121.7)
8: DI/DO 12 (X132.9/X131.1)

Dependency: Refer to: p0490

Caution: In order to prevent incorrect measurement values, these parameters may not be written during an active measurement.

Notice: For CX32, NX10 and NX15, only DI/DO 8, 9, 10, 11 can be selected as fast inputs (refer to the Equipment Manual).

Regarding the terminal designation:

The first designation is valid for CU320, the second for CU310.

Note: Refer to the encoder interface for PROFIdrive.

The terminal must be set as input (p0728).

For p0493 = 0 (factory setting) the following applies:

- there is no logic operation between the reference mark search and an input signal.

For p0493 > 0, the following applies:

- the positive edge of the input signal is evaluated. If the negative edge is to be evaluated, signal inversion must be parameterized via p0490.

- if a parameter change is rejected, a check should be performed as to whether the input terminal is already being used in p0580, p0680, p2517, or p2518.

p0493[0...n] Zero mark selection input terminal / ZM_sel inp_term

SERVO (Dig IO)

Can be changed: C2(4), U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	51	0

Description: Sets the input terminal for selecting the reference mark via BERO/switching signal when performing referencing with several zero marks.

The encoder interface supplies the position of the reference mark, which was detected immediately after the positive edge of the BERO signal.

Value:
0: No selection via BERO
1: DI/DO 9 (X122.10/X121.8)
2: DI/DO 10 (X122.12/X121.10)
3: DI/DO 11 (X122.13/X121.11)
4: DI/DO 13 (X132.10/X131.2)
5: DI/DO 14 (X132.12/X131.4)
6: DI/DO 15 (X132.13/X131.5)
7: DI/DO 8 (X122.9/X121.7)

8: DI/DO 12 (X132.9/X131.1)
50: DI/DO 0 distributed (X3.2)
51: DI/DO 1 distributed (X3.4)

Dependency: Refer to: p0490

Caution: In order to prevent incorrect measurement values, these parameters may not be written during an active measurement.

Notice: For CX32, NX10 and NX15, only DI/DO 8, 9, 10, 11 can be selected as fast inputs (refer to the Equipment Manual).

Regarding the terminal designation:

The first designation is valid for CU320, the second for CU310.

Note: Refer to the encoder interface for PROFIdrive.

The terminal must be set as input (p0728).

For p0493 = 0 (factory setting) the following applies:

- there is no logic operation between the reference mark search and an input signal.

For p0493 > 0, the following applies:

- the positive edge of the input signal is evaluated. If the negative edge is to be evaluated, signal inversion must be parameterized via p0490.

- if a parameter change is rejected, a check should be performed as to whether the input terminal is already being used in p0580, p0680, p2517, or p2518.

p0493 Zero mark selection input terminal / ZM_sel inp_term

ENC			
	Can be changed: C2(4), U, T	**Calculated:** -	**Access level:** 3
	Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Encoder	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	211	0

Description: Sets the input terminal for selecting the reference mark via BERO/switching signal when performing referencing with several zero marks.

The encoder interface supplies the position of the reference mark, which was detected immediately after the positive edge of the BERO signal.

Value:
0: No selection via BERO
1: DI/DO 9 (X122.10/X121.8)
2: DI/DO 10 (X122.12/X121.10)
3: DI/DO 11 (X122.13/X121.11)
4: DI/DO 13 (X132.10/X131.2)
5: DI/DO 14 (X132.12/X131.4)
6: DI/DO 15 (X132.13/X131.5)
7: DI/DO 8 (X122.9/X121.7)
8: DI/DO 12 (X132.9/X131.1)
210: DI 0 (X130 / 1.2)
211: DI 1 (X130 / 1.5)

Dependency: Refer to: p0490

Caution: In order to prevent incorrect measurement values, these parameters may not be written during an active measurement.

Notice: For CX32, NX10 and NX15, only DI/DO 8, 9, 10, 11 can be selected as fast inputs (refer to the Equipment Manual).

Regarding the terminal designation:

The first designation is valid for CU320, the second for CU310.

Note: Refer to the encoder interface for PROFIdrive.

The terminal must be set as input (p0728).

For p0493 = 0 (factory setting) the following applies:

- there is no logic operation between the reference mark search and an input signal.

For p0493 > 0, the following applies:

- the positive edge of the input signal is evaluated. If the negative edge is to be evaluated, signal inversion must be parameterized via p0490.

- if a parameter change is rejected, a check should be performed as to whether the input terminal is already being used in p0580, p0680, p2517, or p2518.

p0494[0...n] Equivalent zero mark input terminal / ZM_equiv inp_term

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(4), U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	8	0

Description: Selects the input terminal for connecting an equivalent zero mark (external encoder zero mark).

Value:
0: No equivalent zero mark (evaluation of the encoder zero mark)
1: DI/DO 9 (X122.10/X121.8)
2: DI/DO 10 (X122.12/X121.10)
3: DI/DO 11 (X122.13/X121.11)
4: DI/DO 13 (X132.10/X131.2)
5: DI/DO 14 (X132.12/X131.4)
6: DI/DO 15 (X132.13/X131.5)
7: DI/DO 8 (X122.9/X121.7)
8: DI/DO 12 (X132.9/X131.1)

Dependency: Refer to: p0490

Caution: In order to prevent incorrect measurement values, these parameters may not be written during an active measurement.

Notice: For CX32, NX10 and NX15, only DI/DO 8, 9, 10, 11 can be selected as fast inputs (refer to the Equipment Manual).

For p0494 = 0 (factory setting), the setting in p0495 is effective.

Regarding the terminal designation:

The first designation is valid for CU320, the second for CU310.

Note: Refer to the encoder interface for PROFIdrive.

The terminal must be set as input.

p0494[0...n] Equivalent zero mark input terminal / ZM_equiv inp_term

SERVO (Dig IO)

Can be changed: C2(4), U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	51	0

Description: Selects the input terminal for connecting an equivalent zero mark (external encoder zero mark).

Value:
0: No equivalent zero mark (evaluation of the encoder zero mark)
1: DI/DO 9 (X122.10/X121.8)
2: DI/DO 10 (X122.12/X121.10)
3: DI/DO 11 (X122.13/X121.11)
4: DI/DO 13 (X132.10/X131.2)
5: DI/DO 14 (X132.12/X131.4)
6: DI/DO 15 (X132.13/X131.5)
7: DI/DO 8 (X122.9/X121.7)
8: DI/DO 12 (X132.9/X131.1)
50: DI/DO 0 distributed (X3.2)
51: DI/DO 1 distributed (X3.4)

Dependency: Refer to: p0490

Caution: In order to prevent incorrect measurement values, these parameters may not be written during an active measurement.

Notice: For CX32, NX10 and NX15, only DI/DO 8, 9, 10, 11 can be selected as fast inputs (refer to the Equipment Manual).

For p0494 = 0 (factory setting), the setting in p0495 is effective.

Regarding the terminal designation:

The first designation is valid for CU320, the second for CU310.

Note: Refer to the encoder interface for PROFIdrive.

The terminal must be set as input.

p0495[0...2] Equivalent zero mark input terminal / ZM_equiv input

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(4), U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 4735
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	8	0

Description: Selects the input terminal for connecting an equivalent zero mark (external encoder zero mark).

Value:
0: No equivalent zero mark (evaluation of the encoder zero mark)
1: DI/DO 9 (X122.10/X121.8)
2: DI/DO 10 (X122.12/X121.10)
3: DI/DO 11 (X122.13/X121.11)
4: DI/DO 13 (X132.10/X131.2)
5: DI/DO 14 (X132.12/X131.4)
6: DI/DO 15 (X132.13/X131.5)
7: DI/DO 8 (X122.9/X121.7)
8: DI/DO 12 (X132.9/X131.1)

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Dependency: Refer to: p0490, p0494

Caution: In order to prevent incorrect measurement values, these parameters may not be written during an active measurement.

Notice: For CX32, NX10 and NX15, only DI/DO 8, 9, 10, 11 can be selected as fast inputs (refer to the Equipment Manual).

For p0494 > 0, the setting in p0494 is effective and p0495 is invalid.

Regarding the terminal designation:

The first designation is valid for CU320, the second for CU310.

Note: Refer to the encoder interface for PROFIdrive.

The terminal must be set as input.

For p0495 = 0 (factory setting), the encoder zero mark is evaluated as zero mark.

For p0495 > 0, the following applies:

Depending on the direction of motion, the positive or negative edge at the appropriate input is evaluated.

- increasing position actual values (r0482) --> the 0/1 edge is evaluated.

- decreasing position actual values (r0482) --> the 1/0 edge is evaluated.

Only one zero mark is supported. If function 2, 3 or 4 is selected, this results in a fault message in Gn_ZSW.

The inversion of the inputs via p0490 affects the function "referencing with equivalent zero mark". This is the reason that the edge evaluation is interchanged as a function of the direction of motion.

An input can only be assigned to one encoder as measuring probe 1, 2 or equivalent zero mark.

Exception:

Simultaneous use as measuring probe and equivalent zero mark is possible for the same encoder, as both functions cannot be simultaneously requested.

p0495[0...2] Equivalent zero mark input terminal / ZM_equiv input

SERVO (Dig IO)

Can be changed: C2(4), U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 4735
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	51	0

Description: Selects the input terminal for connecting an equivalent zero mark (external encoder zero mark).

Value:
0: No equivalent zero mark (evaluation of the encoder zero mark)
1: DI/DO 9 (X122.10/X121.8)
2: DI/DO 10 (X122.12/X121.10)
3: DI/DO 11 (X122.13/X121.11)
4: DI/DO 13 (X132.10/X131.2)

5: DI/DO 14 (X132.12/X131.4)
6: DI/DO 15 (X132.13/X131.5)
7: DI/DO 8 (X122.9/X121.7)
8: DI/DO 12 (X132.9/X131.1)
50: DI/DO 0 distributed (X3.2)
51: DI/DO 1 distributed (X3.4)

Index: [0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Dependency: Refer to: p0490, p0494

Caution: In order to prevent incorrect measurement values, these parameters may not be written during an active measurement.

Notice: For CX32, NX10 and NX15, only DI/DO 8, 9, 10, 11 can be selected as fast inputs (refer to the Equipment Manual).

For p0494 > 0, the setting in p0494 is effective and p0495 is invalid.

Regarding the terminal designation:

The first designation is valid for CU320, the second for CU310.

Note: Refer to the encoder interface for PROFIdrive.

The terminal must be set as input.

For p0495 = 0 (factory setting), the encoder zero mark is evaluated as zero mark.

For p0495 > 0, the following applies:

Depending on the direction of motion, the positive or negative edge at the appropriate input is evaluated.

- increasing position actual values (r0482) --> the 0/1 edge is evaluated.
- decreasing position actual values (r0482) --> the 1/0 edge is evaluated.

Only one zero mark is supported. If function 2, 3 or 4 is selected, this results in a fault message in Gn_ZSW.

The inversion of the inputs via p0490 affects the function "referencing with equivalent zero mark". This is the reason that the edge evaluation is interchanged as a function of the direction of motion.

An input can only be assigned to one encoder as measuring probe 1, 2 or equivalent zero mark.

Exception:

Simultaneous use as measuring probe and equivalent zero mark is possible for the same encoder, as both functions cannot be simultaneously requested.

p0495 Equivalent zero mark input terminal / ZM_equiv input

ENC			
	Can be changed: C2(4), U, T	**Calculated:** -	**Access level:** 3
	Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 4735
	P-Group: Encoder	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	8	0

Description: Selects the input terminal for connecting an equivalent zero mark (external encoder zero mark).

Value:
0: No equivalent zero mark (evaluation of the encoder zero mark)
1: DI/DO 9 (X122.10/X121.8)
2: DI/DO 10 (X122.12/X121.10)
3: DI/DO 11 (X122.13/X121.11)
4: DI/DO 13 (X132.10/X131.2)
5: DI/DO 14 (X132.12/X131.4)
6: DI/DO 15 (X132.13/X131.5)
7: DI/DO 8 (X122.9/X121.7)
8: DI/DO 12 (X132.9/X131.1)

Dependency: Refer to: p0490

Caution: In order to prevent incorrect measurement values, these parameters may not be written during an active measurement.

Notice: For CX32, NX10 and NX15, only DI/DO 8, 9, 10, 11 can be selected as fast inputs (refer to the Equipment Manual).

For p0494 > 0, the setting in p0494 is effective and p0495 is invalid.

Regarding the terminal designation:

The first designation is valid for CU320, the second for CU310.

Note: Refer to the encoder interface for PROFIdrive.

The terminal must be set as input.

For p0495 = 0 (factory setting), the encoder zero mark is evaluated as zero mark.

For p0495 > 0, the following applies:

Depending on the direction of motion, the positive or negative edge at the appropriate input is evaluated.

- increasing position actual values (r0482) --> the 0/1 edge is evaluated.
- decreasing position actual values (r0482) --> the 1/0 edge is evaluated.

Only one zero mark is supported. If function 2, 3 or 4 is selected, this results in a fault message in Gn_ZSW.

The inversion of the inputs via p0490 affects the function "referencing with equivalent zero mark". This is the reason that the edge evaluation is interchanged as a function of the direction of motion.

An input can only be assigned to one encoder as measuring probe 1, 2 or equivalent zero mark.

Exception:

Simultaneous use as measuring probe and equivalent zero mark is possible for the same encoder, as both functions cannot be simultaneously requested.

p0496[0...2] Encoder diagnostic signal selection / Enc diag select

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(4), U, T	**Calculated:** -	**Access level:** 4
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	86	0

Description: Selects the trace signal to be output in r0497, r0498 and r0499 for encoder diagnostics.

Value:

0: Inactive
1: r0497: Mechanical revolution
7: r0498: oversampling channel A with fault trigger
8: r0498: oversampling channel A with fault trigger
9: r0497: sum of the squares AB in 0.1 mV
10: r0498: Raw value track A, r0499: Raw value track B
11: r0498: Fine position X (-A/2), r0499: Fine position Y (-B/2)
12: r0498: Fine position Phi, r0499: -
13: r0498: Offset correction X, r0499: Offset correction Y
14: r0498: Phase correction X, r0499: Amplitude correction Y
15: r0498: Cubic correction X, r0499: Fine position X
16: r0498: oversampling channel A, r0499: oversampling channel B
17: r0498: fan-out amount, r0499: fan-out number
18: r0498: Oversampling angle, r0499: Oversampling amount
19: r0498: Fault counter AB, r0499: raw value track A
20: r0498: Raw value track C, r0499: Raw value track D
21: r0498: CD position X (-D/2), r0499: CD position Y (C/2)
22: r0498: CD position Phi, r0499: CD pos. Phi - mech. revolution
23: r0497: Zero mark status
24: r0498: Raw value track R, r0499: Zero mark status
25: r0498: Raw value track A, r0499: Raw value track R
26: r0498: Sum of squares AB, r0499: sector number
30: r0497: Absolute position serial
31: r0497: Absolute position incremental
32: r0497: Zero mark position
33: r0497: Correction absolute position difference
40: r0498: Raw temperature, r0499: Temperature in 0.1 °C
41: r0498: Resistance in 0.1 Ohm, r0499: Temperature in 0.1 °C
42: r0497: Resistance 2500 Ohm
51: r0497: Absolute speed difference (dn/dt)
52: r0497: Xact1 corrected quadrants
60: Analog sensor: r0498: raw val chann. A, r0499: raw val chann. B
61: Analog sensor: r0498: fine pos chann. A,r0499: fine pos chann. B
62: Analog sensor: r0498: Fine pos before characteristic, r0499: -
70: Resolver: r0498: Transformation ratio, r0499: phase
80: Spindle: r0498: Sensor S1 (raw), r0499: Sensor S4 (raw)

81: Spindle: r0498: Sensor S5 (raw), r0499: -
85: Spindle: r0498: Sensor S1 (cal), r0499: Sensor S4 (cal)
86: Spindle: r0498: Sensor S5 (cal), r0499: -

Index: [0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Dependency: Refer to: r0497, r0498, r0499

Notice: The setting option depends on the following properties:

Sensor Module type, hardware version, firmware version (Sensor Module and Control Units), Article number (last digit).

Not all combinations are supported.

Note: For p0496 = 1: 360 ° <--> 2^32

For p0496 = 7, 8: input voltage in mV

For p0496 = 10 (resolver): 2900 mV <--> 26214 dec

For p0496 = 10, 20 (sin/cos 1 Vpp, EnDat): 500 mV <--> 21299 dec

For p0496 = 11 (resolver): 2900 mV <--> 13107 dec, internal processor offset is corrected

For p0496 = 11, 21 (sin/cos 1 Vpp, EnDat): 500 mV <--> 10650 dec, internal processor offset is corrected

For p0496 = 12: 180 ° fine position <--> 32768 dec

For p0496 = 13 (resolver): 2900 mV <--> 13107 dec

For p0496 = 13 (sin/cos 1 Vpp, EnDat): 500 mV <--> 10650 dec

For p0496 = 14: 1 ° <--> 286 dec, 100 % <--> 16384 dec

For p0496 = 15: 100 % <--> 16384 dec

For p0496 = 16 (resolver): channel A: 2900 mV <--> 26214 dec, channel B: 2900 mV <--> 26214 dec, channel A and channel B can be shifted by one sample (in time)

For p0496 = 16: (sin/cos 1 Vpp, EnDat) channel A: 500 mV <--> 21299 dec, channel B: 500 mV <--> 21299 dec, channel A and channel B can be shifted by one sample (in time)

For p0496 = 17 (resolver): absolute value: 2900 mV <--> 13107 dec, number: 1 ... 8

For p0496 = 17 (sin/cos 1 Vpp, EnDat): absolute value 500 mV <--> 10650 dec, number: 1 ... 8

For p0496 = 18 (resolver): angle: signal period <--> 2^16, absolute value: 2900 mV <--> 13107 dec

For p0496 = 18 (sin/cos 1 Vpp, EnDat): angle: signal period <--> 2^16, absolute value: 500 mV <--> 10650 dec

For p0496 = 19 (resolver): counter: dec, channel A: 2900 mV <--> 26214 dec

For p0496 = 19 (sin/cos 1 Vpp, EnDat): counter: dec, channel A: 500 mV <--> 21299 dec

For p0496 = 22: 180 ° <--> 32768 dec

For p0496 = 23, 24: r0497.31 (r0499.15) set for at least 1 current controller sampling time when encoder zero mark detected

For p0496 = 24, 25: 500 mV <--> 21299 dec

For p0496 = 30: Rotary: 1 singleturn measuring step <--> 1 dec, linear: 1 measuring step <--> 1 dec

For p0496 = 31: Absolute position, incremental in 1/4 encoder pulses

For p0496 = 32: Zero mark position in 1/4 encoder pulses

For p0496 = 33: counter offset absolute value in 1/4 encoder pulses

For p0496 = 40: r0498 <--> (R_KTY/1 kOhm - 0.9) * 32768

For p0496 = 42: 2500 Ohm <--> 2^32

For p0496 = 51: 1 rpm <--> 1000 dec

For p0496 = 52: In 1/4 encoder pulses

For p0496 = 60: voltage, channel A in mV, voltage, channel B in mV

For p0496 = 61: Channel A: encoder periods <--> 2^16, channel B: encoder periods <--> 2^16

For p0496 = 62: encoder periods <--> 2^16

For p0496 = 70: r: 100% <--> 10000 dec, phase: 180 ° <--> 18000 dec

For p0496 = 80, 81, 85, 86: 1V <--> 1000 inc

p0496 Encoder diagnostic signal selection / Enc diag select

ENC			
	Can be changed: C2(4), U, T	**Calculated:** -	**Access level:** 4
	Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Encoder	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	86	0

Description: Selects the trace signal to be output in r0497, r0498 and r0499 for encoder diagnostics.

Value:
0: Inactive
1: r0497: Mechanical revolution
7: r0498: oversampling channel A with fault trigger
8: r0498: oversampling channel A with fault trigger
9: r0497: sum of the squares AB in 0.1 mV
10: r0498: Raw value track A, r0499: Raw value track B
11: r0498: Fine position X (-A/2), r0499: Fine position Y (-B/2)
12: r0498: Fine position Phi, r0499: -
13: r0498: Offset correction X, r0499: Offset correction Y
14: r0498: Phase correction X, r0499: Amplitude correction Y
15: r0498: Cubic correction X, r0499: Fine position X
16: r0498: oversampling channel A, r0499: oversampling channel B
17: r0498: fan-out amount, r0499: fan-out number
18: r0498: Oversampling angle, r0499: Oversampling amount
19: r0498: Fault counter AB, r0499: raw value track A
20: r0498: Raw value track C, r0499: Raw value track D
21: r0498: CD position X (-D/2), r0499: CD position Y (C/2)
22: r0498: CD position Phi, r0499: CD pos. Phi - mech. revolution
23: r0497: Zero mark status
24: r0498: Raw value track R, r0499: Zero mark status
25: r0498: Raw value track A, r0499: Raw value track R
26: r0498: Sum of squares AB, r0499: sector number
30: r0497: Absolute position serial
31: r0497: Absolute position incremental
32: r0497: Zero mark position
33: r0497: Correction absolute position difference
40: r0498: Raw temperature, r0499: Temperature in 0.1 °C
41: r0498: Resistance in 0.1 Ohm, r0499: Temperature in 0.1 °C
42: r0497: Resistance 2500 Ohm
51: r0497: Absolute speed difference (dn/dt)
52: r0497: Xact1 corrected quadrants
60: Analog sensor: r0498: raw val chann. A, r0499: raw val chann. B
61: Analog sensor: r0498: fine pos chann. A,r0499: fine pos chann. B
62: Analog sensor: r0498: Fine pos before characteristic, r0499: -
70: Resolver: r0498: Transformation ratio, r0499: phase
80: Spindle: r0498: Sensor S1 (raw), r0499: Sensor S4 (raw)
81: Spindle: r0498: Sensor S5 (raw), r0499: -
85: Spindle: r0498: Sensor S1 (cal), r0499: Sensor S4 (cal)
86: Spindle: r0498: Sensor S5 (cal), r0499: -

Dependency: Refer to: r0497, r0498, r0499

Notice: The setting option depends on the following properties:

Sensor Module type, hardware version, firmware version (Sensor Module and Control Units), Article number (last digit).

Not all combinations are supported.

Note: For p0496 = 1: 360 ° <--> 2^32

For p0496 = 7, 8: input voltage in mV

For p0496 = 10 (resolver): 2900 mV <--> 26214 dec

For p0496 = 10, 20 (sin/cos 1 Vpp, EnDat): 500 mV <--> 21299 dec

For p0496 = 11 (resolver): 2900 mV <--> 13107 dec, internal processor offset is corrected

For p0496 = 11, 21 (sin/cos 1 Vpp, EnDat): 500 mV <--> 10650 dec, internal processor offset is corrected

For p0496 = 12: 180 ° fine position <--> 32768 dec

For p0496 = 13 (resolver): 2900 mV <--> 13107 dec

For p0496 = 13 (sin/cos 1 Vpp, EnDat): 500 mV <--> 10650 dec

For p0496 = 14: 1 ° <--> 286 dec, 100 % <--> 16384 dec

For p0496 = 15: 100 % <--> 16384 dec

For p0496 = 16 (resolver): channel A: 2900 mV <--> 26214 dec, channel B: 2900 mV <--> 26214 dec, channel A and channel B can be shifted by one sample (in time)

For p0496 = 16: (sin/cos 1 Vpp, EnDat) channel A: 500 mV <--> 21299 dec, channel B: 500 mV <--> 21299 dec, channel A and channel B can be shifted by one sample (in time)

For p0496 = 17 (resolver): absolute value: 2900 mV <--> 13107 dec, number: 1 ... 8

For p0496 = 17 (sin/cos 1 Vpp, EnDat): absolute value 500 mV <--> 10650 dec, number: 1 ... 8

For p0496 = 18 (resolver): angle: signal period <--> 2^16, absolute value: 2900 mV <--> 13107 dec

For p0496 = 18 (sin/cos 1 Vpp, EnDat): angle: signal period <--> 2^16, absolute value: 500 mV <--> 10650 dec

For p0496 = 19 (resolver): counter: dec, channel A: 2900 mV <--> 26214 dec

For p0496 = 19 (sin/cos 1 Vpp, EnDat): counter: dec, channel A: 500 mV <--> 21299 dec

For p0496 = 22: 180 ° <--> 32768 dec

For p0496 = 23, 24: r0497.31 (r0499.15) set for at least 1 current controller sampling time when encoder zero mark detected

For p0496 = 24, 25: 500 mV <--> 21299 dec

For p0496 = 30: Rotary: 1 singleturn measuring step <--> 1 dec, linear: 1 measuring step <--> 1 dec

For p0496 = 31: Absolute position, incremental in 1/4 encoder pulses

For p0496 = 32: Zero mark position in 1/4 encoder pulses

For p0496 = 33: counter offset absolute value in 1/4 encoder pulses

For p0496 = 40: r0498 <--> (R_KTY/1 kOhm - 0.9) * 32768

For p0496 = 42: 2500 Ohm <--> 2^32

For p0496 = 51: 1 rpm <--> 1000 dec

For p0496 = 52: In 1/4 encoder pulses

For p0496 = 60: voltage, channel A in mV, voltage, channel B in mV

For p0496 = 61: Channel A: encoder periods <--> 2^16, channel B: encoder periods <--> 2^16

For p0496 = 62: encoder periods <--> 2^16

For p0496 = 70: r: 100% <--> 10000 dec, phase: 180 ° <--> 18000 dec

For p0496 = 80, 81, 85, 86: 1V <--> 1000 inc

r0497[0...2] CO: Encoder diagnostic signal double word / Enc diag DW

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the trace signal for encoder diagnostics (double word).

The signal to be output is selected in p0496.

Index: [0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Dependency: Refer to: p0496, r0498, r0499

r0497 Encoder diagnostic signal double word / Enc diag DW

ENC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the trace signal for encoder diagnostics (double word).

The signal to be output is selected in p0496.

Dependency: Refer to: p0496, r0498, r0499

r0498[0...2] CO: Encoder diagnostic signal low word / Enc diag low word

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the trace signal for encoder diagnostics (low component).
The signal to be output is selected in p0496.

Index: [0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Dependency: Refer to: p0496, r0497, r0499

r0498 Encoder diagnostic signal low word / Enc diag low word

ENC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the trace signal for encoder diagnostics (low component).
The signal to be output is selected in p0496.

Dependency: Refer to: p0496, r0497, r0499

r0499[0...2] CO: Encoder diagnostic signal high word / Enc diag high word

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the trace signal for encoder diagnostics (high component).
The signal to be output is selected in p0496.

Index: [0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Dependency: Refer to: p0496, r0497, r0498

r0499 Encoder diagnostic signal high word / Enc diag high word

ENC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the trace signal for encoder diagnostics (high component).
The signal to be output is selected in p0496.

Dependency: Refer to: p0496, r0497, r0498

p0500 Technology application / Tec application

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(1, 5), T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Applications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
100	103	100

Description: Sets the technology application.

The parameter influences the calculation of open-loop and closed-loop control parameters that is e.g. initiated using p0578.

Value:
100: Standard drive (SERVO)
101: Feed drive (limit current limitation)
102: Spindle drive (rated current limitation)
103: Feed drive (maximum power limiting)

Dependency: Refer to: p1520, p1521, p1530, p1531, p2000, p2175, p2177

Caution: After changing over the technological application and then calculating the open-loop and closed-loop parameters, the behavior of the motor can have changed very significantly (e.g. the same setpoint results in a higher speed due to a different reference speed). For this reason extreme caution must be taken when the motor is started for the first time.

Note: The calculation of parameters dependent on the technology application can be called up as follows:

- when exiting quick commissioning using p3900 > 0
- when writing p0340 = 1, 3, 5
- when writing p0578 = 1

For p0500 = 100 and when the calculation is initiated, the following parameters are set:

- p1520/p1521 = rated motor torque (r0333)
- p1530/p1531= 2 * pi * r0333 * p0311 (rotary) or r0333 * p0311 (linear)
- p2000 = rated motor speed (p0311) (only for p0340 = 1, p3900 > 0)
- p2175 = factory setting
- p2177 = factory setting

For p0500 = 101 and when the calculation is initiated, the following parameters are set:

- p1520/p1521 = torque at the maximum motor current (p0323)
- p1530/p1531= power at the maximum motor current (p0323) and rated motor speed (p0311)
- p2000 = rated motor speed (p0311) (only for p0340 = 1, p3900 > 0)
- p2175 = maximum value
- p2177 = 0.2 s

For p0500 = 102 and when the calculation is initiated, the following parameters are set:

- p1520/p1521 = rated motor torque (r0333)
- p1530/p1531= 2 * pi * r0333 * p0311 (rotary) or r0333 * p0311 (linear)
- p2000 = maximum motor speed (p0322) if p0322 not equal to 0, otherwise rated motor speed (p0311) (only for p0340 = 1, p3900 > 0)
- p2175 = factory setting
- p2177 = factory setting

p0500 Technology application / Tec application

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(1, 5), T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Applications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	6	1

Description: Sets the technology application.

The parameter influences the calculation of open-loop and closed-loop control parameters that is e.g. initiated using p0578.

Value:	0: Standard drive (VECTOR) 1: Pumps and fans 2: Sensorless closed-loop control down to f = 0 (passive loads) 4: Dynamic in the field weakening range 5: Starting with a high break loose torque 6: High load moment of inertia
Dependency:	Refer to: p2175, p2177

Note: The calculation of parameters dependent on the technology application can be called up as follows:

- when exiting quick commissioning using p3900 > 0

- when writing p0340 = 1, 3, 5 (for p0500 = 6: p0340 = 1, 3, 4)

- when writing p0578 = 1

For p0500 = 0 and when the calculation is initiated, the following parameters are set:

- p1574 = 10 V (separately excited synchronous motor: 20 V)

- p1750.2 = 0

- p1802 = 4 (SVM/FLB without overcontrol)

- p1803 = 106 %

- p1610 = 50 %

- p1611 = 30 %

- p1310 = 50 %

- p1311 = 0 %

- p1381 = 0 %

For p0500 = 1 and when the calculation is initiated, the following parameters are set:

- p1574 = 2 V (separately excited synchronous motor: 4 V)

- p1750.2 = 0

- p1802 = 9 (edge modulation), if r0192.0 = 1

- p1802 = 4, if r0192.0 = 0

- p1803 = 106 %

- p1310, p1311, p1381, p1610, p1610 as for p0500 = 0

For p0500 = 2 and when the calculation is initiated, the following parameters are set:

- p1574 = 2 V (separately excited synchronous motor: 4 V)

- p1750.2 = 1: Encoderless control of the induction motor is effective down to zero frequency.

This operating mode is possible for passive loads. These include applications where the load does not generate regenerative torque when breaking away and the motor comes to a standstill (zero speed) itself when the pulses are inhibited.

- p1802, p1803, p1310, p1311, p1381, p1610, p1610 as for p0500 = 0

The setting of p1750 is only relevant for induction motors.

p1802 and p1803 are only changed, in all cases, if a sine-wave output filter (p0230 = 3, 4) has not been selected.

For p0500 = 4: (presetting for VECTOR with PM250 power unit)

- p1574 = 30 V

- p1750.2 = 0

- p1802 = 2 (SVM with overcontrol)

- p1803 = 106 %

- p1381 = 6 % (to avoid overcontrol)

- p1654 = p0115[1]

- p1402.11 = 1

- p1310, p1311, p1610, p1610 as for p0500 = 0

For p0500 = 5: (for speed-controlled starting for vector control without encoder)

- p1574, p1750.2, p1802, p1803, p1381 as for p0500 = 0

- p1610 = 80 % (separately excited synchronous motor: 50%)

- p1611 = 80 % (separately excited synchronous motor: 50%)

- p1310 minimum 80%

- p1311 minimum 30%

For p0500 = 6: (for high moments of inertia with/without gearbox coupling)

- p1574, p1750.2, p1802, p1803, p1610, p1611, p1310 p1311 as for p0500 = 0

The following settings change the speed control for p0340 = 1, 3, 4

They are only reset using p0340 = 1 or p3900 > 0.

- p0342 = 10 (motor moment of inertia factor, if previously p0342 = 1)

The real factor can be entered in the commissioning tool.

- p1400.20 = 1 (acceleration model)
- p1441, p1442, p1452 calculated
- p1496 = 100 %
- p1959.14 = 1 (speed actual value smoothing is calculated)
- p1967 = 80 %

The following settings are only reset again using p3900 = 1.

- p1115 = 1
- p1130, p1131 ramp-function generator rounding calculated from p1120, p1121 and r0345.

The moment of inertia estimator (p1400 bit 18, p5310) can be used, depending on the specific application, to adaptively determine the load moment of inertia.

p0505 Selecting the system of units / Unit sys select

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM41, ENC

Can be changed: C2(5)	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Applications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	4	1

Description: Sets the actual system of units.

Value:
1: SI system of units
2: System of units referred/SI
3: US system of units
4: System of units referred/US

Dependency: The parameter can only be changed in an offline project using the commissioning tool.

Caution: If a per unit representation is selected and if the reference parameters (e.g. p2000) are subsequently changed, then the physical significance of several control parameters is also adapted at the same time. As a consequence, the control behavior can change (see p1576, p1621, p1744, p1752, p1755 and p1609, p1612, p1619, p1620).

Note: Reference parameter for the unit system % are, for example, p2000 ... p2004. Depending on what has been selected, these are displayed using either SI or US units.

p0514[0...9] Scaling-specific reference values / Scal spec ref val

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000001	10000000.000000	1.000000

Description: Sets the reference values for the specific scaling of BICO parameters.

The specific scaling is active when interconnecting with other BICO parameters, and can be used in the following cases:

1. Parameter with the marking "Scaling: p0514".
2. Changing the standard scaling for parameters with the marking "Scaling: p2000" ... "Scaling: p2007".

Relative values refer to the corresponding reference value. The reference value corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

To specifically scale BICO parameters, proceed as follows:

- set the reference value (p0514[0...9]).
- set the numbers of the parameters, which should be active for the scaling, corresponding to the index of p0514 (p0515[0...19] ... p0524[0...19]).

For parameters with the marking "Scaling: p0514", which are not entered in p0515[0...19] to p0524[0...19], the reference value 1.0 (factory setting) applies.

Index: [0] = Parameters in p0515[0...19]
[1] = Parameters in p0516[0...19]
[2] = Parameters in p0517[0...19]
[3] = Parameters in p0518[0...19]
[4] = Parameters in p0519[0...19]
[5] = Parameters in p0520[0...19]
[6] = Parameters in p0521[0...19]
[7] = Parameters in p0522[0...19]
[8] = Parameters in p0523[0...19]
[9] = Parameters in p0524[0...19]

Dependency: Refer to: p0515, p0516, p0517, p0518, p0519, p0520, p0521, p0522, p0523, p0524

Notice: This parameter is only changed if a warm restart or save with subsequent power off/on is carried out.

p0515[0...19] Scaling specific parameters referred to p0514[0] / Scal spec p514[0]

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	4294967295	0

Description: Sets the parameters with reference value in p0514[0] for the specific scaling.

p0515[0]: parameter number

p0515[1]: parameter number

p0515[2]: parameter number

...

p0515[19]: parameter number

Dependency: Refer to: p0514

p0516[0...19] Scaling specific parameters referred to p0514[1] / Scal spec p514[1]

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	4294967295	0

Description: Sets the parameters with reference value in p0514[1] for the specific scaling.

p0516[0]: parameter number

p0516[1]: parameter number

p0516[2]: parameter number

...

p0516[19]: parameter number

Dependency: Refer to: p0514

p0517[0...19] Scaling specific parameters referred to p0514[2] / Scal spec p514[2]

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	4294967295	0

Description: Sets the parameters with reference value in p0514[2] for the specific scaling.

p0517[0]: parameter number

p0517[1]: parameter number

p0517[2]: parameter number

...

p0517[19]: parameter number

Dependency: Refer to: p0514

p0518[0...19] Scaling specific parameters referred to p0514[3] / Scal spec p514[3]

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	4294967295	0

Description: Sets the parameters with reference value in p0514[3] for the specific scaling.

p0518[0]: parameter number

p0518[1]: parameter number

p0518[2]: parameter number

...

p0518[19]: parameter number

Dependency: Refer to: p0514

p0519[0...19] Scaling specific parameters referred to p0514[4] / Scal spec p514[4]

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	4294967295	0

Description: Sets the parameters with reference value in p0514[4] for the specific scaling.

p0519[0]: parameter number

p0519[1]: parameter number

p0519[2]: parameter number

...

p0519[19]: parameter number

Dependency: Refer to: p0514

p0520[0...19] Scaling specific parameters referred to p0514[5] / Scal spec p514[5]

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	4294967295	0

Description: Sets the parameters with reference value in p0514[5] for the specific scaling.

p0520[0]: parameter number
p0520[1]: parameter number
p0520[2]: parameter number
...
p0520[19]: parameter number

Dependency: Refer to: p0514

p0521[0...19] Scaling specific parameters referred to p0514[6] / Scal spec p514[6]

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	4294967295	0

Description: Sets the parameters with reference value in p0514[6] for the specific scaling.

p0521[0]: parameter number
p0521[1]: parameter number
p0521[2]: parameter number
...
p0521[19]: parameter number

Dependency: Refer to: p0514

p0522[0...19] Scaling specific parameters referred to p0514[7] / Scal spec p514[7]

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	4294967295	0

Description: Sets the parameters with reference value in p0514[7] for the specific scaling.

p0522[0]: parameter number
p0522[1]: parameter number
p0522[2]: parameter number
...
p0522[19]: parameter number

Dependency: Refer to: p0514

p0523[0...19] Scaling specific parameters referred to p0514[8] / Scal spec p514[8]

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	4294967295	0

Description: Sets the parameters with reference value in p0514[8] for the specific scaling.

p0523[0]: parameter number

p0523[1]: parameter number

p0523[2]: parameter number

...

p0523[19]: parameter number

Dependency: Refer to: p0514

p0524[0...19] Scaling specific parameters referred to p0514[9] / Scal spec p514[9]

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	4294967295	0

Description: Sets the parameters with reference value in p0514[9] for the specific scaling.

p0524[0]: parameter number

p0524[1]: parameter number

p0524[2]: parameter number

...

p0524[19]: parameter number

Dependency: Refer to: p0514

p0528 Controller gain system of units / Ctrl_gain unit_sys

SERVO, HLA, SERVO_AC, SERVO_I_AC, TM41, ENC

Can be changed: C2(5)	**Calculated:** -	**Access level:** 4
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Applications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the system of units for the controller gains.

Value:
0: Representation physical/% (p0505)
1: Representation no dimensions (referred)

Note: The parameter is pre-assigned a value of 0 and cannot be changed.

p0528 Controller gain system of units / Ctrl_gain unit_sys

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(5)	**Calculated:** -	**Access level:** 4
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Applications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	1

Description: Sets the system of units for the controller gains.

Value:
0: Representation physical/% (p0505)
1: Representation no dimensions (referred)

Note: For VECTOR (r0107) the following applies:
The parameter is pre-assigned a value of 1 and cannot be changed.

p0530[0...n] Bearing version selection / Bearing vers sel

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 1
Data type: Unsigned16	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: SESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	104	0

Description: Sets the bearing version.
Corresponding to the bearing version entered, its code number (p0531) is automatically set.
0 = No data
1 = Manual entry
101 = STANDARD
102 = PERFORMANCE
103 = HIGH PERFORMANCE
104 = ADVANCED LIFETIME

Dependency: Refer to: p0301, p0531, p0532, p1082, r1082

Notice: For p0530 = 101, 102, 103, 104, the maximum bearing speed (p0532) is write protected. Write protection is withdrawn with p0530 = 1.
If p0530 is changed during quick commissioning (p0010 = 1), then the maximum speed p1082, which is also associated with quick commissioning, is pre-assigned appropriately. This is not the case when commissioning the motor (p0010 = 3). The maximum speed of the bearing is factored into the limit for the maximum speed p1082.

Note: For a motor with DRIVE-CLiQ, p0530 can only be set to 1.

p0531[0...n] Bearing code number selection / Bearing codeNo sel

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(3)	**Calculated:** -	**Access level:** 1
Data type: Unsigned16	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	65535	0

Description: Display and setting the code number of the bearing.
When setting p0301 and p0530 the code number is automatically pre-assigned and is write protected. The information in p0530 should be observed when removing write protection.

Dependency: Refer to: p0301, p0530, p0532, p1082, r1082

Notice: If p0531 is changed during quick commissioning (p0010 = 1), then the maximum speed p1082, which is also associated with quick commissioning, is pre-assigned appropriately. This is not the case when commissioning the motor (p0010 = 3). The maximum speed of the bearing is factored into the limit for the maximum speed p1082.

Note: p0531 cannot be changed on a motor with DRIVE-CLiQ.

p0532[0...n] Bearing maximum speed / Bearing n_max

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [rpm]	210000.0 [rpm]	0.0 [rpm]

Description: Sets the maximum speed of the bearing.
The following applies when calculating the maximum speed (p1082):
- for p0324 = 0 or p0532 = 0, p0322 is used.
- for p0324 > 0 and p0532 > 0, the minimum value from the two parameters is used.

Dependency: Refer to: p0301, p0322, p0324, p0530, p1082, r1082

Notice: This parameter is pre-assigned in the case of motors from the motor list (p0301) if a bearing version (p0530) is selected.

When selecting a catalog motor, this parameter cannot be changed (write protection). The information in p0530 should be observed when removing write protection.

If p0532 is changed during quick commissioning (p0010 = 1), then the maximum speed p1082, which is also associated with quick commissioning, is pre-assigned appropriately. This is not the case when commissioning the motor (p0010 = 3).

p0532[0...n] Bearing maximum velocity / Bearing v_max

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [m/min]	1300.0 [m/min]	0.0 [m/min]

Description: Sets the maximum velocity of the bearing.

The following applies when calculating the maximum velocity (p1082):

- for p0324 = 0 or p0532 = 0, p0322 is used.
- for p0324 > 0 and p0532 > 0, the minimum value from the two parameters is used.

Dependency: Refer to: p0301, p0322, p0324, p0530, p1082, r1082

Notice: This parameter is pre-assigned in the case of motors from the motor list (p0301) if a bearing version (p0530) is selected.

When selecting a catalog motor, this parameter cannot be changed (write protection). The information in p0530 should be observed when removing write protection.

If p0532 is changed during quick commissioning (p0010 = 1), then the maximum velocity p1082, which is also associated with quick commissioning, is pre-assigned appropriately. This is not the case when commissioning the motor (p0010 = 3).

p0532[0...n] Bearing maximum speed / Bearing n_max

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [rpm]	210000.0 [rpm]	0.0 [rpm]

Description: Sets the maximum speed of the bearing.

The following applies when calculating the maximum speed (p1082):

- for p0324 = 0 or p0532 = 0, p0322 is used.
- for p0324 > 0 and p0532 > 0, the minimum value from the two parameters is used.

Dependency: Refer to: p0301, p0322, p0324, p0530, p1082, r1082

Notice: This parameter is pre-assigned in the case of motors from the motor list (p0301) if a bearing version (p0530) is selected.

When selecting a catalog motor, this parameter cannot be changed (write protection). The information in p0530 should be observed when removing write protection.

If p0532 is changed during quick commissioning (p0010 = 1), then the maximum speed p1082, which is also associated with quick commissioning, is pre-assigned appropriately. This is not the case when commissioning the motor (p0010 = 3).

p0541[0...n] Load gearbox code number / Load grbx CodeNo

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	4294967295	1

Description: Display and setting the code number for the load gearbox.

0 = No data

1 = Manual entry

> 1 = valid code number

If value = 0:

- parameters listed under Dependent are set to a value of zero and are write protected.

If value = 1:

- write protection for the parameters listed under Dependent is withdrawn.

If value > 1:

- parameters listed under Dependent are automatically preassigned and are write protected.

Dependency: Refer to: p0542, p0543, p0544, p0545, p0546, p0547

Note: A code number that does not exist cannot be set.

p0542[0...n] Load gearbox maximum speed / Load grbx n_max

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [rpm]	210000.0 [rpm]	0.0 [rpm]

Description: Sets the maximum permissible input speed at the load gearbox.

When calculating the maximum speed (p1082) in quick commissioning (p0010 = 1), the following applies:

- for p0542 = 0, this parameter has no effect. The maximum speed from p0322 is used.

- for p0542 > 0, the maximum speed (p0322) is limited by p0542.

Notice: After entering a corresponding code number (p0541), this parameter is automatically preassigned and write protected. The information in p0541 should be observed when removing write protection.

p0543[0...n] Load gearbox maximum torque / Load grbx M_max

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** 7_4	**Unit selection:** p0100
Not for motor type: ASM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Nm]	1000000.00 [Nm]	0.00 [Nm]

Description: Sets the maximum permissible input torque at the load gearbox.

When calculating the upper/motoring torque limit (p1520) and the lower/generating torque limit (p1521) in quick commissioning (p0010 = 1), then the following applies:

- for p0543 = 0, the values in p1520/p1521 remain unchanged.

- for p0543 > 0, the torque limits (r1538, r1539) are limited by p0543.

Notice: After entering a corresponding code number (p0541), this parameter is automatically preassigned and write protected. The information in p0541 should be observed when removing write protection.

p0544[0...n] Load gearbox overall ratio numerator / Load grbx ratio N

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 2
Data type: Integer32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	2147483647	0

Description: Sets the numerator for the overall ratio (absolute value) of the load gearbox.

Notice: After entering a corresponding code number (p0541), this parameter is automatically preassigned and write protected. The information in p0541 should be observed when removing write protection.

p0545[0...n] Load gearbox overall ratio denominator / Load grbx ratio D

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 2
Data type: Integer32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	2147483647	0

Description: Sets the denominator for the overall ratio (absolute value) of the load gearbox.

Notice: After entering a corresponding code number (p0541), this parameter is automatically preassigned and write protected. The information in p0541 should be observed when removing write protection.

p0546[0...n] Load gearbox direction of rotation inversion / Load grbx dir inv

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 2
Data type: Integer32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	2147483647	0

Description: Setting to invert the direction of rotation of the load gearbox.

Value = 0: no inversion

Value = 1: inversion

Notice: After entering a corresponding code number (p0541), this parameter is automatically preassigned and write protected. The information in p0541 should be observed when removing write protection.

p0547[0...n] Load gearbox moment of inertia / Load gbx M_inertia

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** 25_1	**Unit selection:** p0100
Not for motor type: ASM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000000 [kgm²]	100000.000000 [kgm²]	0.000000 [kgm²]

Description: Sets the load gearbox moment of inertia.

Notice: After entering a corresponding code number (p0541), this parameter is automatically preassigned and write protected. The information in p0541 should be observed when removing write protection.

Note: For a manual input (p0541 = 1), the value to be set is rejected if this entry were to lead to a ratio between the total moment of inertia and the motor of less than 1 (p0342 < 1). In this case, the gearbox data should be reset using p0541 = 0, and re-entered (p0541 = 0 results in p0342 = 1).

p0550[0...n] Brake version / Brake version

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the brake version.

Value:
0: No data
1: Holding brake

Notice: After entering a corresponding code number (p0551), this parameter is automatically preassigned and write protected. The information in p0551 should be observed when removing write protection.

p0551[0...n] Brake code number / Brake code no.

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	4294967295	1

Description: Display and setting the code number for the brake.

0 = No data

1 = Manual entry

> 1 = valid code number

If value = 0:

- parameters listed under Dependent are set to a value of zero and are write protected.

- parameters p1216, p1217 are set to a value of zero and are write protected.

If value = 1:

- write protection for the parameters listed under Dependent is withdrawn.

If value > 1:

- parameters listed under Dependent are automatically preassigned and are write protected.

- parameters p1216, p1217 are automatically appropriately preassigned and are write protected.

Dependency: Refer to: p0550, p0552, p0553

Note: Only code numbers can be set that are permitted for the selected motor code (p0301).

p0552[0...n] Maximum brake speed / Brake n_max

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [rpm]	210000.0 [rpm]	0.0 [rpm]

Description: Sets the maximum permissible brake speed.

When calculating the maximum speed (p1082) in quick commissioning (p0010 = 1), the following applies:

- for p0552 = 0, this parameter has no effect. The maximum speed from p0322 is used.

- for p0552 > 0, the maximum speed (p0322) is limited by p0552.

Notice: After entering a corresponding code number (p0551), this parameter is automatically preassigned and write protected. The information in p0551 should be observed when removing write protection.

p0553[0...n] Brake holding torque / Brake M_hold

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** 7_4	**Unit selection:** p0100
Not for motor type: ASM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Nm]	1000000.00 [Nm]	0.00 [Nm]

Description: Sets the brake holding torque.

Notice: After entering a corresponding code number (p0551), this parameter is automatically preassigned and write protected. The information in p0551 should be observed when removing write protection.

p0554[0...n] Brake moment of inertia / Brake M_inertia

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** 25_1	**Unit selection:** p0100
Not for motor type: ASM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [kgm²]	- [kgm²]	- [kgm²]

Description: Sets the brake moment of inertia.

Notice: After entering a corresponding code number (p0551), this parameter is automatically preassigned and write protected. The information in p0551 should be observed when removing write protection.

Note: For a manual input (p0551 = 1), the value to be set is rejected if this entry were to lead to a ratio between the total moment of inertia and the motor of less than 1 (p0342 < 1). In this case, the brake data should be reset using p0551 = 0, and re-entered (p0551 = 0 results in p0342 = 1).

r0565[0...15] CO: Probe time stamp / Probe t_stamp

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output for the time stamp MT_ZS_1 up to MT_ZS_16.

Displays the measuring time for an edge at the digital input for the "central measuring probe evaluation stage 3" function.

The measuring time is specified as 16-bit value with a resolution of 0.25 μs.

Priority:

MT1 ... MT8, oldest ... newest time stamp

r0566[0...3] CO: Probe time stamp reference / Probe t_stamp name

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output for the time stamp reference MT_ZSB1 up to MT_ZSB4.

r0567 CO: Probe diagnostics word / Probe diag_word

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output for diagnostics word MT_DIAG.

p0570 Inhibit list values effective number / Inhib list no

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(5), U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: Applications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	50	0

Description: Sets the number of parameters in the inhibit list p0571.

This number of parameters can be automatically excluded from the calculation of the motor and control parameters (see p0340, p0578), starting from index 0.

Note: Defines the number of entries in p0571 that should be taken into account.

The inhibit list is deactivated for a value of 0.

p0571[0...49] Inhibit list motor/closed-loop control parameter calculation / Inhib list calc

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(5), U, T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Applications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	2142	0

Description: The inhibit list contains parameters that should be withdrawn from the automatic motor and closed-loop control parameter calculation (p0340, p0578).

Value:

0: No parameter
348: Speed at the start of field weakening Vdc = 600 V
600: Motor temperature sensor
640: Current limit
1082: Maximum speed
1441: Actual speed smoothing time
1460: Speed controller P gain
1462: Speed controller integral time
1470: Speed controller P gain encoderless
1472: Speed controller integral time encoderless
1520: Torque limit upper/motoring
1521: Torque limit lower/regenerative
1530: Power limit motoring
1531: Power limit regenerative
1590: Flux controller P gain
1592: Flux controller integral time
1656: Activates current setpoint filter
2141: Speed threshold 1
2142: Hysteresis speed 1

Note: Parameter p0570 defines the number of entries (starting at index 0) in the inhibit list. p0572 can be used to define for which drive data sets the inhibit list should apply.

If a motor data set is entered into a parameter number, then this is not overwritten as soon as only one drive data set refers to the motor data set (p0186).

p0571[0...49] Inhibit list motor/closed-loop control parameter calculation / Inhib list calc

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(5), U, T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Applications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	2142	0

Description: The inhibit list contains parameters that should be withdrawn from the automatic motor and closed-loop control parameter calculation (p0340, p0578).

Value:
0: No parameter
600: Motor temperature sensor
640: Current limit
1082: Maximum speed
1460: Speed controller P gain
1462: Speed controller integral time
1470: Speed controller P gain encoderless
1472: Speed controller integral time encoderless
1520: Torque limit upper/motoring
1521: Torque limit lower/regenerative
1530: Power limit motoring
1531: Power limit regenerative
1590: Flux controller P gain
1592: Flux controller integral time
2141: Speed threshold 1
2142: Hysteresis speed 1

Note: Parameter p0570 defines the number of entries (starting at index 0) in the inhibit list. p0572 can be used to define for which drive data sets the inhibit list should apply.

If a motor data set is entered into a parameter number, then this is not overwritten as soon as only one drive data set refers to the motor data set (p0186).

p0572[0...n] Activate/deactivate inhibit list / Inh_list act/deact

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(5), U, T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Applications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Setting for activating/deactivating the inhibit list.

Depending on the setting, the parameters of the inhibit list (p0571) should be overwritten when calculating the motor and closed-loop control parameters for the particular drive data set (DDS).

Value:
0: No
1: Yes

Note: If value = 0:

The automatic calculation (p0340, p0578) also overwrites the parameters of the inhibit list (p0571).

If value = 1:

The automatic calculation (p0340, p0578) does not overwrite the parameters of the inhibit list (p0571).

p0573 Inhibit automatic reference value calculation / Inhibit calc

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM41

Can be changed: C2(5), U, T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Applications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Setting to inhibit the calculation of reference parameters (e.g. p2000) when automatically calculating the motor and closed-loop control parameters (p0340, p3900).

Value:
0: No
1: Yes

Notice: The inhibit for the reference value calculation is canceled when new motor parameters (e.g. p0305) are entered and only one drive data set exists (p0180 = 1). This is the case during initial commissioning.

Once the motor and control parameters have been calculated (p0340, p3900), the inhibit for the reference value calculation is automatically re-activated.

Note: If value = 0:

The automatic calculation (p0340, p3900) overwrites the reference parameters.

If value = 1:

The automatic calculation (p0340, p3900) does not overwrite the reference parameters.

p0578[0...n] Calculate technology-dependent parameters / Calc tec par

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(5), T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Applications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: This parameter is used to calculate all parameters that depend on the technology of the application (p0500).

All of the parameters are calculated that can also be determined using p0340 = 5.

Value:
0: No calculation
1: Complete calculation

Note: At the end of the calculations, p0578 is automatically set to 0.

p0580 Measuring probe input terminal / MT input terminal

SERVO, HLA, SERVO_AC, SERVO_I_AC

Can be changed: C2(4), U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	8	0

Description: Sets the input terminal for the measuring probe for speed actual value measurement.

Value:
0: No measuring probe
1: DI/DO 9 (X122.10/X121.8)
2: DI/DO 10 (X122.12/X121.10)
3: DI/DO 11 (X122.13/X121.11)
4: DI/DO 13 (X132.10/X131.2)
5: DI/DO 14 (X132.12/X131.4)
6: DI/DO 15 (X132.13/X131.5)
7: DI/DO 8 (X122.9/X121.7)
8: DI/DO 12 (X132.9/X131.1)

Dependency: Refer to: p0581, p0728

Refer to: A07498

Caution: In order to prevent incorrect measurement values, these parameters may not be written during an active measurement.

Notice: Regarding the terminal designation:

The first designation is valid for CU320, the second for CU310.

To select the values:

For CX32, NX10 and NX15, only DI/DO 8, 9, 10, 11 can be selected as fast inputs (refer to the Equipment Manual).

Note: The terminal must be set as input (p0728).

If a parameter change is rejected, a check should be performed as to whether the input terminal is already being used in p0488, p0489, p0493, p0494, p0495, p0680, p2517 or p2518.

DI/DO: Bidirectional Digital Input/Output

p0581 Measuring probe edge / MT edge

SERVO, HLA, SERVO_AC, SERVO_I_AC

Can be changed: C2(4), U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the edge to evaluate the measuring probe signal for speed actual value measurement.

0: 0/1 edge

1: 1/0 edge

Dependency: Refer to: p0580

p0582 Measuring probe pulses per revolution / MT pulses per rev

SERVO, HLA, SERVO_AC, SERVO_I_AC

Can be changed: C2(4), U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	12	1

Description: Sets the number of pulses per revolution (e.g. for disks with holes).

p0583 Measuring probe maximum measuring time / MT t_meas max

SERVO, HLA, SERVO_AC, SERVO_I_AC

Can be changed: C2(4), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.040 [s]	10.000 [s]	10.000 [s]

Description: Sets the maximum measuring time for the measuring probe.

If a new pulse is not received before the maximum measuring time has expired, then the speed actual value in r0586 is set to zero. This timer is re-started with the next pulse.

Dependency: Refer to: r0586

r0586 CO: Measuring probe speed actual value / MT n_act

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the speed actual value measured using the BERO.

Dependency: Refer to: p0580, p0583

Note: For p0580 = 0 (no measuring probe), a value of zero is displayed here.

r0586 CO: Measuring probe velocity actual value / MT v_act

SERVO (Lin), HLA, SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Displays the velocity actual value measured using the BERO.

Dependency: Refer to: p0580, p0583

Note: For p0580 = 0 (no measuring probe), a value of zero is displayed here.

r0587 CO: Measuring probe measuring time measured / MT t_meas measured

SERVO, HLA, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time between the last two BERO pulses.

The measuring time is specified as 32-bit value with a resolution of 1/48 µs.

If a new pulse is not received before the maximum measured time in p0583 expires, then r0587 is set to the maximum measuring time.

Dependency: Refer to: p0580

Note: For p0580 = 0 (no measuring probe), a value of zero is displayed here.

r0588 CO: Measuring probe pulse counter / MT pulse counter

SERVO, HLA, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the number of measuring pulses that have occurred (been received) up until now.

Dependency: Refer to: p0580

Note: After reaching 4294967295 (2^32 - 1), the counter starts again at 0.

r0589 Measuring probe delay time / MT t_delay

SERVO, HLA, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time since the last measuring pulse was detected.

The delay time is specified as 32-bit value with a resolution of 1/48 µs.

When a measuring pulse occurs (is received) the delay time is reset and is limited to the maximum measuring time in p0583.

Dependency: Refer to: p0580

Note: For p0580 = 0 (no measuring probe), a value of zero is displayed here.

p0595 Technological unit selection / Tech unit select

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: C2(5)	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Applications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	32	1

Description: Selects the units for the parameters of the technology controller.

For p0595 = 1, 2, the reference variable set in p0596 is not active.

Value:

1: %
2: 1 referred no dimensions
3: bar
4: °C
5: Pa
6: ltr/s
7: m³/s
8: ltr/min
9: m³/min
10: ltr/h
11: m³/h
12: kg/s
13: kg/min
14: kg/h
15: t/min
16: t/h
17: N
18: kN
19: Nm
20: psi
21: °F
22: gallon/s
23: inch³/s
24: gallon/min
25: inch³/min
26: gallon/h
27: inch³/h
28: lb/s
29: lb/min
30: lb/h
31: lbf
32: lbf ft

Dependency: Only the unit of the technology controller parameters are switched over (unit group 9_1).

Refer to: p0596

Note: When switching over from % into another unit, the following sequence applies:

- set p0596
- set p0595 to the required unit

p0596 Technological unit reference quantity / Tech unit ref qty

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.01	340.28235E36	1.00

Description: Sets the reference quantity for the technological units.

When changing over using changeover parameter p0595 to absolute units, all of the parameters involved refer to the reference quantity.

Dependency: Refer to: p0595

Notice: When changing over from one technological unit into another, or when changing the reference parameter, a changeover is not made.

p0600[0...n] Motor temperature sensor for monitoring / Mot temp_sensor

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 2
Data type: Integer16	**Dyn. index:** MDS, p0130	**Func. diagram:** 8016
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	21	1

Description: Sets the sensor to monitor the motor temperature.

The sensor type used is set in p0601.

Value:
0: No sensor
1: Temperature sensor via encoder 1
2: Temperature sensor via encoder 2
3: Temperature sensor via encoder 3
10: Temperature sensor via a BICO interconnection
11: Temperature sensor via Motor Module / CU terminals
20: Temperature sensor via a BICO interconnection p0608
21: Temperature sensor via a BICO interconnection p0609

Dependency: Refer to: r0458, p0601, p0603

Caution: If, for a selected temperature sensor (p0600 > 0), the motor temperature sensor is not connected but another sensor, then the temperature adaptation of the motor resistances must be switched out. Otherwise, in controlled-loop operation, torque errors will occur that will mean that the drive will not be able to be stopped.

Notice: The parameter is calculated in the drive using p0340 and is inhibited for p0340 > 0.

The parameter is set to 1 during commissioning, if a motor encoder is connected (p0187 <> 99).

If a temperature sensor is not being used, then p0601 = 0 must be set.

Note: For p0600 = 0:

With induction motors, the motor temperature is calculated using the motor temperature model (see also p0612.1).

For p0600 = 1, 2, 3:

Bimetallic switch (p0601 = 4) and PT100 temperature sensor (p0601 = 5) are not supported.

For p0600 = 10:

The BICO interconnection should be executed via connector input p0603.

For p0600 = 11:

For SINAMICS S120 AC Drive (AC/AC) and using the Control Unit Adapter CUA31, the temperature sensor is connected at the adapter (X210).

For p0600 = 20, 21:

The BICO interconnection should be executed via connector input p0608 or p0609.

Associated parameters: p0601, p4600 ... p4603, p4610 ... p4613

p0600[0...n] Motor temperature sensor for monitoring / Mot temp_sensor

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 2
Data type: Integer16	**Dyn. index:** MDS, p0130	**Func. diagram:** 8016
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	21	0

Description: Sets the sensor to monitor the motor temperature.

The sensor type used is set in p0601.

Value:
0: No sensor
1: Temperature sensor via encoder 1
2: Temperature sensor via encoder 2
3: Temperature sensor via encoder 3
10: Temperature sensor via a BICO interconnection
11: Temperature sensor via Motor Module / CU terminals
20: Temperature sensor via a BICO interconnection p0608
21: Temperature sensor via a BICO interconnection p0609

Dependency: Refer to: r0458, p0601, p0603

Caution: If, for a selected temperature sensor (p0600 > 0), the motor temperature sensor is not connected but another sensor, then the temperature adaptation of the motor resistances must be switched out. Otherwise, in controlled-loop operation, torque errors will occur that will mean that the drive will not be able to be stopped.

Notice: The parameter is calculated in the drive using p0340 and is inhibited for p0340 > 0.

For operation with a braking resistor (p1300 = 15), p0600 = 11 is automatically set when commissioning.

Note: For p0600 = 0:

With induction motors, the motor temperature is calculated using the motor temperature model (see also p0612.1).

For p0600 = 1, 2, 3:

Bimetallic switch (p0601 = 4) and PT100 temperature sensor (p0601 = 5) are not supported.

For p0600 = 10:

The BICO interconnection should be executed via connector input p0603.

For p0600 = 11:

For SINAMICS S120 AC Drive (AC/AC) and using the Control Unit Adapter CUA31, the temperature sensor is connected at the adapter (X210).

For p0600 = 20, 21:

The BICO interconnection should be executed via connector input p0608 or p0609.

Associated parameters: p0601, p4600 ... p4603, p4610 ... p4613

p0601[0...n] Motor temperature sensor type / Mot_temp_sens type

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** MDS, p0130	**Func. diagram:** 8016
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	11	2

Description: Sets the sensor type for the motor temperature monitoring.

Value:
0: No sensor
1: PTC alarm & timer
2: KTY84
3: KTY84 and PTC (only for motors with DRIVE-CLiQ):
4: Bimetallic NC contact alarm & timer (only for temp_eval via MM)
5: PT100
6: PT1000
7: PT1000 and PTC (only for motors with DRIVE-CLiQ):
10: Evaluation via several temperature channels SME12x
11: Evaluation via several temperature channels BICO

Dependency: A thermal motor model is calculated corresponding to p0612.

Refer to: r0458, p0600, p0612

Note: The temperature sensor for the temperature evaluation is set in p0600.

For p0600 = 10 (temperature sensor via a BICO interconnection), the setting in p0601 has no significance.

Information on using temperature sensors is provided in the following literature:

- hardware description of the appropriate components
- SINAMICS S120 Commissioning Manual

For p0601 = 1:

Tripping resistance = 1650 Ohm.

After the tripping resistance has been exceeded, an appropriate alarm is output and after the delay time set in p0606 has expired, an appropriate fault is output.

For p0601 = 3, 7:

For motors with DRIVE-CLiQ and two temperature sensors, the value is automatically set.

For p0601 = 4:

Tripping resistance = 100 Ohm.

After tripping, an appropriate alarm is output and after the delay time set in p0606 has expired, an appropriate fault is output.

For p0601 = 5:

It is only possible to evaluate a PT100 for p0600 = 11 and r0192.15 = 1.

For p0601 = 10:

Not permitted for p0600 = 0, 10, 11.

Associated parameters: p4600 ... p4603 (can be switched via EDS)

For r0458.8 = 1, a temperature evaluation is supported through several temperature channels.

Examples:

When evaluating using SME120 or SME125, 4 temperature channels are available (parameterized using p4600, p4601, p4602, p4603).

When evaluating using CU310 and CUA32, 2 temperature channels are available (encoder interface: parameterization via p4600, terminal block: parameterization via p4601).

For p0601 = 11:

Not permitted for p0600 = 0, 10, 11.

Associated parameters: p4610 ... p4613 (can be switched via MDS)

p0601 Temperature sensor, sensor type / Temp_sens type

A_INF, S_INF, R_INF, B_INF

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	6	0

Description: Sets the sensor type for the temperature measurement at input X21 (booksize) or X41 (chassis).

The measured value is displayed in r0035.

Value:
0: No sensor
1: PTC alarm & timer
2: KTY84
4: Bimetallic NC contact alarm & timer
6: PT1000

Dependency: Refer to: r0035

Note: The measured value display depends on the selected sensor type.

For p0601 = 0:

--> r0035 = -200 °C

For p0601 = 1:

Tripping resistance = 1650 Ohm (lower resistance --> r0035 = -50 °C, higher resistance --> r0035 = 250 °C).

For p0601 = 2, 6:

Displays the temperature in °C.

For p0601 = 4:

r0035 = -50 °C

--> The tripping resistance is less than 100 Ohm (bimetallic NC contact is closed or has a short-circuit).

r0035 = 250 °C

--> The tripping resistance is greater than 100 Ohm (bimetallic NC contact is open, not connected or has a wire breakage).

When using the following components, a value of 4 is set as the factory setting and can no longer be changed:

- Basic Line Module (BLM) with internal Braking Module.
- Active Line Module (ALM) with line filter Active Interface Module (AIM, p0220[0] = 41 ... 45).

In these cases, in addition to the temperature display, the temperature is also monitored.

p0602 Par_connection power unit number, temperature sensor / PU_no temp_sensor

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel)

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	10	0

Description: Sets the power unit number to which the temperature sensor is connected. The value corresponds to the Power unit Data Set number (PDS) of the power unit. The number of power unit data sets is defined in p0120.

p0603 CI: Motor temperature signal source / Mot temp S_src

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(3), T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8016
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to evaluate the motor temperature via a BICO interconnection.

Dependency: Refer to: p0600

Note: Temperature sensor KTY/PT1000: Valid temperature range -48 °C ... 248 °C.

PTC temperature sensor:

For a value = -50 °C, the following applies: Motor temperature < nominal response temperature of the PTC.

For a value = 250 °C, the following applies: Motor temperature >= nominal response temperature of the PTC.

Note:

When using a Terminal Module 31 (TM31), the following applies:

- the sensor type used is set using p4100.
- the temperature signal is interconnected using CO: r4105.

p0604[0...n] Mot_temp_mod 2: sensor alarm threshold / Mod 2: sens A_thr

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 8016
P-Group: Motor	**Unit group:** 21_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [°C]	200.0 [°C]	120.0 [°C]

Description: Sets the alarm threshold for monitoring the motor temperature for motor temperature model 2 or KTY/PT1000.

After the alarm threshold is exceeded, alarm A07910 is output and timer (p0606) is started.

If the delay time has expired and the alarm threshold has, in the meantime, not been fallen below, then fault F07011 is output.

Dependency: Refer to: p0606, p0612

Refer to: F07011, A07910

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: The hysteresis is 2 K.

When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (p0300).

p0604[0...n] Mot_temp_mod 2: sensor alarm threshold / Mod 2: sens A_thr

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 8016
P-Group: Motor	**Unit group:** 21_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [°C]	200.0 [°C]	130.0 [°C]

Description: Sets the alarm threshold for monitoring the motor temperature for motor temperature model 2 or KTY/PT1000.

After the alarm threshold is exceeded, alarm A07910 is output and timer (p0606) is started.

If the delay time has expired and the alarm threshold has, in the meantime, not been fallen below, then fault F07011 is output.

Dependency: Refer to: p0606, p0612

Refer to: F07011, A07910

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: The hysteresis is 2 K.

When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (p0300).

p0605[0...n] Mot_temp_mod 1/2 sensor threshold and temperature value / Mod 1/2 sens thr_T

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 8016, 8017
P-Group: Motor	**Unit group:** 21_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [°C]	240.0 [°C]	145.0 [°C]

Description: Sets the threshold and temperature value to monitor the motor temperature.

Temperature model 1 (I2t, p0612.0 = 1):

The following applies for firmware version < 4.7 SP6 or p0612.8 = 0:

- sets the alarm threshold. If the model temperature (r0034) exceeds the alarm threshold, then alarm A07012 is output.

- this value is simultaneously used as rated winding temperature.

The following applies from firmware version 4.7 SP6 and p0612.8 = 1:

- p5390: when commissioning a catalog motor for the first time, p0605 is copied to p5390.

- p5390: p5390 is of significance when evaluating the alarm threshold.

- p5390: the stator winding temperature (r0632) is used to initiate the signal.

- p0627: when a catalog motor is commissioned for the first time, p0605 - 40 °C is copied to p0627.

- p0627: p0627 is of significance for the rated temperature.

Motor temperature model 2 (p0612.1 = 1) or measurement:

- sets the fault threshold. If the temperature (r0035) exceeds the fault threshold, then fault F07011 is output.

Dependency: Refer to: r0034, p0606, p0611, p0612

Refer to: F07011, A07012

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Motor temperature model 1 (I2t):

The following applies for firmware version < 4.7 SP6 or p0612.8 = 0:

p0605 also defines the final temperature of the model for r0034 = 100 %. Therefore, p0605 has no influence on the time up to alarm A07012 being issued. The time is only determined by time constant p0611, the actual current and the reference value p0318. For p0318 = 0, the rated motor current is used as reference value.

Note: The hysteresis is 2 K.

When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (p0300).

p0606[0...n] Mot_temp_mod 2: sensor timer / Mod 2:sens timer

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 8016
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	600.000 [s]	240.000 [s]

Description: Sets the timer for monitoring the motor temperature for motor temperature model 2 or KTY/PT1000.

This timer is started when the temperature alarm threshold (p0604) is exceeded.

If the timer has expired and the alarm threshold has, in the meantime, not been fallen below, then fault F07011 is output.

If the temperature fault threshold (p0605) is prematurely exceeded before the timer has expired, then fault F07011 is immediately output.

Dependency: Refer to: p0604, p0605

Refer to: F07011, A07910

Note: With p0606 = 0 s, the timer is deactivated and only the fault threshold is effective.

KTY/PT1000: When setting the minimum value, the timer is disabled and a fault is not output until p0605 is exceeded.

PTC, bimetallic NC contact: The timer minimum value has no special significance.

p0606[0...n] Mot_temp_mod 2: sensor timer / Mod 2:sens timer

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 8016
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	600.000 [s]	0.000 [s]

Description: Sets the timer for monitoring the motor temperature for motor temperature model 2 or KTY/PT1000.

This timer is started when the temperature alarm threshold (p0604) is exceeded.

If the timer has expired and the alarm threshold has, in the meantime, not been fallen below, then fault F07011 is output.

If the temperature fault threshold (p0605) is prematurely exceeded before the timer has expired, then fault F07011 is immediately output.

Dependency: Refer to: p0604, p0605

Refer to: F07011, A07910

Note: With p0606 = 0 s, the timer is deactivated and only the fault threshold is effective.

KTY/PT1000: When setting the minimum value, the timer is disabled and a fault is not output until p0605 is exceeded.

PTC, bimetallic NC contact: The timer minimum value has no special significance.

p0607[0...n] Temperature sensor fault timer / Sensor fault time

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 8016
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	600.000 [s]	0.100 [s]

Description: Sets the timer between the output of alarm and fault for a temperature sensor fault.

If there is a sensor fault, this timer is started.

If the sensor fault is still present after the timer has expired, a corresponding fault is output.

Notice: The parameterized time is internally rounded-off to an integer multiple of 48 ms.

Note: If the motor is an induction motor, the timer is switched off when setting the minimum value and no alarm is output. Temperature monitoring is then based on the thermal model.

p0608[0...3] CI: Motor temperature signal source 2 / Mot_temp S_src 2

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(3), T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8016
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets signal source 2 to evaluate the motor temperature via a BICO interconnection.

Index:
[0] = Motor temperature channel 1
[1] = Motor temperature channel 2
[2] = Motor temperature channel 3
[3] = Motor temperature channel 4

Dependency: Refer to: p0600

Note: Temperature sensor KTY/PT1000:

Valid temperature range -48 °C ... 248 °C.

Temperature sensor PTC/bimetal:

For a value of -50 °C, the following applies: Motor temperature < nominal response temperature of the PTC (bimetal contact closed).

For a value of 250 °C, the following applies: Motor temperature >= nominal response temperature of the PTC (bimetal contact open).

Note:

When using a Terminal Module 120 (TM120), the following applies:

- the sensor type used is set using p4100.
- the temperature signal is interconnected using connector output r4105.

p0609[0...3] CI: Motor temperature signal source 3 / Mot_temp S_src 3

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(3), T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8016
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets signal source 3 to evaluate the motor temperature via a BICO interconnection.

Index:
[0] = Motor temperature channel 1
[1] = Motor temperature channel 2
[2] = Motor temperature channel 3
[3] = Motor temperature channel 4

Dependency: Refer to: p0600

Note: Temperature sensor KTY/PT1000:

Valid temperature range -48 °C ... 248 °C.

Temperature sensor PTC/bimetal:

For a value of -50 °C, the following applies: Motor temperature < nominal response temperature of the PTC (bimetal contact closed).

For a value of 250 °C, the following applies: Motor temperature >= nominal response temperature of the PTC (bimetal contact open).

Note:

When using a Terminal Module 120 (TM120), the following applies:

- the sensor type used is set using p4100.
- the temperature signal is interconnected using connector output r4105.

p0610[0...n] Motor overtemperature response / Mot temp response

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(3), T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** MDS, p0130	**Func. diagram:** 8017, 8018, 8019
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
2	12	12

Description: Sets the system response when the motor temperature reaches the alarm threshold.

Value:
2: Messages, no reduction of I_max
12: Messages, no reduction of I_max, temperature storage

Dependency: Refer to: p0601, p0604, p0605, p0614, p0615

Refer to: F07011, A07012, A07910

Note: If value = 2:

An alarm is output and a timer is started. A fault is output if the alarm is still active after this timer has expired.

If value = 12:

Behavior is always the same as for value 2.

For motor temperature monitoring without temperature sensor, when switching off, the model temperature is saved in a non-volatile fashion. When switching on, the same value (reduced by p0614) is taken into account in the model calculation. As a consequence, the UL508C specification is fulfilled.

p0610[0...n] Motor overtemperature response / Mot temp response

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3), T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** MDS, p0130	**Func. diagram:** 8016, 8017, 8018, 8019
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	12	12

Description: Sets the system response when the motor temperature reaches the alarm threshold.

Value:
0: No response only alarm no reduction of I_max
1: Messages, reduction of I_max
2: Messages, no reduction of I_max
12: Messages, no reduction of I_max, temperature storage

Dependency: Refer to: p0601, p0604, p0605, p0614, p0615

Refer to: F07011, A07012, A07910

Note: The I_max reduction is not executed for PTC (p0601 = 1) or bimetallic NC contact (p0601 = 4).

The I_max reduction results in a lower output frequency.

If value = 0:

An alarm is output and I_max is not reduced.

If value = 1:

An alarm is output and a timer is started. A fault is output if the alarm is still active after this timer has expired.

- for KTY/PT1000/PT100, the following applies: reduction of I_max.

- for PTC, the following is valid: I_max. is not reduced

If value = 2:

An alarm is output and a timer is started. A fault is output if the alarm is still active after this timer has expired.

If value = 12:

Behavior is always the same as for value 2.

For motor temperature monitoring without temperature sensor, when switching off, the model temperature is saved in a non-volatile fashion. When switching on, the same value (reduced by p0614) is taken into account in the model calculation. As a consequence, the UL508C specification is fulfilled.

p0611[0...n] I2t motor model thermal time constant / I2t mot_mod T

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(1, 3), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 8017
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [s]	20000 [s]	0 [s]

Description: Sets the winding time constant.

The time constant specifies the warm-up time of the cold stator winding when loaded with the motor standstill current (rated motor current, if the motor standstill current is not parameterized) up until a temperature rise of 63 % of the continuously permissible winding temperature has been reached.

Dependency: The parameter is only used for synchronous motors (p0300 = 2xx, 4) and synchronous reluctance motors (p0300 = 6xx).

Refer to: r0034, p0612, p0615

Refer to: F07011, A07012, A07910

Notice: This parameter is automatically pre-set from the motor database for motors from the motor list (p0301).

When selecting a catalog motor, this parameter cannot be changed (write protection). Information in p0300 should be carefully observed when removing write protection.

When exiting commissioning, p0612 is checked, and where relevant, is pre-assigned to a value that matches the motor power, if a temperature sensor was not parameterized (see p0601).

Note: When parameter p0611 is reset to 0, then this switches out the thermal I2t motor model (refer to p0612).

If no temperature sensor is parameterized, then the ambient temperature for the thermal motor model is referred to p0625.

p0612[0...n] Mot_temp_mod activation / Mot_temp_mod act

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** MDS, p0130	**Func. diagram:** 8017, 8018, 8019
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0010 0000 0010 bin

Description: Setting to activate the motor temperature model.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Activate mot_temp_mod 1 (I2t)	Yes	No	-
01	Activate mot_temp_mod 2	Yes	No	-
02	Activate mot_temp_mod 3	Yes	No	-
08	Activate mot_temp_mod 1 (I2t) extensions	Yes	No	-
09	Activate mot_temp_mod 2 extensions	Yes	No	-
12	Mot_temp_mod 1 (I2t) ambient temperature can be adjusted	Yes (via p0613)	No (fixed 20 °C)	-

Dependency: For synchronous motors and synchronous reluctance motors, when exiting commissioning, temperature model 1 is automatically activated if a time constant has been entered in p0611.

Refer to: r0034, p0351, p0604, p0605, p0606, p0611, p0613, p0615, p0617, p0618, p0619, p0625, p0626, p0627, p0628, r0630, r0631, r0632, r0633, p5350, r5389, p5390, p5391

Refer to: F07011, A07012, F07013, A07014, A07910

Notice: For bit 00:

This bit is only automatically activated for permanent-magnet 1FT7 synchronous motors and synchronous reluctance motors. For other permanent-magnet synchronous motors, the user himself must activate motor temperature model 1 (I2t).

It is only possible to activate this motor temperature model (I2t) for a time constant greater than zero (p0611 > 0).

Note: Mot_temp_mod: motor temperature model

For bit 00 (see also bit 8):

This bit is used to activate/deactivate the motor temperature model for permanent-magnet synchronous motors and synchronous reluctance motors.

For bit 01 (see also bit 9):

This bit is used to activate/deactivate the motor temperature model for induction motors.

For bit 02:

This bit is used to activate/deactivate the motor temperature model for 1FK7 Basic and 1FL6 motors.

Motor temperature model 3 cannot be simultaneously activated with another motor temperature model.

For bit 08:

This bit is used to extend the motor temperature model 1 (I2t).

The following applies for firmware version < 4.7 SP6 (only bit 0):

- this bit has no function. Temperature model 1 operates in the standard mode.

Overtemperature at rated load: p0605 - 40 °C

Alarm threshold: p0605

Fault threshold: p0615

The following applies from firmware version 4.7 SP6 (bits 0 and 8):

- temperature model 1 operates in the extended mode.

Overtemperature at rated load: p0627

Alarm threshold: p5390

Fault threshold: p5391

For bit 09:
This bit is used to extend the motor temperature model 2.
For firmware version < 4.7 following applies (only bit 1):
- this bit has no function. Temperature model 2 operates in the standard mode.
From firmware version 4.7 the following applies (bits 1 and 9):
- this bit should be set. Temperature model 2 then operates in the extended mode and the result of the model is more precise.
For bit 12 (only effective if a temperature sensor has not been parameterized):
This bit is used to set the ambient temperature for the motor temperature model 1 (I2t).
The following applies for firmware version < 4.7 SP6 (only bit 0):
- this bit has no function. Temperature model 1 operates with an ambient temperature of 20 °C.
The following applies from firmware version 4.7 SP6 (bits 0 and 12):
- the ambient temperature can be adapted to the conditions using p0613.

p0613[0...n] Mot_temp_mod 1/3 ambient temperature / Mod 1/3 amb_temp

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 8017
P-Group: Motor	**Unit group:** 21_1	**Unit selection:** p0505
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-40 [°C]	100 [°C]	20 [°C]

Description: Sets the ambient temperature for motor temperature model 1 or 3.
- temperature model 1 (I2t, p0612.0 = 1):
For firmware version < 4.7 SP6 or p0612.12 = 0, the following applies:
The parameter is not relevant.
From firmware version 4.7 SP6 and p0612.12 = 1, the following applies:
The parameter defines the current ambient temperature.
- temperature model 3 (p0612.2 = 1):
The parameter defines the current ambient temperature.

Dependency: Refer to: p0612
Refer to: F07011, A07012

p0614[0...n] Thermal resistance adaptation reduction factor / Therm R_adapt red

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [%]	100 [%]	30 [%]

Description: Sets the reduction factor for the overtemperature of the thermal adaptation of the stator/rotor resistance.
The value is a starting value when switching on. Internally, after switch-on, the reduction factor has no effect corresponding to the thermal time constant.

Dependency: Refer to: p0610

Note: The reduction factor is only effective for p0610 = 12, and refers to the overtemperature.

p0615[0...n] Mot_temp_mod 1 (I2t) fault threshold / I2t F thresh

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 8017
P-Group: Motor	**Unit group:** 21_1	**Unit selection:** p0505
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [°C]	220.0 [°C]	180.0 [°C]

Description: Sets the fault threshold for monitoring the motor temperature for motor temperature model 1 (I2t).

The following applies for firmware version < 4.7 SP6:

- fault F07011 is output after the fault threshold is exceeded.
- fault threshold for r0034 = 100 % * (p0615 - 40 °C) / (p0605 - 40 °C).

The following applies from firmware version 4.7 SP6 and p0612.8 = 1:

- the fault threshold in p0615 is preset when commissioning.
- when a catalog motor with motor temperature model 1 (I2t) is being commissioned for the first time, the threshold value is copied from p0615 to p5391.
- p5391 is of significance for evaluating the fault threshold.

Dependency: The parameter is only used for motor temperature model 1 (I2t).

Refer to: r0034, p0611, p0612

Refer to: F07011, A07012

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: The hysteresis is 2 K.

p0616[0...n] Motor overtemperature alarm threshold 1 / Mot temp alarm 1

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 8016
P-Group: Motor	**Unit group:** 21_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [°C]	200.0 [°C]	195.0 [°C]

Description: Sets the alarm threshold 1 for monitoring the motor temperature.

Note: The alarm threshold is not, as for p0604, coupled to the timer p0606. The hysteresis for canceling the fault is 2 K.

p0616[0...n] Motor overtemperature alarm threshold 1 / Mot temp alarm 1

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 8016
P-Group: Motor	**Unit group:** 21_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [°C]	200.0 [°C]	130.0 [°C]

Description: Sets the alarm threshold 1 for monitoring the motor temperature.

Note: The alarm threshold is not, as for p0604, coupled to the timer p0606. The hysteresis for canceling the fault is 2 K.

p0617[0...n] Stator thermally relevant iron component / Stat therm iron

SERVO, SERVO_AC, SERVO_I_AC	**Can be changed:** C2(3), T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 8018
	P-Group: Motor	**Unit group:** -	**Unit selection:** -
	Not for motor type: PMSM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.0 [%]	100.0 [%]	40.0 [%]

Description: Thermally relevant iron component of the motor as a percentage of p0344.

Dependency: Refer to: p0344

Note: The sum of p0617, p0618 and p0619 can be more than 100 %.

p0618[0...n] Stator thermally relevant copper component / Stat therm copper

SERVO, SERVO_AC, SERVO_I_AC	**Can be changed:** C2(3), T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 8018
	P-Group: Motor	**Unit group:** -	**Unit selection:** -
	Not for motor type: PMSM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.0 [%]	100.0 [%]	15.0 [%]

Description: Thermally relevant copper component of the motor as a percentage of p0344.

Dependency: Refer to: p0344

Note: The sum of p0617, p0618 and p0619 can be more than 100 %.

p0619[0...n] Rotor thermally relevant weight / Rotor therm weight

SERVO, SERVO_AC, SERVO_I_AC	**Can be changed:** C2(3), T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 8018
	P-Group: Motor	**Unit group:** -	**Unit selection:** -
	Not for motor type: PMSM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.0 [%]	100.0 [%]	20.0 [%]

Description: Thermally relevant weight of the motor as a percentage of p0344.

Dependency: Refer to: p0344

Note: The sum of p0617, p0618 and p0619 can be more than 100 %.

p0620[0...n] Thermal adaptation, stator and rotor resistance / Mot therm_adapt R

SERVO, SERVO_AC, SERVO_I_AC	**Can be changed:** C2(3), U, T	**Calculated:** -	**Access level:** 2
	Data type: Integer16	**Dyn. index:** MDS, p0130	**Func. diagram:** -
	P-Group: Motor	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	2	2

Description: Sets the thermal adaptation of the stator/primary section resistance and rotor/secondary section resistance according to r0395 and r0396.

Value:
0: No thermal adaptation of stator and rotor resistances
1: Resistances adapted to the temperatures of the thermal model
2: Resistances adapted to the measured stator winding temperature

Note: For p0620 = 1, the following applies:

The stator resistance is adapted using the temperature in r0035 and the rotor resistance together with the model temperature in r0633.

For p0620 = 2, the following applies:

The stator resistance is adapted using the temperature in r0035. If applicable, the rotor temperature for adapting the rotor resistance is calculated from the stator temperature (r0035) as follows:

theta_R = (r0628 + r0625) / (r0627 + r0625) * r0035

p0620[0...n] Thermal adaptation, stator and rotor resistance / Mot therm_adapt R

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 2
Data type: Integer16	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	2	1

Description: Sets the thermal adaptation of the stator/primary section resistance and rotor/secondary section resistance according to r0395 and r0396.

Value:
0: No thermal adaptation of stator and rotor resistances
1: Resistances adapted to the temperatures of the thermal model
2: Resistances adapted to the measured stator winding temperature

Note: For p0620 = 1, the following applies:

The stator resistance is adapted using the temperature in r0035 and the rotor resistance together with the model temperature in r0633.

For p0620 = 2, the following applies:

The stator resistance is adapted using the temperature in r0035. If applicable, the rotor temperature for adapting the rotor resistance is calculated from the stator temperature (r0035) as follows:

theta_R = (r0628 + r0625) / (r0627 + r0625) * r0035

For separately excited synchronous motors and p0620 = 1, p0620 = 2 is internally and automatically used for calculating. There is no thermal model to adapt the damping resistances.

p0621[0...n] Identification stator resistance after restart / Rst_ident Restart

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: C2(3), T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	2	0

Description: Selects the identification of the stator resistance after booting the Control Unit (only for vector control).

The identification is used to measure the actual stator resistance and from the ratio of the result of motor data identification (p0350) to the matching ambient temperature (p0625) the actual mean temperature of the stator winding is calculated. The result is used to initialize the thermal motor model.

p0621 = 1:

Identification of the stator resistance only when switching on the drive for the first time (pulse enable) after the Control Unit powers up.

p0621 = 2:

Identification of the stator resistance every time the drive is switched on (pulse enable).

p0621 = 3: one-time identification of the cable resistance p0352 without making a change in the thermal motor model (also suitable for synchronous motors).

Value:
0: No Rs identification
1: Rs identification after switching-on again
2: Rs identification after switching-on each time

Dependency: - perform motor data identification (see p1910) with cold motor.

- enter ambient temperature at time of motor data identification in p0625.

Refer to: p0622, r0623

Notice: The calculated stator temperature can only be compared with the measured value of a temperature sensor (KTY/PT1000) to a certain extent, as the sensor is usually the warmest point of the stator winding, whereas the measured value of identification reflects the mean value of the stator winding.

Furthermore this is a short-time measurement with limited accuracy that is performed during the magnetizing phase of the induction motor.

Note: The measurement is carried out:

- For induction motors
- When vector control is active (see p1300)
- if a temperature sensor (KTY/PT1000) has not been connected
- When the motor is at a standstill when switched on

When a flying restart is performed on a rotating motor, the temperatures of the thermal motor model are set to a third of the overtemperatures. This occurs only once, however, when the CU is booted (e.g. after a power failure).

If identification is activated, the magnetizing time is determined via p0622 and not via p0346. Quick magnetizing (p1401.6) is de-energized internally and alarm A07416 is displayed. The speed is enabled after completion of the measurement.

p0622[0...n] Motor excitation time for Rs_ident after switching on again / t_excit Rs_id

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	20.000 [s]	0.000 [s]

Description: Sets the excitation time of the motor for the stator resistance identification after switching on again (restart).

Dependency: Refer to: p0621, r0623

Note: For p0622 < p0346 the following applies:

If identification is activated, the magnetizing time is influenced by p0622. The speed is enabled after measurement is complete, but not before the time in p0346 has elapsed (see r0056 bit 4). The time taken for measurement also depends on the settling time of the measured current.

For p0622 >= p0346 the following applies:

Parameter p0622 is internally limited to the magnetizing time p0346, so that p0346 represents the maximum possible magnetizing time during identification. The entire measurement period (magnetizing plus measurement settling time plus measuring time) will always be greater than p0346.

r0623 Rs identification stator resistance after switch on again / Rs-id Rs aft sw-on

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [ohm]	- [ohm]	- [ohm]

Description: Displays the stator resistance determined using the Rs identification after switching on again.

Dependency: Refer to: p0621, p0622

p0624[0...n] Motor temperature offset PT100 / Mot T_offset PT100

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 8016
P-Group: Motor	**Unit group:** 21_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-100.0 [K]	100.0 [K]	0.0 [K]

Description: Sets the temperature offset for the PT100 measured value.

If there is a difference between the motor temperature displayed in r0035 and the actual motor temperature, then this offset can be entered into this parameter. thereby compensating for the difference.

Dependency: Refer to: p0600, p0601, p0602

Note: The parameter only has an influence with the following settings:

- Temperature sensor of the power unit detected (p0600 = 11).
- Sensor type PT100 selected (p0601 = 5).

If the resistance in series with the PT100 (e.g. the cable resistance of the feeder cable) is known, the following conversion formula must be used:

Offset in p0624 = Measured resistance in ohms x 2.5 K/Ohm

Example:

Measured cable resistance = 2 Ohm

--> 2 Ohm x 2.5 K / Ohm = 5.0 K

p0625[0...n] Motor ambient temperature during commissioning / Mot T_ambient

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_EQU	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 8017, 8018
P-Group: Motor	**Unit group:** 21_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-40 [°C]	80 [°C]	20 [°C]

Description: Defines the ambient temperature of the motor for calculating the motor temperature model.

Dependency: Refer to: p0350, p0354

Note: The parameters for stator and rotor resistance (p0350, p0354) refer to this temperature.

If the thermal I2t motor model is activated for permanent-magnet synchronous motors (refer to p0611), p0625 is included in the model calculation if a temperature sensor is not being used (see p0601).

p0626[0...n] Motor overtemperature, stator core / Mot T_over core

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_EQU	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 8018
P-Group: Motor	**Unit group:** 21_2	**Unit selection:** p0505
Not for motor type: PMSM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
10 [K]	200 [K]	50 [K]

Description: Defines the rated overtemperature of the stator iron referred to ambient temperature in the motor temperature model 2 (p0612.1 = 1).

Dependency: For 1LA5 and 1LA7 motors (p0300 = 15, 17), the parameter is pre-set as a function of p0307 and p0311.

Refer to: p0625

Notice: When selecting a standard induction motor listed in the catalog (p0300 > 100, p0301 > 10000), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (p0300).

p0627[0...n]	Motor overtemperature, stator winding / Mot T_over stator		
SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC	**Can be changed:** C2(3), U, T	**Calculated:** CALC_MOD_EQU	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 8017, 8018
	P-Group: Motor	**Unit group:** 21_2	**Unit selection:** p0505
	Not for motor type: SESM, REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	15 [K]	200 [K]	80 [K]

Description: Defines the rated overtemperature of the stator winding referred to the ambient temperature.

- motor temperature model 1 (I2t, p0612.0 = 1):

The following applies for firmware version < 4.7 SP6 or p0612.8 = 0:

p0605 is of significance for the rated temperature.

The following applies from firmware version 4.7 SP6 and p0612.8 = 1:

Overtemperature at the rated operating point.

- motor temperature model 2 (p0612.1 = 1):

Overtemperature at the rated operating point.

Dependency: For 1LA5 and 1LA7 motors (p0300 = 15, 17), the parameter is pre-set as a function of p0307 and p0311.

Refer to: p0625

Notice: When selecting a standard induction motor listed in the catalog (p0300 > 100, p0301 > 10000), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (p0300).

The signal is not suitable as a process quantity and may only be used as a display quantity.

p0628[0...n]	Motor overtemperature rotor / Mot T_over rotor		
SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC	**Can be changed:** C2(3), U, T	**Calculated:** CALC_MOD_EQU	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 8018
	P-Group: Motor	**Unit group:** 21_2	**Unit selection:** p0505
	Not for motor type: PMSM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	20 [K]	200 [K]	100 [K]

Description: Defines the rated overtemperature of the squirrel cage rotor referred to ambient temperature in the motor temperature model 2 (p0612.1 = 1).

Dependency: For 1LA5 and 1LA7 motors (p0300 = 15, 17), the parameter is pre-set as a function of p0307 and p0311.

Refer to: p0625

Notice: When selecting a standard induction motor listed in the catalog (p0300 > 100, p0301 > 10000), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (p0300).

p0629[0...n] Stator resistance reference / R_stator ref

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)	**Can be changed:** C2(3), U, T	**Calculated:** CALC_MOD_EQU	**Access level:** 4
	Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
	P-Group: Motor	**Unit group:** 16_1	**Unit selection:** p0349
	Not for motor type: PMSM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00000 [ohm]	2000.00000 [ohm]	0.00000 [ohm]

Description: Reference value for the identification of the stator resistance every time the drive is switched on.

Dependency: The measurement of the reference value is activated by the automatic calculation (p0340 = 1, 2), if the following conditions apply:

- the motor temperature is at this instant in time less than 30 °C (r0035).

- a temperature sensor is not being used (p0601).

Refer to: p0621, r0623

Note: The reference value to identify the stator resistance should be manually entered after the first identification (p0629 = r0623). The identification must be realized when the motor is in a cold state, as the value refers to the ambient temperature p0625. The feeder cable resistance should be entered into p0352 before the measurement.

The result must be saved after the first measurement so that the reference is available after the CU has powered up. When changing p0350 or p0352, the reference value p0629 should be re-determined.

r0630[0...n] Mot_temp_mod ambient temperature / Mod T_ambient

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC	**Can be changed:** -	**Calculated:** -	**Access level:** 4
	Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 8018
	P-Group: Motor	**Unit group:** 21_1	**Unit selection:** p0505
	Not for motor type: SESM, REL	**Scaling:** p2006	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [°C]	- [°C]	- [°C]

Description: Displays the ambient temperature of the motor temperature model (models 2 and 3).

r0631[0...n] Mot_temp_mod stator iron temperature / Mod T_stator

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC	**Can be changed:** -	**Calculated:** -	**Access level:** 4
	Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 8018, 8019
	P-Group: Motor	**Unit group:** 21_1	**Unit selection:** p0505
	Not for motor type: SESM, REL	**Scaling:** p2006	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [°C]	- [°C]	- [°C]

Description: Displays the stator iron temperature of the motor temperature model (models 2 and 3).

Note: For motor temperature model 1 (p0612.0 = 1), this parameter is not valid:

r0632[0...n] Mot_temp_mod stator winding temperature / Mod T_winding

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC	**Can be changed:** -	**Calculated:** -	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 8017, 8018, 8019
	P-Group: Motor	**Unit group:** 21_1	**Unit selection:** p0505
	Not for motor type: SESM, REL	**Scaling:** p2006	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [°C]	- [°C]	- [°C]

Description: Displays the stator winding temperature of the motor temperature model.

Dependency: Refer to: F07011, A07012, A07910

r0633[0...n] Mot_temp_mod rotor temperature / Mod rotor temp

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 8018, 8019
P-Group: Motor	**Unit group:** 21_1	**Unit selection:** p0505
Not for motor type: SESM, REL	**Scaling:** p2006	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°C]	- [°C]	- [°C]

Description: Displays the rotor temperature of the motor temperature model (models 2 and 3).

Note: For motor temperature model 1 (p0612.0 = 1), this parameter is not valid:

p0634[0...n] Q flux flux constant unsaturated / PSIQ KPSI UNSAT

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [Vsrms]	100.000 [Vsrms]	0.000 [Vsrms]

Description: The non-linear and cross-coupled quadrature axis flux functions are defined using 4 coefficients.
The parameter weights the unsaturated component of the quadrature axis flux function.

p0635[0...n] Q flux quadrature axis current constant unsaturated / PSIQ KIQ UNSAT

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Arms]	10000.00 [Arms]	0.00 [Arms]

Description: The non-linear and cross-coupled quadrature axis flux functions are defined using 4 coefficients.
This parameter describes the interdependency of the unsaturated component of the quadrature axis current.

Dependency: Refer to: p0634

p0636[0...n] Q flux direct axis current constant unsaturated / PSIQ KID UNSAT

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Arms]	10000.00 [Arms]	0.00 [Arms]

Description: The non-linear and cross-coupled quadrature axis flux functions are defined using 4 coefficients.
This parameter describes the interdependency of the unsaturated component of the direct axis current.

Dependency: Refer to: p0634

p0637[0...n] Q flux flux gradient saturated / PSIQ Grad SAT

VECTOR, VECTOR_AC, VECTOR_I_AC	**Can be changed:** C2(3), U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
	P-Group: Motor	**Unit group:** -	**Unit selection:** -
	Not for motor type: ASM, SESM, RESM	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [mH]	10000.00 [mH]	0.00 [mH]

Description: The non-linear and cross-coupled quadrature axis flux functions are defined using 4 coefficients.

This parameter describes the gradients of the saturated component over the quadrature axis current.

Dependency: Refer to: p0634, p0635, p0636

p0640[0...n] Current limit / Current limit

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC	**Can be changed:** C2(1, 3), U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5722, 6640
	P-Group: Motor	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [Arms]	10000.00 [Arms]	0.00 [Arms]

Description: Sets the current limit.

Dependency: Refer to: r0209, p0209, p0323

Note: The parameter is part of the quick commissioning (p0010 = 1); this means that it is appropriately pre-assigned when changing p0305, p0323 and p0338.

The current limit p0640 is limited to r0209 and p0323. The limit to p0323 is not realized if a value of zero is entered there.

The resulting current limit is displayed in r0067 and if required, r0067 is reduced by the thermal model of the Motor Module.

The torque and power limits (p1520, p1521, p1530, p1531) matching the current limit are automatically calculated when exiting the quick commissioning using p3900 > 0 or using the automatic parameterization with p0340 = 3, 5.

For VECTOR the following applies (p0107):

p0640 is limited to 4.0 x p0305.

p0640 is pre-assigned for the automatic self commissioning routine (e.g. to 1.5 x p0305, with p0305 = r0207[1]).

p0640 must be entered when commissioning the system. This is the reason that p0640 is not calculated by the automatic parameterization when exiting the quick commissioning (p3900 > 0).

For SERVO the following applies (p0107):

p0640 is pre-assigned as follows using the automatic parameterization (p0340 = 1, p3900 > 0) taking into account the limits r0209 and r0323:

- for induction motors: p0640 = 1.5 x p0305
- for synchronous motors: p0640 = p0338

p0641[0...n] CI: Current limit scaling signal source / I_lim scal s_src

VECTOR, VECTOR_AC, VECTOR_I_AC	**Can be changed:** T	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 6300, 6640
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	1

Description: Sets the signal source for scaling the current limit (p0640).

p0642[0...n] Encoderless operation current reduction / Encoderl op I_red

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	100.00 [%]	100.00 [%]

Description: Sets the reduction for the current limit in encoderless operation.

The value is referred to p0640.

Dependency: Refer to: r0209, p0209, p0323, p0491, p0640, p1300, p1404

Note: If the motor is operated both with encoder as well as without encoder (e.g. p0491 is not equal to 0 or p1404 < p1082) then the maximum current can be reduced in encoderless operation. This reduces disturbing saturation-related motor data changes in encoderless operation.

p0643[0...n] Overvoltage protection for synchronous motors / Overvolt_protect

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(3), T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the overvoltage protection for synchronous motors in the field-weakening range.

Value:
0: No measure
1: Voltage Protection Module (VPM)

Dependency: Refer to: p0316, p1082, r1082, p1231, p9601, p9801

Refer to: F07432, F07906, F07907

Notice: When the speed limiting is removed, the user is responsible for implementing a suitable overvoltage protection.

Note: In the field-weakening range, synchronous motors can, when a fault condition exists, generate high DC link voltages. The following possibilities exist to protect the drive system from being destroyed due to overvoltage:

- limit the maximum speed (p1082) without any additional protection.

The maximum speed without protection is calculated as follows:

Rotary motors: p1082 [rpm] <= 11.695 * r0297/p0316 [Nm/A]

Linear motors: p1082 [m/min] <= 73.484 *r0297/0316 [N/A]

- use a Voltage Protection Module (VPM) in conjunction with the function "Safe Torque Off" (p9601, p9801).

When a fault condition exists, the VPM short-circuits the motors. During the short-circuit, the pulses must be suppressed - this means that the terminals for the function "Safe Torque Off" must be connected to the VPM.

- activating the internal voltage protection (IVP) with p1231 = 3.

p0643[0...n] Overvoltage protection for synchronous motors / Overvolt_protect

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: C2(3)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the overvoltage protection for synchronous motors in the field-weakening range.

Value:
0: No measure
1: Voltage Protection Module (VPM)

Dependency: Refer to: p0316, p1082, r1082, p1231, p9601, p9801

Refer to: F07432, F07906, F07907

Notice: When the speed limiting is removed, the user is responsible for implementing a suitable overvoltage protection.

Note: In the field-weakening range, synchronous motors can, when a fault condition exists, generate high DC link voltages. The following possibilities exist to protect the drive system from being destroyed due to overvoltage:

- limit the maximum speed (p1082) without any additional protection.

The maximum speed without protection is calculated as follows:

p1082 [rpm] <= 11.695 * r0297 / p0316 (or r0334) [Nm/A]

- use a Voltage Protection Module (VPM) in conjunction with the function "Safe Torque Off" (p9601, p9801).

When a fault condition exists, the VPM short-circuits the motors. During the short-circuit, the pulses must be suppressed - this means that the terminals for the function "Safe Torque Off" must be connected to the VPM.

- activating the internal voltage protection (IVP) with p1231 = 3.

p0644[0...n] Current limit excitation induction motor / Imax excit ASM

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
50.0 [%]	300.0 [%]	300.0 [%]

Description: Maximum excitation current of the induction motor referred to the permissible rated current of the power unit (r0207[0]).

Dependency: Only effective for vector control.

Refer to: p1401, p1573

Note: The parameter is pre-assigned in the automatic calculation for chassis power units.

p0645[0...n] Motor kT characteristic kT1 / Mot kT char kT1

SERVO (Ext M_ctrl, Lin), SERVO_AC (Ext M_ctrl, Lin), SERVO_I_AC (Ext M_ctrl, Lin)

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [N/Arms]	200.000 [N/Arms]	0.000 [N/Arms]

Description: Sets the constant kT1 for the kT characteristic.

kT(iq) = kT1 + kT3 * iq^2 + kT5 * iq^4 + kT7 * iq^6

Dependency: Refer to: p0316, p0646, p0647, p0648, p1780

Notice: In the case of current reduction (e.g. as a result of the thermal model) while measuring the kT characteristic, it cannot be ensured that the identified characteristic is reliable above the measured values (r1935, r1937).

Note: For the standard setting, the value in p0316 is effective.

The value in p0316 is ignored and the kT characteristic is effective, if the following conditions are fulfilled:

- the function module "expanded torque control" has been activated (r0108.1 = 1).
- the kT characteristic has been activated (p1780.9 = 1).

p0645[0...n] Motor kT characteristic kT1 / Mot kT char kT1

SERVO (Ext M_ctrl), SERVO_AC (Ext M_ctrl), SERVO_I_AC (Ext M_ctrl)

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [Nm/A]	200.000 [Nm/A]	0.000 [Nm/A]

Description: Sets the constant kT1 for the kT characteristic.

kT(iq) = kT1 + kT3 * iq^2 + kT5 * iq^4 + kT7 * iq^6

Dependency: Refer to: p0316, p0646, p0647, p0648, p1780

Notice: In the case of current reduction (e.g. as a result of the thermal model) while measuring the kT characteristic, it cannot be ensured that the identified characteristic is reliable above the measured values (r1935, r1937).

Note: For the standard setting, the value in p0316 is effective.

The value in p0316 is ignored and the kT characteristic is effective, if the following conditions are fulfilled:

- the function module "expanded torque control" has been activated (r0108.1 = 1).
- the kT characteristic has been activated (p1780.9 = 1).

p0646[0...n] Motor kT characteristic kT3 / Mot kT char kT3

SERVO (Ext M_ctrl), SERVO_AC (Ext M_ctrl), SERVO_I_AC (Ext M_ctrl)

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Sets the constant kT3 for the kT characteristic.

kT(iq) = kT1 + kT3 * iq^2 + kT5 * iq^4 + kT7 * iq^6

Dependency: Refer to: p0316, p0645, p0647, p0648, p1780

Notice: In the case of current reduction (e.g. as a result of the thermal model) while measuring the kT characteristic, it cannot be ensured that the identified characteristic is reliable above the measured values (r1935, r1937).

Note: For the standard setting, the value in p0316 is effective.

The value in p0316 is ignored and the kT characteristic is effective, if the following conditions are fulfilled:

- the function module "expanded torque control" has been activated (r0108.1 = 1).
- the kT characteristic has been activated (p1780.9 = 1).

p0647[0...n] Motor kT characteristic kT5 / Mot kT char kT5

SERVO (Ext M_ctrl), SERVO_AC (Ext M_ctrl), SERVO_I_AC (Ext M_ctrl)

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Sets the constant kT5 for the kT characteristic.

kT(iq) = kT1 + kT3 * iq^2 + kT5 * iq^4 + kT7 * iq^6

Dependency: Refer to: p0316, p0645, p0646, p0648, p1780

Notice: In the case of current reduction (e.g. as a result of the thermal model) while measuring the kT characteristic, it cannot be ensured that the identified characteristic is reliable above the measured values (r1935, r1937).

Note: For the standard setting, the value in p0316 is effective.

The value in p0316 is ignored and the kT characteristic is effective, if the following conditions are fulfilled:

- the function module "expanded torque control" has been activated (r0108.1 = 1).
- the kT characteristic has been activated (p1780.9 = 1).

p0648[0...n] Motor kT characteristic kT7 / Mot kT char kT7

SERVO (Ext M_ctrl), SERVO_AC (Ext M_ctrl), SERVO_I_AC (Ext M_ctrl)

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Sets the constant kT7 for the kT characteristic.

kT(iq) = kT1 + kT3 * iq^2 + kT5 * iq^4 + kT7 * iq^6

Dependency: Refer to: p0316, p0645, p0646, p0647, p1780

Notice: In the case of current reduction (e.g. as a result of the thermal model) while measuring the kT characteristic, it cannot be ensured that the identified characteristic is reliable above the measured values (r1935, r1937).

Note: For the standard setting, the value in p0316 is effective.

The value in p0316 is ignored and the kT characteristic is effective, if the following conditions are fulfilled:

- the function module "expanded torque control" has been activated (r0108.1 = 1).
- the kT characteristic has been activated (p1780.9 = 1).

p0650[0...n] Actual motor operating hours / Mot t_oper act

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(3), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [h]	4294967295 [h]	0 [h]

Description: Displays the operating hours for the corresponding motor.

The motor operating time counter continues to run when the pulses are enabled. When the pulse enable is withdrawn, the counter is held and the value saved.

Dependency: The following prerequisites must be fulfilled in order to be able to save the operating hours counter in a non-volatile fashion:

- firmware with V2.2 or higher.
- Control Unit 320 (CU320) with hardware version C or higher (module with NVRAM).

Refer to: p0651

Refer to: A01590

Note: For p0651 = 0, the operating hours counter is disabled.

The operating hours counter in p0650 can only be reset to 0.

The operating hours counter only runs with motor data set 0 and 1 (MDS).

p0651[0...n] Motor operating hours maintenance interval / Mot t_op maint

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(3), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [h]	150000 [h]	0 [h]

Description: Sets the service/maintenance intervals in hours for the appropriate motor.

An appropriate message is output when the operating hours set here are reached.

Dependency: Refer to: p0650

Refer to: A01590

Note: For p0651 = 0, the operating hours counter is disabled.

When setting p0651 to 0, then p0650 is automatically set to 0.

The operating hours counter only runs with motor data set 0 and 1 (MDS).

p0652[0...n] Motor stator resistance scaling / Mot R_stator scal

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_EQU	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
10.0 [%]	300.0 [%]	100.0 [%]

Description: Sets the factor to evaluate the stator resistance.

Dependency: Refer to: p0350, r0370

p0653[0...n] Motor stator leakage inductance scaling / Mot L_S_leak scal

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3), U, T | **Calculated:** CALC_MOD_EQU | **Access level:** 4
Data type: FloatingPoint32 | **Dyn. index:** MDS, p0130 | **Func. diagram:** -
P-Group: Motor | **Unit group:** - | **Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM | **Scaling:** - | **Expert list:** 1

Min	Max	Factory setting
10.0 [%]	300.0 [%]	100.0 [%]

Description: Sets the factor to evaluate the stator leakage induction.

Dependency: Refer to: p0356, r0377

p0655[0...n] Motor magnetizing inductance d axis saturated scaling / Mot L_m d sat scal

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3), U, T | **Calculated:** CALC_MOD_EQU | **Access level:** 4
Data type: FloatingPoint32 | **Dyn. index:** MDS, p0130 | **Func. diagram:** 6727
P-Group: Motor | **Unit group:** - | **Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM | **Scaling:** - | **Expert list:** 1

Min	Max	Factory setting
10.0 [%]	300.0 [%]	100.0 [%]

Description: Factor to evaluate the magnetizing inductance in the direction of the rotor axis (d axis).

Dependency: Refer to: p0360, r0382

p0656[0...n] Motor magnetizing inductance q axis saturated scaling / Mot L_m q sat scal

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3), U, T | **Calculated:** CALC_MOD_EQU | **Access level:** 4
Data type: FloatingPoint32 | **Dyn. index:** MDS, p0130 | **Func. diagram:** 6727
P-Group: Motor | **Unit group:** - | **Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM | **Scaling:** - | **Expert list:** 1

Min	Max	Factory setting
10.0 [%]	300.0 [%]	100.0 [%]

Description: Factor to evaluate the magnetizing inductance quadrature to the rotor axis (q axis).

Dependency: Refer to: p0361, r0383

p0657[0...n] Motor damping inductance d axis scaling / Mot L_damp d scal

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3), U, T | **Calculated:** CALC_MOD_EQU | **Access level:** 4
Data type: FloatingPoint32 | **Dyn. index:** MDS, p0130 | **Func. diagram:** 6727
P-Group: Motor | **Unit group:** - | **Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM | **Scaling:** - | **Expert list:** 1

Min	Max	Factory setting
10.0 [%]	300.0 [%]	100.0 [%]

Description: Factor to evaluate the damping inductance in the direction of the rotor axis (d axis).

Dependency: Refer to: p0358, r0380

p0658[0...n] Motor damping inductance q axis scaling / Mot L_damp q scal

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_EQU	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 6727
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
10.0 [%]	300.0 [%]	100.0 [%]

Description: Factor to evaluate the damping inductance quadrature to the rotor axis (q axis).

Dependency: Refer to: p0359, r0381

p0659[0...n] Motor damping resistance d axis scaling / Mot R_damp d scal

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_EQU	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 6727
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
10.0 [%]	300.0 [%]	100.0 [%]

Description: Factor to evaluate the damping resistance in the direction of the rotor axis (d axis).

Dependency: Refer to: p0354, r0374

p0660[0...n] Motor damping resistance q axis scaling / Mot R_damp q scal

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_EQU	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 6727
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
10.0 [%]	300.0 [%]	100.0 [%]

Description: Factor to evaluate the damping resistance quadrature to the rotor axis (q axis).

Dependency: Refer to: p0355, r0375

p0680[0...7] Central measuring probe input terminal / Cen meas inp

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: C2(4), U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	8	0

Description: Sets the digital input used for the function "central measuring probe evaluation".

p0680[0]: Digital input, measuring probe 1

p0680[1]: Digital input, measuring probe 2

...

p0680[7]: Digital input, measuring probe 8

Value:
0: No measuring probe
1: DI/DO 9 (X122.10/X121.8)
2: DI/DO 10 (X122.12/X121.10)
3: DI/DO 11 (X122.13/X121.11)
4: DI/DO 13 (X132.10/X131.2)
5: DI/DO 14 (X132.12/X131.4)
6: DI/DO 15 (X132.13/X131.5)
7: DI/DO 8 (X122.9/X121.7)
8: DI/DO 12 (X132.9/X131.1)

Dependency: Refer to: p0728

Caution: In order to prevent incorrect measurement values, these parameters may not be written during an active measurement.

Notice: Regarding the terminal designation:

The first designation is valid for CU320, the second for CU310.

To select the values:

For CX32, NX10 and NX15, only DI/DO 8, 9, 10, 11 can be selected as fast inputs (refer to the Equipment Manual).

Note: DI/DO: Bidirectional Digital Input/Output

Prerequisite: The DI/DO must be set as input (p0728.x = 0).

If a parameter change is rejected, a check should be performed as to whether the input terminal is already being used in p0488, p0489, p0493, p0494, p0495, p0580, p2517 or p2518.

p0681 BI: Central measuring probe synchronizing signal signal source / Cen meas sync_sig

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the synchronizing signal (SYN) of the function "central measuring probe evaluation".

The signal is used to synchronize the common system time between the master and slave.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p0682 CI: Central measuring probe control word signal source / Cen meas STW S_src

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the control word of the function "central measuring probe evaluation".

p0684 Central measuring probe evaluation technique / Cen meas eval_tech

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: C2(4), U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	16	0

Description: Sets the evaluation technique for the "central measuring probe evaluation" function.

Value:
0: Measurement with handshake
1: Measurement without handshake 2 edges
16: Measurement without handshake more than 2 edges

Notice: For p0684 = 16:

This evaluation procedure is only activated after parameter save and POWER ON.

Note:

During measurement without a handshake, the probe may have a higher evaluation frequency.

The setting "Measurement without handshake" must be supported by the higher-level control. This setting cannot be used for SIMOTION D with integrated SINAMICS or with CX32.

For p0684 = 0:

Changing this evaluation procedure to p0684 = 1 is possible in the RUN state.

Changing this evaluation procedure to p0684 = 16 is only activated after parameter save and POWER ON.

Permissible combinations in p0922 are:

p0922 = 391, 392, 393, 394

For p0684 = 1:

Changing this evaluation procedure to p0684 = 0 is possible in the RUN state.

Changing this evaluation procedure to p0684 = 16 is only activated after parameter save and POWER ON.

Permissible combinations in p0922 are:

p0922 = 391, 392, 393, 394

For p0684 = 16:

Changing this evaluation procedure to p0684 = 0 or to p0684 = 1 is only activated after parameter save and POWER ON.

Permissible combinations in p0922 are:

p0922 = 395

r0685 Central measuring probe control word display / Cen meas STW disp

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the control word for the function "central measuring probe evaluation".

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Falling edge measuring probe 1	Yes	No	-
01	Falling edge measuring probe 2	Yes	No	-
02	Falling edge measuring probe 3	Yes	No	-
03	Falling edge measuring probe 4	Yes	No	-
04	Falling edge measuring probe 5	Yes	No	-
05	Falling edge measuring probe 6	Yes	No	-
06	Falling edge measuring probe 7	Yes	No	-
07	Falling edge measuring probe 8	Yes	No	-
08	Rising edge measuring probe 1	Yes	No	-
09	Rising edge measuring probe 2	Yes	No	-
10	Rising edge measuring probe 3	Yes	No	-
11	Rising edge measuring probe 4	Yes	No	-
12	Rising edge measuring probe 5	Yes	No	-
13	Rising edge measuring probe 6	Yes	No	-
14	Rising edge measuring probe 7	Yes	No	-
15	Rising edge measuring probe 8	Yes	No	-

r0686[0...7] CO: Central measuring probe measuring time rising edge / CenMeas t_meas 0/1

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the measuring time for a rising edge at the digital input for the "central measuring probe evaluation" function.

The measuring time is specified as 16-bit value with a resolution of 0.25 µs.

r0686[0]: Measuring time, rising edge measuring probe 1
r0686[1]: Measuring time, rising edge measuring probe 2
r0686[2]: Measuring time, rising edge measuring probe 3
r0686[3]: Measuring time, rising edge measuring probe 4
r0686[4]: Measuring time, rising edge measuring probe 5
r0686[5]: Measuring time, rising edge measuring probe 6
r0686[6]: Measuring time, rising edge measuring probe 7
r0686[7]: Measuring time, rising edge measuring probe 8

Note: The parameter is only active for the evaluation procedure p0684 = 0, 1.

For p0684 = 16, r0686[0...7] = 0 is displayed.

r0687[0...7] CO: Central measuring probe measuring time falling edge / CenMeas t_meas 1/0

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the measuring time for a falling edge at the digital input for the "central measuring probe evaluation" function.

The measuring time is specified as 16-bit value with a resolution of 0.25 µs.

r0687[0]: Measuring time, falling edge measuring probe 1
r0687[1]: Measuring time, falling edge measuring probe 2
r0687[2]: Measuring time, falling edge measuring probe 3
r0687[3]: Measuring time, falling edge measuring probe 4
r0687[4]: Measuring time, falling edge measuring probe 5
r0687[5]: Measuring time, falling edge measuring probe 6
r0687[6]: Measuring time, falling edge measuring probe 7
r0687[7]: Measuring time, falling edge measuring probe 8

Note: The parameter is only active for the evaluation procedure p0684 = 0, 1.

For p0684 = 16, r0687[0...7] = 0 is displayed.

r0688 CO: Central measuring probe status word display / Cen meas ZSW disp

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status word for the function "central measuring probe evaluation".

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Digital input measuring probe 1	High	Low	-
01	Digital input measuring probe 2	High	Low	-
02	Digital input measuring probe 3	High	Low	-
03	Digital input measuring probe 4	High	Low	-
04	Digital input measuring probe 5	High	Low	-
05	Digital input measuring probe 6	High	Low	-
06	Digital input measuring probe 7	High	Low	-
07	Digital input measuring probe 8	High	Low	-
08	Sub-sampling measuring probe 1	High	Low	-
09	Sub-sampling measuring probe 2	High	Low	-
10	Sub-sampling measuring probe 3	High	Low	-
11	Sub-sampling measuring probe 4	High	Low	-
12	Sub-sampling measuring probe 5	High	Low	-
13	Sub-sampling measuring probe 6	High	Low	-
14	Sub-sampling measuring probe 7	High	Low	-
15	Sub-sampling measuring probe 8	High	Low	-

p0690[0...n] Brushless excitation rated current / BLE I_rated

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: C2(3), T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 6727
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [A]	1000.00 [A]	0.00 [A]

Description: Sets the rated current of the excitation equipment for the exciter for brushless excitation with a rotating-armature synchronous machine or reverse field induction machine.

Dependency: Refer to: r1626

Notice: For a value = 0, brushless excitation is not activated.

Note: BLE: brushless excitation

p0691[0...n] Reverse field excitation correction factor / RFE correction

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
10 [%]	1000 [%]	100 [%]

Description: Sets the correction factor for the calculated excitation current setpoint of the reverse field exciter for reverse field excitation.

Dependency: Refer to: p0304, p0305, p0308, p0311, p0390, p0690

Note: The correction factor specifies the ratio between the excitation current - which flows in the exciter at the rated operating point of the main machine according to the rating plate data - and the rated current of the exciter p0690.

p0692[0...n] Reverse field excitation iron resistance / RFE iron resist

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-100000.00000 [ohm]	100000.00000 [ohm]	0.00000 [ohm]

Description: Sets the ohmic iron resistance of the rotor for the main machine for reverse field excitation.

Note: For a value of 0, it is assumed that the iron resistance is infinitely high.

p0693[0...n] Brushless excitation inductance d-axis saturated / BLE L_d sat

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 6727
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000.00000 [mH]	1000.00000 [mH]	0.00000 [mH]

Description: Sets the saturated inductance of the exciter for brushless excitation with rotating-armature synchronous machine or reverse field induction machine.

A negative value can also be entered as part of optimizing coefficients.

Notice: For a value = 0, brushless excitation is not activated.

Note: For excitation using a rotating-armature synchronous machine, the equivalent circuit diagram data should be entered, referred to the rotor.

For excitation using a reverse field induction machine, the equivalent circuit diagram data should be entered, referred to the stator.

BLE: brushless excitation

p0694[0...n] Reverse field excitation leakage inductance / RFE L_leak

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-10.00000 [mH]	10.00000 [mH]	0.00000 [mH]

Description: Sets the leakage inductance of the reverse field exciter in mH for reverse field excitation.

A negative value can also be entered as part of optimizing coefficients.

p0696[0...n] Brushless excitation ratio / BLE ratio

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 6727
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	1000.000	0.000

Description: Sets the ratio between the stator and rotor of the exciter for brushless excitation.

For excitation using a rotating-armature synchronous machine, the ratio of the rated excitation current of the main machine to the associated excitation current of the exciter at the rated point of the machine is entered.

For excitation using a reverse field induction machine, the physical ratio at standstill is specified.

Dependency: Refer to: p0311, p0390

Notice: For a value = 0, brushless excitation is not activated.

Note: BLE: brushless excitation

p0697[0...n] Brushless excitation number of pole pairs / BLE PolePairNo

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: C2(3), T	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** MDS, p0130	**Func. diagram:** 6727
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	20	0

Description: Sets the pole pair number of the exciter for brushless excitation using a rotating- armature synchronous machine or using a reverse field induction machine.

Notice: For a value = 0, brushless excitation is not activated.

Note: BLE: brushless excitation

p0698[0...n] Brushless excitation, excitation resistance / BLE exc_resist

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 6727
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-100.00000 [ohm]	100.00000 [ohm]	0.00000 [ohm]

Description: Sets the ohmic excitation resistance of the main machine for brushless excitation for a rotating-armature synchronous machine or reverse field induction machine.

Notice: For a value = 0, brushless excitation is not activated.

Note: When the rotor resistance is known, this value can be added to the excitation resistance. For excitation using a reverse field induction machine, it should be noted that the rotor resistance specified in the data sheet is referred to the stator; however, the excitation resistance of the main machine is referred to the rotor.

BLE: brushless excitation

p0699[0...n] Excitation configuration / Exc config

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: C2(1, 3)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	20	0

Description: Configuration of the excitation.

0:

Excitation via sliprings, default setting.

10:

Brushless excitation for rotating-armature synchronous motor with excitation current setpoint input (FCR).

11:

Brushless excitation for rotating-armature synchronous motor with independently controlled stator voltage (AVR).

20:

Brushless excitation using a reverse field induction machine where the exciter is fed from a SIMOTRAS three-phase AC power controller.

Value:
0: Excitation via sliprings
10: Brushless excitation via rotating-armature synchr. machine (FCR)
11: Brushless excitation via rotating-armature synchr. machine (AVR)
20: Brushless excit. via reverse field induction machine (SIMOTRAS)

Warning: For values = 10, 11:

For excitation using a rotating-armature synchronous machine, it is not permissible that a standing measurement is used for motor data identification, as this can damage the excitation winding of the main machine.

Notice: The following parameters must be assigned values that are not equal to zero in order that the speed-dependent transmission ratio for brushless excitation (p0699 > 0) can be calculated:

p0699 = 10:

p0690, p0693, p0696, p0697, p0698

p0699 = 11:

No excitation current setpoint input

p0699 = 20:

p0690, p0692, p0693, p0696, p0697, p0698

Otherwise, the speed-dependent transmission ratio for brushless excitation as well as for slipring excitation is assumed to be 1.

Note: AVR: autonomous voltage control

FCR: field current control

SIMOTRAS: Siemens three-phase AC power controller

U/f-MM: SINAMICS-Motor Module with U/f control as excitation controller

p0700 Macro Binector Input (BI) for TMs / Macro BI TM

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, TM31, TM15DI_DO, TB30

Can be changed: C2(1), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	999999	0

Description: Runs the corresponding macro files.

The selected macro file must be available on the memory card/device memory.

Example:

p0700 = 6 --> macro file PM000006.ACX is run.

Dependency: Refer to: r8571

Notice: No errors were issued during quick commissioning (p3900 = 1) when writing to parameters of the QUICK_IBN group!

When executing a specific macro, the corresponding programmed settings are made and become active.

Note: The macros in the specified directory are displayed in r8571. r8571 is not in the expert list of the commissioning tool.

Macros available as standard are described in the technical documentation of the particular product.

BI: Binector Input

CDS: Command Data Set

p0700[0...n] Macro Binector Input (BI) / Macro BI

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: C2(1), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** CDS, p0170	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	999999	0

Description: Runs the corresponding macro files.

The binector inputs of the corresponding command data set are appropriately interconnected.

The selected macro file must be available on the memory card/device memory.

Example:

p0700 = 6 --> macro file PM000006.ACX is run.

Dependency: Refer to: p0015, p1000, p1500, r8571

Notice: No errors were issued during quick commissioning (p3900 = 1) when writing to parameters of the QUICK_IBN group!

When executing a specific macro, the corresponding programmed settings are made and become active.

Note: The macros in the specified directory are displayed in r8571. r8571 is not in the expert list of the commissioning tool.

Macros available as standard are described in the technical documentation of the particular product.

BI: Binector Input

CDS: Command Data Set

p0713[0...7] BI: Cam function setpoint state / Cam fct setp state

CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the setpoint state for the cam outputs.

Index:
[0] = Bit 0
[1] = Bit 1
[2] = Bit 2
[3] = Bit 3
[4] = Bit 4
[5] = Bit 5
[6] = Bit 6
[7] = Bit 7

Note: If the time stamp is not connected, or if both time stamps have the value "0", then the output state (r0716) of the cam sequencer is obtained directly from the reference state (p0713).

p0714[0...7] CI: Cam function setting time / Cam t_set

CU_I_D410			
	Can be changed: -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32 / Integer16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Terminals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the setting time for the cam outputs.

Index:
[0] = Cam_0 switching instant for a rising edge
[1] = Cam_1 switching instant for a rising edge
[2] = Cam_2 switching instant for a rising edge
[3] = Cam_3 switching instant for a rising edge
[4] = Cam_4 switching instant for a rising edge
[5] = Cam_5 switching instant for a rising edge
[6] = Cam_6 switching instant for a rising edge
[7] = Cam_7 switching instant for a rising edge

Note: If the setpoint state is not connected, then the output state (r0716) of the cam sequencer is only obtained from the specified switching instants (p0714/p0715).

0000 hex and FFFF have a special significance "No switching event". The maximum time is 16 ms, FA00 hex.

p0715[0...7] CI: Cam function reset time / Cam t_reset

CU_I_D410			
	Can be changed: -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32 / Integer16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Terminals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the reset time for the cam outputs.

Index:
[0] = Cam_0 switching instant for a falling edge
[1] = Cam_1 switching instant for a falling edge
[2] = Cam_2 switching instant for a falling edge
[3] = Cam_3 switching instant for a falling edge
[4] = Cam_4 switching instant for a falling edge
[5] = Cam_5 switching instant for a falling edge
[6] = Cam_6 switching instant for a falling edge
[7] = Cam_7 switching instant for a falling edge

Note: If the setpoint state is not connected, then the output state (r0716) of the cam sequencer is only obtained from the specified switching instants (p0714/p0715).

0000 hex and FFFF have a special significance "No switching event". The maximum time is 16 ms, FA00 hex.

r0716.0...7 CO/BO: Cam function output / Cam output

CU_I_D410			
	Can be changed: -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Terminals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Display and BICO output for the cam outputs.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Cam_0 output signal	High	Low	-
01	Cam_1 output signal	High	Low	-
02	Cam_2 output signal	High	Low	-
03	Cam_3 output signal	High	Low	-
04	Cam_4 output signal	High	Low	-

05	Cam_5 output signal	High	Low	-
06	Cam_6 output signal	High	Low	-
07	Cam_7 output signal	High	Low	-

Note: The cam sequencer is only calculated if the output-side binector (r0716) is interconnected.

r0721 CU digital inputs terminal actual value / CU DI term act val

CU_I, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2119, 2120, 2121, 2130, 2131, 2132, 2133
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the actual value at the digital inputs.

This means that the actual input signal can be checked at terminal DI x or DI/DO x prior to switching from the simulation mode (p0795.x = 1) to terminal mode (p0795.x = 0).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI 0 (X122.1/X121.1)	High	Low	-
01	DI 1 (X122.2/X121.2)	High	Low	-
02	DI 2 (X122.3/X121.3)	High	Low	-
03	DI 3 (X122.4/X121.4)	High	Low	-
04	DI 4 (X132.1 / -)	High	Low	-
05	DI 5 (X132.2 / -)	High	Low	-
06	DI 6 (X132.3 / -)	High	Low	-
07	DI 7 (X132.4 / -)	High	Low	-
08	DI/DO 8 (X122.9/X121.7)	High	Low	-
09	DI/DO 9 (X122.10/X121.8)	High	Low	-
10	DI/DO 10 (X122.12/X121.10)	High	Low	-
11	DI/DO 11 (X122.13/X121.11)	High	Low	-
12	DI/DO 12 (X132.9/X131.1)	High	Low	-
13	DI/DO 13 (X132.10/X131.2)	High	Low	-
14	DI/DO 14 (X132.12/X131.4)	High	Low	-
15	DI/DO 15 (X132.13/X131.5)	High	Low	-
16	DI 16 (X122.5/X120.3)	High	Low	-
17	DI 17 (X122.6/X120.4)	High	Low	-
20	DI 20 (X132.5/X120.9)	High	Low	-
21	DI 21 (X132.6/X120.10)	High	Low	-

Notice: Regarding the terminal designation:

The first designation is valid for CU320, the second for CU310.

Note: If a DI/DO is parameterized as output (p0728.x = 1), then r0721.x = 0 is displayed.

DI: Digital Input

DI/DO: Bidirectional Digital Input/Output

r0721 CX digital inputs terminal actual value / CX DI actual value

CU_NX_CX

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2179, 2180, 2190, 2191
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the actual value at the digital inputs.

This means that the actual input signal can be checked at terminal DI x or DI/DO x prior to switching from the simulation mode (p0795.x = 1) to terminal mode (p0795.x = 0).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI 0 (X122.1)	High	Low	-
01	DI 1 (X122.2)	High	Low	-
02	DI 2 (X122.3)	High	Low	-
03	DI 3 (X122.4)	High	Low	-
08	DI/DO 8 (X122.9)	High	Low	-
09	DI/DO 9 (X122.10)	High	Low	-
10	DI/DO 10 (X122.12)	High	Low	-
11	DI/DO 11 (X122.13)	High	Low	-
16	DI 16 (X122.5)	High	Low	-
17	DI 17 (X122.6)	High	Low	-

Note: If a DI/DO is parameterized as output (p0728.x = 1), then r0721.x = 0 is displayed.

DI: Digital Input

DI/DO: Bidirectional Digital Input/Output

r0721 CU digital inputs terminal actual value / CU DI term act val

CU_S_AC_DP, CU_S_AC_PN, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2019, 2020, 2021, 2030, 2031, 2032, 2033
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the actual value at the digital inputs.

This means that the actual input signal can be checked at terminal DI x or DI/DO x prior to switching from the simulation mode (p0795.x = 1) to terminal mode (p0795.x = 0).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI 0 (X122.1/X121.1)	High	Low	-
01	DI 1 (X122.2/X121.2)	High	Low	-
02	DI 2 (X122.3/X121.3)	High	Low	-
03	DI 3 (X122.4/X121.4)	High	Low	-
08	DI/DO 8 (X122.9/X121.7)	High	Low	-
09	DI/DO 9 (X122.10/X121.8)	High	Low	-
10	DI/DO 10 (X122.12/X121.10)	High	Low	-
11	DI/DO 11 (X122.13/X121.11)	High	Low	-
12	DI/DO 12 (X132.9/X131.1)	High	Low	-
13	DI/DO 13 (X132.10/X131.2)	High	Low	-
14	DI/DO 14 (X132.12/X131.4)	High	Low	-
15	DI/DO 15 (X132.13/X131.5)	High	Low	-
16	DI 16 (X122.5/X120.3)	High	Low	-
17	DI 17 (X122.6/X120.4)	High	Low	-
18	DI 18 (- / X120.6)	High	Low	-
19	DI 19 (- / X120.7)	High	Low	-
20	DI 20 (X132.5/X120.9)	High	Low	-
21	DI 21 (X132.6/X120.10)	High	Low	-
22	DI 22 (- / X130.1)	High	Low	-

Notice: Regarding the terminal designation:

The first designation is valid for CU320, the second for CU310.

Note: If a DI/DO is parameterized as output (p0728.x = 1), then r0721.x = 0 is displayed.

DI: Digital Input

DI/DO: Bidirectional Digital Input/Output

r0722.0...21 CO/BO: CU digital inputs status / CU DI status

CU_I, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2119, 2120, 2121, 2130, 2131, 2132, 2133
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status of the digital inputs.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI 0 (X122.1/X121.1)	High	Low	-
01	DI 1 (X122.2/X121.2)	High	Low	-
02	DI 2 (X122.3/X121.3)	High	Low	-
03	DI 3 (X122.4/X121.4)	High	Low	-
04	DI 4 (X132.1 / -)	High	Low	-
05	DI 5 (X132.2 / -)	High	Low	-
06	DI 6 (X132.3 / -)	High	Low	-
07	DI 7 (X132.4 / -)	High	Low	-
08	DI/DO 8 (X122.9/X121.7)	High	Low	-
09	DI/DO 9 (X122.10/X121.8)	High	Low	-
10	DI/DO 10 (X122.12/X121.10)	High	Low	-
11	DI/DO 11 (X122.13/X121.11)	High	Low	-
12	DI/DO 12 (X132.9/X131.1)	High	Low	-
13	DI/DO 13 (X132.10/X131.2)	High	Low	-
14	DI/DO 14 (X132.12/X131.4)	High	Low	-
15	DI/DO 15 (X132.13/X131.5)	High	Low	-
16	DI 16 (X122.5/X120.3)	High	Low	-
17	DI 17 (X122.6/X120.4)	High	Low	-
20	DI 20 (X132.5/X120.9)	High	Low	-
21	DI 21 (X132.6/X120.10)	High	Low	-

Dependency: Refer to: r0723

Notice: Regarding the terminal designation:

The first designation is valid for CU320, the second for CU310.

Note: DI: Digital Input

DI/DO: Bidirectional Digital Input/Output

r0722.0...17 CO/BO: CX digital inputs status / CX DI status

CU_NX_CX

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2179, 2180, 2190, 2191
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status of the digital inputs.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI 0 (X122.1)	High	Low	-
01	DI 1 (X122.2)	High	Low	-
02	DI 2 (X122.3)	High	Low	-
03	DI 3 (X122.4)	High	Low	-
08	DI/DO 8 (X122.9)	High	Low	-
09	DI/DO 9 (X122.10)	High	Low	-
10	DI/DO 10 (X122.12)	High	Low	-
11	DI/DO 11 (X122.13)	High	Low	-
16	DI 16 (X122.5)	High	Low	-
17	DI 17 (X122.6)	High	Low	-

Dependency: Refer to: r0723

Note: DI: Digital Input
DI/DO: Bidirectional Digital Input/Output

r0722.0...22 CO/BO: CU digital inputs status / CU DI status

CU_S_AC_DP, CU_S_AC_PN, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2019, 2020, 2021, 2030, 2031, 2032, 2033
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status of the digital inputs.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI 0 (X122.1/X121.1)	High	Low	-
01	DI 1 (X122.2/X121.2)	High	Low	-
02	DI 2 (X122.3/X121.3)	High	Low	-
03	DI 3 (X122.4/X121.4)	High	Low	-
08	DI/DO 8 (X122.9/X121.7)	High	Low	-
09	DI/DO 9 (X122.10/X121.8)	High	Low	-
10	DI/DO 10 (X122.12/X121.10)	High	Low	-
11	DI/DO 11 (X122.13/X121.11)	High	Low	-
12	DI/DO 12 (X132.9/X131.1)	High	Low	-
13	DI/DO 13 (X132.10/X131.2)	High	Low	-
14	DI/DO 14 (X132.12/X131.4)	High	Low	-
15	DI/DO 15 (X132.13/X131.5)	High	Low	-
16	DI 16 (X122.5/X120.3)	High	Low	-
17	DI 17 (X122.6/X120.4)	High	Low	-
18	DI 18 (- / X120.6)	High	Low	-
19	DI 19 (- / X120.7)	High	Low	-
20	DI 20 (X132.5/X120.9)	High	Low	-
21	DI 21 (X132.6/X120.10)	High	Low	-
22	DI 22 (- / X130.1)	High	Low	-

Dependency: Refer to: r0723

Notice: Regarding the terminal designation:
The first designation is valid for CU320, the second for CU310.

Note: DI: Digital Input
DI/DO: Bidirectional Digital Input/Output

r0723.0...21 CO/BO: CU digital inputs status inverted / CU DI status inv

CU_I, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2119, 2120, 2121, 2130, 2131, 2132, 2133
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the inverted status of the digital inputs.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI 0 (X122.1/X121.1)	High	Low	-
01	DI 1 (X122.2/X121.2)	High	Low	-
02	DI 2 (X122.3/X121.3)	High	Low	-
03	DI 3 (X122.4/X121.4)	High	Low	-
04	DI 4 (X132.1 / -)	High	Low	-
05	DI 5 (X132.2 / -)	High	Low	-
06	DI 6 (X132.3 / -)	High	Low	-
07	DI 7 (X132.4 / -)	High	Low	-
08	DI/DO 8 (X122.9/X121.7)	High	Low	-
09	DI/DO 9 (X122.10/X121.8)	High	Low	-
10	DI/DO 10 (X122.12/X121.10)	High	Low	-

11	DI/DO 11 (X122.13/X121.11)	High	Low	-
12	DI/DO 12 (X132.9/X131.1)	High	Low	-
13	DI/DO 13 (X132.10/X131.2)	High	Low	-
14	DI/DO 14 (X132.12/X131.4)	High	Low	-
15	DI/DO 15 (X132.13/X131.5)	High	Low	-
16	DI 16 (X122.5/X120.3)	High	Low	-
17	DI 17 (X122.6/X120.4)	High	Low	-
20	DI 20 (X132.5/X120.9)	High	Low	-
21	DI 21 (X132.6/X120.10)	High	Low	-

Dependency: Refer to: r0722

Notice: Regarding the terminal designation:

The first designation is valid for CU320, the second for CU310.

Note: DI: Digital Input

DI/DO: Bidirectional Digital Input/Output

r0723.0...17 CO/BO: CX digital inputs status inverted / CX DI status inv

CU_NX_CX

Can be changed: - | **Calculated:** - | **Access level:** 1

Data type: Unsigned32 | **Dyn. index:** - | **Func. diagram:** 2179, 2180, 2190, 2191

P-Group: Commands | **Unit group:** - | **Unit selection:** -

Not for motor type: - | **Scaling:** - | **Expert list:** 1

Min	Max	Factory setting
-	-	-

Description: Display and BICO output for the inverted status of the digital inputs.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI 0 (X122.1)	High	Low	-
01	DI 1 (X122.2)	High	Low	-
02	DI 2 (X122.3)	High	Low	-
03	DI 3 (X122.4)	High	Low	-
08	DI/DO 8 (X122.9)	High	Low	-
09	DI/DO 9 (X122.10)	High	Low	-
10	DI/DO 10 (X122.12)	High	Low	-
11	DI/DO 11 (X122.13)	High	Low	-
16	DI 16 (X122.5)	High	Low	-
17	DI 17 (X122.6)	High	Low	-

Dependency: Refer to: r0722

Note: DI: Digital Input

DI/DO: Bidirectional Digital Input/Output

r0723.0...22 CO/BO: CU digital inputs status inverted / CU DI status inv

CU_S_AC_DP, CU_S_AC_PN, CU_I_D410

Can be changed: - | **Calculated:** - | **Access level:** 1

Data type: Unsigned32 | **Dyn. index:** - | **Func. diagram:** 2019, 2020, 2021, 2030, 2031, 2032, 2033

P-Group: Commands | **Unit group:** - | **Unit selection:** -

Not for motor type: - | **Scaling:** - | **Expert list:** 1

Min	Max	Factory setting
-	-	-

Description: Display and BICO output for the inverted status of the digital inputs.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI 0 (X122.1/X121.1)	High	Low	-
01	DI 1 (X122.2/X121.2)	High	Low	-
02	DI 2 (X122.3/X121.3)	High	Low	-
03	DI 3 (X122.4/X121.4)	High	Low	-
08	DI/DO 8 (X122.9/X121.7)	High	Low	-
09	DI/DO 9 (X122.10/X121.8)	High	Low	-
10	DI/DO 10 (X122.12/X121.10)	High	Low	-
11	DI/DO 11 (X122.13/X121.11)	High	Low	-
12	DI/DO 12 (X132.9/X131.1)	High	Low	-

13	DI/DO 13 (X132.10/X131.2)	High	Low	-
14	DI/DO 14 (X132.12/X131.4)	High	Low	-
15	DI/DO 15 (X132.13/X131.5)	High	Low	-
16	DI 16 (X122.5/X120.3)	High	Low	-
17	DI 17 (X122.6/X120.4)	High	Low	-
18	DI 18 (- / X120.6)	High	Low	-
19	DI 19 (- / X120.7)	High	Low	-
20	DI 20 (X132.5/X120.9)	High	Low	-
21	DI 21 (X132.6/X120.10)	High	Low	-
22	DI 22 (- / X130.1)	High	Low	-

Dependency: Refer to: r0722

Notice: Regarding the terminal designation:
The first designation is valid for CU320, the second for CU310.

Note: DI: Digital Input
DI/DO: Bidirectional Digital Input/Output

p0728 CU set input or output / CU DI or DO

CU_I, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2119, 2030, 2031, 2130, 2131, 2132, 2133
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 bin

Description: Sets the bidirectional digital inputs/outputs as an input or output.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
08	DI/DO 8 (X122.9/X121.7)	Output	Input	-
09	DI/DO 9 (X122.10/X121.8)	Output	Input	-
10	DI/DO 10 (X122.12/X121.10)	Output	Input	-
11	DI/DO 11 (X122.13/X121.11)	Output	Input	-
12	DI/DO 12 (X132.9/X131.1)	Output	Input	-
13	DI/DO 13 (X132.10/X131.2)	Output	Input	-
14	DI/DO 14 (X132.12/X131.4)	Output	Input	-
15	DI/DO 15 (X132.13/X131.5)	Output	Input	-

Notice: Regarding the terminal designation:
The first designation is valid for CU320, the second for CU310.

Note: DI/DO: Bidirectional Digital Input/Output

p0728 CX set input or output / CX DI or DO

CU_NX_CX

Can be changed: T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2179, 2190, 2191
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 bin

Description: Sets the bidirectional digital inputs/outputs as an input or output.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
08	DI/DO 8 (X122.9)	Output	Input	2190
09	DI/DO 9 (X122.10)	Output	Input	2190
10	DI/DO 10 (X122.12)	Output	Input	2191
11	DI/DO 11 (X122.13)	Output	Input	2191

Note: DI/DO: Bidirectional Digital Input/Output

p0728 CU set input or output / CU DI or DO

CU_S_AC_DP, CU_S_AC_PN, CU_I_D410

Can be changed: T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2019, 2030, 2031, 2032, 2033
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 bin

Description: Sets the bidirectional digital inputs/outputs as an input or output.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
08	DI/DO 8 (X122.9/X121.7)	Output	Input	-
09	DI/DO 9 (X122.10/X121.8)	Output	Input	-
10	DI/DO 10 (X122.12/X121.10)	Output	Input	-
11	DI/DO 11 (X122.13/X121.11)	Output	Input	-
12	DI/DO 12 (X132.9/X131.1)	Output	Input	-
13	DI/DO 13 (X132.10/X131.2)	Output	Input	-
14	DI/DO 14 (X132.12/X131.4)	Output	Input	-
15	DI/DO 15 (X132.13/X131.5)	Output	Input	-

Notice: Regarding the terminal designation:

The first designation is valid for CU320, the second for CU310.

Note: DI/DO: Bidirectional Digital Input/Output

r0729 CU digital outputs access authority / CU DO acc_auth

CU_I, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2030, 2031, 2130, 2131, 2132, 2133
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the access authority at the digital outputs.

Bit = 1:

The control has access authority to the digital output via PROFIBUS or direct access.

Bit = 0:

The drive has access authority to the digital output or the digital input/output is not set as digital output or is not available.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
08	DI/DO 8 (X122.9/X121.7)	High	Low	-
09	DI/DO 9 (X122.10/X121.8)	High	Low	-
10	DI/DO 10 (X122.12/X121.10)	High	Low	-
11	DI/DO 11 (X122.13/X121.11)	High	Low	-
12	DI/DO 12 (X132.9/X131.1)	High	Low	-
13	DI/DO 13 (X132.10/X131.2)	High	Low	-
14	DI/DO 14 (X132.12/X131.4)	High	Low	-
15	DI/DO 15 (X132.13/X131.5)	High	Low	-

Dependency: Refer to: p0728, p0738, p0739, p0740, p0741, p0742, p0743, p0744, p0745, r0747, p0748

Notice: Regarding the terminal designation:

The first designation is valid for CU320, the second for CU310.

Note: The DI/DO must be connected as output (p0728).

DI/DO: Bidirectional Digital Input/Output

r0729 CX digital outputs access authority / CX DO acc_auth

CU_NX_CX

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2030, 2031, 2130, 2131, 2132, 2133
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the access authority at the digital outputs.

Bit = 1:

The control has access authority to the digital output via PROFIBUS or direct access.

Bit = 0:

The drive has access authority to the digital output or the digital input/output is not set as digital output or is not available.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
08	DI/DO 8 (X122.9)	High	Low	-
09	DI/DO 9 (X122.10)	High	Low	-
10	DI/DO 10 (X122.12)	High	Low	-
11	DI/DO 11 (X122.13)	High	Low	-

Dependency: Refer to: p0728, p0738, p0739, p0740, p0741, p0742, p0743, p0744, p0745, r0747, p0748

Notice: Regarding the terminal designation:

The first designation is valid for CU320, the second for CU310.

Note: The DI/DO must be connected as output (p0728).

DI/DO: Bidirectional Digital Input/Output

r0729 CU digital outputs access authority / CU DO acc_auth

CU_S_AC_DP, CU_S_AC_PN, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2030, 2031, 2032, 2033
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the access authority at the digital outputs.

Bit = 1:

The control has access authority to the digital output via PROFIBUS or direct access.

Bit = 0:

The drive has access authority to the digital output or the digital input/output is not set as digital output or is not available.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
08	DI/DO 8 (X122.9/X121.7)	High	Low	-
09	DI/DO 9 (X122.10/X121.8)	High	Low	-
10	DI/DO 10 (X122.12/X121.10)	High	Low	-
11	DI/DO 11 (X122.13/X121.11)	High	Low	-
12	DI/DO 12 (X132.9/X131.1)	High	Low	-
13	DI/DO 13 (X132.10/X131.2)	High	Low	-
14	DI/DO 14 (X132.12/X131.4)	High	Low	-
15	DI/DO 15 (X132.13/X131.5)	High	Low	-
16	DO 16 (- / X130.7, 8)	High	Low	-

Dependency: Refer to: p0728, p0738, p0739, p0740, p0741, p0742, p0743, p0744, p0745, r0747, p0748

Notice: Regarding the terminal designation:

The first designation is valid for CU320, the second for CU310.

Note: The DI/DO must be connected as output (p0728).

DI/DO: Bidirectional Digital Input/Output

p0738 BI: CU signal source for terminal DI/DO 8 / CU S_src DI/DO 8

CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 8 (X122.9 / X121.7).
Regarding the terminal designation:
The first designation is valid for CU320, the second for CU310.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: Prerequisite: The DI/DO must be set as an output (p0728.8 = 1).
DI/DO: Bidirectional Digital Input/Output

p0738 BI: CU signal source for terminal DI/DO 8 / CU S_src DI/DO 8

CU_I, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2119, 2130
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 8 (X122.9 / X121.7).
Regarding the terminal designation:
The first designation is valid for CU320, the second for CU310.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: Prerequisite: The DI/DO must be set as an output (p0728.8 = 1).
DI/DO: Bidirectional Digital Input/Output

p0738 BI: CX signal source for terminal DI/DO 8 / CX S_src DI/DO 8

CU_NX_CX

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2179, 2190
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 8 (X122.9 / X121.7).
Regarding the terminal designation:
The first designation is valid for CU320, the second for CU310.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: Prerequisite: The DI/DO must be set as an output (p0728.8 = 1).
DI/DO: Bidirectional Digital Input/Output

p0738 BI: CU signal source for terminal DI/DO 8 / CU S_src DI/DO 8

CU_S_AC_DP, CU_S_AC_PN

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2019, 2030
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 8 (X122.9 / X121.7).
Regarding the terminal designation:
The first designation is valid for CU320, the second for CU310.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: Prerequisite: The DI/DO must be set as an output (p0728.8 = 1).

DI/DO: Bidirectional Digital Input/Output

p0739 BI: CU signal source for terminal DI/DO 9 / CU S_src DI/DO 9

CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 9 (X122.10 / X121.8).

Regarding the terminal designation:

The first designation is valid for CU320, the second for CU310.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: Prerequisite: The DI/DO must be set as an output (p0728.9 = 1).

DI/DO: Bidirectional Digital Input/Output

p0739 BI: CU signal source for terminal DI/DO 9 / CU S_src DI/DO 9

CU_I, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2130
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 9 (X122.10 / X121.8).

Regarding the terminal designation:

The first designation is valid for CU320, the second for CU310.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: Prerequisite: The DI/DO must be set as an output (p0728.9 = 1).

DI/DO: Bidirectional Digital Input/Output

p0739 BI: CX signal source for terminal DI/DO 9 / CX S_src DI/DO 9

CU_NX_CX

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2190
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 9 (X122.10 / X121.8).

Regarding the terminal designation:

The first designation is valid for CU320, the second for CU310.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: Prerequisite: The DI/DO must be set as an output (p0728.9 = 1).

DI/DO: Bidirectional Digital Input/Output

p0739 BI: CU signal source for terminal DI/DO 9 / CU S_src DI/DO 9

CU_S_AC_DP, CU_S_AC_PN

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2030
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 9 (X122.10 / X121.8).
Regarding the terminal designation:
The first designation is valid for CU320, the second for CU310.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: Prerequisite: The DI/DO must be set as an output (p0728.9 = 1).
DI/DO: Bidirectional Digital Input/Output

p0740 BI: CU signal source for terminal DI/DO 10 / CU S_src DI/DO 10

CU_I, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2131
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 10 (X122.12 / X121.10).
Regarding the terminal designation:
The first designation is valid for CU320, the second for CU310.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: Prerequisite: The DI/DO must be set as an output (p0728.10 = 1).
DI/DO: Bidirectional Digital Input/Output

p0740 BI: CX signal source for terminal DI/DO 10 / CX S_src DI/DO 10

CU_NX_CX

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2191
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 10 (X122.12 / X121.10).
Regarding the terminal designation:
The first designation is valid for CU320, the second for CU310.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: Prerequisite: The DI/DO must be set as an output (p0728.10 = 1).
DI/DO: Bidirectional Digital Input/Output

p0740 BI: CU signal source for terminal DI/DO 10 / CU S_src DI/DO 10

CU_S_AC_DP, CU_S_AC_PN, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2031
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 10 (X122.12 / X121.10).
Regarding the terminal designation:
The first designation is valid for CU320, the second for CU310.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: Prerequisite: The DI/DO must be set as an output (p0728.10 = 1).
DI/DO: Bidirectional Digital Input/Output

p0741 BI: CU signal source for terminal DI/DO 11 / CU S_src DI/DO 11

CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 11 (X122.13 / X121.11).
Regarding the terminal designation:
The first designation is valid for CU320, the second for CU310.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: Prerequisite: The DI/DO must be set as an output (p0728.11 = 1).
DI/DO: Bidirectional Digital Input/Output

p0741 BI: CU signal source for terminal DI/DO 11 / CU S_src DI/DO 11

CU_I, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2119, 2131
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 11 (X122.13 / X121.11).
Regarding the terminal designation:
The first designation is valid for CU320, the second for CU310.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: Prerequisite: The DI/DO must be set as an output (p0728.11 = 1).
DI/DO: Bidirectional Digital Input/Output

p0741 BI: CX signal source for terminal DI/DO 11 / CX S_src DI/DO 11

CU_NX_CX

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2179, 2191
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 11 (X122.13 / X121.11).
Regarding the terminal designation:
The first designation is valid for CU320, the second for CU310.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: Prerequisite: The DI/DO must be set as an output (p0728.11 = 1).
DI/DO: Bidirectional Digital Input/Output

p0741 BI: CU signal source for terminal DI/DO 11 / CU S_src DI/DO 11

CU_S_AC_DP, CU_S_AC_PN

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2019, 2031
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 11 (X122.13 / X121.11).
Regarding the terminal designation:
The first designation is valid for CU320, the second for CU310.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: Prerequisite: The DI/DO must be set as an output (p0728.11 = 1).
DI/DO: Bidirectional Digital Input/Output

p0742 BI: CU signal source for terminal DI/DO 12 / CU S_src DI/DO 12

CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 12 (X132.9 / X131.1).
Regarding the terminal designation:
The first designation is valid for CU320, the second for CU310.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: Prerequisite: The DI/DO must be set as an output (p0728.12 = 1).
DI/DO: Bidirectional Digital Input/Output

p0742 BI: CU signal source for terminal DI/DO 12 / CU S_src DI/DO 12

CU_I, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2119, 2132
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 12 (X132.9 / X131.1).
Regarding the terminal designation:
The first designation is valid for CU320, the second for CU310.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: Prerequisite: The DI/DO must be set as an output (p0728.12 = 1).
DI/DO: Bidirectional Digital Input/Output

p0742 BI: CU signal source for terminal DI/DO 12 / CU S_src DI/DO 12

CU_S_AC_DP, CU_S_AC_PN

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2019, 2032
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 12 (X132.9 / X131.1).
Regarding the terminal designation:
The first designation is valid for CU320, the second for CU310.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: Prerequisite: The DI/DO must be set as an output (p0728.12 = 1).

DI/DO: Bidirectional Digital Input/Output

p0743 BI: CU signal source for terminal DI/DO 13 / CU S_src DI/DO 13

CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 13 (X132.10 / X131.2).

Regarding the terminal designation:

The first designation is valid for CU320, the second for CU310.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: Prerequisite: The DI/DO must be set as an output (p0728.13 = 1).

DI/DO: Bidirectional Digital Input/Output

p0743 BI: CU signal source for terminal DI/DO 13 / CU S_src DI/DO 13

CU_I, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2132
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 13 (X132.10 / X131.2).

Regarding the terminal designation:

The first designation is valid for CU320, the second for CU310.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: Prerequisite: The DI/DO must be set as an output (p0728.13 = 1).

DI/DO: Bidirectional Digital Input/Output

p0743 BI: CU signal source for terminal DI/DO 13 / CU S_src DI/DO 13

CU_S_AC_DP, CU_S_AC_PN

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2032
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 13 (X132.10 / X131.2).

Regarding the terminal designation:

The first designation is valid for CU320, the second for CU310.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: Prerequisite: The DI/DO must be set as an output (p0728.13 = 1).

DI/DO: Bidirectional Digital Input/Output

p0744 BI: CU signal source for terminal DI/DO 14 / CU S_src DI/DO 14

CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 14 (X132.12 / X131.4).
Regarding the terminal designation:
The first designation is valid for CU320, the second for CU310.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: Prerequisite: The DI/DO must be set as an output (p0728.14 = 1).
DI/DO: Bidirectional Digital Input/Output

p0744 BI: CU signal source for terminal DI/DO 14 / CU S_src DI/DO 14

CU_I, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2133
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 14 (X132.12 / X131.4).
Regarding the terminal designation:
The first designation is valid for CU320, the second for CU310.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: Prerequisite: The DI/DO must be set as an output (p0728.14 = 1).
DI/DO: Bidirectional Digital Input/Output

p0744 BI: CU signal source for terminal DI/DO 14 / CU S_src DI/DO 14

CU_S_AC_DP, CU_S_AC_PN

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2033
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 14 (X132.12 / X131.4).
Regarding the terminal designation:
The first designation is valid for CU320, the second for CU310.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: Prerequisite: The DI/DO must be set as an output (p0728.14 = 1).
DI/DO: Bidirectional Digital Input/Output

p0745 BI: CU signal source for terminal DI/DO 15 / CU S_src DI/DO 15

CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 15 (X132.13 / X131.5you).
Regarding the terminal designation:
The first designation is valid for CU320, the second for CU310.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: Prerequisite: The DI/DO must be set as an output (p0728.15 = 1).

DI/DO: Bidirectional Digital Input/Output

p0745 BI: CU signal source for terminal DI/DO 15 / CU S_src DI/DO 15

CU_I, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2119, 2133
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 15 (X132.13 / X131.5you).

Regarding the terminal designation:

The first designation is valid for CU320, the second for CU310.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: Prerequisite: The DI/DO must be set as an output (p0728.15 = 1).

DI/DO: Bidirectional Digital Input/Output

p0745 BI: CU signal source for terminal DI/DO 15 / CU S_src DI/DO 15

CU_S_AC_DP, CU_S_AC_PN

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2019, 2033
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 15 (X132.13 / X131.5you).

Regarding the terminal designation:

The first designation is valid for CU320, the second for CU310.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: Prerequisite: The DI/DO must be set as an output (p0728.15 = 1).

DI/DO: Bidirectional Digital Input/Output

p0746 BI: CU signal source for terminal DO 16 / CU S_src DO 16

CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DO 16 (- / X130.7).

Regarding the terminal designation:

The first designation is valid for CU320, the second for CU310.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: DO: Digital Output

p0746 BI: CU signal source for terminal DO 16 / CU S_src DO 16

CU_S_AC_DP, CU_S_AC_PN

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2019, 2038
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DO 16 (- / X130.7).
Regarding the terminal designation:
The first designation is valid for CU320, the second for CU310.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: DO: Digital Output

r0747 CU digital outputs status / CU DO status

CU_I, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2130, 2131, 2132, 2133
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status of digital outputs.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
08	DI/DO 8 (X122.9/X121.7)	High	Low	-
09	DI/DO 9 (X122.10/X121.8)	High	Low	-
10	DI/DO 10 (X122.12/X121.10)	High	Low	-
11	DI/DO 11 (X122.13/X121.11)	High	Low	-
12	DI/DO 12 (X132.9/X131.1)	High	Low	-
13	DI/DO 13 (X132.10/X131.2)	High	Low	-
14	DI/DO 14 (X132.12/X131.4)	High	Low	-
15	DI/DO 15 (X132.13/X131.5)	High	Low	-

Notice: Regarding the terminal designation:
The first designation is valid for CU320, the second for CU310.

Note: Inversion using p0748 has been taken into account.
DI/DO: Bidirectional Digital Input/Output

r0747 CX digital outputs status / CX DO status

CU_NX_CX

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2190, 2191
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status of digital outputs.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
08	DI/DO 8 (X122.9)	High	Low	-
09	DI/DO 9 (X122.10)	High	Low	-
10	DI/DO 10 (X122.12)	High	Low	-
11	DI/DO 11 (X122.13)	High	Low	-

Notice: Regarding the terminal designation:
The first designation is valid for CU320, the second for CU310.

Note: Inversion using p0748 has been taken into account.
DI/DO: Bidirectional Digital Input/Output

r0747 CU digital outputs status / CU DO status

CU_S_AC_DP, CU_S_AC_PN, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2030, 2031, 2032, 2033, 2038
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status of digital outputs.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
08	DI/DO 8 (X122.9/X121.7)	High	Low	-
09	DI/DO 9 (X122.10/X121.8)	High	Low	-
10	DI/DO 10 (X122.12/X121.10)	High	Low	-
11	DI/DO 11 (X122.13/X121.11)	High	Low	-
12	DI/DO 12 (X132.9/X131.1)	High	Low	-
13	DI/DO 13 (X132.10/X131.2)	High	Low	-
14	DI/DO 14 (X132.12/X131.4)	High	Low	-
15	DI/DO 15 (X132.13/X131.5)	High	Low	-
16	DO 16 (- / X130.7, 8)	High	Low	-

Notice: Regarding the terminal designation:

The first designation is valid for CU320, the second for CU310.

Note: Inversion using p0748 has been taken into account.

DI/DO: Bidirectional Digital Input/Output

p0748 CU invert digital outputs / CU DO inv

CU_I, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2030, 2031, 2130, 2131, 2132, 2133
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 bin

Description: Setting to invert the signals at the digital outputs.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
08	DI/DO 8 (X122.9/X121.7)	Inverted	Not inverted	-
09	DI/DO 9 (X122.10/X121.8)	Inverted	Not inverted	-
10	DI/DO 10 (X122.12/X121.10)	Inverted	Not inverted	-
11	DI/DO 11 (X122.13/X121.11)	Inverted	Not inverted	-
12	DI/DO 12 (X132.9/X131.1)	Inverted	Not inverted	-
13	DI/DO 13 (X132.10/X131.2)	Inverted	Not inverted	-
14	DI/DO 14 (X132.12/X131.4)	Inverted	Not inverted	-
15	DI/DO 15 (X132.13/X131.5)	Inverted	Not inverted	-

Notice: If telegram 39x is set via p0922 in SINAMICS Integrated, the inversion of the output has no effect.

Regarding the terminal designation:

The first designation is valid for CU320, the second for CU310.

Note: DI/DO: Bidirectional Digital Input/Output

p0748 CX invert digital outputs / CX DO inv

CU_NX_CX

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2190, 2191
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 bin

Description: Setting to invert the signals at the digital outputs.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
08	DI/DO 8 (X122.9)	Inverted	Not inverted	-
09	DI/DO 9 (X122.10)	Inverted	Not inverted	-
10	DI/DO 10 (X122.12)	Inverted	Not inverted	-
11	DI/DO 11 (X122.13)	Inverted	Not inverted	-

Notice: If telegram 39x is set via p0922 in SINAMICS Integrated, the inversion of the output has no effect.

Regarding the terminal designation:

The first designation is valid for CU320, the second for CU310.

Note: DI/DO: Bidirectional Digital Input/Output

p0748 CU invert digital outputs / CU DO inv

CU_S_AC_DP, CU_S_AC_PN, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2030, 2031, 2032, 2033, 2038
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 0000 0000 0000 0000 bin

Description: Setting to invert the signals at the digital outputs.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
08	DI/DO 8 (X122.9/X121.7)	Inverted	Not inverted	-
09	DI/DO 9 (X122.10/X121.8)	Inverted	Not inverted	-
10	DI/DO 10 (X122.12/X121.10)	Inverted	Not inverted	-
11	DI/DO 11 (X122.13/X121.11)	Inverted	Not inverted	-
12	DI/DO 12 (X132.9/X131.1)	Inverted	Not inverted	-
13	DI/DO 13 (X132.10/X131.2)	Inverted	Not inverted	-
14	DI/DO 14 (X132.12/X131.4)	Inverted	Not inverted	-
15	DI/DO 15 (X132.13/X131.5)	Inverted	Not inverted	-
16	DO 16 (- / X130.7, 8)	Inverted	Not inverted	-

Notice: If telegram 39x is set via p0922 in SINAMICS Integrated, the inversion of the output has no effect.

Regarding the terminal designation:

The first designation is valid for CU320, the second for CU310.

Note: DI/DO: Bidirectional Digital Input/Output

r0752[0] CO: CU analog input input voltage/current actual / CU AI U_input act

CU_S_AC_DP, CU_S_AC_PN, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2040
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the actual input voltage in V when set as voltage input.

Displays the actual input current in mA when set as current input and with the load resistor switched in.

Index: [0] = AI0 (X131.7, 8)

Dependency: The type of analog input AI 0 (voltage or current input) is set using p0756.

Refer to: p0756

Note: AI: Analog Input

p0753[0] CU analog input smoothing time constant / CU AI T_smooth

CU_S_AC_DP, CU_S_AC_PN, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2040
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [ms]	1000.0 [ms]	0.0 [ms]

Description: Sets the smoothing time constant of the 1st order lowpass filter for the analog input.

Index: [0] = AI0 (X131.7, 8)

Note: AI: Analog Input

r0755[0] CO: CU analog input actual value in percent / CU AI value in %

CU_S_AC_DP, CU_S_AC_PN, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2019, 2040
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the currently referred input value of the analog input of the CU310-2.

When interconnected, the signals are referred to the reference quantities p200x and p205x.

Index: [0] = AI0 (X131.7, 8)

Note: AI: Analog Input

p0756[0] CU analog input type / CU AI type

CU_S_AC_DP, CU_S_AC_PN, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 2040
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	5	4

Description: Sets the type of analog inputs of the CU310-2.

p0756[x] = 0, 4 corresponds to a voltage input (r0752, p0757, p0759 are displayed in V).

p0756[x] = 2, 3, 5 corresponds to a current input (r0752, p0757, p0759 are displayed in mA).

In addition, the associated DIP switch S1200 must be set.

For a voltage input, S1200.1 must be switched to setting "BL".

For a current input, S1200.1 must be switched to the "ON" setting (load resistor = 250 Ohm is switched in).

Value:
0: Unipolar voltage input (0 V ... +10 V)
2: Unipolar current input (0 mA ... +20 mA)
3: Unipolar current input monitored (+4 mA to +20 mA)
4: Bipolar voltage input (-10 V ... +10 V)
5: Bipolar current input (-20 mA to +20 mA)

Index: [0] = AI0 (X131.7, 8)

Warning: The maximum voltage difference between analog input terminals AI+, AI-, and the ground must not exceed 35 V (X131.3, X131.6).

For operation with the load resistor switched in, the voltage between the differential inputs AI+ and AI- may not exceed 12.50 V or the impressed current of 60 mA; if this is not carefully observed, the input will be damaged.

Notice: For use as voltage input, DIP switch S1200 must be set to 0 for the input involved (0).

DIP switch S1200 is located on the front panel, below the BOP cover.

Note: When changing p0756, the parameters of the scaling characteristic (p0757, p0758, p0759, p0760) are overwritten with the following default values:

For p0756 = 0, 4, p0757 is set to 0.0 V, p0758 = 0.0 %, p0759 = 10.0 V and p0760 = 100.0 %.

For p0756 = 2, 5, p0757 is set to 0.0 mA, p0758 = 0.0 %, p0759 = 20.0 mA and p0760 = 100.0 %.

For p0756 = 3, p0757 is set to 4.0 mA, p0758 = 0.0 %, p0759 = 20.0 mA and p0760 = 100.0 %.

p0757[0] CU analog input characteristic value x1 / CU AI char x1

CU_S_AC_DP, CU_S_AC_PN, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2040
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-20.000	20.000	0.000

Description: Sets the scaling characteristic for the analog input of the CU310-2.

The scaling characteristic for the analog input is defined using 2 points.

This parameter specifies the x coordinate (input voltage in V or input current in mA) of the 1st value pair of the characteristic.

Index: [0] = AI0 (X131.7, 8)

Dependency: The unit of this parameter (V or mA) depends on the analog input type.

Refer to: p0756

Notice: This parameter is automatically overwritten when the analog input type (p756) is modified.

Note: The parameters for the characteristic do not have a limiting effect.

p0758[0] CU analog input characteristic value y1 / CU AI char y1

CU_S_AC_DP, CU_S_AC_PN, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2040
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000.00 [%]	1000.00 [%]	0.00 [%]

Description: Sets the scaling characteristic for the analog input of the CU310-2.

The scaling characteristic for the analog inputs is defined using 2 points.

This parameter specifies the y coordinate (percentage) of the 1st value pair of the characteristic.

Index: [0] = AI0 (X131.7, 8)

Notice: This parameter is automatically overwritten when the analog input type (p756) is modified.

Note: The parameters for the characteristic do not have a limiting effect.

p0759[0] CU analog input characteristic value x2 / CU AI char x2

CU_S_AC_DP, CU_S_AC_PN, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2040
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-20.000	20.000	10.000

Description: Sets the scaling characteristic for the analog input of the CU310-2.

The scaling characteristic for the analog inputs is defined using 2 points.

This parameter specifies the x coordinate (input voltage in V or input current in mA) of the 2nd value pair of the characteristic.

Index: [0] = AI0 (X131.7, 8)

Dependency: The unit of this parameter (V or mA) depends on the analog input type.

Refer to: p0756

Notice: This parameter is automatically overwritten when the analog input type (p0756) is modified.

Note: The parameters for the characteristic do not have a limiting effect.

p0760[0] CU analog input characteristic value y2 / CU AI char y2

CU_S_AC_DP, CU_S_AC_PN, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2040
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000.00 [%]	1000.00 [%]	100.00 [%]

Description: Sets the scaling characteristic for the analog input of the CU310-2.
The scaling characteristic for the analog input is defined using 2 points.
This parameter specifies the y coordinate (percentage) of the 2nd value pair of the characteristic.

Index: [0] = AI0 (X131.7, 8)

Notice: This parameter is automatically overwritten when the analog input type (p756) is modified.

Note: The parameters for the characteristic do not have a limiting effect.

p0761[0] CU analog input wire breakage monitoring response threshold / CU WireBrkThresh

CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2040
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [mA]	20.00 [mA]	2.00 [mA]

Description: Sets the response threshold for the wire breakage monitoring of the analog input.
The unit for the parameter value depends on the set analog input type.

Index: [0] = AI0 (X131.7, 8)

Dependency: For the following analog input type, the wire breakage monitoring is active:
p0756[0...1] = 1 (unipolar voltage input monitored (+2 V ... +10 V)), unit [V]
p0756[0...2] = 3 (unipolar current input monitored (+4 mA ... +20 mA)), unit [mA]
p0756[3]: Wire breakage monitoring is not supported for this analog input.
Refer to: p0756

Note: AI: Analog Input

p0761[0] CU analog input wire breakage monitoring response threshold / CU WireBrkThresh

CU_S_AC_DP, CU_S_AC_PN

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2040
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [mA]	20.00 [mA]	2.00 [mA]

Description: Sets the response threshold for the wire breakage monitoring of the analog input.
The unit for the parameter value depends on the set analog input type.

Index: [0] = AI0 (X131.7, 8)

Dependency: For the following analog input type, the wire breakage monitoring is active:
p0756[0...2] = 3 (unipolar current input monitored (+4 mA ... +20 mA)), unit [mA]
p0756[3]: Wire breakage monitoring is not supported for this analog input.
Refer to: p0756

Note: AI: Analog Input

p0762[0] CU analog input wire breakage monitoring delay time / CU wire brk t_del

CU_S_AC_DP, CU_S_AC_PN, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2040
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	1000 [ms]	100 [ms]

Description: Sets the delay time for the wire breakage monitoring of the analog input of the CU310-2.

Index: [0] = AI0 (X131.7, 8)

Note: AI: Analog Input

p0763[0] CU analog input offset / CU AI offset

CU_S_AC_DP, CU_S_AC_PN, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2040
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-20.000	20.000	0.000

Description: Sets the offset for the analog input.
The offset is added to the input signal before the scaling characteristic.

Index: [0] = AI0 (X131.7, 8)

p0766[0] CU analog input activate absolute value generation / CU AI absVal act

CU_S_AC_DP, CU_S_AC_PN, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 2040
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Activates the absolute value generation of the analog input signal.

Value:
0: No absolute value generation
1: Absolute value generation switched in

Index: [0] = AI0 (X131.7, 8)

p0767[0] BI: CU analog input signal source for inversion / CU AI inv S_src

CU_S_AC_DP, CU_S_AC_PN, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2040
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to invert the analog input signals.

Index: [0] = AI0 (X131.7, 8)

p0768[0] CU analog input window to suppress noise / CU AI window

CU_S_AC_DP, CU_S_AC_PN, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2040
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	20.00 [%]	0.00 [%]

Description: Sets the noise suppression window for the analog input.
Changes less than the window are suppressed.

Index: [0] = AI0 (X131.7, 8)

Note: AI: Analog Input

p0769[0] BI: CU analog input enable signal source / CU AI enab S_src

CU_S_AC_DP, CU_S_AC_PN, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2040
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source to enable the analog input.

Index: [0] = AI0 (X131.7, 8)

p0771[0...2] CI: Test sockets signal source / Test skt S_src

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / Integer16	**Dyn. index:** -	**Func. diagram:** 8134
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the signal to be output at the test sockets.

Index:
[0] = T0
[1] = T1
[2] = T2

Dependency: Can only be set when p0776 = 99.
Refer to: r0772, r0774, p0776, p0777, p0778, p0779, p0780, p0783, p0784, r0786

r0772[0...2] Test sockets output signal / TestSktsSignalVal

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8134
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the actual value of the signal to be output.

Index:
[0] = T0
[1] = T1
[2] = T2

Dependency: Refer to: p0771, r0774, p0776, p0777, p0778, p0779, p0780, p0783, p0784, r0786

r0774[0...2] Test sockets output voltage / TestSkts U_output

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the actual output voltage for the test sockets.

Index:
[0] = T0
[1] = T1
[2] = T2

Dependency: Refer to: p0771, r0772, p0776, p0777, p0778, p0779, p0780, p0783, p0784, r0786

p0776[0...2] Test socket mode / Test skt mode

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 8134
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
96	99	99

Description: Sets the mode for the test sockets.

Value:
96: Physical address (32-bit integer signal unsigned)
97: Physical address (32-bit integer signal)
98: Physical address (32-bit floating-point signal)
99: BICO signal

Index:
[0] = T0
[1] = T1
[2] = T2

Dependency: Refer to: p0771, r0772, r0774, p0777, p0778, p0779, p0780, p0783, p0784, r0786, p0788, p0789, r0790

p0777[0...2] Test socket characteristic value x1 / Test skt char x1

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8134
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-100000.00 [%]	100000.00 [%]	0.00 [%]

Description: The scaling characteristic for the test sockets is defined using two points.

This parameter specifies the x coordinate (percentage) of the first point on the characteristic.

Index:
[0] = T0
[1] = T1
[2] = T2

Dependency: Can only be set when p0776 = 99.

Refer to: p0778, p0779, p0780, r0786

Note: The value 0.00 % corresponds to 2.49 V.

p0778[0...2] Test socket characteristic value y1 / Test skt char y1

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8134
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [V]	4.98 [V]	2.49 [V]

Description: The scaling characteristic for the test sockets is defined using two points.
This parameter specifies the y coordinate (output voltage) of the first point on the characteristic.

Index: [0] = T0
[1] = T1
[2] = T2

Dependency: Can only be set when p0776 = 99.
Refer to: p0777, p0779, p0780, r0786

p0779[0...2] Test socket characteristic value x2 / Test skt char x2

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8134
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-100000.00 [%]	427.9E9 [%]	100.00 [%]

Description: The scaling characteristic for the test sockets is defined using two points.
This parameter specifies the x coordinate (percentage) of the second point on the characteristic.

Index: [0] = T0
[1] = T1
[2] = T2

Dependency: Can only be set when p0776 = 99.
Refer to: p0777, p0778, p0780, r0786

Note: The value 100.00 % corresponds to 4.98 V.

p0780[0...2] Test socket characteristic value y2 / Test skt char y2

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8134
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [V]	4.98 [V]	4.98 [V]

Description: The scaling characteristic for the test sockets is defined using two points.
This parameter specifies the y coordinate (output voltage) of the second point on the characteristic.

Index: [0] = T0
[1] = T1
[2] = T2

Dependency: Can only be set when p0776 = 99.
Refer to: p0777, p0778, p0779, r0786

p0783[0...2] Test sockets offset / Test skt offset

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8134
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-4.98 [V]	4.98 [V]	0.00 [V]

Description: Sets an additional offset for the test sockets.

Index:
[0] = T0
[1] = T1
[2] = T2

p0784[0...2] Test socket limit on/off / TestSktLim on/off

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 8134
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the limit for a signal to be output via test sockets.

Value:
0: Limiting off
1: Limiting on

Index:
[0] = T0
[1] = T1
[2] = T2

Note: Limiting on:

If signals are output outside the permissible measuring range, the signal is limited to 4.98 V or to 0 V.

Limiting off:

If signals are output outside the permissible measuring range, this causes signal overflow. In the case of signal overflow, the signal jumps from 0 V to 4.98 V or from 4.98 V to 0 V.

r0786[0...2] Test socket scaling per volt / TestSktScale/Volt

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8134
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the scaling of the signal to be output.

A change in the output voltage by 1 volt corresponds to the value in this parameter. The units are determined by the interconnected test signal.

Index:
[0] = T0
[1] = T1
[2] = T2

Dependency: Refer to: p0771, r0772, r0774, p0777, p0778, p0779, p0780, p0783, p0784

Note: Example:

r0786[0] = 1500.0 and the measuring signal is r0063 (CO: Actual speed smoothed [rpm]).

A change of 1 V at the output of test socket T0 corresponds to 1500.0 [rpm].

p0788[0...2] Test sockets physical address / Test skt PhyAddr

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 bin	1111 1111 1111 1111 1111 1111 1111 1111 bin	0000 bin

Description: Sets the physical address to output signals via the test sockets.

Index:
[0] = T0
[1] = T1
[2] = T2

Dependency: Changes only become effective if p0776 does not equal 99.

Refer to: p0789, r0790

p0789[0...2] Test sockets physical address gain / TestSktPhyAddrGain

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-340.28235E36	340.28235E36	1.00000

Description: Sets the gain of a signal output of a physical address via test sockets.

Index:
[0] = T0
[1] = T1
[2] = T2

Dependency: Changes only become effective if p0776 does not equal 99.

Refer to: p0788

r0790[0...2] Test sockets physical address signal value / TestSktsPhyAddrVal

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the actual value of a signal determined via a physical address.

Index:
[0] = T0
[1] = T1
[2] = T2

Dependency: Only effective when p0776 = 97 or p0776 = 96.

Refer to: p0788

p0795 CU digital inputs simulation mode / CU DI simulation

CU_I, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2020, 2030, 2031, 2100, 2119, 2120, 2130, 2131, 2132, 2133
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 0000 0000 0000 0000 bin

Description: Sets the simulation mode for digital inputs.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI 0 (X122.1/X121.1)	Simulation	Terminal eval	-
01	DI 1 (X122.2/X121.2)	Simulation	Terminal eval	-
02	DI 2 (X122.3/X121.3)	Simulation	Terminal eval	-
03	DI 3 (X122.4/X121.4)	Simulation	Terminal eval	-
04	DI 4 (X132.1 / -)	Simulation	Terminal eval	-
05	DI 5 (X132.2 / -)	Simulation	Terminal eval	-
06	DI 6 (X132.3 / -)	Simulation	Terminal eval	-
07	DI 7 (X132.4 / -)	Simulation	Terminal eval	-
08	DI/DO 8 (X122.9/X121.7)	Simulation	Terminal eval	-
09	DI/DO 9 (X122.10/X121.8)	Simulation	Terminal eval	-
10	DI/DO 10 (X122.12/X121.10)	Simulation	Terminal eval	-
11	DI/DO 11 (X122.13/X121.11)	Simulation	Terminal eval	-
12	DI/DO 12 (X132.9/X131.1)	Simulation	Terminal eval	-
13	DI/DO 13 (X132.10/X131.2)	Simulation	Terminal eval	-
14	DI/DO 14 (X132.12/X131.4)	Simulation	Terminal eval	-
15	DI/DO 15 (X132.13/X131.5)	Simulation	Terminal eval	-
16	DI 16 (X122.5/X120.3)	Simulation	Terminal eval	-
17	DI 17 (X122.6/X120.4)	Simulation	Terminal eval	-
20	DI 20 (X132.5/X120.9)	Simulation	Terminal eval	-
21	DI 21 (X132.6/X120.10)	Simulation	Terminal eval	-

Dependency: The setpoint for the input signals is specified using p0796.

Refer to: p0796, p9620

Notice: If a digital input is used as signal source for the function "STO" (BI: p9620) then it is not permissible to select the simulation mode and this is rejected.

Regarding the terminal designation:

The first designation stands for CU320, the second for CU310.

Note: This parameter is not saved when data is backed-up (p0971, p0977).

DI: Digital Input

DI/DO: Bidirectional Digital Input/Output

p0795 CX digital inputs simulation mode / CX DI simulation

CU_NX_CX

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2180, 2190, 2191
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 0000 0000 0000 0000 bin

Description: Sets the simulation mode for digital inputs.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI 0 (X122.1)	Simulation	Terminal eval	-
01	DI 1 (X122.2)	Simulation	Terminal eval	-
02	DI 2 (X122.3)	Simulation	Terminal eval	-
03	DI 3 (X122.4)	Simulation	Terminal eval	-
08	DI/DO 8 (X122.9)	Simulation	Terminal eval	-

09	DI/DO 9 (X122.10)	Simulation	Terminal eval	-
10	DI/DO 10 (X122.12)	Simulation	Terminal eval	-
11	DI/DO 11 (X122.13)	Simulation	Terminal eval	-
16	DI 16 (X122.5)	Simulation	Terminal eval	-
17	DI 17 (X122.6)	Simulation	Terminal eval	-

Dependency: The setpoint for the input signals is specified using p0796.

Refer to: p0796, p9620

Notice: If a digital input is used as signal source for the function "STO" (BI: p9620) then it is not permissible to select the simulation mode and this is rejected.

Note: This parameter is not saved when data is backed-up (p0971, p0977).

DI: Digital Input

DI/DO: Bidirectional Digital Input/Output

p0795 CU digital inputs simulation mode / CU DI simulation

CU_S_AC_DP, CU_S_AC_PN, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2019, 2020, 2021, 2030, 2031, 2032, 2033
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 0000 0000 0000 0000 bin

Description: Sets the simulation mode for digital inputs.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI 0 (X122.1/X121.1)	Simulation	Terminal eval	-
01	DI 1 (X122.2/X121.2)	Simulation	Terminal eval	-
02	DI 2 (X122.3/X121.3)	Simulation	Terminal eval	-
03	DI 3 (X122.4/X121.4)	Simulation	Terminal eval	-
08	DI/DO 8 (X122.9/X121.7)	Simulation	Terminal eval	-
09	DI/DO 9 (X122.10/X121.8)	Simulation	Terminal eval	-
10	DI/DO 10 (X122.12/X121.10)	Simulation	Terminal eval	-
11	DI/DO 11 (X122.13/X121.11)	Simulation	Terminal eval	-
12	DI/DO 12 (X132.9/X131.1)	Simulation	Terminal eval	-
13	DI/DO 13 (X132.10/X131.2)	Simulation	Terminal eval	-
14	DI/DO 14 (X132.12/X131.4)	Simulation	Terminal eval	-
15	DI/DO 15 (X132.13/X131.5)	Simulation	Terminal eval	-
16	DI 16 (X122.5/X120.3)	Simulation	Terminal eval	-
17	DI 17 (X122.6/X120.4)	Simulation	Terminal eval	-
18	DI 18 (- / X120.6)	Simulation	Terminal eval	-
19	DI 19 (- / X120.7)	Simulation	Terminal eval	-
20	DI 20 (X132.5/X120.9)	Simulation	Terminal eval	-
21	DI 21 (X132.6/X120.10)	Simulation	Terminal eval	-
22	DI 22 (- / X130.1)	Simulation	Terminal eval	-

Dependency: The setpoint for the input signals is specified using p0796.

Refer to: p0796, p9620

Notice: If a digital input is used as signal source for the function "STO" (BI: p9620) then it is not permissible to select the simulation mode and this is rejected.

Regarding the terminal designation:

The first designation stands for CU320, the second for CU310.

Note: This parameter is not saved when data is backed-up (p0971, p0977).

DI: Digital Input

DI/DO: Bidirectional Digital Input/Output

p0796 CU digital inputs simulation mode setpoint / CU DI simul setp

CU_I, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2020, 2030, 2031, 2100, 2119, 2120, 2130, 2131, 2132, 2133
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 0000 0000 0000 0000 bin

Description: Sets the setpoint for the input signals in the digital input simulation mode.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI 0 (X122.1/X121.1)	High	Low	-
01	DI 1 (X122.2/X121.2)	High	Low	-
02	DI 2 (X122.3/X121.3)	High	Low	-
03	DI 3 (X122.4/X121.4)	High	Low	-
04	DI 4 (X132.1 / -)	High	Low	-
05	DI 5 (X132.2 / -)	High	Low	-
06	DI 6 (X132.3 / -)	High	Low	-
07	DI 7 (X132.4 / -)	High	Low	-
08	DI/DO 8 (X122.9/X121.7)	High	Low	-
09	DI/DO 9 (X122.10/X121.8)	High	Low	-
10	DI/DO 10 (X122.12/X121.10)	High	Low	-
11	DI/DO 11 (X122.13/X121.11)	High	Low	-
12	DI/DO 12 (X132.9/X131.1)	High	Low	-
13	DI/DO 13 (X132.10/X131.2)	High	Low	-
14	DI/DO 14 (X132.12/X131.4)	High	Low	-
15	DI/DO 15 (X132.13/X131.5)	High	Low	-
16	DI 16 (X122.5/X120.3)	High	Low	-
17	DI 17 (X122.6/X120.4)	High	Low	-
20	DI 20 (X132.5/X120.9)	High	Low	-
21	DI 21 (X132.6/X120.10)	High	Low	-

Dependency: The simulation of a digital input is selected using p0795.

Refer to: p0795

Notice: Regarding the terminal designation:

The first designation is valid for CU320, the second for CU310.

Note: This parameter is not saved when data is backed-up (p0971, p0977).

DI: Digital Input

DI/DO: Bidirectional Digital Input/Output

p0796 CX digital inputs simulation mode, setpoint / CX DI simul setp

CU_NX_CX

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2020, 2030, 2031
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 0000 0000 0000 0000 bin

Description: Sets the setpoint for the input signals in the digital input simulation mode.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI 0 (X122.1)	High	Low	-
01	DI 1 (X122.2)	High	Low	-
02	DI 2 (X122.3)	High	Low	-
03	DI 3 (X122.4)	High	Low	-
08	DI/DO 8 (X122.9)	High	Low	-
09	DI/DO 9 (X122.10)	High	Low	-
10	DI/DO 10 (X122.12)	High	Low	-

11	DI/DO 11 (X122.13)	High	Low	-
16	DI 16 (X122.5)	High	Low	-
17	DI 17 (X122.6)	High	Low	-

Dependency: The simulation of a digital input is selected using p0795.

Refer to: p0795

Notice: Regarding the terminal designation:

The first designation is valid for CU320, the second for CU310.

Note: This parameter is not saved when data is backed-up (p0971, p0977).

DI: Digital Input

DI/DO: Bidirectional Digital Input/Output

p0796 CU digital inputs simulation mode setpoint / CU DI simul setp

CU_S_AC_DP, CU_S_AC_PN, CU_I_D410

Can be changed: U, T | **Calculated:** - | **Access level:** 2

Data type: Unsigned32 | **Dyn. index:** - | **Func. diagram:** 2019, 2020, 2021, 2030, 2031, 2032, 2033

P-Group: Commands | **Unit group:** - | **Unit selection:** -

Not for motor type: - | **Scaling:** - | **Expert list:** 1

Min	Max	Factory setting
-	-	0000 0000 0000 0000 0000 0000 0000 0000 bin

Description: Sets the setpoint for the input signals in the digital input simulation mode.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI 0 (X122.1/X121.1)	High	Low	-
01	DI 1 (X122.2/X121.2)	High	Low	-
02	DI 2 (X122.3/X121.3)	High	Low	-
03	DI 3 (X122.4/X121.4)	High	Low	-
08	DI/DO 8 (X122.9/X121.7)	High	Low	-
09	DI/DO 9 (X122.10/X121.8)	High	Low	-
10	DI/DO 10 (X122.12/X121.10)	High	Low	-
11	DI/DO 11 (X122.13/X121.11)	High	Low	-
12	DI/DO 12 (X132.9/X131.1)	High	Low	-
13	DI/DO 13 (X132.10/X131.2)	High	Low	-
14	DI/DO 14 (X132.12/X131.4)	High	Low	-
15	DI/DO 15 (X132.13/X131.5)	High	Low	-
16	DI 16 (X122.5/X120.3)	High	Low	-
17	DI 17 (X122.6/X120.4)	High	Low	-
18	DI 18 (- / X120.6)	High	Low	-
19	DI 19 (- / X120.7)	High	Low	-
20	DI 20 (X132.5/X120.9)	High	Low	-
21	DI 21 (X132.6/X120.10)	High	Low	-
22	DI 22 (- / X130.1)	High	Low	-

Dependency: The simulation of a digital input is selected using p0795.

Refer to: p0795

Notice: Regarding the terminal designation:

The first designation is valid for CU320, the second for CU310.

Note: This parameter is not saved when data is backed-up (p0971, p0977).

DI: Digital Input

DI/DO: Bidirectional Digital Input/Output

p0797[0] CU analog input simulation mode / CU AI sim_mode

CU_S_AC_DP, CU_S_AC_PN, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 2040
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the simulation mode for the analog input of the CU310-2.

Value:
0: Terminal evaluation for analog input x
1: Simulation for analog input x

Index: [0] = AI0 (X131.7, 8)

Dependency: The setpoint for the input voltage is specified via p0798.

Refer to: p0798

Note: This parameter is not saved when data is backed-up (p0971, p0977).

AI: Analog Input

p0798[0] CU analog input simulation mode setpoint / CU AI sim setp

CU_S_AC_DP, CU_S_AC_PN, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2040
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-20.000	20.000	0.000

Description: Sets the setpoint for the input value in the simulation mode of the analog input of the CU310-2.

Index: [0] = AI0 (X131.7, 8)

Dependency: The simulation of an analog input is selected using p0797.

If AI x is parameterized as a voltage input (p0756), the setpoint is a voltage in V.

If AI x is parameterized as a current input (p0756), the setpoint is a current in mA.

Refer to: p0756, p0797

Note: This parameter is not saved when data is backed-up (p0971, p0977).

AI: Analog Input

p0799[0...2] CU inputs/outputs sampling time / CU I/O t_sampl

CU_I, CU_I_D410

Can be changed: C1(3)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2020, 2030, 2031
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [µs]	5000.00 [µs]	4000.00 [µs]

Description: Sets the sampling time for the inputs and outputs of the Control Unit.

Index:
[0] = Digital inputs/outputs (DI/DO)
[1] = Analog inputs (AI)
[2] = Not available - analog outputs (AO)

Dependency: The parameter can only be modified for p0009 = 3, 29.

Refer to: p0009

Note: The changed sampling time is immediately effective after a completed sub-boot (p0009 -> 0).

p0799[0...2] CX inputs/outputs sampling time / CX I/O t_sampl

CU_NX_CX

Can be changed: C1(3)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2020, 2030, 2031
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [µs]	5000.00 [µs]	4000.00 [µs]

Description: Sets the sampling time for the inputs and outputs of the Control Unit.

Index:
[0] = Digital inputs/outputs (DI/DO)
[1] = Not available - analog inputs (AI)
[2] = Not available - analog outputs (AO)

Dependency: The parameter can only be modified for p0009 = 3, 29.

Refer to: p0009

Note: The changed sampling time is immediately effective after a completed sub-boot (p0009 -> 0).

p0799[0...2] CU inputs/outputs sampling time / CU I/O t_sampl

CU_S_AC_DP, CU_S_AC_PN

Can be changed: C1(3)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2020, 2030, 2031
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [µs]	5000.00 [µs]	4000.00 [µs]

Description: Sets the sampling time for the inputs and outputs of the Control Unit.

Index:
[0] = Digital inputs/outputs (DI/DO)
[1] = Analog inputs (AI)
[2] = Not available - analog outputs (AO)

Dependency: The parameter can only be modified for p0009 = 3, 29.

Refer to: p0009

Notice: The sampling times entered in index 0 (digital inputs/outputs) and index 2 (analog outputs) must always be greater than or equal to the sampling time in index 1 (analog inputs).

Note: - the modified sampling time is not effective until the drive unit is switched on again.

- parameter p0799[0] must never equal zero.

p0799[0...2] CU inputs/outputs sampling time / CU I/O t_sampl

CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: C1(3)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2020, 2030, 2031
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [µs]	5000.00 [µs]	4000.00 [µs]

Description: Sets the sampling time for the inputs and outputs of the Control Unit.

Index:
[0] = Digital inputs/outputs (DI/DO)
[1] = Not available - analog inputs (AI)
[2] = Not available - analog outputs (AO)

Dependency: The parameter can only be modified for p0009 = 3, 29.

Refer to: p0009

Notice: The sampling times entered in index 0 (digital inputs/outputs) and index 2 (analog outputs) must always be greater than or equal to the sampling time in index 1 (analog inputs).

Note: - the modified sampling time is not effective until the drive unit is switched on again.

- parameter p0799[0] must never equal zero.

p0806 BI: Inhibit master control / PcCtrl inhibit

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to block the master control.

Dependency: Refer to: r0807

Note: The commissioning tool (drive control panel) uses the master control, for example.

r0807.0 BO: Master control active / PcCtrl active

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays what has the master control.

The drive can be controlled via the BICO interconnection or from external (e.g. the commissioning tool).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Master control active	Yes	No	5030, 6031

Dependency: Refer to: p0806

Notice: The master control only influences control word 1 and speed setpoint 1. Other control word/setpoints can be transferred from another automation device.

Note: Bit 0 = 0: BICO interconnection active

Bit 0 = 1: Master control for PC/AOP

The commissioning tool (drive control panel) uses the master control, for example.

p0809[0...2] Copy Command Data Set CDS / Copy CDS

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** 8560
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	15	0

Description: Copies one Command Data Set (CDS) into another.

Index:
[0] = Source Command Data Set
[1] = Target Command Data Set
[2] = Start copying procedure

Note: Procedure:

1. In Index 0, enter which command data set should be copied.
2. In index 1, enter the command data set that is to be copied into.
3. Start copying: set index 2 from 0 to 1.

p0809[2] is automatically set to 0 when copying is completed.

p0810 BI: Command data set selection CDS bit 0 / CDS select., bit 0

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 8560
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to select the Command Data Set bit 0 (CDS bit 0).

Dependency: Refer to: r0050, p0811, r0836

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: The Command Data Set selected using the binector inputs is displayed in r0836.

The currently effective command data set is displayed in r0050.

A Command Data Set can be copied using p0809.

p0811 BI: Command data set selection CDS bit 1 / CDS select., bit 1

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 8560
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to select the Command Data Set bit 1 (CDS bit 1).

Dependency: Refer to: r0050, p0810, r0836

Note: The Command Data Set selected using the binector inputs is displayed in r0836.

The currently effective command data set is displayed in r0050.

A Command Data Set can be copied using p0809.

p0819[0...2] Copy Drive Data Set DDS / Copy DDS

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, TM41

Can be changed: C2(15)	**Calculated:** -	**Access level:** 2
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** 8565
P-Group: Data sets	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	31	0

Description: Copies one Drive Data Set (DDS) into another.

Index:
[0] = Source Drive Data Set
[1] = Target Drive Data Set
[2] = Start copying procedure

Note: Procedure:

1. In Index 0, enter which drive data set is to be copied.
2. In index 1, enter the drive data set data that is to be copied into.
3. Start copying: set index 2 from 0 to 1.

p0819[2] is automatically set to 0 when copying is completed.

p0820[0...n] BI: Drive Data Set selection DDS bit 0 / DDS select., bit 0

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, TM41

Can be changed: C2(15), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 8565, 8575
P-Group: Data sets	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to select the Drive Data Set, bit 0 (DDS, bit 0).

Dependency: Refer to: r0051, r0837

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p0821[0...n] BI: Drive Data Set selection DDS bit 1 / DDS select., bit 1

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, TM41

Can be changed: C2(15), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 8565, 8570
P-Group: Data sets	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to select the Drive Data Set, bit 1 (DDS, bit 1).

Dependency: Refer to: r0051, r0837

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p0822[0...n] BI: Drive Data Set selection DDS bit 2 / DDS select., bit 2

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, TM41

Can be changed: C2(15), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 8565
P-Group: Data sets	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to select the Drive Data Set, bit 2 (DDS, bit 2).

Dependency: Refer to: r0051, r0837

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p0823[0...n] BI: Drive Data Set selection DDS bit 3 / DDS select., bit 3

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, TM41

Can be changed: C2(15), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 8565
P-Group: Data sets	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to select the Drive Data Set, bit 3 (DDS, bit 3).

Dependency: Refer to: r0051, r0837

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p0824[0...n] BI: Drive Data Set selection DDS bit 4 / DDS select., bit 4

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, TM41

Can be changed: C2(15), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 8565, 8575
P-Group: Data sets	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to select the Drive Data Set, bit 4 (DDS, bit 4).

Dependency: Refer to: r0051, r0837

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p0826[0...n] Motor changeover motor number / Mot_chng mot No.

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(3)	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** MDS, p0130	**Func. diagram:** 8575
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	15	0

Description: Sets the freely assignable motor number for the motor changeover.

Dependency: Refer to: p0827

Notice: When changing over motor data sets with the same motor number (e.g. star-delta changeover) and for a motor with brake, the motor brake remains open during the changeover.

Note: When the motor data sets are changed over, the following applies:

The same motor number signifies the same thermal model.

p0826[0...n] Motor changeover motor number / Mot_chng mot No.

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3)	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** MDS, p0130	**Func. diagram:** 8575
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	15	0

Description: Sets the freely assignable motor number for the motor changeover.

Dependency: Refer to: p0827

Notice: When changing over motor data sets with the same motor number (e.g. star-delta changeover) and for a motor with brake, the motor brake remains open during the changeover.

Note: When the motor data sets are changed over, the following applies:

The same motor number signifies the same thermal model.

For the same motor number, the correction values of the Rs, Lh or kT adaptation are applied for the data set changeover (refer to r1782, r1787, r1797).

p0827[0...n] Motor changeover status word bit number / Mot_chg ZSW bitNo.

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(3)	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** MDS, p0130	**Func. diagram:** 8575
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	15	0

Description: Sets the bit number for every motor data set.

Example:

p0827[0] = 0: For MDS0, r0830.0 is switched.

p0827[1] = 5: For MDS1, r0830.5 is switched.

Dependency: Refer to: p0826, r0830

Note: A motor is only changed over (a new motor selected) after the pulses have been suppressed.

When the motor data sets are changed over, the following applies:

Bit numbers that are not identical, signify that the motor must be changed over.

p0828[0...n] BI: Motor changeover feedback signal / Mot_chng fdbk sig

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(3), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 8575
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the feedback signal when changing over the motor.

For p0833.0 = 1 the following applies:

This feedback signal (0/1 edge) is required after a motor changeover to enable the pulses.

Dependency: Refer to: p0833

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

r0830.0...15 CO/BO: Motor changeover status word / Mot_chngov ZSW

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 8575
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status word of the motor changeover.

These signals can be connected to digital outputs to change over the motor.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Motor selection bit 0	High	Low	-
01	Motor selection bit 1	High	Low	-
02	Motor selection bit 2	High	Low	-
03	Motor selection bit 3	High	Low	-
04	Motor selection bit 4	High	Low	-
05	Motor selection bit 5	High	Low	-
06	Motor selection bit 6	High	Low	-
07	Motor selection bit 7	High	Low	-
08	Motor selection bit 8	High	Low	-
09	Motor selection bit 9	High	Low	-
10	Motor selection bit 10	High	Low	-
11	Motor selection bit 11	High	Low	-
12	Motor selection bit 12	High	Low	-
13	Motor selection bit 13	High	Low	-
14	Motor selection bit 14	High	Low	-
15	Motor selection bit 15	High	Low	-

Dependency: Refer to: p0827

p0831[0...15] BI: Motor changeover contactor feedback / Mot_chg cont fdbk

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 8575
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the feedback signal of the contactors when changing over motors.

There is a fixed inter-relationship between energizing the contactor and the feedback signal.

Example:

A changeover is to be made between MDS0 (motor 0) and MDS1 (motor 1). The contactors should be switched using bit 4 (contactor 0) and 5 (contactor 1). The changeover should be made with an interconnection of the feedback signal.

Implementation:

MDS0: p0827[0] = 4, interconnect output to switch contactor 0 to r0830.4, p0831[4] = "input, feedback signal, contactor 0"

MDS1: p0827[1] = 5, interconnect output to switch contactor 1 to r0830.5, p0831[5] = "input, feedback signal, contactor 1"

The following sequence applies when changing over from MDS0 to MDS1:

1. Status bit r0830.4 is deleted. When the feedback signal (p0831[4]) is connected, the system waits until the feedback signal "contactor open" is displayed. If the feedback signal is not connected, then the system waits for the switch-off interlocking time of 320 ms.

2. Status bit r0830.5 is set. If the feedback signal (p0831[5]) is connected, the system waits until the feedback signal "contactor closed" is displayed. If the feedback signal is not connected, then the system waits for the switch-on interlocking time of 160 ms.

Index:
[0] = Feedback signal contactor 0
[1] = Feedback signal contactor 1
[2] = Feedback signal contactor 2
[3] = Feedback signal contactor 3
[4] = Feedback signal contactor 4
[5] = Feedback signal contactor 5
[6] = Feedback signal contactor 6
[7] = Feedback signal contactor 7
[8] = Feedback signal contactor 8
[9] = Feedback signal contactor 9
[10] = Feedback signal contactor 10
[11] = Feedback signal contactor 11
[12] = Feedback signal contactor 12
[13] = Feedback signal contactor 13
[14] = Feedback signal contactor 14
[15] = Feedback signal contactor 15

r0832.0...15 CO/BO: Mot. changeover contactor feedback sig. status word / Mot_chng fdbk ZSW

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 8575
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status word of the contactor feedback signals when changing over a motor.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Feedback signal contactor 0	Closed	Opened	-
01	Feedback signal contactor 1	Closed	Opened	-
02	Feedback signal contactor 2	Closed	Opened	-
03	Feedback signal contactor 3	Closed	Opened	-
04	Feedback signal contactor 4	Closed	Opened	-
05	Feedback signal contactor 5	Closed	Opened	-
06	Feedback signal contactor 6	Closed	Opened	-

07	Feedback signal contactor 7	Closed	Opened	-
08	Feedback signal contactor 8	Closed	Opened	-
09	Feedback signal contactor 9	Closed	Opened	-
10	Feedback signal contactor 10	Closed	Opened	-
11	Feedback signal contactor 11	Closed	Opened	-
12	Feedback signal contactor 12	Closed	Opened	-
13	Feedback signal contactor 13	Closed	Opened	-
14	Feedback signal contactor 14	Closed	Opened	-
15	Feedback signal contactor 15	Closed	Opened	-

Dependency: Refer to: p0831

p0833 Data set changeover configuration / DS_chng config

SERVO, HLA, SERVO_AC, SERVO_I_AC

Can be changed: C2(15)	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 8575
P-Group: Data sets	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Sets the configuration for the motor and encoder changeover.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Contactor changeover from the application/drive	Application	Drive	-
01	Pulse suppression by application/drive	Application	Drive	-
02	Suppress drive parking for EDS changeover	Yes	No	-

Note: For bit 00:

When the bit is set and the motor has to be changed over, then p0827 must be set differently in the appropriate motor data sets.

For bit 02:

The bit defines whether, for an EDS changeover, the status signal Gn_ZSW.14 is suppressed (parking encoder active).

p0833 Data set changeover configuration / DS_chng config

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(15)	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 8575
P-Group: Data sets	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0010 bin

Description: Sets the configuration for the motor and encoder changeover.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Contactor changeover from the application/drive	Application	Drive	-
01	Pulse suppression by application/drive	Application	Drive	-
02	Suppress drive parking for EDS changeover	Yes	No	-

Note: For bit 00:

When the bit is set and the motor has to be changed over, then p0827 must be set differently in the appropriate motor data sets.

For bit 02:

The bit defines whether, for an EDS changeover, the status signal Gn_ZSW.14 is suppressed (parking encoder active).

For motor changeover to running motor:

The "flying restart" function should also be activated (p1200) when changing over to a motor that is already running.

r0835.0...12 CO/BO: Data set changeover status word / Data set sw ZSW

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 8575
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status word of the data set switchover.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Motor changeover active	Yes	No	8575
01	Encoder changeover active	Yes	No	-
02	Internal parameter calculation active	Yes	No	-
04	Armature short circuit active	Yes	No	-
05	Identification running	Yes	No	-
06	Friction characteristic plot running	Yes	No	-
07	Rotating measurement running	Yes	No	-
08	Motor data identification running	Yes	No	-
10	Wait for pulse suppression	Yes	No	-
11	Wait for motor changeover feedback signal	Yes	No	-
12	Frequency response measurement running	Yes	No	-

Note: This parameter is only supplied with up-to-date values if data set changeover has been selected or is running.

For bit 00:

The signal is only influenced when a motor changeover is set via p0827 (unequal bit numbers).

For bit 01:

The signal is only influenced when an encoder changeover is set via p0187, p0188, or p0189.

For bit 02:

A data set changeover is delayed by the time required for the internal parameter calculation.

For bit 04:

A data set changeover is only carried out when the armature short circuit is not activated.

For bit 05:

The following applies for SERVO:

A data set changeover is only carried out when pole position identification, encoder adjustment, motor data identification, and rotating measurement are not running.

The following applies for VECTOR:

A data set changeover is only carried out when pole position identification is not running.

For bit 06:

A data set switchover is only carried out when the friction characteristic is not being plotted.

For bit 07 (VECTOR only):

A data set changeover is only carried out when rotating measurement is not running.

For bit 08 (VECTOR only):

A data set changeover is only carried out when motor data identification is not running.

For bit 10:

A motor changeover is set with p0833.1 = 1. It can only be carried out when the application performs pulse suppression.

For bit 11:

A motor changeover is set with p0833.0 = 1. The pulses are only enabled when the "Motor changeover feedback" signal is detected.

For bit 12:

A data set switchover is only carried out when the moment of inertia determination (p5320 = 0) is not activated.

r0835.2 CO/BO: Data set changeover status word / Data set sw ZSW

TM41, ENC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 8575
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status word of the data set switchover.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
02	Internal parameter calculation active	Yes	No	-

Note: For bit 02:

A data set changeover is delayed by the time required for the internal parameter calculation.

r0836.0...3 CO/BO: Command Data Set CDS selected / CDS selected

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM41

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** 8560
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the command data set (CDS) selected via the binector input.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	CDS selection bit 0	ON	OFF	-
01	CDS selection bit 1	ON	OFF	-
02	CDS selection bit 2	ON	OFF	-
03	CDS selection bit 3	ON	OFF	-

Dependency: Refer to: r0050, p0810, p0811

Note: Command data sets are selected via binector input p0810 and following.

The currently effective command data set is displayed in r0050.

r0837.0...4 CO/BO: Drive Data Set DDS selected / DDS selected

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, TM41, ENC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** 8565
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the drive data set (DDS) selected via the binector input.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DDS selection bit 0	ON	OFF	-
01	DDS selection bit 1	ON	OFF	-
02	DDS selection bit 2	ON	OFF	-
03	DDS selection bit 3	ON	OFF	-
04	DDS selection bit 4	ON	OFF	-

Dependency: Refer to: r0051, p0820, p0821, p0822, p0823, p0824

Note: Drive data sets are selected via binector input p0820 and following.

The currently effective drive data set is displayed in r0051.

If there is only one data set, then a value of 0 is displayed in this parameter and not the selection via binector inputs.

r0838[0...3] Motor/Encoder Data Set selected / MDS/EDS selected

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** 8565
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the selected Motor Data Set (MDS) and the selected Encoder Data Sets (EDS).

Index:
[0] = Motor Data Set MDS selected
[1] = Encoder 1 Encoder Data Set EDS selected
[2] = Encoder 2 Encoder Data Set EDS selected
[3] = Encoder 3 Encoder Data Set EDS selected

Dependency: Refer to: r0049, p0186, p0187, p0188, p0189

Note: Value 99 means the following: No encoder assigned (not configured).

p0839 Motor changeover contactor control delay time / Mot_chg ctrl t_del

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(3)	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	500 [ms]	0 [ms]

Description: Sets the delay time for the contactor control for the motor changeover.

Note: The delay time is taken into account in the following cases:

- for feedback signal, previous contactor "Open". The new motor contactor is controlled (energized) after the delay time has expired.
- for the feedback signal, new motor contactor "Closed". The pulses are enabled after the delay time has expired.

p0840[0...n] BI: ON / OFF (OFF1) / ON / OFF (OFF1)

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2501, 2610, 8720, 8820, 8920
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the command "ON/OFF (OFF1)".

For the PROFIdrive profile, this command corresponds to control word 1 bit 0 (STW1.0).

Recommendation: When the setting for this binector input is changed, the motor can only be switched on by means of an appropriate signal change of the source.

Dependency: Refer to: p1055, p1056

Caution: When "master control from PC" is activated, this binector input is ineffective.

Notice: For binector input p0840 = 0 signal, the motor can be moved, jogging using binector input p1055 or p1056.

The command "ON/OFF (OFF1)" can be issued using binector input p0840 or p1055/p1056.

For binector input p0840 = 0 signal, the switching on inhibited is acknowledged.

Only the signal source that originally switched on can also switch off again.

The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: For drives with closed-loop speed control (p1300 = 20, 21), the following applies:

- BI: p0840 = 0 signal: OFF1 (braking with the ramp-function generator, then pulse suppression)

For drives with closed-loop torque control (p1300 = 22, 23), the following applies:

- BI: p0840 = 0 signal: immediate pulse suppression

For drives with closed-loop torque control (activated using p1501), the following applies:

- BI: p0840 = 0 signal: No dedicated braking response, but pulse cancelation when standstill is detected (p1226, p1227)

For drives with closed-loop speed/torque control, the following applies:

- BI: p0840 = 0/1 signal: ON (pulses can be enabled)

r0863.1 of a drive can also be selected as signal source.

p0840[0...n] BI: ON / OFF (OFF1) / ON / OFF (OFF1)

A_INF, S_INF, R_INF, B_INF

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 8720, 8820, 8920
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the command "ON/OFF (OFF1)".

For the PROFIdrive profile, this command corresponds to control word 1 bit 0 (STW1.0).

Recommendation: When the setting for this binector input is changed, the motor can only be switched on by means of an appropriate signal change of the source.

Dependency: Refer to: p1055, p1056

Caution: When "master control from PC" is activated, this binector input is ineffective.

Notice: For binector input p0840 = 0 signal, the switching on inhibited is acknowledged.

Only the signal source that originally switched on can also switch off again.

The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: For active infeeds (Active Line Module and Smart Line Module) the following applies:

- BI: p0840 = 0 signal: OFF1 (reduce Vdc along the ramp, then pulse suppression and precharging contactor/line contactor open)
- BI: p0840 = 0/1 signal: ON (precharging contactor/line contactor close, pulses can be enabled)

For passive infeeds (Basic Line Module) the following applies:

- BI: p0840 = 0 signal: OFF1 (precharging contactor/line contactor open)
- BI: p0840 = 0/1 signal: ON (precharging contactor/line contactor close)

r0863.1 of a drive can also be selected as signal source.

Switching on can be delayed with a wait time (p0862).

Switching off can also be delayed with a wait time (p3490).

p0840 BI: ON / OFF (OFF1) / ON / OFF (OFF1)

TM41

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9677
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the command "ON/OFF (OFF1)".

For the PROFIdrive profile, this command corresponds to control word 1 bit 0 (STW1.0).

Recommendation: When the setting for this binector input is changed, the motor can only be switched on by means of an appropriate signal change of the source.

Dependency: Refer to: p1055, p1056

Caution: When "master control from PC" is activated, this binector input is ineffective.

Notice: Only the signal source that originally switched on can also switch off again.
The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: BI: p0840 = 0 signal: OFF1 (pulse suppression and switching on inhibited)
BI: p0840 = 0/1 signal: ON (pulses can be enabled)
This parameter has no function in the "SINAMICS" (p4400 = 1) operating mode.

p0844[0...n] BI: No coast-down / coast-down (OFF2) signal source 1 / OFF2 S_src 1

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2501, 8720, 8820, 8920
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the first signal source for the command "No coast down/coast down (OFF2)".
The following signals are AND'ed:
- BI: p0844 "No coast-down / coast-down (OFF2) signal source 1"
- BI: p0845 "No coast-down / coast-down (OFF2) signal source 2"
For the PROFIdrive profile, the result of the AND logic operation corresponds to control word 1 bit 1 (STW1.1).
BI: p0844 = 0 signal or BI: p0845 = 0 signal
- OFF2 (immediate pulse suppression and switching on inhibited)
BI: p0844 = 1 signal and BI: p0845 = 1 signal
- no OFF2 (enable is possible)

Caution: When "master control from PC" is activated, this binector input is ineffective.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p0844[0...n] BI: No coast-down / coast-down (OFF2) signal source 1 / OFF2 S_src 1

A_INF, S_INF, R_INF, B_INF

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 8720, 8820, 8920
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the first signal source for the command to instantaneously switch off the drive.
This corresponds to command "No coast down/coast down (OFF2)" for drives.
The following signals are AND'ed:
- BI: p0844 "No coast-down / coast-down (OFF2) signal source 1"
- BI: p0845 "No coast-down / coast-down (OFF2) signal source 2"
For the PROFIdrive profile, the result of the AND logic operation corresponds to control word 1 bit 1 (STW1.1).
BI: p0844 = 0 signal or BI: p0845 = 0 signal
- OFF2 (immediate pulse suppression and switching on inhibited)
BI: p0844 = 1 signal and BI: p0845 = 1 signal
- no OFF2 (enable is possible)

Caution: When "master control from PC" is activated, this binector input is ineffective.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: For binector input p0844 = 0 signal or p0845 = 0 signal, the following applies:
- precharging contactor/line contactor is additionally opened.

p0844 BI: No coast-down / coast-down (OFF2) / OFF2

TM41

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9677
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for the command "No coast down/coast down (OFF2)".

For the PROFIdrive profile, this command corresponds to control word 1 bit 1 (STW1.1).

BI: p0844 = 0 signal

- OFF2 (immediate pulse suppression and switching on inhibited)

BI: p0844 = 1 signal

- no OFF2 (enable is possible)

Caution: When "master control from PC" is activated, this binector input is ineffective.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: This parameter has no function in the "SINAMICS" (p4400 = 1) operating mode.

p0845[0...n] BI: No coast-down / coast-down (OFF2) signal source 2 / OFF2 S_src 2

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2501, 8720, 8820, 8920
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the second signal source for the command "No coast down/coast down (OFF2)".

The following signals are AND'ed:

- BI: p0844 "No coast-down / coast-down (OFF2) signal source 1"
- BI: p0845 "No coast-down / coast-down (OFF2) signal source 2"

For the PROFIdrive profile, the result of the AND logic operation corresponds to control word 1 bit 1 (STW1.1).

BI: p0844 = 0 signal or BI: p0845 = 0 signal

- OFF2 (immediate pulse suppression and switching on inhibited)

BI: p0844 = 1 signal and BI: p0845 = 1 signal

- no OFF2 (enable is possible)

Caution: When "master control from PC" is activated, this binector input is effective.

p0845[0...n] BI: No coast-down / coast-down (OFF2) signal source 2 / OFF2 S_src 2

A_INF, S_INF, R_INF, B_INF

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 8720, 8820, 8920
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the second signal source for the command to instantaneously switch off the drive.

This corresponds to command "No coast down/coast down (OFF2)" for drives.

The following signals are AND'ed:

- BI: p0844 "No coast-down / coast-down (OFF2) signal source 1"
- BI: p0845 "No coast-down / coast-down (OFF2) signal source 2"

For the PROFIdrive profile, the result of the AND logic operation corresponds to control word 1 bit 1 (STW1.1).

BI: p0844 = 0 signal or BI: p0845 = 0 signal

- OFF2 (immediate pulse suppression and switching on inhibited)

BI: p0844 = 1 signal and BI: p0845 = 1 signal

- no OFF2 (enable is possible)

Caution: When "master control from PC" is activated, this binector input is effective.

Note: For binector input p0844 = 0 signal or p0845 = 0 signal, the following applies:

- precharging contactor/line contactor is additionally opened.

p0848[0...n] BI: No Quick Stop / Quick Stop (OFF3) signal source 1 / OFF3 S_src 1

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2501
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the first signal source for the command "No quick stop/quick stop (OFF3)".

The following signals are AND'ed:

- BI: p0848 "No quick stop / quick stop (OFF3) signal source 1"
- BI: p0849 "No quick stop / quick stop (OFF3) signal source 2"

For the PROFIdrive profile, the result of the AND logic operation corresponds to control word 1 bit 2 (STW1.2).

BI: p0848 = 0 signal or BI: p0849 = 0 signal

- OFF3 (braking along the OFF3 ramp (p1135), then pulse suppression and switching on inhibited)

BI: p0848 = 1 signal and BI: p0849 = 1 signal

- no OFF3 (enable is possible)

Caution: When "master control from PC" is activated, this binector input is ineffective.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: For drives with closed-loop torque control (activated using p1501), the following applies:

BI: p0848 = 0 signal:

- no dedicated braking response, but pulse suppression when standstill is detected (p1226, p1227).

p0848 BI: No Quick Stop / Quick Stop (OFF3) / OFF3

TM41

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9677
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the first signal source for the command "No quick stop/quick stop (OFF3)".
For the PROFIdrive profile, this command corresponds to control word 1 bit 2 (STW1.2).
BI: p0848 = 0 signal
- OFF3 (braking along the OFF3 ramp (p1135), then pulse suppression and switching on inhibited)
BI: p0848 = 1 signal
- no OFF3 (enable is possible)

Caution: When "master control from PC" is activated, this binector input is ineffective.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: This parameter has no function in the "SINAMICS" (p4400 = 1) operating mode.

p0849[0...n] BI: No Quick Stop / Quick Stop (OFF3) signal source 2 / OFF3 S_src 2

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2501
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the second signal source for the command "No quick stop/quick stop (OFF3)".
The following signals are AND'ed:
- BI: p0848 "No quick stop / quick stop (OFF3) signal source 1"
- BI: p0849 "No quick stop / quick stop (OFF3) signal source 2"
For the PROFIdrive profile, the result of the AND logic operation corresponds to control word 1 bit 2 (STW1.2).
BI: p0848 = 0 signal or BI: p0849 = 0 signal
- OFF3 (braking along the OFF3 ramp (p1135), then pulse suppression and switching on inhibited)
BI: p0848 = 1 signal and BI: p0849 = 1 signal
- no OFF3 (enable is possible)

Caution: When "master control from PC" is activated, this binector input is effective.

Note: For drives with closed-loop torque control (activated using p1501), the following applies:
BI: p0849 = 0 signal:
- no dedicated braking response, but pulse suppression when standstill is detected (p1226, p1227).

p0852[0...n] BI: Enable operation/inhibit operation / Enable operation

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2501, 8820, 8920
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for the command "enable operation/inhibit operation".

For the PROFIdrive profile, this command corresponds to control word 1 bit 3 (STW1.3).

BI: p0852 = 0 signal

Inhibit operation (suppress pulses).

BI: p0852 = 1 signal

Enable operation (pulses can be enabled).

Caution: When "master control from PC" is activated, this binector input is ineffective.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p0852 BI: Enable operation/inhibit operation / Enable operation

TM41

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9677
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for the command "enable operation/inhibit operation".

For the PROFIdrive profile, this command corresponds to control word 1 bit 3 (STW1.3).

BI: p0852 = 0 signal

Inhibit operation (suppress pulses).

BI: p0852 = 1 signal

Enable operation (pulses can be enabled).

Caution: When "master control from PC" is activated, this binector input is ineffective.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: This parameter has no function in the "SINAMICS" (p4400 = 1) operating mode.

p0854[0...n] BI: Control by PLC/no control by PLC / Master ctrl by PLC

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2501, 8720, 8820, 8920
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for the command "control by PLC/no control by PLC".

For the PROFIdrive profile, this command corresponds to control word 1 bit 10 (STW1.10).

BI: p0854 = 0 signal

No control by PLC

BI: p0854 = 1 signal

Master control by PLC.

Caution: When "master control from PC" is activated, this binector input is ineffective.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: This bit is used to initiate a response for the drives when the control fails (F07220). If there is no control available, then binector input p0854 should be set to 1.

If a control is available, then STW1.10 must be set to 1 (PZD1) so that the received data is updated. This applies regardless of the setting in p0854 and even in the case of free telegram configuration (p0922 = 999).

p0854 BI: Control by PLC/no control by PLC / Master ctrl by PLC

TM41

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9677, 9678
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for the command "control by PLC/no control by PLC".

For the PROFIdrive profile, this command corresponds to control word 1 bit 10 (STW1.10).

BI: p0854 = 0 signal

No control by PLC

BI: p0854 = 1 signal

Master control by PLC.

Dependency: Refer to: p1155

Caution: When "master control from PC" is activated, this binector input is ineffective.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: For the TM41, a response can be initiated using this bit if the control fails.

The parameter is only effective in the "SIMOTION" operating mode (p4400 = 0).

In the "SINAMICS" operating mode, the setpoints at connector input p4420 are evaluated independently of p0854.

Further, the setting of p2037 should be observed.

p0854 BI: Control by PLC/no control by PLC / Master ctrl by PLC

ENC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2501, 8720, 8820, 8920
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for the command "control by PLC/no control by PLC".

For the PROFIdrive profile, this command corresponds to control word 1 bit 10 (STW1.10).

BI: p0854 = 0 signal

No control by PLC

BI: p0854 = 1 signal

Master control by PLC.

Caution: When "master control from PC" is activated, this binector input is ineffective.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: This bit is used to initiate a response for the drives when the control fails (F07220). If there is no control available, then binector input p0854 should be set to 1.

If a control is available, then STW1.10 must be set to 1 (PZD1) so that the received data is updated. This applies regardless of the setting in p0854 and even in the case of free telegram configuration (p0922 = 999).

p0855[0...n] BI: Unconditionally release holding brake / Uncond open brake

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2501, 2701, 2707
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the command "unconditionally open holding brake".

Dependency: Refer to: p0858

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: The signal via binector input p0858 "Unconditionally close holding brake" has a higher priority than via binector input p0855 "Unconditionally open holding brake".

p0856[0...n] BI: Enable speed controller / n_ctrl enable

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2501, 2701, 2707
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for the command "enable speed controller" (r0898.12).

0 signal: Set the I component and speed controller output to zero.

1 signal: Enable speed controller.

Dependency: Refer to: r0898

Note: If "enable speed controller" is withdrawn, then an existing brake will be closed.

If "enable speed controller" is withdrawn, the pulses are not suppressed.

p0856[0...n] BI: Enable velocity controller / v_ctrl enable

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2501, 2701, 2707
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for the command "enable speed controller" (r0898.12).

0 signal: Set the I component and speed controller output to zero.

1 signal: Enable speed controller.

Dependency: Refer to: r0898

Note: If "enable speed controller" is withdrawn, then an existing brake will be closed.

If "enable speed controller" is withdrawn, the pulses are not suppressed.

p0857 Power unit monitoring time / PU t_monit

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8760, 8864, 8964
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
100.0 [ms]	60000.0 [ms]	6000.0 [ms]

Description: Sets the monitoring time for the power unit.

The following applies for infeeds and drives:

The monitoring time is started after an 0/1 edge of the ON/OFF1 command. If the power unit does not return a READY signal within the monitoring time, then fault F06000 (infeeds) or F07802 (drives) is output.

For drives, the following also applies:

After the pulse enable (operation enabled, p0852), the monitoring time is re-started. If the infeed does not signal ready to the drive within the monitoring time (using binector input p0864 of the drive), fault F07840 is initiated.

Dependency: Refer to: F06000, F07802, F07840, F30027

Notice: The maximum time to precharge the DC link is monitored in the power unit and cannot be changed. The maximum duration of the precharging depends on the power class and the power unit design.

The monitoring time for the precharging is started after the ON command (BI: p0840 = 0/1 signal). Fault F30027 is output when the maximum precharging duration is exceeded.

Note: The factory setting for p0857 depends on the power class and the design of the power unit.

The monitoring time for the ready signal of the power unit includes the time to precharge the DC link and, if relevant, the de-bounce time of the contactors.

If an excessively low value is entered into p0857, then after enable, this results in the corresponding fault.

p0858[0...n] BI: Unconditionally close holding brake / Uncond close brake

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2501, 2701, 2707
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	9719.13

Description: Sets the signal source for the command "unconditionally close holding brake".

Dependency: Refer to: p0855

Note: The signal via binector input p0858 "Unconditionally close holding brake" has a higher priority than via binector input p0855 "Unconditionally open holding brake".

For a 1 signal via binector input p0858, the command "unconditionally close the holding brake" is executed and internally a zero setpoint is entered.

p0858[0...n] BI: Unconditionally close holding brake / Uncond close brake

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2501, 2701, 2707
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the command "unconditionally close holding brake".

Dependency: Refer to: p0855

Note: The signal via binector input p0858 "Unconditionally close holding brake" has a higher priority than via binector input p0855 "Unconditionally open holding brake".

For a 1 signal via binector input p0858, the command "unconditionally close the holding brake" is executed and internally a zero setpoint is entered.

p0860 BI: Line contactor feedback signal / Line contact feedb

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2634, 8734, 8834, 8934
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	863.1

Description: Sets the signal source for the feedback signal from the line contactor.

Recommendation: When the monitoring is activated (BI: p0860 not equal to r0863.1), then to control the line contactor, signal BO: r0863.1 of its own drive object should be used.

Dependency: Refer to: p0861, r0863

Refer to: F07300

Notice: The line contactor monitoring is deactivated if the control signal of the particular drive object is set as the signal source for the feedback signal of the line contactor (BI: p0860 = r0863.1).

Note: The state of the line contactor is monitored depending on signal BO: r0863.1.

When the monitoring is activated (BI: p0860 not equal to r0863.1), fault F07300 is then also output if the contactor is closed before it is controlled using r0863.1.

p0861 Line contactor monitoring time / LineContact t_mon

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2634, 8734, 8834, 8934
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	5000 [ms]	100 [ms]

Description: Sets the monitoring time of the line contactor.

This time starts each time that the line contactor switches (r0863.1). If a feedback signal is not received from the line contactor within the time, a message is output.

Dependency: Refer to: p0860, r0863

Refer to: F07300

Note: The monitoring function is disabled for the factory setting of p0860.

p0862 Power unit ON delay / PU t_on

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2610, 8732, 8832, 8932
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	65000 [ms]	0 [ms]

Description: Sets the delay time for the control command of the power unit and a line contactor, if used.

Note: This means that it is possible to realize a shifted (delayed) precharging or switch-on using a single ON command.

When the infeed units are active, before the line contactor is closed, an offset adjustment of the current measurement is carried out for a duration of 120 ms (p3491).

r0863.0 CO/BO: System pressure status word / p_sys ZSW

HLA

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status word of the system pressure.

Recommendation: If the system pressure is measured (r0069), this signal can be interconnected from the binector input "system pressure available" (p0864). To do this, the threshold and hysteresis for the system pressure must be appropriately set (p0865, p0866).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	System pressure reached	Yes	No	-

Dependency: Refer to: p0864, p0865, p0866

r0863.0...2 CO/BO: Drive coupling status word/control word / CoupleZSW/STW

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status word and control word of the drive coupling.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Closed-loop control operation	Yes	No	2610, 8710, 8810, 8910
01	Energize contactor	Yes	No	2610, 2634, 7990, 8734, 8834, 8934
02	Infeed line supply failure	Yes	No	-

Dependency: Refer to: p0864

Note: For bit 00:

Bit 0 signals that the infeed is ready.

When the operating signal is transferred via binector output r0863.0 this allows several drives to start (run-up) staggered over time when they are simultaneously switched on.

To realize this, the following connections/interconnections are required:

Drive 1: Interconnect binector input p0864 with binector output r0863.0 of the infeed

Drive 2: Interconnect binector input p0864 with binector output r0863.0 of drive 1

Drive 3: Interconnect binector input p0864 with binector output r0863.0 of drive 2 etc.

The first drive only transfers the operating signal to the next drive after it has reached its ready condition.

For bit 01:

Bit 1 is used to control an external line contactor.

For bit 02:

This bit only signals line supply failure for Active Infeed (A_INF) and Smart Infeed (S_INF).

p0864 BI: System pressure available / p_sys available

HLA	**Can be changed:** T	**Calculated:** -	**Access level:** 2
	Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Commands	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	1

Description: Sets the signal source for the "system pressure available" signal.

Dependency: Refer to: r0863, p0865, p0866

Note: An enable is only possible for p0864 = 1 signal.

p0864 BI: Infeed operation / INF operation

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC	**Can be changed:** T	**Calculated:** -	**Access level:** 2
	Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2610, 8710, 8910
	P-Group: Commands	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source for the operating signal of the infeed (e.g. BO: r0863.0).

Dependency: Refer to: r0863

Note: The sequence control of a servo/vector drive requires this signal.

The following applies for an infeed without DRIVE-CLiQ:

For these infeeds, the "ready" message is available via an output terminal. This signal must be connected to a digital input. The drives supplied from this infeed must use this signal as ready signal (BI: p0864 = digital input).

p0865 System pressure switch-on threshold / p_sys thresh

HLA	**Can be changed:** T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: -	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.0 [bar]	10000.0 [bar]	0.0 [bar]

Description: Sets the switch-on threshold to evaluate the measured system pressure.

Recommendation: If the system pressure is measured (r0069), this signal can be interconnected from the binector input "system pressure available" (p0864). To do this, the threshold and hysteresis for the system pressure must be appropriately set (p0865, p0866).

Dependency: Refer to: r0863, p0864, p0866

p0866 System pressure switch-on threshold hysteresis / p_sys hyst

HLA	**Can be changed:** T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: -	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.0 [%]	10000.0 [%]	20.0 [%]

Description: Sets the hysteresis for the switch-on threshold to evaluate the measured system pressure.

Recommendation: If the system pressure is measured (r0069), this signal can be interconnected from the binector input "system pressure available" (p0864). To do this, the threshold and hysteresis for the system pressure must be appropriately set (p0865, p0866).

Dependency: Refer to: r0863, p0864, p0865

Note: The hysteresis refers to the switch-on threshold (p0865) and acts on the lower threshold.

p0867 Power unit main contactor holding time after OFF1 / PU t_MC after OFF1

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [ms]	500.0 [ms]	50.0 [ms]

Description: Sets the main contactor holding time after OFF1

After withdrawing the OFF1 enable (signal source of p0840), the main contactor is only opened after the main contactor holding time has elapsed.

Recommendation: When operating a drive connected to SINUMERIK, which only closes the main contactor with the OFF1 command (blocksize, chassis), p0867 should be set as a minimum to 50 ms.

Dependency: Refer to: p0869

Note: For p0869 = 1 (keep main contactor closed for STO), after withdrawing STO, the switching on inhibited must be acknowledged via the signal source of p0840 = 0 (OFF1) – and before the main contactor holding time expires, should go back to 1, otherwise the main contactor will open.

p0868 Power unit debounce time/wait time / PU t_debnc/t_wait

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	65000 [ms]	65000 [ms]

Description: Sets the debounce time or wait time for the power unit.

The following applies for "Chassis" format Motor Modules:

- sets the debounce time for the DC circuit breaker.

The following applies for "Chassis" format AC/AC converters:

- sets the wait time for the thyristor rectifier.

Note: The following applies if p0868 = 65000 ms:

The debounce time defined internally in the power unit's EEPROM is implemented.

p0869 Sequence control configuration / Seq_ctrl config

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Sets the configuration for the sequence control.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Keep main contactor closed for STO	Yes	No	-

Dependency: Refer to: p0867

Note: STO: Safe Torque Off

For bit 00:

After withdrawing the OFF1 enable (signal source of p0840), the main contactor is opened after the main contactor holding time has elapsed.

For p0869.0 = 1, after withdrawing STO, the switching on inhibited must be acknowledged via the signal source of p0840 = 0 (OFF1) – and before the main contactor holding time expires (p0867), should go back to 1, otherwise the main contactor will open.

p0869 Sequence control configuration / Seq_ctrl config

A_INF, S_INF, R_INF, B_INF

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 8732, 8832, 8932
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Sets the configuration for the sequence control.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
01	Wait for the feedback signal from the external main contactor	Yes	No	8732, 8832, 8932

Notice: For chassis units, the following applies:

Setting p0869.1 = 1 is not permissible, if, using p0860 the internal circuit breaker is monitored (this is not controlled with r0863.1).

Note: For bit 01:

For p0869.1 = 1, before starting to charge the DC link (r0899.8 = 1), the system waits for a feedback signal from the external main contactor (p0860 = 1 signal). The main contactor must be controlled using r0863.1.

Waiting for the contactor feedback signal is especially necessary if the external main contactor has long switching times, which would lead to the precharging time being exceeded (F06000, F30027).

p0870 BI: Close main contactor / Close main cont

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to close the main contactor.

Note: The main contactor is also closed when the converter is switched on after issuing the necessary enable signals.

A binector input p0870 = 1 signal prevents the main contactor from being opened when enable signals are withdrawn.

r0873 CO/BO: Infeed total operation / INF total oper

S_INF, B_INF

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 8732, 8832
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the operational readiness of the infeeds when using Smart Line Module (SLM) and Basic Line Module (BLM) together (mixed operation).

In order that signal BO: r0873 is available at one of the infeeds, then BI: p0874 of the one infeed must be interconnected to BO: r0863.0 of the other infeed.

Dependency: Refer to: r0863, p0874

Note: Mixed operation is not possible with the Active Line Module (ALM)!

p0874 BI: Smart/ Basic Line Module operation / SLM/BLM operation

S_INF, B_INF

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 8732, 8832
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Setting to interconnect the ready signal for mixed operation of Smart Line Module (SLM) and Basic Line Module (BLM).

In order that signal BO: r0873 is available at one of the infeeds, then BI: p0874 of the one infeed must be interconnected to BO: r0863.0 of the other infeed.

Dependency: Refer to: r0863, r0873

Note: Mixed operation is not possible with the Active Line Module (ALM)!

r0887.0...13 BO: ESR status word / ESR ZSW

SERVO (ESR), HLA (ESR), SERVO_AC (ESR), SERVO_I_AC (ESR)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status word for the "ESR" function.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	ESR monitoring activated	Yes	No	-
01	Profile "Extended stopping (integrated in the drive)" active	Yes	No	-
02	Profile "Extended retraction (integrated in the drive)" active	Yes	No	-
03	Profile "Generator operation (Vdc controller)" active	Yes	No	-
09	ESR enabled (p0889)	Yes	No	-
10	ESR trigger active (p0890)	Yes	No	-
11	ESR OFF ramp OFF1/OFF3 (p0891)	OFF1	OFF3	-
12	ESR response initiated	Yes	No	3082
13	ESR response presently running	Yes	No	-

Dependency: Refer to: p0888, p0889, p0890, p0891

Note: ESR: Extended Stop and Retract

p0888 ESR configuration / ESR configuration

SERVO (ESR), HLA (ESR), SERVO_AC (ESR), SERVO_I_AC (ESR)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 3082
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	4	0

Description: Sets the configuration for the "ESR" function.

Value:
0: No function
1: Extended stopping (integrated in the drive), n_set
2: Extended retraction (function integrated in the drive)
3: Generator operation (Vdc controller)
4: Extended stopping (integrated in the drive), n_act

Dependency: Refer to: p0889, p0891, p0892, p0893, p1240

Caution: For p0888 = 3 generator operation (Vdc controller) must be correspondingly configured using p1240.

Note: ESR: Extended Stop and Retract

p0889 BI: ESR response enable / Response enab

SERVO (ESR), HLA (ESR), SERVO_AC (ESR), SERVO_I_AC (ESR)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3082
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	2090.9

Description: Sets the signal source to enable the response for the "ESR" function.

BI: p0889 = 0 signal

The ESR response is locked. A possible trigger event that occurs is ignored.

BI: p0889 = 1 signal

The ESR response is enabled. A possible trigger event that occurs initiates the response.

Dependency: Refer to: p0888

Note: ESR: Extended Stop and Retract

p0890[0...4] BI: ESR trigger / ESR trigger

SERVO (ESR), HLA (ESR), SERVO_AC (ESR), SERVO_I_AC (ESR)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3082
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	[0] 2090.2 [1] 9721.15 [2] 9723.1 [3] 9723.2 [4] 0

Description: Sets the signal sources for the trigger for the "ESR" function.

The binector inputs cannot be interconnected or interconnected as follows:

BI: p0890[0] = r2090.2 (CU_STW1.2)

BI: p0890[1] = r9721.15 (Safety Integrated STOP E)

BI: p0890[2] = r9723.1 (Safety Integrated STOP F)

BI: p0890[3] = r9723.2 (Safety Integrated communication failure)

BI: p0890[4] = can be freely interconnected

Index:
[0] = Trigger for NCK
[1] = Trigger for SI STOP E
[2] = Trigger for SI STOP F
[3] = Trigger for SI communication failure
[4] = Trigger can be freely interconnected

Dependency: Refer to: p0888

Note: ESR: Extended Stop and Retract

p0891 ESR OFF ramp / ESR OFF ramp

SERVO (ESR), HLA (ESR), SERVO_AC (ESR), SERVO_I_AC (ESR)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 3082
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the OFF ramp for the "ESR" function.

Value:
0: OFF3
1: OFF1

Dependency: Refer to: p0888

Note: ESR: Extended Stop and Retract

p0892 ESR timer / ESR timer

SERVO (ESR), HLA (ESR), SERVO_AC (ESR), SERVO_I_AC (ESR)	**Can be changed:** U, T	**Calculated:** -	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: -	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [s]	20.00 [s]	0.50 [s]

Description: Sets the timer for the brake delay for the "ESR" function.

Dependency: The following applies when Safety Integrated is enabled:

p0892 < p9580 (SI motion, pulse cancellation delay bus failure)

If the setting for the times is not observed, then ESR OFF ramp will not be able to be fully completed.

Refer to: p0888, p9580

Note: ESR: Extended Stop and Retract

p0893 ESR velocity / ESR velocity

SERVO (ESR, Lin), HLA, HLA (ESR), SERVO_AC (ESR, Lin), SERVO_I_AC (ESR, Lin)	**Can be changed:** U, T	**Calculated:** -	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3082
	P-Group: -	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-340.28235E36 [m/min]	340.28235E36 [m/min]	0 [m/min]

Description: Sets the speed/velocity, which, when triggered, is approached with an OFF3 ramp.

The timer in p0892 is the total time that elapses for the approach and constant velocity travel. After this, depending on the setting in p0891, an OFF1 ramp or OFF3 ramp is realized.

Dependency: Refer to: p0888, p0889, p0891, p0892

Note: This parameter is only of significance for the profile "retraction" (p0888 = 2).

ESR: Extended Stop and Retract

p0893 ESR speed / ESR speed

SERVO (ESR), SERVO_AC (ESR), SERVO_I_AC (ESR)	**Can be changed:** U, T	**Calculated:** -	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3082
	P-Group: -	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-340.28235E36 [rpm]	340.28235E36 [rpm]	0 [rpm]

Description: Sets the speed/velocity, which, when triggered, is approached with an OFF3 ramp.

The timer in p0892 is the total time that elapses for the approach and constant velocity travel. After this, depending on the setting in p0891, an OFF1 ramp or OFF3 ramp is realized.

Dependency: Refer to: p0888, p0889, p0891, p0892

Note: This parameter is only of significance for the profile "retraction" (p0888 = 2).

ESR: Extended Stop and Retract

p0894 Parking pre-setting / Parking pre-set

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC	**Can be changed:** U, T	**Calculated:** -	**Access level:** 4
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	0000 bin

Description: Pre-setting for the "Parking axis" and "Parking encoder" function.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Default with interconnection	Park	Do not park	-

Dependency: Refer to: p0480, p0897

Note: For bit 00:

If there is at least one BICO interconnection for "Parking axis" or "Parking encoder", this default setting is taken into consideration during power up.

p0895[0...n] BI: Activate/deactivate power unit components / PU_comp act/deact

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source to activate/deactivate a power unit component.

Dependency: BI: p0895 = 0 signal

Deactivate power unit components.

BI: p0895 = 1 signal

Activate power unit components

Refer to: p0125, r0126

Refer to: A05054

Caution: It is not permissible to deactivate drive objects with safety functions enabled.

Notice: For Active Line Modules in the "Chassis" format, the Voltage Sensing Module (VSM, p0145) belonging to the power unit is automatically activated/deactivated.

Note: The power unit is only deactivated when the pulses are suppressed.

For units connected in parallel, when one of the power units is deactivated, then the enable in p7001 is withdrawn.

r0896.0 BO: Parking axis, status word / Parking axis, ZSW

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status word for the "parking axis" function.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Parking axis active	Yes	No	-

Dependency: Refer to: p0897

p0897 BI: Parking axis selection / Parking axis sel

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to select the "parking axis" function.

Dependency: BI: p0897 = 0 signal

The function "parking axis" is not selected.

BI: p0897 = 1 signal

The function "parking axis" is selected.

Refer to: r0896

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: After it has been selected the "parking axis" function only becomes active when the pulses are suppressed.

r0898.0...15 CO/BO: Control word drive object 1 / STW DO1

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output for the control word of drive object 1 (Control Unit).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Synchronization signal SYN	Yes	No	-
01	Real time synchronization PING	Yes	No	-
07	Acknowledge fault	Yes	No	-
12	Master sign-of-life bit 0	Yes	No	-
13	Master sign-of-life bit 1	Yes	No	-
14	Master sign-of-life bit 2	Yes	No	-
15	Master sign-of-life bit 3	Yes	No	-

r0898.0...14 CO/BO: Control word sequence control / STW seq_ctrl

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2501
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output for the control word of the sequence control.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	ON/OFF1	Yes	No	-
01	OC / OFF2	Yes	No	-
02	OC / OFF3	Yes	No	-
03	Enable operation	Yes	No	-
04	Enable ramp-function generator	Yes	No	-
05	Continue ramp-function generator	Yes	No	-
06	Enable speed setpoint	Yes	No	-
07	Command open brake	Yes	No	-
08	Jog 1	Yes	No	3001
09	Jog 2	Yes	No	3001
10	Master control by PLC	Yes	No	-
12	Speed controller enable	Yes	No	-
14	Command close brake	Yes	No	-

Note: OC: Operating condition

r0898.0...14 CO/BO: Control word sequence control / STW seq_ctrl

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2501
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output for the control word of the sequence control.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	ON/OFF1	Yes	No	-
01	OC / OFF2	Yes	No	-
02	OC / OFF3	Yes	No	-
03	Enable operation	Yes	No	-
04	Enable ramp-function generator	Yes	No	-
05	Continue ramp-function generator	Yes	No	-

	Bit	Signal name	1 signal	0 signal	FP
	06	Enable velocity setpoint	Yes	No	-
	07	Command open brake	Yes	No	-
	08	Jog 1	Yes	No	3001
	09	Jog 2	Yes	No	3001
	10	Master control by PLC	Yes	No	-
	12	Velocity controller enable	Yes	No	-
	14	Command close brake	Yes	No	-

Note: OC: Operating condition

r0898.0...10 CO/BO: Control word sequence control infeed / STW seq_ctrl INF

A_INF, S_INF, R_INF

Can be changed: - | **Calculated:** - | **Access level:** 2
Data type: Unsigned16 | **Dyn. index:** - | **Func. diagram:** 8820, 8920
P-Group: Displays, signals | **Unit group:** - | **Unit selection:** -
Not for motor type: - | **Scaling:** - | **Expert list:** 1

Min	Max	Factory setting
-	-	-

Description: Display and connector output for the control word of the sequence control for the infeed.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	ON/OFF1	Yes	No	-
01	OC / OFF2	Yes	No	-
03	Enable operation	Yes	No	-
05	Inhibit motoring operation	Yes	No	-
06	Inhibit regenerative	Yes	No	-
10	Master control by PLC	Yes	No	-

Note: OC: Operating condition

r0898.0...10 CO/BO: Control word sequence control infeed / STW seq_ctrl INF

B_INF

Can be changed: - | **Calculated:** - | **Access level:** 2
Data type: Unsigned16 | **Dyn. index:** - | **Func. diagram:** 8720
P-Group: Displays, signals | **Unit group:** - | **Unit selection:** -
Not for motor type: - | **Scaling:** - | **Expert list:** 1

Min	Max	Factory setting
-	-	-

Description: Display and connector output for the control word of the sequence control for the infeed.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	ON/OFF1	Yes	No	-
01	OC / OFF2	Yes	No	-
10	Master control by PLC	Yes	No	-

Note: OC: Operating condition

r0898.0...13 CO/BO: Control word sequence control / STW seq_ctrl

TM41

Can be changed: - | **Calculated:** - | **Access level:** 2
Data type: Unsigned16 | **Dyn. index:** - | **Func. diagram:** 9678
P-Group: Displays, signals | **Unit group:** - | **Unit selection:** -
Not for motor type: - | **Scaling:** - | **Expert list:** 1

Min	Max	Factory setting
-	-	-

Description: Display and connector output for the control word of the sequence control.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	ON/OFF1	Yes	No	-
01	OC / OFF2	Yes	No	-
02	OC / OFF3	Yes	No	-
03	Enable operation	Yes	No	-
04	Enable ramp-function generator	Yes	No	-
05	Start ramp-function generator	Yes	No	-
06	Enable speed setpoint	Yes	No	-

07	Acknowledge fault	Yes	No	-
10	Master control by PLC	Yes	No	-
13	Zero mark enable	Yes	No	-

Note: OC: Operating condition

r0898.10 CO/BO: Control word sequence control encoder DO / STW seq_ctrl encDO

ENC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output for the control word of the sequence control for encoder drive object.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
10	Master control by PLC	Yes	No	-

r0899.0...15 CO/BO: Status word drive object 1 / ZSW DO1

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status word of the sequence control of the Control Unit (drive object 1).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Reserved	Yes	No	-
03	Fault present	Yes	No	-
07	Alarm present	Yes	No	-
08	System time synchronized	Yes	No	-
12	Slave sign-of-life bit 0	Yes	No	-
13	Slave sign-of-life bit 1	Yes	No	-
14	Slave sign-of-life bit 2	Yes	No	-
15	Slave sign-of-life bit 3	Yes	No	-

Note: DO: Drive Object

r0899.0...13 CO/BO: Status word sequence control / ZSW seq_ctrl

HLA

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status word of the sequence control.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Ready for switching on	Yes	No	-
01	Ready	Yes	No	-
02	Operation enabled	Yes	No	-
03	Jog active	Yes	No	-
04	No coasting active	OFF2 inactive	OFF2 active	-
05	No Quick Stop active	OFF3 inactive	OFF3 active	-
06	Switching on inhibited active	Yes	No	-
07	Drive ready	Yes	No	-
08	Controller enable	Yes	No	-
09	Control request	Yes	No	-

Bit	Signal name	1 signal	0 signal	FP
11	Enable power	Yes	No	-
12	Shutoff valve enabled	Yes	No	-
13	Command lock shutoff valve	Yes	No	-

Note: For bits 00, 01, 02, 04, 05, 06, 09:

For PROFIdrive, these signals are used for status word 1.

r0899.0...15 CO/BO: Status word sequence control / ZSW seq_ctrl

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2503
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status word of the sequence control.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Ready for switching on	Yes	No	-
01	Ready	Yes	No	-
02	Operation enabled	Yes	No	-
03	Jog active	Yes	No	-
04	No coasting active	OFF2 inactive	OFF2 active	-
05	No Quick Stop active	OFF3 inactive	OFF3 active	-
06	Switching on inhibited active	Yes	No	-
07	Drive ready	Yes	No	-
08	Controller enable	Yes	No	-
09	Control request	Yes	No	-
11	Pulses enabled	Yes	No	-
12	Open holding brake	Yes	No	-
13	Command close holding brake	Yes	No	-
14	Pulse enable from the brake control	Yes	No	-
15	Setpoint enable from the brake control	Yes	No	-

Note: For bits 00, 01, 02, 04, 05, 06, 09:

For PROFIdrive, these signals are used for status word 1.

For bit 13:

When the "Safe Brake Control" (SBC) is activated and selected, the brake is no longer controlled using this signal.

For bit 14, 15:

These signals are only of significance when the "extended brake control" function module is activated (r0108.14 = 1).

r0899.0...12 CO/BO: Status word sequence control infeed / ZSW seq_ctrl INF

A_INF, S_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 8826, 8926
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status word of the sequence control of the infeed unit.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Ready for switching on	Yes	No	-
01	Ready	Yes	No	-
02	Operation enabled	Yes	No	-
04	No OFF2 active	OFF2 inactive	OFF2 active	-
06	Switching on inhibited	Yes	No	-
08	Switching-on operation active	Yes	No	-
09	Control request	Yes	No	-
11	Precharging complete	Yes	No	-
12	Line contactor closed	Yes	No	8934

Note: For bit 12:

The feedback signal of a line contactor (auxiliary contact) can be interconnected via BI: p0860.

r0899.0...12 CO/BO: Status word sequence control infeed / ZSW seq_ctrl INF

B_INF

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 8726
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status word of the sequence control of the infeed unit.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Ready for switching on	Yes	No	-
01	Ready	Yes	No	-
02	Operation enabled	Yes	No	-
04	No OFF2 active	OFF2 inactive	OFF2 active	-
06	Switching on inhibited	Yes	No	-
08	Switching-on operation active	Yes	No	-
09	Control request	Yes	No	-
11	Precharging complete	Yes	No	-
12	Line contactor closed	Yes	No	-

Note: For bits 00, 01, 02, 04, 06, 09:

For PROFIdrive, these signals are used for status word 1.

r0899.0...15 CO/BO: Status word sequence control / ZSW seq_ctrl

TM41

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 9680
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status word of the sequence control.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Ready for switching on	Yes	No	-
01	Ready	Yes	No	-
02	Operation enabled	Yes	No	-
04	Coast down active	No	Yes	-
05	Quick Stop active	No	Yes	-
06	Switching on inhibited	Yes	No	-
07	Drive ready	Yes	No	-
09	Control request	Yes	No	-
13	Zero mark enabled	Yes	No	-
14	Track A/B enabled	Yes	No	-
15	Interface encoder emulation enabled	Yes	No	-

Note: For bit 00, 01, 02, 06:

For PROFIdrive, these bits are used for status word 1.

For bit 14, 15:

These bits are set as soon as the following conditions are fulfilled:

- STW.3 "Enable operation" is present (BI: p0852 = 1 signal).
- Connector input p4420 is interconnected.
- there are no disturbances/faults.

r0899.7...9 CO/BO: Status word sequence control encoder DO / ZSW seq_ctrl encDO

ENC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status word for sequence control on the encoder drive object.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
07	Drive ready	Yes	No	-
09	Control request	Yes	No	-

Note: For PROFIdrive, this signal is used for status word ZSW2_ENC.

p0915[0...29] TM15 PROFIdrive PZD setpoint assignment / TM15 PD PZD setp

TM15

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	4273	[0] 4201 [1] 4204 [2] 4205 [3] 4211 [4] 4212 [5] 4213 [6...29] 0

Description: Is used to assign the process data received from the master (PZD, setpoints).

Value:

0: ZERO
4201: r4201 (system time for synchronization)
4204: r4204 (control digital output 0 ... 15)
4205: r4205 (control digital output 16 ... 23)
4211: r4211 (edge mode digital input 0 ... 7)
4212: r4212 (edge mode digital input 8 ... 15)
4213: r4213 (edge mode digital input 16 ... 23)
4250: r4250 (set/resetting time digital output 0)
4251: r4251 (set/resetting time digital output 1)
4252: r4252 (set/resetting time digital output 2)
4253: r4253 (set/resetting time digital output 3)
4254: r4254 (set/resetting time digital output 4)
4255: r4255 (set/resetting time digital output 5)
4256: r4256 (set/resetting time digital output 6)
4257: r4257 (set/resetting time digital output 7)
4258: r4258 (set/resetting time digital output 8)
4259: r4259 (set/resetting time digital output 9)
4260: r4260 (set/resetting time digital output 10)
4261: r4261 (set/resetting time digital output 11)
4262: r4262 (set/resetting time digital output 12)
4263: r4263 (set/resetting time digital output 13)
4264: r4264 (set/resetting time digital output 14)
4265: r4265 (set/resetting time digital output 15)
4266: r4266 (set/resetting time digital output 16)
4267: r4267 (set/resetting time digital output 17)
4268: r4268 (set/resetting time digital output 18)
4269: r4269 (set/resetting time digital output 19)
4270: r4270 (set/resetting time digital output 20)
4271: r4271 (set/resetting time digital output 21)
4272: r4272 (set/resetting time digital output 22)
4273: r4273 (set/resetting time digital output 23)

Index: [0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17
[17] = PZD 18
[18] = PZD 19
[19] = PZD 20
[20] = PZD 21
[21] = PZD 22
[22] = PZD 23
[23] = PZD 24
[24] = PZD 25
[25] = PZD 26
[26] = PZD 27
[27] = PZD 28
[28] = PZD 29
[29] = PZD 30

Note: Example:

The telegram for the setpoints should have the following process data (PZD) and assignments:

PZD 1 (r4201), PZD 2 (r4204), PZD 3 (r4250)

The setpoint assignment must be realized as follows:

p0915[0] = 4201 - 16 bit

p0915[1] = 4204 - 16 bit

p0915[2] = 4250 - 16 bit

p0915[3] = 0

...

p0915[29] = 0

p0915[0...35] TM17 PROFIdrive PZD setpoint assignment / TM17 PD PZD setp

TM17	**Can be changed:** T	**Calculated:** -	**Access level:** 2
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Communications	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	4265	[0] 4201 [1] 4204 [2] 4211 [3] 4212 [4...35] 0

Description: Is used to assign the process data received from the master (PZD, setpoints).

Value:
0: ZERO
4201: r4201 (system time for synchronization)
4204: r4204 (control digital output 0 ... 15)
4211: r4211 (edge mode digital input 0 ... 7)
4212: r4212 (edge mode digital input 8 ... 15)
4250: r4250 (set/resetting time digital output 0)
4251: r4251 (set/resetting time digital output 1)

4252: r4252 (set/resetting time digital output 2)
4253: r4253 (set/resetting time digital output 3)
4254: r4254 (set/resetting time digital output 4)
4255: r4255 (set/resetting time digital output 5)
4256: r4256 (set/resetting time digital output 6)
4257: r4257 (set/resetting time digital output 7)
4258: r4258 (set/resetting time digital output 8)
4259: r4259 (set/resetting time digital output 9)
4260: r4260 (set/resetting time digital output 10)
4261: r4261 (set/resetting time digital output 11)
4262: r4262 (set/resetting time digital output 12)
4263: r4263 (set/resetting time digital output 13)
4264: r4264 (set/resetting time digital output 14)
4265: r4265 (set/resetting time digital output 15)

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17
[17] = PZD 18
[18] = PZD 19
[19] = PZD 20
[20] = PZD 21
[21] = PZD 22
[22] = PZD 23
[23] = PZD 24
[24] = PZD 25
[25] = PZD 26
[26] = PZD 27
[27] = PZD 28
[28] = PZD 29
[29] = PZD 30
[30] = PZD 31
[31] = PZD 32
[32] = PZD 33
[33] = PZD 34
[34] = PZD 35
[35] = PZD 36

Note:
Example:

The telegram for the setpoints should have the following process data (PZD) and assignments:

PZD 1 (r4201), PZD 2 (r4204), PZD 3 (r4250), PZD 4 (r4250)

The setpoint assignment must be realized as follows:

p0915[0] = 4201 - 16 bit

p0915[1] = 4204 - 16 bit

p0915[2] = 4250 - 32 bit - specified twice one after the other

p0915[3] = 4250 - 32 bit

p0915[4] = 0

...

p0915[35] = 0

p0916[0...29] TM15 PROFIdrive PZD actual value assignment / TM15 PD PZD actVal

TM15	**Can be changed:** T	**Calculated:** -	**Access level:** 2
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Communications	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	4373	[0] 4301 [1] 4304 [2] 4305 [3] 4311 [4] 4312 [5] 4313 [6...29] 0

Description: Is used to assign the process data to be sent to the master (PZD, actual values).

Value:
0: ZERO
4301: r4301 (module synchronization)
4304: r4304 (status digital input 0 ... 15)
4305: r4305 (status digital input 16 ... 23)
4311: r4311 (edge status digital input 0 ... 7)
4312: r4312 (edge status digital input 8 ... 15)
4313: r4313 (edge status digital input 16 ... 23)
4350: r4350 (edge times digital input 0)
4351: r4351 (edge times digital input 1)
4352: r4352 (edge times digital input 2)
4353: r4353 (edge times digital input 3)
4354: r4354 (edge times digital input 4)
4355: r4355 (edge times digital input 5)
4356: r4356 (edge times digital input 6)
4357: r4357 (edge times digital input 7)
4358: r4358 (edge times digital input 8)
4359: r4359 (edge times digital input 9)
4360: r4360 (edge times digital input 10)
4361: r4361 (edge times digital input 11)
4362: r4362 (edge times digital input 12)
4363: r4363 (edge times digital input 13)
4364: r4364 (edge times digital input 14)
4365: r4365 (edge times digital input 15)
4366: r4366 (edge times digital input 16)
4367: r4367 (edge times digital input 17)
4368: r4368 (edge times digital input 18)
4369: r4369 (edge times digital input 19)
4370: r4370 (edge times digital input 20)
4371: r4371 (edge times digital input 21)
4372: r4372 (edge times digital input 22)
4373: r4373 (edge times digital input 23)

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16

[16] = PZD 17
[17] = PZD 18
[18] = PZD 19
[19] = PZD 20
[20] = PZD 21
[21] = PZD 22
[22] = PZD 23
[23] = PZD 24
[24] = PZD 25
[25] = PZD 26
[26] = PZD 27
[27] = PZD 28
[28] = PZD 29
[29] = PZD 30

Note: Example:

The telegram for the actual values should have the following process data (PZD) and assignments:

PZD 1 (r4301), PZD 2 (r4304), PZD 3 (r4350)

The actual value assignment must be implemented as follows:

p0916[0] = 4301 - 16 bit

p0916[1] = 4304 - 16 bit

p0916[2] = 4350 - 16 bit

p0916[3] = 0

...

p0916[29] = 0

p0916[0...35] TM17 PROFIdrive PZD actual value assignment / TM17 PD PZD actVal

TM17

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	4365	[0] 4301 [1] 4304 [2] 4311 [3] 4312 [4...35] 0

Description: Is used to assign the process data to be sent to the master (PZD, actual values).

Value:
0: ZERO
4301: r4301 (module synchronization)
4304: r4304 (status digital input 0 ... 15)
4311: r4311 (edge status digital input 0 ... 7)
4312: r4312 (edge status digital input 8 ... 15)
4350: r4350 (edge times digital input 0)
4351: r4351 (edge times digital input 1)
4352: r4352 (edge times digital input 2)
4353: r4353 (edge times digital input 3)
4354: r4354 (edge times digital input 4)
4355: r4355 (edge times digital input 5)
4356: r4356 (edge times digital input 6)
4357: r4357 (edge times digital input 7)
4358: r4358 (edge times digital input 8)
4359: r4359 (edge times digital input 9)
4360: r4360 (edge times digital input 10)
4361: r4361 (edge times digital input 11)
4362: r4362 (edge times digital input 12)
4363: r4363 (edge times digital input 13)
4364: r4364 (edge times digital input 14)
4365: r4365 (edge times digital input 15)

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17
[17] = PZD 18
[18] = PZD 19
[19] = PZD 20
[20] = PZD 21
[21] = PZD 22
[22] = PZD 23
[23] = PZD 24
[24] = PZD 25
[25] = PZD 26
[26] = PZD 27
[27] = PZD 28
[28] = PZD 29
[29] = PZD 30
[30] = PZD 31
[31] = PZD 32
[32] = PZD 33
[33] = PZD 34
[34] = PZD 35
[35] = PZD 36

Note:
Example:
The telegram for the actual values should have the following process data (PZD) and assignments:
PZD 1 (r4301), PZD 2 (r4304), PZD 3 (r4350), PZD 4 (r4350)
The actual value assignment must be implemented as follows:
p0916[0] = 4301 - 16 bit
p0916[1] = 4304 - 16 bit
p0916[2] = 4350 - 32 bit - specified twice one after the other
p0916[3] = 4350 - 32 bit
p0916[4] = 0
...
p0916[35] = 0

p0918 PROFIBUS address / PB address

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2401, 2410
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	126	126

Description: Displays or sets the PROFIBUS address for PROFIBUS interface on the Control Unit.

The address can be set as follows:

1) Using the address switch on the Control Unit.

--> p0918 can then only be read and displays the selected address.

--> A change only becomes effective after a POWER ON.

2) Using p0918

--> Only if the address 00 hex, 7F hex, 80 hex, or FF hex has been set using the address switch.

--> The address is saved in a non-volatile fashion using the function "copy from RAM to ROM".

--> A change only becomes effective after a POWER ON.

Note: Permissible PROFIBUS addresses: 1 ... 126 (01 hex ... 7E hex)

Address 126 is used for commissioning.

Every PROFIBUS address change only becomes effective after a POWER ON.

The parameter is not influenced by setting the factory setting.

p0922 IF1 PROFIdrive PZD telegram selection / IF1 PZD telegr

CU_I_D410

Can be changed: C2(1), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2401, 2420, 2423, 2481, 2483
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
390	999	999

Description: Sets the send and receive telegram.

Value:

390: SIEMENS telegram 390, PZD-2/2
391: SIEMENS telegram 391, PZD-3/7
392: SIEMENS telegram 392, PZD-3/15
393: SIEMENS telegram 393, PZD-4/21
394: SIEMENS telegram 394, PZD-3/3
395: SIEMENS telegram 395, PZD-4/25
396: SIEMENS telegram 396, PZD-20/21
999: Free telegram configuration with BICO

p0922 IF1 PROFIdrive PZD telegram selection / IF1 PZD telegr

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: C2(1), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2401, 2420, 2423, 2481, 2483
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
390	999	999

Description: Sets the send and receive telegram.

Value:

390: SIEMENS telegram 390, PZD-2/2
391: SIEMENS telegram 391, PZD-3/7
392: SIEMENS telegram 392, PZD-3/15
393: SIEMENS telegram 393, PZD-4/21
394: SIEMENS telegram 394, PZD-3/3
395: SIEMENS telegram 395, PZD-4/25
999: Free telegram configuration with BICO

p0922 IF1 PROFIdrive PZD telegram selection / IF1 PZD telegr

HLA			
	Can be changed: C2(1), T	**Calculated:** -	**Access level:** 1
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2401, 2415, 2416, 2419, 2420, 2421, 2422, 2423
	P-Group: Communications	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	166	999	999

Description: Sets the send and receive telegram.

Value:
166: SIEMENS telegram 166, PZD-14/20
999: Free telegram configuration with BICO

Note: If a value is not equal to 999, a telegram is set and the automatically set interconnections in the telegram are inhibited.

The inhibited interconnections can only be changed again after setting value 999.

p0922 IF1 PROFIdrive PZD telegram selection / IF1 PZD telegr

SERVO, SERVO_AC, SERVO_I_AC			
	Can be changed: C2(1), T	**Calculated:** -	**Access level:** 1
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2401, 2415, 2416, 2419, 2420, 2421, 2422, 2423
	P-Group: Communications	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	1	999	999

Description: Sets the send and receive telegram.

Value:
1: Standard telegram 1, PZD-2/2
2: Standard telegram 2, PZD-4/4
3: Standard telegram 3, PZD-5/9
4: Standard telegram 4, PZD-6/14
5: Standard telegram 5, PZD-9/9
6: Standard telegram 6, PZD-10/14
102: SIEMENS telegram 102, PZD-6/10
103: SIEMENS telegram 103, PZD-7/15
105: SIEMENS telegram 105, PZD-10/10
106: SIEMENS telegram 106, PZD-11/15
116: SIEMENS telegram 116, PZD-11/19
118: SIEMENS telegram 118, PZD-11/19
125: SIEMENS telegram 125, PZD-14/10
126: SIEMENS telegram 126, PZD-15/15
136: SIEMENS telegram 136, PZD-15/19
138: SIEMENS telegram 138, PZD-15/19
220: SIEMENS telegram 220, PZD-10/10
999: Free telegram configuration with BICO

Note: If a value is not equal to 999, a telegram is set and the automatically set interconnections in the telegram are inhibited.

The inhibited interconnections can only be changed again after setting value 999.

p0922 IF1 PROFIdrive PZD telegram selection / IF1 PZD telegr

SERVO (EPOS, Pos ctrl, Spin_diag), SERVO_AC (EPOS, Pos ctrl, Spin_diag)

Can be changed: C2(1), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2401, 2415, 2416, 2419, 2420, 2421, 2422, 2423
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
7	999	999

Description: Sets the send and receive telegram.

Value:
7: Standard telegram 7, PZD-2/2
9: Standard telegram 9, PZD-10/5
110: SIEMENS telegram 110, PZD-12/7
111: SIEMENS telegram 111, PZD-12/12
999: Free telegram configuration with BICO

Note: If a value is not equal to 999, a telegram is set and the automatically set interconnections in the telegram are inhibited.

The inhibited interconnections can only be changed again after setting value 999.

p0922 IF1 PROFIdrive PZD telegram selection / IF1 PZD telegr

SERVO (Pos ctrl, Spin_diag), SERVO_AC (Pos ctrl, Spin_diag)

Can be changed: C2(1), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2401, 2415, 2416, 2419, 2420, 2421, 2422, 2423
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
999	999	999

Description: Sets the send and receive telegram.

Value:
999: Free telegram configuration with BICO

Note: If a value is not equal to 999, a telegram is set and the automatically set interconnections in the telegram are inhibited.

The inhibited interconnections can only be changed again after setting value 999.

p0922 IF1 PROFIdrive PZD telegram selection / IF1 PZD telegr

SERVO (Spin_diag), SERVO_AC (Spin_diag)

Can be changed: C2(1), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2401, 2415, 2416, 2419, 2420, 2421, 2422, 2423
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	999	999

Description: Sets the send and receive telegram.

Value:
1: Standard telegram 1, PZD-2/2
2: Standard telegram 2, PZD-4/4
3: Standard telegram 3, PZD-5/9
4: Standard telegram 4, PZD-6/14
5: Standard telegram 5, PZD-9/9
6: Standard telegram 6, PZD-10/14
102: SIEMENS telegram 102, PZD-6/10
103: SIEMENS telegram 103, PZD-7/15
105: SIEMENS telegram 105, PZD-10/10
106: SIEMENS telegram 106, PZD-11/15
116: SIEMENS telegram 116, PZD-11/19
118: SIEMENS telegram 118, PZD-11/19

125: SIEMENS telegram 125, PZD-14/10
126: SIEMENS telegram 126, PZD-15/15
136: SIEMENS telegram 136, PZD-15/19
138: SIEMENS telegram 138, PZD-15/19
139: SIEMENS telegram 139, PZD-15/19
220: SIEMENS telegram 220, PZD-10/10
999: Free telegram configuration with BICO

Note: If a value is not equal to 999, a telegram is set and the automatically set interconnections in the telegram are inhibited.

The inhibited interconnections can only be changed again after setting value 999.

p0922 IF1 PROFIdrive PZD telegram selection / IF1 PZD telegr

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(1), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2401, 2415, 2416, 2419, 2420, 2421, 2422, 2423
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	999	999

Description: Sets the send and receive telegram.

Value:
1: Standard telegram 1, PZD-2/2
2: Standard telegram 2, PZD-4/4
20: Standard telegram 20, PZD-2/6
220: SIEMENS telegram 220, PZD-10/10
352: SIEMENS telegram 352, PZD-6/6
999: Free telegram configuration with BICO

Caution: Telegrams 2, 3 and 4 are not suitable for sensorless vector control (p1300 = 20). For sensorless vector control, it is necessary that the setpoint speed is entered at the ramp-function generator input (e.g. p1070) and not after the ramp-function generator (p1155).

Note: If a value is not equal to 999, a telegram is set and the automatically set interconnections in the telegram are inhibited. The inhibited interconnections can only be changed again after setting value 999.

p0922 IF1 PROFIdrive PZD telegram selection / IF1 PZD telegr

VECTOR (EPOS, n/M, Pos ctrl), VECTOR_AC (EPOS, n/M, Pos ctrl)

Can be changed: C2(1), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2401, 2415, 2416, 2419, 2420, 2421, 2422, 2423
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
7	999	999

Description: Sets the send and receive telegram.

Value:
7: Standard telegram 7, PZD-2/2
9: Standard telegram 9, PZD-10/5
110: SIEMENS telegram 110, PZD-12/7
111: SIEMENS telegram 111, PZD-12/12
999: Free telegram configuration with BICO

Caution: Telegrams 2, 3 and 4 are not suitable for sensorless vector control (p1300 = 20). For sensorless vector control, it is necessary that the setpoint speed is entered at the ramp-function generator input (e.g. p1070) and not after the ramp-function generator (p1155).

Note: If a value is not equal to 999, a telegram is set and the automatically set interconnections in the telegram are inhibited. The inhibited interconnections can only be changed again after setting value 999.

p0922 IF1 PROFIdrive PZD telegram selection / IF1 PZD telegr

VECTOR (n/M, Pos ctrl), VECTOR_AC (n/M, Pos ctrl)

Can be changed: C2(1), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2401, 2415, 2416, 2419, 2420, 2421, 2422, 2423
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
999	999	999

Description: Sets the send and receive telegram.

Value: 999: Free telegram configuration with BICO

Caution: Telegrams 2, 3 and 4 are not suitable for sensorless vector control (p1300 = 20). For sensorless vector control, it is necessary that the setpoint speed is entered at the ramp-function generator input (e.g. p1070) and not after the ramp-function generator (p1155).

Note: If a value is not equal to 999, a telegram is set and the automatically set interconnections in the telegram are inhibited. The inhibited interconnections can only be changed again after setting value 999.

p0922 IF1 PROFIdrive PZD telegram selection / IF1 PZD telegr

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: C2(1), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2401, 2415, 2416, 2419, 2420, 2421, 2422, 2423
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	999	999

Description: Sets the send and receive telegram.

Value:
1: Standard telegram 1, PZD-2/2
2: Standard telegram 2, PZD-4/4
3: Standard telegram 3, PZD-5/9
4: Standard telegram 4, PZD-6/14
20: Standard telegram 20, PZD-2/6
220: SIEMENS telegram 220, PZD-10/10
352: SIEMENS telegram 352, PZD-6/6
999: Free telegram configuration with BICO

Caution: Telegrams 2, 3 and 4 are not suitable for sensorless vector control (p1300 = 20). For sensorless vector control, it is necessary that the setpoint speed is entered at the ramp-function generator input (e.g. p1070) and not after the ramp-function generator (p1155).

Note: If a value is not equal to 999, a telegram is set and the automatically set interconnections in the telegram are inhibited. The inhibited interconnections can only be changed again after setting value 999.

p0922 IF1 PROFIdrive PZD telegram selection / IF1 PZD telegr

A_INF, S_INF, R_INF, B_INF

Can be changed: C2(1), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2401, 2420, 2423, 2447, 2457, 2481, 2483
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
370	999	999

Description: Sets the send and receive telegram.

Value:
370: SIEMENS telegram 370, PZD-1/1
371: SIEMENS telegram 371, PZD-5/8
999: Free telegram configuration with BICO

Note: If a value is not equal to 999, a telegram is set and the automatically set interconnections in the telegram are inhibited.

The inhibited interconnections can only be changed again after setting value 999.

p0922 IF1 PROFIdrive PZD telegram selection / IF1 PZD telegr

TM17, TM15

Can be changed: C2(1), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2481, 2483
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	0	0

Description: Sets the send and receive telegram.

Value:
0: Free telegram configuration with p0915/p0916

p0922 IF1 PROFIdrive PZD telegram selection / IF1 PZD telegr

TM41

Can be changed: C2(1), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2401, 9677, 9679, 9681, 9683
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
3	999	999

Description: Sets the send and receive telegram.

Value:
3: Standard telegram 3, PZD-5/9
999: Free telegram configuration with BICO

Note: If a value is not equal to 999, a telegram is set and the automatically set interconnections in the telegram are inhibited.

The inhibited interconnections can only be changed again after setting value 999.

p0922 IF1 PROFIdrive PZD telegram selection / IF1 PZD telegr

ENC

Can be changed: C2(1), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2401, 2415, 2416, 2419, 2420, 2421, 2422, 2423
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
81	999	999

Description: Sets the send and receive telegram.

Value:
81: SIEMENS telegram 81, PZD-2/6
82: SIEMENS telegram 82, PZD-2/7
83: SIEMENS telegram 83, PZD-2/8
999: Free telegram configuration with BICO

Note: If a value is not equal to 999, a telegram is set and the automatically set interconnections in the telegram are inhibited.

The inhibited interconnections can only be changed again after setting value 999.

r0924[0...1] ZSW bit pulses enabled / ZSW pulse enab

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2454, 2456
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the position of the "Pulses enabled" status signal in the PROFIdrive telegram.

Index:
[0] = Signal number
[1] = Bit position

p0925 PROFIdrive clock synchronous sign-of-life tolerance / PD SoL_tol

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, SERVO, VECTOR (n/M), HLA, SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M), TM41, ENC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2410
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	65535	1

Description: Sets the number of tolerated consecutive sign-of-life errors of the isochronous master.

The sign-of-life signal is normally received in PZD4 (control word 2) from the master.

Dependency: Refer to: p2045, r2065

Refer to: F01912

Note: The sign-of-life monitoring is disabled for p0925 = 65535.

r0930 PROFIdrive operating mode / PD operating mode

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the operating mode.

1: Closed-loop speed controlled operation with ramp-function generator

2: Closed-loop position controlled operation

3: Closed-loop speed controlled operation without ramp-function generator

r0944 CO: Counter for fault buffer changes / Fault buff change

All objects

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 8060
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output for the counter for changes of the fault buffer.

This counter is incremented every time the fault buffer changes.

Recommendation: Used to check whether the fault buffer has been read out consistently.

Dependency: Refer to: r0945, r0947, r0948, r0949, r2109

r0945[0...63] Fault code / Fault code

All objects

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 8050, 8060
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the numbers of faults that have occurred.

Dependency: Refer to: r0947, r0948, r0949, r2109, r2130, r2133, r2136, r3120, r3122

Notice: The properties of the fault buffer should be taken from the corresponding product documentation.

Note: The buffer parameters are cyclically updated in the background (refer to status signal in r2139).
Fault buffer structure (general principle):
r0945[0], r0949[0], r0948[0], r2109[0], r3115[0] --> actual fault case, fault 1
. . .
r0945[7], r0949[7], r0948[7], r2109[7], r3115[7] --> actual fault case, fault 8
r0945[8], r0949[8], r0948[8], r2109[8], r3115[8] --> 1st acknowledged fault case, fault 1
. . .
r0945[15], r0949[15], r0948[15], r2109[15], r3115[15] --> 1st acknowledged fault case, fault 8
. . .
r0945[56], r0949[56], r0948[56], r2109[56], r3115[56] --> 7th acknowledged fault case, fault 1
. . .
r0945[63], r0949[63], r0948[63], r2109[63], r3115[63] --> 7th acknowledged fault case, fault 8

r0946[0...65534] Fault code list / Fault code list

All objects	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Messages	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 0
	Min	**Max**	**Factory setting**
	-	-	-

Description: Lists the fault codes stored in the drive unit.
The indices can only be accessed with a valid fault code.
Example:
r0946[0...999] = 0 --> fault code 0 ... 999 is not available
r0946[1000] = 1000 --> fault code 1000 is available
r0946[1001] = 1001 --> fault code 1001 is available
...
r0946[1008] = 0 --> fault code 1008 is not available
...

Dependency: The parameter assigned to the fault code is entered in r0951 under the same index.

r0947[0...63] Fault number / Fault number

All objects	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 8050, 8060
	P-Group: Messages	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: This parameter is identical to r0945.

r0948[0...63] Fault time received in milliseconds / t_fault recv ms

All objects	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 8050, 8060
	P-Group: Messages	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [ms]	- [ms]	- [ms]

Description: Displays the system runtime in milliseconds when the fault occurred.

Dependency: Refer to: r0945, r0947, r0949, r2109, r2114, r2130, r2133, r2136, r3115, r3120, r3122

Notice: The time comprises r2130 (days) and r0948 (milliseconds).

Note: The buffer parameters are cyclically updated in the background (refer to status signal in r2139).
The structure of the fault buffer and the assignment of the indices is shown in r0945.
When the parameter is read via PROFIdrive, the TimeDifference data type applies.

r0949[0...63] Fault value / Fault value

All objects

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 8050, 8060
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays additional information about the fault that occurred (as integer number).

Dependency: Refer to: r0945, r0947, r0948, r2109, r2130, r2133, r2136, r3115, r3120, r3122

Note: The buffer parameters are cyclically updated in the background (refer to status signal in r2139).

The structure of the fault buffer and the assignment of the indices is shown in r0945.

p0952 Fault cases counter / Fault cases qty

All objects

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 6700, 8060
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	65535	0

Description: Number of fault situations that have occurred since the last reset.

Dependency: The fault buffer is deleted (cleared) by setting p0952 to 0.

Refer to: r0945, r0947, r0948, r0949, r2109, r2130, r2133, r2136

r0963 PROFIBUS baud rate / PB baud rate

CU_S_AC_DP, CU_S120_DP, CU_S150_DP

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	-

Description: Displays the corresponding value for the PROFIBUS baud rate.

Value:

0: 9.6 kbit/s
1: 19.2 kbit/s
2: 93.75 kbit/s
3: 187.5 kbit/s
4: 500 kbit/s
6: 1.5 Mbit/s
7: 3 Mbit/s
8: 6 Mbit/s
9: 12 Mbit/s
10: 31.25 kbit/s
11: 45.45 kbit/s
255: Unknown

r0964[0...6] Device identification / Device ident

CU_I, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the device identification.

Index:
[0] = Company (Siemens = 42)
[1] = Device type
[2] = Firmware version
[3] = Firmware date (year)
[4] = Firmware date (day/month)
[5] = Number of drive objects
[6] = Firmware patch/hot fix

Note: Example:

r0964[0] = 42 --> SIEMENS

r0964[1] = device type, see below

r0964[2] = 403 --> first part of the firmware version V04.03 (for second part, refer to index 6)

r0964[3] = 2010 --> year 2010

r0964[4] = 1705 --> 17th of May

r0964[5] = 2 --> 2 drive objects

r0964[6] = 200 --> second part, firmware version (complete version: V04.03.02.00)

Device type:

r0964[1] = 5800 --> SINAMICS S120 in SIMOTION D435-2

r0964[1] = 5801 --> SINAMICS S120 in SIMOTION D445-2

r0964[1] = 5802 --> SINAMICS S120 in SIMOTION D425-2

r0964[1] = 5803 --> SINAMICS S120 in SIMOTION D455-2

r0964[1] = 5820 --> SINAMICS S120 in SIMOTION D410-2 DP

r0964[1] = 5821 --> SINAMICS S120 in SIMOTION D410-2 PN

r0964[1] = 5850 --> SINAMICS S120 in SINUMERIK NCU710

r0964[1] = 5851 --> SINAMICS S120 in SINUMERIK NCU720

r0964[1] = 5852 --> SINAMICS S120 in SINUMERIK NCU730

r0964[1] = 5853 --> SINAMICS S120 in SINUMERIK NCU730.2

r0964[1] = 5861 --> SINAMICS S120 in SINUMERIK 828D

r0964[0...6] Device identification / Device ident

CU_NX_CX

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the device identification.

Index:
[0] = Company (Siemens = 42)
[1] = Device type
[2] = Firmware version
[3] = Firmware date (year)
[4] = Firmware date (day/month)
[5] = Number of drive objects
[6] = Firmware patch/hot fix

Note: Example:

r0964[0] = 42 --> SIEMENS

r0964[1] = device type, see below

r0964[2] = 403 --> first part of the firmware version V04.03 (for second part, refer to index 6)

r0964[3] = 2010 --> year 2010

r0964[4] = 1705 --> 17th of May

r0964[5] = 2 --> 2 drive objects

r0964[6] = 200 --> second part, firmware version (complete version: V04.03.02.00)

Device type:

r0964[1] = 5100 --> SIMOTION CX32-2

r0964[1] = 5120 --> SINUMERIK NX10

r0964[1] = 5121 --> SINUMERIK NX15

r0964[0...6] Device identification / Device ident

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the device identification.

Index:
[0] = Company (Siemens = 42)
[1] = Device type
[2] = Firmware version
[3] = Firmware date (year)
[4] = Firmware date (day/month)
[5] = Number of drive objects
[6] = Firmware patch/hot fix

Note: Example:

r0964[0] = 42 --> SIEMENS

r0964[1] = device type, see below

r0964[2] = 403 --> first part of the firmware version V04.03 (for second part, refer to index 6)

r0964[3] = 2010 --> year 2010

r0964[4] = 1705 --> 17th of May

r0964[5] = 2 --> 2 drive objects

r0964[6] = 200 --> second part, firmware version (complete version: V04.03.02.00)

Device type:

r0964[1] = 5000 --> SINAMICS S120 CU320-2 DP

r0964[1] = 5001 --> SINAMICS S120 CU320-2 PN

r0964[1] = 5010 --> SINAMICS S120 CU310-2 DP

r0964[1] = 5011 --> SINAMICS S120 CU310-2 PN

r0964[1] = 5250 --> SINAMICS S150 CU320-2 DP

r0964[1] = 5251 --> SINAMICS S150 CU320-2 PN

r0965 PROFIdrive profile number / PD profile number

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the PROFIdrive profile number and profile version.

Constant value = 0329 hex.

Byte 1: Profile number = 03 hex = PROFIdrive profile

Byte 2: Profile version = 29 hex = Version 4.1

Note: When the parameter is read via PROFIdrive, the Octet String 2 data type applies.

p0969 System runtime relative / t_System relative

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 8050, 8060
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	4294967295 [ms]	0 [ms]

Description: Displays the system runtime in ms since the last POWER ON.

Note: The value in p0969 can only be reset to 0.

The value overflows after approx. 49 days.

When the parameter is read via PROFIdrive, the TimeDifference data type applies.

p0970 Reset drive parameters / Drive par reset

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: C2(30)	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Factory settings	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	100	0

Description: The parameter is used to initiate the reset of the parameters of an individual drive unit.

Parameters p0100, p0205 (only for VECTOR) and the parameters of the basic drive commissioning (p0009) are not reset (p0107, p0108, p0111, p0112, p0115, p0121, p0130, p0131, p0140, p0141, p0142, p0170, p0186 ... p0189). These can only be reset using the factory setting of the complete drive unit (p0976).

Value:

0: Inactive
1: Start a parameter reset
5: Starts a safety parameter reset
6: Start reset non-safety/safety parameters
10: Start loading parameters saved with p0971 = 10
11: Start loading parameters saved with p0971 = 11
12: Start loading parameters saved with p0971 = 12
30: Start loading delivery condition saved with p0971 = 30
100: Start a BICO interconnection reset

Notice: After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

Note: A factory setting run can only be started if p0010 was first set to 30 (parameter reset).

At the end of the calculations, p0970 is automatically set to 0.

Parameter reset has been completed if p0970 and p0010 have been set to 0.

For p0970 = 5 the following applies:

The password for Safety Integrated must be set.

When Safety Integrated is enabled, this can result in error messages, which then require an acceptance test to be performed.

Then save the parameters and carry out a POWER ON.

---

p0970 Reset drive parameters / Drive par reset

HLA

Can be changed: C2(30)	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Factory settings	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	100	0

Description: The parameter is used to initiate the reset of the parameters of an individual drive unit.

Parameters of the basic drive commissioning (p0009) are not reset (p0107, p0108, p0111, p0112, p0115, p0121, p0130, p0131, p0140, p0141, p0142, p0170, p0186 ... p0189). These can only be reset using the factory setting of the complete drive unit (p0976).

Value:
0: Inactive
1: Start a parameter reset
100: Start a BICO interconnection reset

Notice: After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

Note: A factory setting run can only be started if p0010 was first set to 30 (parameter reset).

At the end of the calculations, p0970 is automatically set to 0.

Parameter reset has been completed if p0970 and p0010 have been set to 0.

---

p0970 Reset drive parameters / Drive par reset

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(30)	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Factory settings	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	100	0

Description: The parameter is used to initiate the reset of the parameters of an individual drive unit.

Parameters p0100, p0205 (only for VECTOR) and the parameters of the basic drive commissioning (p0009) are not reset (p0107, p0108, p0111, p0112, p0115, p0121, p0130, p0131, p0140, p0141, p0142, p0170, p0186 ... p0189). These can only be reset using the factory setting of the complete drive unit (p0976).

Value:
0: Inactive
1: Start a parameter reset
5: Starts a safety parameter reset
6: Start reset non-safety/safety parameters
100: Start a BICO interconnection reset

Dependency: Refer to: F01659

Notice: After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

Note: A factory setting run can only be started if p0010 was first set to 30 (parameter reset).

At the end of the calculations, p0970 is automatically set to 0.

Parameter reset has been completed if p0970 and p0010 have been set to 0.

For p0970 = 5 the following applies:

The password for Safety Integrated must be set.

When Safety Integrated is enabled, this can result in error messages, which then require an acceptance test to be performed.

Then save the parameters and carry out a POWER ON.

For p0970 = 1 the following applies:

If a Safety Integrated function is parameterized (p9601), then the safety parameters are not reset. In this case, a fault F01659 is output with fault value 2.

p0970 Reset infeed parameter / INF par reset

A_INF, S_INF, R_INF, B_INF

Can be changed: C2(30)	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Factory settings	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	100	0

Description: The parameter is used to initiate a reset of the parameters of an individual infeed unit.

The parameters of the basic commissioning (refer to p0009) are in this case not reset (p0107, p0108, p0121, p0170). These can only be reset using the factory setting of the complete drive unit (p0976).

The sampling times (p0111, p0112, p0115) are only not reset if this results in a conflict with the basic clock cycle (p0110).

Value:
0: Inactive
1: Start a parameter reset
100: Start a BICO interconnection reset

Notice: After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

Note: A factory setting run can only be started if p0010 was first set to 30 (parameter reset).

At the end of the calculations, p0970 is automatically set to 0.

Parameter reset has been completed if p0970 and p0010 have been set to 0.

p0970 TM120 reset parameters / TM120 par reset

TM120

Can be changed: C2(30)	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Factory settings	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	100	0

Description: The parameter is used to initiate a reset of the parameters on Terminal Module 120 (TM120).

Value:
0: Inactive
1: Start a parameter reset
100: Start a BICO interconnection reset

Dependency: Refer to: p0010

Notice: After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

Note: A factory setting run can only be started if p0010 was first set to 30 (parameter reset).

At the end of the calculations, p0970 is automatically set to 0.

p0970 TM15 reset parameter / TM15 par reset

TM15

Can be changed: C2(30)	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Factory settings	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	100	0

Description: The parameter is used to initiate a reset of the parameters on Terminal Module 15 (TM15).

Parameter p0151 is not reset. It is only reset if the entire drive unit is reset to the factory settings (p0976).

Value:
0: Inactive
1: Start a parameter reset
100: Start a BICO interconnection reset

Dependency: Refer to: p0010

Notice: After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

Note: A factory setting run can only be started if p0010 was first set to 30 (parameter reset).

At the end of the calculations, p0970 is automatically set to 0.

p0970 TM150 reset parameters / TM150 par reset

TM150			
	Can be changed: C2(30)	**Calculated:** -	**Access level:** 2
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Factory settings	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	100	0

Description: The parameter is used to initiate a reset of the parameters on Terminal Module 150 (TM150).

Value:
0: Inactive
1: Start a parameter reset
100: Start a BICO interconnection reset

Dependency: Refer to: p0010

Notice: After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

Note: A factory setting run can only be started if p0010 was first set to 30 (parameter reset).

At the end of the calculations, p0970 is automatically set to 0.

p0970 TM15DI/DO reset parameter / TM15D par reset

TM15DI_DO			
	Can be changed: C2(30)	**Calculated:** -	**Access level:** 2
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Factory settings	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	100	0

Description: The parameter is used to initiate a reset of the parameters on Terminal Module 15 (TM15).

The sampling time p4099 is not reset if in so doing a conflict occurs with the basic clock cycle.

Parameter p0151 is not reset. It is only reset if the entire drive unit is reset to the factory settings (p0976).

Value:
0: Inactive
1: Start a parameter reset
100: Start a BICO interconnection reset

Dependency: Refer to: p0010

Notice: After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

Note: A factory setting run can only be started if p0010 was first set to 30 (parameter reset).

At the end of the calculations, p0970 is automatically set to 0.

p0970 TM17 reset parameter / TM17 par reset

TM17			
	Can be changed: C2(30)	**Calculated:** -	**Access level:** 2
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Factory settings	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	100	0

Description: The parameter is used to initiate a reset of the parameters on Terminal Module 17 (TM17).

Parameter p0151 is not reset. It is only reset if the entire drive unit is reset to the factory settings (p0976).

Value:
0: Inactive
1: Start a parameter reset
100: Start a BICO interconnection reset

Dependency: Refer to: p0010

Notice: After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

Note: A factory setting run can only be started if p0010 was first set to 30 (parameter reset).

At the end of the calculations, p0970 is automatically set to 0.

p0970 TM31 reset parameters / TM31 par reset

TM31

Can be changed: C2(30)	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Factory settings	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	100	0

Description: The parameter is used to initiate a reset of the parameters on Terminal Module 31 (TM31).

The sampling time p4099 is not reset if in so doing a conflict occurs with the basic clock cycle.

Parameter p0151 is not reset. It is only reset if the entire drive unit is reset to the factory settings (p0976).

Value:
0: Inactive
1: Start a parameter reset
100: Start a BICO interconnection reset

Dependency: Refer to: p0010

Notice: After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

Note: A factory setting run can only be started if p0010 was first set to 30 (parameter reset).

At the end of the calculations, p0970 is automatically set to 0.

p0970 TM41 reset parameters / TM41 par reset

TM41

Can be changed: C2(30)	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Factory settings	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	100	0

Description: The parameter is used to initiate a reset of the parameters on Terminal Module 41 (TM41).

Parameter p0151 is not reset. It is only reset if the entire drive unit is reset to the factory settings (p0976).

Value:
0: Inactive
1: Start a parameter reset
100: Start a BICO interconnection reset

Dependency: Refer to: p0010

Notice: After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

Note: A factory setting run can only be started if p0010 was first set to 30 (parameter reset).

At the end of the calculations, p0970 is automatically set to 0.

p0970 TB30 reset parameters / TB30 par reset

TB30

Can be changed: C2(30)	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Factory settings	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	100	0

Description: The parameter is used to initiate a reset of the parameters on Terminal Board 30 (TB30).

The sampling time p4099 is not reset if in so doing a conflict occurs with the basic clock cycle.

Parameter p0161 is not reset. It is only reset if the entire drive unit is reset to the factory settings (p0976).

Value:
0: Inactive
1: Start a parameter reset
100: Start a BICO interconnection reset

Notice: After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

Note: A factory setting run can only be started if p0010 was first set to 30 (parameter reset).

At the end of the calculations, p0970 is automatically set to 0.

Parameter reset has been completed if p0970 and p0010 have been set to 0.

p0970 TM54F reset parameters / TM54F par reset

TM54F_MA

Can be changed: C2(30)	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Factory settings	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	100	0

Description: The parameter is used to initiate a reset of the parameters on Terminal Module 54F (TM54F).

Parameter p0151 is not reset. It is only reset if the entire drive unit is reset to the factory settings (p0976).

Value:
0: Inactive
1: Start a parameter reset
5: Starts a safety parameter reset
6: Start reset non-safety/safety parameters
100: Start a BICO interconnection reset

Notice: After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

Note: A factory setting run can only be started if p0010 was first set to 30 (parameter reset).

At the end of the calculations, p0970 is automatically set to 0.

Parameter reset has been completed if p0970 and p0010 have been set to 0.

For p0970 = 5 the following applies:

The password for Safety Integrated must be set.

When Safety Integrated is enabled, this can result in error messages, which then require an acceptance test to be performed.

Then save the parameters and carry out a POWER ON.

p0970 ENCODER reset parameters / ENC par reset

ENC

Can be changed: C2(30)	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Factory settings	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	100	0

Description: The parameter is used to initiate the reset of the parameters on the ENCODER drive object.

Parameter p0141 is not reset. It is only reset if the entire drive unit is reset to the factory settings (p0976).

Value:
0: Inactive
1: Start a parameter reset
100: Start a BICO interconnection reset

Notice: After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

Note: A factory setting run can only be started if p0010 was first set to 30 (parameter reset).

At the end of the calculations, p0970 is automatically set to 0.

Parameter reset has been completed if p0970 and p0010 have been set to 0.

p0971 Save drive object parameters / Drv_obj par save

All objects

Can be changed: C2(30), U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Factory settings	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Setting to save the parameter of the particular drive object in the non-volatile memory.

When saving, only the adjustable parameters intended to be saved are taken into account.

Value:
0: Inactive
1: Save drive object

Dependency: Refer to: p0977, p1960, p3845, r3996

Warning: If the Control Unit power supply is switched off while data is being saved, then the backup of all adjustable parameters can be lost, and the Control Unit must be recommissioned.

Notice: The Control Unit power supply may only be switched off after data has been saved (i.e. after data save has been started, wait until the parameter again has the value 0).

Writing to parameters is inhibited while saving.

The progress while saving is displayed in r3996.

Note: Starting from the particular drive object, the following parameters are saved:

CU3xx: Device-specific parameters and PROFIBUS device parameters.

Other objects: Parameters of the actual object and PROFIBUS device parameters.

Prerequisite:

Before saving with p0971, all parameters (topology, all drive objects) must have been saved at least once using p0977 = 1.

p0972 Drive unit reset / Drv_unit reset

CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: All groups	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	3	0

Description: Sets the required procedure to execute a hardware reset for the drive unit.

Value:
0: Inactive
1: Hardware-Reset immediate
2: Hardware reset preparation
3: Hardware reset after cyclic communication has failed

Danger: It must be absolutely ensured that the system is in a safe condition.

The memory card/device memory of the Control Unit must not be accessed.

Note: If value = 1:

Reset is immediately executed and communications interrupted.

After communications have been established, check the reset operation (refer below).

This value cannot be set in operation.

If value = 2:

Help to check the reset operation.

Firstly, set p0972 = 2 and then read back. Secondly, set p0972 = 1 (it is possible that this request is possibly no longer acknowledged). The communication is then interrupted.

After communications have been established, check the reset operation (refer below).

If value = 3:

The reset is executed after interrupting cyclic communication. This setting is used to implement a synchronized reset by a control for several drive units.

If cyclic communication is not active, then the reset is immediately executed.

If the cyclic communication is active for both PROFIdrive interfaces, then the reset is executed after completing both cycle communications.

After communications have been established, check the reset operation (refer below).

To check the reset operation:

After the drive unit has been restarted and communications have been established, read p0972 and check the following:

p0972 = 0 --> the reset was successfully executed.

p0972 > 0 --> the reset was not executed.

r0975[0...10] Drive object identification / DO identification

All objects

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the identification of the drive object.

Index:
[0] = Company (Siemens = 42)
[1] = Drive object type
[2] = Firmware version
[3] = Firmware date (year)
[4] = Firmware date (day/month)
[5] = PROFIdrive drive object type class
[6] = PROFIdrive drive object sub-type Class 1
[7] = Drive object number
[8] = Reserved
[9] = Reserved
[10] = Firmware patch/hot fix

Note: Example:

r0975[0] = 42 --> SIEMENS

r0975[1] = 11 --> SERVO drive object type

r0975[2] = 102 --> first part, firmware version V01.02 (second part, refer to index 10)

r0975[3] = 2003 --> year 2003

r0975[4] = 1401 --> 14th of January

r0975[5] = 1 --> PROFIdrive drive object, type class

r0975[6] = 9 --> PROFIdrive drive object sub-type class 1

r0975[7] = 2 --> drive object number = 2

r0975[8] = 0 (reserved)

r0975[9] = 0 (reserved)

r0975[10] = 600 --> second part, firmware version (complete version: V01.02.06.00)

p0976 Reset and load all parameters / Reset load all par

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: C1(30), C2(30)	**Calculated:** -	**Access level:** 1
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Factory settings	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1013	0

Description: Resets or downloads all parameters of the drive system.

Value:
0: Inactive
1: Start reset of all parameters to factory setting
2: Start dnload of param. saved in non-volatile mem w/ p0977=1
3: Start download of volatile parameters from RAM
10: Start dnload of param. saved in non-volatile mem w/ p0977=10
11: Start dnload of param. saved in non-volatile mem w/ p0977=11
12: Start dnload of param. saved in non-volatile mem w/ p0977=12
20: Start load of param. saved in non-volatile mem w/ p0977=20
21: Start load of param. saved in non-volatile mem w/ p0977=21
22: Start load of param. saved in non-volatile mem w/ p0977=22
23: Start load of param. saved in non-volatile mem w/ p0977=23
24: Start load of param. saved in non-volatile mem w/ p0977=24
25: Start load of param. saved in non-volatile mem w/ p0977=25
26: Start load of param. saved in non-volatile mem w/ p0977=26
30: Start loading the delivery state saved with p0977=30
100: Start resetting of all BICO interconnections
1011: Start dnload of param. saved in volatile mem w/ p0977=1011
1012: Start dnload of param. saved in volatile mem w/ p0977=1012
1013: Start dnload of param. saved in volatile mem w/ p0977=1013

Notice: After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

Note: After all of the parameters have been reset to their factory setting, the system must be commissioned for the first time again.

Resetting or loading is realized in the non-volatile memory.

Procedure:

1. Set p0009 = 30 (parameter reset).
2. Set p0976 to "required value". The system is rebooted.

p0976 is automatically set to 0 and p0009 is automatically set to 1 after this has been carried out.

p0977 Save all parameters / Save all par

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: C2(30), U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Factory settings	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1013	0

Description: Saves all parameters of the drive system to the non-volatile memory.

When saving, only the adjustable parameters intended to be saved are taken into account.

Value:
0: Inactive
1: Save in non-volatile memory - loaded at POWER ON
10: Save as opt. in non-vol. memory - loaded with p0976=10
11: Save as opt. in non-vol. memory - loaded with p0976=11
12: Save as opt. in non-vol. memory - loaded with p0976=12
20: Save as opt. in non-vol. memory - loaded with p0976=20
21: Save as opt. in non-vol. memory - loaded with p0976=21
22: Save as opt. in non-vol. memory - loaded with p0976=22
23: Save as opt. in non-vol. memory - loaded with p0976=23
24: Save as opt. in non-vol. memory - loaded with p0976=24
25: Save as opt. in non-vol. memory - loaded with p0976=25

26: Save as opt. in non-vol. memory - loaded with p0976=26
30: State when delivered, save in non-volatile memory as setting 30
80: Save in non-volatile memory time-optimized (reserved)
1011: Save in volatile memory, downloaded with p0976=1011
1012: Save in volatile memory, downloaded with p0976=1012
1013: Save in volatile memory, downloaded with p0976=1013

Dependency: Refer to: p0976, p1960, p3845, r3996

Notice: The Control Unit power supply may only be switched off after data has been saved (i.e. after data save has been started, wait until the parameter again has the value 0).

Writing to parameters is inhibited while saving.

The progress while saving is displayed in r3996.

For p0977 = 30:

The original state when delivered is overwritten when executing this memory function.

Note: Parameters saved with p0977 = 10, 11 or 12 can be downloaded again with p0976 = 10, 11 or 12.

The identification and maintenance data (I&M data, p8806 and following) are only saved for p0977 = 1.

p0978[0...n] List of drive objects / List of the DO

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: C1(1)	**Calculated:** -	**Access level:** 2
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: Topology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	[0] 1 [1...24] 0

Description: This parameter is an image of p0101 in conformance with PROFIdrive.

Parameters p0101 and p0978 contain the following information:

1) The same number of drive objects

2) The same drive objects

In this sense, they are consistent.

Difference between p0101 and p0978:

p0978 can be re-sorted and a zero inserted in order to identify those drive objects that participate in the process data exchange and to define their sequence in the process data exchange. Drive objects that are listed after the first zero, are excluded from the process data exchange.

For p0978, in addition, the value 255 can be inserted a multiple number of times.

p0978[n] = 255 means: The drive object is visible for the PROFIBUS master and is empty (without any actual process data exchange). This allows cyclic communications of a PROFIBUS master with unchanged configuring to the drive units with a lower number of drive objects.

Dependency: Refer to: p0101, p0971, p0977

Note: p0978 cannot be changed when the drive system is first commissioned. The reason for this is that at this time the actual topology has still not been acknowledged (p0099 is still not equal to r0098 and p0009 is set to 0).

r0979[0...30] PROFIdrive encoder format / PD encoder format

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 4704
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the actual position encoder used according to PROFIdrive.

Index:
[0] = Header
[1] = Type encoder 1
[2] = Resolution encoder 1
[3] = Shift factor G1_XIST1
[4] = Shift factor G1_XIST2
[5] = Distinguishable revolutions encoder 1
[6...10] = Reserved
[11] = Type encoder 2

[12] = Resolution encoder 2
[13] = Shift factor G2_XIST1
[14] = Shift factor G2_XIST2
[15] = Distinguishable revolutions encoder 2
[16...20] = Reserved
[21] = Type encoder 3
[22] = Resolution encoder 3
[23] = Shift factor G3_XIST1
[24] = Shift factor G3_XIST2
[25] = Distinguishable revolutions encoder 3
[26...30] = Reserved

Note: Information about the individual indices can be taken from the following literature:
PROFIdrive Profile Drive Technology

r0979[0...30] PROFIdrive encoder format / PD encoder format

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 4704
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the actual position encoder used according to PROFIdrive.

Index:
[0] = Header
[1] = Type encoder 1
[2] = Resolution encoder 1
[3] = Shift factor G1_XIST1
[4] = Shift factor G1_XIST2
[5] = Distinguishable distance encoder 1
[6...10] = Reserved
[11] = Type encoder 2
[12] = Resolution encoder 2
[13] = Shift factor G2_XIST1
[14] = Shift factor G2_XIST2
[15] = Distinguishable distance encoder 2
[16...20] = Reserved
[21] = Type encoder 3
[22] = Resolution encoder 3
[23] = Shift factor G3_XIST1
[24] = Shift factor G3_XIST2
[25] = Distinguishable distance encoder 3
[26...30] = Reserved

Note: Information about the individual indices can be taken from the following literature:
PROFIdrive Profile Drive Technology

r0979[0...10] PROFIdrive encoder format / PD encoder format

TM41, ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 4704
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the actual position encoder used according to PROFIdrive.

Index:
[0] = Header
[1] = Type encoder 1
[2] = Resolution encoder 1
[3] = Shift factor G1_XIST1
[4] = Shift factor G1_XIST2
[5] = Distinguishable revolutions encoder 1
[6...10] = Reserved

Note: Information about the individual indices can be taken from the following literature:
PROFIdrive Profile Drive Technology

r0979[0...10] PROFIdrive encoder format / PD encoder format

ENC (Lin_enc)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 4704
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the actual position encoder used according to PROFIdrive.

Index:
[0] = Header
[1] = Type encoder 1
[2] = Resolution encoder 1
[3] = Shift factor G1_XIST1
[4] = Shift factor G1_XIST2
[5] = Distinguishable distance encoder 1
[6...10] = Reserved

Note: Information about the individual indices can be taken from the following literature:
PROFIdrive Profile Drive Technology

r0980[0...299] List of existing parameters 1 / List avail par 1

All objects

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the parameters that exist for this drive.

Dependency: Refer to: r0981, r0989

Note: Modified parameters are displayed in indices 0 to 298. If an index contains the value 0, then the list ends here. In a long list, index 299 contains the parameter number at which position the list continues.

This list consists solely of the following parameters:

r0980[0...299], r0981[0...299] ... r0989[0...299]

The parameters in this list are not displayed in the expert list of the commissioning tool. However, they can be read from a higher-level control system (e.g. PROFIBUS master).

r0981[0...299] List of existing parameters 2 / List avail par 2

All objects

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the parameters that exist for this drive.

Dependency: Refer to: r0980, r0989

Note: Modified parameters are displayed in indices 0 to 298. If an index contains the value 0, then the list ends here. In a long list, index 299 contains the parameter number at which position the list continues.

This list consists solely of the following parameters:

r0980[0...299], r0981[0...299] ... r0989[0...299]

The parameters in this list are not displayed in the expert list of the commissioning tool. However, they can be read from a higher-level control system (e.g. PROFIBUS master).

r0989[0...299] List of existing parameters 10 / List avail par 10

All objects			
	Can be changed: -	**Calculated:** -	**Access level:** 4
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: -	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 0
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the parameters that exist for this drive.

Dependency: Refer to: r0980, r0981

Note: Modified parameters are displayed in indices 0 to 298. If an index contains the value 0, then the list ends here.

This list consists solely of the following parameters:

r0980[0...299], r0981[0...299] ... r0989[0...299]

The parameters in this list are not displayed in the expert list of the commissioning tool. However, they can be read from a higher-level control system (e.g. PROFIBUS master).

r0990[0...99] List of modified parameters 1 / List chang par 1

All objects			
	Can be changed: -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: -	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 0
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays those parameters with a value other than the factory setting for this drive.

Dependency: Refer to: r0991, r0999

Note: Modified parameters are displayed in indices 0 to 98. If an index contains the value 0, then the list ends here. In a long list, index 99 contains the parameter number at which position the list continues.

This list consists solely of the following parameters:

r0990[0...99], r0991[0...99] ... r0999[0...99]

The parameters in this list are not displayed in the expert list of the commissioning tool. However, they can be read from a higher-level control system (e.g. PROFIBUS master).

r0991[0...99] List of modified parameters 2 / List chang par 2

All objects			
	Can be changed: -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: -	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 0
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays those parameters with a value other than the factory setting for this drive.

Dependency: Refer to: r0990, r0999

Note: Modified parameters are displayed in indices 0 to 98. If an index contains the value 0, then the list ends here. In a long list, index 99 contains the parameter number at which position the list continues.

This list consists solely of the following parameters:

r0990[0...99], r0991[0...99] ... r0999[0...99]

The parameters in this list are not displayed in the expert list of the commissioning tool. However, they can be read from a higher-level control system (e.g. PROFIBUS master).

r0999[0...99] List of modified parameters 10 / List chang par 10

All objects

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays those parameters with a value other than the factory setting for this drive.

Dependency: Refer to: r0990, r0991

Note: Modified parameters are displayed in indices 0 to 98. If an index contains the value 0, then the list ends here.

This list consists solely of the following parameters:

r0990[0...99], r0991[0...99] ... r0999[0...99]

The parameters in this list are not displayed in the expert list of the commissioning tool. However, they can be read from a higher-level control system (e.g. PROFIBUS master).

p1000[0...n] Macro Connector Inputs (CI) for speed setpoints / Macro CI n_set

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(1), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** CDS, p0170	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	999999	0

Description: Runs the corresponding macro files.

The Connector Inputs (CI) for the speed setpoints of the appropriate Command Data Set (CDS) are appropriately interconnected.

The selected macro file must be available on the memory card/device memory.

Example:

p1000 = 6 --> the macro file PM000006.ACX is run.

Dependency: Refer to: p0015, p0700, p1500, r8572

Notice: No errors were issued during quick commissioning (p3900 = 1) when writing to parameters of the QUICK_IBN group!

When executing a specific macro, the corresponding programmed settings are made and become active.

Note: The macros in the specified directory are displayed in r8572. r8572 is not in the expert list of the commissioning tool.

Macros available as standard are described in the technical documentation of the particular product.

CI: Connector Input

p1000[0...n] Macro Connector Inputs (CI) for velocity setpoints / Macro CI v_set

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: C2(1), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** CDS, p0170	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	999999	0

Description: Runs the corresponding macro files.

The Connector Inputs (CI) for the velocity setpoints of the appropriate Command Data Set (CDS) are appropriately interconnected.

The selected macro file must be available on the memory card/device memory.

Example:

p1000 = 6 --> the macro file PM000006.ACX is run.

Dependency: Refer to: p0015, p0700, p1500, r8572

Notice: No errors were issued during quick commissioning (p3900 = 1) when writing to parameters of the QUICK_IBN group!

When executing a specific macro, the corresponding programmed settings are made and become active.

Note: The macros in the specified directory are displayed in r8572. r8572 is not in the expert list of the commissioning tool.
Macros available as standard are described in the technical documentation of the particular product.
CI: Connector Input

p1001[0...n] CO: Fixed velocity setpoint 1 / v_set_fix 1

SERVO (Ext setp, Lin), SERVO_AC (Ext setp, Lin), SERVO_I_AC (Ext setp, Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3010
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000.000 [m/min]	1000.000 [m/min]	0.000 [m/min]

Description: Setting and connector output for fixed velocity setpoint 1.
Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197
Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1001[0...n] CO: Fixed speed setpoint 1 / n_set_fixed 1

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3010
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Setting and connector output for fixed speed setpoint 1.
Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197
Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1002[0...n] CO: Fixed velocity setpoint 2 / v_set_fix 2

SERVO (Ext setp, Lin), SERVO_AC (Ext setp, Lin), SERVO_I_AC (Ext setp, Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3010
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000.000 [m/min]	1000.000 [m/min]	0.000 [m/min]

Description: Setting and connector output for fixed velocity setpoint 2.
Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197
Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1002[0...n] CO: Fixed speed setpoint 2 / n_set_fixed 2

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3010
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Setting and connector output for fixed speed setpoint 2.
Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197
Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1003[0...n] CO: Fixed velocity setpoint 3 / v_set_fix 3

SERVO (Ext setp, Lin), SERVO_AC (Ext setp, Lin), SERVO_I_AC (Ext setp, Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3010
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000.000 [m/min]	1000.000 [m/min]	0.000 [m/min]

Description: Setting and connector output for fixed velocity setpoint 3.

Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1003[0...n] CO: Fixed speed setpoint 3 / n_set_fixed 3

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3010
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Setting and connector output for fixed speed setpoint 3.

Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1004[0...n] CO: Fixed velocity setpoint 4 / v_set_fix 4

SERVO (Ext setp, Lin), SERVO_AC (Ext setp, Lin), SERVO_I_AC (Ext setp, Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3010
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000.000 [m/min]	1000.000 [m/min]	0.000 [m/min]

Description: Setting and connector output for fixed velocity setpoint 4.

Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1004[0...n] CO: Fixed speed setpoint 4 / n_set_fixed 4

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3010
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Setting and connector output for fixed speed setpoint 4.

Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1005[0...n] CO: Fixed velocity setpoint 5 / v_set_fix 5

SERVO (Ext setp, Lin), SERVO_AC (Ext setp, Lin), SERVO_I_AC (Ext setp, Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3010
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000.000 [m/min]	1000.000 [m/min]	0.000 [m/min]

Description: Setting and connector output for fixed velocity setpoint 5.

Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1005[0...n] CO: Fixed speed setpoint 5 / n_set_fixed 5

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3010
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Setting and connector output for fixed speed setpoint 5.

Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1006[0...n] CO: Fixed velocity setpoint 6 / v_set_fix 6

SERVO (Ext setp, Lin), SERVO_AC (Ext setp, Lin), SERVO_I_AC (Ext setp, Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3010
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000.000 [m/min]	1000.000 [m/min]	0.000 [m/min]

Description: Setting and connector output for fixed velocity setpoint 6.

Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1006[0...n] CO: Fixed speed setpoint 6 / n_set_fixed 6

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3010
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Setting and connector output for fixed speed setpoint 6.

Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1007[0...n] CO: Fixed velocity setpoint 7 / v_set_fix 7

SERVO (Ext setp, Lin), SERVO_AC (Ext setp, Lin), SERVO_I_AC (Ext setp, Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3010
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000.000 [m/min]	1000.000 [m/min]	0.000 [m/min]

Description: Setting and connector output for fixed velocity setpoint 7.

Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1007[0...n] CO: Fixed speed setpoint 7 / n_set_fixed 7

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3010
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Setting and connector output for fixed speed setpoint 7.

Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1008[0...n] CO: Fixed velocity setpoint 8 / v_set_fix 8

SERVO (Ext setp, Lin), SERVO_AC (Ext setp, Lin), SERVO_I_AC (Ext setp, Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3010
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000.000 [m/min]	1000.000 [m/min]	0.000 [m/min]

Description: Setting and connector output for fixed velocity setpoint 8.

Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1008[0...n] CO: Fixed speed setpoint 8 / n_set_fixed 8

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3010
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Setting and connector output for fixed speed setpoint 8.

Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1009[0...n] CO: Fixed velocity setpoint 9 / v_set_fix 9

SERVO (Ext setp, Lin), SERVO_AC (Ext setp, Lin), SERVO_I_AC (Ext setp, Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3010
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000.000 [m/min]	1000.000 [m/min]	0.000 [m/min]

Description: Setting and connector output for fixed velocity setpoint 9.

Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1009[0...n] CO: Fixed speed setpoint 9 / n_set_fixed 9

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3010
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Setting and connector output for fixed speed setpoint 9.

Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1010[0...n] CO: Fixed velocity setpoint 10 / v_set_fix 10

SERVO (Ext setp, Lin), SERVO_AC (Ext setp, Lin), SERVO_I_AC (Ext setp, Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3010
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000.000 [m/min]	1000.000 [m/min]	0.000 [m/min]

Description: Setting and connector output for fixed velocity setpoint 10.

Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1010[0...n] CO: Fixed speed setpoint 10 / n_set_fixed 10

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3010
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Setting and connector output for fixed speed setpoint 10.

Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1011[0...n] CO: Fixed velocity setpoint 11 / v_set_fix 11

SERVO (Ext setp, Lin), SERVO_AC (Ext setp, Lin), SERVO_I_AC (Ext setp, Lin)	**Can be changed:** U, T	**Calculated:** -	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3010
	P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
	Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-1000.000 [m/min]	1000.000 [m/min]	0.000 [m/min]

Description: Setting and connector output for fixed velocity setpoint 11.

Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1011[0...n] CO: Fixed speed setpoint 11 / n_set_fixed 11

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC	**Can be changed:** U, T	**Calculated:** -	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3010
	P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
	Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Setting and connector output for fixed speed setpoint 11.

Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1012[0...n] CO: Fixed velocity setpoint 12 / v_set_fix 12

SERVO (Ext setp, Lin), SERVO_AC (Ext setp, Lin), SERVO_I_AC (Ext setp, Lin)	**Can be changed:** U, T	**Calculated:** -	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3010
	P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
	Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-1000.000 [m/min]	1000.000 [m/min]	0.000 [m/min]

Description: Setting and connector output for fixed velocity setpoint 12.

Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1012[0...n] CO: Fixed speed setpoint 12 / n_set_fixed 12

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC	**Can be changed:** U, T	**Calculated:** -	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3010
	P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
	Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Setting and connector output for fixed speed setpoint 12.

Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1013[0...n] CO: Fixed velocity setpoint 13 / v_set_fix 13

SERVO (Ext setp, Lin), SERVO_AC (Ext setp, Lin), SERVO_I_AC (Ext setp, Lin)	**Can be changed:** U, T	**Calculated:** -	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3010
	P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
	Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-1000.000 [m/min]	1000.000 [m/min]	0.000 [m/min]

Description: Setting and connector output for fixed velocity setpoint 13.

Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1013[0...n] CO: Fixed speed setpoint 13 / n_set_fixed 13

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC	**Can be changed:** U, T	**Calculated:** -	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3010
	P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
	Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Setting and connector output for fixed speed setpoint 13.

Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1014[0...n] CO: Fixed velocity setpoint 14 / v_set_fix 14

SERVO (Ext setp, Lin), SERVO_AC (Ext setp, Lin), SERVO_I_AC (Ext setp, Lin)	**Can be changed:** U, T	**Calculated:** -	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3010
	P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
	Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-1000.000 [m/min]	1000.000 [m/min]	0.000 [m/min]

Description: Setting and connector output for fixed velocity setpoint 14.

Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1014[0...n] CO: Fixed speed setpoint 14 / n_set_fixed 14

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC	**Can be changed:** U, T	**Calculated:** -	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3010
	P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
	Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Setting and connector output for fixed speed setpoint 14.

Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1015[0...n] CO: Fixed velocity setpoint 15 / v_set_fix 15

SERVO (Ext setp, Lin), SERVO_AC (Ext setp, Lin), SERVO_I_AC (Ext setp, Lin)	**Can be changed:** U, T	**Calculated:** -	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3010
	P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
	Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-1000.000 [m/min]	1000.000 [m/min]	0.000 [m/min]

Description: Setting and connector output for fixed velocity setpoint 15.

Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1015[0...n] CO: Fixed speed setpoint 15 / n_set_fixed 15

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC	**Can be changed:** U, T	**Calculated:** -	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3010
	P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
	Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Setting and connector output for fixed speed setpoint 15.

Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1020[0...n] BI: Fixed velocity setpoint selection Bit 0 / v_set_fixed Bit 0

SERVO (Ext setp, Lin), SERVO_AC (Ext setp, Lin), SERVO_I_AC (Ext setp, Lin)	**Can be changed:** T	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2505, 3010
	P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source to select the fixed velocity setpoint.

Dependency: Selects the required fixed velocity setpoint using p1020 ... p1023.

Displays the number of the actual fixed velocity setpoint in r1197.

Sets values for the fixed velocity setpoints 1 ... 15 using p1001 ... p1015.

Refer to: p1021, p1022, p1023, r1197

Note: If a fixed velocity setpoint has not been selected (p1020 ... p1023 = 0, r1197 = 0), then r1024 = 0 (setpoint = 0).

p1020[0...n] BI: Fixed speed setpoint selection Bit 0 / n_set_fixed Bit 0

SERVO (Ext setp), SERVO_AC (Ext setp), SERVO_I_AC (Ext setp)	**Can be changed:** T	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2505, 3010
	P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source for selecting the fixed speed setpoint.

Dependency: Selects the required fixed speed setpoint using p1020 ... p1023.

Displays the number of the actual fixed speed setpoint in r1197.

Sets the values for the fixed speed setpoints 1 ... 15 using p1001 ... p1015.

Refer to: p1021, p1022, p1023, r1197

Note: If a fixed speed setpoint has not been selected (p1020 ... p1023 = 0, r1197 = 0), then r1024 = 0 (setpoint = 0).

p1020[0...n] BI: Fixed speed setpoint selection Bit 0 / n_set_fixed Bit 0

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2505, 3010, 3011
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for selecting the fixed speed setpoint.

Dependency: Selects the required fixed speed setpoint using p1020 ... p1023.

Displays the number of the actual fixed speed setpoint in r1197.

Sets the values for the fixed speed setpoints 1 ... 15 using p1001 ... p1015.

Refer to: p1021, p1022, p1023, r1197

Note: If a fixed speed setpoint has not been selected (p1020 ... p1023 = 0, r1197 = 0), then r1024 = 0 (setpoint = 0).

p1021[0...n] BI: Fixed velocity setpoint selection Bit 1 / v_set_fixed Bit 1

SERVO (Ext setp, Lin), SERVO_AC (Ext setp, Lin), SERVO_I_AC (Ext setp, Lin)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2505, 3010
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to select the fixed velocity setpoint.

Dependency: Selects the required fixed velocity setpoint using p1020 ... p1023.

Displays the number of the actual fixed velocity setpoint in r1197.

Sets values for the fixed velocity setpoints 1 ... 15 using p1001 ... p1015.

Refer to: p1020, p1022, p1023, r1197

Note: If a fixed velocity setpoint has not been selected (p1020 ... p1023 = 0, r1197 = 0), then r1024 = 0 (setpoint = 0).

p1021[0...n] BI: Fixed speed setpoint selection Bit 1 / n_set_fixed Bit 1

SERVO (Ext setp), SERVO_AC (Ext setp), SERVO_I_AC (Ext setp)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2505, 3010
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for selecting the fixed speed setpoint.

Dependency: Selects the required fixed speed setpoint using p1020 ... p1023.

Displays the number of the actual fixed speed setpoint in r1197.

Sets the values for the fixed speed setpoints 1 ... 15 using p1001 ... p1015.

Refer to: p1020, p1022, p1023, r1197

Note: If a fixed speed setpoint has not been selected (p1020 ... p1023 = 0, r1197 = 0), then r1024 = 0 (setpoint = 0).

p1021[0...n] BI: Fixed speed setpoint selection Bit 1 / n_set_fixed Bit 1

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2505, 3010, 3011
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for selecting the fixed speed setpoint.

Dependency: Selects the required fixed speed setpoint using p1020 ... p1023.

Displays the number of the actual fixed speed setpoint in r1197.

Sets the values for the fixed speed setpoints 1 ... 15 using p1001 ... p1015.

Refer to: p1020, p1022, p1023, r1197

Note: If a fixed speed setpoint has not been selected (p1020 ... p1023 = 0, r1197 = 0), then r1024 = 0 (setpoint = 0).

p1022[0...n] BI: Fixed velocity setpoint selection Bit 2 / v_set_fixed Bit 2

SERVO (Ext setp, Lin), SERVO_AC (Ext setp, Lin), SERVO_I_AC (Ext setp, Lin)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2505, 3010
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to select the fixed velocity setpoint.

Dependency: Selects the required fixed velocity setpoint using p1020 ... p1023.

Displays the number of the actual fixed velocity setpoint in r1197.

Sets values for the fixed velocity setpoints 1 ... 15 using p1001 ... p1015.

Refer to: p1020, p1021, p1023, r1197

Note: If a fixed velocity setpoint has not been selected (p1020 ... p1023 = 0, r1197 = 0), then r1024 = 0 (setpoint = 0).

p1022[0...n] BI: Fixed speed setpoint selection Bit 2 / n_set_fixed Bit 2

SERVO (Ext setp), SERVO_AC (Ext setp), SERVO_I_AC (Ext setp)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2505, 3010
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for selecting the fixed speed setpoint.

Dependency: Selects the required fixed speed setpoint using p1020 ... p1023.

Displays the number of the actual fixed speed setpoint in r1197.

Sets the values for the fixed speed setpoints 1 ... 15 using p1001 ... p1015.

Refer to: p1020, p1021, p1023, r1197

Note: If a fixed speed setpoint has not been selected (p1020 ... p1023 = 0, r1197 = 0), then r1024 = 0 (setpoint = 0).

p1022[0...n] BI: Fixed speed setpoint selection Bit 2 / n_set_fixed Bit 2

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2505, 3010, 3011
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for selecting the fixed speed setpoint.

Dependency: Selects the required fixed speed setpoint using p1020 ... p1023.

Displays the number of the actual fixed speed setpoint in r1197.

Sets the values for the fixed speed setpoints 1 ... 15 using p1001 ... p1015.

Refer to: p1020, p1021, p1023, r1197

Note: If a fixed speed setpoint has not been selected (p1020 ... p1023 = 0, r1197 = 0), then r1024 = 0 (setpoint = 0).

p1023[0...n] BI: Fixed velocity setpoint selection Bit 3 / v_set_fixed Bit 3

SERVO (Ext setp, Lin), SERVO_AC (Ext setp, Lin), SERVO_I_AC (Ext setp, Lin)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2505, 3010
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to select the fixed velocity setpoint.

Dependency: Selects the required fixed velocity setpoint using p1020 ... p1023.

Displays the number of the actual fixed velocity setpoint in r1197.

Sets values for the fixed velocity setpoints 1 ... 15 using p1001 ... p1015.

Refer to: p1020, p1021, p1022, r1197

Note: If a fixed velocity setpoint has not been selected (p1020 ... p1023 = 0, r1197 = 0), then r1024 = 0 (setpoint = 0).

p1023[0...n] BI: Fixed speed setpoint selection Bit 3 / n_set_fixed Bit 3

SERVO (Ext setp), SERVO_AC (Ext setp), SERVO_I_AC (Ext setp)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2505, 3010
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for selecting the fixed speed setpoint.

Dependency: Selects the required fixed speed setpoint using p1020 ... p1023.

Displays the number of the actual fixed speed setpoint in r1197.

Sets the values for the fixed speed setpoints 1 ... 15 using p1001 ... p1015.

Refer to: p1020, p1021, p1022, r1197

Note: If a fixed speed setpoint has not been selected (p1020 ... p1023 = 0, r1197 = 0), then r1024 = 0 (setpoint = 0).

p1023[0...n] BI: Fixed speed setpoint selection Bit 3 / n_set_fixed Bit 3

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2505, 3010, 3011
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for selecting the fixed speed setpoint.

Dependency: Selects the required fixed speed setpoint using p1020 ... p1023.

Displays the number of the actual fixed speed setpoint in r1197.

Sets the values for the fixed speed setpoints 1 ... 15 using p1001 ... p1015.

Refer to: p1020, p1021, p1022, r1197

Note: If a fixed speed setpoint has not been selected (p1020 ... p1023 = 0, r1197 = 0), then r1024 = 0 (setpoint = 0).

r1024 CO: Fixed velocity setpoint effective / v_set_fixed eff

SERVO (Ext setp, Lin), SERVO_AC (Ext setp, Lin), SERVO_I_AC (Ext setp, Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3001, 3010
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Displays the selected and effective fixed velocity setpoint.

This setpoint is the output value for the fixed velocity setpoints and must be appropriately interconnected (e.g. with the main setpoint).

Recommendation: Interconnect the signal with the main setpoint (CI: p1070 = r1024).

Dependency: Selects the required fixed velocity setpoint using p1020 ... p1023.

Displays the number of the actual fixed velocity setpoint in r1197.

Sets values for the fixed velocity setpoints 1 ... 15 using p1001 ... p1015.

Refer to: p1070, r1197

Note: If a fixed velocity setpoint has not been selected (p1020 ... p1023 = 0, r1197 = 0), then r1024 = 0 (setpoint = 0).

r1024 CO: Fixed speed setpoint effective / n_set_fixed eff

SERVO (Ext setp), SERVO_AC (Ext setp), SERVO_I_AC (Ext setp)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3001, 3010
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Display and connector output for the selected and active fixed speed setpoint.

This setpoint is the output value for the fixed speed setpoints and must be appropriately interconnected (e.g. with the main setpoint).

Recommendation: Interconnect the signal with the main setpoint (CI: p1070 = r1024).

Dependency: Selects the required fixed speed setpoint using p1020 ... p1023.

Displays the number of the actual fixed speed setpoint in r1197.

Sets the values for the fixed speed setpoints 1 ... 15 using p1001 ... p1015.

Refer to: p1070, r1197

Note: If a fixed speed setpoint has not been selected (p1020 ... p1023 = 0, r1197 = 0), then r1024 = 0 (setpoint = 0).

r1024 CO: Fixed speed setpoint effective / n_set_fixed eff

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3001, 3010, 3011
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Display and connector output for the selected and active fixed speed setpoint.

This setpoint is the output value for the fixed speed setpoints and must be appropriately interconnected (e.g. with the main setpoint).

Recommendation: Interconnect the signal with the main setpoint (CI: p1070 = r1024).

Dependency: Selects the required fixed speed setpoint using p1020 ... p1023.

Displays the number of the actual fixed speed setpoint in r1197.

Sets the values for the fixed speed setpoints 1 ... 15 using p1001 ... p1015.

Refer to: p1070, r1197

Note: If a fixed speed setpoint has not been selected (p1020 ... p1023 = 0, r1197 = 0), then r1024 = 0 (setpoint = 0).

p1030[0...n] Motorized potentiometer configuration / Mop configuration

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** 3020
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0110 bin

Description: Sets the configuration for the motorized potentiometer.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Data save active	Yes	No	-
01	Automatic mode ramp-function generator active	Yes	No	-
02	Initial rounding-off active	Yes	No	-
03	Non-volatile saving active	Yes	No	-
04	Ramp-function generator always active	Yes	No	-

Notice: The following prerequisites must be fulfilled in order to be able to save the setpoint (Bit 03 = 1) in a non-volatile fashion:

- Firmware with V2.3 or higher.
- Control Unit 320 (CU320) with hardware version C or higher (module with NVRAM).

Note: For bit 00:

0: The setpoint for the motorized potentiometer is not saved and after ON is entered using p1040.

1: The setpoint for the motorized potentiometer is saved after OFF and after ON set to the saved value. In order to save in a non-volatile fashion, bit 03 should be set to 1.

For bit 01:

0: Without ramp-function generator in the automatic mode (ramp-up/ramp-down time = 0).

1: With ramp-function generator in the automatic mode.

For manual operation (0 signal via BI: p1041), the ramp-function generator is always active.

For bit 02:

0: Without initial rounding-off

1: With initial rounding-off. The selected ramp-up/down time is correspondingly exceeded. The initial rounding-off is a sensitive way of specifying small changes (progressive reaction when keys are pressed).

The jerk for the initial rounding-off is independent of the ramp-up time and only depends on the selected maximum speed (p1082). It is calculated as follows:

r = 0.01 % * p1082 [1/s] / 0.13^2 [s^2]

The jerk acts up until the maximum acceleration is reached (a_max = p1082 [1/s] / p1047 [s]), and then the drive continues to run linearly with a constant rate of acceleration. The higher the maximum acceleration (the lower that p1047 is), the longer the ramp-up time increases with respect to the set ramp-up time.

For bit 03:

0: Non-volatile data save deactivated.

1: The setpoint for the motorized potentiometer is saved in a non-volatile fashion (for bit 00 = 1).

For bit 04:

When the bit is set, the ramp-function generator is computed independent of the pulse enable. The actual output value of the motorized potentiometer is always in r1050.

p1035[0...n] BI: Motorized potentiometer setpoint raise / Mop raise

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2505, 3020
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to continually increase the setpoint for the motorized potentiometer.

The setpoint change (CO: r1050) depends on the set ramp-up time (p1047) and the duration of the signal that is present (BI: p1035).

Dependency: Refer to: p1036

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p1035 BI: Zero marks enable / ZM enable

TM41

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9677
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to enable the zero marks.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: For TM41, this parameter has no function.

The zero mark can only be switched in or switched out using p4401.

p1036[0...n] BI: Motorized potentiometer lower setpoint / Mop lower

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2505, 3020
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to continuously lower the setpoint for the motorized potentiometer.

The setpoint change (CO: r1050) depends on the set ramp-down time (p1048) and the duration of the signal that is present (BI: p1036).

Dependency: Refer to: p1035

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p1037[0...n] Motorized potentiometer maximum velocity / MotP n_max

SERVO (Ext setp, Lin), SERVO_AC (Ext setp, Lin), SERVO_I_AC (Ext setp, Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3020
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000.000 [m/min]	1000.000 [m/min]	0.000 [m/min]

Description: Sets the maximum speed/velocity for the motorized potentiometer.

Note: This parameter is automatically pre-assigned in the commissioning phase.

The setpoint output from the motorized potentiometer is limited to this value.

p1037[0...n] Motorized potentiometer maximum speed / MotP n_max

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3020
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets the maximum speed/velocity for the motorized potentiometer.

Note: This parameter is automatically pre-assigned in the commissioning phase.

The setpoint output from the motorized potentiometer is limited to this value.

p1038[0...n] Motorized potentiometer minimum velocity / MotP n_min

SERVO (Ext setp, Lin), SERVO_AC (Ext setp, Lin), SERVO_I_AC (Ext setp, Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3020
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000.000 [m/min]	1000.000 [m/min]	0.000 [m/min]

Description: Sets the minimum speed/velocity for the motorized potentiometer.

Note: This parameter is automatically pre-assigned in the commissioning phase.

The setpoint output from the motorized potentiometer is limited to this value.

p1038[0...n] Motorized potentiometer minimum speed / MotP n_min

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3020
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets the minimum speed/velocity for the motorized potentiometer.

Note: This parameter is automatically pre-assigned in the commissioning phase.

The setpoint output from the motorized potentiometer is limited to this value.

p1039[0...n] BI: Motorized potentiometer inversion / MotP inv

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 3020
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to invert the minimum speed/velocity or the maximum speed/velocity for the motorized potentiometer.

Dependency: Refer to: p1037, p1038

Note: The inversion is only active during "motorized potentiometer raise" or "motorized potentiometer lower".

p1040[0...n] Motorized potentiometer starting value / Mop start value

SERVO (Ext setp, Lin), SERVO_AC (Ext setp, Lin), SERVO_I_AC (Ext setp, Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3020
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000.000 [m/min]	1000.000 [m/min]	0.000 [m/min]

Description: Sets the starting value for the motorized potentiometer. This starting value becomes effective after the drive has been switched on.

Dependency: Only effective if p1030.0 = 0.

Refer to: p1030

p1040[0...n] Motorized potentiometer starting value / Mop start value

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3020
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets the starting value for the motorized potentiometer. This starting value becomes effective after the drive has been switched on.

Dependency: Only effective if p1030.0 = 0.

Refer to: p1030

p1041[0...n] BI: Motorized potentiometer manual/automatic / Mop manual/auto

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 3020
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to change over from manual to automatic when using a motorized potentiometer.

In the manual mode, the setpoint is changed using two signals - raise and lower. In the automatic mode, the setpoint must be interconnected via a connector input.

Dependency: Refer to: p1030, p1035, p1036, p1042

Note: The effectiveness of the internal ramp-function generator can be set in automatic mode.

p1042[0...n] CI: Motorized potentiometer automatic setpoint / Mop auto setpoint

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 3020
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the setpoint of the motorized potentiometer in the automatic mode.

Dependency: Refer to: p1041

p1043[0...n] BI: Motorized potentiometer accept setting value / MotP acc set val

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 3020
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to accept the setting value for the motorized potentiometer.

Dependency: Refer to: p1044

Note: The setting value (CI: p1044) becomes effective for a 0/1 edge of the setting command (BI: p1043).

p1044[0...n] CI: Motorized potentiometer setting value / Mop set val

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 3020
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the setting value for the motorized potentiometer.

Dependency: Refer to: p1043

Note: The setting value (CI: p1044) becomes effective for a 0/1 edge of the setting command (BI: p1043).

r1045 CO: Mot. potentiom. velocity setp. in front of ramp-fct. gen. / Mop n_set bef RFG

SERVO (Ext setp, Lin), SERVO_AC (Ext setp, Lin), SERVO_I_AC (Ext setp, Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3020
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Sets the effective setpoint in front of the internal motorized potentiometer ramp-function generator.

r1045 CO: Mot. potentiometer speed setp. in front of ramp-fct. gen. / Mop n_set bef RFG

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3020
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Sets the effective setpoint in front of the internal motorized potentiometer ramp-function generator.

p1047[0...n] Motorized potentiometer ramp-up time / Mop ramp-up time

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3020
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	1000.000 [s]	10.000 [s]

Description: Sets the ramp-up time for the internal ramp-function generator for the motorized potentiometer.

The setpoint is changed from zero up to the speed/velocity limit (p1082) within this time (if no initial rounding-off has been activated).

Dependency: Refer to: p1030, p1048, p1082, r1082

Note: When the initial rounding-off is activated (p1030.2) the ramp-up time is correspondingly extended.

p1048[0...n] Motorized potentiometer ramp-down time / Mop ramp-down time

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3020
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	1000.000 [s]	10.000 [s]

Description: Sets the ramp-down time for the internal ramp-function generator for the motorized potentiometer.

The setpoint is changed from the speed/velocity limit (p1082) to zero within this time (if no initial rounding-off has been activated).

Dependency: Refer to: p1030, p1047, p1082, r1082

Note: The deceleration time is extended corresponding to the activated initial rounding-off (p1030.2).

r1050 CO: Motorized potentiometer setpoint after ramp-function generator / Mop setp after RFG

SERVO (Ext setp, Lin), SERVO_AC (Ext setp, Lin), SERVO_I_AC (Ext setp, Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3001, 3020
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Sets the effective setpoint after the internal motorized potentiometer ramp-function generator.

This setpoint is the output value of the motorized potentiometer and must be appropriately interconnected onwards (e.g. with the main setpoint).

Recommendation: Interconnect the signal with main setpoint (p1070).

Dependency: Refer to: p1070

Note: For "With ramp-function generator", after an OFF1, OFF2, OFF3 or for a 0 signal via BI: p0852 (inhibit operation, suppress pulses) the ramp-function generator output (r1050) is set to the starting value (configuration via p1030.0).

r1050 CO: Motorized potentiometer setpoint after ramp-function generator / Mop setp after RFG

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3001, 3020
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Sets the effective setpoint after the internal motorized potentiometer ramp-function generator.

This setpoint is the output value of the motorized potentiometer and must be appropriately interconnected onwards (e.g. with the main setpoint).

Recommendation: Interconnect the signal with main setpoint (p1070).

Dependency: Refer to: p1070

Note: For "With ramp-function generator", after an OFF1, OFF2, OFF3 or for a 0 signal via BI: p0852 (inhibit operation, suppress pulses) the ramp-function generator output (r1050) is set to the starting value (configuration via p1030.0).

p1051[0...n] CI: Velocity limit RFG positive direction / v_limit RFG pos

SERVO (ESR, Ext setp, Lin), SERVO_AC (ESR, Ext setp, Lin), SERVO_I_AC (ESR, Ext setp, Lin)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 3050
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1083[0]

Description: Sets the signal source for the velocity limit of the positive direction on the ramp-function generator input.

Note: The OFF3 ramp-down time (p1135) is effective when the limit is reduced.

p1051[0...n] CI: Speed limit RFG positive direction of rotation / n_limit RFG pos

SERVO (ESR, Ext setp), VECTOR, HLA (ESR), SERVO_AC (ESR, Ext setp), VECTOR_AC, SERVO_I_AC (ESR, Ext setp), VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 3050
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1083[0]

Description: Sets the signal source for the speed limit of the positive direction on the ramp-function generator input.

Note: The OFF3 ramp-down time (p1135) is effective when the limit is reduced.

p1052[0...n] CI: Velocity limit RFG negative direction / v_limit RFG neg

SERVO (ESR, Ext setp, Lin), SERVO_AC (ESR, Ext setp, Lin), SERVO_I_AC (ESR, Ext setp, Lin)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 3050
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1086[0]

Description: Sets the signal source for the velocity limit of the negative direction on the ramp-function generator input.

Note: The OFF3 ramp-down time (p1135) is effective when the limit is reduced.

p1052[0...n] CI: Speed limit RFG negative direction of rotation / n_limit RFG neg

SERVO (ESR, Ext setp), VECTOR, HLA (ESR), SERVO_AC (ESR, Ext setp), VECTOR_AC, SERVO_I_AC (ESR, Ext setp), VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 3050
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1086[0]

Description: Sets the signal source for the speed limit of the negative direction on the ramp-function generator input.

Note: The OFF3 ramp-down time (p1135) is effective when the limit is reduced.

p1055[0...n] BI: Jog bit 0 / Jog bit 0

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2501, 3030
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for jog 1.

Recommendation: When the setting for this binector input is changed, the motor can only be switched on by means of an appropriate signal change of the source.

Dependency: Refer to: p0840, p1058

Notice: The drive is enabled for jogging using BI: p1055 or BI: p1056.

The command "ON/OFF1" can be issued using BI: p0840 or using BI: p1055/p1056.

Only the signal source that was used to switch on can also be used to switch off again.

p1056[0...n] BI: Jog bit 1 / Jog bit 1

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2501, 3030
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for jog 2.

Recommendation: When the setting for this binector input is changed, the motor can only be switched on by means of an appropriate signal change of the source.

Dependency: Refer to: p0840, p1059

Notice: The drive is enabled for jogging using BI: p1055 or BI: p1056.

The command "ON/OFF1" can be issued using BI: p0840 or using BI: p1055/p1056.

Only the signal source that was used to switch on can also be used to switch off again.

p1058[0...n] Jog 1 velocity setpoint / Jog 1 v_set

SERVO (Ext setp, Lin), SERVO_AC (Ext setp, Lin), SERVO_I_AC (Ext setp, Lin)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3001, 3030
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000.000 [m/min]	1000.000 [m/min]	0.000 [m/min]

Description: Sets the velocity for jog 1.

Jogging (JOG) is level-triggered, and allows the motor to be incrementally traversed.

Dependency: Refer to: p1055, p1056

p1058[0...n] Jog 1 speed setpoint / Jog 1 n_set

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3001, 3030
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets the speed for jog 1.

Jogging (JOG) is level-triggered, and allows the motor to be incrementally traversed.

Dependency: Refer to: p1055, p1056

p1059[0...n] Jog 2 velocity setpoint / Jog 2 v_set

SERVO (Ext setp, Lin), SERVO_AC (Ext setp, Lin), SERVO_I_AC (Ext setp, Lin)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3001, 3030
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000.000 [m/min]	1000.000 [m/min]	0.000 [m/min]

Description: Sets the velocity for jog 2.
Jogging (JOG) is level-triggered, and allows the motor to be incrementally traversed.

Dependency: Refer to: p1055, p1056

p1059[0...n] Jog 2 speed setpoint / Jog 2 n_set

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3001, 3030
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets the speed for jog 2.
Jogging (JOG) is level-triggered, and allows the motor to be incrementally traversed.

Dependency: Refer to: p1055, p1056

p1063[0...n] Setpoint channel velocity limit / Setp_chan v_lim

SERVO (Ext setp, Lin), SERVO_AC (Ext setp, Lin), SERVO_I_AC (Ext setp, Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3040
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [m/min]	1000.000 [m/min]	1000.000 [m/min]

Description: Sets the velocity limit effective in the setpoint channel.

Dependency: Refer to: p1082, r1082, p1083, p1085, p1086, p1088

p1063[0...n] Setpoint channel speed limit / Setp_chan n_lim

SERVO (Ext setp), SERVO_AC (Ext setp), SERVO_I_AC (Ext setp)

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3040
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [rpm]	210000.000 [rpm]	210000.000 [rpm]

Description: Sets the speed limit effective in the setpoint channel.

Dependency: Refer to: p1082, r1082, p1083, p1085, p1086, p1088

p1063[0...n] Setpoint channel speed limit / Setp_chan n_lim

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3040
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [rpm]	210000.000 [rpm]	40000.000 [rpm]

Description: Sets the speed limit effective in the setpoint channel.

Dependency: Refer to: p1082, r1082, p1083, p1085, p1086, p1088

p1070[0...n] CI: Main setpoint / Main setpoint

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 3001, 3030
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1024[0]

Description: Sets the signal source for the main setpoint.
Examples:
r1024: Fixed speed setpoint effective
r1050: Motor. potentiometer setpoint after the ramp-function generator

Dependency: Refer to: p1071, r1073, r1078

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p1071[0...n] CI: Main setpoint scaling / Main setp scal

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 3001, 3030
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for scaling the main setpoint.

r1073 CO: Main setpoint effective / Main setpoint eff

SERVO (Ext setp, Lin), SERVO_AC (Ext setp, Lin), SERVO_I_AC (Ext setp, Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3030
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Displays the effective main setpoint.
The value shown is the main setpoint after scaling.

r1073 CO: Main setpoint effective / Main setpoint eff

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3030
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the effective main setpoint.
The value shown is the main setpoint after scaling.

p1075[0...n] CI: Supplementary setp / Suppl setp

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 3001, 3030
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the supplementary setpoint.

Dependency: Refer to: p1076, r1077, r1078

p1076[0...n] CI: Supplementary setpoint scaling / Suppl setp scal

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 3001, 3030
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for scaling the supplementary setpoint.

r1077 CO: Supplementary setpoint effective / Suppl setpoint eff

SERVO (Ext setp, Lin), SERVO_AC (Ext setp, Lin), SERVO_I_AC (Ext setp, Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3030
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Displays the effective supplementary setpoint. The value shown is the additional setpoint after scaling.

r1077 CO: Supplementary setpoint effective / Suppl setpoint eff

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3030
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the effective supplementary setpoint. The value shown is the additional setpoint after scaling.

r1078 CO: Total setpoint effective / Total setpoint eff

SERVO (Ext setp, Lin), SERVO_AC (Ext setp, Lin), SERVO_I_AC (Ext setp, Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3030
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Displays the total effective setpoint.
The value indicates the sum of the effective main setpoint and supplementary setpoint.

r1078 CO: Total setpoint effective / Total setpoint eff

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3030
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the total effective setpoint.

The value indicates the sum of the effective main setpoint and supplementary setpoint.

p1079 Interpolator clock cycle for speed setpoints / Interp_cyc n_set

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	127.00 [ms]	0.00 [ms]

Description: Sets the time with which new speed setpoints are interpolated.

With interpolation, the higher-level control adapts the speed setpoint steps to the time grid of the setpoint channel.

Recommendation: For non-synchronous operation, a setting to the maximum time difference between two setpoints is recommended.

For sensorless vector control, interpolation should always be activated if the ramp-up and ramp-down times of the ramp-function generator are very short. The drive must be able to follow the external speed setpoint (the drive does not ramp up at the torque limit).

Note: For acceleration precontrol of the speed controller, interpolation prevents torque peaks from occurring if the ramp-up or ramp-down times in the setpoint channel are zero.

When exiting commissioning, the parameter is preset using the automatic calculation if, as setpoint source for the main or supplementary setpoint, a PZD receive word is already set and the ramp-up time is zero.

Interpolation is limited to 127 cycles of the setpoint channel.

p1079 = 0 ms:

Interpolation is deactivated.

p1079 = 0.01 ms:

The interpolation time is automatically determined the first time that the speed setpoint is changed. After this, no other changes are made if the send times of the external control increase. Writing to p1079 again initiates the automatic adaptation of the interpolation time.

p1079 > 0.01 ms:

Interpolation is performed corresponding to the ratio to the computation clock cycle.

For a value of 0, for synchronized setpoint input, the currently valid application clock cycle is loaded.

p1080[0...n] Minimum velocity / v_min

SERVO (Ext setp, Lin), SERVO_AC (Ext setp, Lin), SERVO_I_AC (Ext setp, Lin)

Can be changed: C2(1), T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3050
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [m/min]	1000.000 [m/min]	0.000 [m/min]

Description: Sets the lowest possible motor velocity.

This value is not undershot in operation.

Dependency: Refer to: p1106

Notice: The effective minimum velocity is formed from p1080 and p1106.

Note: The parameter value applies for both motor directions.

In exceptional cases, the motor can operate below this value (e.g. when reversing).

In order that a stationary motor – after all of the enable signals have been switched on, can operate at the minimum speed/minimum velocity once all of the enable signals are available, the direction must be entered using one of the following options:

- direction input via small setpoint.
- direction input by inhibiting the negative or positive direction (p1110, p1111).

p1080[0...n] Minimum speed / n_min

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: C2(1), T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3050
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [rpm]	19500.000 [rpm]	0.000 [rpm]

Description: Sets the lowest possible motor speed.

This value is not undershot in operation.

Dependency: Refer to: p1106

Notice: The effective minimum speed is formed from p1080 and p1106.

Note: The parameter value applies for both motor directions.

In exceptional cases, the motor can operate below this value (e.g. when reversing).

In order that a stationary motor – after all of the enable signals have been switched on, can operate at the minimum speed/minimum velocity once all of the enable signals are available, the direction must be entered using one of the following options:

- direction input via small setpoint.
- direction input by inhibiting the negative or positive direction (p1110, p1111).

p1081 Maximum speed scaling / n_max scal

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3050, 3095
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
100.00 [%]	105.00 [%]	100.00 [%]

Description: Sets the scaling for the maximum speed (p1082).

For a higher-level speed control, this scaling allows the maximum speed to be briefly exceeded.

Dependency: Refer to: p1082, r1082

Notice: Continuous operation above a scaling of 100 % is not permitted.

p1081 Maximum velocity scaling / v_max scal

SERVO (Lin), HLA, SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3050, 3095
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
100.00 [%]	105.00 [%]	100.00 [%]

Description: Sets the scaling for the maximum velocity (p1082).

For a higher-level velocity control, this scaling allows the maximum velocity to be briefly exceeded.

Dependency: Refer to: p1082, r1082

Notice: Continuous operation above a scaling of 100 % is not permitted.

p1082[0...n] Maximum velocity / v_max

HLA	**Can be changed:** C2(1), T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 1
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
	P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.000 [m/min]	1000.000 [m/min]	1000.000 [m/min]

Description: Sets the highest possible velocity.

Dependency: Refer to: p0115, p0230, r0313, p0313, p0322, p0324, r0336, p0532

Notice: After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

Note: The parameter is applicable for both directions of rotation.

The parameter has a limiting effect and is the reference quantity for all ramp-up and ramp-down times (e.g. down ramps, ramp-function generator, motor potentiometer).

p1082[0...n] Maximum speed / n_max

SERVO, SERVO_AC, SERVO_I_AC	**Can be changed:** C2(1), T	**Calculated:** CALC_MOD_ALL	**Access level:** 1
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 2820, 3020, 3050, 3060, 3070, 3095
	P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.000 [rpm]	210000.000 [rpm]	1500.000 [rpm]

Description: Sets the highest possible speed.

Dependency: Refer to: p0115, p0322, p0324, p0532

Notice: After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

Note: The parameter applies for both motor directions.

The parameter has a limiting effect and is the reference quantity for all ramp-up and ramp-down times (e.g. down ramps, ramp-function generator, motor potentiometer).

Since the parameter is part of quick commissioning (p0010 = 1), it is defined appropriately when p0310, p0311, p0322, p0324, p0530, p0531, and p0532 are changed.

p1082 <= min(p0324, p0532) if p0324 > 0 and p0532 > 0

p1082 <= p0322, if p0324 = 0 or p0532 = 0 and p0322 > 0

p1082 <= 60 / (10.0 * p0115[0] * r0313)

p1082 <= 60 * Maximum power unit pulse frequency / (5.0 * r0313)

For the automatic calculation (p0340 = 1) the value of the parameter is pre-assigned the maximum motor speed (p0322). If p0322 = 0, the rated motor speed (p0311) is used as default (pre-assignment) value. For induction motors that are not catalog motors (p0301 = 0), the synchronous no-load speed is used as default (pre-assignment) value (p0310 * 60 / r0313).

For synchronous motors, the following additionally applies:

In the automatic calculation (p0340 = 1), p1082 is, on one hand, limited to speeds for which the rated power unit current (S1 continuous duty r0207[3]) is not sufficient as field current:

p1082 < p0348 / (1 - r0207 / r0331), applicable for r0207[3] < r0331

On the other hand, an additional limit is effective, which prevents the EMF from exceeding the maximum DC link voltage (see p0643 and p1231).

The effective assignment of the motor data set parameter (e.g. p0311) to the drive data set parameter p1082 when pre-assigning should be taken from p0186.

p1082 is also available in the quick commissioning (p0010 = 1); this means that when exiting via p3900 > 0, the value is not changed.

p1082[0...n] Maximum velocity / v_max

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: C2(1), T	**Calculated:** CALC_MOD_ALL	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 2820, 3020, 3050, 3060, 3070, 3095
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [m/min]	1300.000 [m/min]	1000.000 [m/min]

Description: Sets the highest possible velocity.

Dependency: Refer to: p0115, p0322, p0324, p0532

Notice: After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

Note: The parameter applies for both motor directions.

The parameter has a limiting effect and is the reference quantity for all ramp-up and ramp-down times (e.g. down ramps, ramp-function generator, motor potentiometer).

Since the parameter is part of quick commissioning (p0010 = 1), it is defined appropriately when p0310, p0311, p0322, p0324, p0530, p0531, and p0532 are changed.

p1082 <= min(p0324, p0532) if p0324 > 0 and p0532 > 0

p1082 <= p0322, if p0324 = 0 or p0532 = 0 and p0322 > 0

p1082 <= 60 / (10.0 * p0115[0] * r0313)

p1082 <= 60 * Maximum power unit pulse frequency / (5.0 * r0313)

For the automatic calculation (p0340 = 1) the value of the parameter is pre-assigned the maximum motor speed (p0322). If p0322 = 0, the rated motor speed (p0311) is used as default (pre-assignment) value. For induction motors that are not catalog motors (p0301 = 0), the synchronous no-load speed is used as default (pre-assignment) value (p0310 * 60 / r0313).

For synchronous motors, the following additionally applies:

In the automatic calculation (p0340 = 1), p1082 is, on one hand, limited to speeds for which the rated power unit current (S1 continuous duty r0207[3]) is not sufficient as field current:

p1082 < p0348 / (1 - r0207 / r0331), applicable for r0207[3] < r0331

On the other hand, an additional limit is effective, which prevents the EMF from exceeding the maximum DC link voltage (see p0643 and p1231).

The effective assignment of the motor data set parameter (e.g. p0311) to the drive data set parameter p1082 when pre-assigning should be taken from p0186.

p1082 is also available in the quick commissioning (p0010 = 1); this means that when exiting via p3900 > 0, the value is not changed.

p1082[0...n] Maximum speed / n_max

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(1), T	**Calculated:** CALC_MOD_ALL	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 2820, 3020, 3050, 3060, 3070, 3095
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [rpm]	210000.000 [rpm]	1500.000 [rpm]

Description: Sets the highest possible speed.

Dependency: For vector control (p1300 = 20 ... 23) the maximum speed is limited to 60.0 / (8.333 x p0115[0] x r0313). This can be identified by a reduction in r1084. p1082 is not changed in this process due to the fact that the operating mode p1300 can be changed over.

If a sine-wave filter (p0230 = 3) is parameterized as output filter, then the maximum speed is limited corresponding to the maximum permissible filter output frequency (refer to the filter data sheet). When using sine-wave filters (p0230 = 3, 4), the maximum speed r1084 is limited to 70% of the resonant frequency of the filter capacitance and the motor leakage inductance.

For reactors and dU/dt filters, it is limited to 150 Hz * 60 / r0313 (for chassis power units) or 120 Hz x 60 / r0313 (for booksize power units).

Refer to: p0115, p0230, r0313, p0313, p0322, p0324, r0336, p0532

Notice: After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

Note: The parameter applies for both motor directions.

The parameter has a limiting effect and is the reference quantity for all ramp-up and ramp-down times (e.g. down ramps, ramp-function generator, motor potentiometer).

Since the parameter is part of quick commissioning (p0010 = 1), it is defined appropriately when p0310, p0311, p0322, p0324, p0530, p0531, and p0532 are changed.

p1082 <= min(p0324, p0532) if p0324 > 0 and p0532 > 0

p1082 <= p0322, if p0324 = 0 or p0532 = 0 and p0322 > 0

p1082 <= 60 x minimum (15 x r0336, 650 Hz) / r0313

p1082 <= 60 x Maximum power unit pulse frequency / (k x r0313)

k = 12 for vector control (r0108.2 = 1), k = 6.5 for U/f control (r0108.2 = 0)

For the automatic calculation (p0340 = 1) the value of the parameter is pre-assigned the maximum motor speed (p0322). If p0322 = 0, the rated motor speed (p0311) is used as default (pre-assignment) value. For induction motors that are not catalog motors (p0301 = 0), the synchronous no-load speed is used as default (pre-assignment) value (p0310 x 60 / r0313).

For synchronous motors, the following additionally applies:

The maximum speed p1082 is restricted to speeds (r1084) where the EMF does not exceed the DC link voltage.

The effective assignment of the motor data set parameter (e.g. p0311) to the drive data set parameter p1082 when pre-assigning should be taken from p0186.

p1082 is also available in the quick commissioning (p0010 = 1); this means that when exiting via p3900 > 0, the value is not changed.

r1082[0...n] Encoder emulation maximum speed / Enc_emul n_max

TM41

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 9674, 9676
P-Group: -	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the frequency limit of the signal output as maximum speed for the encoder emulation.

The value is displayed independent of the operating mode set (p4400).

Dependency: Refer to: p0115

Refer to: F35220

p1083[0...n] CO: Velocity limit positive direction / v_limit pos

HLA

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [m/min]	1000.000 [m/min]	1000.000 [m/min]

Description: Sets the maximum velocity for the positive direction.

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1083[0...n] CO: Speed limit in positive direction of rotation / n_limit pos

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3050, 3095
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [rpm]	210000.000 [rpm]	210000.000 [rpm]

Description: Sets the maximum speed for the positive direction.

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1083[0...n] CO: Velocity limit positive direction / v_limit pos

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3050, 3095
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [m/min]	1000.000 [m/min]	1000.000 [m/min]

Description: Sets the maximum velocity for the positive direction.

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1083[0...n] CO: Speed limit in positive direction of rotation / n_limit pos

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3050, 6732
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [rpm]	210000.000 [rpm]	40000.000 [rpm]

Description: Sets the maximum speed for the positive direction.

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

r1084 CO: Velocity limit positive effective / v_limit pos eff

HLA

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Display and connector output for the active positive velocity limit.

Dependency: Refer to: p1082, r1082, p1083, p1085

r1084 CO: Speed limit positive effective / n_limit pos eff

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3050, 3095
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Display and connector output for the active positive speed limit.

Dependency: Refer to: p1082, r1082, p1083, p1085

r1084 CO: Velocity limit positive effective / v_limit pos eff

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3050, 3095
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Display and connector output for the active positive velocity limit.

Dependency: Refer to: p1082, r1082, p1083, p1085

r1084 CO: Speed limit positive effective / n_limit pos eff

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3050, 3095
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Display and connector output for the active positive speed limit.

Dependency: Refer to: p1082, r1082, p1083, p1085

Note: Vector control: r1084 <= 60 / (8.333 x p0115[0] x r0313)

p1085[0...n] CI: Velocity limit positive direction / v_limit pos

SERVO (Ext setp, Lin), SERVO_AC (Ext setp, Lin), SERVO_I_AC (Ext setp, Lin)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 3050
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1083[0]

Description: Sets the signal source for the velocity limit of the positive direction.

p1085[0...n] CI: Speed limit in positive direction of rotation / n_limit pos

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 3050
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1083[0]

Description: Sets the signal source for the speed limit of the positive direction.

p1086[0...n] CO: Velocity limit negative direction / v_limit neg

HLA

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000.000 [m/min]	0.000 [m/min]	-1000.000 [m/min]

Description: Sets the velocity limit for the negative direction.

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1086[0...n] CO: Speed limit in negative direction of rotation / n_limit neg

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3050, 3095
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-210000.000 [rpm]	0.000 [rpm]	-210000.000 [rpm]

Description: Sets the speed limit for the negative direction.

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1086[0...n] CO: Velocity limit negative direction / v_limit neg

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3050, 3095
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000.000 [m/min]	0.000 [m/min]	-1000.000 [m/min]

Description: Sets the velocity limit for the negative direction.

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1086[0...n] CO: Speed limit in negative direction of rotation / n_limit neg

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3050
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-210000.000 [rpm]	0.000 [rpm]	-40000.000 [rpm]

Description: Sets the speed limit for the negative direction.

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

r1087 CO: Velocity limit negative effective / v_limit neg eff

HLA

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Display and connector output for the active negative velocity limit.

Dependency: Refer to: p1082, r1082, p1086, p1088

r1087 CO: Speed limit negative effective / n_limit neg eff

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3050, 3095
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Display and connector output for the active negative speed limit.

Dependency: Refer to: p1082, r1082, p1086, p1088

r1087 CO: Velocity limit negative effective / v_limit neg eff

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3050, 3095
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Display and connector output for the active negative velocity limit.

Dependency: Refer to: p1082, r1082, p1086, p1088

r1087 CO: Speed limit negative effective / n_limit neg eff

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3050, 3095
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Display and connector output for the active negative speed limit.

Dependency: Refer to: p1082, r1082, p1086, p1088

Note: Vector control: r1087 >= -60 / (8.333 x p0115[0] x r0313)

p1088[0...n] CI: Velocity limit negative direction / n_limit neg

SERVO (Ext setp, Lin), SERVO_AC (Ext setp, Lin), SERVO_I_AC (Ext setp, Lin)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 3050
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1086[0]

Description: Sets the signal source for the speed/velocity limit of the negative direction.

p1088[0...n] CI: Speed limit in negative direction of rotation / n_limit neg

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 3050
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1086[0]

Description: Sets the signal source for the speed/velocity limit of the negative direction.

p1091[0...n] Skip velocity 1 / v_skip 1

SERVO (Ext setp, Lin), SERVO_AC (Ext setp, Lin), SERVO_I_AC (Ext setp, Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3050
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [m/min]	1000.000 [m/min]	0.000 [m/min]

Description: Sets skip velocity 1.

Dependency: Refer to: p1092, p1093, p1094, p1101

Notice: Skip bandwidths can also become ineffective as a result of the downstream limits in the setpoint channel.

Note: The skip (suppression) velocities can be used to prevent the effects of mechanical resonance.

p1091[0...n] Skip speed 1 / n_skip 1

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3050
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets skip speed 1.

Dependency: Refer to: p1092, p1093, p1094, p1101

Notice: Skip bandwidths can also become ineffective as a result of the downstream limits in the setpoint channel.

Note: The skip (suppression) speeds can be used to prevent the effects of mechanical resonance.

p1092[0...n] Skip velocity 2 / v_skip 2

SERVO (Ext setp, Lin), SERVO_AC (Ext setp, Lin), SERVO_I_AC (Ext setp, Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3050
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [m/min]	1000.000 [m/min]	0.000 [m/min]

Description: Sets skip velocity 2.

Dependency: Refer to: p1091, p1093, p1094, p1101

Notice: Skip bandwidths can also become ineffective as a result of the downstream limits in the setpoint channel.

p1092[0...n] Skip speed 2 / n_skip 2

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3050
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets skip speed 2.

Dependency: Refer to: p1091, p1093, p1094, p1101

Notice: Skip bandwidths can also become ineffective as a result of the downstream limits in the setpoint channel.

p1093[0...n] Skip velocity 3 / v_skip 3

SERVO (Ext setp, Lin), SERVO_AC (Ext setp, Lin), SERVO_I_AC (Ext setp, Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3050
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [m/min]	1000.000 [m/min]	0.000 [m/min]

Description: Sets skip velocity 3.

Dependency: Refer to: p1091, p1092, p1094, p1101

Notice: Skip bandwidths can also become ineffective as a result of the downstream limits in the setpoint channel.

p1093[0...n] Skip speed 3 / n_skip 3

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3050
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets skip speed 3.

Dependency: Refer to: p1091, p1092, p1094, p1101

Notice: Skip bandwidths can also become ineffective as a result of the downstream limits in the setpoint channel.

p1094[0...n]	Skip velocity 4 / v_skip 4		
SERVO (Ext setp, Lin), SERVO_AC (Ext setp, Lin), SERVO_I_AC (Ext setp, Lin)	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3050
	P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
	Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.000 [m/min]	1000.000 [m/min]	0.000 [m/min]

Description: Sets skip velocity 4.
Dependency: Refer to: p1091, p1092, p1093, p1101
Notice: Skip bandwidths can also become ineffective as a result of the downstream limits in the setpoint channel.

p1094[0...n]	Skip speed 4 / n_skip 4		
SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3050
	P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
	Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets skip speed 4.
Dependency: Refer to: p1091, p1092, p1093, p1101
Notice: Skip bandwidths can also become ineffective as a result of the downstream limits in the setpoint channel.

p1098[0...n]	CI: Skip velocity scaling / v_skip scal		
SERVO (Ext setp, Lin), SERVO_AC (Ext setp, Lin), SERVO_I_AC (Ext setp, Lin)	**Can be changed:** T	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 3050
	P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	1

Description: Sets the signal source for scaling the skip velocities.
Dependency: Refer to: p1091, p1092, p1093, p1094

p1098[0...n]	CI: Skip speed scaling / n_skip scal		
SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC	**Can be changed:** T	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 3050
	P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	1

Description: Sets the signal source for scaling the skip speeds.
Dependency: Refer to: p1091, p1092, p1093, p1094

r1099.0 CO/BO: Skip band status word / Skip band ZSW

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the skip bands.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	r1170 within the skip band	Yes	No	3050

Dependency: Refer to: r1170

Note: For bit 00:

With the bit set, the setpoint speed is within the skip band after the ramp-function generator (r1170).

The signal can be used to switch over the drive data set (DDS).

p1101[0...n] Skip velocity bandwidth / v_skip bandwidth

SERVO (Ext setp, Lin), SERVO_AC (Ext setp, Lin), SERVO_I_AC (Ext setp, Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3050
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [m/min]	1000.000 [m/min]	0.000 [m/min]

Description: Sets the bandwidth for the skip velocities 1 to 4.

Dependency: Refer to: p1091, p1092, p1093, p1094

Note: The setpoint velocities are skipped (suppressed) in the range of the skip velocity +/-p1101.

Steady-state operation is not possible in the skipped (suppressed) velocity range. The skip (suppression) range is skipped.

Example:

p1091 = 600 and p1101 = 20

--> setpoint velocities between 580 and 620 [rpm] are skipped.

For the skip bandwidths, the following hysteresis behavior applies:

For a setpoint velocity coming from below, the following applies:

r1170 < 580 [m/min] and 580 [m/min] <= r1114 <= 620 [m/min] --> r1119 = 580 [m/min]

For a setpoint velocity coming from above, the following applies:

r1170 > 620 [m/min] and 580 [m/min] <= r1114 <= 620 [m/min] --> r1119 = 620 [m/min]

p1101[0...n] Skip speed bandwidth / n_skip bandwidth

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3050
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets the bandwidth for the skip speeds/velocities 1 to 4.

Dependency: Refer to: p1091, p1092, p1093, p1094

Note: The setpoint (reference) speeds are skipped (suppressed) in the range of the skip speed +/-p1101.

Steady-state operation is not possible in the skipped (suppressed) speed range. The skip (suppression) range is skipped.

Example:

p1091 = 600 and p1101 = 20

--> setpoint speeds between 580 and 620 [rpm] are skipped.

For the skip bandwidths, the following hysteresis behavior applies:
For a setpoint speed coming from below, the following applies:
r1170 < 580 [rpm] and 580 [rpm] <= r1114 <= 620 [rpm] --> r1119 = 580 [rpm]
For a setpoint speed coming from above, the following applies:
r1170 > 620 [rpm] and 580 [rpm] <= r1114 <= 620 [rpm] --> r1119 = 620 [rpm]

p1106[0...n] CI: Minimum velocity signal source / v_min s_src

SERVO (Ext setp, Lin), SERVO_AC (Ext setp, Lin), SERVO_I_AC (Ext setp, Lin)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 3050
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for lowest possible motor velocity.
Dependency: Refer to: p1080
Notice: The effective minimum velocity is formed from p1080 and p1106.

p1106[0...n] CI: Minimum speed signal source / n_min s_src

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 3050
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for lowest possible motor speed.
Dependency: Refer to: p1080
Notice: The effective minimum speed is formed from p1080 and p1106.

p1110[0...n] BI: Inhibit negative direction / Inhib neg dir

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2505, 3040
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to disable the negative direction.
Dependency: Refer to: p1111

p1111[0...n] BI: Inhibit positive direction / Inhib pos dir

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2505, 3040
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to disable the positive direction.
Dependency: Refer to: p1110

r1112 CO: Velocity setpoint after minimum limiting / v_set aft min_lim

SERVO (Ext setp, Lin), SERVO_AC (Ext setp, Lin), SERVO_I_AC (Ext setp, Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3050
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Displays the velocity setpoint after the minimum limiting.

Dependency: Refer to: p1091, p1092, p1093, p1094, p1101

r1112 CO: Speed setpoint after minimum limiting / n_set aft min_lim

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3050
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the speed setpoint after the minimum limiting.

Dependency: Refer to: p1091, p1092, p1093, p1094, p1101

p1113[0...n] BI: Setpoint inversion / Setp inv

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2441, 2442, 2505, 3040
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to invert the setpoint.

Dependency: Refer to: r1198

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

r1114 CO: Setpoint after the direction limiting / Setp after limit

SERVO (Ext setp, Lin), SERVO_AC (Ext setp, Lin), SERVO_I_AC (Ext setp, Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3001, 3040, 3050
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Displays the speed/velocity setpoint after the changeover and limiting the direction.

r1114 CO: Setpoint after the direction limiting / Setp after limit

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3001, 3040, 3050
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the speed/velocity setpoint after the changeover and limiting the direction.

p1115 Ramp-function generator selection / RFG selection

SERVO (ESR, Ext setp), VECTOR, HLA (ESR), SERVO_AC (ESR, Ext setp), VECTOR_AC, SERVO_I_AC (ESR, Ext setp), VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 3001, 3080
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the ramp-function generator type.

Value:
0: Basic ramp-function generator
1: Extended ramp-function generator

Note: Another ramp-function generator type can only be selected when the motor is at a standstill.

r1119 CO: Ramp-function generator setpoint at the input / RFG setp at inp

HLA, HLA (ESR)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Displays the setpoint at the input of the ramp-function generator.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: The setpoint is influenced by other functions, e.g. skip (suppressed) speeds, minimum and maximum limits.

r1119 CO: Ramp-function generator setpoint at the input / RFG setp at inp

SERVO (ESR, Ext setp, Lin), SERVO_AC (ESR, Ext setp, Lin), SERVO_I_AC (ESR, Ext setp, Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3001, 3050, 3060, 3070, 6300
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Displays the setpoint at the input of the ramp-function generator.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: The setpoint is influenced by other functions, e.g. skip (suppressed) speeds, minimum and maximum limits.

r1119 CO: Ramp-function generator setpoint at the input / RFG setp at inp

SERVO (ESR, Ext setp), VECTOR, SERVO_AC (ESR, Ext setp), VECTOR_AC, SERVO_I_AC (ESR, Ext setp), VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3001, 3050, 3060, 3070, 6300
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the setpoint at the input of the ramp-function generator.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: The setpoint is influenced by other functions, e.g. skip (suppressed) speeds, minimum and maximum limits.

p1120[0...n]	Ramp-function generator ramp-up time / RFG ramp-up time		
HLA, HLA (ESR)	**Can be changed:** C2(1), U, T	**Calculated:** -	**Access level:** 1
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3060, 3070
	P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.000 [s]	999999.000 [s]	10.000 [s]

Description: The ramp-function generator ramps-up the velocity setpoint from standstill (setpoint = 0) up to the maximum velocity (p1082) in this time.

Dependency: Refer to: p1082, r1082, p1138

Note: The ramp-up time can be scaled via connector input p1138.

p1120[0...n]	Ramp-function generator ramp-up time / RFG ramp-up time		
SERVO (ESR, Ext setp, Lin), SERVO_AC (ESR, Ext setp, Lin), SERVO_I_AC (ESR, Ext setp, Lin)	**Can be changed:** C2(1), U, T	**Calculated:** -	**Access level:** 1
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3060, 3070
	P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.000 [s]	999999.000 [s]	10.000 [s]

Description: The drive is accelerated from standstill (setpoint = 0) up to the maximum velocity (p1082) in this time.

Dependency: Refer to: p1082, r1082, p1138

p1120[0...n]	Ramp-function generator ramp-up time / RFG ramp-up time		
SERVO (ESR, Ext setp), SERVO_AC (ESR, Ext setp), SERVO_I_AC (ESR, Ext setp)	**Can be changed:** C2(1), U, T	**Calculated:** -	**Access level:** 1
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3060, 3070
	P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.000 [s]	999999.000 [s]	10.000 [s]

Description: The ramp-function generator ramps-up the speed setpoint from standstill (setpoint = 0) up to the maximum speed (p1082) in this time.

Dependency: Refer to: p1082, r1082, p1138

p1120[0...n]	Ramp-function generator ramp-up time / RFG ramp-up time		
VECTOR, VECTOR_AC, VECTOR_I_AC	**Can be changed:** C2(1), U, T	**Calculated:** -	**Access level:** 1
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3060, 3070
	P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.000 [s]	999999.000 [s]	10.000 [s]

Description: The ramp-function generator ramps-up the speed setpoint from standstill (setpoint = 0) up to the maximum speed (p1082) in this time.

Dependency: Refer to: p1082, r1082, p1138

Note: The ramp-up time can be scaled via connector input p1138.

The parameter is adapted during the rotating measurement (p1960 > 0). This is the reason that during the rotating measurement, the motor can accelerate faster than was originally parameterized.

For U/f control and sensorless vector control (see p1300), a ramp-up time of 0 s does not make sense. The setting should be based on the startup times (r0345) of the motor.

p1121[0...n] Ramp-function generator ramp-down time / RFG ramp-down time

HLA

Can be changed: C2(1), U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	999999.000 [s]	0.000 [s]

Description: The drive is decelerated from the maximum velocity (p1082) down to standstill (setpoint = 0) in this time.

Further, the ramp-down time is always effective for OFF1.

Dependency: Refer to: p1082, r1082, p1139

Note: The ramp-down time can be scaled via connector input p1139.

p1121[0...n] Ramp-function generator ramp-down time / RFG ramp-down time

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(1), U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3060, 3070
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	999999.000 [s]	10.000 [s]

Description: Sets the ramp-down time for the ramp-function generator.

The ramp-function generator ramps-down the speed setpoint from the maximum speed (p1082) down to standstill (setpoint = 0) in this time.

Further, the ramp-down time is always effective for OFF1.

Dependency: Refer to: p1082, r1082, p1139

Note: The ramp-down time can be scaled via connector input p1139.

The following applies for SERVO:

The ramp-function generator is only available when the function module "extended setpoint channel" is active (r0108.8 = 1).

p1121[0...n] Ramp-function generator ramp-down time / RFG ramp-down time

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: C2(1), U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3060, 3070
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	999999.000 [s]	0.000 [s]

Description: The drive is decelerated from the maximum velocity (p1082) down to standstill (setpoint = 0) in this time.

Further, the ramp-down time is always effective for OFF1.

Dependency: Refer to: p1082, r1082, p1139

Note: The ramp-down time can be scaled via connector input p1139.

The following applies for SERVO:

The ramp-function generator is only available when the function module "extended setpoint channel" is active (r0108.8 = 1).

p1121[0...n] Ramp-function generator ramp-down time / RFG ramp-down time

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(1), U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3060, 3070
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	999999.000 [s]	10.000 [s]

Description: Sets the ramp-down time for the ramp-function generator.

The ramp-function generator ramps-down the speed setpoint from the maximum speed (p1082) down to standstill (setpoint = 0) in this time.

Further, the ramp-down time is always effective for OFF1.

Dependency: Refer to: p1082, r1082, p1139

Note: For U/f control and sensorless vector control (see p1300), a ramp-down time of 0 s does not make sense. The setting should be based on the startup times (r0345) of the motor.

p1122[0...n] BI: Bypass ramp-function generator / Bypass RFG

SERVO (ESR, Ext setp), VECTOR, HLA (ESR), SERVO_AC (ESR, Ext setp), VECTOR_AC, SERVO_I_AC (ESR, Ext setp), VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2505
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for bypassing the ramp generator (ramp-up and ramp-down times = 0).

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

The bypass is kept for OFF1/OFF3.

Note: For VECTOR in encoderless operation, it is not permissible that the ramp-function generator is bypassed.

p1130[0...n] Ramp-function generator initial rounding-off time / RFG t_start_round

SERVO (ESR, Ext setp), VECTOR, HLA (ESR), SERVO_AC (ESR, Ext setp), VECTOR_AC, SERVO_I_AC (ESR, Ext setp), VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3070
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	30.000 [s]	0.000 [s]

Description: Sets the initial rounding-off time for the extended ramp generator.

The value applies to ramp-up and ramp-down.

Note: Rounding-off times avoid an abrupt response and prevent damage to the mechanical system.

p1131[0...n] Ramp-function generator final rounding-off time / RFG t_end_delay

SERVO (ESR, Ext setp), VECTOR, HLA (ESR), SERVO_AC (ESR, Ext setp), VECTOR_AC, SERVO_I_AC (ESR, Ext setp), VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3070
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	30.000 [s]	0.000 [s]

Description: Sets the final rounding-off time for the extended ramp generator.

The value applies to ramp-up and ramp-down.

Note: Rounding-off times avoid an abrupt response and prevent damage to the mechanical system.

p1134[0...n] Ramp-function generator rounding-off type / RFG round-off type

SERVO (ESR, Ext setp), VECTOR, HLA (ESR), SERVO_AC (ESR, Ext setp), VECTOR_AC, SERVO_I_AC (ESR, Ext setp), VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 3070
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the smoothed response to the OFF1 command or the reduced setpoint for the extended ramp-function generator.

Value:
0: Continuous smoothing
1: Discontinuous smoothing

Dependency: No effect up to initial rounding-off time (p1130) > 0 s.

Note: p1134 = 0 (continuous smoothing)

If the setpoint is reduced while ramping-up, initially a final rounding-off is carried out and then the ramp-up completed. During the final rounding-off, the output of the ramp-function generator continues to go in the direction of the previous setpoint (overshoot). After the final rounding-off has been completed, the output goes toward the new setpoint.

p1134 = 1 (discontinuous smoothing)

If the setpoint is reduced while ramping-up, then the output goes immediately in the direction of the new setpoint. For the setpoint change there is no rounding-off.

p1135[0...n] OFF3 ramp-down time / OFF3 t_RD

SERVO, HLA, SERVO_AC, SERVO_I_AC

Can be changed: C2(1), U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3060, 3070
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	600.000 [s]	0.000 [s]

Description: Sets the ramp-down time from the maximum speed down to zero speed for the OFF3 command.

Note: This time can be exceeded if the DC link voltage reaches its maximum value.

p1135[0...n] OFF3 ramp-down time / OFF3 t_RD

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: C2(1), U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3060, 3070
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	600.000 [s]	0.000 [s]

Description: Sets the ramp-down time from the maximum velocity down to zero speed for the OFF3 command.

Note: This time can be exceeded if the DC link voltage reaches its maximum value.

p1135[0...n] OFF3 ramp-down time / OFF3 t_RD

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(1), U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3060, 3070
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	600.000 [s]	3.000 [s]

Description: Sets the ramp-down time from the maximum speed down to zero speed for the OFF3 command.

Note: This time can be exceeded if the DC link voltage reaches its maximum value.

p1136[0...n] OFF3 initial rounding-off time / RFGOFF3 t_strt_rnd

SERVO (ESR, Ext setp), VECTOR, HLA (ESR), SERVO_AC (ESR, Ext setp), VECTOR_AC, SERVO_I_AC (ESR, Ext setp), VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3070
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	30.000 [s]	0.000 [s]

Description: Sets the initial rounding-off time for OFF3 for the extended ramp generator.

p1137[0...n] OFF3 final rounding-off time / RFG OFF3 t_end_del

SERVO (ESR, Ext setp), VECTOR, HLA (ESR), SERVO_AC (ESR, Ext setp), VECTOR_AC, SERVO_I_AC (ESR, Ext setp), VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3070
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	30.000 [s]	0.000 [s]

Description: Sets the final rounding-off time for OFF3 for the extended ramp generator.

p1138[0...n] CI: Ramp-function generator ramp-up time scaling / RFG t_RU scal

SERVO (ESR, Ext setp), VECTOR, HLA (ESR), SERVO_AC (ESR, Ext setp), VECTOR_AC, SERVO_I_AC (ESR, Ext setp), VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 3060, 3070
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for scaling the ramp-up time of the ramp-function generator.

Dependency: Refer to: p1120

Note: The ramp-up time is set in p1120.

p1139[0...n] CI: Ramp-function generator ramp-down time scaling / RFG t_RD scal

SERVO (ESR, Ext setp), VECTOR, HLA (ESR), SERVO_AC (ESR, Ext setp), VECTOR_AC, SERVO_I_AC (ESR, Ext setp), VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 3060, 3070
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for scaling the ramp-down time of the ramp-function generator.

Dependency: Refer to: p1121

Note: The ramp-down time is set in p1121.

p1140[0...n] BI: Enable ramp-function generator/inhibit ramp-function generator / Enable RFG

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2501
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for the command "enable ramp-function generator/inhibit ramp-function generator".
For the PROFIdrive profile, this command corresponds to control word 1 bit 4 (STW1.4).
BI: p1140 = 0 signal:
Inhibits the ramp-function generator (the ramp-function generator output is set to zero).
BI: p1140 = 1 signal:
Enable ramp-function generator.

Dependency: Refer to: p1141, p1142

Caution: When "master control from PC" is activated, this binector input is ineffective.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p1140 BI: Enable ramp-function generator/inhibit ramp-function generator / Enable RFG

TM41

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9678
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for the command "enable ramp-function generator/inhibit ramp-function generator".
For the PROFIdrive profile, this command corresponds to control word 1 bit 4 (STW1.4).
BI: p1140 = 0 signal:
Inhibits the ramp-function generator (the ramp-function generator output is set to zero).
BI: p1140 = 1 signal:
Enable ramp-function generator.

Dependency: Refer to: p1141, p1142

Caution: When "master control from PC" is activated, this binector input is ineffective.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: This parameter has no function in the "SINAMICS" (p4400 = 1) operating mode.

p1141[0...n] BI: Continue ramp-function generator/freeze ramp-function generator / Continue RFG

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2501
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for the command "continue ramp-function generator/freeze ramp-function generator".
For the PROFIdrive profile, this command corresponds to control word 1 bit 5 (STW1.5).
BI: p1141 = 0 signal:
Freezes the ramp-function generator.
BI: p1141 = 1 signal:
Continue ramp-function generator.

Dependency: Refer to: p1140, p1142

Caution: When "master control from PC" is activated, this binector input is ineffective.

Notice: The ramp-function generator is, independent of the state of the signal source, active in the following cases:
- OFF1/OFF3.
- ramp-function generator output within the suppression bandwidth.
- ramp-function generator output below the minimum speed.

p1141 BI: Continue ramp-function generator/freeze ramp-function generator / Continue RFG

TM41

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9678
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for the command "continue ramp-function generator/freeze ramp-function generator".
For the PROFIdrive profile, this command corresponds to control word 1 bit 5 (STW1.5).
BI: p1141 = 0 signal:
Freezes the ramp-function generator.
BI: p1141 = 1 signal:
Continue ramp-function generator.

Dependency: Refer to: p1140, p1142

Caution: When "master control from PC" is activated, this binector input is ineffective.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: This parameter has no function in the "SINAMICS" (p4400 = 1) operating mode.

p1142[0...n] BI: Enable setpoint/inhibit setpoint / Setpoint enable

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2501
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for the command "enable setpoint/inhibit setpoint".
For the PROFIdrive profile, this command corresponds to control word 1 bit 6 (STW1.6).
BI: p1142 = 0 signal
Inhibits the setpoint (the ramp-function generator input is set to zero).
BI: p1142 = 1 signal
Setpoint enable.

Dependency: Refer to: p1140, p1141

Caution: When "master control from PC" is activated, this binector input is ineffective.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: When the function module "position control" (r0108.3 = 1) is activated, this binector input is interconnected as follows as standard:
BI: p1142 = 0 signal

p1142 BI: Enable setpoint/inhibit setpoint / Setpoint enable

TM41

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9674, 9678
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for the command "enable setpoint/inhibit setpoint".

For the PROFIdrive profile, this command corresponds to control word 1 bit 6 (STW1.6).

BI: p1142 = 0 signal

Inhibits the setpoint (the ramp-function generator input is set to zero).

BI: p1142 = 1 signal

Setpoint enable.

Dependency: Refer to: p1140, p1141

Caution: When "master control from PC" is activated, this binector input is ineffective.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: This parameter has no function in the "SINAMICS" (p4400 = 1) operating mode.

p1143[0...n] BI: Ramp-function generator, accept setting value / RFG accept set v

SERVO (ESR, Ext setp), VECTOR, HLA (ESR), SERVO_AC (ESR, Ext setp), VECTOR_AC, SERVO_I_AC (ESR, Ext setp), VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 3060, 3070
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for accepting the setting value of the ramp-function generator.

Dependency: The signal source for the ramp-function generator setting value is set using parameters.

Refer to: p1144

Note: 0/1 signal:

The ramp-function generator output is immediately (without delay) set to the setting value of the ramp-function generator.

1 signal:

The setting value of the ramp-function generator is effective.

1/0 signal:

The input value of the ramp-function generator is effective. The ramp-function generator output is adapted to the input value using the ramp-up time or the ramp-down time.

0 signal:

The input value of the ramp-function generator is effective.

p1144[0...n] CI: Ramp-function generator setting value / RFG setting value

SERVO (ESR, Ext setp), VECTOR, HLA (ESR), SERVO_AC (ESR, Ext setp), VECTOR_AC, SERVO_I_AC (ESR, Ext setp), VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 3060, 3070
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the ramp-function generator setting value.

Dependency: The signal source for accepting the setting value is set using parameters.

Refer to: p1143

p1145[0...n] Ramp-function generator tracking intensity. / RFG track intens

SERVO (ESR, Ext setp), SERVO_AC (ESR, Ext setp), SERVO_I_AC (ESR, Ext setp)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3080
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0	50.0	1.3

Description: Sets the ramp-function generator tracking.

The output value of the ramp-function generator is tracked (corrected) corresponding to the maximum possible drive acceleration.

The reference value is the deviation at the speed/velocity controller input that is necessary to ensure that the motor accelerates at the torque/force limit.

Recommendation: If at least one speed setpoint filter/velocity setpoint filter is activated (p1414), then the ramp-function generator tracking should be deactivated (p1145 = 0.0). When the speed setpoint filter is activated, the output value of the ramp-function generator can no longer be tracked (corrected) corresponding to the maximum possible drive acceleration.

For p1145 = 0.0:

This value deactivates the ramp-function generator tracking.

For p1145 = 0.0 ... 1.0:

Generally, these values are not practical. They cause the motor to accelerate below its torque limit. The lower the selected value, the greater the margin between the controller and torque limit when accelerating.

For p1145 > 1.0:

The greater the value, the higher the permissible deviation between the speed setpoint and speed actual value.

Notice: If ramp-function generator tracking is activated and the ramp time is set too short, this can cause unsteady acceleration.

Remedy:

- deactivate ramp-function generator tracking (p1145 = 0).
- increase the ramp-up/ramp-down time (p1120, p1121).

Note: In the U/f mode, ramp-function generator tracking is not active.

For SERVO with U/f operation, the following applies:

The complete ramp-function generator is not active, i.e. ramp-up and ramp-down time = 0.

p1145[0...n] Ramp-function generator tracking intensity. / RFG track intens

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3080
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0	50.0	1.3

Description: Sets the ramp-function generator tracking.

The output value of the ramp-function generator is tracked (corrected) corresponding to the maximum possible drive acceleration.

The reference value is the deviation at the speed/velocity controller input that is necessary to ensure that the motor accelerates at the torque/force limit.

Recommendation: If at least one speed setpoint filter/velocity setpoint filter is activated (p1414), then the ramp-function generator tracking should be deactivated (p1145 = 0.0). When the speed setpoint filter is activated, the output value of the ramp-function generator can no longer be tracked (corrected) corresponding to the maximum possible drive acceleration.

For p1145 = 0.0:

This value deactivates the ramp-function generator tracking.

For p1145 = 0.0 ... 1.0:

Generally, these values are not practical. They cause the motor to accelerate below its torque limit. The lower the selected value, the greater the margin between the controller and torque limit when accelerating.

For p1145 > 1.0:

The greater the value, the higher the permissible deviation between the speed setpoint and speed actual value.

Notice: If ramp-function generator tracking is activated and the ramp time is set too short, this can cause unsteady acceleration.

Remedy:

- deactivate ramp-function generator tracking (p1145 = 0).
- increase the ramp-up/ramp-down time (p1120, p1121).

Note: In the U/f mode, ramp-function generator tracking is not active.

For ramp-function generator tracking and active acceleration model (p1400.20, 23), the integral component of the speed controller should be able to run freely up to the torque limit (p1400.16 = 1).

p1148[0...n] Ramp-function gen. tolerance for ramp-up and ramp-down active / RFG tol HL/RL act

SERVO (ESR, Ext setp, Lin), HLA, HLA (ESR), SERVO_AC (ESR, Ext setp, Lin), SERVO_I_AC (ESR, Ext setp, Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3060, 3070
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [m/min]	10.000 [m/min]	0.200 [m/min]

Description: Sets the tolerance value for the status of the ramp-function generator (ramp-up active, ramp-down active).

If the input of the ramp-function generator does not change in comparison to the output by more than the entered tolerance time, then the status bits "ramp-up active" and "ramp-down active" are not influenced.

Dependency: Refer to: r1199

p1148[0...n] Ramp-function gen. tolerance for ramp-up and ramp-down active / RFG tol HL/RL act

SERVO (ESR, Ext setp), VECTOR, SERVO_AC (ESR, Ext setp), VECTOR_AC, SERVO_I_AC (ESR, Ext setp), VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3060, 3070
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [rpm]	1000.000 [rpm]	19.800 [rpm]

Description: Sets the tolerance value for the status of the ramp-function generator (ramp-up active, ramp-down active).

If the input of the ramp-function generator does not change in comparison to the output by more than the entered tolerance time, then the status bits "ramp-up active" and "ramp-down active" are not influenced.

Dependency: Refer to: r1199

r1149 CO: Ramp-function generator acceleration / RFG acceleration

SERVO (ESR, Ext setp, Lin), SERVO_AC (ESR, Ext setp, Lin), SERVO_I_AC (ESR, Ext setp, Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3060, 3070
P-Group: Setpoints	**Unit group:** 22_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2007	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/s²]	- [m/s²]	- [m/s²]

Description: Displays the acceleration of the ramp-function generator.

Dependency: Refer to: p1145

r1149 CO: Ramp-function generator acceleration / RFG acceleration

SERVO (ESR, Ext setp), VECTOR, HLA (ESR), SERVO_AC (ESR, Ext setp), VECTOR_AC, SERVO_I_AC (ESR, Ext setp), VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3060, 3070
P-Group: Setpoints	**Unit group:** 39_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2007	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rev/s²]	- [rev/s²]	- [rev/s²]

Description: Displays the acceleration of the ramp-function generator.

Dependency: Refer to: p1145

r1150 CO: Ramp-function generator velocity setpoint at the output / RFG v_set at outp

SERVO (ESR, Ext setp, Lin), HLA, HLA (ESR), SERVO_AC (ESR, Ext setp, Lin), SERVO_I_AC (ESR, Ext setp, Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3001, 3080
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Displays the setpoint at the output of the ramp-function generator.

r1150 CO: Ramp-function generator speed setpoint at the output / RFG n_set at outp

SERVO (ESR, Ext setp), VECTOR, SERVO_AC (ESR, Ext setp), VECTOR_AC, SERVO_I_AC (ESR, Ext setp), VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3001, 3080
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the setpoint at the output of the ramp-function generator.

p1151[0...n] Ramp-function generator configuration / RFG config

SERVO (ESR, Ext setp), VECTOR, SERVO_AC (ESR, Ext setp), VECTOR_AC, SERVO_I_AC (ESR, Ext setp), VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Sets the configuration for the extended ramp-function generator.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Deactivate rounding-off at the zero cross-over	Yes	No	3070
01	RFG tracking without polarity change	Yes	No	-
02	RFG tracking with polarity change	Yes	No	-

Dependency: For bit 01, 02 = 1:

These bits are only effective when ramp-function generator tracking is activated (p1145 > 0).

When both bits are activated, RFG tracking with polarity change is active.

For bit 01 = 0, bit 02 = 0:

When ramp-function generator tracking is active, the setpoint can only change in the direction of the target setpoint – or be frozen.

Notice: For bit 00 = 1:

If the ramp-up time is longer than the ramp-down time (p1120 > p1121), then there is an acceleration step at the zero crossover. This can have a negative impact on the mechanical system.

Note: For bit 00 = 1:

When the direction change is changed there is no rounding-off before and after the zero crossover.

For bit 01 = 1:

For load surges, the ramp-function generator output tracks the actual value. The tracking (correction) ends at a setpoint of zero.

For bit 02 = 1:

For load surges, the ramp-function generator output tracks the actual value. For a polarity change, the tracking (correction) is continued.

p1152 BI: Setpoint 2 enable / Setp 2 enab

SERVO (Ext brake), VECTOR (Ext brake), SERVO_AC (Ext brake), VECTOR_AC (Ext brake), SERVO_I_AC (Ext brake), VECTOR_I_AC (Ext brake)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2711, 4015
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	899.15

Description: Sets the signal source for "setpoint 2 enable".

p1155[0...n] CI: Speed controller speed setpoint 1 / n_ctrl n_set 1

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 3001, 3080, 5030, 6031
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for speed setpoint 1 of the speed controller.

Dependency: The effectiveness of this setpoint depends on, e.g. STW1.4 and STW1.6.

Refer to: r0002, p0840, p0844, p0848, p0852, p0854, r0898, p1140, p1142, p1160, r1170, p1189, p1412, p1414, p1417, p1418

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p1155[0...n] CI: Velocity controller velocity setpoint 1 / v_ctrl v_set 1

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 3001, 3080, 5030, 6031
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for velocity setpoint 1 of the velocity controller.

Dependency: The effectiveness of this setpoint depends on, e.g. STW1.4 and STW1.6.

Refer to: r0002, p0840, p0844, p0848, p0852, p0854, r0898, p1140, p1142, p1160, r1170, p1189, p1412, p1414, p1417, p1418

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p1155 CI: TM41 encoder emulation speed setpoint 1 / Enc_emulat n_set 1

TM41

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9674
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for speed setpoint 1 of the encoder emulation.

The speed setpoint is processed corresponding to the sequencer of the TM41.

Dependency: The effectiveness of this setpoint depends on control word 1 (STW1).

Refer to: r0898

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p1160[0...n] CI: Speed controller speed setpoint 2 / n_ctrl n_set 2

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 3001, 3080
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for speed setpoint 2 of the speed controller.

Dependency: Refer to: p1155, r1170

Note: For OFF1/OFF3, the ramp-function generator ramp is effective.

The ramp-function generator is set (SERVO: to the actual value, VECTOR: To the setpoint (r1170)) and stops the drive corresponding to the ramp-downtime (p1121 or p1135). While stopping via the ramp-function generator, STW1.4 is effective (enable ramp-function generator).

When the function module "position control" (r0108.3 = 1) is activated, this connector input is interconnected as follows as standard:

CI: p1160 = r2562

p1160[0...n] CI: Velocity controller velocity setpoint 2 / v_ctrl v_set 2

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 3001, 3080
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for velocity setpoint 2 of the velocity controller.

Dependency: Refer to: p1155, r1170

Note: For OFF1/OFF3, the ramp-function generator ramp is effective.

The ramp-function generator is set to the actual value and stops the drive corresponding to the ramp-downtime (p1121 or p1135). While stopping via the ramp-function generator, STW1.4 is effective (enable ramp-function generator).

For the function module "position control" (r0108.3 = 1), this connector input is interconnected as follows as standard:

CI: p1160 = r2562

r1169 CO: Velocity controller velocity setpoints 1 and 2 / v_ctrl v_set 1/2

HLA

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Displays the velocity setpoint after the addition of the velocity setpoint 1 (p1155) and velocity setpoint 2 (p1160).

Dependency: Refer to: p1155, p1160

Note: The value is only correctly displayed at r0899.2 = 1 (operation enabled).

r1169 CO: Speed controller speed setpoints 1 and 2 / n_ctrl n_set 1/2

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3080
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the speed setpoint after the addition of the speed setpoint 1 (p1155) and speed setpoint 2 (p1160).

Dependency: Refer to: p1155, p1160

Note: The value is only correctly displayed at r0899.2 = 1 (operation enabled).

r1169 CO: Velocity controller velocity setpoints 1 and 2 / v_ctrl n_set 1/2

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3080
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Displays the velocity setpoint after the addition of the velocity setpoint 1 (p1155) and velocity setpoint 2 (p1160).

Dependency: Refer to: p1155, p1160

Note: The value is only correctly displayed at r0899.2 = 1 (operation enabled).

r1170 CO: Velocity controller setpoint sum / v_ctrl setp sum

HLA

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Display and connector output for the velocity setpoint after selecting the ramp-function generator.
The value is the sum of velocity setpoint 1 (p1155) and velocity setpoint 2 (p1160).

Dependency: Refer to: r1150, p1155, p1160

r1170 CO: Speed controller setpoint sum / n_ctrl setp sum

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3001, 3050, 3080, 5019, 5020
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Display and connector output for the speed setpoint after selecting the ramp-function generator.
The value is the sum of speed setpoint 1 (p1155) and speed setpoint 2 (p1160).

Dependency: Refer to: r1150, p1155, p1160

r1170 CO: Velocity controller setpoint sum / v_ctrl setp sum

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3001, 3050, 3080, 5019, 5020
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Display and connector output for the velocity setpoint after selecting the ramp-function generator.

The value is the sum of velocity setpoint 1 (p1155) and velocity setpoint 2 (p1160).

Dependency: Refer to: r1150, p1155, p1160

r1170 CO: Speed controller setpoint sum / n_ctrl setp sum

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3001, 3080, 6300
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Display and connector output for the speed setpoint after selecting the ramp-function generator.

The value is the sum of speed setpoint 1 (p1155) and speed setpoint 2 (p1160).

Dependency: Refer to: r1150, p1155, p1160

p1189[0...n] Speed setpoint configuration / n_ctrl config

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** 3080
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0011 bin

Description: Sets the configuration for the speed setpoint.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Interpolation ramp-fct gen/speed controller active	Yes	No	3080
01	Interpol. op-loop ctrl /speed controller active	Yes	No	3080

Note: For bit 01:

The interpolator is only effective in following cases:

- isochronous PROFIBUS operation with a sign-of-life received from the master (STW2.12 ... STW2.15).

p1189[0...n] Velocity setpoint configuration / v_ctrl config

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** 3080
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0011 bin

Description: Sets the configuration for the velocity setpoint.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Interpolation ramp-fct gen/velocity controller active	Yes	No	3080
01	Interpol. op-loop ctrl /velocity controller active	Yes	No	3080

Note: For bit 01:
The interpolator is only effective in following cases:
- isochronous PROFIBUS operation with a sign-of-life received from the master (STW2.12 ... STW2.15).

p1189 TM41 encoder simulation configuration / Enc_emulat config

TM41

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 9674
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0010 bin

Description: Sets the configuration for the incremental encoder emulation.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
01	Interpol. op-loop ctrl /speed controller active	Yes	No	9674

Note: The parameter is not effective in the SINAMICS operating mode (p4400 = 1).
For bit 01:
The interpolator is only effective for isochronous PROFIBUS operation and when the master receives a sign-of-life (STW 2.12 ... STW 2.15).

p1190 CI: DSC position deviation XERR / DSC XERR

SERVO, HLA, SERVO_AC, SERVO_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Integer32	**Dyn. index:** -	**Func. diagram:** 3001, 3090
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the position deviation XERR for DSC (position controller output of the higher-level control).

Dependency: Isochronous operation must be activated for DSC.
The position controller gain factor (KPC), the position deviation (XERR) and the speed setpoint (N_SOLL_B) must be included in the setpoint telegram.
At least the encoder interface (Gx_XIST1) must be included in the actual value telegram.
The position actual value used for the internal position controller can be selected using p1192.
Refer to: p1191, p1192

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.
The parameter can only be interconnected to a signal source with Integer32 data type.

Note: DSC: Dynamic Servo Control

p1191 CI: DSC position controller gain KPC / DSC KPC

SERVO, HLA, SERVO_AC, SERVO_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3001, 3090
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the position controller gain KPC for DSC.

Dependency: Isochronous operation must be activated for DSC.
Refer to: p1190

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: DSC: Dynamic Servo Control

p1192[0...n] DSC encoder selection / DSC enc selection

SERVO, HLA, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 3090
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	3	1

Description: Sets the number of the encoder used for DSC.

Value:
1: Encoder 1 (motor encoder)
2: Encoder 2
3: Encoder 3

Note: DSC: Dynamic Servo Control

Value 1 corresponds to encoder 1 (motor encoder); the encoder data set is assigned via p0187.

Value 2 corresponds to encoder 2; the encoder data set is assigned via p0188.

Value 3 corresponds to encoder 3; the encoder data set is assigned via p0189.

p1193[0...n] DSC encoder adaptation factor / DSC encodAdaptFact

SERVO, HLA, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3090
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000000.00000	1000000.00000	1.00000

Description: Sets the factor to adapt the encoder when using either encoder 2 or 3 for DSC.

The factor sets the ratio of the pulse difference between the motor encoder (encoder 1) and the selected encoder for the same distance moved through.

This factor takes into account e.g. gear ratios, differences in the number of encoder pulses.

Dependency: Refer to: p1192

Note: DSC: Dynamic Servo Control

Example:

Encoder 1: Motor encoder with 2048 pulses/revolution, ballscrew with 10 mm/revolution pitch

Encoder 2: Linear scale with 20 µm grid division as direct measuring system

p1193 = number of pulses, encoder 1 per motor revolution / number of pulses, encoder 2 per motor revolution

p1193 = 2048 / (10 mm / 20 µm) = 4.096

p1194 CI: DSC control word DSC_STW / DSC_STW

SERVO (DSC spline, Lin), SERVO_AC (DSC spline, Lin), SERVO_I_AC (DSC spline, Lin)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Integer16	**Dyn. index:** -	**Func. diagram:** 3001, 3090
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for control word DSC_STW for DSC with spline.

Bit 0: DSC with spline on

Bit 4: Velocity precontrol for DSC with spline on

Bit 5: Force precontrol for DSC with spline on

Dependency: The control word is only evaluated if the "DSC with spline" function module (r0108.6) is activated.

The closed-loop control structure selected by the DSC control word is displayed in r1407.

Refer to: p1191, p1192, p1195

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: DSC: Dynamic Servo Control

p1194 CI: DSC control word DSC_STW / DSC_STW

SERVO (DSC spline), SERVO_AC (DSC spline), SERVO_I_AC (DSC spline)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Integer16	**Dyn. index:** -	**Func. diagram:** 3001, 3090
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for control word DSC_STW for DSC with spline.

Bit 0: DSC with spline on

Bit 4: Speed precontrol for DSC with spline on

Bit 5: Torque precontrol for DSC with spline on

Dependency: The control word is only evaluated if the "DSC with spline" function module (r0108.6) is activated.

The closed-loop control structure selected by the DSC control word is displayed in r1407.

Refer to: p1191, p1192, p1195

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: DSC: Dynamic Servo Control

p1195 CI: DSC symmetrizing time constant T_SYMM / DSC T_SYMM

SERVO (DSC spline, Lin), SERVO_AC (DSC spline, Lin), SERVO_I_AC (DSC spline, Lin)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Integer16	**Dyn. index:** -	**Func. diagram:** 3001, 3090
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the symmetrizing time constant T_SYMM for DSC with spline.

T_SYMM = 0:

Symmetrization is deactivated.

T_SYMM > 0:

The position setpoint is symmetrized with the time constant T_SYMM.

For active force precontrol (r1407.20, 21, 22), the velocity precontrol value is symmetrized with the sum of the following time constants:

T_SYMM + T_SYMM_ADD (p1427) + 0.5 * velocity controller sampling time (p0115[1])

Force precontrol value is not symmetrized.

Dependency: The symmetrizing time constant is only evaluated if the "DSC with spline" function module (r0108.6) is activated.

Refer to: p1191, p1192, p1194, p1427

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: The symmetrizing time constant T_SYMM has the unit 10 µs in the Unsigned16 format.

DSC: Dynamic Servo Control

p1195 CI: DSC symmetrizing time constant T_SYMM / DSC T_SYMM

SERVO (DSC spline), SERVO_AC (DSC spline), SERVO_I_AC (DSC spline)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Integer16	**Dyn. index:** -	**Func. diagram:** 3001, 3090
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the symmetrizing time constant T_SYMM for DSC with spline.

T_SYMM = 0:

Symmetrization is deactivated.

T_SYMM > 0:

The position setpoint is symmetrized with the time constant T_SYMM.

For active torque precontrol (r1407.20, 21, 22), the speed precontrol value is symmetrized with the sum of the following time constants:

T_SYMM + T_SYMM_ADD (p1427) + 0.5 * speed controller sampling time (p0115[1])

Torque precontrol value is not symmetrized.

Dependency: The symmetrizing time constant is only evaluated if the "DSC with spline" function module (r0108.6) is activated.

Refer to: p1191, p1192, p1194, p1427

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: The symmetrizing time constant T_SYMM has the unit 10 µs in the Unsigned16 format.

DSC: Dynamic Servo Control

r1196 CO: DSC position setpoint / DSC x_set

SERVO, HLA, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 3090
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output of the position setpoint of DSC in fine pulses.

Note: DSC: Dynamic Servo Control

r1197 Fixed velocity setpoint number actual / n_set_fixed No act

SERVO (Ext setp, Lin), SERVO_AC (Ext setp, Lin), SERVO_I_AC (Ext setp, Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 3010
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the number of the selected fixed speed/velocity setpoint.

Dependency: Refer to: p1020, p1021, p1022, p1023

Note: If a fixed speed setpoint has not been selected (p1020 ... p1023 = 0, r1197 = 0), then r1024 = 0 (setpoint = 0).

r1197 Fixed speed setpoint number actual / n_set_fixed No act

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 3010
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the number of the selected fixed speed/velocity setpoint.

Dependency: Refer to: p1020, p1021, p1022, p1023

Note: If a fixed speed setpoint has not been selected (p1020 ... p1023 = 0, r1197 = 0), then r1024 = 0 (setpoint = 0).

r1198.0...15 CO/BO: Control word setpoint channel / STW setpoint chan

SERVO (Ext setp), VECTOR, SERVO_AC (Ext setp), VECTOR_AC, SERVO_I_AC (Ext setp), VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2505
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the control word of the setpoint channel.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Fixed setpoint bit 0	Yes	No	3010
01	Fixed setpoint bit 1	Yes	No	3010
02	Fixed setpoint bit 2	Yes	No	3010
03	Fixed setpoint bit 3	Yes	No	3010
05	Inhibit negative direction	Yes	No	3040
06	Inhibit positive direction	Yes	No	3040
11	Setpoint inversion	Yes	No	3040
13	Motorized potentiometer raise	Yes	No	3020
14	Motorized potentiometer lower	Yes	No	3020
15	Bypass ramp-function generator	Yes	No	3060, 3070

r1199.0...8 CO/BO: Ramp-function generator status word / RFG ZSW

SERVO (ESR, Ext setp), VECTOR, HLA (ESR), SERVO_AC (ESR, Ext setp), VECTOR_AC, SERVO_I_AC (ESR, Ext setp), VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 3001, 3080
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status word for the ramp-function generator (RFG).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Ramp-up active	Yes	No	-
01	Ramp-down active	Yes	No	-
02	RFG active	Yes	No	-
03	Ramp-function generator set	Yes	No	-
04	Ramp-function generator held	Yes	No	-
05	Ramp-function generator tracking active	Yes	No	-
06	Maximum limit active	Yes	No	-
07	Ramp-function generator acceleration positive	Yes	No	-
08	Ramp-function generator acceleration negative	Yes	No	-

Note: For bit 02:

The bit is the result of the OR logic operation - bit 00 and bit 01.

p1200 — CI: Position offset incremental/absolute / x_off inc/abs

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / Integer32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the position offset between incremental and absolute position.

Dependency: Refer to: p1201

Note: When using an incremental measuring system, which is referenced (homed) via the control system, then the control must provide an offset for the incremental position. This value is added to the incremental value, therefore generating an absolute position. The absolute position is used in the drive to determine the piston position, if the measuring system does not have any absolute information.

p1200[0...n] — Flying restart operating mode / FlyRest op_mode

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 6300
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	6	0

Description: Sets the operating mode for flying restart.

The flying restart allows the drive converter to be switched on while the motor is still rotating. In so doing, the drive converter output frequency is changed until the actual motor speed/velocity is found. The motor then accelerates up to the setpoint at the ramp-function generator setting.

Value:
0: Flying restart inactive
1: Flying restart always active (start in setpoint direction)
2: FlyRestart active after on, fault, OFF2 (start in setp. dir.)
3: FlyRestart active after fault, OFF2 (start in setp. direction)
4: Flying restart always active (start only in setpoint direction)
5: FlyRestart active after on, fault, OFF2 (start only in setp_dir)
6: FlyRestart active after fault, OFF2 (start only in setp. dir.)

Dependency: The ground fault test is only possible when the motor is stationary, and is therefore only realized when flying restart is deactivated (p1200 = 0).

For induction motors, the following applies:

A differentiation is made between flying restart for U/f control and for vector control (p1300).

Flying restart, U/f control: p1202, p1203, r1204

Flying restart, vector control: p1202, p1203, r1205

For synchronous motors, the following applies:

Flying restart is not possible with U/f control or if, in the case of sensorless vector control, a Voltage Sensing Module (VSM) has not been connected and parameterized.

If two VSMs are connected to the Motor Module, then the motor voltage for the flying restart is measured using the second VSM (see p0151[1]).

If only one VSM is connected, then this can be used for the flying restart (p1200) (for induction motors, also see p0247 bit 5). When activating flying restart, line synchronization must be deactivated (p3800 = 0).

Refer to: p1201

Refer to: F07330, F07331

Notice: The "flying restart" function must be used in cases where the motor may still be running (e.g. after a brief line supply interruption) or is being driven by the load. The system might otherwise shut down as a result of overcurrent.

It does not make sense to use "flying restart" together with the "motor holding brake function" (p1215 > 0) because then the flying restart will always be realized with the motor stationary.

For a flying restart of induction motors without voltage measurement (VSM) the de-energization time (p0347) must be set long enough so that for fast restarts after a pulse inhibit, excessively high current peaks do not occur.

When operating synchronous reluctance motors and flying restart a motor data identification must first be carried out.

Note: For p1200 = 1, 4, the following applies:

Flying restart is active after faults, OFF1, OFF2, OFF3.

For p1200 = 2, 5, the following applies:

The "switch-on" is the first switching-on operation after the drive system has been booted. This is practical for motors with a high-inertia load.

For p1200 = 1, 2, 3, the following applies: The search is made in both directions.

For p1200 = 4, 5, 6, the following applies: The search is only made in the setpoint direction. For a setpoint of zero, a search is not made in the negative direction of rotation.

For operation with encoder, the following applies:

p1200 = 1, 4 as well as p1200 = 2, 5 and p1200 = 3, 6 have the same meaning.

For U/f control (p1300 < 20), the following applies:

The speed can only be sensed for values above approx. 5 % of the rated motor speed. For lower speeds, it is assumed that the motor is at a standstill.

If p1200 is changed while commissioning (p0009, p0010 > 0), then it is possible that the old value will no longer be able to be set. The reason for this is that the dynamic limits of p1200 have been changed by a parameter that was set when the drive was commissioned (e.g. p0300).

p1201[0...n] CI: Position offset incremental/absolute valid / x_off valid

HLA

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Integer16	**Dyn. index:** CDS, p0170	**Func. diagram:** -
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the message "Position offset incremental/absolute valid".

BI: p1201 = 1 signal:

The value for the position offset incremental/absolute (p1200) is valid.

Dependency: Refer to: p1200

p1201[0...n] BI: Flying restart enable signal source / Fly_res enab S_src

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** -
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source to enable the "flying restart" function.

Dependency: Refer to: p1200

Note: Withdrawing the enable signal has the same effect as setting p1200 = 0.

p1202[0...n] Flying restart search current / FlyRest I_srch

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
10 [%]	400 [%]	100 [%]

Description: Sets the search current for the "flying restart" function.

The value is referred to the motor magnetizing current.

For U/f control, it may be necessary to increase the search current (e.g. 120 %) to ensure reliable flying restart.

Fast flying restart for induction motors with voltage model (see r1780.11):

Sets the initial setpoint for the field-generating current component.

Dependency: Refer to: r0331

Caution: An unfavorable parameter value can result in the motor behaving in an uncontrollable fashion.

Note: In U/f control mode, the parameter serves as a threshold value for establishing the current at the beginning of the flying restart function. When the threshold value is reached, the actual search current is set as a function of the frequency based on the voltage setpoints.

Reducing the search current can also improve flying restart performance (if the system moment of inertia is not very high, for example).

The following applies for a synchronous reluctance motor:

- a parameter change only becomes effective after carrying out the motor data identification.

- the minimum search current is limited (p1202 >= 50 %).

- the search algorithm is optimized for 100%, and the current reached is internally limited. It is possible that a set value (p1202 != 100%) may not be able to be reached.

- if the ratio between motor power and converter power is greater than 1, then it may be advantageous to increase the search current.

p1203[0...n] Flying restart search rate factor / FlyRst v_Srch Fact

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
10 [%]	4000 [%]	100 [%]

Description: Sets the factor for the search speed for flying restart.

The value influences the rate at which the output frequency is changed during a flying restart . A higher value results in a longer search time.

Recommendation: For sensorless vector control and motor cables longer than 200 m - as well as for du/dt filters (p0230) - the following applies:

p1203 >= 300 %

Caution: An unfavorable parameter value can result in the motor behaving in an uncontrollable fashion.

For vector control, a value that is too low or too high can cause flying restart to become unstable.

Note: The parameter factory setting is selected so that standard induction motors that are rotating can be found and restarted as quickly as possible (fast flying restart).

With this pre-setting, if the motor is not found (e.g. for motors that are accelerated as a result of active loads or with U/f control and low speeds), we recommend that the search rate is reduced (by increasing p1203).

For a fast flying restart with voltage model in the U/f control mode (p1300 < 20) the search duration can be modified using this parameter.

The following applies for a synchronous reluctance motor:

- the minimum search speed is limited (p1203 >= 50 %).

r1204.0...15 CO/BO: Flying restart U/f control status / FlyRest Uf st

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status for checking and monitoring flying restart states in the U/f control mode.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Current impressed	Yes	No	-
01	No current flow	Yes	No	-
02	Voltage input	Yes	No	-
03	Voltage reduced	Yes	No	-
04	Start ramp-function generator	Yes	No	-
05	Wait for execution	Yes	No	-
06	Slope filter act	Yes	No	-
07	Positive gradient	Yes	No	-

08	Current < threshold	Yes	No	-
09	Current minimum	Yes	No	-
10	Search in the positive direction	Yes	No	-
11	Stop after positive direction	Yes	No	-
12	Stop after negative direction	Yes	No	-
13	No result	Yes	No	-
14	Fast flying restart w/ voltage model for induction motor activ.	Yes	No	-
15	Flying restart with VSM active	Yes	No	-

r1205.0...21 CO/BO: Flying restart vector control status / FlyRest vector st

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status for checking and monitoring flying restart states with vector control.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Speed adaptation circuit record angle	Yes	No	-
01	Speed adaptation circuit set gain to 0	Yes	No	-
02	Isd channel enable	Yes	No	-
03	Speed control switched out	Yes	No	-
04	Quadrature arm switched in	Yes	No	-
05	Special transformation active	Yes	No	-
06	Speed adaptation circuit set I component to 0	Yes	No	-
07	Current control on	Yes	No	-
08	Isd_set = 0 A	Yes	No	-
09	Frequency held	Yes	No	-
10	Search in the positive direction	Yes	No	-
11	Search Started	Yes	No	-
12	Current impressed	Yes	No	-
13	Search interrupted	Yes	No	-
14	Speed adaptation circuit deviation = 0	Yes	No	-
15	Speed control activated	Yes	No	-
16	Fast flying restart w/ voltage model for induction motor activ.	Yes	No	-
17	Fast flying restart w/ voltage model for induction motor exited	Yes	No	-
18	Apply VSM voltage to the monitor	Yes	No	-
19	Preassign flux ramp	Yes	No	-
20	Adaptation current controller and speed adapt. controller gain	Yes	No	-
21	Voltage pulse active	Yes	No	-

Note: For bit 00 ... 09:

Used to control internal sequences during the flying restart.

Depending on the motor type (p0300), the number of active bits differs.

For bits 10 ... 17:

Are used to monitor the flying restart sequence.

p1206[0...9] Automatic restart faults not active / AR fault not act

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	65535	0

Description: Sets faults for which automatic restart should not be effective.

Dependency: The setting is only effective for p1210 = 6, 16.

Refer to: p1210

p1207 BI: AR connection following drive object / AR connection DO

A_INF, S_INF, R_INF, B_INF

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Modifies the precharging monitoring of the infeed.

The active automatic restart (AR) of the following drive object can be interconnected using this binector input (BI: p1207 = r1214.2).

This means that when the automatic restart is operational, the precharging monitoring of the infeed is deactivated and is only re-activated under the following conditions:

- the absolute current in the DC link is greater than 2 % of the maximum current (r0209) of the infeed to provide protection against short-circuit in the DC link.

- if a Voltage Sensing Module (VSM) is being used, the line supply voltage amplitude is greater than 3 % of the parameterized unit supply voltage (p0210) to protect the precharging resistors against continuous filter current when the line supply partially returns.

Dependency: Refer to: r0209, p0209, p0210, r1214

p1208[0...1] BI: AR modification infeed / AR modification

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to modify the automatic restart (AR).

Interconnections between the automatic restart and infeed:

With the following interconnection in the mode p1210 = 6, the automatic restart can respond to infeed faults:

BI: p1208[0] = r2139.3

With the following interconnection, in the mode p1210 = 4, the automatic restart can respond to line supply failure of the infeed:

BI: p1208[1] = r0863.2

Index: [0] = Infeed fault
[1] = Infeed line supply failure

Dependency: Refer to: r0863, r2139

p1210 Automatic restart mode / AR mode

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	16	0

Description: Sets the automatic restart mode (AR).

Value:
0: Inhibit automatic restart
1: Acknowledge all faults without restarting
4: Restart after line supply failure w/o additional start attempts
6: Restart after fault with additional start attempts
14: Restart after line supply failure following man. acknowledgment
16: Restart after fault following manual acknowledgment

Dependency: The automatic restart requires an active ON command (e.g., via a digital input). If, for p1210 > 1, there is no active ON command, then the automatic restart is interrupted.

When using an Operator Panel in the LOCAL mode, then there is no automatic start.

For p1210 = 14, 16, a manual acknowledgment is required for an automatic restart.

Refer to: p0840, p0857, p1267

Refer to: F30003

Danger: If the automatic restart is activated (p1210 > 1) if there is an ON command (refer to p0840), the drive is switched on as soon as any fault messages that are present can be acknowledged. This also occurs after the line supply returns or the Control Unit boots if the DC link voltage is again present or the feedback of the line supply infeed (refer to p0864) is again available. This automatic switching-on operation can only be interrupted by withdrawing the ON command.

Notice: A change is only accepted and made in the state "initialization" (r1214.0) and "wait for alarm" (r1214.1). When faults are present, therefore, the parameter cannot be changed.

For p1210 > 1, the motor is automatically started.

Note: For p1210 = 1:

Faults that are present are automatically acknowledged. If new faults occur after a successful fault acknowledgment, then these are also automatically acknowledged again. p1211 has no influence on the number of acknowledgment attempts.

For p1210 = 4:

An automatic restart is only carried out if fault F30003 occurred at the Motor Module or a 1 signal is present at binector input p1208[1]. If additional faults are present, then these faults are also acknowledged and when successful, starting continues. If the 24 V Control Unit power supply fails, then this is interpreted as a line supply failure.

For p1210 = 6:

An automatic restart is carried out if any fault has occurred or there is a 1 signal at binector input p1208[0].

For p1210 = 14:

as for p1210 = 4. However, active faults must be manually acknowledged.

For p1210 = 16:

as for p1210 = 6. However, active faults must be manually acknowledged.

p1210 Automatic restart mode / AR mode

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	16	0

Description: Sets the automatic restart mode (AR).

Value:
0: Inhibit automatic restart
1: Acknowledge all faults without restarting
4: Restart after line supply failure w/o additional start attempts
6: Restart after fault with additional start attempts
14: Restart after line supply failure following man. acknowledgment
16: Restart after fault following manual acknowledgment

Recommendation: For brief line supply failures, the motor shaft may still be rotating when restarting. The "flying restart" function (p1200) might need to be activated to restart while the motor shaft is still rotating.

Dependency: The automatic restart requires an active ON command (e.g., via a digital input). If, for p1210 > 1, there is no active ON command, then the automatic restart is interrupted.

When using an Operator Panel in the LOCAL mode, then there is no automatic start.

For p1210 = 14, 16, a manual acknowledgment is required for an automatic restart.

Refer to: p0840, p0857, p1267

Refer to: F30003

Danger: If the automatic restart is activated (p1210 > 1) if there is an ON command (refer to p0840), the drive is switched on as soon as any fault messages that are present can be acknowledged. This also occurs after the line supply returns or the Control Unit boots if the DC link voltage is again present or the feedback of the line supply infeed (refer to p0864) is again available. This automatic switching-on operation can only be interrupted by withdrawing the ON command.

Notice: A change is only accepted and made in the state "initialization" (r1214.0) and "wait for alarm" (r1214.1). When faults are present, therefore, the parameter cannot be changed.

For p1210 > 1, the motor is automatically started.

Note: For p1210 = 1:

Faults that are present are automatically acknowledged. If new faults occur after a successful fault acknowledgment, then these are also automatically acknowledged again. p1211 has no influence on the number of acknowledgment attempts.

For p1210 = 4:

An automatic restart is only carried out if fault F30003 occurred at the Motor Module or a 1 signal is present at binector input p1208[1]. If additional faults are present, then these faults are also acknowledged and when successful, starting continues. If the 24 V Control Unit power supply fails, then this is interpreted as a line supply failure.

For p1210 = 6:

An automatic restart is carried out if any fault has occurred or there is a 1 signal at binector input p1208[0].

For p1210 = 14:

as for p1210 = 4. However, active faults must be manually acknowledged.

For p1210 = 16:

as for p1210 = 6. However, active faults must be manually acknowledged.

p1210 Automatic restart mode / AR mode

A_INF, R_INF

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	6	0

Description: Sets the automatic restart mode (AR).

Value:
0: Inhibit automatic restart
1: Acknowledge all faults without restarting
4: Restart after line supply failure w/o additional start attempts
6: Restart after fault with additional start attempts

Dependency: The automatic restart requires an active ON command (e.g., via a digital input). If, for p1210 > 1, there is no active ON command, then the automatic restart is interrupted.

When using an Advanced Operator Panel (AOP) in the LOCAL Mode, then there is no automatic restart.

Refer to: p0840, p0857, p1267

Refer to: F30003

Danger: If the automatic restart is activated (p1210 > 1) if there is an ON command (refer to p0840), the drive is switched on as soon as any fault messages that are present can be acknowledged. This also occurs after the line supply returns or the Control Unit boots if the DC link voltage is again present or the feedback of the line supply infeed (refer to p0864) is again available. This automatic switching-on operation can only be interrupted by withdrawing the ON command.

Notice: A change is only accepted and made in the state "initialization" (r1214.0) and "wait for alarm" (r1214.1).

For p1210 > 1, the infeed is automatically started.

Note: For p1210 = 1:

Faults that are present are automatically acknowledged. If new faults occur after a successful fault acknowledgment, then these are also automatically acknowledged again. A minimum time of p1212 + 1 s must expire between a successful fault acknowledgment and a fault re-occurring if the signal ON/OFF1 (STW1.0) is at a HIGH signal level. If the signal ON/OFF1 is at a LOW signal level, then the time between a successful fault acknowledgment and a new fault must be at least 1 s. p1211 has no influence on the number of acknowledgment attempts.

For p1210 = 4:

An automatic restart is only executed if fault F06200 or F06851 has occurred. If additional faults are present, then these faults are also acknowledged and when successful, starting continues. If the 24 V Control Unit power supply fails, then this is interpreted as a line supply failure.

For p1210 = 6:

An automatic restart is carried out if any fault has occurred.

p1210 Automatic restart mode / AR mode

B_INF

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	6	0

Description: Sets the automatic restart mode (AR).

Value:
0: Inhibit automatic restart
1: Acknowledge all faults without restarting
6: Restart after fault with additional start attempts

Dependency: The automatic restart requires an active ON command (e.g., via a digital input). If, for p1210 > 1, there is no active ON command, then the automatic restart is interrupted.

When using an Advanced Operator Panel (AOP) in the LOCAL Mode, then there is no automatic restart.

Refer to: p0840, p0857, p1267

Refer to: F30003

Danger: If the automatic restart is activated (p1210 > 1) if there is an ON command (refer to p0840), the drive is switched on as soon as any fault messages that are present can be acknowledged. This also occurs after the line supply returns or the Control Unit boots if the DC link voltage is again present or the feedback of the line supply infeed (refer to p0864) is again available. This automatic switching-on operation can only be interrupted by withdrawing the ON command.

Notice: A change is only accepted and made in the state "initialization" (r1214.0) and "wait for alarm" (r1214.1).

For p1210 > 1, the infeed is automatically started.

Note: For p1210 = 1:

Faults that are present are automatically acknowledged. If new faults occur after a successful fault acknowledgment, then these are also automatically acknowledged again. A minimum time of p1212 + 1 s must expire between a successful fault acknowledgment and a fault re-occurring if the signal ON/OFF1 (STW1.0) is at a HIGH signal level. If the signal ON/OFF1 is at a LOW signal level, then the time between a successful fault acknowledgment and a new fault must be at least 1 s. p1211 has no influence on the number of acknowledgment attempts.

For p1210 = 6:

An automatic restart is carried out if any fault has occurred.

p1210 Automatic restart mode / AR mode

S_INF

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	6	0

Description: Sets the automatic restart mode (AR).

Value:
0: Inhibit automatic restart
1: Acknowledge all faults without restarting
4: Restart after line supply failure w/o additional start attempts
6: Restart after fault with additional start attempts

Dependency: The automatic restart requires an active ON command (e.g., via a digital input). If, for p1210 > 1, there is no active ON command, then the automatic restart is interrupted.

When using an Advanced Operator Panel (AOP) in the LOCAL Mode, then there is no automatic restart.

Refer to: p0840, p0857, p1267

Refer to: F30003

Danger: If the automatic restart is activated (p1210 > 1) if there is an ON command (refer to p0840), the drive is switched on as soon as any fault messages that are present can be acknowledged. This also occurs after the line supply returns or the Control Unit boots if the DC link voltage is again present or the feedback of the line supply infeed (refer to p0864) is again available. This automatic switching-on operation can only be interrupted by withdrawing the ON command.

Notice: A change is only accepted and made in the state "initialization" (r1214.0) and "wait for alarm" (r1214.1).

For p1210 > 1, the infeed is automatically started.

Note: For p1210 = 1:

Faults that are present are automatically acknowledged. If new faults occur after a successful fault acknowledgment, then these are also automatically acknowledged again. A minimum time of p1212 + 1 s must expire between a successful fault acknowledgment and a fault re-occurring if the signal ON/OFF1 (STW1.0) is at a HIGH signal level. If the signal ON/OFF1 is at a LOW signal level, then the time between a successful fault acknowledgment and a new fault must be at least 1 s.

p1211 has no influence on the number of acknowledgment attempts.

For p1210 = 4:

An automatic restart is only executed if fault F06200 has occurred. If additional faults are present, then these faults are also acknowledged and when successful, starting continues. If the 24 V Control Unit power supply fails, then this is interpreted as a line supply failure.

For p1210 = 6:

An automatic restart is carried out if any fault has occurred.

p1211 Automatic restart start attempts / AR start attempts

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	10	3

Description: Sets the start attempts of the automatic restart function for p1210 = 4, 6.

Dependency: A change is only accepted and made in the state "initialization" (r1214.0) and "wait for alarm" (r1214.1).

Refer to: p1210, r1214

Refer to: F07320

Notice: After fault F07320 occurs, the switch-on command must be withdrawn and all of the faults acknowledged so that the automatic restart function is re-activated.

After a complete power failure (blackout) the start counter always starts with the counter value that applied before the power failure, and decrements this start attempt by 1. If a further attempt to acknowledge is started by the automatic restart function prior to power failure, e.g. if the Control Unit remains active on power failure longer than the time p1212/2, the fault counter will already have been decremented once. In this case, the start counter is thus decreased by the value 2.

Note: A start attempt starts immediately when a fault occurs. The start attempt is considered to been completed if the motor was magnetized (r0056.4 = 1) and an additional delay time of 1 s has expired.

As long as a fault is present, an acknowledge command is generated in the time intervals of p1212 / 2. When successfully acknowledged, the start counter is decremented. If, after this, a fault re-occurs before a restart has been completed, then acknowledgment starts again from the beginning.

Fault F07320 is output if, after several faults occur, the number of parameterized start attempts has been reached. After a successful start attempt, i.e. a fault/error has no longer occurred up to the end of the magnetizing phase, the start counter is again reset to the parameter value after 1 s. If a fault re-occurs - the parameterized number of start attempts is again available.

At least one start attempt is always carried out.

After a line supply failure, acknowledgment is immediate and when the line supply returns, the system is switched on. If, between successfully acknowledging the line fault and the line supply returning, another fault occurs, then its acknowledgment also causes the start counter to be decremented.

p1211 Automatic restart start attempts / AR start attempts

A_INF, S_INF, R_INF, B_INF

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	10	3

Description: Sets the start attempts of the automatic restart function for p1210 = 4, 6.

Dependency: This parameter setting is active for p1210 = 6.

For p1210 = 4, the parameter only has an influence if, when attempting to start, an additional line phase failure (F06200) occurs.

A change is only accepted and made in the state "initialization" (r1214.0) and "wait for alarm" (r1214.1).

Refer to: p1210, r1214

Refer to: F07320

Notice: After fault F07320 occurs, the switch-on command must be withdrawn and all of the faults acknowledged so that the automatic restart function is re-activated.

After a complete power failure (blackout) the start counter always starts with the counter value that applied before the power failure, and decrements this start attempt by 1. If a further attempt to acknowledge is started by the automatic restart function prior to power failure, e.g. if the Control Unit remains active on power failure longer than the time p1212/2, the fault counter will already have been decremented once. In this case, the start counter is thus decreased by the value 2.

Note: A start attempt starts immediately when a fault occurs. The restart attempt is considered to have been completed if the infeed is switched on and an additional delay time of 1 s has expired.

As long as a fault is present, an acknowledge command is generated in the time intervals of p1212 / 2. When successfully acknowledged, the start counter is decremented. If, after this, a fault re-occurs before a restart has been completed, then acknowledgment starts again from the beginning.

Fault F07320 is output if, after several faults occur, the number of parameterized start attempts has been reached. After a successful start attempt (i.e. a fault/error has no longer occurred up to the end of the switching-on operation) the start counter is again reset to the parameter value after 1 s. If faults re-occur, the parameterized number of start attempts is again available.

At least one start attempt is always carried out.

After a line supply failure, acknowledgment is immediate and when the line supply returns, the system is switched on. If, between successfully acknowledging the line fault and the line supply returning, another fault occurs, then its acknowledgment also causes the start counter to be decremented.

p1212 Automatic restart delay time start attempts / AR t_wait start

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.1 [s]	1000.0 [s]	1.0 [s]

Description: Sets the delay time up to restart.

Dependency: This parameter setting is active for p1210 = 4, 6.

For p1210 = 1, the following applies:

Faults are only automatically acknowledged in half of the waiting time, no restart.

Refer to: p1210, r1214

Notice: A change is only accepted and made in the state "initialization" (r1214.0) and "wait for alarm" (r1214.1).

Note: The faults are automatically acknowledged after half of the delay time has expired and the full delay time.

If the cause of a fault is not removed in the first half of the delay time, then it is no longer possible to acknowledge in the delay time.

p1212 Automatic restart delay time start attempts / AR t_wait start

A_INF, S_INF, R_INF, B_INF

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.1 [s]	1000.0 [s]	1.0 [s]

Description: Sets the delay time up to restart.

Dependency: This parameter setting is active for p1210 = 4, 6.

For p1210 = 1, the following applies:

Only automatic acknowledgment of the faults, no restart.

Refer to: p1210, r1214

Notice: A change is only accepted and made in the state "initialization" (r1214.0) and "wait for alarm" (r1214.1).

Note: Faults are automatically acknowledged and the drive switched on again after half and the complete wait time have expired.

p1213[0...1]	Automatic restart monitoring time / AR t_monit		
SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Functions	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.0 [s]	10000.0 [s]	0.0 [s]

Description: Sets the monitoring time of the automatic restart (AR).

Index: [0] = Restart
[1] = Reset start counter

Dependency: Refer to: p1210, r1214

Notice: A change is only accepted and made in the state "initialization" (r1214.0) and "wait for alarm" (r1214.1).

After fault F07320 occurs, the switch-on command must be withdrawn and all of the faults acknowledged so that the automatic restart function is re-activated.

Note: For index [0]:

The monitoring time starts when the faults are detected. If the automatic acknowledgments are not successful, the monitoring time runs again. If, after the monitoring time has expired, the drive has still not successfully started again (flying restart and magnetizing of the motor must have been completed: r0056.4 = 1), then fault F07320 is output.

The monitoring is deactivated with p1213 = 0. If p1213 is set lower than the sum of p1212, the magnetizing time p0346 and the additional delay time due to the flying restart, then fault F07320 is generated at each restart. If, for p1210 = 1, the time in p1213 is set lower than in p1212, then fault F07320 is also generated at each restart.

The monitoring time must be extended if the faults that occur cannot be immediately and successfully acknowledged (e.g. for faults that are permanently present).

In the case of p1210 = 14, 16, the faults which are present must be acknowledged manually within the time in p1213[0]. Otherwise, fault F07320 is generated after the set time.

For index [1]:

The start counter (refer to r1214) is only set back to the starting value p1211 if, after successful restart, the time in p1213[1] has expired. The delay time is not effective for fault acknowledgment without automatic restart (p1210 = 1). After a power failure (blackout) the delay time only starts after the line supply returns and the Control Unit boots. The start counter is set to p1211, if F07320 occurred, the switch-on command is withdrawn and the fault is acknowledged.

The start counter is immediately updated if the starting value p1211 or the mode p1210 is changed.

p1213[0...1]	Automatic restart monitoring time / AR t_monit		
A_INF, S_INF, R_INF, B_INF	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Functions	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.0 [s]	10000.0 [s]	0.0 [s]

Description: Sets the monitoring time of the automatic restart (AR).

Index: [0] = Restart
[1] = Reset start counter

Dependency: Refer to: p1210, r1214

Notice: A change is only accepted and made in the state "initialization" (r1214.0) and "wait for alarm" (r1214.1).

After fault F07320 occurs, the switch-on command must be withdrawn and all of the faults acknowledged so that the automatic restart function is re-activated.

Note: For index [0]:

The monitoring time starts when the faults are detected. If the automatic acknowledgments are not successful, the monitoring time runs again. If the drive has not restarted at the end of the monitoring time, fault F07320 is signaled.

The monitoring is deactivated with p1213 = 0. If p1213 is set to a value which is lower than in p1212, fault F07320 is generated at each restart. If, for p1210 = 1, the time in p1213 is set lower than in p1212, then fault F07320 is also generated at each restart.

The monitoring time must be extended if the faults that occur cannot be immediately and successfully acknowledged (e.g. for faults that are permanently present).

For index [1]:

The start counter (refer to r1214) is only set back to the starting value p1211 if, after successful restart, the time in p1213[1] has expired. The delay time is not effective for fault acknowledgment without automatic restart (p1210 = 1). After a power failure (blackout) the delay time only starts after the line supply returns and the Control Unit boots. The start counter is set to p1211, if F07320 occurred, the switch-on command is withdrawn and the fault is acknowledged.

The start counter is immediately updated if the starting value p1211 or the mode p1210 is changed.

r1214.0...15 CO/BO: Automatic restart status / AR status

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status of the automatic restart (AR).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Initialization	Yes	No	-
01	Wait for alarm	Yes	No	-
02	Auto restart act	Yes	No	-
03	Setting the acknowledgment command	Yes	No	-
04	Acknowledge alarms	Yes	No	-
05	Restart	Yes	No	-
06	Delay time running after automatic switch-on	Yes	No	-
07	Fault	Yes	No	-
10	Effective fault	Yes	No	-
12	Start counter bit 0	ON	OFF	-
13	Start counter bit 1	ON	OFF	-
14	Start counter bit 2	ON	OFF	-
15	Start counter bit 3	ON	OFF	-

Note: For bit 00:

State to display the single initialization after POWER ON.

For bit 01:

State in which the automatic restart function waits for faults (initial state).

For bit 02:

General display that a fault has been identified and that the restart or acknowledgment has been initiated.

For bit 03:

Displays the acknowledge command within the "acknowledge alarms" state (bit 4 = 1). For bit 5 = 1 or bit 6 = 1, the acknowledge command is continually displayed.

For bit 04:

State in which the faults that are present are acknowledged. The state is exited again after successful acknowledgment. A change is only made into the next state if it is signaled that a fault is no longer present after an acknowledgment command (bit 3 = 1).

For bit 05:

State in which the drive is automatically switched on (only for p1210 = 4, 6).

For bit 06:

State in which the system waits after having been switched on, to the end of the start attempt (to the end of the magnetizing process).

For p1210 = 1, this signal is directly set after the faults have been successfully acknowledged.

For bit 07:

State which is assumed after a fault occurs within the automatic restart function. This is only reset after acknowledging the fault and withdrawing the switch-on command.

For bit 10:

When the automatic restart function is active, r1214.7 is displayed, otherwise the active fault r2139.3.

The bit is set if the automatic restart can no longer acknowledge a fault, and cancels with fault F07320.

For bits 12 ... 15:

Actual state of the start counter (binary coded).

r1214.0...15 CO/BO: Automatic restart status / AR status

A_INF, S_INF, R_INF, B_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status of the automatic restart (AR).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Initialization	Yes	No	-
01	Wait for alarm	Yes	No	-
02	Auto restart act	Yes	No	-
03	Setting the acknowledgment command	Yes	No	-
04	Acknowledge alarms	Yes	No	-
05	Restart	Yes	No	-
06	Delay time running after automatic switch-on	Yes	No	-
07	Fault	Yes	No	-
10	Effective fault	Yes	No	-
12	Start counter bit 0	ON	OFF	-
13	Start counter bit 1	ON	OFF	-
14	Start counter bit 2	ON	OFF	-
15	Start counter bit 3	ON	OFF	-

Note: For bit 00:

State to display the single initialization after POWER ON.

For bit 01:

State in which the automatic restart function waits for faults (initial state).

For bit 02:

General display that a fault has been identified and that the restart or acknowledgment has been initiated.

For bit 03:

Displays the acknowledge command within the "acknowledge alarms" state (bit 4 = 1). For bit 5 = 1 or bit 6 = 1, the acknowledge command is continually displayed.

For bit 04:

State in which the faults that are present are acknowledged. The state is exited again after successful acknowledgment. A change is only made into the next state if it is signaled that a fault is no longer present after an acknowledgment command (bit 3 = 1).

For bit 05:

State in which the drive is automatically switched on (only for p1210 = 4, 6).

For bit 06:

State in which the system waits after having been switched on, to the end of the start attempt.

For p1210 = 1, this signal is directly set after the faults have been successfully acknowledged.

For bit 07:

State which is assumed after a fault occurs within the automatic restart function.

For bit 10:

When the automatic restart function is active, r1214.7 is displayed, otherwise the active fault r2139.3.

The bit is set if the automatic restart can no longer acknowledge a fault, and cancels with fault F07320.

For bits 12 ... 15:

Actual state of the start counter (binary coded).

p1215 Motor holding brake configuration / Brake config

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 2701, 2707, 2711
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	3	0

Description: Sets the holding brake configuration.

Value:
0: No motor holding brake available
1: Motor holding brake acc. to sequence control
2: Motor holding brake always open
3: Motor holding brake like sequence control connection via BICO

Dependency: Refer to: p1216, p1217, p1226, p1227, p1228, p1278

Caution: For the setting p1215 = 0, if a brake is used, it remains closed. If the motor moves, this will destroy the brake.

Notice: If p1215 was set to 1 or if p1215 was set to 3, then when the pulses are suppressed, the brake is closed even if the motor is still rotating. Pulse suppression can either be caused by a 0 signal at p0844, p0845 or p0852 or as a result of a fault with OFF2 response. If this is not desirable (e.g. for a flying restart), then the brake can be kept open using a 1 signal at p0855.

Note: If the configuration is set to "no holding brake present" when booting, then the motor holding brake will be automatically identified. If a motor holding brake is detected, the configuration is set to "motor holding brake as for sequence control".

If a motor holding brake is used via the brake connection of the Motor Module integrated in the drive, then it is not permissible that p1215 is set to 3.

if an external motor holding brake is being used, then p1215 should be set to 3 and r0899.12 should be interconnected as control signal.

When the function module "extended brake control" is activated (r0108.14 = 1), r1229.1 should be interconnected as control signal.

The parameter can only be set to zero when the pulses are inhibited.

The parameterization "no motor holding brake available" and "Safe Brake Control" enabled (p1215 = 0, p9602 = 1, p9802 = 1) is not practical if there is no motor holding brake.

The parameterization "motor holding brake the same as sequence control, connection via BICO" and "Safe Brake Control" enabled (p1215 = 3, p9602 = 1, p9802 = 1) is not practical.

p1216 Motor holding brake opening time / Brake t_open

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2701, 2711
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	10000 [ms]	100 [ms]

Description: Sets the time to open the motor holding brake.

After controlling the holding brake (opens), the speed/velocity setpoint remains at zero for this time. After this, the speed/velocity setpoint is enabled.

Recommendation: This time should be set longer than the actual opening time of the brake. This ensures that the drive cannot accelerate when the brake is applied.

Dependency: Refer to: p1215, p1217

Note: For a motor with DRIVE-CLiQ and integrated brake, for p0300 = 10000, this time is pre-assigned the value saved in the motor.

For p1216 = 0 ms, the monitoring and the message A07931 "Brake does not open" are deactivated.

p1217 Motor holding brake closing time / Brake t_close

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2701, 2711
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	10000 [ms]	100 [ms]

Description: Sets the time to apply the motor holding brake.

After OFF1 or OFF3 and the holding brake is controlled (the brake closes), then the drive remains closed-loop controlled for this time stationary with a speed setpoint/velocity setpoint of zero. The pulses are suppressed when the time expires.

Recommendation: This time should be set longer than the actual closing time of the brake. This ensures that the pulses are only suppressed after the brake has closed.

Dependency: Refer to: p1215, p1216

Notice: If the selected closing time is too short with respect to the actual closing time of the brake, then the load can sag.

If the closing time is selected to be too long with respect to the actual closing time of the brake, the control works against the brake and therefore reduces its lifetime.

Note: For a motor with DRIVE-CLiQ and integrated brake, for p0300 = 10000, this time is pre-assigned the value saved in the motor.

For p1217 = 0 ms, the monitoring and the message A07932 "Brake does not close" are deactivated.

p1218[0...1] BI: Open motor holding brake / Open brake

SERVO (Ext brake), VECTOR (Ext brake), SERVO_AC (Ext brake), VECTOR_AC (Ext brake), SERVO_I_AC (Ext brake), VECTOR_I_AC (Ext brake)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2707
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for a conditional opening of the motor holding brake.

Dependency: Refer to: p1215

Note: [0]: Signal, open brake, AND logic operation, input 1

[1]: Signal, open brake, AND logic operation, input 2

p1219[0...3] BI: Immediately close motor holding brake / Close brake

SERVO (Ext brake), VECTOR (Ext brake), SERVO_AC (Ext brake), VECTOR_AC (Ext brake), SERVO_I_AC (Ext brake), VECTOR_I_AC (Ext brake)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2707
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	[0] 0 [1] 0 [2] 0 [3] 1229.9

Description: Sets the signal source for an unconditional (immediate) closing of the motor holding brake.

Dependency: Refer to: p1215, p1275

Note: [0]: Signal, immediately close brake, inversion via p1275.0

[1]: Signal, immediately close brake, inversion via p1275.1

[2]: Signal, immediately close brake

[3]: Signal, immediately close brake - refer to the factory setting

These four signals form an OR logic operation.

p1220 CI: Open motor holding brake signal source threshold / Open brake thresh

SERVO (Ext brake), VECTOR (Ext brake), SERVO_AC (Ext brake), VECTOR_AC (Ext brake), SERVO_I_AC (Ext brake), VECTOR_I_AC (Ext brake)			
	Can be changed: T	**Calculated:** -	**Access level:** 2
	Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2707
	P-Group: Functions	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	1

Description: Sets the signal source for the command "open brake".

Dependency: Refer to: p1215, p1221, r1229, p1277

p1221 Open motor holding brake threshold / Open brake thresh

SERVO (Ext brake), VECTOR (Ext brake), SERVO_AC (Ext brake), VECTOR_AC (Ext brake), SERVO_I_AC (Ext brake), VECTOR_I_AC (Ext brake)			
	Can be changed: U, T	**Calculated:** -	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2707
	P-Group: Functions	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [%]	200.00 [%]	0.00 [%]

Description: Sets the threshold value for the command "open brake".

Dependency: Refer to: p1220, r1229, p1277

p1222 BI: Motor holding brake feedback signal brake closed / Brake feedb closed

SERVO (Ext brake), VECTOR (Ext brake), SERVO_AC (Ext brake), VECTOR_AC (Ext brake), SERVO_I_AC (Ext brake), VECTOR_I_AC (Ext brake)			
	Can be changed: T	**Calculated:** -	**Access level:** 2
	Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2711
	P-Group: Functions	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source for the feedback signal "brake closed".

For motor holding brakes with feedback signal, the signal "brake closed" can be activated using p1275.5 = 1.

Dependency: Refer to: p1223, p1275

Note: 1 signal: Brake closed.

When braking with 1 feedback signal, the inverted feedback signal is connected to the BICO input for the second feedback signal (p1223).

For r1229.5 = 1, OFF1/OFF3 are suppressed to prevent the drive accelerating by a load that drives the motor - whereby OFF2 remains effective.

p1223 BI: Motor holding brake feedback signal brake open / Brake feedb open

SERVO (Ext brake), VECTOR (Ext brake), SERVO_AC (Ext brake), VECTOR_AC (Ext brake), SERVO_I_AC (Ext brake), VECTOR_I_AC (Ext brake)			
	Can be changed: T	**Calculated:** -	**Access level:** 2
	Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2711
	P-Group: Functions	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	1

Description: Sets the signal source for the feedback signal "brake open".

For motor holding brakes with feedback signal, the signal "brake open" can be activated using p1275.5 = 1.

Dependency: Refer to: p1222, p1275

Note: 1 signal: Brake open.
When braking with 1 feedback signal, the inverted feedback signal is connected to the BICO input for the second feedback signal (p1222).

p1224[0...3] BI: Close motor holding brake at standstill / Brk close standst

SERVO (Ext brake), VECTOR (Ext brake), SERVO_AC (Ext brake), VECTOR_AC (Ext brake), SERVO_I_AC (Ext brake), VECTOR_I_AC (Ext brake)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2704
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for close brake at standstill.

Dependency: Refer to: p1275

Note: [0]: Signal, close brake at standstill, inversion via p1275.2
[1]: Signal, close brake at standstill, inversion via p1275.3
[2]: signal, close brake at standstill
[3]: signal, close brake at standstill
These four signals form an OR logic operation.

p1225 CI: Standstill detection threshold value / Standstill thresh

SERVO (Ext brake), VECTOR (Ext brake), SERVO_AC (Ext brake), VECTOR_AC (Ext brake), SERVO_I_AC (Ext brake), VECTOR_I_AC (Ext brake)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2704
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	63[0]

Description: Sets the signal source "threshold value" for the standstill identification.

Dependency: Refer to: p1226, p1228, r1229

p1226[0...n] Standstill detection velocity threshold / v_standst v_thresh

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Functions	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [m/min]	1000.00 [m/min]	0.20 [m/min]

Description: Sets the velocity threshold for the standstill identification.
Acts on the actual value and setpoint monitoring.
When braking with OFF1 or OFF3, when the threshold is undershot, standstill is identified.

Dependency: Refer to: p1227

Note: Standstill is identified in the following cases:
- the velocity actual value falls below the velocity threshold in p1226 and the time started after this in p1228 has expired.
- the velocity setpoint falls below the velocity threshold in p1226 and the time started after this in p1227 has expired.
The actual value sensing is subject to measuring noise. For this reason, standstill cannot be detected if the velocity threshold is too low.

p1226[0...n]	**Threshold for zero speed detection / n_standst n_thresh**		
SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC	**Can be changed:** U, T	**Calculated:** -	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 2701, 2704
	P-Group: Functions	**Unit group:** 3_1	**Unit selection:** p0505
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [rpm]	210000.00 [rpm]	20.00 [rpm]

Description: Sets the speed threshold for the standstill identification.

Acts on the actual value and setpoint monitoring.

When braking with OFF1 or OFF3, when the threshold is undershot, standstill is identified.

The following applies when the brake control is activated:

When the threshold is undershot, the brake control is started and the system waits for the brake closing time in p1217. The pulses are then suppressed.

if the brake control is not activated, the following applies:

When the threshold is undershot, the pulses are suppressed and the drive coasts down.

Dependency: Refer to: p1215, p1216, p1217, p1227

Notice: For reasons relating to the compatibility to earlier firmware versions, a parameter value of zero in indices 1 to 31 is overwritten with the parameter value in index 0 when the Control Unit boots.

Note: Standstill is identified in the following cases:

- the speed actual value falls below the speed threshold in p1226 and the time started after this in p1228 has expired.
- the speed setpoint falls below the speed threshold in p1226 and the time started after this in p1227 has expired.

The actual value sensing is subject to measuring noise. For this reason, standstill cannot be detected if the speed threshold is too low.

p1226[0...n]	**Standstill detection velocity threshold / v_standst v_thresh**		
SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)	**Can be changed:** U, T	**Calculated:** -	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 2701, 2704
	P-Group: Functions	**Unit group:** 4_1	**Unit selection:** p0505
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [m/min]	1000.00 [m/min]	0.20 [m/min]

Description: Sets the velocity threshold for the standstill identification.

Acts on the actual value and setpoint monitoring.

When braking with OFF1 or OFF3, when the threshold is undershot, standstill is identified.

The following applies when the brake control is activated:

When the threshold is undershot, the brake control is started and the system waits for the brake closing time in p1217. The pulses are then suppressed.

if the brake control is not activated, the following applies:

When the threshold is undershot, the pulses are suppressed and the drive coasts down.

Dependency: Refer to: p1215, p1216, p1217, p1227

Notice: For reasons relating to the compatibility to earlier firmware versions, a parameter value of zero in indices 1 to 31 is overwritten with the parameter value in index 0 when the Control Unit boots.

Note: Standstill is identified in the following cases:

- the velocity actual value falls below the velocity threshold in p1226 and the time started after this in p1228 has expired.
- the velocity setpoint falls below the velocity threshold in p1226 and the time started after this in p1227 has expired.

The actual value sensing is subject to measuring noise. For this reason, standstill cannot be detected if the velocity threshold is too low.

p1227 Zero speed detection monitoring time / Standst_id t_monit

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	300.000 [s]	4.000 [s]

Description: Sets the monitoring time for the standstill identification.

When braking with OFF1 or OFF3, standstill is identified after this time has expired, after the setpoint speed has fallen below p1226 (also refer to p1145).

After this, the brake control is started, the system waits for the closing time in p1217 and then the pulses are suppressed.

Notice: For p1145 > 0.0 (RFG tracking) the setpoint is not equal to zero dependent on the selected value. This can therefore cause the monitoring time in p1227 to be exceeded. In this case, for a driven motor, the pulses are not suppressed.

Note: Standstill is identified in the following cases:

- the speed actual value falls below the speed threshold in p1226 and the time started after this in p1228 has expired.
- the speed setpoint falls below the speed threshold in p1226 and the time started after this in p1227 has expired.

For p1227 = 300.000 s the following applies:

Monitoring is deactivated.

For p1227 = 0.000 s, the following applies:

With OFF1 or OFF3 and a ramp-down time = 0, the pulses are immediately suppressed and the motor "coasts" down.

p1227 Zero speed detection monitoring time / n_standst t_monit

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2701, 2704
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	300.000 [s]	4.000 [s]

Description: Sets the monitoring time for the standstill identification.

When braking with OFF1 or OFF3, standstill is identified after this time has expired, after the setpoint speed has fallen below p1226 (also refer to p1145).

After this, the brake control is started, the system waits for the closing time in p1217 and then the pulses are suppressed.

Dependency: Refer to: p1215, p1216, p1217, p1226

Notice: For p1145 > 0.0 (RFG tracking) the setpoint is not equal to zero dependent on the selected value. This can therefore cause the monitoring time in p1227 to be exceeded. In this case, for a driven motor, the pulses are not suppressed.

Note: Standstill is identified in the following cases:

- the speed actual value falls below the speed threshold in p1226 and the time started after this in p1228 has expired.
- the speed setpoint falls below the speed threshold in p1226 and the time started after this in p1227 has expired.

For p1227 = 300.000 s the following applies:

Monitoring is deactivated.

For p1227 = 0.000 s, the following applies:

With OFF1 or OFF3 and a ramp-down time = 0, the pulses are immediately suppressed and the motor "coasts" down.

p1228 Pulse suppression delay time / Pulse suppr t_del

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2701, 2704
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	299.000 [s]	0.000 [s]

Description: Sets the delay time for pulse suppression.

After OFF1 or OFF3, the pulses are canceled, if at least one of the following conditions is fulfilled:

- the speed actual value falls below the threshold in p1226 and the time started after this in p1228 has expired.

- the speed setpoint falls below the threshold in p1226 and the time started after this in p1227 has expired.

Dependency: Refer to: p1226, p1227

Notice: When the motor holding brake is activated, pulse cancellation is additionally delayed by the brake closing time (p1217).

r1229.1...11 CO/BO: Motor holding brake status word / Brake ZSW

SERVO (Ext brake), VECTOR (Ext brake), SERVO_AC (Ext brake), VECTOR_AC (Ext brake), SERVO_I_AC (Ext brake), VECTOR_I_AC (Ext brake)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status word for the motor holding brake.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
01	Command open brake (continuous signal)	Yes	No	2711
03	Pulse enable extended brake control	Yes	No	2711
04	Brake does not open	Yes	No	2711
05	Brake does not close	Yes	No	2711
06	Brake threshold exceeded	Yes	No	2707
07	Brake threshold undershot	Yes	No	2704
08	Brake monitoring time expired	Yes	No	2704
09	Pulse enable request missing/n_ctrl inhibited	Yes	No	2707
10	Brake OR logic operation result	Yes	No	2707
11	Brake AND logic operation result	Yes	No	2707

p1230[0...n] BI: Armature short-circuit / DC braking activation / ASC/DCBRK act

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 7014, 7016, 7017
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to activate the armature short-circuit or DC braking.

Dependency: Refer to: p1231, p1232, p1233, p1234, p1235, p1236, p1237, r1238, r1239, p1345, p1346

Note: 1 signal: Armature short-circuit/DC braking activated.

0 signal: Armature short-circuit/DC braking deactivated.

p1231[0...n] Armature short-circuit / DC braking configuration / ASC/DCBRK config

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** MDS, p0130	**Func. diagram:** 7014, 7016, 7017
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	14	0

Description: Setting to activate the various types for armature short-circuit / DC braking.

Value:
0: No function
1: External armature short-circuit with contactor feedback signal
2: Ext. armature short circuit without contactor feedback signal
3: Internal voltage protection
4: Internal armature short-circuit / DC braking
5: DC braking for OFF1/OFF3
14: DC braking below starting speed

Dependency: Refer to: p0300, p1230, p1232, p1233, p1234, p1235, p1236, p1237, r1238, r1239, p1345, p1346

Danger:

For p1231 = 1, 2:

- only short-circuit-proof motors may be used, or suitable resistors must be used to short-circuit the motor

For p1231 = 3:

- when the internal voltage protection is active, after pulse suppression, all of the motor terminals are at half of the DC link voltage (without an internal voltage protection, the motor terminals are at zero potential)!

- it is only permissible to use motors that are short-circuit proof (p0320 < p0323).

- the Motor Module must be able to conduct 180% short-circuit current (r0320) of the motor (r0209).

- the internal voltage protection cannot be interrupted due to a fault response. If an overcurrent condition occurs during the active, internal voltage protection, then this can destroy the Motor Module and/or the motor.

- if the Motor Module does not support the autonomous, internal voltage protection (r0192.10 = 0), in order to ensure safe, reliable functioning when the line supply fails, an external 24 V power supply (UPS) must be used for the components.

- if the Motor Module does support the autonomous, internal voltage protection (r0192.10 = 1), in order to ensure safe, reliable functioning when the line supply fails, the 24 V power supply for the components must be provided through a Control Supply Module.

- if the internal voltage protection is active, it is not permissible that the motor is driven by the load for a longer period of time (e.g. as a result of loads that move the motor or another coupled motor).

For p1231 = 4 and synchronous motor:

- when armature short-circuit is active, all of the motor terminals are at half of the DC link potential.

- it is only permissible to use motors that are short-circuit proof (p0320 < p0323).

- the Motor Module must be able to conduct 180% short-circuit current (r0320) of the motor (r0209).

- for pulling loads, it is not permissible that an armature short circuit is used by itself. The reason for this is that until this becomes effective, the motor will have continued to rotate. In the case of a fault, it is only permissible to use an armature short circuit as support in conjunction with a mechanical brake.

For p1231 = 4 and induction motor:

- it is not permissible that DC braking is used for pulling loads; this is because during the demagnetization time (p0347) the motor rotates and a mechanical brake is then only closed while the motor is still rotating.

Note:

For p1231 = 1, 2:

The external armature short circuit can only be selected for synchronous motors (p0300). In this case, control bit BO: r1239.0 must be interconnected (e.g. to a digital input) to control the external contactor.

The external armature short circuit cannot be set as a fault response. It can be triggered via binector input p1230. It is also always activated in the case of pulse suppression.

When the external armature short circuit is activated, the system waits for the de-excitation time (p0347) before the short-circuit contactor is controlled. For vector control, for the de-excitation time, a value greater than zero may be required in order to avoid the overcurrent monitoring from responding.

For p1231 = 3:

Internal voltage protection (using an internal armature short circuit) can only be selected for synchronous motors (p0300) and Motor Modules in booksize or chassis format. Further, it is not permissible for Safety Integrated to be active on blocksize Motor Modules (i.e. p9501 = 0 and p9601 = 0). The internal voltage protection prevents the DC link capacitance from being charged if there is no possibility of regenerating the EMF of a motor operated in the field-weakening mode. The Motor Module must support this function (r0192.9 = 1).

a) If the Motor Module does not support the autonomous, internal armature short-circuit (r0192.10 = 0), the armature short-circuit is activated as soon as the activation criterion is fulfilled (refer below):

b) If the Motor Module supports the autonomous internal voltage protection (r0192.10 = 1), then the Motor Module itself decides - using the DC link voltage - as to whether the short-circuit should be activated. In this case, protection is also provided even if the DRIVE-CLiQ connection between the Control Unit and Motor Module was interrupted. The short circuit is activated if the DC link voltage exceeds 800 V. If the DC link voltage falls below 450 V, then the short-circuit is withdrawn. This therefore ensures that the required input voltage for the Control Supply Module is maintained.

For chassis units, the following applies:

The value for the voltage limits is calculated, depending on the voltage class, from EEPROM data of the particular power unit and a factor.

For p1231 = 4:

The function is activated as soon as the activation criterion is fulfilled.

- the function can be superseded by OFF2

a) For synchronous motors (p0300 = 2xx, 4xx), the internal armature short-circuit is initiated.

- the Motor Module must support this function (r0192.9 = 1).

b) For induction motors (p0300 = 1xx), the DC braking is initiated.

Activation criterion (one of the following criteria is fulfilled):

- binector input p1230 = 1 signal (DC braking activation).

- the drive is not in the state "S4: Operation" or in "S5x" (refer to function diagram 2610).

- the internal pulse enable is missing (r0046.19 = 0).

For p1231 = 5:

DC braking can only be set for induction motors.

DC braking is activated if the OFF1 or OFF3 command is present. Binector input p1230 is ineffective. If the drive speed still lies above the speed threshold p1234, then initially, the drive is ramped-down to this threshold, demagnetized (see p0347) and is then switched into DC braking for the time set in p1233. After this, the drive is switched-off. If, at OFF1/OFF3, the drive speed is below p1234, then it is immediately demagnetized and switched into DC braking. A change is made into normal operation if the OFF1 command is withdrawn prematurely.

DC braking by means of fault response continues to be possible.

For p1231 = 14:

DC braking can only be set for induction motors.

DC braking is initiated if binector input p1230 = 1 during operation and the actual speed is below the starting speed p1234 (before this, the drive must have operated above p1234 plus the hysteresis). Then, following upstream de-magnetization (see p0347), the braking current p1232 is injected for the time set in p1233. The drive then changes into normal operation. During braking the command for DC braking can be withdrawn. If the time p1233 is exceeded, then DC braking is inhibited and the drive changes into normal operation.

For OFF1 and OFF3, DC braking is only executed, if binector input p1230 = 1 signal.

DC braking by means of fault response continues to be possible.

For operation with an encoder, the encoder signal may not exceed a ripple of 15 rpm in the range of p1234.

For p1231 = 3, 4, 5, 14:

The value can only be changed to values not equal to 3, 4, 5 or 14 if p0491 is not equal to 4 and p2101 is not equal to 6 (armature short-circuit/DC braking not set).

In order that the armature short-circuit/DC braking is active as fault response, the corresponding fault number must be entered in p2100 and fault response p2101 set = 6 (encoder fault response, see p0491).

Note:

ASC: Armature Short Circuit

CSM: Control Supply Module

DCBRK: DC Braking

IVP: Internal Voltage Protection

UPS: Uninterruptible Power Supply

p1232[0...n] DC braking braking current / DCBRK I_brake

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 7017
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Arms]	10000.00 [Arms]	0.00 [Arms]

Description: Sets the braking current for DC braking.

Dependency: Refer to: p1230, p1231, p1233, p1234, r1239, p1345, p1346

Note: A change to the braking current becomes effective the next time that DC braking is switched on.

The value for p1232 is specified as an rms value in the 3-phase system. The magnitude of the braking current is the same as that of an identical output current at frequency zero (see r0067, r0068, p0640). The braking current is internally limited to r0067.

p1232[0...n] DC braking braking current / DCBRK I_brake

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 7017
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Arms]	10000.00 [Arms]	0.00 [Arms]

Description: Sets the braking current for DC braking.

Dependency: Refer to: p1230, p1231, p1233, p1234, r1239, p1345, p1346

Note: A change to the braking current becomes effective the next time that DC braking is switched on.

The value for p1232 is specified as an rms value in the 3-phase system. The magnitude of the braking current is the same as that of an identical output current at frequency zero (see r0067, r0068, p0640). The braking current is internally limited to r0067.

For the current controller, the settings of parameters p1345 and p1346 (I_max limiting controller) are used.

p1233[0...n] DC braking time / DCBRK time

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 7017
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [s]	3600.0 [s]	1.0 [s]

Description: Sets the DC braking time (as fault response).

Dependency: Refer to: p1230, p1231, p1232, p1234, r1239

Note: The time set is also effective when parameterizing DC braking as fault response.

If a speed encoder is being used, DC braking is ended as soon as the drive falls below the standstill threshold (p1226).

p1234[0...n] Speed at the start of DC braking / DCBRK n_start

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 7017
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	210000.00 [rpm]

Description: Sets the starting speed for DC braking.

If the actual speed falls below this threshold, then DC braking is activated.

Dependency: Refer to: p1230, p1231, p1232, p1233, r1239

Notice: If an encoder fault occurs during closed-loop operation with an encoder, controlled deceleration of the drive down to the start speed p1234 is no longer possible. In this case, DC braking is activated immediately and injects the braking current p1232 for the braking time p1233 after de-magnetizing. The braking current and braking duration must, therefore, be dimensioned accordingly for this situation so that the drive can be decelerated to standstill.

In the case of operation with an encoder, this speed may not be set too low so as ensure that the oscillation movement induced by the residual flux/remanence of the motor does not cause DC braking to be deactivated again.

Note: Function p1231 = 14 is activated at 15 1/min higher than the value set in p1234. This hysteresis is required to prevent DC braking from being deactivated for speed encoder signals with ripple.

p1234[0...n] DC braking starting velocity / DCBRK v_start

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 7017
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [m/min]	1300.00 [m/min]	1000.00 [m/min]

Description: Sets the starting velocity for DC braking.

If the actual velocity falls below this threshold, then DC braking is activated.

Dependency: Refer to: p1230, p1231, p1232, p1233, r1239

Notice: If an encoder fault occurs during closed-loop operation with an encoder, controlled deceleration of the drive down to the start speed p1234 is no longer possible. In this case, DC braking is activated immediately and injects the braking current p1232 for the braking time p1233 after de-magnetizing. The braking current and braking duration must, therefore, be dimensioned accordingly for this situation so that the drive can be decelerated to standstill.

In the case of operation with an encoder, this speed may not be set too low so as ensure that the oscillation movement induced by the residual flux/remanence of the motor does not cause DC braking to be deactivated again.

Note: Function p1231 = 14 is activated at 15 1/min higher than the value set in p1234. This hysteresis is required to prevent DC braking from being deactivated for speed encoder signals with ripple.

p1234[0...n] Speed at the start of DC braking / DCBRK n_start

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 7017
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	40000.00 [rpm]

Description: Sets the starting speed for DC braking.

If the actual speed falls below this threshold, then DC braking is activated.

Dependency: Refer to: p1230, p1231, p1232, p1233, r1239

Notice: If an encoder fault occurs during closed-loop operation with an encoder, controlled deceleration of the drive down to the start speed p1234 is no longer possible. In this case, DC braking is activated immediately and injects the braking current p1232 for the braking time p1233 after de-magnetizing. The braking current and braking duration must, therefore, be dimensioned accordingly for this situation so that the drive can be decelerated to standstill.

In the case of operation with an encoder, this speed may not be set too low so as ensure that the oscillation movement induced by the residual flux/remanence of the motor does not cause DC braking to be deactivated again.

Note: Function p1231 = 14 is activated at 15 1/min higher than the value set in p1234. This hysteresis is required to prevent DC braking from being deactivated for speed encoder signals with ripple.

p1235[0...n] BI: External armature short-circuit contactor feedback signal / ASC ext feedback

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** -
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the contactor feedback signal for external armature short-circuit.

Dependency: Refer to: p1230, p1231, p1236, p1237, r1239

Notice: In order that the pulses are not enabled when the contactor is closed, the contactor feedback signal must lag by a sufficiently long time when opening the contactor.

Note: 1 signal: The contactor is closed.

0 signal: The contactor is open.

p1236[0...n] Ext. armature short-cct. contactor feedback signal monit. time / ASC ext t_monit

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	1000 [ms]	200 [ms]

Description: Sets the monitoring time of the contactor feedback signal for the external armature short-circuit configuration.

If the contactor feedback signal (p1235) is parameterized, then the appropriate feedback signal (r1239.1) is expected within this monitoring time after either opening or closing the contactor.

Dependency: Refer to: p1230, p1231, p1235, p1237, r1239

Refer to: F07904, F07905

p1237[0...n] External armature short-circuit delay time when opening / ASC ext t_wait

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	1000 [ms]	200 [ms]

Description: Sets the delay time when opening the contactor of the external armature short-circuit.

If no contactor feedback signal has been selected (p1235), then the system waits for this time before the pulses are switched in.

Dependency: Refer to: p1230, p1231, p1235, p1236, r1239

Notice: This delay time must be at least long enough so that the contactor contacts reliably open before the pulses are switched in. The delay time must be greater than the contactor response time. The Motor Module can be damaged if the delay time is too short.

r1238 **CO: Armature short-circuit external state / EASC state**

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 2610
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	6	-

Description: Displays the state for the external armature short-circuit.

Value:
0: Switched off
1: Ready
2: Active
3: Active - feedback signal "Closed" OK
4: Active - feedback signal "Closed" missing
5: Prompt to remove the armature short-circuit
6: Active - feedback signal "Open" missing

Dependency: Refer to: p1230, p1231, p1235, p1236, p1237, r1239

Refer to: F07904, F07905

Note: Activation criterion (one of the following criteria is fulfilled):

- the signal at BI: p1230 (armature short-circuit activation) is 0.

- the drive is not in the state "S4: Operation" or in S5x (refer to function diagram 2610).

- the internal pulse enable is missing (r0046.19 = 0).

For state "switched out" (r1238 = 0):

- the external armature short-circuit can be selected with p1231 = 1.

For state "ready" (r1238 = 1):

- as soon as the activation criterion is fulfilled, then a transition is made into the state "active" (r1238 = 2).

Regarding the state "active" (r1238 = 2), "active - feedback signal "Closed" OK" (r1238 = 3)", "active - feedback signal "Closed" missing" (r1238 = 4)":

- the control signal to close contactor r1239.0 is set to "1" (closed) and the pulses are suppressed.

- if a contactor feedback signal is not connected (BI: p1235 = 0 signal), then a transition is immediately made into state 3.

- if a contactor feedback signal is connected, then a transition is made into state 3 if the feedback signal at BI: p1235 goes to "1" (closed) within the monitoring time (p1236).

- otherwise, a transition is made into state 4.

For state "prompt to remove the armature short-circuit" (r1238 = 5):

- the activation criterion is no longer fulfilled. An attempt is made to again remove the armature short circuit.

- the control signal to close the contactor r1239.0 is set to "0" (open) and the pulses remain suppressed.

- if a contactor feedback signal is not connected (BI: p1235 = 0 signal), the system waits for the delay time (p1237) to expire until a transition is made into state 1.

- if a contactor feedback signal is connected, the system waits until the feedback signal at BI:p1235 goes to "0" (open) until a transition is made into state 1. If this does not occur within the monitoring time (p1236), then a transition is made into state 6.

For state "active - feedback signal "Open" missing" (r1238 = 6):

- this error state can be exited by de-selecting the external armature short-circuit (p1231 = 0).

r1239.0...13 CO/BO: Armature short-circuit / DC braking status word / ASC/DCBRK ZSW

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status word for armature short-circuit.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	External armature short-circuit	Active	Inactive	-
01	External armature short-circuit contactor feedback signal	Closed	Open	-
02	External armature short-circuit ready	Yes	No	-
03	External armature short-circuit with contactor feedback signal	Yes	No	-
04	Internal armature short-circuit	Active	Inactive	-
05	Internal armature short circuit feedback signal from power unit	Active	Inactive	-
06	Internal armature short-circuit ready	Yes	No	-
08	DC braking active	Yes	No	7017
09	DC current injection active	Yes	No	-
10	DC braking ready	Yes	No	7017
11	Armature short circuit/DC braking selected	Yes	No	-
12	DC braking selection internally inhibited	Yes	No	-
13	DC braking for OFF1/OFF3	Yes	No	-

Dependency: Refer to: p1230, p1231, p1232, p1233, p1234, p1235, p1236, p1237

Note: External armature short-circuit (bits 0 ... 3):

For bit 00:

Using this signal, the motor is short-circuited through an external contactor circuit. This means that this BO: p1239.0 must be interconnected e.g. to a digital output.

For bit 01:

This signal indicates the state of the contactor to establish the armature short-circuit. To do this, BI: p1235 must be interconnected to a digital input.

For bit 02:

The external armature short-circuit configuration is ready and is activated as soon as the activation criterion is fulfilled.

For bit 03:

1: A feedback signal from an external contactor was parameterized in BI: p1235.

Internal voltage protection / internal armature short-circuit (bits 4 ... 6):

For bit 04:

a) Internal voltage protection (p1231 = 3) was selected and the Motor Module does not support the autonomous internal voltage protection (r0192.10 = 0).

The Control Unit issues the command to the Motor Module to short-circuit the motor through the power semiconductors.

a) Internal voltage protection (p1231 = 3) was selected and the Motor Module supports the autonomous internal voltage protection (r0192.10 = 1).

The Motor Module decides autonomously whether the armature short-circuit is activated. In this case, the following applies: r1239.4 = r1239.5.

c) Internal armature short-circuit (p1231 = 4) was selected.

The Control Unit issues the command to the Motor Module to short-circuit the motor through the power semiconductors.

For bit 05:

The Motor Module signals that the motor is short-circuited in the Motor Module through the power semiconductors.

For bit 06:

a) Internal voltage protection (p1231 = 3) was selected and the Motor Module does not support the autonomous internal voltage protection (r0192.10 = 0).

The internal voltage protection is ready and is activated as soon as the activation criterion is fulfilled.

a) Internal voltage protection (p1231 = 3) was selected and the Motor Module supports the autonomous internal voltage protection (r0192.10 = 1).

The internal voltage protection is ready and the Motor Module decides autonomously - using the DC link voltage - whether the short-circuit is activated. In this case, protection is also provided even if the DRIVE-CLiQ connection between the Control Unit and Motor Module was interrupted. The short-circuit is activated if the DC link voltage exceeds 800 V. If the DC link voltage falls below 450 V, then the short-circuit is withdrawn.

c) Internal armature short-circuit (p1231 = 4) was selected.

The internal armature short-circuit is ready and is activated as soon as the activation criterion is fulfilled.

Activation criterion (one of the following criteria is fulfilled):

- the signal at BI: p1230 (armature short-circuit activation) is 1.

- the drive is not in the state "S4: Operation" or in S5x (refer to function diagram 2610).

- the internal pulse enable is missing (r0046.19 = 0).

For bits 12, 13:

Only effective for p1231 = 14.

p1240[0...n] Vdc controller or Vdc monitoring configuration / Vdc ctrl config

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 3082, 5650
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	9	0

Description: Sets the configuration of the controller or monitoring for the DC link voltage (Vdc).

Value:
0: Inhibit Vdc ctrl
1: Enable Vdc_max controller
2: Enable Vdc_min controller (kinetic buffering)
3: Enable Vdc_min controller and Vdc_max controller
4: Activate Vdc_max monitoring
5: Activate Vdc_min monitoring
6: Activate Vdc_min monitoring and Vdc_max monitoring
7: Enable Vdc_max controller without accelerating
8: Enable Vdc_min controller without braking
9: Enable Vdc_min and Vdc_max controller w/o braking/accelerating

Dependency: Refer to: p1244, p1248, p1250, p1532

Notice: During a few steps of the rotating measurement (p1960 = 1) the Vdc_min controller and/or Vdc_max controller is disabled.

Note: p1240 = 1, 3:

When the upper DC link voltage threshold is reached (p1244), then the following applies:

- the Vdc_max controller limits the regenerative energy in order that the DC link voltage is kept below the maximum DC link voltage when braking.

- when other drives regenerate into the DC link, then the Vdc_max controller causes the motor to accelerate.

p1240 = 2, 3:

When the lower DC link voltage threshold is reached (p1248), the following applies:

- the Vdc_min controller limits the energy taken from the DC link in order to keep the DC link voltage above the minimum DC link voltage when accelerating.

- the motor is braked in order to use its kinetic energy to buffer the DC link.

p1240 = 4, 5, 6:

When the threshold in p1244 or p1248 is reached, the DC link voltage monitoring initiates a fault with a response and therefore reduces additional negative effects on the DC link voltage.

p1240 = 7, 9:

as for p1240 = 1, 3. However, the motor is prevented from accelerating as a result of the regenerative feedback (energy recovery) of the other drives. The effective lower torque limit cannot exceed the offset of the torque limit (p1532).

p1240 = 8, 9:

as for p1240 = 2, 3. However, the motor is prevented from braking due to the fact that the DC link voltage has been lowered. The effective upper torque limit cannot be less than the offset of the torque limit (p1532).

p1240[0...n] Vdc controller or Vdc monitoring configuration / Vdc ctrl config

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 6220
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	6	1

Description: Sets the controller configuration of the DC link voltage (Vdc controller) in the closed-loop control mode.

Value:
0: Inhibit Vdc ctrl
1: Enable Vdc_max controller
2: Enable Vdc_min controller (kinetic buffering)
3: Enable Vdc_min controller and Vdc_max controller
4: Activate Vdc_max monitoring
5: Activate Vdc_min monitoring
6: Activate Vdc_min monitoring and Vdc_max monitoring

Dependency: Refer to: p1245

Refer to: A07400, A07401, A07402, F07403, F07404, F07405, F07406

Warning: When the Vdc_max controller is active, the motor can be accelerated (e.g. by driving loads or as a result of high DC link voltages). This can be caused by other drives that are operating on a common DC link busbar.

Caution: If several drives are operated from the same DC link busbar, then it is recommended that the Udc control is only activated for the drives with high moments of inertia. If the Udc controls for various drives are simultaneously active, then they can mutually influence one another. In this case, the controller dynamic performance should be reduced or the Udc control of individual drives should be deactivated.

Drives with Udc control must be able to brake and accelerate independently of one another.

Notice: An excessively high value in p1245 can possibly negatively influence the normal operation of the drive.

Note: p1240 = 1, 3:

When the DC link voltage limit specified for the Motor Module is reached the following applies:

- the Vdc_max controller limits the regenerative energy in order that the DC link voltage is kept below the maximum DC link voltage when braking.

- the ramp-down times are automatically increased.

p1240 = 2, 3:

When the switch-in threshold of the Vdc_min controller is reached (p1245), the following applies:

- the Vdc_min controller limits the energy taken from the DC link in order to keep the DC link voltage above the minimum DC link voltage when accelerating.

- the motor is braked in order to use its kinetic energy to buffer the DC link.

p1240 = 4, 5, 6:

When the threshold in r1242 or r1246 is reached, the DC link voltage monitoring initiates a fault (F07403 or F07404) with a response and therefore reduces additional negative effects on the DC link voltage.

If a braking resistor is connected to the DC link, then the Vdc_max control should be disabled (also see p1531).

p1241 Vdc_max controller switch-in level / Vdc_max on_level

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
70.0 [%]	100.0 [%]	100.0 [%]

Description: Sets the switch-in level for the Vdc_max controller for line droop control (BI: p5401[0] = 1 signal).

Dependency: Refer to: r0297, p1250

Note: The absolute value is obtained as follows:

p1241[%] * r0297

r1242 Vdc_max controller switch-in level / Vdc_max on_level

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6220
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the switch-in level for the Vdc_max controller.

If p1254 = 0 (automatic sensing of the switch-in level = off), then the following applies:

AC/AC device: r1242 = 1.15 * sqrt(2) * p0210

DC/AC device: r1242 = 1.15 * p0210

If p1254 = 1 (automatic sensing of the switch-in level = on), then the following applies:

r1242 = Vdc_max - 50.0 V (Vdc_max: Overvoltage threshold of the power unit)

r1242 = Vdc_max - 25.0 V (for 230 V power units)

Notice: If the activation level of the Vdc_max controller is already exceeded in the deactivated state (pulse inhibit) by the DC link voltage, then the controller can be automatically deactivated (see F07401), so that the drive is not accelerated the next time that it is activated.

Note: The Vdc_max controller is not switched back off until the DC link voltage falls below the threshold 0.95 * r1242 and the controller output is zero.

p1243[0...n] Vdc_max controller dynamic factor / Vdc_max dyn_factor

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6220
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1 [%]	10000 [%]	100 [%]

Description: Sets the dynamic factor for the DC link voltage controller (Vdc_max controller).

100% means that p1250, p1251, and p1252 (gain, integral time, and rate time) are used corresponding to their basic settings and based on a theoretical controller optimization.

If subsequent optimization is required, this can be carried out using the dynamic factor. In this case p1250, p1251, p1252 are weighted with the dynamic factor p1243.

If several modules are connected to the DC link, then the dynamic factor must be increased corresponding to the ratio of the additional capacitances to the capacitance of the module involved.

Note: The pre-setting of the dynamic factor is based on the power units connected to DRIVE-CLiQ. It is assumed that the power units connected via DRIVE-CLiQ are also electrically connected to the DC link. If this is not the case, then the dynamic factor must be optimized manually.

p1244[0...n] DC link voltage threshold upper / Vdc upper thresh

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5650
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
165 [V]	1200 [V]	750 [V]

Description: Sets the upper threshold for the DC link voltage.

For p1240 = 1, 3, 7, 9, this threshold is used as limit setpoint for the Vdc_max controller.

For p1240 = 4, 6, for DC link voltages above this threshold, an appropriate fault is output.

Dependency: Refer to: p1240, p1248, p1250

Note: For p1244 < 1.07 * "parameterized DC link voltage" input of values is rejected.

For p0204.0 = 1, the following applies:

"Parameterized DC link voltage" = p0210

For p0204.0 = 0, the following applies:

"Parameterized DC link voltage" = p0210 * 1.4142

p1245[0...n] Vdc_min controller switch-in level (kinetic buffering) / Vdc_min on_level

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
65 [%]	150 [%]	76 [%]

Description: Sets the switch-in level for the Vdc-min controller (kinetic buffering).

The value is obtained as follows:

AC/AC device: r1246[V] = p1245[%] * sqrt(2) * p0210

DC/AC device: r1246[V] = p1245[%] * p0210

Dependency: Refer to: p0210

Warning: An excessively high value possibly negatively influences normal drive operation, and can mean that after the line supply returns, the Vdc minimum control can no longer be exited.

The values up to 150 % are intended for operating modes p1240 = 5, 6.

Note: For SINAMICS GM/SM, the following applies:

Minimum value = 0.75

Maximum value = 0.90

p1245 Vdc_min controller switch-in level / Vdc_min on_level

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
100.0 [%]	200.0 [%]	100.0 [%]

Description: Sets the switch-in level for the Vdc_min controller for line droop control (BI: p5401[0] = 1 signal).

Dependency: Refer to: p0210, r0296, p1250

Note: The undervoltage threshold r0296 also depends on the set supply voltage p0210.

The absolute value is obtained as follows:

p1245[%] * r0296

r1246 Vdc_min controller switch-in level (kinetic buffering) / Vdc_min on_level

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6220
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the switch-in level for the Vdc_min controller (kinetic buffering).

Note: The Vdc_min controller is not switched back off until the DC link voltage rises above the threshold 1.05 * p1246 and the controller output is zero.

p1247[0...n] Vdc_min controller dynamic factor (kinetic buffering) / Vdc_min dyn_factor

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)	**Can be changed:** U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6220
	P-Group: Functions	**Unit group:** -	**Unit selection:** -
	Not for motor type: REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	1 [%]	10000 [%]	100 [%]

Description: Sets the dynamic factor for the Vdc_min controller (kinetic buffering).

100% means that p1250, p1251, and p1252 (gain, integral time, and rate time) are used corresponding to their basic settings and based on a theoretical controller optimization.

If subsequent optimization is required, this can be carried out using the dynamic factor. In this case p1250, p1251, p1252 are weighted with the dynamic factor p1247.

If several components are connected to the DC link, then the dynamic factor must be increased corresponding to the ratio of the additional capacitances to the capacitance of the component involved.

p1248[0...n] DC link voltage threshold lower / Vdc lower thresh

SERVO, SERVO_AC, SERVO_I_AC	**Can be changed:** U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5650
	P-Group: Functions	**Unit group:** -	**Unit selection:** -
	Not for motor type: REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	50 [V]	1000 [V]	285 [V]

Description: Sets the lower threshold for the DC link voltage.

For p1240 = 2, 3, 8, 9, this threshold is used as limit setpoint for the Vdc_min controller.

For p1240 = 5, 6, for DC link voltages below this threshold, an appropriate fault is output.

Dependency: Refer to: p1240, p1244, p1250

Note: For p1248 > 0.93 * "parameterized DC link voltage" input of values is rejected.

For p0204.0 = 1, the following applies:

"Parameterized DC link voltage" = p0210

For p0204.0 = 0, the following applies:

"Parameterized DC link voltage" = p0210 * 1.4142

p1249[0...n] Vdc_max controller speed threshold / Vdc_max n_thresh

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)	**Can be changed:** U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
	P-Group: Functions	**Unit group:** 3_1	**Unit selection:** p0505
	Not for motor type: REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [rpm]	210000.00 [rpm]	10.00 [rpm]

Description: Sets the lower speed threshold for the Vdc_max controller.

When this speed threshold is undershot, the Vdc_max control is switched out and the speed is controlled using the ramp-function generator.

Note: For fast braking where the ramp-function generator tracking was active, it is possible to prevent the drive rotating in the opposite direction by increasing the speed threshold and setting a final rounding-off time in the ramp-function generator (p1131). This is supported using a dynamic setting of the speed controller.

p1250[0...n] Vdc controller proportional gain / Vdc_ctrl Kp

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5650
P-Group: Functions	**Unit group:** 19_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [A/V]	100.00 [A/V]	1.00 [A/V]

Description: Sets the proportional gain for the DC link voltage controller (Vdc_min controller, Vdc_max controller).

Dependency: Refer to: p1240, p1244, p1248

p1250[0...n] Vdc controller proportional gain / Vdc_ctrl Kp

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00	100.00	1.00

Description: Sets the proportional gain for the DC link voltage controller (Vdc_min controller, Vdc_max controller).

Dependency: The effective proportional gain is obtained taking into account p1243 (Vdc_max controller dynamic factor).

Note: The gain factor is proportional to the capacitance of the DC link. The parameter is pre-set to a value that is optimally adapted to the capacitance of the individual Motor Module. The capacitances of the other power units, which are connected to the DC link, can be taken into account using the dynamic factor (p1247 or p1243).

p1250 Vdc controller proportional gain / Vdc_ctrl Kp

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00	100.00	0.00

Description: Sets the proportional gain for the DC link voltage controller (Vdc_min controller, Vdc_max controller) in line droop operation (p5401).

The controller actuating signal acts on the frequency output of the line droop control. The additional power to change the DC link voltage is therefore internally multiplied with the gradient of the frequency droop (p5407, p5408).

Dependency: Refer to: p1241, p1245

Notice: The Vdc_min controller or Vdc_max controller for grid droop operation can only become correctly active from its inherent operating principle, if additional island grid components are connected whose power significantly changes with the grid frequency. Examples of this are other power generators at an operating point with sufficient reserve for higher and lower power output - or line motors with sufficient reserve for higher and lower power consumption.

Otherwise, when the activation level for the Vdc_min controller or Vdc_max controller is exceeded, serious line faults can occur (underfrequency/overfrequency and undervoltage/overvoltage).

Note: Parameter p1250 acts as multiplier to the internal default setting of the gain factor.

The internal setting already takes into account the dependency on the capacitance of the DC link (corresponding to p3422).

p1251[0...n] Vdc controller integral time / Vdc_ctrl Tn

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6220
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	10000 [ms]	0 [ms]

Description: Sets the integral time for the DC link voltage controller (Vdc_min controller, Vdc_max controller).

Dependency: The effective integral time is obtained taking into account p1243 (Vdc_max controller dynamic factor).

Note: An integral time is normally not required for single axis drives. For multi-axis drives on the other hand, it may be possible to compensate for interference from other axes using the integral time (integral component) .

p1251 = 0: The integral component is deactivated.

p1252[0...n] Vdc controller rate time / Vdc_ctrl t_rate

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6220
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	1000 [ms]	0 [ms]

Description: Sets the rate time constant for the DC link voltage controller (Vdc_min controller, Vdc_max controller).

Dependency: The effective rate time is obtained taking into account p1243 (Vdc_max controller dynamic factor).

p1254 Vdc_max controller automatic ON level detection / Vdc_max SenseOnLev

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	1

Description: Activates/deactivates the automatic sensing of the switch-in level for the Vdc_max controller.

Value:
0: Automatic detection inhibited
1: Automatic detection enabled

p1255[0...n] Vdc_min controller time threshold / Vdc_min t_thresh

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	10000.000 [s]	0.000 [s]

Description: Sets the time threshold for the Vdc_min controller (kinetic buffering).

If this value is exceeded a fault is output; the required response can be parameterized.

Prerequisite: p1256 = 1

Dependency: Refer to: F07406

Notice: If a time threshold has been parameterized, the Vdc_max controller should also be activated (p1240 = 3) so that the drive does not shut down with overvoltage when Vdc_min control is exited (due to the time violation) and in the event of fault response OFF3. It is also possible to increase the OFF3 ramp-down time p1135.

p1256[0...n] Vdc_min controller response (kinetic buffering) / Vdc_min response

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the response for the Vdc_min controller (kinetic buffering).

Value:
0: Buffer Vdc until undervoltage, n<p1257 -> F07405
1: Buff. Vdc until undervolt., n<p1257 -> F07405, t>p1255 -> F07406

Dependency: Refer to: F07405, F07406

p1257[0...n] Vdc_min controller speed threshold / Vdc_min n_thresh

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Functions	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	50.00 [rpm]

Description: Sets the speed threshold for the Vdc-min controller (kinetic buffering).

If this value is exceeded a fault is output; the required response can be parameterized .

Kinetic buffering is not started below the speed threshold.

Note: Exiting the Vdc_min control before reaching motor standstill prevents the regenerative braking current from increasing significantly at low speeds, and after a pulse inhibit, means that the motor coasts down.

However, the maximum braking torque can be set via the appropriate torque limiting.

r1258 CO: Vdc controller output / Vdc_ctrl output

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6220
P-Group: Functions	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the actual output of the Vdc controller (DC link voltage controller)

Note: The regenerative power limit p1531 is used for vector control to precontrol the Vdc_max controller. The lower the power limit is set, the lower the correction signals of the controller when the voltage limit is reached.

p1260 Bypass configuration / Bypass config

VECTOR (Tech_ctrl), VECTOR_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	3	0

Description: Sets the configuration for the bypass function.

Value:
0: Bypass deactivated
1: Bypass with synchronization and overlap
2: Bypass with synchronization without overlap
3: Bypass without synchronization

Note: If the bypass function is selected (p1260 > 0), then when the power unit restarts after POWER OFF, the state of the bypass switch is evaluated. This means that after the ramp-up, it is possible to directly change into the standby mode. This is only possible for p1267 = 1 (bypass using the control signal) and if the control command after the system has been booted is still available (p1266). This function has a higher priority than the automatic restart function (p1210).

The "bypass" function can only be switched off again (p1260 = 0) if the bypass is not active or the bypass function has a fault.

The corresponding function should be activated in p3800 for bypass with synchronization.

r1261.0...12 CO/BO: Bypass control/status word / Bypass STW / ZSW

VECTOR (Tech_ctrl), VECTOR_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Control and feedback signals of the bypass switch.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Command switch motor - power unit	Close	Open	-
01	Command switch motor - line supply	Close	Open	-
02	Synchronization requested	Yes	No	-
03	Staging status	Active	Not active	-
05	Feedback signal switch motor - power unit	Closed	Opened	-
06	Feedback signal switch motor - line supply	Closed	Opened	-
07	Bypass command (from p1266)	Yes	No	-
08	Feedback signal synchronization completed (from p1268)	Yes	No	-
09	Staging requested (from p2369)	Yes	No	-
10	Bypass in process sequence	Yes	No	-
11	Bypass enabled	Yes	No	-
12	DC link voltage monitoring activated	Yes	No	-

Dependency: Refer to: p1200, p2369

Note: Control bits 0 and 1 should be interconnected to the signal outputs via which the switches in the motor feeder cables should be controlled. These should be selected/dimensioned for switching under load.

For bit 12:

The DC link voltage can suddenly rise for overlapping switching. In this case, a fast pulse inhibit is initiated. The "Flying restart" function must be activated so that after the pulse inhibit, for a bypass, the drive can be automatically re-synchronized to the converter.

p1262[0...n] Bypass dead time / Bypass t_dead

VECTOR (Tech_ctrl), VECTOR_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** CALC_MOD_REG	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	20.000 [s]	1.000 [s]

Description: Sets the dead time for non-synchronized bypass.

Note: This parameter is used to define the changeover time of the contactors. It should not be shorter than the de-magnetizing time of the motor (p0347).

The total switchover time for the bypass is obtained from the sum of p1262 and the switch-off time of the relevant switch (p1274[x]).

p1263 Debypass delay time / Debypass t_del

VECTOR (Tech_ctrl), VECTOR_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	300.000 [s]	1.000 [s]

Description: Sets the delay time to switch back to converter operation for a non-synchronized bypass.

p1264 Bypass delay time / Bypass t_del

VECTOR (Tech_ctrl), VECTOR_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	300.000 [s]	1.000 [s]

Description: Sets the delay time for switching to line operation for a non-synchronized bypass.

p1265 Bypass speed threshold / Bypass n_thresh

VECTOR (Tech_ctrl), VECTOR_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: REL, RESM	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	1480.00 [rpm]

Description: Sets the speed threshold to activate the bypass.

Dependency: If the drive setpoint speed is entered via a motorized potentiometer, then the configuration bit p1030.4 should be set in order to ensure the bypass via speed threshold function.

Note: When selecting p1260 = 3 and p1267.1 = 1, the bypass is automatically activated when this speed is reached.

p1266 BI: Bypass control command / Bypass command

VECTOR (Tech_ctrl), VECTOR_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the control command to the bypass.

p1267 Bypass changeover source configuration / Chngov_src config

VECTOR (Tech_ctrl), VECTOR_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Sets the cause that should initiate the bypass.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bypass via signal (BI: p1266)	Yes	No	-
01	Bypass via reaching the speed threshold	Yes	No	-

Note: The parameter only has an effect for a non-synchronized bypass.

p1267.0 = 1:

The bypass is initiated by setting a binary signal. When the command is reset, after the debypass delay time (p1263) has expired, operation at the power unit is re-selected.

p1267.1 = 1:

When the speed threshold entered in p1265 is reached, the bypass is switched in. The system only switches back when the speed setpoint again falls below the threshold value.

p1268 BI: Bypass feedback synchronization completed / FS sync compl

VECTOR (Tech_ctrl), VECTOR_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	3819.2

Description: Sets the signal source for the feedback signal "synchronization completed" for the bypass function.

Dependency: Refer to: r3819

p1269[0...1] BI: Bypass switch feedback signal / Bypass FS

VECTOR (Tech_ctrl), VECTOR_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the feedback signal of the bypass switch.

Index:
[0] = Switch motor/drive
[1] = Switch motor/line supply

Note: In the case of switches without a feedback signal, interconnect the corresponding control bit as the signal source:

BI: p1269[0] = r1261.0

BI: p1269[1] = r1261.1

p1270[0...n] Flying restart configuration / Fly restart config

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 4
Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 bin

Description: Sets the configuration for the "flying restart function" function.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Fast flying restart with voltage model for induction motor	Yes	No	-
01	PLL expansion for fast flying restart w/ voltage model for ASM	Yes	No	-
12	Siemens internal	Yes	No	-
13	Siemens internal	1	0	-
14	Siemens internal	1	0	-
15	Siemens internal	1	0	-

Caution: For bit 00 = 1:

When using a dv/dt filter, it is not permissible that a flying restart with voltage model is activated.

Notice: When selecting bit 00, also for U/f characteristic operation, a standstill measurement to identify the motor data must have been performed to set the necessary current controller for a fast flying restart.

Note: ASM: Induction motor

PMSM: permanent-magnet synchronous motor

For bit 00:

This bit is equivalent to p1780 bit 11.

For bit 01:

This bit should only be set when required for large drives.

p1271[0...n] Flying restart maximum frequency for the inhibited direction / FlyRes f_max dir

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [Hz]	650 [Hz]	0 [Hz]

Description: Sets the maximum search frequency for a flying restart in an inhibited setpoint direction (p1110, p1111).

Note: The parameter has no effect for an operating mode, which only searches in the setpoint direction (p1200 > 3).

p1272 Simulation mode / Simulation mode

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: In the simulation mode, the closed-loop control or U/f control can be operated without motor.

The simulation mode is used to test the power unit. Even though the DC link voltage is missing, the pulses are enabled when switching on. The DC link precharging is bypassed and the undervoltage detection is disabled.

Closed-loop speed control with an encoder is possible if the torque setpoint (r0079) is used in order to operate a second drive in the closed-loop torque controlled mode.

Value:
0: OFF
1: ON

Dependency: The following functions are deactivated in the simulation mode:

- motor data identification routine
- motor data identification routine, rotating without encoder
- pole position identification

For U/f control and sensorless vector control, flying restart is not carried out (refer to p1200).

Refer to: r0192, p1900, p1910, p1960, p1990

Refer to: A07825, F07826

Notice: In simulation mode, binector output r0863.1 = 1 is set. This is why you need to check whether other devices are switched on via this signal before activating simulation mode. You might need to disconnect the corresponding BICO interconnection temporarily.

Note: Simulation mode is only possible for DC link voltages below 40 V. In order that the closed-loop control can be calculated, the displayed DC link voltage (r0026, r0070) is set to the rated DC link voltage (refer to p0210). Closed-loop current control and motor model are switched out (disabled) - the same is true for the speed controller for encoderless closed-loop speed control.

When fault messages occur, the parameter is not automatically reset. This function is not implemented for SINAMICS GM.

p1274[0...1] Bypass switch monitoring time / Switch t_monit

VECTOR (Tech_ctrl), VECTOR_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	5000 [ms]	1000 [ms]

Description: Sets the monitoring time for the bypass switch.

Index:
[0] = Switch motor/drive
[1] = Switch motor/line supply

Dependency: Refer to: p1260

Note: The monitoring is deactivated with p1274 = 0 ms.

For non-synchronized bypass (p1260 = 3), the following applies:

The changeover time for the bypass (p1262) is extended by the value in this parameter.

p1275 Motor holding brake control word / Brake STW

SERVO (Ext brake), VECTOR (Ext brake), SERVO_AC (Ext brake), VECTOR_AC (Ext brake), SERVO_I_AC (Ext brake), VECTOR_I_AC (Ext brake)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 bin

Description: Sets the control word for the motor holding brake.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Inversion BI: 1219[0]	Yes	No	2707
01	Inversion BI: 1219[1]	Yes	No	2707
02	Inversion BI: 1224[0]	Yes	No	2704
03	Inversion BI: 1224[1]	Yes	No	2704
05	Brake with feedback	Yes	No	2711
06	Enable with feedback signal	Yes	No	2711

Note: For p1275.6 = 1 and p1275.5 = 1, the following applies:

The pulse enable (BO: r1229.3) is independent of the timer that has been set (p1217, p1216). The particular enable is only defined by the feedback signal (BI: p1222, BI: p1223). The timers (p1216, p1217) only influence the alarm A07931 "Brake does not open" and A07932 "Brake does not close".

p1276 Motor holding brake standstill detection bypass / Brk standst bypass

SERVO (Ext brake), VECTOR (Ext brake), SERVO_AC (Ext brake), VECTOR_AC (Ext brake), SERVO_I_AC (Ext brake), VECTOR_I_AC (Ext brake)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2704
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	300.000 [s]	300.000 [s]

Description: Sets the delay time for closing the brake at standstill.

After this time has expired, if the "close brake at standstill" or OFF1/OFF3 is present, the brake is closed and the pulses are suppressed.

For p1276 = 300.000 s, the timer is deactivated - this means that the timer output is always zero.

p1277 Motor holding brake braking threshold delay exceeded / Del thresh exceed

SERVO (Ext brake), VECTOR (Ext brake), SERVO_AC (Ext brake), VECTOR_AC (Ext brake), SERVO_I_AC (Ext brake), VECTOR_I_AC (Ext brake)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2707
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	300.000 [s]	0.000 [s]

Description: Sets the delay time for the signal "braking threshold exceeded" (BO: r1229.6).

Dependency: Refer to: p1220, p1221, r1229

p1278 Brake control diagnostics evaluation / Brake diagnostics

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the brake control type (with or without diagnostics evaluation).

Example for brake control with diagnostics evaluation.

- brake control in the Motor Modules in booksize format
- Safe Brake Relay for AC Drive

Example for brake control without diagnostics evaluation.

- Brake Relay for AC Drive

Value:

0: Brake control with diagnostics evaluation
1: Brake control without diagnostics evaluation

Note: If the configuration of the motor holding brake (p1215) is set to "no holding brake present" when booting, then an automatic identification of the motor holding brake will be carried out. If a brake control is detected without diagnostics evaluation (e.g. Brake Relay for AC Drive), then the parameter is set to "brake control without diagnostics evaluation".

It is not permissible to parameterize "brake control without diagnostics evaluation" and also enable "safe brake control" (p1278 = 1, p9602 = 1, p9802 = 1).

p1279[0...3] BI: Motor holding brake OR/AND logic operation / Brake OR AND

SERVO (Ext brake), VECTOR (Ext brake), SERVO_AC (Ext brake), VECTOR_AC (Ext brake), SERVO_I_AC (Ext brake), VECTOR_I_AC (Ext brake)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2707
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the OR/AND logic operation.

Dependency: Refer to: r1229

Note: [0]: OR logic operation, input 1 --> the result is displayed in r1229.10.

[1]: OR logic operation, input 2 --> the result is displayed in r1229.10.

[2]: AND logic operation, input 1 --> the result is displayed in r1229.11.

[3]: AND logic operation, input 2 --> the result is displayed in r1229.11.

p1280[0...n] Vdc controller or Vdc monitoring configuration (U/f) / Vdc_ctr config U/f

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 6300, 6320
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	6	1

Description: Sets the configuration of the controller for the DC link voltage (Vdc controller) in the U/f operating mode.

Value:
0: Inhibit Vdc ctrl
1: Enable Vdc_max controller
2: Enable Vdc_min controller (kinetic buffering)
3: Enable Vdc_min controller and Vdc_max controller
4: Activate Vdc_max monitoring
5: Activate Vdc_min monitoring
6: Activate Vdc_min monitoring and Vdc_max monitoring

Warning: When the Vdc_max controller is active, the motor can be accelerated (e.g. by driving loads or as a result of high DC link voltages). This can be caused by other drives that are operating on a common DC link busbar.

Caution: If several drives are operated from the same DC link busbar, then it is recommended that the Udc control is only activated for the drives with relatively high moments of inertia.

If the Udc controls for various drives are simultaneously active, then they can mutually influence one another. In this case, the controller dynamic performance should be reduced or the Udc control of individual drives should be deactivated.

Drives with Udc control must be able to brake and accelerate independently of one another.

Note: For p1280 = 4, 5, 6:

When the threshold in r1282 or r1286 is reached, the DC link voltage monitoring initiates a fault (F07403 or F07404) with a response and therefore reduces additional negative effects on the DC link voltage.

If a braking resistor is connected to the DC link, then the Vdc_max control should be disabled.

For p1280 = 1, 3:

Only U/f control: When the Vdc max controller is active, fault F07404 is initiated if the speed setpoint ramp is stopped (held) longer than the time set in p1284.

p1281[0...n] Vdc controller configuration / Vdc ctrl config

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Sets the configuration for the DC link voltage controller.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Vdc min control (U/f) without up ramp	Yes	No	-
02	Vdc min shorter wait time when the line returns	Yes	No	-

Note: ASM: Induction motor (induction motor)

PMSM: permanent-magnet synchronous motor

For bit 00:

This bit is equivalent to p1780 bit 1.

For bit 01:

This bit should only be set when required for large drives.

r1282 Vdc_max controller switch-in level (U/f) / Vdc_max on_level

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6320
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the switch-in level for the Vdc_max controller.

If p1294 = 0 (automatic sensing of the switch-in level = off), then the following applies:

AC/AC device: r1282 = 1.15 * sqrt(2) * p0210

DC/AC device: r1282 = 1.15 * p0210

If p1294 = 1 (automatic sensing of the switch-in level = on), then the following applies:

r1282 = Vdc_max - 50.0 V (Vdc_max: Overvoltage threshold of the power unit)

r1282 = Vdc_max - 25.0 V (for 230 V power units)

Notice: If the activation level of the Vdc_max controller is already exceeded in the deactivated state (pulse inhibit) by the DC link voltage, then the controller can be automatically deactivated (see F07401), so that the drive is not accelerated the next time that it is activated.

Note: The Vdc_max controller is not switched back off until the DC link voltage falls below the threshold 0.95 * r1282 and the controller output is zero.

p1283[0...n] Vdc_max controller dynamic factor (U/f) / Vdc_max dyn_factor

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6320
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1 [%]	10000 [%]	100 [%]

Description: Sets the dynamic factor for the DC link voltage controller (Vdc_max controller).

100% means that p1290, p1291, and p1292 (gain, integral time, and rate time) are used in accordance with their basic settings and on the basis of a theoretical controller optimization.

If subsequent optimization is required, this can be carried out using the dynamic factor. In this case, p1290, p1291, and p1292 are weighted with the dynamic factor p1283.

If several modules are connected to the DC link, then the dynamic factor must be increased corresponding to the ratio of the additional capacitances to the capacitance of the module involved.

Note: The pre-setting of the dynamic factor is based on the power units connected to DRIVE-CLiQ. It is assumed that the power units connected via DRIVE-CLiQ are also electrically connected to the DC link. If this is not the case, then the dynamic factor must be optimized manually.

p1284[0...n] Vdc_max controller time threshold (U/f) / Vdc_max t_thresh

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	300.000 [s]	4.000 [s]

Description: Sets the monitoring time for the Vdc_max controller.

If the down ramp of the speed setpoint is held for longer than the time set in p1284, then fault F07404 is output.

p1285[0...n] Vdc_min controller switch-in level (kinetic buffering) (U/f) / Vdc_min on_level

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
65 [%]	150 [%]	76 [%]

Description: Sets the switch-in level for the Vdc-min controller (kinetic buffering).

The value is obtained as follows:

AC/AC device: r1286[V] = p1285[%] * sqrt(2) * p0210

DC/AC device: r1286[V] = p1285[%] * p0210

Warning: An excessively high value may adversely affect normal drive operation. The values up to 150 % are intended for operating modes p1240 = 5, 6.

r1286 Vdc_min controller switch-in level (kinetic buffering) (U/f) / Vdc_min on_level

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6320
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the switch-in level for the Vdc_min controller (kinetic buffering).

Note: The Vdc_min controller is not switched back off until the DC link voltage rises above the threshold 1.05 * r1286 and the controller output is zero.

p1287[0...n] Vdc_min controller dynamic factor (kinetic buffering) (U/f) / Vdc_min dyn_factor

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6320
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1 [%]	10000 [%]	100 [%]

Description: Sets the dynamic factor for the Vdc_min controller (kinetic buffering).

100% means that p1290, p1291, and p1292 (gain, integral time, and rate time) are used corresponding to their basic settings and based on a theoretical controller optimization.

If subsequent optimization is required, this can be carried out using the dynamic factor. In this case, p1290, p1291, and p1292 are weighted with the dynamic factor p1287.

If several modules are connected to the DC link, then the dynamic factor must be increased corresponding to the ratio of the additional capacitances to the capacitance of the module involved.

Note: The pre-setting of the dynamic factor is based on the power units connected to DRIVE-CLiQ. It is assumed that the power units connected via DRIVE-CLiQ are also electrically connected to the DC link. If this is not the case, then the dynamic factor must be optimized manually.

p1288[0...n] Vdc_max controller feedback coupling factor ramp-fct. gen. (U/f) / Vdc_max factor RFG

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	100.000	0.500

Description: Sets the feedback factor for the ramp-function generator.

Its ramp times are decelerated relative to the output signal of the Vdc_max controller.

Note: For values p1288 = 0.0 to 0.5, the controller dynamics are automatically adapted internally.

p1289[0...n] Vdc_max controller speed threshold (U/f) / Vdc_max n_thresh

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Functions	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	10.00 [rpm]

Description: Sets the lower speed threshold for the Vdc_max controller.

When this speed threshold is undershot, the Vdc_max control is switched out and the speed is controlled using the ramp-function generator.

p1290[0...n] Vdc controller proportional gain (U/f) / Vdc_ctrl Kp

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6320
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00	100.00	1.00

Description: Sets the proportional gain for the Vdc controller (DC link voltage controller).

Note: The gain factor is proportional to the capacitance of the DC link. The parameter is pre-set to a value that is optimally adapted to the capacitance of the individual Motor Module. The capacitances of the other power units which are connected to the DC link can be taken into account using the dynamic factor (p1287 or p1283).

p1291[0...n] Vdc controller integral time (U/f) / Vdc_ctrl Tn

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6320
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	10000 [ms]	40 [ms]

Description: Sets the integral time for the Vdc controller (DC link voltage controller).

p1292[0...n] Vdc controller rate time (U/f) / Vdc_ctrl t_rate

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6320
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	1000 [ms]	10 [ms]

Description: Sets the rate time constant for the Vdc controller (DC link voltage controller).

p1293[0...n] Vdc min controller output limit (U/f) / Vdc_min outp_lim

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6320
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Hz]	600.00 [Hz]	10.00 [Hz]

Description: Sets the output limit for the Vdc min controller (DC link undervoltage controller).

p1294 Vdc_max controller automatic detection ON signal level (U/f) / Vdc_max SenseOnLev

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Activates/deactivates the automatic sensing of the switch-in level for the Vdc_max controller. When the sensing function is deactivated, the activation threshold r1282 for the Vdc_max controller is determined from the parameterized connection voltage p0210.

Value:
0: Automatic detection inhibited
1: Automatic detection enabled

p1295[0...n] Vdc_min controller time threshold (U/f) / Vdc_min t_thresh

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	10000.000 [s]	0.000 [s]

Description: Sets the time threshold for the Vdc_min controller (kinetic buffering).

If this value is exceeded a fault is output; the required response can be parameterized.

Prerequisite: p1296 = 1

Notice: If a time threshold has been parameterized, the Vdc_max controller should also be activated (p1280 = 3) so that the drive does not shut down with overvoltage when Vdc_min control is exited (due to the time violation) and in the event of fault response OFF3. It is also possible to increase the OFF3 ramp-down time p1135.

p1296[0...n] Vdc_min controller response (kinetic buffering) (U/f) / Vdc_min response

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the response for the Vdc_min controller (kinetic buffering).

Value:
0: Buffer Vdc until undervoltage, n<p1297 -> F07405
1: Buff. Vdc until undervolt., n<p1297 -> F07405, t>p1295 -> F07406

Note: For p1296 = 1:

The quick stop ramp entered in p1135 must not be equal to zero, to prevent overcurrent shutdown if F07406 is triggered.

p1297[0...n] Vdc_min controller speed threshold (U/f) / Vdc_min n_thresh

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Functions	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	50.00 [rpm]

Description: Sets the speed threshold for the Vdc-min controller (kinetic buffering).

If this value is exceeded a fault is output; the required response can be parameterized .

Note: Exiting the Vdc_min control before reaching motor standstill prevents the regenerative braking current from increasing significantly at low speeds, and after a pulse inhibit, means that the motor coasts down.

r1298 CO: Vdc controller output (U/f) / Vdc_ctrl output

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6320
P-Group: Functions	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the actual output of the Vdc controller (DC link voltage controller)

p1300[0...n] Open-loop/closed-loop control operating mode / Op/cl-lp ctrl_mode

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(1), T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 5060, 8012
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
20	23	21

Description: Sets the open and closed-loop control mode of a drive.

Value:
20: Speed control (encoderless)
21: Speed control (with encoder)
23: Torque control (with encoder)

Dependency: Closed-loop speed or torque control (with encoder) cannot be selected if the encoder type is not entered (p0400).

Refer to: p0108, r0108, p0300, p0311, p0400, p1501

Notice: General conditions for encoderless operation can be found in the following literature:

SINAMICS S120 Function Manual Drive Functions

Note: The closed-loop torque control can only be changed over in operation (p1300 = 20, 21) by selecting the closed-loop speed control (p1501). At the changeover, the setting of p1300 does not change. In this case, the actual state is displayed in r1407, bit 2 and bit 3.

For encoderless operation (p1404 = 0 or p1300 = 20), the following applies:

- the following condition must be fulfilled: p1800 >= 1 / (4 * p0115[0])

- for motors with a low power rating (< 300 W), we recommend to set p1800 >= 1 / p0115[0].

- although pulse frequencies p1800 = 1/ (n * p0115[0]) with n = 3 or 4 are possible, for p0115[0] > 62.5 µs, they result in unsteady closed-loop control and should be avoided.

- for a blocksize unit with a current controller sampling time p0115[0] < 80 µs and a pulse frequency of p1800 = 0.5 / p0115[0], then it may be necessary to increase the switchover speed of the model p1755.

p1300[0...n] Open-loop/closed-loop control operating mode / Op/cl-lp ctrl_mode

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: C2(1), T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 5060, 8012
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
20	23	21

Description: Sets the open and closed-loop control mode of a drive.

Value:
20: Velocity control (encoderless)
21: Velocity control (with encoder)
23: Force control (with encoder)

Dependency: Closed-loop velocity or force control (with encoder) cannot be selected if the encoder type is not entered (p0400).

Refer to: p0108, r0108, p0300, p0311, p0400, p1501

Notice: General conditions for encoderless operation can be found in the following literature:

SINAMICS S120 Function Manual Drive Functions

Note: It is only possible to change over to force control during operation (p1501) if velocity control is selected (p1300 = 20, 21). At the changeover, the setting of p1300 does not change. In this case, the actual state is displayed in r1407, bit 2 and bit 3.

For encoderless operation (p1404 = 0 or p1300 = 20), the following applies:

- the following condition must be fulfilled: p1800 >= 1 / (4 * p0115[0])

- for motors with a low power rating (< 300 W), we recommend to set p1800 >= 1 / p0115[0].

- although pulse frequencies p1800 = 1/ (n * p0115[0]) with n = 3 or 4 are possible, for p0115[0] > 62.5 µs, they result in unsteady closed-loop control and should be avoided.

p1300[0...n] Open-loop/closed-loop control operating mode / Op/cl-lp ctrl_mode

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(1), T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 6300, 6301, 8012
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	19	0

Description: Sets the U/f control mode of the drive.

Value:
0: U/f control with linear characteristic
1: U/f control with linear characteristic and FCC
2: U/f control with parabolic characteristic
3: U/f control with parameterizable characteristic
4: U/f control with linear characteristic and ECO
5: U/f control for drives requiring a precise freq. (e.g. textiles)
6: U/f control for drives requiring a precise frequency and FCC
7: U/f control for a parabolic characteristic and ECO
15: Operation with braking resistor
19: U/f control with independent voltage setpoint

Recommendation: The use of the vector control operating modes is recommended for synchronous motors.

Dependency: If you are working with reduced supply voltages (p0212.0 = 1), only U/f control with independent voltage setpoint (p1300 = 19) can be set as the operating mode.

p1300 = 15 (operation with braking resistor), can only be activated or deactivated in quick commissioning (p0010 = 1). This operating mode is only possible for chassis power units (DC/AC Motor Module).

Notice: Active slip compensation is required in the U/f control types with Eco mode (p1300 = 4, 7). Slip compensation scaling (p1335) must be set so that the slip is completely compensated (or generally, 100 %).

The Eco mode is only effective in steady-state operation and when the ramp-function generator is not bypassed. In the case of analog setpoints, if required the tolerance for ramp-up and ramp-down should be actively increased for the ramp-function generator using p1148 in order to reliably signal a steady-state condition.

Note: The closed-loop torque control can only be changed over in operation (p1300 = 20, 21) by selecting the closed-loop speed control (p1501). At the changeover, the setting of p1300 does not change. In this case, the actual state is displayed in r1407, bit 2 and bit 3.

For motors, type p0300 = 14, operation with U/f control is only recommended for diagnostic purposes.

For motors, type p0300 = 6 and 6xx, operation with U/f control is only recommended for diagnostic purposes.

p1300[0...n] Open-loop/closed-loop control operating mode / Op/cl-lp ctrl_mode

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: C2(1), T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 6300, 6301, 8012
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	23	20

Description: Sets the open and closed-loop control mode of a drive.

Value:
0: U/f control with linear characteristic
1: U/f control with linear characteristic and FCC
2: U/f control with parabolic characteristic
3: U/f control with parameterizable characteristic
4: U/f control with linear characteristic and ECO
5: U/f control for drives requiring a precise freq. (e.g. textiles)
6: U/f control for drives requiring a precise frequency and FCC
7: U/f control for a parabolic characteristic and ECO
15: Operation with braking resistor
18: I/f control with fixed current
19: U/f control with independent voltage setpoint
20: Speed control (encoderless)
21: Speed control (with encoder)
22: Torque control (encoderless)
23: Torque control (with encoder)

Recommendation: The use of the vector control operating modes is recommended for synchronous motors.

Dependency: Closed-loop speed or torque control (with encoder) cannot be selected if the encoder type is not entered (p0400).

Closed-loop speed or torque control can be selected if the closed-loop speed/torque control was selected as operating mode (p0108.2).

Only operation with U/f characteristic is possible if the rated motor speed is not entered (p0311).

A reluctance motor (p0300 = 8) can only be operated in a U/f control mode (p1300 < 20), a synchronous-reluctance motor (p0300 = 6, 6xx) only in closed-loop speed/torque control.

Sensorless control on separately excited synchronous motors is only possible with a VSM module (see p0150, p0151).

For chassis power units with reduced line voltage (see r0212.0), the drive can only be operated in a control mode (p1300 = 20...23) and with the DC link voltage control activated.

Refer to: p0108, r0108, p0212, p0300, p0311, p0400, p1501

Notice: Active slip compensation is required in the U/f control types with Eco mode (p1300 = 4, 7). Slip compensation scaling (p1335) must be set so that the slip is completely compensated (or generally, 100 %).

The Eco mode is only effective in steady-state operation and when the ramp-function generator is not bypassed. In the case of analog setpoints, if required the tolerance for ramp-up and ramp-down should be actively increased for the ramp-function generator using p1148 in order to reliably signal a steady-state condition.

Note: The closed-loop torque control can only be changed over in operation (p1300 = 20, 21) by selecting the closed-loop speed control (p1501). At the changeover, the setting of p1300 does not change. In this case, the actual state is displayed in r1407, bit 2 and bit 3.

For the open-loop control modes p1300 = 5 and 6 (textile sector), slip compensation p1335, resonance damping p1338, and the Imax frequency controller are switched off internally so that the output frequency can be set precisely. The Imax voltage controller remains active.

For the open-loop control modes p1300 = 4 and 7 (Eco mode), the efficiency can be optimized by varying the voltage (when the operating point is constant).

Separately excited synchronous motors can only be operated in modes p1300 = 20, 21 and 23 - or for diagnostic purposes in modes p1300 = 0, 3 and 18. For I/f control (p1300 = 18), the current amplitude can be set using p1609. Both for U/f as well as for I/f control only a small load may be applied to the separately excited synchronous motor because the excitation current is not calculated as a function of the load.

During operation (pulses enabled) the open-loop/closed-loop control mode cannot be changed by changing over drive data sets.

p1300 is pre-assigned depending on r0108.2 and p0187.

p1302[0...n] U/f control configuration / U/f config

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 bin

Description: Sets the configuration for the U/f control.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Output voltage starting angle zero	Yes	No	-
01	Take into account the setpoint voltage sign	Yes	No	-
02	Output voltage angle setpoint input	Yes	No	-
04	Field orientation	Yes	No	-
06	Immediate setpoint transfer for pulse inhibit	Yes	No	-

Note: For bit 00:

If the bit is set the device will always start up with setpoint angle zero on pulse enable. This also affects the setpoint angle for DC braking (p1231).

For bit 01:

If the bit is set, in the case of U/f control with independent voltage setpoint (p1300 = 19) and negative setpoint voltages at the input of p1330, the setpoint angle is rotated through 180 degrees, thereby achieving a negative output voltage. The voltage boost is in this case not active (p1310, p1311).

For bit 02:

When the bit is set, for U/f controls with independent voltage setpoint (p1300 = 19), the setpoint angle should be entered directly at connector input p1356.

For bit 06 (only for p1300 = 19):

When the bit is set, the setpoints from p1330 for pulse inhibit are transferred without any delay.

p1310[0...n] Starting current (voltage boost) permanent / I_start (Ua) perm

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6300, 6301
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	250.0 [%]	50.0 [%]

Description: Defines the voltage boost as a [%] referred to the rated motor current (p0305).

The magnitude of the permanent voltage boost is reduced with increasing frequency so that at the rated motor frequency, the rated motor voltage is present.

The magnitude of the boost in Volt at a frequency of zero is defined as follows:

Voltage boost [V] = 1.732 x p0305 (rated motor current [A]) x r0395 (stator/primary section resistance [ohm]) x p1310 (permanent voltage boost [%]) / 100 %

At low output frequencies, there is only a low output voltage in order to maintain the motor flux. However, the output voltage can be too low in order to achieve the following:

- magnetize the induction motor.
- hold the load.
- compensate for losses in the system.

This is the reason that the output voltage can be increased using p1310.

The voltage boost can be used for both linear as well as square-law U/f characteristics.

Dependency: The starting current (voltage boost) is limited by the current limit p0640.

The accuracy of the starting current depends on the setting of the stator and feeder cable resistance (p0350, p0352).

Refer to: p1300, p1311, p1312, r1315

Notice: The starting current (voltage boost) increases the motor temperature (particularly at zero speed).

Note: The starting current as a result of the voltage boost is only effective for U/f control (p1300).

The boost values are combined with one another if the permanent voltage boost (p1310) is used in conjunction with other boost parameters (acceleration boost (p1311), voltage boost for starting (p1312)).

However, these parameters are assigned the following priorities: p1310 > p1311, p1312

p1311[0...n] Starting current (voltage boost) when accelerating / I_start accel

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6300, 6301
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	250.0 [%]	0.0 [%]

Description: p1311 only results in a voltage boost when accelerating and generates a supplementary torque to accelerate the load.

The voltage boost becomes effective for a positive setpoint increase, and is withdrawn once the setpoint has been reached.

The build-up and withdrawal of the voltage boost are smoothed.

The magnitude of the boost in Volt at a frequency of zero is defined as follows:

Voltage boost [V] = 1.732 * p0305 (rated motor current [A]) x r0395 (stator/primary section resistance [ohm]) x p1311 (voltage boost when accelerating [%]) / 100 %

Dependency: The current limit p0640 limits the boost.

Refer to: p1300, p1310, p1312, r1315

Notice: The voltage boost results in a higher motor temperature increase.

Note: The voltage boost when accelerating can improve the response to small, positive setpoint changes.

Assigning priorities for the voltage boosts: refer to p1310

p1312[0...n] Starting current (voltage boost) when starting / I_start start

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6300, 6301
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	250.0 [%]	0.0 [%]

Description: Setting for an additional voltage boost when powering-up (only for the first acceleration phase).

The voltage boost becomes effective for a positive setpoint increase, and is withdrawn once the setpoint has been reached.

The build-up and withdrawal of the voltage boost are smoothed.

Dependency: The current limit p0640 limits the boost.

Refer to: p1300, p1310, p1311, r1315

Notice: The voltage boost results in a higher motor temperature increase.

Note: The voltage boost when accelerating can improve the response to small, positive setpoint changes.

Assigning priorities for the voltage boosts: refer to p1310

r1315 Voltage boost total / U_boost total

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6301
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Displays the total resulting voltage boost in volt.

Dependency: Refer to: p1310, p1311, p1312

p1317[0...n] U/f control activation / Uf act

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 5019, 5730
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Setting to activate the U/f control with linear characteristic.

Value:
0: Deactivated (p1300 effective)
1: Activated

Dependency: Refer to: p1318, p1319, p1326, p1327

Note: The following applies for firmware version 4.3 and higher:

When U/f control is activated, resonance damping is automatically activated. The resonance damping must be deactivated (p1338 = 0) in order to obtain pure diagnostics operation without the influence of actual values.

Further, when U/f control is activated, the following functions are active:

- Vdc controller (p1240, p1244, p1248, p1250).

- the up ramp is limited by the set M, P and I limits (p0326, p0341, p0342, p0640, p1520, p1521, p1530, p1531, p1498).

- the ramp-function generator is held if the current actual value exceeds the current limit set in p0640.

p1318[0...n] U/f control ramp-up/ramp-down time / Uf t_rmp-up_rmp-dn

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5300
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	999999.000 [s]	10.000 [s]

Description: Sets the ramp-up and ramp-down time for the U/f control.

The ramp-function generator requires this time to reach the maximum speed (p1082) from zero.

Dependency: Refer to: p1317, p1319, p1326, p1327

Note: This ramp is used for stall protection and operates independently of any ramp-function generator that might have been configured.

p1319[0...n] U/f control voltage at zero frequency / Uf U at f=0 Hz

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5300
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [Vrms]	100.0 [Vrms]	0.0 [Vrms]

Description: The linear characteristic for the U/f control is defined by 0 Hz/p1319 and p1326/p1327.

This parameter specifies the voltage for a frequency of 0 Hz.

Dependency: The U/f control is activated via p1317 = 1.

Refer to: p1317, p1326, p1327

Note: Linear interpolation is carried out between the points 0 Hz/p1319 and p1326/p1327.

p1320[0...n] U/f control programmable characteristic frequency 1 / Uf char f1

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6301
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Hz]	3000.00 [Hz]	0.00 [Hz]

Description: The programmable characteristic for the U/f control is defined using 4 points and 0 Hz/p1310.

This parameter specifies the voltage of the first point along the characteristic.

Dependency: Selects the freely programmable characteristic using p1300 = 3.

The following applies to the frequency values: p1320 <= p1322 <= p1324 <= p1326. Otherwise, a standard characteristic is used that contains the rated motor operating point.

Refer to: p1300, p1310, p1311, p1321, p1322, p1323, p1324, p1325, p1326, p1327

Note: Linear interpolation is carried out between the points 0 Hz/p1310, p1320/p1321 ... p1326/p1327.

The voltage boost when accelerating (p1311) is also applied to the freely programmable U/f characteristic.

p1321[0...n] U/f control programmable characteristic voltage 1 / Uf char U1

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6301
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [Vrms]	10000.0 [Vrms]	0.0 [Vrms]

Description: The programmable characteristic for the U/f control is defined using 4 points and 0 Hz/p1310.

This parameter specifies the voltage of the first point along the characteristic.

Dependency: Selects the freely programmable characteristic using p1300 = 3.

Refer to: p1310, p1311, p1320, p1322, p1323, p1324, p1325, p1326, p1327

Note: Linear interpolation is carried out between the points 0 Hz/p1310, p1320/p1321 ... p1326/p1327.

The voltage boost when accelerating (p1311) is also applied to the freely programmable U/f characteristic.

p1322[0...n] U/f control programmable characteristic frequency 2 / Uf char f2

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6301
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Hz]	3000.00 [Hz]	0.00 [Hz]

Description: The programmable characteristic for the U/f control is defined using 4 points and 0 Hz/p1310.

This parameter specifies the voltage of the second point along the characteristic.

Dependency: The following applies to the frequency values: p1320 <= p1322 <= p1324 <= p1326. Otherwise, a standard characteristic is used that contains the rated motor operating point.

Refer to: p1310, p1311, p1320, p1321, p1323, p1324, p1325, p1326, p1327

p1323[0...n] U/f control programmable characteristic voltage 2 / Uf char U2

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6301
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [Vrms]	10000.0 [Vrms]	0.0 [Vrms]

Description: The programmable characteristic for the U/f control is defined using 4 points and 0 Hz/p1310.

This parameter specifies the voltage of the second point along the characteristic.

Dependency: Refer to: p1310, p1311, p1320, p1321, p1322, p1324, p1325, p1326, p1327

p1324[0...n] U/f control programmable characteristic frequency 3 / Uf char f3

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6301
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Hz]	3000.00 [Hz]	0.00 [Hz]

Description: The programmable characteristic for the U/f control is defined using 4 points and 0 Hz/p1310.

This parameter specifies the voltage of the third point along the characteristic.

Dependency: The following applies to the frequency values: p1320 <= p1322 <= p1324 <= p1326. Otherwise, a standard characteristic is used that contains the rated motor operating point.

Refer to: p1310, p1311, p1320, p1321, p1322, p1323, p1325, p1326, p1327

p1325[0...n] U/f control programmable characteristic voltage 3 / Uf char U3

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6301
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [Vrms]	10000.0 [Vrms]	0.0 [Vrms]

Description: The programmable characteristic for the U/f control is defined using 4 points and 0 Hz/p1310.

This parameter specifies the voltage of the third point along the characteristic.

Dependency: Refer to: p1310, p1311, p1320, p1321, p1322, p1323, p1324, p1326, p1327

p1326[0...n] U/f control characteristic frequency / Uf char f

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5300
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Hz]	10000.00 [Hz]	0.00 [Hz]

Description: The linear characteristic for the U/f control is defined by 0 Hz/p1319 and p1326/p1327.

This parameter specifies the voltage of the upper point along the characteristic.

Dependency: The U/f control is activated via p1317 = 1.

Refer to: p1317, p1319, p1327

Note: Linear interpolation is carried out between the points 0 Hz/p1319 and p1326/p1327.

p1326[0...n] U/f control programmable characteristic frequency 4 / Uf char f4

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6301
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Hz]	10000.00 [Hz]	0.00 [Hz]

Description: The programmable characteristic for the U/f control is defined using 4 points and 0 Hz/p1310.

This parameter specifies the frequency of the fourth point along the characteristic.

Dependency: Selects the freely programmable characteristic using p1300 = 3.

The following applies for the frequency values:

p1320 <= p1322 <= p1324 <= p1326

Otherwise, a standard characteristic is used that contains the rated motor operating point.

Refer to: p1310, p1311, p1317, p1319, p1320, p1321, p1322, p1323, p1324, p1325, p1327

Note: Linear interpolation is carried out between the points 0 Hz/p1310, p1320/p1321 ... p1326/p1327. For output frequencies above p1326, the characteristic is extrapolated with the gradient between the characteristic points p1324/p1325 and p1326/p1327.

The voltage boost when accelerating (p1311) is also applied to the freely programmable U/f characteristic.

p1327[0...n] U/f control characteristic voltage / Uf char U

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5300
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [Vrms]	10000.0 [Vrms]	0.0 [Vrms]

Description: The linear characteristic for the U/f control is defined by 0 Hz/p1319 and p1326/p1327.

This parameter specifies the voltage of the upper point along the characteristic.

Dependency: The U/f control is activated via p1317 = 1.

Refer to: p1317, p1319, p1326

Note: Linear interpolation is carried out between the points 0 Hz/p1319 and p1326/p1327.

p1327[0...n] U/f control programmable characteristic voltage 4 / Uf char U4

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6301
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [Vrms]	10000.0 [Vrms]	0.0 [Vrms]

Description: The programmable characteristic for the U/f control is defined using 4 points and 0 Hz/p1310.
This parameter specifies the voltage of the fourth point along the characteristic.

Dependency: Selects the freely programmable characteristic using p1300 = 3.
Refer to: p1310, p1311, p1317, p1319, p1320, p1321, p1322, p1323, p1324, p1325, p1326

Note: Linear interpolation is carried out between the points 0 Hz/p1310, p1320/p1321 ... p1326/p1327.
The voltage boost when accelerating (p1311) is also applied to the freely programmable U/f characteristic.

p1330[0...n] CI: U/f control independent voltage setpoint / Uf U_set independ.

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 6301
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the voltage setpoint for U/f control with an independent voltage setpoint (p1300 = 19).

Dependency: Selects the U/f control with independent voltage setpoint via p1300 = 19.
Refer to: p1300

p1331[0...n] Voltage limiting / U_lim

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6300
P-Group: -	**Unit group:** 5_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
50.00 [Vrms]	2000.00 [Vrms]	1000.00 [Vrms]

Description: Limiting the voltage setpoint.
This means that the output voltage can be reduced with respect to the calculated maximum voltage r0071 and the start of field weakening.

Note: The output voltage is only limited if, as a result of p1331, the maximum output voltage (r0071) is fallen below.

p1333[0...n] U/f control FCC starting frequency / U/f FCC f_start

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6301
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Hz]	3000.00 [Hz]	0.00 [Hz]

Description: Sets the starting frequency at which FCC (Flux Current Control) is activated.

Dependency: The correct operating mode must be set (p1300 = 1, 6).

Warning: An excessively low value can result in instability.

Note: For p1333 = 0 Hz, the FCC starting frequency is automatically set to 6 % of the rated motor frequency.

p1334[0...n] U/f control slip compensation starting frequency / Slip comp start

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6310
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Hz]	3000.00 [Hz]	0.00 [Hz]

Description: Sets the starting frequency of the slip compensation.

Note: For p1334 = 0, the starting frequency of the slip compensation is automatically set to 6 % of the rated motor frequency.

p1335[0...n] Slip compensation scaling / Slip comp scal

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6300, 6310
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	600.0 [%]	0.0 [%]

Description: Sets the setpoint for slip compensation in [%] referred to r0330 (motor rated slip).

p1335 = 0.0 %: Slip compensation deactivated.

p1335 = 100.0 %: The slip is completely compensated.

Dependency: Prerequisite for a precise slip compensation for p1335 = 100 % are the precise motor parameters (p0350 ... p0360).

If the parameters are not precisely known, a precise compensation can be achieved by varying p1335.

For U/f control modes with ECO optimization (p1300 = 4, 7), slip compensation must be activated in order to guarantee correct operation.

Note: The purpose of slip compensation is to maintain a constant motor speed regardless of the applied load. The fact that the motor speed decreases with increasing load is a typical characteristic of induction motors.

For synchronous motors, this effect does not occur and the parameter has no effect in this case.

For U/f control modes, for textile applications (p1300 = 5, 6), slip compensation is internally deactivated, allowing the output frequency to be precisely adjusted.

If p1335 is changed during commissioning (p0009, p0010 > 0), then it is possible that the old value will no longer be able to be set. The reason for this is that the dynamic limits of p1335 have been changed by a parameter that was set when the drive was commissioned (e.g. p0300).

p1336[0...n] Slip compensation limit value / Slip comp lim val

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6310
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	600.00 [%]	250.00 [%]

Description: Sets the limit value for slip compensation in [%] referred to r0330 (motor rated slip).

r1337 CO: Actual slip compensation / Slip comp act val

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6310
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, REL, RESM	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the actual compensated slip [%] referred to r0330 (rated motor slip).

Dependency: p1335 > 0 %: Slip compensation active.

Refer to: p1335

p1338[0...n] U/f mode resonance damping gain / Uf Res_damp gain

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5300
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00	100.00	1.00

Description: Sets the gain for resonance damping for U/f control.

In U/f mode, the resonance damping function dampens oscillations that are frequently experienced by induction motors in certain speed ranges and by synchronous motors above even low speeds.

Dependency: Refer to: p1317, p1339, p1349

Note: Resonance damping is active in the following ranges:

- Active: 3.1 Hz ... p1349
- Build-up (linear): 3.1 ... 4.77 Hz
- Reduction (linear): 0.95 * p1349 ... p1349

Where the value = 1 and at the oscillation amplitude of the rated current, the rated slip frequency is switched in for induction motors, while a frequency of 10 Hz is switched in for synchronous motors.

p1338[0...n] U/f mode resonance damping gain / Uf Res_damp gain

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6300, 6310
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00	100.00	0.00

Description: Sets the gain for resonance damping for U/f control.

Dependency: Refer to: p1300, p1339, p1349

Note: The resonance damping function dampens active current oscillations that frequency occur under no-load conditions.

The resonance damping is active in a range from approximately 6 % of the rated motor frequency (p0310). The shutoff frequency is determined by p1349.

For the open-loop control modes p1300 = 5 and 6 (textile sectors), the resonance damping is internally disabled in order that the output frequency can be precisely set.

p1339[0...n] U/f mode resonance damping filter time constant / Uf Res_damp T

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5300
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1.00 [ms]	1000.00 [ms]	20.00 [ms]

Description: Sets the filter time constant for resonance damping for U/f control.

Dependency: Refer to: p1317, p1338, p1349

Note: The filter time constant must be greater than the oscillation period of the oscillation to be dampened.

p1339[0...n] U/f mode resonance damping filter time constant / Uf Res_damp T

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6310
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1.00 [ms]	1000.00 [ms]	20.00 [ms]

Description: Sets the filter time constant for resonance damping for U/f control.

Dependency: Refer to: p1300, p1338, p1349

p1340[0...n] I_max frequency controller proportional gain / I_max_ctrl Kp

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6300
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	0.500	0.000

Description: Sets the proportional gain of the I_max frequency controller.

The I_max controller reduces the drive converter output current if the maximum current (r0067) is exceeded.

In the U/f operating modes (p1300) for the I_max control, one controller is used that acts on the output frequency and one controller that acts on the output voltage. The frequency controller reduces the current by decreasing the converter output frequency. The frequency is reduced down to a minimum value (equaling twice rated slip). If the overcurrent condition cannot be successfully resolved using this measure, then the drive converter output voltage is reduced using the I_max voltage controller. Once the overcurrent condition has been resolved, the drive is accelerated along the ramp set in p1120 (ramp-up time).

Dependency: In the U/f modes (p1300) for textile applications and for external voltage setpoints, only the I_max voltage controller is used.

Notice: When deactivating the I_max controller, the following must be carefully observed:

When the maximum current (r0067) is exceeded, the output current is no longer reduced. The drive is switched off when the overcurrent limits are exceeded.

Note: The I_max limiting controller becomes ineffective if the ramp-function generator is deactivated with p1122 = 1.

p1341 = 0:

I_max frequency controller deactivated and I_max voltage controller activated over the complete speed range.

p1341[0...n] I_max frequency controller integral time / I_max_ctrl Tn

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6300
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	50.000 [s]	0.300 [s]

Description: Sets the integral time for the I_max frequency controller.

Dependency: Refer to: p1340

Note: When p1341 = 0, the current limiting controller influencing the frequency is deactivated and only the current limiting controller influencing the output voltage remains active (p1345, p1346).

r1343 CO: I_max controller frequency output / I_max_ctrl f_outp

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6300
P-Group: V/f open-loop control	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the effective frequency limit.

Dependency: Refer to: p1340

r1344 I_max controller voltage output / I_max_ctrl U_outp

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6300
P-Group: V/f open-loop control	**Unit group:** 5_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Displays the amount by which the converter output voltage is reduced.

Dependency: Refer to: p1340

p1345[0...n] DC braking proportional gain / DCBRK Kp

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6300, 7017
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	100000.000	0.000

Description: Sets the proportional gain for DC braking (p1230, p1231).

Dependency: Refer to: p1346

Note: Current controller adaptation is not effective for DC braking.

p1345[0...n] I_max voltage controller proportional gain / I_max_U_ctrl Kp

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6300, 7017
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	100000.000	0.000

Description: Sets the proportional gain for the I_max voltage controller.

Dependency: Refer to: p1340

Note: The controller settings are also used in the current controller of the DC braking (refer to p1232).

p1346[0...n] DC braking integral time / DCBRK Tn

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6300, 7017
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [ms]	50.000 [ms]	0.030 [ms]

Description: Sets the integral time for DC braking (p1230, p1231).

Dependency: Refer to: p1345

Note: For p1346 = 0, the following applies:
The integral time of DC braking is deactivated.

p1346[0...n] I_max voltage controller integral time / I_max_U_ctrl Tn

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6300, 7017
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	50.000 [s]	0.030 [s]

Description: Sets the integral time for the I_max voltage controller.

Dependency: Refer to: p1340

Note: The controller settings are also used in the current controller of the DC braking (refer to p1232).

For p1346 = 0, the following applies:

The integral time of the I_max voltage controller is deactivated.

r1348 CO: U/f control Eco factor actual value / Uf Eco fac act v

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6300, 6301
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the economic factor determined for optimizing motor consumption.

Dependency: Refer to: p1335

Note: The value is only determined for operating modes with Economic (p1300 = 4, 7).

p1349[0...n] U/f mode resonance damping maximum frequency / Uf res_damp f_max

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Hz]	3000.00 [Hz]	3000.00 [Hz]

Description: Sets the maximum output frequency for resonance damping for U/f control.

Resonance damping is inactive above this output frequency.

Dependency: Refer to: p1338, p1339

Note: Resonance damping is active in the following ranges:

- Active: 3.1 Hz ... p1349
- Build-up (linear): 3.1 ... 4.77 Hz
- Reduction (linear): 0.95 * p1349 ... p1349

p1349[0...n] U/f mode resonance damping maximum frequency / Uf res_damp f_max

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6310
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Hz]	3000.00 [Hz]	0.00 [Hz]

Description: Sets the maximum output frequency for resonance damping for U/f control.

Resonance damping is inactive above this output frequency.

Dependency: Refer to: p1338, p1339

Note: For p1349 = 0, the changeover limit is automatically set to 95 % of the rated motor frequency - however, to a max. of 45 Hz.

p1350[0...n] U/f control soft start / U/f soft start

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 6300
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Sets whether the voltage is continuously increased during the magnetizing phase (p1350 = 1, On) or whether it jumps directly to the voltage boost (p1350 = 0, Off).

Value:
0: OFF
1: ON

Dependency: The function is not effective for p1300 = 15.

Note: The settings for this parameter have the following advantages and disadvantages:

0 = off (jump directly to voltage boost)

Advantage: Flux is established quickly -> torque is quickly available

Disadvantage: The motor can move while it is being magnetized

1 = on (voltage is continually established)

Advantage: The motor is unlikely to rotate

Disadvantage: The flux is established slower -> torque is available later

p1351[0...n] CO: Motor holding brake starting frequency / Brake f_start

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6310
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-300.00 [%]	300.00 [%]	0.00 [%]

Description: Sets the frequency setting value at the slip compensation output for starting up with motor holding brake.

Dependency: When setting p1351 > 0, then slip compensation is automatically activated (p1335 = 100 %).

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

Note: A value of 100% corresponds to the motor rated slip (r0330).

p1356[0...n] CI: U/f control angular setpoint / Uf ang setpoint

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** -
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2005	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the differential angular generation for U/f control.

p1358[0...n] Angular difference symmetrizing actual angle / Sym act angle

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the dead time for the symmetrizing of the actual angle value for the differential angular generation.

The selected multiplier refers to the current controller clock cycle (dead time= p1358 * p0115[0]).

r1359 CO: Angular difference / Angular difference

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2005	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°]	- [°]	- [°]

Description: Displays the output of the differential angular generation.

Note: The difference between the setpoint angle, read-in in p1356 and the actual value of the U/f control delayed with p1358 is displayed.

p1360 Braking chopper braking resistor cold / Br_chop R cold

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [ohm]	10.000 [ohm]	0.000 [ohm]

Description: Sets the braking resistor for the braking chopper.

Dependency: Select operation with braking resistor: p1300 = 15

Refer to: p1362, r1363, p1364

Refer to: A06921, F06922

p1362[0...1] Braking chopper activation threshold / Br_chop thresh

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [V]	1158 [V]	[0] 0 [V] [1] 60 [V]

Description: Sets the activation threshold for the brake chopper.

The hysteresis defines the range of the output voltage from zero up to the maximum voltage.

Index: [0] = Braking chopper threshold value
[1] = Braking chopper hysteresis

Dependency: Select operation with braking resistor: p1300 = 15

Refer to: p1360, r1363, p1364

Refer to: A06921, F06922

r1363 CO: Braking chopper output voltage / Br_chop U_output

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 5_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Displays the actual power unit output voltage (Motor Module) in braking chopper operation.

Dependency: Select operation with braking resistor: p1300 = 15

Refer to: p1360, p1362, p1364

Refer to: A06921, F06922

p1364 Braking chopper resistor asymmetry / Br_chop R asym

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: V/f open-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	100.00 [%]	25.00 [%]

Description: Sets the percentage value for the asymmetry detection for the braking chopper.

The ripple of the absolute current r0068 is monitored.

The reference value is the average value of the absolute current.

The minimum monitoring value is 10 % of the power unit rated current.

Dependency: Select operation with braking resistor: p1300 = 15

Refer to: p1360, p1362, r1363

Refer to: F06922

Note: For p1364 = 0, asymmetry identification is deactivated.

Asymmetry can also be displayed if the absolute current manifests ripple, caused by load-related ripple of the DC link voltage. In this particular case, p1364 must be increased.

r1369[0] CO: Phase current actual value filtered / I_ph act val filt

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6300
P-Group: V/f open-loop control	**Unit group:** 6_5	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [A]	- [A]	- [A]

Description: Displays the measured actual phase currents as peak value.

This value is averaged for the display in the speed controller sampling time (p0115[1]).

Index: [0] = Phase U

Dependency: The signal is only displayed in operating mode p1300 = 19 (U/f control with independent voltage setpoint) and is used to control DC currents (e.g. for excitation (field) controllers).

p1381[0...n] U/f control modulation limit reduction / U/f mod_lim reduce

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6723
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	40.0 [%]	0.0 [%]

Description: Reduction of the maximum modulation depth when compared to r0073 to reduce the maximum output voltage r0071.

The maximum modulation depth is reduced no more than the ideal overcontrol limit of 100 %.

Note: If p1803 is increased for operation with closed-loop speed/torque control, then the modulation limit for operation with U/f control can in turn be reduced in order to avoid overcontrol and the associated current ripple.

p1400[0...n] Closed-loop control configuration / Ctrl config

HLA			
	Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 2
	Data type: Unsigned32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	0000 0000 0000 0000 0000 0000 0000 0000 bin

Description: Sets the configuration for the closed-loop control.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Force limiting mode 1	ON	OFF	-
01	Force limiting mode 2	ON	OFF	-
02	Stiction compensation with force controller	ON	OFF	-
03	Reference model velocity setpoint I component	ON	OFF	-
05	Kp/Tv adaptation	ON	OFF	-
07	Interpolation velocity controller precontrol active	Yes	No	-
09	Stiction compensation voltage pulse	ON	OFF	-
10	Speed precontrol	For symmetrizing	To setp_filter	-
11	Stiction compensation voltage ramp	ON	OFF	-
14	Activate force controller with setpoint p1511	Yes	No	-
16	I component for limiting	Enable	Hold	-

Note: For bit 00:

Force limiting when the force limit is exceeded as replacing mode. This function is only recommended for low velocities, and requires a precise compensation of the characteristic.

For bit 01:

The closed-loop force control is active if "Travel to end stop" (BI: p1545) is selected and the force limit has been exceeded. The force controller remains active until "Travel to end stop" is deselected.

For bit 02:

The force for both velocity signs must be constant, and parameterized in p1555 and p1556. Further, all of the preconditions for operation of the force controller must be fulfilled.

For bit 05:

P gain and derivative-action time of the velocity controller are adapted via the position. The position adaptation only becomes effective if a piston calibration has been performed, and the piston position is known (r1407.3 = 1).

For bit 09:

The stiction is essentially compensated without force controller and pressure sensors with a voltage pulse for reversal of the traversing direction. The duration and magnitude of the voltage pulse must be set in p1570, p1571 and p1572. Further, the standstill threshold in p1552 is effective. The piston must be calibrated. It is not necessary to know the adhesive forces.

For bit 11:

The stiction is essentially compensated without force controller and pressure sensors with a voltage ramp for reversal of the traversing direction. The duration and magnitude of the voltage ramp must be set in p1570, p1571 and p1572. Further, the standstill threshold in p1552 is effective. The piston must be calibrated. It is not necessary to know the adhesive forces. For elastic motion during the force change, a ramp-shaped velocity can be advantageous.

For bit 14:

The force controller is continuously activated, and the force setpoint entered via the sources of p1511 and p1512 (scaling). The force setpoint is limited to r1538 and r1539. All of the preconditions for operation of the force controller must be fulfilled.

p1400[0...n] Speed control configuration / n_ctrl config

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5019, 5490
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 0000 0011 1010 0000 bin

Description: Sets the configuration for the closed-loop speed control.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
03	Reference model speed setpoint I component	ON	OFF	5030
04	Torque limiting active in motoring/regenerative mode	Yes	No	-
05	Kp/Tn adaptation active	Yes	No	-
07	Interpolation speed precontrol active	Yes	No	-
08	Interpolation torque setpoint active	Yes	No	-
09	Damping for encoderless open-loop controlled oper.	Yes	No	-
10	Speed precontrol	For symmetrizing	For setp_filter 2	-
11	Encoderless oper. speed actual value starting value	setpoint	0.0	-
12	Encoderless operation changeover	Steady-state	When accelerating	-
13	Motoring/regenerative depending on	Speed setpoint	Speed actual value	-
16	I component for limiting	Enable	Hold	-
17	DSC position controller limit active	Yes	No	3090
18	Moment of inertia estimator active	Yes	No	-
22	Obtain moment of inertia estimator value for pulse inhibit	Yes	No	-

Note: For bit 07:

The interpolator is only active for isochronous PROFIBUS operation, and with the sign-of-life received from the master (STW2.12 ... STW2.15). Further, for active Dynamic Servo Control (DSC) an additional dead time of one speed controller sampling time occurs.

For bit 10:

The precontrol signal via connector input p1430 only becomes effective at p1402.4 = 1 (torque-speed precontrol with encoder) at p1400.10 = 0 (for setp_filter 2).

For bit 11:

If the motor rotates when the pulses are enabled, then we recommend p1400.11 = 1 (starting value = setpoint) with the matching sign.

If the motor remains stationary (zero speed) when the pulses are enabled, the we recommend p1400.11 = 0 (starting value = 0.0).

For bit 12:

If a changeover is made from operation with encoder to encoderless operation while accelerating (with the threshold from p1404), then we recommend p1400.12 = 0.

If the changeover is made from operation with encoder to encoderless at constant speed/velocity (e.g. with a DDS changeover or if there is an encoder fault via p0491) then we recommend p1400.12 = 1.

For bit 17:

In order to avoid limit cycles (e.g. as a result of disturbing torques) for DSC with a high Kv factor, the position controller output can be limited using a root function corresponding to the currently available deceleration capability of the drive. In this case, the total moment of inertia (J_tot) must be parameterized precisely (if necessary, determine the moment of inertia p0341, p0342 and p1498 using the motor data identification). If the limiting function responds, then this is indicated in r1407.19.

As a result of the absolute value limiting above n[rpm] = 0.91 x M_max[Nm] / (Kv[1000/min] x J_tot[kgm²]) the dynamic response of the position controller is no longer linear (M_max, see r1538, r1539). This is the reason that speed precontrol is recommended.

For bit 18:

Only active when the "moment of inertia estimator" function module is active (r0108.10 = 1).

The result of the moment of inertia estimator is displayed in r1493 when the function is activated.

The function assumes that speed changes are made without load change. If a speed change must be realized with associated load change, then during this time, the estimated moment of inertia should be frozen using binector input p1502.

For bit 22:

Only active when the "moment of inertia estimator" function module is active (r0108.10 = 1) and when the moment of inertia estimator is active (p1400.18 =1).

For bit = 0, the following applies:

The starting value after withdrawing the pulse inhibit is the parameterized moment of inertia (p0341 * p0342 + p1498).

For bit = 1, the following applies:

The starting value after withdrawing the pulse inhibit is the last estimated value for the moment of inertia.

p1400[0...n] Velocity control configuration / v_ctrl config

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5019, 5490
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 0000 0011 1010 0000 bin

Description: Sets the configuration for the closed-loop velocity control.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
03	Reference model velocity setpoint I component	ON	OFF	5030
04	Force limiting active in motoring/regenerative mode	Yes	No	-
05	Kp/Tn adaptation active	Yes	No	-
07	Interpolation velocity controller precontrol active	Yes	No	-
08	Interpolation force setpoint active	Yes	No	-
09	Damping for encoderless open-loop controlled oper.	Yes	No	-
10	Velocity precontrol	For symmetrizing	For setp_filter 2	-
11	Encoderless oper. velocity actual value starting value	setpoint	0.0	-
12	Encoderless operation changeover	Steady-state	When accelerating	-
13	Motoring/regenerative depending on	Speed setpoint	Speed actual value	-
16	I component for limiting	Enable	Hold	-
17	DSC position controller limit active	Yes	No	3090
18	Moment of inertia estimator active	Yes	No	-
22	Obtain moment of inertia estimator value for pulse inhibit	Yes	No	-

Note: For bit 07:

The interpolator is only active for isochronous PROFIBUS operation, and with the sign-of-life received from the master (STW2.12 ... STW2.15). Further, for active Dynamic Servo Control (DSC) an additional dead time of one velocity controller sampling time occurs.

For bit 10:

The precontrol signal via connector input p1430 only becomes effective at p1402.4 = 1 (force-velocity precontrol with encoder) at p1400.10 = 0 (for setp_filter 2).

For bit 11:

If the motor rotates when the pulses are enabled, then we recommend p1400.11 = 1 (starting value = setpoint) with the matching sign.

If the motor remains stationary (zero speed) when the pulses are enabled, the we recommend p1400.11 = 0 (starting value = 0.0).

For bit 12:

If a changeover is made from operation with encoder to encoderless operation while accelerating (with the threshold from p1404), then we recommend p1400.12 = 0.

If the changeover is made from operation with an encoder to encoderless at constant velocity (e.g. with a DDS changeover or if there is an encoder fault via p0491), then we recommend p1400.12 = 1.

For bit 17:

In order to avoid limit cycles (e.g. as a result of disturbing forces) for DSC with a high Kv factor, the position controller output can be limited using a root function corresponding to the currently available deceleration capability of the drive. In this case, the total mass (m_tot) must be parameterized precisely (if necessary, determine the mass p0341, p0342 and p1498 using the motor data identification). If the limiting function responds, then this is indicated in r1407.19.

As a result of the absolute value limiting above v[m/min] = 5.7 x F_max[N] / (Kv[1000/min] x m_tot[kg]), the dynamic response of the position controller is no longer linear (F_max, see r1538, r1539). This is the reason that velocity precontrol is recommended.

For bit 18:

Only active when the "moment of inertia estimator" function module is active (r0108.10 = 1).

The result of the moment of inertia estimator is displayed in r1493 when the function is activated.

The function assumes that the velocity changes without the load changing. If the velocity must be changed with associated load change, then during this time, the estimated mass should be frozen using binector input p1502.

p1400[0...n] Speed control configuration / n_ctrl config

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6490
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 1000 0000 0010 0001 bin

Description: Sets the configuration for the closed-loop speed control.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Automatic Kp/Tn adaptation active	Yes	No	6040
01	Sensorless vector control freeze I comp	Yes	No	6040
02	Acceleration precontrol signal source	External (p1495)	Internal (n_set)	6031
03	Reference model speed setpoint I component	ON	OFF	6031
05	Kp/Tn adaptation active	Yes	No	6040
06	Free Tn adaptation active	Yes	No	6050
14	Torque precontrol	Always active	For n_ctrl enab	6060
15	Sensorless vector control speed precontrol	Yes	No	6030
16	I component for limiting	Enable	Hold	6030
18	Moment of inertia estimator active	Yes	No	6030
19	Anti-windup for integral component	Yes	No	6030
20	Acceleration model	ON	OFF	6031
22	Obtain moment of inertia estimator value for pulse inhibit	Yes	No	6030
23	Acceleration model (with speed encoder)	Yes	No	6030
24	Moment of inertia estimator fast estimation active	Yes	No	6030
25	Acceleration torque instantaneous in the I/f mode	Yes	No	-

Note: For bit 01:

When the bit is set, the I component of the speed controller is kept when changing into the open-loop controlled mode.

For bit 16:

When the bit is set, the integral component of the speed controller is only held if it reaches the torque limit.

For bit 19:

When this bit is set, speed overshoots when accelerating along the torque limit and for load surges are reduced. If the setpoint torque reaches the torque limit, then the integral component is set to the difference between the torque limit and P component.

For bits 20, 23:

The acceleration model for the speed setpoint is only active if p1496 is not zero. When the acceleration model and the ramp-function generator (p1145) are simultaneously activated, it is recommended that p1400 bit 16 is set (this allows the I component to run freely up to the torque limit).

For bit 24:

When the bit is set, assuming that the motor accelerates smoothly, the moment of inertia can be determined faster.

For bit 25:

When the bit is set, for high dynamic starting in the I/f mode, the acceleration precontrol torque smoothing only has a short minimum time (4 ms).

p1401[0...n] Flux control configuration / Flux ctrl config

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** 6491
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 1110 bin

Description: Sets the configuration for flux setpoint control

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Flux setpoint soft starting active	Yes	No	6722, 6725
01	Flux setpoint differentiation active	Yes	No	6723, 6726
02	Flux build-up control active	Yes	No	6722, 6723, 6725, 6726
03	Flux characteristic load-dependent	Yes	No	6725
04	Flux controller (ASM with encoder)	Yes	No	-
05	Flux impression (ASM with encoder)	with model chngov	From 30 % n_rated	-
06	Quick magnetizing	Yes	No	6722
07	Precontrol speed limitation	Yes	No	6640
08	Speed limiting controller	With M_limits	With I_limits	6640
09	Dynamic load-dependent flux boost	Yes	No	6790, 6823
10	Flux boost low speed	Yes	No	6790, 6823
13	Precontrol characteristic (PESM)	Yes	No	-
14	Efficiency optimization 2 active	Yes	No	6722, 6837

Note:

For bit 00 (only for induction motors):

Initially, the flux is only established with a low rate of rise when magnetizing the induction motor. The flux setpoint p1570 is reached again at the end of the magnetizing time p0346.

For bit 01 (only for induction motors and separately excited synchronous motors):

The flux differentiation can be switched out if a significant ripple occurs in the field-generating current setpoint (r0075) when entering the field weakening range. However, this is not suitable for fast acceleration operations because then, the flux decays more slowly and the voltage limiting responds.

For bit 02 (only for induction motors):

The flux build-up control operates during the magnetizing phase p0346 of the induction motor. If it is switched out, a constant current setpoint is injected and the flux is built up corresponding to the rotor time constant. When quick magnetizing (p1401.6 = 1) is selected and when flux build-up control is de-energized alarm A07416 is displayed.

For bit 03:

Separately excited synchronous machine: flux characteristic is calculated as a function of the load.

Synchronous-reluctance motor (RESM): activation of the load-dependent optimum flux characteristic.

For bit 04 (only for induction motors with encoder):

The flux controller does not operate in the range of the current model and not in the range of the flux impression (refer to p1750.4).

For bit 05 (only for induction motors with encoder):

Extremely rugged control operation is possible by directly toggling between the current model and flux impression. We therefore recommend that, in addition, the time-controlled model change is switched in (p1750.4 = 1) or the model changeover limits are significantly increased (p1752 > 0.35 * p0311; p1753 = 5 %).

For bit 06 (not for induction motors):

Magnetizing is carried out with the maximum current (0.9 * r0067 <= p1603 * r0209). Magnetization has been completed if the flux threshold value p1573 or the magnetizing time p0346 has been reached. With active identification of the stator resistance (see p0621) quick magnetizing is internally deactivated and alarm A07416 is displayed. During a flying restart of a rotating motor (see p1200) no quick magnetizing takes place.

For bit 07:

If the speed of the drive exceeds the effective speed limit of the speed limiting controller, the torque limit is reduced linearly to zero as the deviation becomes greater. This reduces the integral component of the speed controller and, in turn, the overshoot during load shedding (see also F07901 and p2162).

For bit 08:

The speed limiting controller sets the speed to maximum by opening the torque limits as far as the current limits (bit 8 = 0) or taking the torque limits into account (bit 8 = 1).

For bit 09:

Synchronous reluctance motor (RESM):

Dynamic increase in the flux setpoint when torque is quickly established.

For bit 10:

Synchronous reluctance motor (RESM):

For load-dependent optimum flux characteristic (p1401.3 = 1) the flux setpoint is increased at low speeds.

Flux boost at low speeds is not effective when using an encoder - or for encoderless operation with HF signal injection (p1750.5).

For bit 13:

PESM: activation of the load-dependent precontrol characteristic

For bit 14:

When the function is activated, the following applies:

- the optimum flux is calculated and the power loss is entered for optimization purposes
- the efficiency optimization (p1580) is not active.

It only makes sense to activate this function if the dynamic response requirements of the speed controller are low.

In order to avoid oscillations, if required, the speed controller parameters should be adapted (increase Tn, reduce Kp). Further, the smoothing time of the flux setpoint filter (p1582) should be increased.

p1402[0...n] Closed-loop current control and motor model configuration / I_ctrl config

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0100 bin

Description: Sets the configuration for the closed-loop control and the motor model.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
01	Park encoder for n_act > p1404	Yes	No	-
02	Current controller adaptation active	Yes	No	-
03	Stall power limiting motoring	Yes	No	-
04	Torque-speed precontrol with encoder	Yes	No	-
05	Precontrol voltage drop across the resistance	Yes	No	-
06	Higher stall power	Yes	No	-

Note: For bit 01:

When the bit is set, the encoder is parked as soon as the actual speed is greater than the changeover speed (p1404). The encoder state is indicated in r0481.14.

For bit 02:

The current controller adaptation (p0391 ... p0393) is only calculated when the bit is set.

For bit 04:

Only effective for operation with encoder.

When the bit is set, the highest dynamic performance is achieved with p1517 = 0 ms.

p1402[0...n] Closed-loop current control and motor model configuration / I_ctrl config

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0100 bin

Description: Sets the configuration for the closed-loop control and the motor model.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
01	Park encoder for v_act > p1404	Yes	No	-
02	Current controller adaptation active	Yes	No	-
03	Stall power limiting motoring	Yes	No	-
04	Force-velocity precontrol with encoder	Yes	No	-
05	Precontrol voltage drop across the resistance	Yes	No	-
06	Higher stall power	Yes	No	-

Note: For bit 01:

When the bit is set, the encoder is parked as soon as the actual velocity is greater than the changeover velocity (p1404). The encoder state is indicated in r0481.14.

For bit 02:

The current controller adaptation (p0391 ... p0393) is only calculated when the bit is set.

p1402[0...n] Closed-loop current control and motor model configuration / I_ctrl config

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0001 bin

Description: Sets the configuration for the closed-loop control and the motor model.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Speed-following error correction active	Yes	No	-
02	Current controller adaptation active	Yes	No	-
07	Taking into account slip for speed and frequency calculation	Yes	No	-
08	Changeover current model/voltage model with speed setpoint	Yes	No	-
10	d-current controller adaptation model-based	Yes	No	-
11	Ldiq/dt precontrol model at the voltage limit	Yes	No	-
12	q-current controller adaptation model-based	Yes	No	-
13	Current controller decoupling filter	Yes	No	-
15	Current controller precontrol active for Vdc controller oper.	Yes	No	-

Note: For bit 00:

When the bit is set, the speed following error is compensated that is obtained as a result of the smoothing time constant in p1441.

For bit 02:

The current controller adaptation (p0391 ... p0393) is only calculated when the bit is set.

For bit 07:

Only with encoderless control of separately excited synchronous motors.

For bit 08:

Only with encoderless control of separately excited synchronous motors.

For bit 11:

Model for the dynamic voltage precontrol Ldi/dt of the q current controller when reaching the voltage limit with the I component held (see p0500 = 4).

For bit 13 (only permanent-magnet synchronous motor):

Operation in the field weakening range is stabilized when the bit is set.

For bit 15:

For DC link voltage control (see function diagram 7960) the dynamic current controller precontrol is activated (scalable using p1702, p1703).

p1404[0...n] Encoderless operation changeover speed / Encoderl op n_chg

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5019, 5060
P-Group: Closed-loop control	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	210000.00 [rpm]

Description: Sets the speed to change over between operation with and without an encoder.

Above this speed, the drive system is automatically operated in encoderless mode.

Notice: General conditions for encoderless operation can be found in the following literature:

SINAMICS S120 Function Manual Drive Functions

Note: The changeover speed applies when changing over between operation with and without encoder.

With p1404 > 0, the effective changeover speed is limited to values greater than or equal to p1755 in order to avoid controlled operation.

Separate speed controllers should be set when operating with and without encoder.

- Operation with encoder: p1460 (Kp), p1462 (Tn), p1461, p1463, p1457, p1458 (speed controller adaptation)
- Operation without encoder: p1470 (Kp), p1472 (Tn)

For encoderless operation (p1404 = 0 or p1300 = 20), the following applies:

- the following condition must be fulfilled: p1800 >= 1 / (4 * p0115[0])
- for motors with a low power rating (< 300 W), we recommend to set p1800 >= 1 / p0115[0].
- although pulse frequencies p1800 = 1/ (n * p0115[0]) with n = 3 or 4 are possible, for p0115[0] > 62.5 µs, they result in unsteady closed-loop control and should be avoided.

p1404[0...n] Encoderless operation changeover velocity / Encoderl op v_chg

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5019, 5060
P-Group: Closed-loop control	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [m/min]	1000.00 [m/min]	1000.00 [m/min]

Description: Sets the velocity to change over between operation with and without an encoder.

Above this velocity, the drive system is automatically operated in encoderless mode.

Notice: General conditions for encoderless operation can be found in the following literature:

SINAMICS S120 Function Manual Drive Functions

Note: The changeover velocity applies when changing over between operation with and without an encoder.

With p1404 > 0, the effective changeover velocity is limited to values greater than or equal to p1755 in order to avoid controlled operation.

Separate velocity controllers should be set when operating with and without an encoder.

- Operation with encoder: p1460 (Kp), p1462 (Tn), p1461, p1463, p1457, p1458 (velocity controller adaptation)
- Operation without encoder: p1470 (Kp), p1472 (Tn)

For encoderless operation (p1404 = 0 or p1300 = 20), the following applies:

- the following condition must be fulfilled: p1800 >= 1 / (4 * p0115[0])
- for motors with a low power rating (< 300 W), we recommend to set p1800 >= 1 / p0115[0].
- although pulse frequencies p1800 = 1/ (n * p0115[0]) with n = 3 or 4 are possible, for p0115[0] > 62.5 µs, they result in unsteady closed-loop control and should be avoided.

r1406.8...12 CO/BO: Control word speed controller / STW n_ctrl

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2520
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the control word of the speed controller.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
08	Travel to fixed stop active	Yes	No	-
12	Torque control active	Yes	No	-

r1406.8...12 CO/BO: Control word velocity controller / STW v_ctrl

SERVO (Lin), HLA, SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2520
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the control word of the velocity controller.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
08	Travel to fixed stop active	Yes	No	-
12	Force control active	Yes	No	-

r1406.4...15 CO/BO: Control word speed controller / STW n_ctrl

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2520
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the control word of the speed controller.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
04	Hold speed controller I component	Yes	No	6040
05	Set speed controller I component	Yes	No	6040
08	Travel to fixed stop	Yes	No	8012
11	Droop enable	Yes	No	6030
12	Torque control active	Yes	No	6060
15	Set speed adaptation controller I component	Yes	No	-

r1407.0...20 CO/BO: Status word controller / ZSW ctrl

HLA

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status word of the controller.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Force limiting mode 1 parameterized	Yes	No	-
01	Force limiting mode 1 active	Yes	No	-
02	Force control active	Yes	No	-
03	Piston position known	Yes	No	-
04	Velocity setpoint from DSC	Yes	No	-
05	Velocity controller I component frozen	Yes	No	-
06	Velocity controller I component set	Yes	No	-
07	Force limiting active	Yes	No	-
08	Upper force limit active	Yes	No	-
09	Lower force limit active	Yes	No	-
10	Travel to fixed stop active	Yes	No	-
11	Velocity setpoint limited	Yes	No	-
12	Stiction compensation parameterized	Yes	No	-
13	Stiction compensation active	Yes	No	-
14	Force limiting mode 2 parameterized	Yes	No	-
15	Force limiting mode 2 active	Yes	No	-
16	Closed-loop force control permanently active	Yes	No	-
17	Valve setpoint limited	Yes	No	-
18	Valve deviation	Yes	No	-
19	Adaptation velocity controller	Yes	No	-
20	Absolute position known	Yes	No	-

r1407.0...26 CO/BO: Status word speed controller / ZSW n_ctrl

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2522
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status word of the speed controller.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	U/f control active	Yes	No	-
01	Encoderless operation active	Yes	No	-
02	Torque control active	Yes	No	8010
04	Speed setpoint from DSC	Yes	No	2522
05	Speed controller I component frozen	Yes	No	-
06	Speed controller I component set	Yes	No	-
07	Torque limit reached	Yes	No	5610
08	Upper torque limit active	Yes	No	5610
09	Lower torque limit active	Yes	No	5610
11	Speed setpoint limited	Yes	No	-
13	Encoderless operation due to a fault	Yes	No	-
19	DSC position controller limited	Yes	No	3090
20	DSC with spline on	Yes	No	-
21	Speed precontrol for DSC with spline on	Yes	No	-
22	Torque precontrol for DSC with spline on	Yes	No	-
23	Torque-speed precontrol with encoder on	Yes	No	-

24	Moment of inertia estimator active	Yes	No	-
25	Load estimate active	Yes	No	-
26	Moment of inertia estimator stabilized	Yes	No	-

Note: For bit 04:

The following conditions must be fulfilled to set to 1:

- connector input p1190 and p1191 must be interconnected with a signal source that is not equal to zero.
- OFF1, OFF3 or STOP2 must not be active.
- it is not permissible that the motor data identification is active.
- Master control must not be active.

The following conditions can mean that the DSC function is not active in spite of the fact that the bit is set:

- isochronous operation is not selected (r2054 not equal to 4).
- the PROFIBUS is not isochronous (r2064[0] not equal to 1).
- DSC is not activated on the control side, therefore KPC = 0 is transferred as value to connector input p1191.

r1407.0...26 CO/BO: Status word velocity controller / ZSW v_ctrl

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2522
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status word of the velocity controller.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	U/f control active	Yes	No	-
01	Encoderless operation active	Yes	No	-
02	Force control active	Yes	No	8010
04	Velocity setpoint from DSC	Yes	No	2522
05	Velocity controller I component frozen	Yes	No	-
06	Velocity controller I component set	Yes	No	-
07	Force limit reached	Yes	No	5610
08	Upper force limit active	Yes	No	5610
09	Lower force limit active	Yes	No	5610
11	Velocity setpoint limited	Yes	No	-
13	Encoderless operation due to a fault	Yes	No	-
19	DSC position controller limited	Yes	No	3090
20	DSC with spline on	Yes	No	-
21	Velocity precontrol for DSC with spline on	Yes	No	-
22	Force precontrol for DSC with spline on	Yes	No	-
23	Torque-speed precontrol with encoder on	Yes	No	-
24	Mass estimate active	Yes	No	-
25	Load estimate active	Yes	No	-
26	Moment of inertia estimator stabilized	Yes	No	-

Note: For bit 04:

The following conditions must be fulfilled to set to 1:

- connector input p1190 and p1191 must be interconnected with a signal source that is not equal to zero.
- OFF1, OFF3 or STOP2 must not be active.
- it is not permissible that the motor data identification is active.
- Master control must not be active.

The following conditions can mean that the DSC function is not active in spite of the fact that the bit is set:

- isochronous operation is not selected (r2054 not equal to 4).
- the PROFIBUS is not isochronous (r2064[0] not equal to 1).
- DSC is not activated on the control side, therefore KPC = 0 is transferred as value to connector input p1191.

r1407.0...27 CO/BO: Status word speed controller / ZSW n_ctrl

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2522
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status word of the speed controller.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	U/f control active	Yes	No	-
01	Encoderless operation active	Yes	No	-
02	Torque control active	Yes	No	6030, 6060, 8010
03	Speed control active	Yes	No	6040
05	Speed controller I component frozen	Yes	No	6040
06	Speed controller I component set	Yes	No	6040
07	Torque limit reached	Yes	No	6060
08	Upper torque limit active	Yes	No	6060
09	Lower torque limit active	Yes	No	6060
10	Droop enabled	Yes	No	6030
11	Speed setpoint limited	Yes	No	6030
12	Ramp-function generator set	Yes	No	-
13	Encoderless operation due to a fault	Yes	No	-
14	I/f control active	Yes	No	-
15	Torque limit reached (without precontrol)	Yes	No	6060
17	Speed limiting control active	Yes	No	6640
23	Acceleration model activated	Yes	No	-
24	Moment of inertia estimator active	Yes	No	-
25	Load estimate active	Yes	No	-
26	Moment of inertia estimator stabilized	Yes	No	-
27	Moment of inertia estimator fast estimation active	Yes	No	-

r1408.0...9 CO/BO: Status word current controller / ZSW I_ctrl

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2530, 5040
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status word of the current controller.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Current control	Active	Not active	-
04	Limit Ud	Active	Not active	-
05	Limit Uq	Active	Not active	-
06	Positive limiting Iq	Active	Not active	-
07	Negative limiting Iq	Active	Not active	-
08	Limit iq_set	Active	Not active	-
09	Limit id_set	Active	Not active	-

Note: The set current limit is taken into account in upstream torque limiting. Bits 6, 7, and 8 are, therefore, only set in the event of overshoots on account of the current setpoint filter.

r1408.0...15 CO/BO: Status word current controller / ZSW I_ctrl

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2530
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status word of the current controller.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Current controller active	Active	Not active	-
01	Id control I component limiting	Active	Not active	6714
03	Voltage limiting	Active	Not active	6714
10	Speed adaptation limiting	Active	Not active	-
11	Speed adaptation speed deviation	Out tolerance	In tolerance	6730
12	Motor stalled	Yes	No	6730, 8020
13	Separately excited synchronous motor is excited	Yes	No	-
14	Current model SESM: magnetizing excitation current limited to 0	Yes	No	6726
15	Excitation current differential exceeded	Yes	No	6726

Note: For bit 11:

For operation with speed encoder, this bit is set as a result of steps/jumps in the speed signal (see p0492) or due to deviations at the adaptation controller output (see p1744).

p1409[0...n] Speed control extended configuration / n_ctrl ext config

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C1(3)	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Sets the extended configuration for the closed-loop speed control.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Interpolation supplementary torque active	Yes	No	5060

p1409[0...n] Velocity control extended configuration / v_ctrl ext config

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: C1(3)	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Sets the extended configuration for the closed-loop velocity control.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Interpolation supplementary force active	Yes	No	5060

p1412[0...n] TM41 increm. encoder emulation, speed setpoint filter deadtime / n_set dead time

TM41

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 9674
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [ms]	1.000 [ms]	0.000 [ms]

Description: Sets the delay of the speed setpoint for the incremental encoder emulation.

Note: The parameter is not effective in the SINAMICS operating mode (p4400 = 1).

p1413[0...n] Velocity actual value filter activation / v_act_filt act

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Setting for activating/deactivating the velocity actual value filter.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
01	General filter activation	Yes	No	-

Dependency: The velocity actual value filter is parameterized from p1446.

Refer to: p1699

p1413[0...n] Speed actual value filter activation / n_act_filt act

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** 5040, 5042, 5210
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Setting for activating/deactivating the speed actual value filter.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
01	General filter activation	Yes	No	-

Dependency: The speed actual value filter is parameterized from p1446.

p1413[0...n] Velocity actual value filter activation / v_act_filt act

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** 5040, 5042, 5210
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Setting for activating/deactivating the velocity actual value filter.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
01	General filter activation	Yes	No	-

Dependency: The velocity actual value filter is parameterized from p1446 and higher.

p1414[0...n] Velocity setpoint filter activation / v_set_filt act

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Setting for activating/deactivating the velocity setpoint filter.

Recommendation: If only one filter is required, filter 1 should be activated and filter 2 deactivated, to avoid excessive processing time.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Activate filter 1	Yes	No	-
01	Activate filter 2	Yes	No	-

Dependency: The individual velocity setpoint filters are parameterized as of p1415.

Refer to: p1699

p1414[0...n] Speed setpoint filter activation / n_set_filt act

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** 5020
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Setting for activating/deactivating the speed setpoint filter.

Recommendation: If only one filter is required, filter 1 should be activated and filter 2 deactivated, to avoid excessive processing time.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Activate filter 1	Yes	No	-
01	Activate filter 2	Yes	No	-

Dependency: The individual speed setpoint filters are parameterized as of p1415.

p1414[0...n] Velocity setpoint filter activation / v_set_filt act

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** 5020
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Setting for activating/deactivating the velocity setpoint filter.

Recommendation: If only one filter is required, filter 1 should be activated and filter 2 deactivated, to avoid excessive processing time.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Activate filter 1	Yes	No	-
01	Activate filter 2	Yes	No	-

Dependency: The individual velocity setpoint filters are parameterized as of p1415.

p1414[0...n] TM41 incr. encoder emulation speed setpoint filter activation / n_set_filt act

TM41

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** 9674
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Setting for activating/deactivating speed setpoint filter 1 for the incremental encoder emulation.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Activate filter 1	Yes	No	9674

Dependency: The speed setpoint filter can be parameterized using p1417 and p1418.

Refer to: p1417, p1418

Note: The parameter is not effective in the SINAMICS operating mode (p4400 = 1).

p1415[0...n] Velocity setpoint filter 1 type / v_setp_filt 1 type

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	2	0

Description: Sets the type for speed setpoint filter 1.

Value:
0: Low pass: PT1
1: Low pass: PT2
2: General 2nd order filter

Dependency: PT1 low pass: p1416

PT2 low pass: p1417, p1418

General filter: p1417 ... p1420

p1415[0...n] Speed setpoint filter 1 type / n_set_filt 1 type

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 5020
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	2	0

Description: Sets the type for speed setpoint filter 1.

Value:
0: Low pass: PT1
1: Low pass: PT2
2: General 2nd order filter

Dependency: PT1 low pass: p1416

PT2 low pass: p1417, p1418

General filter: p1417 ... p1420

p1415[0...n]	Velocity setpoint filter 1 type / v_setp_filt 1 type		
SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 5020
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	2	0

Description: Sets the type for speed setpoint filter 1.

Value:
0: Low pass: PT1
1: Low pass: PT2
2: General 2nd order filter

Dependency: PT1 low pass: p1416
PT2 low pass: p1417, p1418
General filter: p1417 ... p1420

p1416[0...n]	Velocity setpoint filter 1 time constant / v_set_filt 1 T		
HLA	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [ms]	5000.00 [ms]	0.00 [ms]

Description: Sets the time constant for the velocity setpoint filter 1 (PT1).

Dependency: Refer to: p1414, p1415

Note: This parameter is only effective if the filter is set as a PT1 low pass.

p1416[0...n]	Speed setpoint filter 1 time constant / n_set_filt 1 T		
SERVO, SERVO_AC, SERVO_I_AC	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5020
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [ms]	5000.00 [ms]	0.00 [ms]

Description: Sets the time constant for the speed setpoint filter 1 (PT1).

Dependency: Refer to: p1414, p1415

Note: This parameter is only effective if the filter is set as a PT1 low pass.

p1416[0...n]	Velocity setpoint filter 1 time constant / v_set_filt 1 T		
SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5020
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [ms]	5000.00 [ms]	0.00 [ms]

Description: Sets the time constant for the velocity setpoint filter 1 (PT1).

Dependency: Refer to: p1414, p1415

Note: This parameter is only effective if the filter is set as a PT1 low pass.

p1416[0...n] Speed setpoint filter 1 time constant / n_set_filt 1 T

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6020, 6030
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	5000.00 [ms]	0.00 [ms]

Description: Sets the time constant for the speed setpoint filter 1 (PT1).

p1417[0...n] Velocity setpoint filter 1 denominator natural frequency / v_set_filt1 fn_den

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	2000.0 [Hz]

Description: Sets the denominator natural frequency for velocity setpoint filter 1 (PT2, general filter).

Dependency: Refer to: p1414, p1415

Note: This parameter is only effective if the velocity filter is parameterized as a PT2 low pass or as general filter.
The filter is only effective if the natural frequency is less than half of the sampling frequency.

p1417[0...n] Speed setpoint filter 1 denominator natural frequency / n_set_filt1 fn_den

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5020
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	2000.0 [Hz]

Description: Sets the denominator natural frequency for speed setpoint filter 1 (PT2, general filter).

Dependency: Refer to: p1414, p1415

Note: This parameter is only effective if the speed filter is parameterized as a PT2 low pass or as general filter.
The filter is only effective if the natural frequency is less than half of the sampling frequency.

p1417[0...n] Velocity setpoint filter 1 denominator natural frequency / v_set_filt1 fn_den

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5020
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	2000.0 [Hz]

Description: Sets the denominator natural frequency for velocity setpoint filter 1 (PT2, general filter).

Dependency: Refer to: p1414, p1415

Note: This parameter is only effective if the velocity filter is parameterized as a PT2 low pass or as general filter.
The filter is only effective if the natural frequency is less than half of the sampling frequency.

p1417[0...n] TM41 Speed setpoint filter 1 denominator natural frequency / n_set_filt1 fn_den

TM41

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 9674
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	2000.0 [Hz]

Description: Sets the denominator natural frequency for the speed setpoint filter 1 (PT2) of the incremental encoder emulation.

Dependency: Refer to: p1414

Note: The parameter is not effective in the SINAMICS operating mode (p4400 = 1).

This parameter is only effective if the speed setpoint filter in p1414 is activated.

The filter is only effective if the natural frequency is less than half of the sampling frequency.

p1418[0...n] Velocity setpoint filter 1 denominator damping / v_set_filt 1 D_den

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.001	10.000	0.700

Description: Sets the denominator damping for velocity setpoint filter 1 (PT2, general filter).

Dependency: Refer to: p1414, p1415

Note: This parameter is only effective if the velocity filter is parameterized as a PT2 low pass or as general filter.

p1418[0...n] Speed setpoint filter 1 denominator damping / n_set_filt 1 D_den

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5020
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.001	10.000	0.700

Description: Sets the denominator damping for speed setpoint filter 1 (PT2, general filter).

Dependency: Refer to: p1414, p1415

Note: This parameter is only effective if the speed filter is parameterized as a PT2 low pass or as general filter.

p1418[0...n] Velocity setpoint filter 1 denominator damping / v_set_filt 1 D_den

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5020
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.001	10.000	0.700

Description: Sets the denominator damping for velocity setpoint filter 1 (PT2, general filter).

Dependency: Refer to: p1414, p1415

Note: This parameter is only effective if the velocity filter is parameterized as a PT2 low pass or as general filter.

p1418[0...n] TM41 Speed setpoint filter 1 denominator damping / n_set_filt 1 D_den

TM41

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 9674
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.001	1.000	0.700

Description: Sets the denominator damping for the speed setpoint filter 1 (PT2) of the incremental encoder emulation.

Dependency: Refer to: p1414

Note: The parameter is not effective in the SINAMICS operating mode (p4400 = 1).

This parameter is only effective if the speed setpoint filter in p1414 is activated.

p1419[0...n] Velocity setpoint filter 1 numerator natural frequency / v_set_filt1 fn_num

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	2000.0 [Hz]

Description: Sets the numerator natural frequency for velocity setpoint filter 1 (general filter).

Dependency: Refer to: p1414, p1415

Note: This parameter is only effective if the velocity filter is set as a general filter.

The filter is only effective if the natural frequency is less than half of the sampling frequency.

p1419[0...n] Speed setpoint filter 1 numerator natural frequency / n_set_filt1 fn_num

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5020
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	2000.0 [Hz]

Description: Sets the numerator natural frequency for speed setpoint filter 1 (general filter).

Dependency: Refer to: p1414, p1415

Note: This parameter is only effective if the speed filter is set as a general filter.

The filter is only effective if the natural frequency is less than half of the sampling frequency.

p1419[0...n] Velocity setpoint filter 1 numerator natural frequency / v_set_filt1 fn_num

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5020
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	2000.0 [Hz]

Description: Sets the numerator natural frequency for velocity setpoint filter 1 (general filter).

Dependency: Refer to: p1414, p1415

Note: This parameter is only effective if the velocity filter is set as a general filter.

The filter is only effective if the natural frequency is less than half of the sampling frequency.

p1420[0...n] Velocity setpoint filter 1 numerator damping / v_set_filt 1 D_num

HLA	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.000	10.000	0.700

Description: Sets the numerator damping for velocity setpoint filter 1 (general filter).

Dependency: Refer to: p1414, p1415

Note: This parameter is only effective if the velocity filter is set as a general filter.

p1420[0...n] Speed setpoint filter 1 numerator damping / n_set_filt 1 D_num

SERVO, SERVO_AC, SERVO_I_AC	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5020
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.000	10.000	0.700

Description: Sets the numerator damping for speed setpoint filter 1 (general filter).

Dependency: Refer to: p1414, p1415

Note: This parameter is only effective if the speed filter is set as a general filter.

p1420[0...n] Velocity setpoint filter 1 numerator damping / v_set_filt 1 D_num

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5020
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.000	10.000	0.700

Description: Sets the numerator damping for velocity setpoint filter 1 (general filter).

Dependency: Refer to: p1414, p1415

Note: This parameter is only effective if the velocity filter is set as a general filter.

p1421[0...n] Velocity setpoint filter 2 type / v_setp_filt 2 type

HLA	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	2	0

Description: Sets the type for velocity setpoint filter 2.

Value:
0: Low pass: PT1
1: Low pass: PT2
2: General 2nd order filter

Dependency: PT1 low pass: p1422

PT2 low pass: p1423, p1424

General filter: p1423 ... p1426

p1421[0...n] Speed setpoint filter 2 type / n_set_filt 2 type

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 5020
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	2	0

Description: Sets the type for speed setpoint filter 2.

Value:
0: Low pass: PT1
1: Low pass: PT2
2: General 2nd order filter

Dependency: PT1 low pass: p1422
PT2 low pass: p1423, p1424
General filter: p1423 ... p1426

p1421[0...n] Velocity setpoint filter 2 type / v_setp_filt 2 type

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 5020
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	2	0

Description: Sets the type for velocity setpoint filter 2.

Value:
0: Low pass: PT1
1: Low pass: PT2
2: General 2nd order filter

Dependency: PT1 low pass: p1422
PT2 low pass: p1423, p1424
General filter: p1423 ... p1426

p1422[0...n] Velocity setpoint filter 2 time constant / v_set_filt 2 T

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	5000.00 [ms]	0.00 [ms]

Description: Sets the time constant for the velocity setpoint filter 2 (PT1).

Dependency: Refer to: p1414, p1421

Note: This parameter is only effective if the velocity filter is set as a PT1 low pass.

p1422[0...n] Speed setpoint filter 2 time constant / n_set_filt 2 T

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5020
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	5000.00 [ms]	0.00 [ms]

Description: Sets the time constant for the speed setpoint filter 2 (PT1).

Dependency: Refer to: p1414, p1421

Note: This parameter is only effective if the speed filter is set as a PT1 low pass.

p1422[0...n] Velocity setpoint filter 2 time constant / v_set_filt 2 T

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5020
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	5000.00 [ms]	0.00 [ms]

Description: Sets the time constant for the velocity setpoint filter 2 (PT1).

Dependency: Refer to: p1414, p1421

Note: This parameter is only effective if the velocity filter is set as a PT1 low pass.

p1423[0...n] Velocity setpoint filter 2 denominator natural frequency / v_set_filt2 fn_den

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	2000.0 [Hz]

Description: Sets the denominator natural frequency for velocity setpoint filter 2 (PT2, general filter).

Dependency: Refer to: p1414, p1421

Note: This parameter is only effective if the velocity filter is parameterized as a PT2 low pass or as general filter.
The filter is only effective if the natural frequency is less than half of the sampling frequency.

p1423[0...n] Speed setpoint filter 2 denominator natural frequency / n_set_filt2 fn_den

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5020
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	2000.0 [Hz]

Description: Sets the denominator natural frequency for speed setpoint filter 2 (PT2, general filter).

Dependency: Refer to: p1414, p1421

Note: This parameter is only effective if the speed filter is parameterized as a PT2 low pass or as general filter.
The filter is only effective if the natural frequency is less than half of the sampling frequency.

p1423[0...n] Velocity setpoint filter 2 denominator natural frequency / v_set_filt2 fn_den

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5020
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	2000.0 [Hz]

Description: Sets the denominator natural frequency for velocity setpoint filter 2 (PT2, general filter).

Dependency: Refer to: p1414, p1421

Note: This parameter is only effective if the velocity filter is parameterized as a PT2 low pass or as general filter.
The filter is only effective if the natural frequency is less than half of the sampling frequency.

p1424[0...n] Velocity setpoint filter 2 denominator damping / v_set_filt 2 D_den

HLA	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.001	10.000	0.700

Description: Sets the denominator damping for velocity setpoint filter 2 (PT2, general filter).

Dependency: Refer to: p1414, p1421

Note: This parameter is only effective if the velocity filter is parameterized as a PT2 low pass or as general filter.

p1424[0...n] Speed setpoint filter 2 denominator damping / n_set_filt 2 D_den

SERVO, SERVO_AC, SERVO_I_AC	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5020
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.001	10.000	0.700

Description: Sets the denominator damping for speed setpoint filter 2 (PT2, general filter).

Dependency: Refer to: p1414, p1421

Note: This parameter is only effective if the speed filter is parameterized as a PT2 low pass or as general filter.

p1424[0...n] Velocity setpoint filter 2 denominator damping / v_set_filt 2 D_den

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5020
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.001	10.000	0.700

Description: Sets the denominator damping for velocity setpoint filter 2 (PT2, general filter).

Dependency: Refer to: p1414, p1421

Note: This parameter is only effective if the velocity filter is parameterized as a PT2 low pass or as general filter.

p1425[0...n] Velocity setpoint filter 2 numerator natural frequency / v_set_filt2 fn_num

HLA	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.5 [Hz]	16000.0 [Hz]	2000.0 [Hz]

Description: Sets the numerator natural frequency for velocity setpoint filter 2 (general filter).

Dependency: Refer to: p1414, p1421

Note: This parameter is only effective if the velocity filter is set as a general filter.
The filter is only effective if the natural frequency is less than half of the sampling frequency.

p1425[0...n] Speed setpoint filter 2 numerator natural frequency / n_set_filt2 fn_num

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5020
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	2000.0 [Hz]

Description: Sets the numerator natural frequency for speed setpoint filter 2 (general filter).

Dependency: Refer to: p1414, p1421

Note: This parameter is only effective if the speed filter is set as a general filter.

The filter is only effective if the natural frequency is less than half of the sampling frequency.

p1425[0...n] Velocity setpoint filter 2 numerator natural frequency / v_set_filt2 fn_num

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5020
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	2000.0 [Hz]

Description: Sets the numerator natural frequency for velocity setpoint filter 2 (general filter).

Dependency: Refer to: p1414, p1421

Note: This parameter is only effective if the velocity filter is set as a general filter.

The filter is only effective if the natural frequency is less than half of the sampling frequency.

p1426[0...n] Velocity setpoint filter 2 numerator damping / v_set_filt 2 D_num

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	10.000	0.700

Description: Sets the numerator damping for velocity setpoint filter 2 (general filter).

Dependency: Refer to: p1414, p1421

Note: This parameter is only effective if the velocity filter is set as a general filter.

p1426[0...n] Speed setpoint filter 2 numerator damping / n_set_filt 2 D_num

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5020
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	10.000	0.700

Description: Sets the numerator damping for speed setpoint filter 2 (general filter).

Dependency: Refer to: p1414, p1421

Note: This parameter is only effective if the speed filter is set as a general filter.

p1426[0...n] Velocity setpoint filter 2 numerator damping / v_set_filt 2 D_num

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5020
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	10.000	0.700

Description: Sets the numerator damping for velocity setpoint filter 2 (general filter).

Dependency: Refer to: p1414, p1421

Note: This parameter is only effective if the velocity filter is set as a general filter.

p1427[0...n] DSC symmetrizing time constant additive T_SYMM_ADD / DSC T_SYMM_ADD

SERVO (DSC spline, Lin), SERVO_AC (DSC spline, Lin), SERVO_I_AC (DSC spline, Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3090
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	1000.00 [ms]	0.00 [ms]

Description: Set the additive symmetrizing time constant T_SYMM_ADD for the velocity precontrol value for active force precontrol.

Dependency: The additive symmetrizing time constant T_SYMM_ADD is only evaluated if the "DSC with spline" function module (r0108.6 = 1) is activated.

Refer to: p1190, p1191, p1194, p1195

Note: For active force precontrol (r1407.20/.21/.22) and active symmetrizing (T_SYMM > 0), the velocity precontrol value is symmetrized with the sum of the following time constants:

T_SYMM (see p1195) + T_SYMM_ADD (p1427) + 0.5 * velocity controller sampling time (p0115[1])

With half of the velocity controller sampling time, the velocity actual value generation is taken into account using position differences.

DSC: Dynamic Servo Control

p1427[0...n] DSC symmetrizing time constant additive T_SYMM_ADD / DSC T_SYMM_ADD

SERVO (DSC spline), SERVO_AC (DSC spline), SERVO_I_AC (DSC spline)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3090
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	1000.00 [ms]	0.00 [ms]

Description: Set the additive symmetrizing time constant T_SYMM_ADD for symmetrizing the speed precontrol value for active torque precontrol.

Dependency: The additive symmetrizing time constant T_SYMM_ADD is only evaluated if the "DSC with spline" function module (r0108.6 = 1) is activated.

Refer to: p1190, p1191, p1194, p1195

Note: When torque precontrol is active (r1407.20/.21/.22) and symmetrization is active (T_SYMM > 0) then the speed precontrol value is symmetrized with the sum of the following time constants:

T_SYMM (see p1195) + T_SYMM_ADD (p1427) + 0.5 * speed controller sampling time (p0115[1])

With half of the speed controller sampling time, the speed actual value generation is taken into account using position differences.

DSC: Dynamic Servo Control

p1428[0...n] Velocity precontrol symmetrizing dead time / n_prectrSym t_dead

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5030, 5042, 5210
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0	3.0	0.0

Description: Sets the dead time to symmetrize the velocity setpoint for active force precontrol.

The selected multiplier refers to the sampling time of the controller (dead time= p1428 * p0115[0]).

Dependency: In conjunction with p1429, this parameter can emulate the characteristics of how the force is established (dynamic response of closed control loop).

Refer to: p1429, p1511

p1428[0...n] Speed precontrol symmetrizing dead time / n_prectrSym t_dead

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5030, 5042, 5210
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0	2.0	0.0

Description: Sets the dead time to symmetrize the speed setpoint for active torque precontrol.

The selected multiplier refers to the sampling time of the speed controller (dead time= p1428 * p0115[1]).

Dependency: In conjunction with p1429, this parameter can emulate the characteristics of how the torque is established (dynamic response of closed current control loop).

Refer to: p1429, p1511

p1428[0...n] Velocity precontrol symmetrizing dead time / n_prectrSym t_dead

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5030, 5042, 5210
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0	2.0	0.0

Description: Sets the dead time to symmetrize the velocity setpoint for active force precontrol.

The selected multiplier refers to the sampling time of the velocity controller (dead time= p1428 * p0115[1]).

Dependency: In conjunction with p1429, this parameter can emulate the characteristics of how the force is established (dynamic response of closed current control loop).

Refer to: p1429, p1511

p1428[0...n] Speed precontrol symmetrizing dead time / n_prectrSym t_dead

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6031
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0	3.0	0.0

Description: Sets the dead time to symmetrize the speed setpoint for active torque precontrol.

The selected multiplier refers to the sampling time of the speed controller (dead time= p1428 * p0115[1]).

Dependency:	In conjunction with p1429, this parameter can emulate the characteristics of how the torque is established (dynamic response of closed current control loop). The parameter is only effective if the acceleration model is supplied using external acceleration signals (p1400.2 = 1). For p1400.2 = 0, a fixed dead time is used. Refer to: p1429, p1511

p1429[0...n] Speed precontrol symmetrizing time constant / n_prectr sym T

SERVO, VECTOR (n/M), HLA, SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5030, 5042, 5210, 6031
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	10000.00 [ms]	0.00 [ms]

Description:	Sets the time constant (PT1) for symmetrizing the speed setpoint for active torque precontrol.
Dependency:	In conjunction with p1428, this parameter can emulate the characteristics of how torque is established (dynamic response of the closed current control loop). For VECTOR (r0107) the following applies: The parameter is only effective if the acceleration model is supplied using external acceleration signals (p1400.2 = 1). For p1400.2 = 0, time constant p1442 (or p1452 for sensorless vector control) is used. Refer to: p1428, p1511

p1429[0...n] Velocity precontrol symmetrizing time constant / n_prectr sym T

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5030, 5042, 5210
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	10000.00 [ms]	0.00 [ms]

Description:	Sets the time constant (PT1) for symmetrizing the velocity setpoint for active force precontrol.
Dependency:	In conjunction with p1428, this parameter can emulate the characteristics of how the force is established (dynamic response of closed current control loop). Refer to: p1428, p1511

p1430[0...n] CI: Velocity precontrol / v_prectrl

HLA

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 3001, 5019, 5030
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description:	Sets the signal source for the velocity precontrol channel (velocity precontrol or force precontrol).
Notice:	The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p1430[0...n] CI: Speed precontrol / n_prectrl

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 3001, 5019, 5030
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for speed precontrol channel (speed precontrol or torque precontrol).

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: The precontrol signal via connector input p1430 only becomes effective at p1402.4 = 1 (torque-speed precontrol with encoder) at p1400.10 = 0 (for setp_filter 2).

p1430[0...n] CI: Velocity precontrol / v_prectrl

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 3001, 5019, 5030
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the velocity precontrol channel (velocity precontrol or force precontrol).

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: The precontrol signal via connector input p1430 only becomes effective at p1402.4 = 1 (force-velocity precontrol with encoder) at p1400.10 = 0 (for setp_filter 2).

r1431 CO: Speed precontrol to motor model / n_prectrl mot_mod

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6030
P-Group: Closed-loop control	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Display and connector output for the speed setpoint to precontrol the motor model for sensorless vector control.

Note: With p1400.15 = 0 or encoderless torque control, the precontrol signal is kept continuously in the range of the voltage model.

r1432[0...1] CO: Speed precontrol / n_precontrol

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5020, 5030
P-Group: Closed-loop control	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Display and connector output for the speed precontrol.

For index [0]:

Displays the speed precontrol value after symmetrizing for the torque build-up (emulates the closed current control loop).

For index [1]:

Displays the speed precontrol value before the switch p1400.10.

When the "DSC with spline" function module is activated (r0108.6 = 1, signal source of p1194.0 = 1), then this is the precontrol value generated by the spline. Otherwise, this is the value from the signal source of p1430 (possibly after linear interpolation). The precontrol value generated by the spline is zero if the speed precontrol for the spline is deactivated (signal source of p1194.4 = 0).

Index: [0] = After symmetrization
[1] = Before switch p1400.10

Dependency: Symmetrizing can be parameterized with p1428 and/or p1429.

r1432[0...1] CO: Velocity precontrol / v_precontrol

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5020, 5030
P-Group: Closed-loop control	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Display and connector output for the velocity precontrol.

For index [0]:

Displays the velocity precontrol value after symmetrizing for the force build-up (emulates the closed current control loop).

For index [1]:

Displays the velocity precontrol value before the switch p1400.10.

When the "DSC with spline" function module is activated (r0108.6 = 1, signal source of p1194.0 = 1), then this is the precontrol value generated by the spline. Otherwise, this is the value from the signal source of p1430 (possibly after linear interpolation). The precontrol value generated by the spline is zero if the velocity precontrol for the spline is deactivated (signal source of p1194.4 = 0).

Index: [0] = After symmetrization
[1] = Before switch p1400.10

Dependency: Symmetrizing can be parameterized with p1428 and/or p1429.

p1433[0...n] Velocity controller reference model natural frequency / v_ctrl RefMod fn

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [Hz]	8000.0 [Hz]	0.0 [Hz]

Description: Sets the natural frequency of a PT2 element for the reference model of the velocity controller.

Recommendation: The reference model is correctly set when the characteristics of p1439 (reference model output) and p1445 (velocity actual value) are virtually identical when the I component of the velocity controller is disabled.

Dependency: In conjunction with p1434, the time response of the P-controlled velocity control loop can be emulated.

Refer to: p1434, p1435

p1433[0...n] Speed controller reference model natural frequency / n_ctrl RefMod fn

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5030
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [Hz]	8000.0 [Hz]	0.0 [Hz]

Description: Sets the natural frequency of a PT2 element for the reference model of the speed controller.

Recommendation: The reference model is correctly set when the characteristics of p1439 (reference model output) and p1445 (actual speed value) are virtually identical when the I component of the speed controller is disabled.

Dependency: Together with p1434 and p1435, the characteristics (in the time domain) of the closed-loop speed control (P) can be emulated.

Refer to: p1434, p1435

p1433[0...n] Velocity controller reference model natural frequency / v_ctrl RefMod fn

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5030
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [Hz]	8000.0 [Hz]	0.0 [Hz]

Description: Sets the natural frequency of a PT2 element for the reference model of the velocity controller.

Recommendation: The reference model is correctly set when the characteristics of p1439 (reference model output) and p1445 (velocity actual value) are virtually identical when the I component of the velocity controller is disabled.

Dependency: Together with p1434 and p1435, the characteristics (in the time domain) of the closed-loop velocity control (P) can be emulated.

Refer to: p1434, p1435

p1433[0...n] Speed controller reference model natural frequency / n_ctrl RefMod fn

VECTOR (J_estimator, n/M), VECTOR_AC (J_estimator, n/M), VECTOR_I_AC (J_estimator, n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6031
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [Hz]	8000.0 [Hz]	0.0 [Hz]

Description: Sets the natural frequency of a PT2 element for the reference model of the speed controller.

Recommendation: The reference model is correctly set when the characteristics of p1439 (reference model output) and p1445 (actual speed value) are virtually identical when the I component of the speed controller is disabled.

Dependency: Together with p1434 and p1435, the characteristics (in the time domain) of the closed-loop speed control (P) can be emulated.

For VECTOR (r0107) the following applies:

The reference model is activated with p1400.3 = 1. For sensorless vector control (p1300 = 20) the reference model is disabled in open-loop speed controlled operation (refer to p1755).

Refer to: p1434, p1435

p1434[0...n] Velocity controller reference model damping / v_ctrl RefMod D

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	5.000	1.000

Description: Sets the damping of a PT2 element for the reference model of the velocity controller.

Recommendation: The reference model is correctly set when the characteristics of p1439 (reference model output) and p1445 (velocity actual value) are virtually identical when the I component of the velocity controller is disabled.

Dependency: In conjunction with p1433, the time response of the P-controlled velocity control loop can be emulated.

Refer to: p1433, p1435

p1434[0...n] Speed controller reference model damping / n_ctrl RefMod D

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5030, 6031
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	5.000	1.000

Description: Sets the damping of a PT2 element for the reference model of the speed controller.

Recommendation: The reference model is correctly set when the characteristics of p1439 (reference model output) and p1445 (actual speed value) are virtually identical when the I component of the speed controller is disabled.

Dependency: In conjunction with p1433 and p1435, the characteristics (in time) of the P-controlled speed control loop can be emulated.

Refer to: p1433, p1435

p1434[0...n] Velocity controller reference model damping / v_ctrl RefMod D

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5030, 6031
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	5.000	1.000

Description: Sets the damping of a PT2 element for the reference model of the velocity controller.

Recommendation: The reference model is correctly set when the characteristics of p1439 (reference model output) and p1445 (velocity actual value) are virtually identical when the I component of the velocity controller is disabled.

Dependency: Together with p1433 and p1435, the characteristics (in the time domain) of the P-controlled velocity control loop can be emulated.

Refer to: p1433, p1435

p1434[0...n] Speed controller reference model damping / n_ctrl RefMod D

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5030, 6031
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	5.000	1.000

Description: Sets the damping of a PT2 element for the reference model of the speed controller.

Recommendation: The reference model is correctly set when the characteristics of p1439 (reference model output) and p1445 (actual speed value) are virtually identical when the I component of the speed controller is disabled.

Dependency: In conjunction with p1433 and p1435, the characteristics (in time) of the P-controlled speed control loop can be emulated.

For VECTOR (r0107) the following applies:

The reference model is activated with p1400.3 = 1.

Refer to: p1433, p1435

p1435[0...n] Speed controller reference model dead time / n_ctrRefMod t_dead

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5030, 6031
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00	2.00	0.00

Description: Sets the "fractional" dead time for the reference model of the speed controller.

This parameter emulates the computing dead time of the proportionally controlled speed control loop.

The selected multiplier refers to the speed controller sampling time (dead time= p1435 * p0115[1]).

Recommendation: The reference model is correctly set when the characteristics of p1439 (reference model output) and p1445 (actual speed value) are virtually identical when the I component of the speed controller is disabled.

Dependency: In conjunction with p1433 and p1434, the characteristics (in time) of the P-controlled speed control loop can be emulated.

Refer to: p0115, p1433, p1434

p1435[0...n] Velocity controller reference model dead time / v_ctrRefMod t_dead

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5030, 6031
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00	2.00	0.00

Description: Sets the "fractional" dead time for the reference model of the velocity controller.

This parameter emulates the computing dead time of the proportionally controlled velocity control loop.

The selected multiplier refers to the velocity controller sampling time (dead time= p1435 * p0115[1]).

Recommendation: The reference model is correctly set when the characteristics of p1439 (reference model output) and p1445 (velocity actual value) are virtually identical when the I component of the velocity controller is disabled.

Dependency: Together with p1433 and p1434, the characteristics (in the time domain) of the P-controlled velocity control loop can be emulated.

Refer to: p0115, p1433, p1434

p1435[0...n] Speed controller reference model dead time / n_ctrRefMod t_dead

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5030, 6031
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00	3.00	0.00

Description: Sets the "fractional" dead time for the reference model of the speed controller.

This parameter emulates the computing dead time of the proportionally controlled speed control loop.

The selected multiplier refers to the speed controller sampling time (dead time= p1435 * p0115[1]).

Recommendation: The reference model is correctly set when the characteristics of p1439 (reference model output) and p1445 (actual speed value) are virtually identical when the I component of the speed controller is disabled.

Dependency: In conjunction with p1433 and p1434, the characteristics (in time) of the P-controlled speed control loop can be emulated.

For VECTOR (r0107) the following applies:

The reference model is activated with p1400.3 = 1.

Refer to: p0115, p1433, p1434

r1436 CO: Velocity controller reference model velocity_setpoint output / RefMod v_set outp

HLA

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4965
P-Group: Closed-loop control	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Display and connector output of the velocity setpoint at the output of the reference model.

r1436 CO: Speed controller reference model speed setpoint output / RefMod n_set outp

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5030, 6031
P-Group: Closed-loop control	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Display and connector output for the speed setpoint at the output of the reference model.

r1436 CO: Velocity controller reference model velocity_setpoint output / RefMod v_set outp

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5030, 6031
P-Group: Closed-loop control	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Display and connector output for the velocity setpoint at the output of the reference model.

r1436 CO: Speed controller reference model speed setpoint output / RefMod n_set outp

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5030, 6031
P-Group: Closed-loop control	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Display and connector output for the speed setpoint at the output of the reference model.

Dependency: For VECTOR (r0107) the following applies:
The reference model is activated with p1400.3 = 1.

p1437[0...n] CI: Speed controller reference model I component input / n_ctrRefMod I_comp

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 6031
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1436[0]

Description: Sets the signal source for speed setpoint for the integral component of the speed controller.

Dependency: The reference model is activated with p1400.3 = 1.
Refer to: p1400

Notice: In should be ensured that a speed setpoint is selected as signal source that corresponds to the setpoint for the P component of the speed controller.

r1438 CO: Velocity controller velocity setpoint / v_ctrl v_set

HLA

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4965
P-Group: Closed-loop control	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Display and connector output of the velocity setpoint after setpoint limiting for the P component of the velocity controller.

Dependency: Refer to: r1439

r1438 CO: Speed controller speed setpoint / n_ctrl n_set

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3001, 5019, 5030, 5042, 5210
P-Group: Closed-loop control	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Display and connector output of the speed setpoint after setpoint limiting for the P component of the speed controller.

For U/f operation, the value that is displayed is of no relevance.

Dependency: Refer to: r1439

Note: In the standard state (the reference model is deactivated), r1438 = r1439.

r1438 CO: Velocity controller velocity setpoint / v_ctrl v_set

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3001, 5019, 5030, 5042, 5210
P-Group: Closed-loop control	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Displays the velocity setpoint after setpoint limiting for the P component of the velocity controller.

For U/f operation, the value that is displayed is of no relevance.

Dependency: Refer to: r1439

Note: In the standard state (the reference model is deactivated), r1438 = r1439.

r1438 CO: Speed controller speed setpoint / n_ctrl n_set

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3001, 5019, 5030, 5042, 5210, 6020, 6031
P-Group: Closed-loop control	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Display and connector output of the speed setpoint after setpoint limiting for the P component of the speed controller.

For U/f operation, the value that is displayed is of no relevance.

Dependency: Refer to: r1439

Note: In the standard state (the reference model is deactivated), r1438 = r1439.

r1439 Speed setpoint I component / n_set I_comp

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5030, 5040, 6031
P-Group: Closed-loop control	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the speed setpoint for the I component of the speed controller (output of the reference model after the setpoint limiting).

Dependency: Refer to: r1438

Note: In the standard state (the reference model is deactivated), r1438 = r1439.

r1439 Velocity setpoint I component / v_set I_comp

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5030, 5040, 6031
P-Group: Closed-loop control	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Displays the velocity setpoint for the I component of the velocity controller (output of the reference model after the setpoint limiting).

Dependency: Refer to: r1438

Note: In the standard state (the reference model is deactivated), r1438 = r1439.

p1440[0...n] CI: Speed controller speed actual value input / n_ctrl n_act

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 6040
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	63[0]

Description: Sets the signal source for the speed actual value of the speed controller.

Dependency: Refer to: r1443

Danger: When using external speed actual values for the speed controller, for a direction of rotation change via p1821 = 1, then its polarity must also be changed (e.g. for an encoder DO via p0410). Otherwise, a positive coupling can occur in the speed control loop and the drive would then be accelerated up to the speed limit.

Caution: Speed control with encoder (p1300 = 21):

For the speed or position signal of the motor model there must always be a motor encoder available (evaluation via SMC/SMI, see p0400). The actual speed of the motor (r0061) and the position data for synchronous motors continue to come from this motor encoder and are not affected by the setting of p1440.

Interconnection of p1440:

If connector input p1440 is interconnected with an external speed actual value, the identical scaling of the speed should be observed (p2000).

Notice: Speed control without encoder (p1300 = 20):

Dependent upon the transmission path of the external speed signal there will be dead times which have to be taken into account when setting the speed controller parameters (p1470, p1472) and can lead to dynamic losses accordingly. It is for this reason that signal transmission times have to be kept as low as possible.

So that the speed controller can also work at standstill, set p1750.2 = 1 (closed-loop operation from zero speed for passive loads). If you do not make this setting, operation will switch to open-loop speed control in the low speed range, switching the closed-loop speed controller off and rendering the measured actual speed ineffective.

Note: Speed control with encoder (p1300 = 21):

An external speed signal should, on the average, correspond to the speed of the motor encoder (r0061).

p1441[0...n] Actual velocity smoothing time / v_act t_smooth

HLA

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	50.00 [ms]	0.00 [ms]

Description: Sets the smoothing time constant (PT1) for the velocity actual value.

Dependency: Refer to: r0063, p1451

Note: The velocity actual value should be smoothed for encoders with a low pulse number.

After this parameter has been changed, we recommend that the velocity controller is adjusted and/or the velocity controller settings Kp, Tn and Tv checked.

p1441[0...n] Actual speed smoothing time / n_act T_smooth

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4710, 4715
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	50.00 [ms]	0.00 [ms]

Description: Sets the smoothing time constant (PT1) for the speed actual value.

Dependency: Refer to: r0063, p1451

Note: The speed actual value should be smoothed for encoders with a low pulse number or for resolvers.

After this parameter has been changed, we recommend that the speed controller is adapted and/or the speed controller settings checked Kp (p1460) and Tn (p1462).

p1441[0...n] Actual velocity smoothing time / v_act t_smooth

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4710, 4715
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	50.00 [ms]	0.00 [ms]

Description: Sets the smoothing time constant (PT1) for the velocity actual value.

Dependency: Refer to: r0063, p1451

Note: The speed actual value should be smoothed for encoders with a low pulse number or for resolvers.

After this parameter has been changed, we recommend that the velocity controller is adapted and/or the velocity controller settings checked Kp (p1460) and Tn (p1462).

p1441[0...n] Actual speed smoothing time / n_act T_smooth

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4710, 4715
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	1000.00 [ms]	0.00 [ms]

Description: Sets the smoothing time constant (PT1) for the speed actual value.

Dependency: Refer to: r0063

Notice: Smoothing times above 20 ms are only possible if the drive is accelerated or braked with the appropriately long ramp-up/ramp-down times. Otherwise, significant torque errors can occur and there is the danger that the drive is switched off (tripped) with F07902 (motor stalled).

Note: The speed actual value should be smoothed for encoders with a low pulse number or for resolvers.

After this parameter has been changed, we recommend that the speed controller is adapted and/or the speed controller settings checked Kp (p1460) and Tn (p1462).

p1442[0...n] Speed controller speed actual value smoothing time / n_ctr n_act T_smth

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6020, 6040
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	32000.00 [ms]	4.00 [ms]

Description: Sets the smoothing time for the actual speed value of the speed controller for closed-loop control with encoder.

Note: The smoothing must be increased if there is gear backlash. For longer smoothing times, the integral time of the speed controller must also be increased (e.g. using p0340 = 4).

r1443 CO: Speed controller speed actual value at actual value input / n_ctrl n_act inp

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6040
P-Group: Closed-loop control	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the speed actual value at the speed controller's free-wiring actual value input p1440.

Dependency: Refer to: p1440

Note: This speed signal is only used by the speed controller and not by the motor model.

r1444 Velocity controller velocity setpoint static / v_ctrl v_set stat

HLA

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Displays the sum of all velocity setpoints that are present.

The following sources are available for the displayed setpoint:

- setpoint at the ramp-function generator input (r1119).
- velocity setpoint 1 (p1155).
- velocity setpoint 2 (p1160).
- velocity setpoint for the velocity precontrol (p1430).
- setpoint from DSC (for DSC active).
- setpoint via PC (for master control active).

Dependency: Refer to: r1119, p1155, p1160, p1430

r1444 Speed controller speed setpoint steady-state (static) / n_ctrl n_set stat

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5030
P-Group: Closed-loop control	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the sum of all speed setpoints that are present.
The following sources are available for the displayed setpoint:
- setpoint at the ramp-function generator input (r1119).
- speed setpoint 1 (p1155).
- speed setpoint 2 (p1160).
- speed setpoint for the speed precontrol (p1430).
- setpoint from DSC (for DSC active).
- setpoint via PC (for master control active).

Dependency: Refer to: r1119, p1155, p1160, p1430

r1444 Velocity controller velocity setpoint total / v_ctrl v_set stat

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5030
P-Group: Closed-loop control	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Displays the sum of all velocity setpoints that are present.
The following sources are available for the displayed setpoint:
- setpoint at the ramp-function generator input (r1119).
- velocity setpoint 1 (p1155).
- velocity setpoint 2 (p1160).
- velocity setpoint for the velocity precontrol (p1430).
- setpoint from DSC (for DSC active).
- setpoint via PC (for master control active).

Dependency: Refer to: r1119, p1155, p1160, p1430

r1445 CO: Actual velocity smoothed / v_act smooth

HLA

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4965
P-Group: Closed-loop control	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Display and connector output for the actual smoothed velocity actual value of the velocity control.

r1445 CO: Actual speed smoothed / n_act smooth

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5040, 5210
P-Group: Closed-loop control	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Display and connector output for the actual smoothed speed actual value of the speed control.

r1445 CO: Actual velocity smoothed / v_act smooth

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5040, 5210
P-Group: Closed-loop control	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Display and connector output for the actual smoothed velocity actual value of the velocity control.

r1445 CO: Actual speed smoothed / n_act smooth

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6040
P-Group: Closed-loop control	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Display and connector output for the actual smoothed speed actual value of the speed control.

p1446[0...n] Velocity actual value filter type / v_act_filt type

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	2	2

Description: Sets the type for the general velocity actual value filter.

Value:
1: PT2 low pass
2: General 2nd order filter

Dependency: PT2 low pass: p1447, p1448
General filter: p1447 ... p1450

p1446[0...n] Speed actual value filter type / n_act_filt type

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 5040, 5210
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	2	2

Description: Sets the type for the general speed actual value filter.

Value:
1: PT2 low pass
2: General 2nd order filter

Dependency: PT2 low pass: p1447, p1448
General filter: p1447 ... p1450

p1446[0...n] Velocity actual value filter type / v_act_filt type

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 5040, 5210
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	2	2

Description: Sets the type for the general velocity actual value filter.

Value:
1: PT2 low pass
2: General 2nd order filter

Dependency: PT2 low pass: p1447, p1448
General filter: p1447 ... p1450

p1447[0...n] Velocity actual value filter denominator natural frequency / v_act_filt fn_den

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	2000.0 [Hz]

Description: Sets the denominator natural frequency for the velocity actual value filter (PT2, general filter).

Dependency: Refer to: p1413, p1446

Note: The filter is only effective if the natural frequency is less than half of the sampling frequency.

p1447[0...n] Speed actual value filter denominator natural frequency / n_act_filt fn_den

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5040, 5210
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	2000.0 [Hz]

Description: Sets the denominator natural frequency for the speed actual value filter (PT2, general filter).

Dependency: Refer to: p1413, p1446

Note: The filter is only effective if the natural frequency is less than half of the sampling frequency.

p1447[0...n] Velocity actual value filter denominator natural frequency / v_act_filt fn_den

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5040, 5210
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	2000.0 [Hz]

Description: Sets the denominator natural frequency for the velocity actual value filter (PT2, general filter).

Dependency: Refer to: p1413, p1446

Note: The filter is only effective if the natural frequency is less than half of the sampling frequency.

p1448[0...n] Velocity actual value filter denominator damping / v_act_filt D_den

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.001	10.000	0.700

Description: Sets the denominator damping for the velocity actual value filter (PT2, general filter).

Dependency: Refer to: p1413, p1446

p1448[0...n] Speed actual value filter denominator damping / n_act_filt D_den

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5040, 5210
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.001	10.000	0.700

Description: Sets the denominator damping for the speed actual value filter (PT2, general filter).

Dependency: Refer to: p1413, p1446

p1448[0...n] Velocity actual value filter denominator damping / v_act_filt D_den

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5040, 5210
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.001	10.000	0.700

Description: Sets the denominator damping for the velocity actual value filter (PT2, general filter).

Dependency: Refer to: p1413, p1446

p1449[0...n] Velocity actual value filter numerator natural frequency / v_act_filt fn_num

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	2000.0 [Hz]

Description: Sets the numerator natural frequency for the velocity actual value filter (general filter).

Dependency: Refer to: p1413, p1446

Note: This parameter is only effective if the velocity filter is set as a general filter.

The filter is only effective if the natural frequency is less than half of the sampling frequency.

p1449[0...n] Speed actual value filter numerator natural frequency / n_act_filt fn_num

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5040, 5210
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	2000.0 [Hz]

Description: Sets the numerator natural frequency for the speed actual value filter (general filter).

Dependency: Refer to: p1413, p1446

Note: The filter is only effective if the natural frequency is less than half of the sampling frequency.

p1449[0...n] Velocity actual value filter numerator natural frequency / v_act_filt fn_num

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5040, 5210
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	2000.0 [Hz]

Description: Sets the numerator natural frequency for the velocity actual value filter (general filter).

Dependency: Refer to: p1413, p1446

Note: This parameter is only effective if the velocity filter is set as a general filter.

The filter is only effective if the natural frequency is less than half of the sampling frequency.

p1450[0...n] Velocity actual value filter numerator damping / v_act_filt D_num

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	10.000	0.700

Description: Sets the numerator damping for the velocity actual value filter (general filter).

Dependency: Refer to: p1413, p1446

Note: This parameter is only effective if the velocity actual value filter is set as a general filter.

p1450[0...n] Speed actual value filter numerator damping / n_act_filt D_num

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5040, 5210
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	10.000	0.700

Description: Sets the numerator damping for the speed actual value filter (general filter).

Dependency: Refer to: p1413, p1446

Note: This parameter is only effective if the speed filter is set as a general filter.

p1450[0...n] Velocity actual value filter numerator damping / v_act_filt D_num

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5040, 5210
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	10.000	0.700

Description: Sets the numerator damping for the velocity actual value filter (general filter).

Dependency: Refer to: p1413, p1446

Note: This parameter is only effective if the velocity actual value filter is set as a general filter.

p1451[0...n] Speed actual value smoothing time sensorless / n_act t_sm SL

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	1000 [ms]	0 [ms]

Description: Sets the smoothing time for the calculated speed actual value in sensorless operation.

Dependency: Refer to: p1441

p1451[0...n] Velocity actual value smoothing time sensorless / v_act t_sm SL

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	1000 [ms]	0 [ms]

Description: Sets the smoothing time for the calculated velocity actual value in sensorless operation.

Dependency: Refer to: p1441

p1451[0...n] Motor model speed actual value smoothing time sensorless / Mot_mod n_act t_sm

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	1000 [ms]	4 [ms]

Description: Sets the smoothing time for the speed actual value calculated by the motor model in sensorless operation.

p1452[0...n] Speed controller speed actual value smoothing time (sensorless) / n_C n_act T_s SL

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6020, 6040
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	32000.00 [ms]	10.00 [ms]

Description: Sets the smoothing time for the actual speed of the speed controller for encoderless closed-loop speed control.

Note: The smoothing must be increased if there is gear backlash. For longer smoothing times, the integral time of the speed controller must also be increased (e.g. using p0340 = 4).

r1454 CO: Velocity controller system deviation I component / v_ctrl sys dev Tn

HLA

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Display and connector output for the system deviation of the I component of the velocity controller.

When the reference model is inactive (p1433 = 0 Hz), this parameter corresponds to the system deviation of the complete PI controller (r1454 = r0064).

r1454 CO: Speed controller system deviation I component / n_ctrl sys dev Tn

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5040
P-Group: Closed-loop control	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Display and connector output for the system deviation of the I component of the speed controller.

When the reference model is inactive (p1433 = 0 Hz), this parameter corresponds to the system deviation of the complete PI controller (r1454 = r0064).

r1454 CO: Velocity controller system deviation I component / v_ctrl sys dev Tn

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5040
P-Group: Closed-loop control	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Display and connector output for the system deviation of the I component of the velocity controller.

When the reference model is inactive (p1433 = 0 Hz), this parameter corresponds to the system deviation of the complete PI controller (r1454 = r0064).

r1454 CO: Speed controller system deviation I component / n_ctrl sys dev Tn

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6040
P-Group: Closed-loop control	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Display and connector output for the system deviation of the I component of the speed controller.

When the reference model is inactive (p1433 = 0 Hz), this parameter corresponds to the system deviation of the complete PI controller (r1454 = r0064).

p1455[0...n] CI: Speed controller P gain adaptation signal / n_ctr adapt_sig Kp

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 5050
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the source for the adaptation signal to additionally adapt the P gain of the speed controller.

Dependency: Refer to: p1456, p1457, p1458, p1459

p1455[0...n] CI: Velocity controller P gain adaptation signal / v_ctr adapt_sig Kp

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 5050
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the source for the adaptation signal to additionally adapt the P gain of the velocity controller.

Dependency: Refer to: p1456, p1457, p1458, p1459

p1455[0...n] CI: Speed controller P gain adaptation signal / n_ctr adapt_sig Kp

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 6050
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the source for the adaptation signal to additionally adapt the P gain of the speed controller.

Dependency: Refer to: p1456, p1457, p1458, p1459

p1456[0...n] Speed controller P gain adaptation lower starting point / n_ctrl AdaptKpLow

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5050
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	400.00 [%]	0.00 [%]

Description: Sets the lower starting point of the adaptation range for the additional adaptation of the P gain of the speed controller.

The values are in % and refer to the set source of the adaptation signal.

Dependency: Refer to: p1455, p1457, p1458, p1459

p1456[0...n] Velocity controller P gain adaptation lower starting point / v_ctrl AdaptKpLow

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5050
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	400.00 [%]	0.00 [%]

Description: Sets the lower starting point of the adaptation range for the additional adaptation of the P gain of the velocity controller.

The values are in % and refer to the set source of the adaptation signal.

Dependency: Refer to: p1455, p1457, p1458, p1459

p1456[0...n] Speed controller P gain adaptation lower starting point / n_ctrl AdaptKpLow

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6050
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	400.00 [%]	0.00 [%]

Description: Sets the lower starting point of the adaptation range for the additional adaptation of the P gain of the speed controller.

The values are in % and refer to the set source of the adaptation signal.

Dependency: Refer to: p1455, p1457, p1458, p1459

Note: If the upper transition point p1457 of the speed controller adaptation is set to lower values than the lower transition p1456, then the controller gain below p1457 is adapted with p1459 and above p1456, with p1458.

p1457[0...n] Speed controller P gain adaptation upper starting point / n_ctrl AdaptKp up

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5050
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	400.00 [%]	0.00 [%]

Description: Sets the upper starting point of the adaptation range for the additional adaptation of the P gain of the speed controller.

The values are in % and refer to the set source of the adaptation signal.

Dependency: Refer to: p1455, p1456, p1458, p1459

p1457[0...n] Velocity controller P gain adaptation upper starting point / v_ctrl AdaptKp up

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5050
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	400.00 [%]	0.00 [%]

Description: Sets the upper starting point of the adaptation range for the additional adaptation of the P gain of the velocity controller.

The values are in % and refer to the set source of the adaptation signal.

Dependency: Refer to: p1455, p1456, p1458, p1459

p1457[0...n] Speed controller P gain adaptation upper starting point / n_ctrl AdaptKp up

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6050
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	400.00 [%]	0.00 [%]

Description: Sets the upper starting point of the adaptation range for the additional adaptation of the P gain of the speed controller.

The values are in % and refer to the set source of the adaptation signal.

Dependency: Refer to: p1455, p1456, p1458, p1459

Note: If the upper transition point p1457 of the speed controller adaptation is set to lower values than the lower transition p1456, then the controller gain below p1457 is adapted with p1459 and above p1456, with p1458.

p1458[0...n] Adaptation factor lower / Adapt_factor lower

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5050
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	200000.0 [%]	100.0 [%]

Description: Sets the adaptation factor before the adaptation range (0 % ... p1456) to additionally adapt the P gain of the speed/velocity controller.

Dependency: Refer to: p1455, p1456, p1457, p1459

p1458[0...n] Adaptation factor lower / Adapt_factor lower

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6050
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	200000.0 [%]	100.0 [%]

Description: Sets the adaptation factor before the adaptation range (0 % ... p1456) to additionally adapt the P gain of the speed/velocity controller.

Dependency: Refer to: p1455, p1456, p1457, p1459

Note: If the upper transition point p1457 of the speed controller adaptation is set to lower values than the lower transition p1456, then the controller gain below p1457 is adapted with p1459 and above p1456, with p1458.

p1459[0...n] Adaptation factor upper / Adapt_factor upper

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5050
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	200000.0 [%]	100.0 [%]

Description: Sets the adaptation factor after the adaptation range (> p1457) to additionally adapt the P gain of the speed/velocity controller.

Dependency: Refer to: p1455, p1456, p1457, p1458

p1459[0...n] Adaptation factor upper / Adapt_factor upper

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6050
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	200000.0 [%]	100.0 [%]

Description: Sets the adaptation factor after the adaptation range (> p1457) to additionally adapt the P gain of the speed/velocity controller.

Dependency: Refer to: p1455, p1456, p1457, p1458

Note: If the upper transition point p1457 of the speed controller adaptation is set to lower values than the lower transition p1456, then the controller gain below p1457 is adapted with p1459 and above p1456, with p1458.

p1460[0...n] Velocity controller P gain A / v_ctrl Kp A

HLA

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-100.000 [%]	1000.000 [%]	0.000 [%]

Description: Sets the proportional gain (Kp) for the velocity controller at the A side

p1460[0...n] Speed controller P gain adaptation speed lower / n_ctrl Kp n lower

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5040, 5042
P-Group: Closed-loop control	**Unit group:** 17_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0000 [Nms/rad]	500000000.0000 [Nms/rad]	0.3000 [Nms/rad]

Description: Sets the P gain of the speed controller before the adaptation speed range (0 ... p1464).

This value corresponds to the basic setting of the P gain of the speed controller without adaptation (p1461 = 100 %).

Dependency: Refer to: p1461, p1464, p1465

Note: When automatically calculating the speed controller, only the motor moment of inertia is taken into account (p0341). For higher load moments of inertia (p0342 > 1 or p1498 > 0), you are advised to check the speed controller gain.

p1460[0...n] Velocity controller P gain adaptation velocity lower / v_ctrl Kp n lower

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5040, 5042
P-Group: Closed-loop control	**Unit group:** 24_2	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0000 [Ns/m]	500000000.0000 [Ns/m]	10.0000 [Ns/m]

Description: Sets the P gain of the velocity controller before the adaptation velocity range (0 ... p1464).

This value corresponds to the basic setting of the P gain of the velocity controller without adaptation (p1461 = 100 %).

Dependency: Refer to: p1461, p1464, p1465

Note: When automatically calculating the velocity controller, only the motor inertia is taken into account (p0341). For higher inertias (p0342 > 1 or p1498 > 0), you are advised to check the velocity controller gain.

p1460[0...n] Speed controller P gain adaptation speed lower / n_ctrl Kp n lower

VECTOR (J_estimator, n/M), VECTOR_AC (J_estimator, n/M), VECTOR_I_AC (J_estimator, n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6020, 6040
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0000	999999.0000	0.3000

Description: Sets the P gain of the speed controller before the adaptation speed range (0 ... p1464).

This value corresponds to the basic setting of the P gain of the speed controller without adaptation (p1461 = 100 %).

Dependency: For p0528 = 1, the speed controller gain is represented without any dimensions.

Refer to: p1461, p1464, p1465

p1461[0...n] Velocity controller P gain / v_ctr Kp

HLA

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-100.0 [%]	1000.0 [%]	0.0 [%]

Description: Sets the proportional gain (Kp) for the velocity controller at the position of the minimum natural frequency.

p1461[0...n] Speed controller Kp adaptation speed upper scaling / n_ctr Kp n up scal

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5050
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	200000.0 [%]	100.0 [%]

Description: Sets the P gain of the speed controller for the upper adaptation speed range (> p1465).

The entry is made referred to the P gain for the lower adaptation speed range of the speed controller (% referred to p1460).

Dependency: Refer to: p1460, p1464, p1465

Note: When automatically calculating the speed controller, only the motor moment of inertia is taken into account (p0341). For higher load moments of inertia (p0342 > 1 or p1498 > 0), you are advised to check the speed controller gain.

p1461[0...n] Velocity controller Kp adaptation velocity upper scaling / v_ctr Kp n up scal

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5050
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	200000.0 [%]	100.0 [%]

Description: Sets the P gain of the velocity controller for the upper adaptation velocity range (> p1465).

The entry is made referred to the P gain for the lower adaptation velocity range of the velocity controller (% referred to p1460).

Dependency: Refer to: p1460, p1464, p1465

Note: When automatically calculating the velocity controller, only the motor inertia is taken into account (p0341). For higher inertias (p0342 > 1 or p1498 > 0), you are advised to check the velocity controller gain.

p1461[0...n] Speed controller Kp adaptation speed upper scaling / n_ctr Kp n up scal

VECTOR (J_estimator, n/M), VECTOR_AC (J_estimator, n/M), VECTOR_I_AC (J_estimator, n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6050
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	200000.0 [%]	100.0 [%]

Description: Sets the P gain of the speed controller for the upper adaptation speed range (> p1465).

The entry is made referred to the P gain for the lower adaptation speed range of the speed controller (% referred to p1460).

Dependency: Refer to: p1460, p1464, p1465

Note: If the upper transition point p1465 of the speed controller adaptation is set to lower values than the lower transition p1464, then the controller gain below p1465 is adapted with p1461. This means that an adaptation can be implemented for low speeds without having to change the controller parameters.

p1462[0...n] Velocity controller P gain B / v_ctrl Kp B

HLA	**Can be changed:** U, T	**Calculated:** CALC_MOD_CON	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-100.00 [%]	1000.00 [%]	0.00 [%]

Description: Sets the proportional gain (Kp) for the velocity controller at the B side

p1462[0...n] Speed controller integral time adaptation speed lower / n_ctrl Tn n lower

SERVO, SERVO_AC, SERVO_I_AC	**Can be changed:** U, T	**Calculated:** CALC_MOD_CON	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5040, 5042, 6020, 6040
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [ms]	100000.00 [ms]	20.00 [ms]

Description: Sets the integration time of the speed controller before the adaptation speed range (0 ... p1464).

This value corresponds to the basic setting of the integral time of the speed controller without adaptation (p1461 = 100 %).

Dependency: Refer to: p1463, p1464, p1465

p1462[0...n] Velocity contr. integral act. time adaptation velocity lower / v_ctrl Tn n lower

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)	**Can be changed:** U, T	**Calculated:** CALC_MOD_CON	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5040, 5042
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [ms]	100000.00 [ms]	20.00 [ms]

Description: Sets the integration time of the velocity controller before the adaptation velocity range (0 ... p1464).

This value corresponds to the basic setting of the integral time of the velocity controller without adaptation (p1461 = 100 %).

Dependency: Refer to: p1463, p1464, p1465

p1462[0...n] Speed controller integral time adaptation speed lower / n_ctrl Tn n lower

VECTOR (J_estimator, n/M), VECTOR_AC (J_estimator, n/M), VECTOR_I_AC (J_estimator, n/M)	**Can be changed:** U, T	**Calculated:** CALC_MOD_CON	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5040, 5042, 6020, 6040
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [ms]	100000.00 [ms]	20.00 [ms]

Description: Sets the integration time of the speed controller before the adaptation speed range (0 ... p1464).

This value corresponds to the basic setting of the integral time of the speed controller without adaptation (p1461 = 100 %).

Dependency: Refer to: p1463, p1464, p1465

Note: The integral component is stopped if the complete controller output or the sum of controller output and torque precontrol reach the torque limit.

p1463[0...n]	**Velocity controller integral time / v_ctr Tn**		
HLA	**Can be changed:** U, T	**Calculated:** CALC_MOD_CON	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.0 [ms]	2000.0 [ms]	0.0 [ms]

Description: Sets the integral time (Tn) for the velocity controller.

p1463[0...n]	**Speed controller Tn adaptation speed upper scaling / n_ctr Tn n up scal**		
SERVO, SERVO_AC, SERVO_I_AC	**Can be changed:** U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5050
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.0 [%]	200000.0 [%]	100.0 [%]

Description: Sets the integral time of the speed controller after the adaptation speed range (> p1465).

The entry is made referred to the integral time for the lower adaptation speed range of the speed controller (% referred to p1462).

Dependency: Refer to: p1462, p1464, p1465

p1463[0...n]	**Velocity controller Tn adaptation velocity upper scaling / v_ctr Tn n up scal**		
SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)	**Can be changed:** U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5050
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.0 [%]	200000.0 [%]	100.0 [%]

Description: Sets the integral time of the velocity controller after the adaptation velocity range (> p1465).

The entry is made referred to the integral time for the lower adaptation velocity range of the velocity controller (% referred to p1462).

Dependency: Refer to: p1462, p1464, p1465

p1463[0...n]	**Speed controller Tn adaptation speed upper scaling / n_ctr Tn n up scal**		
VECTOR (J_estimator, n/M), VECTOR_AC (J_estimator, n/M), VECTOR_I_AC (J_estimator, n/M)	**Can be changed:** U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6050
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.0 [%]	200000.0 [%]	100.0 [%]

Description: Sets the integral time of the speed controller after the adaptation speed range (> p1465).

The entry is made referred to the integral time for the lower adaptation speed range of the speed controller (% referred to p1462).

Dependency: Refer to: p1462, p1464, p1465

Note: If the upper transition point p1465 of the speed controller adaptation is set to lower values than the lower transition point p1464, then the controller integral time below p1465 is adapted with p1463. This means that an adaptation can be implemented for low speeds without having to change the controller parameters.

p1464[0...n] Velocity controller D component smoothing time constant / v_ctr D comp T

HLA			
	Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.25 [ms]	100.00 [ms]	0.25 [ms]

Description: Sets the smoothing time constant for the D component of the velocity controller.

p1464[0...n] Speed controller adaptation speed lower / n_ctrl n lower

SERVO, SERVO_AC, SERVO_I_AC			
	Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5050
	P-Group: Closed-loop control	**Unit group:** 3_1	**Unit selection:** p0505
	Not for motor type: REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [rpm]	210000.00 [rpm]	0.00 [rpm]

Description: Sets the lower adaptation speed of the speed controller.
No adaptation is effective below this speed.

Dependency: Refer to: p1460, p1461, p1462, p1463, p1465

p1464[0...n] Velocity controller adaptation velocity lower / v_ctrl n lower

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)			
	Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5050
	P-Group: Closed-loop control	**Unit group:** 4_1	**Unit selection:** p0505
	Not for motor type: REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [m/min]	1000.00 [m/min]	0.00 [m/min]

Description: Sets the lower adaptation velocity of the velocity controller.
No adaptation is effective below this velocity.

Dependency: Refer to: p1460, p1461, p1462, p1463, p1465

p1464[0...n] Speed controller adaptation speed lower / n_ctrl n lower

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)			
	Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6050
	P-Group: Closed-loop control	**Unit group:** 3_1	**Unit selection:** p0505
	Not for motor type: REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [rpm]	210000.00 [rpm]	0.00 [rpm]

Description: Sets the lower adaptation speed of the speed controller.
No adaptation is effective below this speed.

Dependency: The parameter is set by the speed controller optimization. Adaptation to the application should then be subsequently made.
Refer to: p1460, p1461, p1462, p1463, p1465

Note: If the upper transition point p1465 of the speed controller adaptation is set to lower values than the lower transition point p1464, then the controller below p1465 is adapted with p1461 or p1463. This means that an adaptation can be implemented for low speeds without having to change the controller parameters.

p1465[0...n] Velocity controller derivative-action time A / v_ctrl Tv A

HLA

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000.00 [ms]	1000.00 [ms]	0.00 [ms]

Description: Sets the derivative-action time (Tv, D component) for the velocity controller at the A side.

p1465[0...n] Speed controller adaptation speed upper / n_ctrl n upper

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5050
P-Group: Closed-loop control	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	210000.00 [rpm]

Description: Sets the upper adaptation speed of the speed controller.

No adaptation is effective above this speed.

For the proportional gain, p1460 x p1461 is effective.

For the integral time, p1462 x p1463 is effective.

Dependency: Refer to: p1460, p1461, p1462, p1463, p1464

p1465[0...n] Velocity controller adaptation velocity upper / v_ctrl n upper

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5050
P-Group: Closed-loop control	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [m/min]	1000.00 [m/min]	1000.00 [m/min]

Description: Sets the upper adaptation velocity of the velocity controller.

No adaptation is effective above this velocity.

For the proportional gain, p1460 x p1461 is effective.

For the integral time, p1462 x p1463 is effective.

Dependency: Refer to: p1460, p1461, p1462, p1463, p1464

p1465[0...n] Speed controller adaptation speed upper / n_ctrl n upper

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6050
P-Group: Closed-loop control	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	210000.00 [rpm]

Description: Sets the upper adaptation speed of the speed controller.

No adaptation is effective above this speed.

For the proportional gain, p1460 x p1461 is effective.

For the integral time, p1462 x p1463 is effective.

Dependency: The parameter is set by the speed controller optimization. Adaptation to the application should then be subsequently made.

Refer to: p1460, p1461, p1462, p1463, p1464

Note: If the upper transition point p1465 of the speed controller adaptation is set to lower values than the lower transition point p1464, then the controller below p1465 is adapted with p1461 or p1463. This means that an adaptation can be implemented for low speeds without having to change the controller parameters.

p1466[0...n] Velocity controller derivative-action time / v_ctrl Tv

HLA

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000.00 [ms]	1000.00 [ms]	0.00 [ms]

Description: Sets the derivative-action time (Tv, D component) for the velocity controller at the position of the minimum natural frequency.

p1466[0...n] CI: Speed controller P-gain scaling / n_ctrl Kp scal

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 5050
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for the scaling of the P gain of the speed controller.

This also makes the effective P gain (including adaptations) scalable.

p1466[0...n] CI: Velocity controller P gain scaling / v_ctrl Kp scal

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 5050
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for the scaling of the P gain of the velocity controller.

This also makes the effective P gain (including adaptations) scalable.

p1466[0...n] CI: Speed controller P-gain scaling / n_ctrl Kp scal

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 6050
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for the scaling of the P gain of the speed controller.

This also makes the effective P gain (including adaptations) scalable.

p1467[0...n] Velocity controller derivative-action time B / v_ctrl Tv B

HLA

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000.00 [ms]	1000.00 [ms]	0.00 [ms]

Description: Sets the derivative-action time (Tv, D component) for the velocity controller at the B side.

r1468 Velocity controller P gain effective / v_ctrl Kp eff

HLA

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the effective P gain of the velocity controller.

r1468 Speed controller P-gain effective / n_ctr Kp eff

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5040, 5042, 5210
P-Group: Closed-loop control	**Unit group:** 17_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Nms/rad]	- [Nms/rad]	- [Nms/rad]

Description: Displays the effective P gain of the speed controller.

Note: For encoderless operation and speeds less than p1755 (open-loop controlled mode) the speed controller is not active and r1468 = 0 is displayed.

r1468 Velocity controller P gain effective / v_ctrl Kp eff

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5040, 5042, 5210
P-Group: Closed-loop control	**Unit group:** 24_2	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Ns/m]	- [Ns/m]	- [Ns/m]

Description: Displays the effective P gain of the velocity controller.

Note: For encoderless operation and velocities less than p1755 (open-loop controlled mode) the velocity controller is not active and r1468 = 0 is displayed.

r1468 CO: Speed controller P-gain effective / n_ctr Kp eff

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6040
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the effective P gain of the speed controller.

Dependency: For p0528 = 1, the speed controller gain is represented without any dimensions. In this case, connector output signal r1468 is increased by a factor of 100 in order to improve the resolution.

r1469 Velocity controller derivative-action time active / v_ctrl Tv act

HLA

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [ms]	- [ms]	- [ms]

Description: Displays the effective derivative time of the velocity controller.

r1469 Speed controller integral time effective / n_ctr Tn eff

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5040, 5042, 6040
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [ms]	- [ms]	- [ms]

Description: Displays the effective integral time of the speed controller.

r1469 Velocity controller integral time effective / v_ctrl Tn eff

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5040, 5042
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [ms]	- [ms]	- [ms]

Description: Displays the effective integral time of the velocity controller.

p1470[0...n] Speed controller encoderless operation P-gain / n_ctrl SL Kp

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5210
P-Group: Closed-loop control	**Unit group:** 17_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00000 [Nms/rad]	999999.00000 [Nms/rad]	0.30000 [Nms/rad]

Description: Sets the P gain for encoderless operation for the speed controller.

Note: When automatically calculating the speed controller, only the motor moment of inertia is taken into account (p0341). For higher load moments of inertia (p0342 > 1 or p1498 > 0), you are advised to check the speed controller gain.

p1470[0...n] Velocity controller encoderless operation P-gain / v_ctrl SLVC Kp

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5210
P-Group: Closed-loop control	**Unit group:** 24_2	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00000 [Ns/m]	999999.00000 [Ns/m]	10.00000 [Ns/m]

Description: Sets the P gain for encoderless operation for the velocity controller.

Note: When automatically calculating the velocity controller, only the motor inertia is taken into account (p0341). For higher inertias (p0342 > 1 or p1498 > 0), you are advised to check the velocity controller gain.

p1470[0...n] Speed controller encoderless operation P-gain / n_ctrl SL Kp

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6040, 6050
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00000	999999.00000	0.30000

Description: Sets the P gain for encoderless operation for the speed controller.

Dependency: For p0528 = 1, the speed controller gain is represented without any dimensions.

Note: The product p0341 x p0342 is taken into account when automatically calculating the speed controller (p0340 = 1, 3, 4).

p1472[0...n] Speed controller encoderless operation integral time / n_ctrl SL Tn

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5210
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [ms]	100000.0 [ms]	20.0 [ms]

Description: Set the integral time for encoderless operation for the speed controller.

p1472[0...n] Velocity controller encoderless operation integral time / v_ctrl SLVC Tn

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5210
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [ms]	100000.0 [ms]	20.0 [ms]

Description: Set the integral time for encoderless operation for the velocity controller.

p1472[0...n] Speed controller encoderless operation integral time / n_ctrl SL Tn

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6040, 6050
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [ms]	100000.0 [ms]	20.0 [ms]

Description: Set the integral time for encoderless operation for the speed controller.

Note: The integral component is stopped if the complete controller output or the sum of controller output and torque precontrol reach the torque limit.

p1475[0...n] Velocity controller loop gain / v_ctrl loop_gain

HLA

Can be changed: U, T	**Calculated:** CALC_MOD_EQU	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [mm/Vmin]	20000.0 [mm/Vmin]	0.0 [mm/Vmin]

Description: Sets the loop gain of the velocity controller.

p1475[0...n] CI: Speed controller torque setting value for motor holding brake / n_ctrl M_sv MHB

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 6040
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the torque setting value when starting up with motor holding brake.

Recommendation: To hold the actual torque when stopping the motor, you are advised to set p1400.1 = 1. As a result, the integral component of the speed controller is frozen when changing to the open-loop controlled operating range.

Dependency: The switching in of the torque setting value for the motor holding brake has a higher priority than the setting of the integrator value using p1477 and p1478.

Note: The setting of the integral output of the speed controller begins after magnetizing (see p0346, r0056.4) and ends at the end of the brake control opening time p1216. A setting value of zero means that no setting procedure will take place.

p1476[0...n] BI: Velocity controller hold integrator / v_ctrl integ stop

HLA

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to hold the integrator for the velocity controller.

p1476[0...n] BI: Speed controller hold integrator / n_ctrl integ stop

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2520, 5040, 5042, 5210, 6040
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to hold the integrator for the speed controller.

p1476[0...n] BI: Velocity controller hold integrator / v_ctrl integ stop

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2520, 5040, 5042, 5210
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to hold the integrator for the velocity controller.

p1477[0...n] BI: Velocity controller set integrator value / v_ctrl integ set

HLA

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to set the integrator setting value (p1478).

Dependency: Refer to: p1478, p1479

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: For the interface mode "SIMODRIVE 611 universal" (p2038 = 1), p1477 and p1478 are used for the signal STW2.6 (integrator inhibit, speed controller).

p1477[0...n] BI: Speed controller set integrator value / n_ctrl integ set

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2520, 5040, 5042, 5210, 6040
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to set the integrator setting value (p1478).

Dependency: Refer to: p1478, p1479

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: For the interface mode "SIMODRIVE 611 universal" (p2038 = 1), p1477 and p1478 are used for the signal STW2.6 (integrator inhibit, speed controller).

p1477[0...n] BI: Velocity controller set integrator value / v_ctrl integ set

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2520, 5040, 5042, 5210
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to set the integrator setting value (p1478).

Dependency: Refer to: p1478, p1479

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: For the interface mode "SIMODRIVE 611 universal" (p2038 = 1), p1477 and p1478 are used for the signal STW2.6 (integrator inhibit, speed controller).

p1478[0...n] CI: Velocity controller integrator value / v_ctr integ_setVal

HLA

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the integrator setting value for the velocity controller.

The signal to set this integrator setting value is interconnected via p1477.

Dependency: Refer to: p1477, p1479

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: For the interface mode "SIMODRIVE 611 universal" (p2038 = 1), p1477 and p1478 are used for the signal STW2.6 (integrator inhibit, speed controller).

p1478[0...n] CI: Speed controller integrator setting value / n_ctr integ_setVal

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 5040, 5042, 5210
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the integrator setting value for the velocity controller.

The signal to set this integrator setting value is interconnected via p1477.

Dependency: Refer to: p1477, p1479

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: For the interface mode "SIMODRIVE 611 universal" (p2038 = 1), p1477 and p1478 are used for the signal STW2.6 (integrator inhibit, speed controller).

p1478[0...n] CI: Velocity controller integrator value / v_ctr integ_setVal

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 5040, 5042, 5210
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the integrator setting value for the velocity controller.

The signal to set this integrator setting value is interconnected via p1477.

Dependency: Refer to: p1477, p1479

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: For the interface mode "SIMODRIVE 611 universal" (p2038 = 1), p1477 and p1478 are used for the signal STW2.6 (integrator inhibit, speed controller).

p1478[0...n] CI: Speed controller integrator setting value / n_ctr integ_setVal

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 6040
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the integrator setting value for the velocity controller.

The signal to set this integrator setting value is interconnected via p1477.

Dependency: The setting value of the speed controller integrator is weighted with the scaling factor of the signal source in p1479.

If p1478 is interconnected to the integral output of the speed controller (r1482), then after the magnetizing time (r0346) and if the speed controller is enabled, the integral component of the controller is set to the last value before the pulse inhibit. This value is set if no setting command (p1477) is interconnected or, at the instant that the pulses were inhibited, a setting command is available, which is not deactivated up to the next time that the pulses are inhibited. For sensorless vector control, in addition p1400.1 should be set to 1 so that when the drive is stopped, the integral component of the speed controller is not controlled down to zero.

In order that when setting the integrator output, only the static torque is detected, we recommend that the accelerating torque is completely precontrolled (e.g. p1496).

If p1478 is interconnected to another output other than r1482, then after magnetizing and speed controller enable, the integral output is set once if the setting command is not interconnected (p1477 = 0).

Refer to: p1477, p1479

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p1479[0...n] CI: Speed controller integrator setting value scaling / n_ctrl I_val scal

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 6040
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for scaling the integrator setting value (p1478) of the speed controller.

Dependency: Refer to: p1477, p1478

r1480 CO: Velocity controller PID output / v_ctrl PID outp

HLA

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Display and connector output for the voltage setpoint at the output of the PID velocity controller.

r1480 CO: Speed controller PI torque output / n_ctrl PI-M_outp

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5019, 5040, 5042, 5060, 5210, 6060
P-Group: Closed-loop control	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Display and connector output for the torque setpoint at the output of the PI speed controller.

r1480 CO: Velocity controller PI force output / v_ctrl PI-F_outp

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5019, 5040, 5042, 5060, 5210
P-Group: Closed-loop control	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [N]	- [N]	- [N]

Description: Display and connector output for the force setpoint at the output of the PI velocity controller.

r1481 CO: Velocity controller P component output / v_ctrl P outp

HLA

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Display and connector output for the voltage setpoint of the P component for the velocity controller.

r1481 CO: Speed controller P torque output / n_ctrl P-M_outp

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5040, 5042, 5210, 6040
P-Group: Closed-loop control	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Display and connector output for the torque setpoint at the output of the P speed controller.

r1481 CO: Velocity controller P force output / v_ctrl P-F_outp

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5040, 5042, 5210
P-Group: Closed-loop control	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [N]	- [N]	- [N]

Description: Display and connector output for the force setpoint at the output of the P velocity controller.

r1482 CO: Velocity controller I component output / v_ctrl I outp

HLA

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4965
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Display and connector output for the voltage setpoint of the I component for the velocity controller.

r1482 CO: Speed controller I torque output / n_ctrl I-M_outp

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5040, 5042, 5210, 6030, 6040
P-Group: Closed-loop control	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Display and connector output for the torque setpoint at the output of the I speed controller.

r1482 CO: Velocity controller I force output / v_ctrl I-F_outp

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5040, 5042, 5210
P-Group: Closed-loop control	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [N]	- [N]	- [N]

Description: Display and connector output for the force setpoint at the output of the I velocity controller.

r1483 CO: Velocity controller D component output / v_ctrl D outp

HLA

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4965
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Display and connector output for the voltage setpoint of the D component for the velocity controller.

r1484 CO: Speed controller Kp adaptation as percentage / n_ctrl Kp adap %

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5040, 5042, 5210
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Display and connector output for the percentage Kp adaptation of the speed controller.

Dependency: Refer to: p1460, p1461, p1464, p1465

Note: The value is referred to the set proportional gain (p1460).

r1484 CO: Velocity controller Kp adaptation as percentage / v_ctrl Kp adap %

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5040, 5042, 5210
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Display and connector output for the percentage Kp adaptation of the velocity controller.

Dependency: Refer to: p1460, p1461, p1464, p1465

Note: The value is referred to the set proportional gain (p1460).

p1486[0...n] CI: Droop compensation torque / Droop M_comp

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 6030
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the compensation torque to be output within the droop calculation.

This parameter should be interconnected with the torque setpoint of the drive (corresponding to the selection p1488), with which load equalization should be performed.

p1487[0...n] Droop compensation torque scaling / Droop M_comp scal

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6030
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-2000.0 [%]	2000.0 [%]	100.0 [%]

Description: Sets the scaling for the compensation torque within the droop calculation.

p1488[0...n] Droop input source / Droop input source

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 6030
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	3	0

Description: Sets the source for droop feedback.

With increasing torque, the speed setpoint is reduced (enabled using p1492), so that for mechanically coupled drives a load equalization (load compensation) is obtained.

A load difference compensation is also possible, if p1486 is interconnected with the torque setpoint of the other drive.

Value:
0: Droop feedback not connected
1: Droop from torque setpoint
2: Droop from speed controller output
3: Droop from integral output speed controller

Dependency: Refer to: p1486, p1487, p1489, r1490, p1492

Caution: For active acceleration precontrol of the speed controller (refer to p1496), it is not recommended that p1488 is set to 1, as this could result in positive coupling effects. Instead of this, as source of the droop feedback, the output signal of the speed controller should be used, which generally sets the load torque.

p1489[0...n] Droop feedback scaling / Droop scal

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6030
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	0.500	0.050

Description: Sets the scaling for the droop feedback

Dependency: Refer to: p1486, p1487, p1488, r1490, p1492

Note: Example:

A value of 0.05 means that for a torque equal to the rated motor torque, the rated motor speed is reduced by 5 %.

r1490 CO: Droop feedback speed reduction / Droop n_reduction

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6030
P-Group: Closed-loop control	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the output signal of the droop calculation. The droop feedback result is subtracted from the speed setpoint when activated (p1492).

Dependency: Refer to: p1486, p1487, p1488, p1489, p1492

p1492[0...n] BI: Droop feedback enable / Droop enable

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2520, 6030
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Enables the droop to be applied to the speed/velocity setpoint.

Dependency: Refer to: p1486, p1487, p1488, p1489, r1490

Note: Even when not enabled, the droop speed is calculated but not subtracted from the setpoint speed. This makes it possible to subtract the result of this calculation from the speed of another drive.

r1493 CO: Moment of inertia total / M_inertia total

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5042, 5210
P-Group: Closed-loop control	**Unit group:** 25_1	**Unit selection:** p0100
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [kgm²]	- [kgm²]	- [kgm²]

Description: Display and connector output for the parameterized total moment of inertia.

The value is calculated as follows: (p0341 * p0342) + p1498

The scaling is not take into account using p1497.

When the "moment of inertia estimator" is activated (r0108.10 = 1, p1400.18 = 1) and scaling is deactivated (CI: p1497 = 1), the following applies:

The currently estimated value of the moment of inertia estimator is displayed in this parameter.

Dependency: Refer to: p1300, p1402, p1404, p1497

Note: The parameterized total moment of inertia, taking into account p1497, influences the torque precontrol.

In encoderless operation or when the torque-speed precontrol with encoder (p1402.4 = 1) is activated, then torque-speed precontrol is activated.

r1493 CO: Total mass / Total mass

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5042, 5210
P-Group: Closed-loop control	**Unit group:** 27_1	**Unit selection:** p0100
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [kg]	- [kg]	- [kg]

Description: Display and connector output for the parameterized total mass.

The value is calculated as follows: (p0341 * p0342) + p1498

The scaling is not take into account using p1497.

When the "moment of inertia estimator" is activated (r0108.10 = 1, p1400.18 = 1) and scaling is deactivated (CI: p1497 = 1), the following applies:

The currently estimated value of the moment of inertia estimator is displayed in this parameter.

Dependency: Refer to: p1300, p1402, p1404, p1497

Note: The parameterized total mass, taking into account p1497, influences the force-velocity precontrol.

In encoderless operation or when the force-velocity precontrol with encoder (p1402.4 = 1) is activated, then torque-velocity precontrol is activated.

r1493 CO: Moment of inertia total, scaled / M_inert tot scal

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6031
P-Group: Closed-loop control	**Unit group:** 25_1	**Unit selection:** p0100
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [kgm²]	- [kgm²]	- [kgm²]

Description: Display and connector output for the parameterized total moment of inertia.

The value is calculated as follows: (p0341 * p0342) + p1496

The scaling is not take into account using p1497.

p1494[0...n]	Velocity controller integrator feedback time constant / v_ctr integ_fdbk T		
HLA	**Can be changed:** U, T	**Calculated:** -	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [ms]	1000.00 [ms]	0.00 [ms]

Description: Sets the time constant of the PT1 filter for integrator feedback.

The integrator of the velocity controller is re-parameterized to become a PT1 filter through a feedback element (1st Order low pass filter characteristics).

The following applies:

p1494 < 0.25 (2 x p0115[1]) --> the PT1 filter is not active - the pure integrator is effective.

p1494 >= 0.25 (2 x p0115[1]) --> the PT1 filter is active and has replaced the pure integrator.

Dependency: Refer to: p1495

Note: Applications:

Motion at zero setpoint and dominant stiction can be suppressed but this has a negative impact on the remaining setpoint-actual value difference. This can be used, for example, to avoid oscillation of a position-controlled axis at standstill (stick-slip effect) or overshoot when traversing (moving) in micrometer steps.

p1494[0...n]	Speed controller integrator feedback time constant / n_ctr integ_fdbk T		
SERVO, SERVO_AC, SERVO_I_AC	**Can be changed:** U, T	**Calculated:** -	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5040, 5042, 5210
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [ms]	1000.00 [ms]	0.00 [ms]

Description: Sets the time constant of the PT1 filter for integrator feedback.

The integrator of the speed controller is re-parameterized to become a PT1 filter through a feedback element (1st Order low pass filter characteristics).

The following applies:

p1494 < 2 x p0115[1] --> the PT1 filter is not active - the pure integrator is effective.

p1494 >= 2 x p0115[1] --> the PT1 filter is active and has replaced the pure integrator.

Note: Applications:

Motion at zero setpoint and dominant stiction can be suppressed but this has a negative impact on the remaining setpoint-actual value difference. This can be used, for example, to avoid oscillation of a position-controlled axis at standstill (stick-slip effect) or overshoot when traversing (moving) in micrometer steps.

Also prevents tension/stressing for axes that are mechanically and rigidly coupled with one another (e.g. for synchronous spindles, master - slave axes).

p1494[0...n]	Velocity controller integrator feedback time constant / v_ctr integ_fdbk T		
SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)	**Can be changed:** U, T	**Calculated:** -	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5040, 5042, 5210
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [ms]	1000.00 [ms]	0.00 [ms]

Description: Sets the time constant of the PT1 filter for integrator feedback.

The integrator of the velocity controller is re-parameterized to become a PT1 filter through a feedback element (1st Order low pass filter characteristics).

The following applies:

p1494 < 0.25 (2 x p0115[1]) --> the PT1 filter is not active - the pure integrator is effective.

p1494 >= 0.25 (2 x p0115[1]) --> the PT1 filter is active and has replaced the pure integrator.

Note: Applications:

Motion at zero setpoint and dominant stiction can be suppressed but this has a negative impact on the remaining setpoint-actual value difference. This can be used, for example, to avoid oscillation of a position-controlled axis at standstill (stick-slip effect) or overshoot when traversing (moving) in micrometer steps.

Also prevents tension/stressing for axes that are mechanically and rigidly coupled with one another (e.g. for synchronous spindles, master - slave axes).

p1495[0...n] Integrator feedback velocity threshold / Integ_fdbk v_thr

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
P-Group: Closed-loop control	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [m/min]	120000.000 [m/min]	0.010 [m/min]

Description: Sets the velocity threshold for the integrator feedback.

Dependency: Refer to: p1494

p1495[0...n] CI: Acceleration precontrol / a_prectrl

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 6031
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** p2007	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the acceleration precontrol.

Dependency: The signal source for the acceleration is activated with p1400.2 = 1.

For p1400.2 = 0, the acceleration precontrol is calculated from the speed setpoint change from r0062.

For p1400.2 = 0 and activate reference model (p1400.3 = 1) the acceleration precontrol is switched out.

Refer to: p1400, p1496

Note: If the acceleration is entered as external signal, then the accelerating torque is calculated as follows (r1518):

r1518 = acceleration (% of p2007) / 100 % * (p2007 * 60 s) / p0311 * r0345 / 1 s * r0333

p1496[0...n] Acceleration precontrol scaling / a_prectrl scal

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6020, 6031
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	10000.0 [%]	0.0 [%]

Description: Sets the scaling for the acceleration precontrol of the speed/velocity controller.

Dependency: When the reference model is activated (p1400.3 = 1) and for an internal acceleration precontrol (p1400.2 = 0), the acceleration precontrol is switched out (disabled). The reference model (p1400.3 = 1) and external acceleration precontrol (p1400.2 = 1) can be operated together.

Refer to: p0341, p0342

Warning: The acceleration precontrol r1518 is kept at the old value if the ramp-function generator tracking (r1199.5) is active or the ramp-function generator output is set (r1199.3). This is used to avoid torque peaks. Depending on the application, it may therefore be necessary to disable the ramp-function generator tracking (p1145 = 0) or the acceleration precontrol (p1496 = 0).

The acceleration precontrol is set to zero, if the Vdc control is active (r0056.14/15).

Note: The parameter is set to 100% by the rotating measurement (refer to p1960).

The acceleration precontrol may not be used if the speed setpoint manifests significant ripple (e.g. analog setpoint) and the rounding-off in the speed ramp-function generator is disabled.

We also recommend that the precontrol mode is not used if there is gearbox backlash.

p1497[0...n] CI: Moment of inertia scaling signal source / M_inert scal s_src

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 5042, 5210, 6030, 6031
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for scaling the motor moment of inertia.

Notice: This parameter has no effect when the "moment of inertia estimator" function is active (r0108.10 = 1, p1400.18 = 1).

p1497[0...n] CI: Mass scaling signal source / Mass scal s_src

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 5042, 5210
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for scaling the motor mass.

Notice: This parameter has no effect when the "moment of inertia estimator" function is active (r0108.10 = 1, p1400.18 = 1).

p1497[0...n] CI: Moment of inertia scaling signal source / M_inert scal s_src

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 5042, 5210, 6030, 6031
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for scaling the motor moment of inertia.

p1498[0...n] Load mass / Load mass

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** 27_1	**Unit selection:** p0100
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00000 [kg]	100000.00000 [kg]	0.00000 [kg]

Description: Sets the load mass.

Note: p0341 + p1498 influence the calculation of the natural frequencies (p0352 ... p0354), of the force offset (p1532) and of the velocity controller (p1460 ... p1467) for p0340.1 = 1 or p3900 = 3.

p1498[0...n] Load moment of inertia / Load M_inertia

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5042, 5210
P-Group: Closed-loop control	**Unit group:** 25_1	**Unit selection:** p0100
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [kgm²]	- [kgm²]	- [kgm²]

Description: Sets the load moment of inertia.

Note: (p0341 * p0342) + p1498 influence the speed/torque precontrol (active in encoderless operation or for p1402.4 = 1).

p1498[0...n] Load mass / Load mass

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5042, 5210
P-Group: Closed-loop control	**Unit group:** 27_1	**Unit selection:** p0100
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [kg]	- [kg]	- [kg]

Description: Sets the load mass.

Note: (p0341 * p0342) + p1498 influence the velocity/force precontrol (active in encoderless operation or for p1402.4 = 1).

p1498[0...n] Load moment of inertia / Load M_inertia

VECTOR (J_estimator, n/M), VECTOR_AC (J_estimator, n/M), VECTOR_I_AC (J_estimator, n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6031
P-Group: Closed-loop control	**Unit group:** 25_1	**Unit selection:** p0100
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00000 [kgm²]	100000.00000 [kgm²]	0.00000 [kgm²]

Description: Sets the load moment of inertia.

Note: (p0341 * p0342) + p1498 influence the speed/torque precontrol (active in encoderless operation or for p1402.4 = 1).

p1499[0...n] Accelerating for torque control scaling / a for M_ctrl scal

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6030
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	400.0 [%]	100.0 [%]

Description: Sets the scaling for the acceleration integrator at low speeds (only for encoderless torque control).

Dependency: Refer to: p0341, p0342

p1500[0...n] Macro Connector Inputs (CI) for torque setpoints / Macro CI M_set

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(1), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** CDS, p0170	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	999999	0

Description: Runs the corresponding macro files.

The Connector Inputs (CI) for the torque setpoints of the appropriate Command Data Set (CDS) are appropriately interconnected.

The selected macro file must be available on the memory card/device memory.

Example:

p1500 = 6 --> the macro file PM000006.ACX is run.

Dependency: Refer to: p0015, p0700, p1000, r8573

Notice: No errors were issued during quick commissioning (p3900 = 1) when writing to parameters of the QUICK_IBN group!

When executing a specific macro, the corresponding programmed settings are made and become active.

Note: The macros in the specified directory are displayed in r8573. r8573 is not in the expert list of the commissioning tool.

Macros available as standard are described in the technical documentation of the particular product.

CI: Connector Input

p1500[0...n] Macro Connector Inputs (CI) for force setpoints / Macro CI F_set

SERVO (Lin), HLA, SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: C2(1), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** CDS, p0170	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	999999	0

Description: Runs the corresponding macro files.

The connector inputs (CI) for the force setpoints of the appropriate command data set (CDS) are appropriately interconnected.

The selected macro file must be available on the memory card/device memory.

Example:

p1500 = 6 --> the macro file PM000006.ACX is run.

Dependency: Refer to: p0015, p0700, p1000, r8573

Notice: No errors were issued during quick commissioning (p3900 = 1) when writing to parameters of the QUICK_IBN group!

When executing a specific macro, the corresponding programmed settings are made and become active.

Note: The macros in the specified directory are displayed in r8573. r8573 is not in the expert list of the commissioning tool.

Macros available as standard are described in the technical documentation of the particular product.

CI: Connector Input

p1501[0...n] BI: Change over between closed-loop speed/torque control / Changeov n/M_ctrl

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2520, 6020
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for toggling between speed and torque control.

0 signal: Closed-loop speed control

1 signal: Closed-loop torque control

Dependency: The input connectors to enter the torque are provided using p1511, p1512 and p1513.

Refer to: p1300

Notice: If the closed-loop torque control is not activated (p1300) and a change is made to closed-loop torque control (p1501), OFF1 (p0840) does not have its own braking response but pulse suppression when standstill is detected (p1226, p1227).

Note: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p1501[0...n] BI: Change over velocity/force control / Changeov n/F_ctrl

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2520, 6020
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for toggling between velocity and force control.

0 signal: Velocity control

1 signal: Force control

Dependency: The input connectors to enter the force are provided using p1511, p1512 and p1513.

Refer to: p1300

Notice: If the closed-loop force control is not activated (p1300) and a change is made to closed-loop force control (p1501), OFF1 (p0840) does not have its own braking response but pulse suppression when standstill is detected (p1226, p1227).

p1502[0...n] BI: Freeze moment of inertia estimator / J_estim freeze

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to freeze the estimated moment of inertia.

0 signal:

Moment of inertia estimator active

1 signal:

Determined moment of inertia frozen.

Dependency: Refer to: p1300

Note: Only active when the "moment of inertia estimator" function module is active (r0108.10 = 1) and p1400.18 =1.

p1502[0...n] BI: Freeze moment of inertia estimator / J_estim freeze

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to freeze the estimated moment of inertia.

0 signal:

Moment of inertia estimator active

1 signal:

Determined moment of inertia frozen.

Dependency: Refer to: p1300

Note: Only active when the "moment of inertia estimator" function module is active (r0108.10 = 1) and p1400.18 =1.

For operation with encoder, p1400.23 must also be set to 1.

p1503[0...n] CI: Torque setpoint / M_set

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 6020, 6060
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the torque setpoint for torque control.

Note: A change is made to closed-loop torque control if, in p1300, closed-loop torque control was selected or if the selection was made using the changeover source in p1501.

it is also possible to change over in operation using p1501.

r1508 CO: Torque setpoint before supplementary torque / M_set bef. M_suppl

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6030, 6060, 6722
P-Group: Closed-loop control	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Displays the torque setpoint before entering the supplementary torque.

For closed-loop speed control, r1508 corresponds to the speed controller output; for closed-loop torque control, r1508 corresponds to the torque setpoint of the signal source assigned in p1503.

r1509 CO: Torque setpoint before torque limiting / M_set before M_lim

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5019, 5060, 5610
P-Group: Closed-loop control	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Display and connector output for the total torque setpoint before torque limiting.

The value is the sum of the controller output, supplementary torque and where relevant precontrol torque, operation without encoder.

r1509 CO: Force setpoint before force limiting / F_set before F_lim

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5019, 5060, 5610
P-Group: Closed-loop control	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [N]	- [N]	- [N]

Description: Display and connector output for the total force setpoint before force limiting.

The value is the sum of the controller output, supplementary force and where relevant precontrol force, operation without encoder.

p1511[0...n] CI: Force setpoint / F_set

HLA

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 4970
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the force setpoint.

The force setpoint can be scaled using p1512 and is only effective for p1400.14 = 1.

Dependency: Refer to: p1400, p1512

p1511[0...n] CI: Supplementary torque 1 / M_suppl 1

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 5060
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for supplementary torque 1.

p1511[0...n] CI: Supplementary force 1 / F_suppl 1

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 5060
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for supplementary force 1.

p1511[0...n] CI: Supplementary torque 1 / M_suppl 1

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 6020, 6060
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for supplementary torque 1.

p1512[0...n] CI: Force setpoint scaling / F_set scal

HLA

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 4970
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for scaling the force setpoint via p1511.

Dependency: Refer to: p1400, p1511

p1512[0...n] CI: Supplementary torque 1 scaling / M_suppl 1 scal

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 5060, 6060
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for scaling the supplementary torque 1.

p1512[0...n] CI: Supplementary force 1 scaling / F_suppl 1 scal

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 5060, 6060
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for scaling the supplementary force 1.

p1513[0...n] CI: Supplementary torque 2 / M_suppl 2

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 5060
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for supplementary torque 2.

Note: Supplementary torque 2 can be used for weight equalization, and for example, is included in the manufacturer-specific telegram 136.

p1513[0...n] CI: Supplementary force 2 / F_suppl 2

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 5060
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for supplementary force 2.

Note: Supplementary force 2 can be used for weight equalization, and for example, is included in the manufacturer-specific telegram 136.

p1513[0...n] CI: Supplementary torque 2 / M_suppl 2

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 6020, 6060
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for supplementary torque 2.

p1514[0...n] Supplementary torque 2 scaling / M_suppl 2 scal

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6020, 6060
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-2000.0 [%]	2000.0 [%]	100.0 [%]

Description: Sets the scaling for supplementary torque 2.

r1515 Supplementary torque total / M_suppl total

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5060
P-Group: Closed-loop control	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Displays the total supplementary torque.

The displayed value is the total of supplementary torque values 1 and 2 (p1511, p1512, p1513, p1514).

r1515 Supplementary force total / F_suppl total

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5060
P-Group: Closed-loop control	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [N]	- [N]	- [N]

Description: Displays the total supplementary force.

The displayed value is the total of supplementary forces 1 and 2 (p1511, p1512, p1513, p1514).

r1515 Supplementary torque total / M_suppl total

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6020, 6060
P-Group: Closed-loop control	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Displays the total supplementary torque.

The displayed value is the total of supplementary torque values 1 and 2 (p1511, p1512, p1513, p1514).

r1516 CO: Supplementary torque and acceleration torque / M_suppl + M_accel

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6060
P-Group: Closed-loop control	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Displays the total supplementary torque and the accelerating torque.

The displayed value is the total of the smoothed supplementary torque and the accelerating torque (p1516 = p1518[1] + r1515).

p1517[0...n] Accelerating torque smoothing time constant / M_accel T_smooth

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5042, 5210, 6060
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	100.00 [ms]	4.00 [ms]

Description: Sets the smoothing time constant of the accelerating torque.

Note: For servo drives, the following applies:

- For p1402.4 = 1, the highest dynamic performance is achieved with p1517 = 0 ms.
- in encoderless operation, p1517 should be set >= 0.5 ms; for an induction motor with current displacement rotor p1517 >= 20 ms is recommended.

For vector drives, the following applies:

- the acceleration precontrol is inhibited if the smoothing is set to the maximum value.

p1517[0...n] Acceleration force smoothing time constant / F_accel T_smooth

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5042, 5210
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	100.00 [ms]	4.00 [ms]

Description: Sets the smoothing time constant of the accelerating force.

Note: For servo drives, the following applies:

- For p1402.4 = 1, the highest dynamic performance is achieved with p1517 = 0 ms.
- in encoderless operation, p1517 should be set >= 0.5 ms.

r1518[0...1] CO: Accelerating torque / M_accel

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5042, 5210
P-Group: Closed-loop control	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Displays the accelerating torque to precontrol the speed controller for torque-speed precontrol (p1402.4 = 1) or in encoderless operation.

Index: [0] = Unsmoothed
[1] = Smoothed

Dependency: Refer to: p0341, p0342, p1300, p1402, r1493, p1497, p1498

r1518[0...1] CO: Accelerating force / F_accel

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5042, 5210
P-Group: Closed-loop control	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [N]	- [N]	- [N]

Description: Displays the accelerating torque to precontrol the velocity controller for force- velocity precontrol (p1402.4 = 1) or in encoderless operation.

Index: [0] = Unsmoothed
[1] = Smoothed

Dependency: Refer to: p0341, p0342, p1300, p1402, r1493, p1497, p1498

r1518[0...1] CO: Accelerating torque / M_accel

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6060
P-Group: Closed-loop control	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Displays the accelerating torque for precontrol of the speed controller.

Index: [0] = Unsmoothed
[1] = Smoothed

Dependency: Refer to: p0341, p0342, p1496

p1520[0...n] CO: Force limit upper/motoring / F_max upper/mot

HLA

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4970
P-Group: Closed-loop control	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000000.00 [N]	20000000.00 [N]	0.00 [N]

Description: Sets the fixed upper or force limit when motoring.

Dependency: Refer to: p0500, p1521, p1522, p1523, p1532, r1538, r1539

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1520[0...n] CO: Torque limit upper/motoring / M_max upper/mot

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5620, 5630
P-Group: Closed-loop control	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000000.00 [Nm]	20000000.00 [Nm]	0.00 [Nm]

Description: Sets the fixed upper torque limit or the torque limit when motoring.

Dependency: p1400.4 = 0: upper/lower

p1400.4 = 1: motoring / regenerating

Refer to: p0500, p1521, p1522, p1523, p1532, r1538, r1539

Danger: For p1400.4 = 0 (torque limiting, upper/lower) the following applies:

Negative values when setting the upper torque limit (p1520 < 0) can result in the motor accelerating in an uncontrollable fashion.

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1520[0...n] CO: Force limit upper/motoring / F_max upper/mot

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5620, 5630
P-Group: Closed-loop control	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000000.00 [N]	20000000.00 [N]	0.00 [N]

Description: Sets the fixed upper or force limit when motoring.

Dependency: p1400.4 = 0: upper/lower

p1400.4 = 1: motoring / regenerating

Refer to: p0500, p1521, p1522, p1523, p1532, r1538, r1539

Danger: For p1400.4 = 0 (torque limiting, upper/lower) the following applies:

Negative values when setting the upper torque limit (p1520 < 0) can result in the motor accelerating in an uncontrollable fashion.

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1520[0...n] CO: Torque limit upper / M_max upper

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6020, 6630
P-Group: Closed-loop control	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000000.00 [Nm]	20000000.00 [Nm]	0.00 [Nm]

Description: Sets the fixed, upper torque limit.

Dependency: Refer to: p1521, p1522, p1523, r1538, r1539

Danger: Negative values when setting the upper torque limit (p1520 < 0) can result in the motor accelerating in an uncontrollable fashion.

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

Note: The torque limit is limited to 400% of the rated motor torque. When automatically calculating the motor/closed-loop control parameters (p0340), the torque limit is set to match the current limit (p0640).

p1521[0...n] CO: Force limit lower/regenerative / F_max lower/regen

HLA

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4970
P-Group: Closed-loop control	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
-20000000.00 [N]	1000000.00 [N]	0.00 [N]

Description: Sets the fixed lower or force limit when regenerating.

Dependency: Refer to: p1520, p1522, p1523, p1532

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1521[0...n] CO: Torque limit lower/regenerative / M_max lower/regen

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5620, 5630
P-Group: Closed-loop control	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
-20000000.00 [Nm]	1000000.00 [Nm]	0.00 [Nm]

Description: Sets the fixed lower torque limit or the torque limit when regenerating.

Dependency: p1400.4 = 0: upper/lower

p1400.4 = 1: motoring / regenerating

Refer to: p0500, p1520, p1522, p1523, p1532

Danger: For p1400.4 = 0 (torque limiting, upper/lower) the following applies:

Positive values when setting the lower torque limit (p1521 > 0) can result in the motor accelerating in an uncontrollable fashion.

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1521[0...n] CO: Force limit lower/regenerative / F_max lower/regen

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5620, 5630
P-Group: Closed-loop control	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
-20000000.00 [N]	1000000.00 [N]	0.00 [N]

Description: Sets the fixed lower or force limit when regenerating.

Dependency: p1400.4 = 0: upper/lower

p1400.4 = 1: motoring / regenerating

Refer to: p0500, p1520, p1522, p1523, p1532

Danger: For p1400.4 = 0 (torque limiting, upper/lower) the following applies:

Positive values when setting the lower torque limit (p1521 > 0) can result in the motor accelerating in an uncontrollable fashion.

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1521[0...n] CO: Torque limit lower / M_max lower

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6020, 6630
P-Group: Closed-loop control	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
-20000000.00 [Nm]	1000000.00 [Nm]	0.00 [Nm]

Description: Sets the fixed, lower torque limit.

Dependency: Refer to: p1520, p1522, p1523, p1532

Danger: Positive values when setting the lower torque limit (p1521 > 0) can result in the motor accelerating in an uncontrollable fashion.

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

Note: The torque limit is limited to 400% of the rated motor torque. When automatically calculating the motor/closed-loop control parameters (p0340), the torque limit is set to match the current limit (p0640).

p1522[0...n] CI: Force limit upper/motoring / F_max upper/mot

HLA

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	2902[5]

Description: Sets the signal source for the upper or torque/force limit when motoring.

Dependency: Refer to: p1520, p1521, p1523, p1532

p1522[0...n] CI: Torque limit upper/motoring / M_max upper/mot

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 5609, 5620, 5630, 6630
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1520[0]

Description: Sets the signal source for the upper or torque/force limit when motoring.

Dependency: p1400.4 = 0: upper/lower

p1400.4 = 1: motoring / regenerating

Refer to: p1520, p1521, p1523, p1532

Danger: For p1400.4 = 0 (torque limiting, upper/lower) the following applies:

Negative values resulting from the signal source and scaling can cause the motor to accelerate in an uncontrolled manner.

p1522[0...n] CI: Force limit upper/motoring / F_max upper/mot

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 5609, 5620, 5630, 6630
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1520[0]

Description: Sets the signal source for the upper or torque/force limit when motoring.

Dependency: p1400.4 = 0: upper/lower

p1400.4 = 1: motoring / regenerating

Refer to: p1520, p1521, p1523, p1532

Danger: For p1400.4 = 0 (torque limiting, upper/lower) the following applies:

Negative values resulting from the signal source and scaling can cause the motor to accelerate in an uncontrolled manner.

p1522[0...n] CI: Torque limit upper / M_max upper

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 6630
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1520[0]

Description: Sets the signal source for the upper torque limit.

Dependency: Refer to: p1520, p1521, p1523

Danger: Negative values resulting from the signal source and scaling can cause the motor to accelerate in an uncontrolled manner.

p1523[0...n] CI: Force limit lower/regenerative / F_max lower/regen

HLA

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	2902[12]

Description: Sets the signal source for the lower or torque/force limit when regenerating.

Dependency: Refer to: p1520, p1521, p1522, p1532

p1523[0...n] CI: Torque limit lower/regenerative / M_max lower/regen

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 5609, 5620, 5630
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1521[0]

Description: Sets the signal source for the lower or torque/force limit when regenerating.

Dependency: p1400.4 = 0: upper/lower

p1400.4 = 1: motoring / regenerating

Refer to: p1520, p1521, p1522, p1532

Danger: For p1400.4 = 0 (torque limiting, upper/lower) the following applies:

Positive values resulting from the signal source and scaling can cause the motor to accelerate in an uncontrolled manner.

p1523[0...n] CI: Force limit lower/regenerative / F_max lower/regen

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 5609, 5620, 5630
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1521[0]

Description: Sets the signal source for the lower or torque/force limit when regenerating.

Dependency: p1400.4 = 0: upper/lower

p1400.4 = 1: motoring / regenerating

Refer to: p1520, p1521, p1522, p1532

Danger: For p1400.4 = 0 (torque limiting, upper/lower) the following applies:

Positive values resulting from the signal source and scaling can cause the motor to accelerate in an uncontrolled manner.

p1523[0...n] CI: Torque limit lower / M_max lower

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 6020, 6630
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1521[0]

Description: Sets the signal source for the lower torque limit.

Dependency: Refer to: p1520, p1521, p1522

Danger: Positive values resulting from the signal source and scaling can cause the motor to accelerate in an uncontrolled manner.

p1524[0...n] CO: Force limit upper/motoring scaling / F_max up/mot scal

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-2000.0 [%]	2000.0 [%]	100.0 [%]

Description: Sets the scaling for the upper force limit or the force limit when motoring.

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

Note: This parameter can be freely interconnected.

The value has the meaning stated above if it is interconnected from connector input p1528.

p1524[0...n] CO: Torque limit upper/motoring scaling / M_max up/mot scal

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5620, 5630
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-2000.0 [%]	2000.0 [%]	100.0 [%]

Description: Sets the scaling for the upper torque limit or the torque limit when motoring.

Dependency: p1400.4 = 0: upper/lower

p1400.4 = 1: motoring / regenerating

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

Note: This parameter can be freely interconnected.

The value has the meaning stated above if it is interconnected from connector input p1528.

p1524[0...n] CO: Force limit upper/motoring scaling / F_max up/mot scal

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5620, 5630
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-2000.0 [%]	2000.0 [%]	100.0 [%]

Description: Sets the scaling for the upper force limit or the force limit when motoring.

Dependency: p1400.4 = 0: upper/lower

p1400.4 = 1: motoring / regenerating

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

Note: This parameter can be freely interconnected.

The value has the meaning stated above if it is interconnected from connector input p1528.

p1524[0...n] CO: Torque limit upper scaling / M_max upper scal

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6630
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-2000.0 [%]	2000.0 [%]	100.0 [%]

Description: Sets the scaling for the upper torque limit.

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

Note: This parameter can be freely interconnected.
The value has the meaning stated above if it is interconnected from connector input p1528.

p1525[0...n] CO: Force limit lower/regenerative scaling / F_max lo/reg scal

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-2000.0 [%]	2000.0 [%]	100.0 [%]

Description: Sets the scaling for the lower force limit or the force limit when regenerating.

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

Note: This parameter can be freely interconnected.
The value has the meaning stated above if it is interconnected from connector input p1528.

p1525[0...n] CO: Torque limit lower/regenerative scaling / M_max low/gen scal

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5620, 5630
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-2000.0 [%]	2000.0 [%]	100.0 [%]

Description: Sets the scaling for the lower torque limit or the torque limit when regenerating.

Dependency: p1400.4 = 0: upper/lower
p1400.4 = 1: motoring / regenerating

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

Note: This parameter can be freely interconnected.
The value has the meaning stated above if it is interconnected from connector input p1528.

p1525[0...n] CO: Force limit lower/regenerative scaling / F_max lo/reg scal

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5620, 5630
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-2000.0 [%]	2000.0 [%]	100.0 [%]

Description: Sets the scaling for the lower force limit or the force limit when regenerating.

Dependency: p1400.4 = 0: upper/lower
p1400.4 = 1: motoring / regenerating

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

Note: This parameter can be freely interconnected.
The value has the meaning stated above if it is interconnected from connector input p1528.

p1525[0...n] CO: Torque limit lower scaling / M_max lower scal

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6630
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-2000.0 [%]	2000.0 [%]	100.0 [%]

Description: Sets the scaling for the lower torque limit.

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

Note: This parameter can be freely interconnected.

The value has the meaning stated above if it is interconnected from connector input p1528.

r1526 CO: Force limit upper/motoring without offset / F_max up w/o offs

HLA

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [N]	- [N]	- [N]

Description: Display and connector output for the upper force limit of all force limits without offset.

Dependency: Refer to: p1520, p1521, p1522, p1523, p1528, p1529

r1526 CO: Torque limit upper/motoring without offset / M_max up w/o offs

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5620, 5630
P-Group: Closed-loop control	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Display and connector output for the upper torque limit of all torque limits without offset.

Dependency: p1400.4 = 0: upper/lower

p1400.4 = 1: motoring / regenerating

Refer to: p1520, p1521, p1522, p1523, p1528, p1529

r1526 CO: Force limit upper/motoring without offset / F_max up w/o offs

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5620, 5630
P-Group: Closed-loop control	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [N]	- [N]	- [N]

Description: Display and connector output for the upper force limit of all force limits without offset.

Dependency: p1400.4 = 0: upper/lower

p1400.4 = 1: motoring / regenerating

Refer to: p1520, p1521, p1522, p1523, p1528, p1529

r1526 CO: Total upper torque limit / M_max upper total

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6060, 6630, 6640
P-Group: Closed-loop control	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Display and connector output for the upper torque limit of all torque limits.

Dependency: Refer to: p1520, p1521, p1522, p1523, p1528, p1529

r1527 CO: Force limit lower/regenerative without offset / F_max low w/o offs

HLA

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [N]	- [N]	- [N]

Description: Display and connector output for the lower force limit of all force limits without offset.

Dependency: Refer to: p1520, p1521, p1522, p1523, p1528, p1529

r1527 CO: Torque limit lower/regenerative without offset / M_max low w/o offs

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5620, 5630
P-Group: Closed-loop control	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Display and connector output for the lower torque limit of all torque limits without offset.

Dependency: p1400.4 = 0: upper/lower

p1400.4 = 1: motoring / regenerating

Refer to: p1520, p1521, p1522, p1523, p1528, p1529

r1527 CO: Force limit lower/regenerative without offset / F_max low w/o offs

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5620, 5630
P-Group: Closed-loop control	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [N]	- [N]	- [N]

Description: Display and connector output for the lower force limit of all force limits without offset.

Dependency: p1400.4 = 0: upper/lower

p1400.4 = 1: motoring / regenerating

Refer to: p1520, p1521, p1522, p1523, p1528, p1529

r1527 CO: Total lower torque limit / M_max lower total

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6060, 6630, 6640
P-Group: Closed-loop control	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Display and connector output for the lower torque limit of all torque limits.

Dependency: Refer to: p1520, p1521, p1522, p1523, p1528, p1529

p1528[0...n] CI: Force limit upper/motoring scaling / F_max up/mot scal

HLA

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1524[0]

Description: Sets the signal source for the scaling of the upper or motoring force limit in p1522.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p1528[0...n] CI: Torque limit upper/motoring scaling / M_max up/mot scal

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 3617, 5609, 5620, 5630
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1524[0]

Description: Sets the signal source for the scaling of the upper or motoring torque limit in p1522.

Dependency: p1400.4 = 0: upper/lower

p1400.4 = 1: motoring / regenerating

Danger: For p1400.4 = 0 (torque limiting, upper/lower) the following applies:

Negative values resulting from the signal source and scaling can cause the motor to accelerate in an uncontrolled manner.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p1528[0...n] CI: Force limit upper/motoring scaling / F_max up/mot scal

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 3617, 5609, 5620, 5630
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1524[0]

Description: Sets the signal source for the scaling of the upper or motoring force limit in p1522.

Dependency: p1400.4 = 0: upper/lower

p1400.4 = 1: motoring / regenerating

Danger: For p1400.4 = 0 (torque limiting, upper/lower) the following applies:

Negative values resulting from the signal source and scaling can cause the motor to accelerate in an uncontrolled manner.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p1528[0...n] CI: Torque limit upper scaling / M_max upper scal

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 6630
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1524[0]

Description: Sets the signal source for the scaling of the upper torque limit in p1522.

Danger: For p1400.4 = 0 (torque limiting, upper/lower) the following applies:

Negative values resulting from the signal source and scaling can cause the motor to accelerate in an uncontrolled manner.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p1529[0...n] CI: Force limit lower/regenerative scaling / F_max lo/reg scal

HLA

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1525[0]

Description: Sets the signal source for the scaling of the lower force limit or the regenerative force limit in p1523.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p1529[0...n] CI: Torque limit lower/regenerative scaling / M_max low/gen scal

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 3617, 5609, 5620, 5630
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1525[0]

Description: Sets the signal source for the scaling of the lower torque limit or the regenerative torque limit in p1523.

Dependency: p1400.4 = 0: upper/lower

p1400.4 = 1: motoring / regenerating

Danger: For p1400.4 = 0 (torque limiting, upper/lower) the following applies:

Positive values resulting from the signal source and scaling can cause the motor to accelerate in an uncontrolled manner.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p1529[0...n] CI: Force limit lower/regenerative scaling / F_max lo/reg scal

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 3617, 5609, 5620, 5630
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1525[0]

Description: Sets the signal source for the scaling of the lower force limit or the regenerative force limit in p1523.

Dependency: p1400.4 = 0: upper/lower

p1400.4 = 1: motoring / regenerating

Danger: For p1400.4 = 0 (torque limiting, upper/lower) the following applies:
Positive values resulting from the signal source and scaling can cause the motor to accelerate in an uncontrolled manner.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p1529[0...n] CI: Torque limit lower scaling / M_max lower scal

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 6630
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1525[0]

Description: Sets the signal source for the scaling of the lower torque limit in p1523.

Danger: For p1400.4 = 0 (torque limiting, upper/lower) the following applies:
Positive values resulting from the signal source and scaling can cause the motor to accelerate in an uncontrolled manner.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p1530[0...n] Power limit motoring / P_max mot

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5640
P-Group: Closed-loop control	**Unit group:** 14_5	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [kW]	100000.00 [kW]	0.00 [kW]

Description: Sets the power limit when motoring.

Dependency: Refer to: p0500, p1531

p1530[0...n] Power limit motoring / P_max mot

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5640
P-Group: Closed-loop control	**Unit group:** 14_8	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [kW]	100000.00 [kW]	0.00 [kW]

Description: Sets the power limit when motoring.

Dependency: Refer to: p0500, p1531

p1530[0...n] Power limit motoring / P_max mot

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6640
P-Group: Closed-loop control	**Unit group:** 14_5	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [kW]	100000.00 [kW]	0.00 [kW]

Description: Sets the power limit when motoring.

Dependency: Refer to: p0500, p1531

Note: The power limit is limited to 300% of the rated motor power.

p1531[0...n] Power limit regenerative / P_max gen

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5640
P-Group: Closed-loop control	**Unit group:** 14_5	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-100000.00 [kW]	-0.01 [kW]	-0.01 [kW]

Description: Sets the regenerative power limit.

Dependency: Refer to: p0500, p1530

p1531[0...n] Power limit regenerative / P_max gen

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5640
P-Group: Closed-loop control	**Unit group:** 14_8	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-100000.00 [kW]	-0.01 [kW]	-0.01 [kW]

Description: Sets the regenerative power limit.

Dependency: Refer to: p0500, p1530

p1531[0...n] Power limit regenerative / P_max gen

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6640
P-Group: Closed-loop control	**Unit group:** 14_5	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-100000.00 [kW]	-0.01 [kW]	-0.01 [kW]

Description: Sets the regenerative power limit.

Dependency: Refer to: p0500, p1530

Note: The power limit is limited to 300% of the rated motor power.

For power units without regenerative feedback into the line supply, the regenerative power limit is pre-set to 30% of the motoring power limit p1530 and in the ratio rated drive converter power to rated motor power. If a braking resistor is connected to the DC link, then the power limit can be correspondingly increased.

p1532[0...n] CO: Force offset, force limit / F_max offset

HLA

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4970
P-Group: Closed-loop control	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
-100000.00 [N]	100000.00 [N]	0.00 [N]

Description: Sets the force offset for the force limit.

Dependency: Refer to: p1520, p1521, p1522, p1523, p1528, p1529

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1532[0...n]	CO: Torque limit offset / M_max offset		
SERVO, SERVO_AC, SERVO_I_AC	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5620, 5630, 5650, 7010, 8012
	P-Group: Closed-loop control	**Unit group:** 7_1	**Unit selection:** p0505
	Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-100000.00 [Nm]	100000.00 [Nm]	0.00 [Nm]

Description: Sets the torque offset for the torque limit.

Dependency: Refer to: p1520, p1521, p1522, p1523, p1528, p1529

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1532[0...n]	CO: Force offset, force limit / F_max offset		
SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5620, 5630, 5650, 7010, 8012
	P-Group: Closed-loop control	**Unit group:** 8_1	**Unit selection:** p0505
	Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-100000.00 [N]	100000.00 [N]	0.00 [N]

Description: Sets the force offset for the force limit.

Dependency: Refer to: p1520, p1521, p1522, p1523, p1528, p1529

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

r1533	Current limit torque-generating total / Iq_max total		
SERVO, SERVO_AC, SERVO_I_AC	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5640, 5722
	P-Group: Displays, signals	**Unit group:** 6_2	**Unit selection:** p0505
	Not for motor type: REL	**Scaling:** p2002	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [Arms]	- [Arms]	- [Arms]

Description: Displays the maximum torque/force generating current as a result if all current limits.

r1533	Current limit force-generating total / Iq_max total		
SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5640, 5722
	P-Group: Displays, signals	**Unit group:** 6_2	**Unit selection:** p0505
	Not for motor type: REL	**Scaling:** p2002	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [Arms]	- [Arms]	- [Arms]

Description: Displays the maximum torque/force generating current as a result if all current limits.

r1533	Current limit torque-generating total / Iq_max total		
VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6640
	P-Group: Displays, signals	**Unit group:** 6_2	**Unit selection:** p0505
	Not for motor type: REL	**Scaling:** p2002	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [Arms]	- [Arms]	- [Arms]

Description: Displays the maximum torque/force generating current as a result if all current limits.

r1534 CO: Total upper torque limit / M_max upper total

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5609, 5620, 5630, 5640
P-Group: Closed-loop control	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Display and connector output for the upper torque limit of all torque limits.

Dependency: Refer to: p1520, p1521, p1522, p1523, p1528, p1529, p1532

r1534 CO: Force limit upper total / F_max upper total

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5609, 5620, 5630, 5640
P-Group: Closed-loop control	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [N]	- [N]	- [N]

Description: Display and connector output for the upper force limit of all force limits.

Dependency: Refer to: p1520, p1521, p1522, p1523, p1528, p1529, p1532

r1535 CO: Total lower torque limit / M_max lower total

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5609, 5620, 5630, 5640
P-Group: Closed-loop control	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Display and connector output for the lower torque limit of all torque limits.

Dependency: Refer to: p1520, p1521, p1522, p1523, p1528, p1529, p1532

r1535 CO: Force limit lower total / F_max lower total

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5609, 5620, 5630, 5640
P-Group: Closed-loop control	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [N]	- [N]	- [N]

Description: Display and connector output for the lower force limit of all force limits.

Dependency: Refer to: p1520, p1521, p1522, p1523, p1528, p1529, p1532

r1536[0...1] Torque-generating current maximum limit / Isq_max

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6640, 6710, 7960
P-Group: Closed-loop control	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the maximum limit for the torque-generating current component.

For index [0]:

The signal limited by the Vdc controller is displayed here.

Index: [0] = Limited
[1] = Unlimited

r1537[0...1] Torque-generating current minimum limit / Isq_min

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6640, 6710, 7960
P-Group: Closed-loop control	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the minimum limit for the torque-generating current component.

For index [0]:

The signal limited by the Vdc controller is displayed here.

Index: [0] = Limited
[1] = Unlimited

r1538 CO: Upper force limit effective / F_max upper eff

HLA

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [N]	- [N]	- [N]

Description: Display and connector output for the actual effective upper force limit.

r1538 CO: Upper effective torque limit / M_max upper eff

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5609, 5650
P-Group: Closed-loop control	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Display and connector output for the actual effective upper torque limit.

Note: The effective upper torque limit is reduced with respect to the selected upper torque limit p1520, if the current limit p0640 is reduced or the rated magnetizing current of the induction motor p0320 is increased.

The torque limit p1520 can be re-calculated using p0340 = 1, 3 or 5.

This torque limit can be influenced by p0543.

r1538 CO: Upper force limit effective / F_max upper eff

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5609, 5650
P-Group: Closed-loop control	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [N]	- [N]	- [N]

Description: Display and connector output for the actual effective upper force limit.

Note: The effective, upper force limit is reduced with respect to the selected upper force limit p1520 if the current limit p0640 is reduced.

The force limit p1520 can be re-calculated using p0340 = 1, 3 or 5.

r1538 CO: Upper effective torque limit / M_max upper eff

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6020, 6640
P-Group: Closed-loop control	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Display and connector output for the actual effective upper torque limit.

Note: The effective upper torque limit is reduced with respect to the selected upper torque limit p1520, if the current limit p0640 is reduced or the rated magnetizing current of the induction motor p0320 is increased.

The torque limit p1520 can be re-calculated using p0340 = 1, 3 or 5.

This torque limit can be influenced by p0543.

The following applies for VECTOR:

- this is possibly the case for a rotating measurement (see p1960).
- additional variable torque limiting is possible (e.g. binector input p1540).

r1539 CO: Lower force limit effective / F_max lower eff

HLA

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [N]	- [N]	- [N]

Description: Display and connector output for the actual effective lower force limit.

r1539 CO: Lower effective torque limit / M_max lower eff

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5609, 5650
P-Group: Closed-loop control	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Display and connector output for the actual effective lower torque limit.

Note: The effective lower torque limit is reduced with respect to the selected lower torque limit p1521, if the current limit p0640 is reduced or the rated magnetizing current of the induction motor p0320 is increased.

The following applies in the case of VECTOR: This may be the case for rotating measurements (see p1960).

The following applies in the case of VECTOR: Further variable torque limiting is possible (e.g. binector input p1541).

The torque limit p1520 can be re-calculated using p0340 = 1, 3 or 5.

This torque limit can be influenced by p0543.

r1539 CO: Lower force limit effective / F_max lower eff

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5609, 5650
P-Group: Closed-loop control	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [N]	- [N]	- [N]

Description: Display and connector output for the actual effective lower force limit.

Note: The effective lower force limit is reduced with respect to the selected lower force limit p1521 if the current limit p0640 is reduced.

The force limit p1520 can be re-calculated using p0340 = 1, 3 or 5.

r1539 CO: Lower effective torque limit / M_max lower eff

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6020, 6640
P-Group: Closed-loop control	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Display and connector output for the actual effective lower torque limit.

Note: The effective lower torque limit is reduced with respect to the selected lower torque limit p1521, if the current limit p0640 is reduced or the rated magnetizing current of the induction motor p0320 is increased.

The following applies in the case of VECTOR: This may be the case for rotating measurements (see p1960).

The following applies in the case of VECTOR: Further variable torque limiting is possible (e.g. binector input p1541).

The torque limit p1520 can be re-calculated using p0340 = 1, 3 or 5.

This torque limit can be influenced by p0543.

p1540[0...n] CI: Torque limit speed controller upper scaling / M_max n-ctr upScal

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 6020, 6060
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for the scaling of the upper torque limiting to limit the speed controller output.

p1541[0...n] CI: Torque limiting speed controller lower scaling / M_max nctr lowScal

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 6020, 6060
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for the scaling of the lower torque limiting to limit the speed controller output.

p1542[0...n]	CI: Travel to fixed stop torque reduction / TfS M_red		
SERVO, HLA, SERVO_AC, SERVO_I_AC	**Can be changed:** T	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 5610
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source for the torque reduction when traversing to a fixed stop.
This value is converted into a factor and is interconnected to the scaling of the torque limits.

Dependency: Refer to: p1528, p1529, r1543, p1544, p1545

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p1542[0...n]	CI: Travel to fixed stop force reduction / TfS F_red		
SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)	**Can be changed:** T	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 5610
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source for the force reduction when traversing to a fixed stop.
This value is converted into a factor and is interconnected to the scaling of the force limits.

Dependency: Refer to: p1528, p1529, r1543, p1544, p1545

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

r1543	CO: Travel to fixed stop torque scaling / TfS M scal		
SERVO, HLA, SERVO_AC, SERVO_I_AC	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5610
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [%]	- [%]	- [%]

Description: Displays the internally converted factor to interconnect to the scaling of the torque/force limits.

Dependency: Refer to: p1528, p1529, p1542, p1544, p1545

r1543	CO: Travel to fixed stop force scaling / TfS F scal		
SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5610
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [%]	- [%]	- [%]

Description: Displays the internally converted factor to interconnect to the scaling of the torque/force limits.

Dependency: Refer to: p1528, p1529, p1542, p1544, p1545

p1544 Travel to fixed stop evaluation torque reduction / TfS M_red eval

SERVO, HLA, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5610
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [%]	65535 [%]	100 [%]

Description: Sets the evaluation for the torque/force reduction when traversing to a fixed stop.

Dependency: Refer to: p1528, p1529, p1542, r1543, p1545

Note: 4000 hex (16384 dec) in the MOMRED control word corresponds to a reduction by the percentage specified in this parameter.

p1544 Travel to fixed stop evaluation force reduction / TfS F_red eval

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5610
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [%]	65535 [%]	100 [%]

Description: Sets the evaluation for the torque/force reduction when traversing to a fixed stop.

Dependency: Refer to: p1528, p1529, p1542, r1543, p1545

Note: 4000 hex (16384 dec) in the MOMRED control word corresponds to a reduction by the percentage specified in this parameter.

p1545[0...n] BI: Activates travel to a fixed stop / TfS activation

HLA

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2520, 3617, 8012
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to activate/deactivate the "travel to fixed stop" function

1: Travel to fixed stop is active

0: Travel to fixed stop is inactive

Dependency: Refer to: p1542, r1543, p1544

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p1545[0...n] BI: Activates travel to a fixed stop / TfS activation

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2520, 3617, 8012
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	[0] 0 [1] 0

Description: Sets the signal source to activate/deactivate the "travel to fixed stop" function

1: Travel to fixed stop is active

0: Travel to fixed stop is inactive

Dependency: Refer to: p1542, r1543, p1544

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p1545[0...n] BI: Activates travel to a fixed stop / TfS activation

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2520, 3617, 8012
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to activate/deactivate the "travel to fixed stop" function

1: Travel to fixed stop is active

0: Travel to fixed stop is inactive

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: EPOS uses the parameter (refer to p2686).

When traveling to fixed stop, the fault F07900 "motor blocked" is suppressed.

p1546 Speed threshold motoring/regenerating / n_thresh mot/regen

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	20.00 [rpm]

Description: Sets the speed threshold for the motoring/regenerative limit.

For speeds where the absolute value is less than p1546, then the following applies:

- For p1400.13 = 0: Motoring limit (speed threshold is compared to the speed actual value).
- For p1400.13 = 1: Regenerative limiting (speed threshold is compared to the speed setpoint).

p1546 Velocity threshold motoring/regenerative / v_thresh mot/regen

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [m/min]	1000.00 [m/min]	0.20 [m/min]

Description: Sets the velocity threshold for the motoring/regenerative limit.

For velocities where the absolute value is less than p1546, then the following applies:

- For p1400.13 = 0: Motoring limit (velocity threshold is compared to the velocity actual value).
- For p1400.13 = 1: Regenerative limiting (velocity threshold is compared to the velocity setpoint).

r1547[0...1] CO: Torque limit for speed controller output / M_max outp n_ctrl

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6060
P-Group: Closed-loop control	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Displays the torque limit to limit the speed controller output.

Index: [0] = Upper limit
[1] = Lower limit

r1548[0...1] CO: Stall current limit torque-generating maximum / Isq_max stall

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the limit for the torque-generating current component using the stall calculation, the current limit of the Motor Module as well as the parameterization in p0640.

Index: [0] = Upper limit
[1] = Lower limit

r1549[0...1] CO: Stall power actual value / P_stall

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5640
P-Group: Displays, signals	**Unit group:** 14_5	**Unit selection:** p0505
Not for motor type: -	**Scaling:** r2004	**Expert list:** 1
Min	**Max**	**Factory setting**
- [kW]	- [kW]	- [kW]

Description: Displays the instantaneous stall power.

Index: [0] = Actual stall power value
[1] = Stall power correction value

Dependency: Refer to: p0326

Note: The stall power is influenced by p0326, p0353, p0354 and p0356.

r1549[0...1] CO: Stall power actual value / P_stall

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5640
P-Group: Displays, signals	**Unit group:** 14_8	**Unit selection:** p0505
Not for motor type: -	**Scaling:** r2004	**Expert list:** 1
Min	**Max**	**Factory setting**
- [kW]	- [kW]	- [kW]

Description: Displays the instantaneous stall power.

Index: [0] = Actual stall power value
[1] = Stall power correction value

Dependency: Refer to: p0326

Note: The stall power is influenced by p0326, p0353, p0354 and p0356.

p1550[0...n] BI: Transfer actual torque as torque offset / Accept act torque

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	9718.23

Description: For a positive edge, the actual torque (r0079[0]) at this instant in time is used instead of the torque offset from p1532 as long as p1550 remains at 1.

p1550[0...n] BI: Transfer actual force as force offset / Accept act force

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	9718.23

Description: For a positive edge, the actual force (r0079[0]) at this instant in time is used instead of the force offset from p1532 as long as p1550 remains at 1.

p1551[0...n] BI: Torque limit variable/fixed signal source / M_lim var/fixS_src

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 5620, 5630, 6060, 6630
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source to change over the torque limits between variable and fixed torque limit.

BI: p1551 = 1 signal:

The variable torque limit applies (fixed torque limit + scaling).

BI: p1551 = 0 signal:

The fixed torque limit applies.

Example:

In order that for a Quick Stop (OFF3) the fixed torque limit is effective, binector input: p1551 must be interconnected to r0899.5.

p1551[0...n] BI: Force limit variable/fixed signal source / F_lim var/fixS_src

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 5620, 5630, 6060, 6630
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source to change over the force limits between variable and fixed force limit.

BI: p1551 = 1 signal:

The variable force limit applies (fixed force limit + scaling).

BI: p1551 = 0 signal:

The fixed force limit applies.

Example:

In order that for a Quick Stop (OFF3) the fixed force limit is effective, binector input: p1551 must be interconnected to r0899.5.

p1552[0...n] Stiction velocity threshold / Stiction v_thresh

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4970
P-Group: Closed-loop control	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [m/min]	10.000 [m/min]	0.010 [m/min]

Description: Sets the velocity threshold for the stiction.

p1552[0...n] CI: Torque limit upper scaling without offset / M_max up w/o offs

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 5060
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for the scaling of the upper torque limiting to limit the speed controller output without taking into account the current and power limits.

Notice: Speed controller limiting is only active if a BICO interconnection is set for connector input p1552 or p1554, (different to the factory setting).

p1552[0...n] CI: Force limit upper scaling without offset / F_max up w/o offs

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 5060
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for the scaling of the upper force limiting to limit the velocity controller output without taking into account the current and power limits.

Notice: Speed controller limiting is only active if a BICO interconnection is set for connector input p1552 or p1554, (different to the factory setting).

p1552[0...n] CI: Torque limit upper scaling without offset / M_max up w/o offs

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 6060
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for the scaling of the upper torque limiting to limit the speed controller output without taking into account the current and power limits.

p1553[0...n] Stall limit scaling / Stall limit scal

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
80.0 [%]	130.0 [%]	100.0 [%]

Description: Sets the scaling of the stall limit for the start of field weakening.

Danger: If the stall current limit is increased, then the q current setpoint can exceed the stall limit; as a consequence, a hysteresis effect can occur when loading and unloading.

p1554[0...n] Stiction shutdown rate action / Stict shutdown

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4970
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
3.0 [%]	100.0 [%]	40.0 [%]

Description: Sets the shutdown rate time for the stiction compensation.

The force controller is shut down via the shutdown rate time somewhat before reaching the force setpoint, so that the actuating time of the control valve does not result in an overshoot.

Dependency: Refer to: p1400, p1552, p1555, p1556

p1554[0...n] CI: Torque limit lower scaling without offset / M_max low w/o offs

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 5060
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for the scaling of the lower torque limiting to limit the speed controller output without taking into account the current and power limits.

Notice: Speed controller limiting is only active if a BICO interconnection is set for connector input p1552 or p1554, (different to the factory setting).

p1554[0...n] CI: Force limit lower scaling without offset / F_max low w/o offs

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 5060
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for the scaling of the lower force limiting to limit the velocity controller output without taking into account the current and power limits.

Notice: Speed controller limiting is only active if a BICO interconnection is set for connector input p1552 or p1554, (different to the factory setting).

p1554[0...n] CI: Torque limit lower scaling without offset / M_max low w/o offs

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 6060
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for the scaling of the lower torque limiting to limit the speed controller output without taking into account the current and power limits.

p1555[0...n]	Stiction force velocity positive / Stiction F v pos		
HLA	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4970
	P-Group: Closed-loop control	**Unit group:** 8_2	**Unit selection:** p0505
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-100000000.0 [N]	100000000.0 [N]	0.0 [N]

Description: Sets the force for positive velocity for the stiction compensation.

Dependency: Refer to: p1400, p1552, p1554, p1556

p1555[0...n]	CI: Power limit / P_max		
VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)	**Can be changed:** T	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 6640
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: REL	**Scaling:** r2004	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	1

Description: Sets the signal source for the motoring and negative regenerative power limit.

Dependency: Refer to: p1530, p1531

Note: The resulting motoring power limit is the minimum from p1530 and the signal which is read in.
The resulting regenerative power limit is the maximum from p1531 and the negative signal which is read in.

p1556[0...n]	Stiction force velocity negative / Stiction F v neg		
HLA	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4970
	P-Group: Closed-loop control	**Unit group:** 8_2	**Unit selection:** p0505
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-100000000.0 [N]	100000000.0 [N]	0.0 [N]

Description: Sets the force for negative velocity for the stiction compensation.

Dependency: Refer to: p1400, p1552, p1554, p1555

p1556[0...n]	Power limit scaling / P_max scal		
VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)	**Can be changed:** T	**Calculated:** -	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6640
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00	340.28235E36	0.00

Description: Sets the scaling of the signal source for the motoring and negative regenerative power limit.
0 signifies no power limiting.

p1560[0...n] Moment of inertia estimator accelerating force threshold value / J_est F thresh

SERVO (J_estimator, Lin), SERVO_AC (J_estimator, Lin), SERVO_I_AC (J_estimator, Lin)

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.10 [%]	100.00 [%]	10.00 [%]

Description: Sets the threshold for the acceleration force of the moment of inertia estimator.

The moment of inertia estimator is active above this threshold.

The value is referred to the rated motor force (r0333).

Dependency: Refer to: p1400, p1561, p1562

Note: The moment of inertia estimation is inaccurate at very low accelerating forces. As a consequence, below this threshold, the estimator does not provide any new values.

p1560[0...n] Moment of inertia estimator accelerating torque threshold value / J_est M thresh

SERVO (J_estimator), VECTOR (J_estimator), SERVO_AC (J_estimator), VECTOR_AC (J_estimator), SERVO_I_AC (J_estimator), VECTOR_I_AC (J_estimator)

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.10 [%]	100.00 [%]	10.00 [%]

Description: Sets the threshold for the accelerating torque for the moment of inertia estimator.

The moment of inertia estimator is active above this threshold.

The value is referred to the rated motor torque (r0333).

Dependency: Refer to: p1400, p1561, p1562

Note: The moment of inertia estimation is inaccurate at very low accelerating torques. As a consequence, below this threshold, the estimator does not provide any new values.

p1561[0...n] Inertia estimator change time high inertia mass / J_est t_change M

SERVO (J_estimator, Lin), SERVO_AC (J_estimator, Lin), SERVO_I_AC (J_estimator, Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
10.00 [ms]	5000.00 [ms]	500.00 [ms]

Description: Sets the change time for the moment of inertia for the moment of inertia estimator.

Lower values mean that faster changes are possible.

For a higher value, this estimated value is smoothed more significantly.

Dependency: Refer to: p1400, p1560, p1562

p1561[0...n] Moment of inertia estimator change time moment of inertia / J_est t_change J

SERVO (J_estimator), VECTOR (J_estimator), SERVO_AC (J_estimator), VECTOR_AC (J_estimator), SERVO_I_AC (J_estimator), VECTOR_I_AC (J_estimator)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
10.00 [ms]	5000.00 [ms]	500.00 [ms]

Description: Sets the change time for the moment of inertia for the moment of inertia estimator.
Lower values mean that faster changes are possible.
For a higher value, this estimated value is smoothed more significantly.

Dependency: Refer to: p1400, p1560, p1562

p1562[0...n] Moment of inertia estimator change time load / J_est t load

SERVO (J_estimator, Lin), SERVO_AC (J_estimator, Lin), SERVO_I_AC (J_estimator, Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
5.00 [ms]	5000.00 [ms]	10.00 [ms]

Description: Sets the change time for the load force for the moment of inertia estimator.
Lower values mean that faster changes are possible.
For a higher value, this estimated value is smoothed more significantly.

Dependency: Refer to: p1400, p1560, p1561

p1562[0...n] Moment of inertia estimator change time load / J_est t load

SERVO (J_estimator), VECTOR (J_estimator), SERVO_AC (J_estimator), VECTOR_AC (J_estimator), SERVO_I_AC (J_estimator), VECTOR_I_AC (J_estimator)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
5.00 [ms]	5000.00 [ms]	10.00 [ms]

Description: Sets the change time for the load torque for the moment of inertia estimator.
Lower values mean that faster changes are possible.
For a higher value, this estimated value is smoothed more significantly.

Dependency: Refer to: p1400, p1560, p1561

p1563[0...n] CO: Moment of inertia estimator load force positive direction / J_est F pos

SERVO (J_estimator, Lin), SERVO_AC (J_estimator, Lin), SERVO_I_AC (J_estimator, Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
-340.28235E36 [N]	340.28235E36 [N]	0.00 [N]

Description: Display and connector output for the monitored load force in the positive traversing direction.
The moment of inertia estimator estimates the load force drawn while the velocity is constant.

Dependency: Refer to: p1400, p1560, p1561

p1563[0...n] CO: Mom. of inertia estimator load torque direction of rotation pos. / J_est M pos

SERVO (J_estimator), VECTOR (J_estimator), SERVO_AC (J_estimator), VECTOR_AC (J_estimator), SERVO_I_AC (J_estimator), VECTOR_I_AC (J_estimator)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
-340.28235E36 [Nm]	340.28235E36 [Nm]	0.00 [Nm]

Description: Display and connector output for the monitored load torque in the positive direction of rotation.

The moment of inertia estimator estimates the load torque drawn while the speed is constant.

Dependency: Refer to: p1400, p1560, p1561

p1564[0...n] CO: Moment of inertia estimator load force negative direction / J_est F neg

SERVO (J_estimator, Lin), SERVO_AC (J_estimator, Lin), SERVO_I_AC (J_estimator, Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
-340.28235E36 [N]	340.28235E36 [N]	0.00 [N]

Description: Display and connector output for the monitored load force in the negative traversing direction.

The moment of inertia estimator estimates the load force drawn while the velocity is constant.

Dependency: Refer to: p1400, p1560, p1561

p1564[0...n] CO: Mom. of inertia estimator load torque direction of rotation neg. / J_est M neg

SERVO (J_estimator), VECTOR (J_estimator), SERVO_AC (J_estimator), VECTOR_AC (J_estimator), SERVO_I_AC (J_estimator), VECTOR_I_AC (J_estimator)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
-340.28235E36 [Nm]	340.28235E36 [Nm]	0.00 [Nm]

Description: Display and connector output for the monitored load torque in the negative direction of rotation.

The moment of inertia estimator estimates the load torque drawn while the speed is constant.

Dependency: Refer to: p1400, p1560, p1561

r1566[0...n] Flux reduction torque factor transition value / Flux red M trans

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6790
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, SESM, REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: The following applies for a synchronous reluctance motor:

Displays the transition value for the start of the evaluation of the optimum flux characteristic.

The value is referred to the rated motor torque.

Note: The transition value corresponds with the lower limit of the flux setpoint (p1581).

For a lower absolute torque setpoint, the flux setpoint remains at the lower limit (p1581).

p1567[0...n] Magnetization rate time scaling / Mag Tv scale

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6790
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [%]	1000 [%]	100 [%]

Description: The following applies for a synchronous reluctance motor:

Sets the scaling of the rate time Tv for dynamic flux increase when the torque is quickly established.

The value is referred to the inverse value of the rated motor frequency.

Tv = p1567 / 100 % / p0310

Dependency: Refer to: p1401

Note: The "Dynamic load-dependent flux boost" function can be deactivated using p1401.9 = 0.

r1568[0...5] CO: Synchronous reluctance motor flux channel / RESM flux channel

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, SESM, REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Display and connector output for signals of the flux channel for a synchronous reluctance motor (RESM).

The values are referred to the rated motor flux of the in-line axis (p0357 * r0331).

Index:
[0] = Setpoint before filter
[1] = Optimum flux characteristic output
[2] = Minimum value at low speed
[3] = Dynamic load-dependent boost
[4] = Field weakening value total
[5] = Field weakening value precontrol

Note: RESM: reluctance synchronous motor (synchronous reluctance motor)

p1569[0...n] CI: Supplementary torque 3 / M_suppl 3

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	3841[0]

Description: Sets the signal source for supplementary torque 3.

Dependency: Refer to: p3842

Notice: The signal input is after the torque limit (r1538, r1539). For vector drives, the signals that are entered are only limited by the current and power limits.

Note: The signal input is preferably used to enter the friction characteristic. The friction compensation is also effective if the speed controller output reaches its torque limits, but the current limits have still not been reached (this only applies to vector drives).

p1569[0...n] CI: Supplementary force 3 / F_suppl 3

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	3841[0]

Description: Sets the signal source for supplementary force 3.

Dependency: Refer to: p3842

Notice: The signal input is after the force limit (r1538, r1539). For vector drives, the signals that are entered are only limited by the current and power limits.

Note: The signal input is preferably used to enter the friction characteristic. The friction compensation is also effective if the velocity controller output reaches its force limits, but the current limits have still not been reached (this only applies to vector drives).

p1570[0...n] Stiction voltage pulse positive / Stiction U pos

HLA

Can be changed: U, T	**Calculated:** CALC_MOD_EQU	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [V]	10.000 [V]	0.200 [V]

Description: Sets the voltage pulse for stiction compensation when changing from a negative to a positive traversing direction.

This compensation does not require any pressure sensors and does not use the force controller. However, the piston must be calibrated.

Dependency: Refer to: p1400, p1552, p1571, p1572

Note: The "Stiction compensation voltage pulse" function is activated via p1400.9 = 1.

The duration of the voltage pulse and the magnitude in both directions is set using p1572, p1570 and p1571.

The threshold in p1552 is used to detect standstill.

p1570[0...n] CO: Flux setpoint / Flex setp

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6722
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
50.0 [%]	200.0 [%]	100.0 [%]

Description: Sets the flux setpoint referred to rated motor flux.

The following applies for a synchronous reluctance motor:

Scaling the flux setpoint.

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

Note: For p1570 > 100%, the flux setpoint increases as a function of the load from 100% (no-load operation) to the setting in p1570 (above rated motor torque), if p1580 > 0% has been set.

The following applies for a synchronous reluctance motor:

The scaling allows the flux setpoint to be adapted when operating with load-dependent optimum flux characteristic or with constant flux setpoint.

p1571[0...n] Stiction voltage pulse negative / Stiction U neg

HLA

Can be changed: U, T	**Calculated:** CALC_MOD_EQU	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-10.000 [V]	0.000 [V]	-0.200 [V]

Description: Sets the voltage pulse for stiction compensation when changing from a positive to a negative traversing direction.

This compensation does not require any pressure sensors and does not use the force controller. However, the piston must be calibrated.

Dependency: Refer to: p1400, p1552, p1570, p1572

Note: The "Stiction compensation voltage pulse" function is activated via p1400.9 = 1.

The duration of the voltage pulse and the magnitude in both directions is set using p1572, p1570 and p1571.

The threshold in p1552 is used to detect standstill.

p1571[0...n] CI: Supplementary flux setpoint / Suppl flux setp

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 6725
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the supplementary flux setpoint.

Notice: Low flux setpoints can cause the drive to stall at higher loads. This is the reason that the flux setpoint should only be adapted for slow load changes.

Note: The supplementary flux setpoint is limited to +/- 50 %.

p1572[0...n] Supplementary flux setpoint / Suppl flux setp

HLA

Can be changed: U, T	**Calculated:** CALC_MOD_EQU	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	100.00 [ms]	2.00 [ms]

Description: Separately-excited synchronous motor:

Sets the supplementary flux setpoint for the flux controller. The value is referred to the rated motor flux.

Synchronous-reluctance motor:

Sets the factor by which the flux is reduced when operating under no-load conditions and operating using the pulse technique.

Dependency: Refer to: p1400, p1552, p1570, p1571

Notice: Separately-excited synchronous motor:

The parameter should be set back to 0% again for normal closed-loop control operation.

Note: Separately-excited synchronous motor:

The parameter is used to optimize the flux controller. The current model is not influenced by the setting.

p1572[0...n] Supplementary flux setpoint / Suppl flux setp

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6726
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	100.0 [%]	0.0 [%]

Description: Separately-excited synchronous motor:

Sets the supplementary flux setpoint for the flux controller. The value is referred to the rated motor flux.

Synchronous-reluctance motor:

Sets the factor by which the flux is reduced when operating under no-load conditions and operating using the pulse technique.

Notice: Separately-excited synchronous motor:

The parameter should be set back to 0% again for normal closed-loop control operation.

Note: Separately-excited synchronous motor:

The parameter is used to optimize the flux controller. The current model is not influenced by the setting.

p1573[0...n] Flux threshold value magnetizing / Flux thresh magnet

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6722
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, REL, RESM	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
10.0 [%]	200.0 [%]	100.0 [%]

Description: Sets the flux threshold value for enabling the speed setpoint and the end of magnetizing (r0056.4).

Note: The parameter only has an influence if the flux actual value reaches the threshold value p1573 more quickly during magnetizing than the time set in p0346. This is generally the case when selecting fast magnetization (p1401.6).

The parameter has no influence for flying restart (see p1200) and after DC braking (see p1231).

p1574[0...n] Voltage reserve dynamic / U_reserve dyn

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6723, 6724
P-Group: Closed-loop control	**Unit group:** 5_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [Vrms]	150.0 [Vrms]	10.0 [Vrms]

Description: Sets a dynamic voltage reserve.

Note: In the field weakening range, it must be expected that the control dynamic performance is somewhat restricted due to the limited possibilities of controlling/adjusting the voltage. This can be improved by increasing the voltage reserve. Increasing the reserve reduces the steady-state maximum output voltage (r0071).

p1575[0...n] Voltage target value limit / U_tgt val lim

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6725
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
50.00 [%]	300.00 [%]	200.00 [%]

Description: Sets the limit of the voltage target value.

In steady-state field weakening operation this corresponds to the required output voltage.

The value of 100% refers to p0304.

Note: The output voltage is only limited if the maximum output voltage (r0071) minus the voltage reserve (p1574) corresponds to a value higher than p1575.

Limiting via p1575 allows the influence of the voltage ripple of the line supply voltage to be eliminated at the operating point.

p1576[0...n] Flux boost adaptation speed, lower / Flux boost n lower

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6725
P-Group: Closed-loop control	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	0.00 [rpm]

Description: Sets the lower adaptation speed of the flux boost.

Below this speed, p1570 is set as reference (setpoint) flux.

p1577[0...n] Flux boost adaptation speed upper / Flux boost n upper

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6725
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1.0 [%]	10000.0 [%]	200.0 [%]

Description: Sets the upper adaptation speed of the flux boost.

Above this speed, the rated motor flux (100 %) is set as reference (setpoint) flux.

Dependency: The parameter value refers to the lower adaptation speed of the flux boost.

Refer to: p1576

p1578[0...n] Flux reduction flux decrease smoothing time / Flux red dec t_sm

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5722
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
20 [ms]	5000 [ms]	200 [ms]

Description: Sets the smoothing time for the flux setpoint when decreasing the flux due to flux reduction (p1581 < 100 %).

Dependency: Refer to: p1579, p1581

p1578[0...n] Flux reduction flux decrease smoothing time / Flux red dec t_sm

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6791
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
20 [ms]	5000 [ms]	200 [ms]

Description: Sets the smoothing time for the flux setpoint when decreasing the flux due to flux reduction (p1581 < 100 %).

Dependency: Refer to: p1579

p1579[0...n] Flux reduction flux build-up smoothing time / Flux red up t_sm

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5722
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	5000 [ms]	4 [ms]

Description: Sets the smoothing time for the flux setpoint for the flux build-up due to flux reduction (p1581 < 100 %).

Dependency: Refer to: p1578, p1581

Note: An excessively long smoothing time extends the time until the maximum torque is reached from the no-load phase.

p1579[0...n] Flux reduction flux build-up smoothing time / Flux red up t_sm

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6791
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	5000 [ms]	4 [ms]

Description: Sets the smoothing time for the flux setpoint for the flux build-up due to flux reduction (p1581 < 100 %).

Dependency: Refer to: p1578

Note: An excessively long smoothing time extends the time until the maximum torque is reached from the no-load phase.

p1580[0...n] Efficiency optimization / Efficiency opt.

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6722
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [%]	100 [%]	0 [%]

Description: Sets the efficiency optimization.

When optimizing the efficiency, the flux setpoint of the closed-loop control is adapted as a function of the load.

For p1580 = 100 %, under no-load operating conditions, the flux setpoint is reduced to 50 % of the rated motor flux.

Note: It only makes sense to activate this function if the dynamic response requirements of the speed controller are low.

In order to avoid oscillations, if required, the speed controller parameters should be adapted (increase Tn, reduce Kp).

Further, the smoothing time of the flux setpoint filter (p1582) should be increased.

p1581[0...n] Flux reduction factor / Flux red factor

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5722
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
20 [%]	100 [%]	100 [%]

Description: Sets the factor to which the flux is reduced under no-load conditions.

For a value of 100%, the flux reduction is deactivated.

This parameter refers to the flux saved in the field weakening characteristic.

By reducing the flux, the losses in induction motors can be reduced under no-load conditions or at low torques. However, the time it takes to reach the maximum torque is extended.

Recommendation: For induction motors with closed rotor slots, we recommend that the integral time of the current controller (p1717) is increased to three times the value, for example.

For stable operation, the maximum field-weakening factor in operation with an encoder must be less than 16 and in operation without an encoder must be less than 4. Lower field weakening factors are recommended. The field weakening factor is calculated as follows:

(p1082 * 100 % * 600 V) / (p0348 * p1581 * p0070)

In order to reduce losses due to magnetizing and de-magnetizing, we recommend that the smoothing times are adapted for flux decrease (p1578) and flux build-up (p1579).

In order to reduce the losses as a result of building-up and reducing the torque, we recommend that the torque setpoint is smoothed (current setpoint filter (p1656 ...) or speed actual value filter (p1441)).

Dependency: Refer to: p1578, p1579

Note: It only makes sense to activate this function if there are low dynamic requirements placed on the speed controller and there are frequent phases with a low load.

In order to avoid oscillations, if required, the speed controller parameters should be adapted (decrease Kp (p1460, p1470), increase Tn (p1462, p1472)).

When used without an encoder, flux reduction is not possible for induction motors with closed rotor slots.

p1581[0...n] Flux reduction factor / Flux red factor

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [%]	100 [%]	100 [%]

Description: Sets the factor to which the flux is reduced under no-load conditions.

For a value of 100%, the flux reduction is deactivated.

This parameter refers to the flux saved in the field weakening characteristic.

By reducing the flux, the losses in induction motors can be reduced under no-load conditions or at low torques. However, the time it takes to reach the maximum torque is extended.

Recommendation: For induction motors with closed rotor slots, we recommend that the integral time of the current controller (p1717) is increased to three times the value, for example.

For stable operation, the maximum field-weakening factor in operation with an encoder must be less than 16 and in operation without an encoder must be less than 4. Lower field weakening factors are recommended. The field weakening factor is calculated as follows:

(p1082 * 100 % * 600 V) / (p0348 * p1581 * p0070)

In order to reduce losses due to magnetizing and de-magnetizing, we recommend that the smoothing times are adapted for flux decrease (p1578) and flux build-up (p1579).

In order to reduce the losses as a result of building-up and reducing the torque, we recommend that the torque setpoint is smoothed (current setpoint filter (p1656 ...) or speed actual value filter (p1441)).

Note: It only makes sense to activate this function if there are low dynamic requirements placed on the speed controller and there are frequent phases with a low load.

In order to avoid oscillations, if required, the speed controller parameters should be adapted (decrease Kp (p1460, p1470), increase Tn (p1462, p1472)).

When used without an encoder, flux reduction is not possible for induction motors with closed rotor slots.

p1582[0...n] Flux setpoint smoothing time / Flux setp T_smth

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6722, 6724, 6725
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
4 [ms]	5000 [ms]	15 [ms]

Description: Sets the smoothing time for the flux setpoint.

r1583 Flux setpoint smoothed / Flux setp smooth

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6722, 6723, 6724
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the smoothed flux setpoint.
The value is referred to the rated motor flux.

p1584[0...n] Field weakening operation flux setpoint smoothing time / Field weak T_smth

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6722
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	20000 [ms]	0 [ms]

Description: Sets the smoothing time for the flux setpoint in the field-weakening range

Recommendation: Smoothing should be especially used if there is no regenerative feedback into the line supply. This means that the DC link voltage can quickly increase in regenerative operation

Note: Only the flux setpoint rise is smoothed

p1585[0...n] Flux actual value smoothing time / Flux actVal T_smth

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	1000 [ms]	0 [ms]

Description: Sets the smoothing time for the flux actual value.

p1585[0...n] Flux actual value smoothing time / Flux actVal T_smth

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6726
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	1000 [ms]	0 [ms]

Description: Sets the smoothing time for the flux actual value.

p1586[0...n] Field weakening characteristic scaling / Field weak scal

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
80.0 [%]	120.0 [%]	100.0 [%]

Description: Sets the scaling of the precontrol characteristic for the start of field weakening.
For values above 100 % and for partial load situations, the field weakening starts at higher speeds.

Note: If the start of field weakening is shifted to lower speeds, then the voltage reserve is increased for partial load situations.
If the start of field weakening is shifted to higher speeds, the voltage reserve is appropriately reduced so that for fast load changes, it can be expected that this will have a negative impact on the dynamic performance.

r1589 Field-weakening current precontrol value / I_FieldWeak prectr

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6724
P-Group: Closed-loop control	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: ASM, SESM, REL, RESM	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the precontrol value for the field weakening current.

p1590[0...n] Flux controller P gain / Flux controller Kp

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5722
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [A/Vs]	999999.0 [A/Vs]	10.0 [A/Vs]

Description: Sets the proportional gain for the flux controller.

Note: For synchronous motors, this parameters has no effect.
The value is automatically pre-assigned dependent on the motor when the drive system is first commissioned.
When calculating controller parameters (p0340 = 4), this value is re-calculated.

p1590[0...n] Flux controller P gain / Flux controller Kp

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6723
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0	999999.0	10.0

Description: Sets the proportional gain for the flux controller.

Note: The value is automatically pre-assigned dependent on the motor when the drive system is first commissioned.
When calculating controller parameters (p0340 = 4), this value is re-calculated.

p1592[0...n] Flux controller integral time / Flux controller Tn

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5722
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	10000 [ms]	30 [ms]

Description: Sets the integral time for the flux controller.

Note: For synchronous motors, this parameters has no effect.
The value is automatically pre-assigned dependent on the motor when the drive system is first commissioned.
When calculating controller parameters (p0340 = 4), this value is re-calculated.

p1592[0...n] Flux controller integral time / Flux controller Tn

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6723
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	10000 [ms]	30 [ms]

Description: Sets the integral time for the flux controller.

Note: The value is automatically pre-assigned dependent on the motor when the drive system is first commissioned.
When calculating controller parameters (p0340 = 4), this value is re-calculated.

r1593 Field weakening controller output / Field_ctrl outp

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6723, 6724, 6726
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL, RESM	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Display and connector output for the output of the field weakening controller.

r1593[0...1] CO: Field weakening controller / flux controller output / Field/Fl_ctrl outp

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6723, 6724, 6726
P-Group: Closed-loop control	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: REL, RESM	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Display and connector output for the output of the field weakening controller (synchronous motor) or the output of the flux controller (separately excited synchronous motor, induction motor).

Index:
[0] = PI output
[1] = I output

p1594[0...n] Field-weakening controller P gain / Field_ctrl Kp

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6724
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00	1000.00	0.00

Description: Sets the P gain of the field-weakening controller.

p1595[0...n] Field weakening controller additional setpoint / Field_ctr add_setp

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6726
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-80.00 [%]	50.00 [%]	0.00 [%]

Description: Sets an additional setpoint for the field weakening controller.

The value refers to the dynamic voltage reserve (p1574).

Note: For a value equal to zero, the field weakening controller is activated when the maximum voltage, calculated with the average value of the DC link voltage - and limited using p1575 - is reached.

Positive values mean that the field weakening controller intervenes later.

Negative values cause the field weakening controller to intervene earlier, so that the voltage can move away from the modulation depth limit.

p1596[0...n] Field weakening controller integral-action time / Field_ctrl Tn

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6723, 6724
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
10 [ms]	10000 [ms]	50 [ms]

Description: Sets the integral-action time of the field-weakening controller.

r1597 CO: Field weakening controller output / Field_ctrl outp

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6723
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the output of the field weakening controller.

The value is referred to the rated motor flux.

r1598 CO: Total flux setpoint / Flux setp total

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6714, 6723, 6724, 6725, 6726, 8020
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the effective flux setpoint.

The value is referred to the rated motor flux.

p1599[0...n] Flux controller excitation current difference / Flux ctr I_exc_dif

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	100.0 [%]	3.0 [%]

Description: Sets the permissible difference between the actual excitation current and the excitation current setpoint.

The excitation current flux controller is active within this difference.

If the difference lies outside the specified limit value, then the I component of the excitation current flux controller is kept. Instead of this, for the flux controller of the field-generating current, an additional I controller is switched in (integral time according to p1592).

If the difference again lies within the bandwidth, the I component of the excitation current flux controller is re-activated and the I component of the flux controller of the field-generating current is reduced as an exponential function with respect to time. The reduction of the I component over time depends on the rotor time constant (r0384).

p1600[0...n] P flux controller P gain / P flux ctrl Kp

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0	999999.0	10.0

Description: Sets the proportional gain of the P flux controller for separately excited synchronous motors (SESM).

Note: The value is automatically pre-assigned dependent on the motor when the drive system is first commissioned.

When calculating controller parameters (p0340 = 4), this value is re-calculated.

p1601[0...n] Current injection ramp time / I_inject t_ramp

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6790
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1 [ms]	10000 [ms]	20 [ms]

Description: Synchronous-reluctance motor:

Sets the ramp-up time of the current setpoint (p1610, p1611) when switching over from closed-loop controlled to open-loop controlled operation.

Synchronous motor:

Sets the ramp-down time of the current setpoint when switching over from open-loop controlled to closed-loop controlled operation.

r1602 CO: P flux controller output / P flux ctrl outp

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6726, 6727
P-Group: Closed-loop control	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the output of the P flux controller for separately excited synchronous motors (SESM).

p1603[0...n] Field-generating current maximum / Id max

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	100.0 [%]	0.0 [%]

Description: Sets the maximum component of the field-generating current to the permissible maximum current (r0067).

Note: If value = 0.0%:

For synchronous motors, 90 % is effective and for induction motors, 60 %.

p1604[0...n] Pulse technique current limit / Pulse current lim

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Arms]	10000.00 [Arms]	0.00 [Arms]

Description: Sets the effective current limit within the pulse technique.

Note: The saturation characteristic of the motor defines the available operating range for the pulse technique.

This operating range can be adjusted using the current limit.

When commissioning a catalog motor, the technique is automatically selected depending on the motor type being used.

Otherwise, the rated motor current is used as pre-assigned value.

p1605[0...n] Pulse technique pattern configuration / Puls pattrn config

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	5	2

Description: Sets the applied test signal and evaluation technique for estimating the continuous rotor position.

Remark:

See p1750 to activate the test signal technique.

Value:
1: 2p_dpm
2: 4p_dppmm
3: 2p_dpm_model
4: 2p_dpm_qpm
5: 2p_apm_bpm

Dependency: Refer to: p1750

Note: When commissioning a catalog motor, the technique is automatically selected depending on the motor type being used.

r1606 CO: Pulse technique pattern actual / Puls pattern act

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	5	-

Description: Displays the currently applied test signal for estimating the continuous rotor position.

Value:
0: None
1: 2p_dpm
2: 4p_dppmm
3: 2p_dpm_model
4: 2p_dpm_qpm
5: 2p_apm_bpm

Dependency: Refer to: p1605, p1750

p1607[0...n] Pulse technique excitation / Pulse excitation

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [mVs]	20000.000 [mVs]	32.000 [mVs]

Description: Sets the excitation amplitude (voltage-time pulse) for the pulse technique for estimating the continuous rotor position.

For load current-dependent adaptation (p3371 ... p3373), this amplitude applies at operating point 1.

Dependency: Refer to: p1605, p1750, p3371, p3372, p3373

r1608[0...8] CO: Pulse technique response / Puls response

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 6_5	**Unit selection:** p0505
Not for motor type: ASM, SESM, REL	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [A]	- [A]	- [A]

Description: Displays the signal response components relating to the excitation of the pulse technique.

Index:
[0] = Component x
[1] = Component y
[2] = Pointer length
[3] = Component x smooth
[4] = Component y smooth
[5] = Component x
[6] = Component y
[7] = Pointer length
[8] = Pointer length

Dependency: Refer to: p1605, p1607, p1750

Note: For index [0...8]:

The reference system of components x and y depends on the actual pattern (r1606).

For fixed stator excitation, the following applies: x = alpha, y = beta

For fixed rotor excitation, the following applies: x = d, y = q

For index [3, 4]:

Displays the smoothed values (smoothing time p0045) from indices 0 and 1.

p1609[0...n] I/f operation current setpoint / I/f op I_setp

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6727
P-Group: Closed-loop control	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Arms]	10000.00 [Arms]	0.00 [Arms]

Description: Sets the stator current setpoint for operation of a separately excited synchronous motor (SESM) in operating mode I/f (p1300 = 18).

p1610[0...n] Torque setpoint static (sensorless) / M_set static

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6700, 6721, 6722, 6726
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-200.0 [%]	200.0 [%]	50.0 [%]

Description: Sets the static torque setpoint for sensorless vector control in the low speed range.

This parameter is entered as a percentage referred to the rated motor torque (r0333).

For sensorless vector control, in the speed-controlled operating range (open loop), an absolute current is impressed. p1610 represents the maximum load that occurs at a constant setpoint speed.

Caution: For separately-excited synchronous motors (p0300 = 5), the parameter is also active for vector control with sensor and independent of the speed (see function diagram, 6726).

Notice: p1610 should always be set to at least 10 % higher than the maximum steady-state load that can occur.

Note: For p1610 = 0%, a current setpoint is calculated that corresponds to the no-load case (ASM: rated magnetizing current, RESM: no-load magnetizing current).

For p1610 = 100 %, a current setpoint is calculated that corresponds to the rated motor torque.

Negative values are converted into positive setpoints in the case of induction and permanent-magnet synchronous motors as well as closed-loop controlled reluctance motors.

p1611[0...n] Additional acceleration torque (sensorless) / M_suppl_accel

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6700, 6721, 6722, 6726
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	200.0 [%]	30.0 [%]

Description: Setting the dynamic torque setpoint for small speed ranges with sensorless vector control.

This parameter is entered as a percentage referred to the rated motor torque (r0333).

Caution: For separately-excited synchronous motors (p0300 = 5), the parameter is also active for vector control with sensor and independent of the speed during the acceleration phase (r1199.2 = 1, see function diagram, 6726).

Note: When accelerating and braking p1611 is added to p1610 and the resulting total torque is converted into an appropriate current setpoint and controlled.

For pure accelerating torques, it is always favorable to use the torque precontrol of the speed controller (p1496).

p1612[0...n] Current setpoint open-loop control, encoderless / I_setCtrEncoderl

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_REG	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Arms]	10000.00 [Arms]	0.00 [Arms]

Description: Sets the current setpoint for controlled (open-loop) encoderless operation.

Note: The value is effective at speeds less than p1755 and represents a reserve for a possibly existing load torque or torque error in the moment of inertia.

p1612[0...n] Current setpoint magnetizing open-loop controlled / Id_set ctrl

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Arms]	10000.00 [Arms]	0.00 [Arms]

Description: Sets the magnetizing current setpoint in the open-loop controlled encoderless operation.

The value is only valid during the current model orientation.

Dependency: Refer to: p1610, p1611

Note: The value is effective at speeds less than p1755 and represents a reserve for a possibly existing load torque or torque error in the moment of inertia.

r1614 EMF maximum / EMF max

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6725
P-Group: Displays, signals	**Unit group:** 5_1	**Unit selection:** p0505
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Displays the actual maximum possible electromotive force (EMF) of the separately excited synchronous motor.

Dependency: The value is the basis for the flux setpoint.

The maximum possible EMF depends on the following factors:

- Actual DC link voltage (r0070).
- Maximum modulation depth (p1803).
- Field-generating and torque-generating current setpoint.

p1616[0...n] Current setpoint smoothing time / I_set T_smooth

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6721, 6722, 6726
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
4 [ms]	10000 [ms]	40 [ms]

Description: Sets the smoothing time for the current/torque setpoint in the open-loop-controlled operating range in the case of sensorless vector control.

Note: This parameter is only effective in the range where current is injected for sensorless vector control.

For permanent magnet synchronous motors, the parameter is effective over the complete speed range.

For induction motors, the current setpoint is calculated from p1610 and p1611 and for separately excited synchronous motors the torque setpoint is calculated from p1610 and p1611.

r1617 CO: Torque setpoint (controlled) / M_set ctrl

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6726
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Torque setpoint for sensorless control of the separately excited synchronous motor in the open-loop-controlled operating range (under p1755 * p1756).

r1618 Current model controller precontrol / I_mod_ctrl prectrl

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the precontrol value of the current model controller.

It involves a magnetizing current in the d-direction.

p1619[0...n] Setpoint/actual value tracking threshold / SetAct track thrsh

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6727
P-Group: Closed-loop control	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Arms]	10000.00 [Arms]	0.00 [Arms]

Description: Threshold for setpoint/actual value tracking of the stator current in the q axis of the current model.

p1620[0...n] Stator current minimum / I_stator min

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6727
P-Group: Closed-loop control	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-10000.00 [Arms]	10000.00 [Arms]	0.00 [Arms]

Description: Sets the minimum stator current for separately excited synchronous motors (SESM).

A negative value means that the field-generating stator current (d-axis) has a negative sign. The valid value is internally limited to 50% of the rated motor current (p0305).

p1621[0...n] Changeover speed inner cos phi = 1 / n_chngov cos phi=1

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6727
P-Group: Closed-loop control	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	0.00 [rpm]

Description: Sets the speed where a change is made from the inner to the outer cos phi = 1.

If the value that is entered exceeds the rated speed, then a change is made to the inner cos phi = 1 over the complete speed range.

p1622[0...n] Field-generating current setpoint smoothing time constant / Id_setp T_smth

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6727
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.1 [ms]	200.0 [ms]	20.0 [ms]

Description: Sets the smoothing time constant for the setpoint of the field-generating current components.

The current filtered in this way is included in the calculation of the cos phi.

r1623[0...1] Field-generating current setpoint (steady-state) / Id_set stationary

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6723, 6726, 6727
P-Group: Displays, signals	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: PMSM, REL, RESM	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the steady-state field generating current setpoint (Id_set).

r1624 Field-generating current setpoint total / Id_setp total

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6640, 6721, 6723, 6727
P-Group: Displays, signals	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the limited field-generating current setpoint (Id_set).

This value comprises the steady-state field-generating current setpoint r1623 and a dynamic component that is only set when changes are made to the flux setpoint.

p1625[0...n] Excitation current setpoint calibration / I_exc_setp cal

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6727
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
10.0 [%]	200.0 [%]	100.0 [%]

Description: Sets the gain factor to weight the excitation current setpoint.

r1626[0...1] CO: Excitation current setpoint / I_exc_setp

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6727
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the calculated excitation current setpoint.

The following applies for index 0:

For direct excitation, the value is referred to p0390. For brushless excitation, the value is referred to p0690.

The following applies for index 1:

The value is referred to p0390.

Index: [0] = Excitation current of the excitation equipment
[1] = Excitation current for direct excitation

Dependency: Refer to: p0390, p0690

r1627 CO: Current model load angle / I_mod load angle

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6727
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** p2005	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°]	- [°]	- [°]

Description: Displays the load angle of the current model.

p1628[0...n] Current model controller dynamic factor / I_mod_ctr dyn_fact

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6727
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1 [%]	400 [%]	50 [%]

Description: Sets the dynamic response factor for the current model controller.

p1629[0...n] Current model controller P gain / I_mod_ctrl Kp

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6727
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	100000.000	0.000

Description: Sets the proportional gain for the current model controller.

This value is automatically pre-set using p3900 or p0340 when commissioning has been completed.

p1630[0...n] Current model controller integral time / I_mod_ctrl Tn

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6727
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	10000.00 [ms]	0.00 [ms]

Description: Sets the integral time for the current model controller.

This value is automatically pre-set using p3900 or p0340 when commissioning has been completed.

r1631 Current model controller P gain effective / I_mod ctrl Kp eff

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6727
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the effective P gain of the current model controller.

r1632 Current model controller integral time effective / I_mod_ctrl Tn eff

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6727
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [ms]	- [ms]	- [ms]

Description: Displays the effective integral time of the current model controller.

r1633 Current model flux setpoint / I_mod flux setp

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6727
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the effective flux setpoint of the current model.

The value is referred to the rated motor flux.

r1634 Current model flux actual value / I_mod flux act val

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6727
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the effective flux actual value of the current model.

The value is referred to the rated motor flux.

r1635 Current model controller I component / I_mod_ctrl I comp

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6727
P-Group: Closed-loop control	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the I component of the current model controller.

r1636 Current model controller output / I_mod_ctrl outp

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6727
P-Group: Closed-loop control	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the output of the current model controller.

r1637 Current model magnetizing current d axis / I_mod I_mag d-ax

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6727
P-Group: Closed-loop control	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the magnetizing current of the current model in the d-axis.

r1638 Current model magnetizing current q axis / I_mod I_mag q-ax

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6727
P-Group: Closed-loop control	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the magnetizing current of the current model in the q-axis.

r1639 CO: Current model Isq after actual value tracking / I_mod Isq track

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6727
P-Group: Closed-loop control	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the stator current in the q axis after the current actual value tracking.

p1640[0...n] CI: Excitation current actual value signal source / I_exc_ActVal S_src

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 6727
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the excitation current actual value

r1641[0...1] Excitation current actual value / I_exc_act val

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6727, 8020
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the excitation current actual value that is read in.

Index: [0] = Excitation current of the excitation equipment
[1] = Excitation current for direct excitation

Dependency: Refer to: p0390

Note: The following applies for index 0:

For direct excitation, the value is referred to p0390. For brushless excitation, the value is referred to p0690.

The following applies for index 1:

The value is referred to p0390.

p1642[0...n] Minimum excitation current / Min I_exc

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6727
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.1 [%]	50.0 [%]	5.0 [%]

Description: Sets the minimum excitation current.

This means that negative excitation currents can be avoided.

p1643[0...n] Minimum excitation current closed-loop control gain factor / I_exc_min Kp

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6727
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00	5.00	0.40

Description: Sets the gain factor for the minimum excitation current, closed-loop control.

This is active if the excitation current is below 75 % of p1642.

Dependency: Refer to: p1642

r1644 CO: Excitation current monitoring output / I_exc_monit outp

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6727
P-Group: Closed-loop control	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the output of the excitation current monitoring for separately excited synchronous motors.

p1645[0...7] BI: Excitation feedback signals signal source / Exc FS S_src

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 6495
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	[0...6] 1 [7] 0

Description: Sets the signal source for the individual feedback signals from the excitation.

Index:
[0] = Excitation ready for switching on
[1] = Excitation ready
[2] = Excitation operational
[3] = Excitation group signal fault
[4] = Excitation group signal alarm
[5] = Not used
[6] = Not used
[7] = Excitation at the voltage limit

Dependency: Refer to: r1649

p1646 Excitation monitoring time / Excit t_monit

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6495
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
2.0 [s]	1300.0 [s]	20.0 [s]

Description: Sets the monitoring time of the excitation.

After an ON command, the feedback signal must be received within this monitoring time.

Note: After the on command for the excitation (r1648.0 = 1), its feedback signal must be available at r1649.1 within this monitoring time (BI: p1645[1]).

The same monitoring time is effective after the excitation is enabled for operation (r1648.3 = 1) up to the feedback signal "excitation operational" (r1649.2 = 1, BI: p1645[2]).

p1647 Excitation switch-off delay time / Exc t_off

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6495
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [s]	5.0 [s]	0.8 [s]

Description: Sets the switch-off delay time to shut down the excitation equipment.

Note: The delay time starts if, when switching off, r0863.0 = 0.

r1648.0 and r1648.3 are reset at the end of the delay time.

r1648.0...11 CO/BO: Excitation control word / Excitation STW

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 6495
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the control word for the excitation equipment.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Power up excitation	Yes	No	-
01	Excitation no OFF2	Yes	No	-
02	Excitation no OFF3	Yes	No	-
03	Excitation operation enable	Yes	No	-
07	Excitation acknowledge fault	Yes	No	-
10	Reserved	-	-	-
11	Reverse field excitation invert excitation current setpoint	Yes	No	-

Note: For bit 00:

This bit is set, dependent on r0863.0; exception, precharging via the Motor Module (see p0212).

r1649.0...11 CO/BO: Excitation status word / Excitation ZSW

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 6495
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status word of the excitation equipment.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Excitation ready for switching on feedback signal	Yes	No	-
01	Excitation ready feedback signal	Yes	No	-
02	Excitation operational feedback signal	Yes	No	-
03	Excitation group signal fault	Yes	No	-
07	Excitation group signal alarm	Yes	No	-
08	Excitation at the voltage limit	Yes	No	-
11	Excitation voltage present at the power unit	Yes	No	-

Dependency: Refer to: p1645
Refer to: A49204

r1650 Current setpoint torque-generating before filter / Iq_set before filt

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5710
P-Group: Closed-loop control	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the torque generating current setpoint Iqset after the torque limits and the clock cycle interpolation is ahead of the current setpoint filters.

r1650 Current setpoint force-generating before filter / Iq_set before filt

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5710
P-Group: Closed-loop control	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the force generating current setpoint Iqset after the force limits and the clock cycle interpolation is ahead of the current setpoint filters.

r1651 CO: Torque setpoint function generator / M_set FG

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Displays the torque setpoint of the function generator.

r1651 CO: Force setpoint function generator / F_set FG

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [N]	- [N]	- [N]

Description: Displays the force setpoint of the function generator.

p1653[0...n] Current setpoint torque-generating smoothing time minimum / Isq_s T_smth min

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6710
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.1 [ms]	20.0 [ms]	0.1 [ms]

Description: Sets the minimum smoothing time constant for the setpoint of the torque-generating current components.

p1654[0...n] Curr. setpoint torque-gen. smoothing time field weakening range / Isq_s T_smth FW

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6710
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.1 [ms]	50.0 [ms]	4.8 [ms]

Description: Sets the smoothing time constant for the setpoint of the torque-generating current components.

Note: The smoothing time does not become effective until the field-weakening range is reached.

p1655[0...4] CI: Current setpoint/Speed actual value filter nat. frequency tuning / I/n_setp_filt f_n

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6700, 6710
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for tuning the natural frequency of the current setpoint filter 1, 2 and speed actual value filter 5.

Index:
[0] = Filter 1
[1] = Filter 2
[2] = Reserved
[3] = Reserved
[4] = Filter 5

p1656[0...n] Manipulated variable filter velocity controller activation / Filt v_ctrl act

HLA

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Setting for activating/deactivating the manipulated variable filter for the velocity controller.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Filter 1	Active	Inactive	-
01	Filter 2	Active	Inactive	-
02	Filter 3	Active	Inactive	-
03	Filter 4	Active	Inactive	-

Dependency: Refer to: p1657, p1658, p1659, p1660, p1661, p1662, p1663, p1664, p1665, p1666, p1699

p1656[0...n] Activates current setpoint filter / I_setp_filt act

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** 5710
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0001 bin

Description: Setting for activating/deactivating the current setpoint filter.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Filter 1	Active	Inactive	-
01	Filter 2	Active	Inactive	-
02	Filter 3	Active	Inactive	-
03	Filter 4	Active	Inactive	-

Dependency: The individual current setpoint filters are parameterized as of p1657.

Note: If not all of the filters are required, then the filters should be used consecutively starting from filter 1.

p1656[0...n] Current setpoint/Speed actual value filter activation / I_setp_filt act

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** 4715, 6710
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0001 bin

Description: Setting for activating/deactivating the current setpoint filter 1, 2 and speed actual value filter 5.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Filter 1	Active	Inactive	-
01	Filter 2	Active	Inactive	-
04	Filter 5	Active	Inactive	-

Dependency: The individual current setpoint/speed actual value filters are parameterized starting at p1657.

Note: If not all of the filters are required, then the filters should be used consecutively starting from filter 1.

p1656 Signal filter activation / I_setp_filt act

A_INF (Suppl cl-loop ctrl), R_INF (Suppl cl-loop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 bin

Description: Setting for activating/deactivating the 2nd order filter.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
04	Filter 5	Active	Inactive	8940

Dependency: The filter is parameterized from p1677.

p1657[0...n] Manipulated variable filter 1 velocity controller type / Filt 1 v_ctrl type

HLA

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	2	1

Description: Sets the type for manipulated variable filter 1 of the velocity controller

Value:
1: PT2 low pass
2: General 2nd order filter

Dependency: For p1657 = 1, the following parameters should be set:

- p1656.0, p1658, p1659

For p1657 = 2, the following parameters should be set:

- p1656.0, p1658, p1659, p1660, p1661

Refer to: p1656, p1658, p1659, p1660, p1661, p1662, p1663, p1664, p1665, p1666

Note: For a general 2nd order filter, by inserting the same natural frequency in both the numerator and in the denominator, i.e. bandstop frequency, a bandstop filter is implemented. If the numerator damping of zero is selected, the bandstop frequency is completely suppressed.

The denominator damping can be determined from the equation for the 3 dB bandwidth:

f_3dB bandwidth = 2 * D_denominator * f_bandstop frequency

p1657[0...n] Current setpoint filter 1 type / I_set_filt 1 type

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 5710, 6710
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	2	1

Description: Sets the current setpoint filter 1 as low pass (PT2) or general 2nd-order filter.

Value:
1: PT2 low pass
2: General 2nd order filter

Dependency: The current setpoint filter 1 is activated via p1656.0 and parameterized via p1657 ... p1661.

Note: For a general 2nd order filter, by inserting the same natural frequency in both the numerator and in the denominator, i.e. bandstop frequency, a bandstop filter is implemented. If the numerator damping of zero is selected, the bandstop frequency is completely suppressed.

The denominator damping can be determined from the equation for the 3 dB bandwidth:

f_3dB bandwidth = 2 * D_denominator * f_bandstop frequency

p1658[0...n] Manip. var. filter 1 velocity controller denom. natural freq. / Filt1 v_ctr fn_den

HLA

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	1999.0 [Hz]

Description: Sets the denominator natural frequency for manipulated variable filter 1 of the velocity controller.

Dependency: Refer to: p1656, p1657, p1659, p1660, p1661, p1662, p1663, p1664, p1665, p1666

p1658[0...n] Current setpoint filter 1 denominator natural frequency / I_set_filt1 fn_den

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5710, 6710
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	1999.0 [Hz]

Description: Sets the denominator natural frequency for current setpoint filter 1 (PT2, general filter).

Dependency: The current setpoint filter 1 is activated via p1656.0 and parameterized via p1657 ... p1661.

p1659[0...n] Manip. variable filter 1 velocity controller denominator damping / Filt 1 v_ctr D_den

HLA

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.001	10.000	0.700

Description: Sets the denominator damping for manipulated variable filter 1 of the velocity controller.

Dependency: Refer to: p1656, p1657, p1658, p1660, p1661, p1662, p1663, p1664, p1665, p1666

p1659[0...n] Current setpoint filter 1 denominator damping / I_set_filt 1 D_den

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5710, 6710
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.001	10.000	0.700

Description: Sets the denominator damping for current setpoint filter 1.

Dependency: The current setpoint filter 1 is activated via p1656.0 and parameterized via p1657 ... p1661.

p1660[0...n] Manip. var. filter 1 velocity controller numerator natural freq. / Filt1 v_ctr fn_num

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	1999.0 [Hz]

Description: Sets the numerator natural frequency for manipulated variable filter 1 of the velocity controller.

Dependency: Refer to: p1656, p1657, p1658, p1659, p1661, p1662, p1663, p1664, p1665, p1666

p1660[0...n] Current setpoint filter 1 numerator natural frequency / I_set_filt1 fn_num

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5710, 6710
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	1999.0 [Hz]

Description: Sets the numerator natural frequency for current setpoint filter 1 (general filter).

Dependency: The current setpoint filter 1 is activated via p1656.0 and parameterized via p1657 ... p1661.

p1661[0...n] Manip. variable filter 1 velocity controller numerator damping / Filt 1 v_ctr D_num

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	10.000	0.700

Description: Sets the numerator damping for manipulated variable filter 1 of the velocity controller.

Dependency: Refer to: p1656, p1657, p1658, p1659, p1660, p1662, p1663, p1664, p1665, p1666

p1661[0...n] Current setpoint filter 1 numerator damping / I_set_filt 1 D_num

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5710, 6710
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	10.000	0.700

Description: Sets the numerator damping for current setpoint filter 1.

Dependency: The current setpoint filter 1 is activated via p1656.0 and parameterized via p1657 ... p1661.

p1662[0...n] Manipulated variable filter 2 velocity controller type / Filt 2 v_ctrl type

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	2	1

Description: Sets the type for manipulated variable filter 2 of the velocity controller

Value:
1: PT2 low pass
2: General 2nd order filter

Dependency: For p1662 = 1, the following parameters should be set:

- p1656.1, p1663, p1664

For p1662 = 2, the following parameters should be set:

- p1656.1, p1663, p1664, p1665, p1666

Refer to: p1656, p1657, p1658, p1659, p1660, p1661, p1663, p1664, p1665, p1666

Note: For a general 2nd order filter, by inserting the same natural frequency in both the numerator and in the denominator, i.e. bandstop frequency, a bandstop filter is implemented. If the numerator damping of zero is selected, the bandstop frequency is completely suppressed.

The denominator damping can be determined from the equation for the 3 dB bandwidth:

f_3dB bandwidth = 2 * D_denominator * f_bandstop frequency

p1662[0...n] Current setpoint filter 2 type / I_set_filt 2 type

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 5710, 6710
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	2	1

Description: Sets current setpoint filter 2 as lowpass filter (PT2) or general 2nd order filter.

Value:
1: PT2 low pass
2: General 2nd order filter

Dependency: Current setpoint filter 2 is activated via p1656.1 and parameterized via p1662 ... p1666.

Note: For a general 2nd order filter, by inserting the same natural frequency in both the numerator and in the denominator, i.e. bandstop frequency, a bandstop filter is implemented. If the numerator damping of zero is selected, the bandstop frequency is completely suppressed.

The denominator damping can be determined from the equation for the 3 dB bandwidth:

f_3dB bandwidth = 2 * D_denominator * f_bandstop frequency

p1663[0...n] Manip. var. filter 2 velocity controller denom. natural freq. / Filt2 v_ctr fn_den

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	1999.0 [Hz]

Description: Sets the denominator natural frequency for manipulated variable filter 2 of the velocity controller.

Dependency: Refer to: p1656, p1657, p1658, p1659, p1660, p1661, p1662, p1664, p1665, p1666

p1663[0...n] Current setpoint filter 2 denominator natural frequency / I_set_filt2 fn_den

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5710, 6710
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	1999.0 [Hz]

Description: Sets the denominator natural frequency for current setpoint filter 2 (PT2, general filter).

Dependency: Current setpoint filter 2 is activated via p1656.1 and parameterized via p1662 ... p1666.

p1664[0...n] Manip. variable filter 2 velocity controller denominator damping / Filt 2 v_ctr D_den

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.001	10.000	0.700

Description: Sets the denominator damping for manipulated variable filter 2 of the velocity controller.

Dependency: Refer to: p1656, p1657, p1658, p1659, p1660, p1661, p1662, p1663, p1665, p1666

p1664[0...n] Current setpoint filter 2 denominator damping / I_set_filt 2 D_den

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5710, 6710
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.001	10.000	0.700

Description: Sets the denominator damping for current setpoint filter 2.

Dependency: Current setpoint filter 2 is activated via p1656.1 and parameterized via p1662 ... p1666.

p1665[0...n] Manip. var. filter 2 velocity controller numerator natural freq. / Filt2 v_ctr fn_num

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	1999.0 [Hz]

Description: Sets the numerator natural frequency for manipulated variable filter 2 of the velocity controller.

Dependency: Refer to: p1656, p1657, p1658, p1659, p1660, p1661, p1662, p1663, p1664, p1666

p1665[0...n] Current setpoint filter 2 numerator natural frequency / I_set_filt2 fn_num

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5710, 6710
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	1999.0 [Hz]

Description: Sets the numerator natural frequency for current setpoint filter 2 (general filter).

Dependency: Current setpoint filter 2 is activated via p1656.1 and parameterized via p1662 ... p1666.

p1666[0...n] Manip. variable filter 2 velocity controller numerator damping / Filt 2 v_ctr D_num

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	10.000	0.700

Description: Sets the numerator damping for manipulated variable filter 2 of the velocity controller.

Dependency: Refer to: p1656, p1657, p1658, p1659, p1660, p1661, p1662, p1663, p1664, p1665

p1666[0...n] Current setpoint filter 2 numerator damping / I_set_filt 2 D_num

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5710, 6710
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	10.000	0.700

Description: Sets the numerator damping for current setpoint filter 2.

Dependency: Current setpoint filter 2 is activated via p1656.1 and parameterized via p1662 ... p1666.

p1667[0...n] Manipulated variable filter 3 velocity controller type / Filt 3 v_ctrl type

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 5710
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	2	1

Description: Sets the type for manipulated variable filter 3 of the velocity controller

Value:
1: PT2 low pass
2: General 2nd order filter

Dependency: For p1667 = 1, the following parameters should be set:
- p1656.2, p1668, p1669

For p1667 = 2, the following parameters should be set:
- p1656.2, p1668, p1669, p1670, p1671

p1667[0...n] Current setpoint filter 3 type / I_set_filt 3 type

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 5710
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	2	1

Description: Sets current setpoint filter 3 as lowpass filter (PT2) or general 2nd order filter.

Value:
1: PT2 low pass
2: General 2nd order filter

Dependency: Current setpoint filter 3 is activated via p1656.2 and parameterized via p1667 ... p1671.

p1668[0...n] Manip. var. filter 3 velocity controller denom. natural freq. / Filt3 v_ctr fn_den

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5710
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	1999.0 [Hz]

Description: Sets the denominator natural frequency for manipulated variable filter 3 of the velocity controller.

Dependency: Manipulated variable filter 3 is activated via p1656.2 and parameterized via p1667 ... p1671.

p1668[0...n] Current setpoint filter 3 denominator natural frequency / I_set_filt3 fn_den

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5710
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	1999.0 [Hz]

Description: Sets the denominator natural frequency for current setpoint filter 3 (PT2, general filter).

Dependency: Current setpoint filter 3 is activated via p1656.2 and parameterized via p1667 ... p1671.

p1669[0...n] Manip. variable filter 3 velocity controller denominator damping / Filt 3 v_ctr D_den

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5710
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.001	10.000	0.700

Description: Sets the denominator damping for manipulated variable filter 3 of the velocity controller.

Dependency: Manipulated variable filter 3 is activated via p1656.2 and parameterized via p1667 ... p1671.

p1669[0...n] Current setpoint filter 3 denominator damping / I_set_filt 3 D_den

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5710
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.001	10.000	0.700

Description: Sets the denominator damping for current setpoint filter 3.

Dependency: Current setpoint filter 3 is activated via p1656.2 and parameterized via p1667 ... p1671.

p1670[0...n] Manip. var. filter 3 velocity controller numerator natural freq. / Filt3 v_ctr fn_num

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5710
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	1999.0 [Hz]

Description: Sets the numerator natural frequency for manipulated variable filter 3 of the velocity controller.

Dependency: Manipulated variable filter 3 is activated via p1656.2 and parameterized via p1667 ... p1671.

p1670[0...n] Current setpoint filter 3 numerator natural frequency / I_set_filt3 fn_num

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5710
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	1999.0 [Hz]

Description: Sets the numerator natural frequency for current setpoint filter 3 (general filter).

Dependency: Current setpoint filter 3 is activated via p1656.2 and parameterized via p1667 ... p1671.

p1671[0...n] Manip. variable filter 3 velocity controller numerator damping / Filt 3 v_ctr D_num

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5710
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	10.000	0.700

Description: Sets the numerator damping for manipulated variable filter 3 of the velocity controller.

Dependency: Manipulated variable filter 3 is activated via p1656.2 and parameterized via p1667 ... p1671.

p1671[0...n] Current setpoint filter 3 numerator damping / I_set_filt 3 D_num

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5710
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	10.000	0.700

Description: Sets the numerator damping for current setpoint filter 3.

Dependency: Current setpoint filter 3 is activated via p1656.2 and parameterized via p1667 ... p1671.

p1672[0...n] Manipulated variable filter 4 velocity controller type / Filt 4 v_ctrl type

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 5710
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	2	1

Description: Sets the type for manipulated variable filter 4 of the velocity controller

Value:
1: PT2 low pass
2: General 2nd order filter

Dependency: For p1672 = 1, the following parameters should be set:
- p1656.3, p1673, p1674

For p1667 = 2, the following parameters should be set:
- p1656.3, p1673, p1674, p1675, p1676

p1672[0...n] Current setpoint filter 4 type / I_set_filt 4 type

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 5710
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	2	1

Description: Sets current setpoint filter 4 as lowpass filter (PT2) or general 2nd order filter.

Value:
1: PT2 low pass
2: General 2nd order filter

Dependency: Current setpoint filter 4 is activated via p1656.3 and parameterized via p1672 ... p1676.

p1673[0...n] Manip. var. filter 4 velocity controller denom. natural freq. / Filt4 v_ctr fn_den

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5710
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	1999.0 [Hz]

Description: Sets the denominator natural frequency for manipulated variable filter 4 of the velocity controller.

Dependency: Manipulated variable filter 4 is activated via p1656.3 and parameterized via p1672 ... p1676.

p1673[0...n] Current setpoint filter 4 denominator natural frequency / I_set_filt4 fn_den

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5710
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	1999.0 [Hz]

Description: Sets the denominator natural frequency for current setpoint filter 4 (PT2, general filter).

Dependency: Current setpoint filter 4 is activated via p1656.3 and parameterized via p1672 ... p1676.

p1674[0...n] Manip. variable filter 4 velocity controller denominator damping / Filt 4 v_ctr D_den

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5710
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.001	10.000	0.700

Description: Sets the denominator damping for manipulated variable filter 4 of the velocity controller.

Dependency: Manipulated variable filter 4 is activated via p1656.3 and parameterized via p1672 ... p1676.

p1674[0...n] Current setpoint filter 4 denominator damping / I_set_filt 4 D_den

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5710
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.001	10.000	0.700

Description: Sets the denominator damping for current setpoint filter 4.

Dependency: Current setpoint filter 4 is activated via p1656.3 and parameterized via p1672 ... p1676.

p1675[0...n] Manip. var. filter 4 velocity controller numerator natural freq. / Filt4 v_ctr fn_num

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5710
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	1999.0 [Hz]

Description: Sets the numerator natural frequency for manipulated variable filter 4 of the velocity controller.

Dependency: Manipulated variable filter 4 is activated via p1656.3 and parameterized via p1672 ... p1676.

p1675[0...n] Current setpoint filter 4 numerator natural frequency / I_set_filt4 fn_den

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5710
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	1999.0 [Hz]

Description: Sets the numerator natural frequency for current setpoint filter 4 (general filter).

Dependency: Current setpoint filter 4 is activated via p1656.3 and parameterized via p1672 ... p1676.

p1676[0...n] Manip. variable filter 4 velocity controller numerator damping / Filt 4 v_ctr D_num

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5710
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	10.000	0.700

Description: Sets the numerator damping for manipulated variable filter 4 of the velocity controller.

Dependency: Manipulated variable filter 4 is activated via p1656.3 and parameterized via p1672 ... p1676.

p1676[0...n] Current setpoint filter 4 numerator damping / I_set_filt 4 D_num

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5710
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	10.000	0.700

Description: Sets the numerator damping for current setpoint filter 4.

Dependency: Current setpoint filter 4 is activated via p1656.3 and parameterized via p1672 ... p1676.

p1677[0...n] Speed actual value filter 5 type / n_act_filt 5 type

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 4715
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	2	2

Description: Sets the speed actual value filter 5 as low pass (PT2) or general 2nd-order filter.

Value:
1: PT2 low pass
2: General 2nd order filter

Dependency: The speed actual value filter is activated via p1656.4 and parameterized via p1677 ... p1681.

Note: For a general 2nd order filter, by inserting the same natural frequency in both the numerator and in the denominator, i.e. bandstop frequency, a bandstop filter is implemented. If the numerator damping of zero is selected, the bandstop frequency is completely suppressed.

The denominator damping can be determined from the equation for the 3 dB bandwidth:

f_3dB bandwidth = 2 * D_denominator * f_bandstop frequency

p1677 Vdc actual value filter 5 type / Vdc act_filt 5 typ

A_INF (Suppl cl-loop ctrl), R_INF (Suppl cl-loop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 8940
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	2	2

Description: Sets the Vdc actual value filter 5 as low pass (PT2) or as extended general 2nd order filter.

Value:
1: PT2 low pass
2: General 2nd order filter

Dependency: The Vdc actual value filter is activated with p1656.4 and parameterized via p1677 ... p1681.

Note: For a general 2nd order filter, by inserting the same natural frequency in both the numerator and in the denominator, i.e. bandstop frequency, a bandstop filter is implemented. If the numerator damping of zero is selected, the bandstop frequency is completely suppressed.

The denominator damping can be determined from the equation for the 3 dB bandwidth:

f_3dB bandwidth = 2 * D_denominator * f_bandstop frequency

p1678[0...n] Speed actual value filter 5 denominator natural frequency / n_act_filt5 fn_den

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4715
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	1999.0 [Hz]

Description: Sets the denominator natural frequency for speed actual value filter 5 (PT2, general filter).

Dependency: The speed actual value filter is activated via p1656.4 and parameterized via p1677 ... p1681.

p1678 Vdc actual value filter 5 denominator natural frequency / VdcAct_flt5 fn_den

A_INF (Suppl cl-loop ctrl), R_INF (Suppl cl-loop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8940
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	1000.0 [Hz]

Description: Sets the denominator natural frequency for the Vdc actual value filter 5 (PT2, general filter).

Dependency: The Vdc actual value filter is activated with p1656.4 and parameterized via p1677 ... p1681.

p1679[0...n] Speed actual value filter 5 denominator damping / n_act_filt 5 D_den

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4715
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.001	10.000	0.700

Description: Sets the denominator damping for speed actual value filter 5.

Dependency: The speed actual value filter is activated via p1656.4 and parameterized via p1677 ... p1681.

p1679 Vdc actual value filter 5 denominator damping / Vdc act_flt5 D_den

A_INF (Suppl cl-loop ctrl), R_INF (Suppl cl-loop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8940
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.001	10.000	0.700

Description: Sets the denominator damping for Vdc actual value filter 5.

Dependency: The Vdc actual value filter is activated with p1656.4 and parameterized via p1677 ... p1681.

p1680[0...n] Speed actual value filter 5 numerator natural frequency / n_act_filt5 fn_num

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4715
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	1999.0 [Hz]

Description: Sets the numerator natural frequency for speed actual value filter 5 (general filter).

Dependency: The speed actual value filter is activated via p1656.4 and parameterized via p1677 ... p1681.

p1680 Vdc actual value filter 5 numerator natural frequency / VdcAct_flt5 fn_num

A_INF (Suppl cl-loop ctrl), R_INF (Suppl cl-loop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8940
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	1000.0 [Hz]

Description: Sets the numerator natural frequency for the Vdc actual value filter 5 (general filter).

Dependency: The Vdc actual value filter is activated with p1656.4 and parameterized via p1677 ... p1681.

p1681[0...n] Speed actual value filter 5 numerator damping / n_act_filt 5 D_num

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4715
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	10.000	0.700

Description: Sets the numerator damping for speed actual value filter 5.

Dependency: The speed actual value filter is activated via p1656.4 and parameterized via p1677 ... p1681.

p1681 Vdc actual value filter 5 numerator damping / Vdc act_flt5 D_num

A_INF (Suppl cl-loop ctrl), R_INF (Suppl cl-loop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	10.000	0.010

Description: Sets the numerator damping for Vdc actual value filter 5.

Dependency: The Vdc actual value filter is activated with p1656.4 and parameterized via p1677 ... p1681.

p1699 Filter data acceptance / Filt data accept

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Activates data acceptance for parameter changes for the filter.

p1699 = 0:

The new filter data are immediately accepted.

p1699 = 1:

The new filter data are only accepted when this parameter is reset.

Dependency: Velocity setpoint filter 1, 2 (p1414 and following)

Velocity actual value filter (p1413, p1446 and following)

Manipulated variable filter velocity controller 1, 2 (p1656 and following)

Manipulated variable filter (p1800 and following)

Precontrol filter (p1721 and following)

p1699 Filter data acceptance / Filt data accept

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Activates data acceptance for parameter changes for the filter.

p1699 = 0:

The new filter data are immediately accepted.

p1699 = 1:

The new filter data are only accepted when this parameter is reset.

Dependency: Speed setpoint filter 1, 2 (p1414 and following)

Speed actual value filter (p1413, p1446 and following)

Current setpoint filter 1 ... 4 (p1656 and following)

Current setpoint filter 5 ... 10 (function module, p5200 and following)

APC filter (APC function module, p3704 and following)

Refer to: p1414, p1656, p5200

p1700[0...n] Force controller loop gain / F_ctrl loop_gain

HLA

Can be changed: U, T	**Calculated:** CALC_MOD_EQU	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [N/V]	1000000000.0 [N/V]	0.0 [N/V]

Description: Sets the loop gain for the force controller.

Dependency: Refer to: p1400, p1715, p1717, r1718, p1718, r1719, p1719, p1720

p1701[0...n] Current controller reference model dead time / I_ctrRefMod t_dead

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5714
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	1.000	1.000

Description: Sets the fractional dead time for the current controller reference model.
This parameter emulates the computing dead time of the proportionally controlled current control loop.

Note: Dead time = p1701 * p0115[0]

p1702[0...n] Isd current controller precontrol scaling / Isd_ctr_prectrScal

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6714
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	200.0 [%]	70.0 [%]

Description: Sets the scaling of the dynamic current controller precontrol for the flux-generating current component Isd.

Note: The parameter is effective for permanent and separately excited synchronous motors.

p1703[0...n] Isq current controller precontrol scaling / Isq_ctr_prectrScal

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	200.0 [%]	0.0 [%]

Description: Sets the scaling of the dynamic current controller precontrol for the torque/force-generating current component Isq.

p1703[0...n] Isq current controller precontrol scaling / Isq_ctr_prectrScal

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6714
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	200.0 [%]	70.0 [%]

Description: Sets the scaling of the dynamic current controller precontrol for the torque/force-generating current component Isq.

p1704[0...n] Isq current controller precontrol EMF scaling / Isq_ctrl EMF scal

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6714, 6726
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	200.0 [%]	100.0 [%]

Description: Sets the scaling of the EMF precontrol for the Isq current controller.

p1705[0...n] Flux setpoint/actual value tracking threshold / Flux track thresh

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6714, 6726
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	100.0 [%]	100.0 [%]

Description: Threshold for the setpoint - actual value tracking of the EMF precontrol of the Isq current controller.

p1710[0...n] Current controller adaptation in-line axis starting point Kp / Id_adapt pt Kp

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Arms]	6000.00 [Arms]	0.00 [Arms]

Description: Sets the starting point of the current-dependent current controller adaptation where the current controller gain p1720 is effective.

Dependency: Refer to: p1720

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: For p1712 = 100 % or p1402.2 = 0, the current controller adaptation is disabled and p1720 is effective over the entire range.

p1711[0...n] Current ctrl adaptation in-line axis starting point Kp adapted / Id_adap pt Kp adap

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Arms]	6000.00 [Arms]	0.00 [Arms]

Description: Sets the starting point of the current-dependent current controller adaptation where the adapted current controller gain p1720 x p1712 is effective.

Dependency: Refer to: p1710, p1712, p1720

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: For p1712 = 100 % or p1402.2 = 0, the current controller adaptation is disabled and p1720 is effective over the entire range.

p1712[0...n] Current controller adaptation in-line axis p gain adaptation / Id_adapt Kp adapt

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	1000.00 [%]	100.00 [%]

Description: Sets the factor for the current controller P gain in the adaptation range (d-current > p1711).

The value is referred to p1720.

Dependency: Refer to: p1710, p1711, p1720

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: For p1712 = 100 % or p1402.2 = 0, the current controller adaptation is disabled and p1720 is effective over the entire range.

p1715[0...n] Force controller P gain / F_ctrl Kp

HLA

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4970
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	10000.000	0.000

Description: Sets the proportional gain for the force controller.

Dependency: Refer to: p1400, p1700, p1717, r1718, p1718, r1719, p1719, p1720

p1715[0...n] Current controller P gain / I_ctrl Kp

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5714, 7017
P-Group: Closed-loop control	**Unit group:** 18_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [V/A]	100000.000 [V/A]	0.000 [V/A]

Description: Sets the proportional gain of the current controller for the lower adaptation current range.

This value is automatically pre-set using p3900 or p0340 when commissioning has been completed.

Dependency: Refer to: p0391, p0392, p0393

Note: For p0393 = 100 %, the current controller adaptation is disabled and p1715 is effective over the entire range.

p1715[0...n] Current controller P gain / I_ctrl Kp

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6700, 6714, 7017
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	100000.000	0.000

Description: Sets the proportional gain of the current controller for the lower adaptation current range.

This value is automatically pre-set using p3900 or p0340 when commissioning has been completed.

Dependency: Refer to: p0391, p0392, p0393

Note: For p0393 = 100 %, the current controller adaptation is disabled and p1715 is effective over the entire range.

p1716[0...n] Force controller P gain weakening / F_ctrl Kp red

HLA

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4970
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.1 [%]	100.0 [%]	40.0 [%]

Description: Sets the weakening of the proportional gain for large actuating signals for the force controller.

The setting value specifies what percentage of a P component of 10 V is weakened.

Dependency: Refer to: p1715

p1717[0...n]	Force controller integral time / F_ctrl Tn		
HLA	**Can be changed:** U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4970
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [ms]	2000.00 [ms]	40.00 [ms]

Description: Sets the integral time of the force controller.

Dependency: Refer to: p1400, p1700, p1715, r1718, p1718, r1719, p1719, p1720

p1717[0...n]	Current controller integral-action time / I_ctrl Tn		
SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)	**Can be changed:** U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5714, 6700, 6714, 7017
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [ms]	1000.00 [ms]	2.00 [ms]

Description: Sets the integral-action time of the current controller.

Dependency: Refer to: p1715

p1718[0...n]	Force controller D component smoothing time constant / F_ctrl D comp T		
HLA	**Can be changed:** T	**Calculated:** CALC_MOD_CON	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4970
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.250 [ms]	100.000 [ms]	0.500 [ms]

Description: Sets the smoothing time constant of the D component for the force controller.

Dependency: Refer to: p1400, p1700, p1715, p1717, r1719, p1719, p1720

r1718	CO: Isq controller output / Isq_ctrl outp		
VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)	**Can be changed:** -	**Calculated:** -	**Access level:** 4
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6714
	P-Group: Closed-loop control	**Unit group:** 5_1	**Unit selection:** p0505
	Not for motor type: REL	**Scaling:** p2001	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [Vrms]	- [Vrms]	- [Vrms]

Description: Displays the actual output of the Isq current controller (torque/force generating current, PI controller).
The value contains the proportional and integral components of the PI controller.

p1719[0...n]	Force controller derivative-action time / F_ctrl t_deriv		
HLA	**Can be changed:** U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4970
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-10000.0 [ms]	10000.0 [ms]	0.0 [ms]

Description: Sets the derivative-action time for the force controller.

Dependency: Refer to: p1400, p1700, p1715, p1717, r1718, p1718, p1720

r1719 Isq controller integral component / Isq_ctrl I_comp

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6714
P-Group: Closed-loop control	**Unit group:** 5_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Displays the integral component of the Isq current controller (torque/force-generating current, PI controller).

p1720[0...n] Force controller precontrol factor / F_ctr prectr fact

HLA

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4970
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	120.0 [%]	100.0 [%]

Description: Sets the factor for the velocity precontrol of the force controller.

p1720[0...n] Current controller d axis p gain / Id_ctrl Kp

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	100000.000	0.000

Description: Sets the proportional gain of the d-current controller for the lower adaptation current range.
This value is automatically pre-set using p3900 or p0340 when commissioning has been completed.

p1721[0...n] Precontrol filter activation / Prectrl_filt act

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** 4970
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Setting for activating/deactivating the precontrol filter.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Activate filter	Yes	No	-

Dependency: Refer to: p1699, p1722, r1724, p1724, r1725, p1725, p1726, p1727

p1722[0...n] Precontrol filter type / Prectrl_filt type

HLA

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 4970
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	2	1

Description: Sets the precontrol filter as low pass (PT2) or as general 2nd-order filter.

Value:
1: PT2 low pass
2: General 2nd order filter

Dependency: The precontrol filter is activated via p1721.0 and parameterized via p1721 ... p1726.

Note: For an extended general 2nd order filter, by inserting the same natural frequency in both the numerator and in the denominator, i.e. bandstop frequency, a bandstop filter is implemented. If the numerator damping of zero is selected, the bandstop frequency is completely suppressed.

The denominator damping can be determined from the equation for the 3 dB bandwidth:

f_3dB bandwidth = 2 * D_denominator * f_bandstop frequency

p1722[0...n] Current controller d axis integral time / I_ctrl d-axis Tn

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	1000.00 [ms]	2.00 [ms]

Description: Sets the integral time of the d-current controller.

r1723 CO: Isd controller output / Isd_ctrl outp

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6714
P-Group: Closed-loop control	**Unit group:** 5_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Displays the actual output of the Isd current controller (flux-generating current, PI controller).

The value contains the proportional and integral components of the PI controller.

p1724[0...n] Precontrol filter denominator natural frequency / Prectr_filt fn_den

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4970
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	1999.0 [Hz]

Description: Sets the denominator natural frequency for the precontrol filter (PT2, general filter).

Recommendation: The precontrol filter is activated via p1721.0 and parameterized via p1722 ... p1727.

Dependency: Refer to: p1721

r1724 Isd controller integral component / Isd_ctrl I_comp

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6714
P-Group: Closed-loop control	**Unit group:** 5_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Displays the integral component of the Isd current controller (flux-generating current, PI controller).

p1725[0...n] Precontrol filter denominator damping / Prectrl_filt D_den

HLA			
	Can be changed: U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4970
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: REL	**Scaling:** p2001	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.001	10.000	0.700

Description: Sets the denominator damping for the precontrol filter (PT2, general filter).

Dependency: The precontrol filter is activated via p1721.0 and parameterized via p1722 ... p1727.

Refer to: p1721

r1725 Isd controller integral component limit / Isd_ctrl I_limit

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)			
	Can be changed: -	**Calculated:** -	**Access level:** 4
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6714
	P-Group: Closed-loop control	**Unit group:** 5_1	**Unit selection:** p0505
	Not for motor type: REL	**Scaling:** p2001	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [Vrms]	- [Vrms]	- [Vrms]

Description: Displays the limit value for the integral component of the Isd current controller.

p1726[0...n] Precontrol filter numerator natural frequency / Prectr_filt fn_num

HLA			
	Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4970
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.5 [Hz]	16000.0 [Hz]	1999.0 [Hz]

Description: Sets the numerator natural frequency for the precontrol filter (general filter).

Dependency: Refer to: p1721

Note: The precontrol filter is activated via p1721.0 and parameterized via p1722 ... p1727.

p1726[0...n] Quadrature arm decoupling scaling / Transv_decpl scal

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)			
	Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 4
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6714
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.0 [%]	200.0 [%]	75.0 [%]

Description: Sets the scaling of the quadrature arm decoupling

Note: This parameter is ineffective for sensorless vector control. In this case, p1727 is always used. If p1726 is set to 0, then the quadrature de-coupling is deactivated. The integral component of the Isd current controller remains effective in the complete speed control range.

For the closed-loop control of synchronous motors, this parameter is used to scale the current controller de-coupling.

p1727[0...n] Precontrol filter numerator damping / Prectrl_filt D_num

HLA			
	Can be changed: U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4970
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.000	10.000	0.700

Description: Sets the numerator damping for precontrol filter.

Dependency: The precontrol filter is activated via p1721.0 and parameterized via p1722 ... p1727.

p1727[0...n] Quadrature arm decoupling at voltage limit scaling / TrnsvDecplVmaxScal

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6714
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	200.0 [%]	50.0 [%]

Description: Sets the scaling of quadrature arm decoupling when the voltage limit is reached.

r1728 De-coupling voltage in-line axis / U_dir-axis_decoupl

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6714
P-Group: Closed-loop control	**Unit group:** 5_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Displays the actual output of the quadrature channel de-coupling for the d axis.

r1729 De-coupling voltage quadrature axis / U_quad_decoupl

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6714
P-Group: Closed-loop control	**Unit group:** 5_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Displays the actual output of the quadrature channel de-coupling for the q axis.

p1730[0...n] Isd controller integral component shutdown threshold / Isd ctrl Tn shutd

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
30 [%]	150 [%]	30 [%]

Description: Sets the speed threshold for deactivating the integral component of the Isd controller.

The d current controller is only effective as P controller for speeds greater than the threshold value. Instead of the integral component, the quadrature arm decoupling is effective.

Warning: For settings above 80%, the d current controller is active up to the field weakening limit. When operated at the voltage limit, this can result in an unstable behavior. In order to avoid this, the dynamic voltage reserve p1574 should be increased.

Note: The parameter value is referred to the synchronous rated motor speed.

p1731[0...n] Isd controller combination current time component / Isd ctr I_combi T1

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	10000.00 [ms]	0.00 [ms]

Description: Sets the time constant to calculate the d current DC component difference (combination current) to add to the d current controller actual value.

Note: It is not added for p1731 = 0.

r1732 CO: Direct-axis voltage setpoint / Direct U set

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5700, 5714, 6714, 5718
P-Group: Closed-loop control	**Unit group:** 5_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Display and connector output for the direct axis voltage setpoint Ud.

r1732[0...1] CO: Direct-axis voltage setpoint / Direct U set

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5700, 5714, 6714, 5718
P-Group: Closed-loop control	**Unit group:** 5_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Display and connector output for the direct axis voltage setpoint Ud.

Index:
[0] = Unsmoothed
[1] = Smoothed with p0045

r1733 CO: Quadrature-axis voltage setpoint / Quad U set

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5019, 5700, 5714
P-Group: Closed-loop control	**Unit group:** 5_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Display and connector output for the quadrature axis voltage setpoint Uq.

r1733[0...1] CO: Quadrature-axis voltage setpoint / Quad U set

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6714, 6731
P-Group: Closed-loop control	**Unit group:** 5_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Display and connector output for the quadrature axis voltage setpoint Uq.

Index:
[0] = Unsmoothed
[1] = Smoothed with p0045

p1734[0...n] Isq current controller precontrol eddy current compensation drop / Isq_ctr_prctr drop

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	200.0 [%]	10.0 [%]

Description: Sets the component of the current drop as a result of eddy currents for the dynamic current controller precontrol.

p1735[0...n] Isq current controller prectrl eddy current comp time constant / Isq_ctr_prectr T

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	5.00 [ms]	0.75 [ms]

Description: Sets the time constant for eddy current compensation for dynamic current controller precontrol.

p1740[0...n] Gain resonance damping for encoderless closed-loop control / Gain res_damp

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	10.000	0.025

Description: Defines the gain of the controller for resonance damping for operation with sensorless vector control in the range that current is injected.

p1744[0...n] Motor model speed threshold stall detection / MotMod n_thr stall

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	100.00 [rpm]

Description: Sets the speed threshold value to detect a stalled motor.

If the adaptation controller output exceeds the parameterized speed difference, then in status word r1408.11 is set = 1.

Dependency: If a stalled drive is detected (r1408.11 = 1), fault F07902 is output after the delay time set in p2178.

Refer to: p2178

Note: Speed monitoring is only effective in operation with a speed encoder (refer to p1300).
Stalling is also identified if steps/jumps occur in the speed signal, which exceed the value in p0492.

p1745[0...n] Motor model error threshold stall detection / MotMod ThreshStall

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	1000.0 [%]	5.0 [%]

Description: Sets the fault threshold in order to detect a motor that has stalled.
If the error signal (r1746) exceeds the parameterized error threshold, then status signal r1408.12 is set to 1.

Dependency: If a stalled drive is detected (r1408.12 = 1), fault F07902 is output after the delay time set in p2178.
Refer to: p2178

Note: Monitoring is only effective in the low-speed range (below p1755 * (100% - p1756)).

r1746 Motor model error signal stall detection / MotMod sig stall

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Signal to initiate stall detection

Note: The signal is not calculated while magnetizing and only in the low speed range (below p1755 * (100 % - p1756)).

p1747[0...n] Motor model pulse technique transition speed / MotMod puls tech n

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_REG	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: ASM, PMSM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	0.00 [rpm]

Description: Sets the transition (corner) speed for the smooth and bumpless transition into the small signal motor model for encoderless operation of the synchronous-reluctance motor (RESM).

Note: RESM: reluctance synchronous motor (synchronous reluctance motor)

p1748[0...n] Motor model lower changeover speed n_set -> n_act / MotMod low n_chng

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	90.0 [%]	50.0 [%]

Description: Sets the lower speed for the transition "n_set -> n_act" in encoderless operation.
This value is entered as a percentage referred to p1749.

Dependency: Refer to: p1749, p1752

p1749[0...n] Motor model upper changeover speed / increase changeover speed / Up/incr n_chngov

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	99.0 [%]	50.0 [%]

Description: Separately excited synchronous motor:

Sets the upper speed for the transition "n_set -> n_act" in sensorless operation.

This value is entered as a percentage of p1755.

Induction motor without speed encoder:

Depending on the machine data, the drive has calculated a minimum value of the operating frequency for rugged operation.

If the minimum value is greater than the lower changeover limit parameterized with p1755 * (1 - 2 * p1756), then the difference is displayed using p1749 * p1755. The parameter value cannot be changed.

Dependency: Refer to: p1748, p1752, p1755, p1756

p1750[0...n] Motor model configuration / MotMod config

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 bin

Description: Sets the configuration for the motor model.

Bit 0 = 1: Forces open-loop speed-controlled starting (ASM).

Bit 1 = 1: Forces the system to pass through frequency zero, open-loop-controlled (ASM).

Bit 2 = 1: Drive remains in full closed-loop control mode, even at zero frequency (ASM).

Bit 3 = 1: Motor model evaluates the saturation characteristic (ASM).

Bit 4 = 1: Time-controlled change between current and observer models (ASM).

Bit 5 = 1: Test signal injection to estimate the continuous rotor position (RESM, PMSM).

Bit 6 = 1: If the motor is blocked, sensorless vector control remains speed-controlled (ASM).

For a stalled (blocked) synchronous motor (PMSM), the sensorless vector control remains open-loop speed controlled.

Bit 7 = 1: Use rugged switchover limits to switchover the model between open-loop and closed-loop controlled operation (ASM).

Bit 8 = 1: Open-loop speed controlled operation independent of the speed setpoint (except for OFF3) (ASM).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Controlled start	Yes	No	-
01	Controlled through 0 Hz	Yes	No	-
02	Closed-loop ctrl oper. down to zero freq. for passive loads	Yes	No	-
03	Motor model Lh_pre = f(PsiEst)	Yes	No	-
04	Model changeover	Time controlled	Freq. controlled	-
05	Closed-loop controlled operation down to f = 0 Hz w/ test signal	Yes	No	-
06	Closed-/open-loop controlled when motor is blocked	Yes	No	-
07	Use rugged changeover limits	Yes	No	-
08	Closed-loop controlled until wait time p1758 has expired	Yes	No	-

Caution: Do not use bit 6 = 1 if the motor can be slowly reversed by the load at the torque limit. Long delay times due to blocking (p2177 > p1758) can cause the motor to stall. In this case you should deactivate the function or use closed-loop control throughout the speed range (note the information re bit 2 = 1).

Note: Bit 0 ... 3 only have influence for sensorless vector control, bit 4 only for vector control with encoder. Bit 2 is pre-assigned depending on p0500.

For bit 2 = 1:

The sensorless vector control is effective down to zero frequency. A change is not made into the open-loop speed controlled mode.

This operating mode is possible for passive loads. These include applications where the load itself does not generate any active torque and therefore only acts reactively to the drive torque of the induction motor.

If bit 2 = 1, then bit 3 is automatically set to 1. Manual de-selection is possible and may be sensible if the saturation characteristic (p1960) was not measured for third-party motors. Generally, for standard SIEMENS motors, the already pre-assigned (default value) saturation characteristic is adequate.

When the bit is set, the selection of bits 0 and 1 is ignored.

For bit 2 = 0:

If the model feedback is deactivated (p1784 = 0), with bit 2 = 0, then bit 3 is also automatically set to 0.

For bit 5 = 1:

The selection of the test signal injection is only relevant for synchronous reluctance motors (RESM) and permanent magnet synchronous motors (PMSM).

In the pulse enable, changing bit 5 is always rejected.

When p1750.5 is selected, initially p1810.3 is set, and then a system power up is requested via F1040 to configure the power unit component in the oversampling mode.

When deactivating p1750.5, p1810.3 remains unchanged. Therefore, to undo the configuration of the power unit components from the oversampling mode

(after manually deselecting p1750 bit 5), then initially p1810 bit 3 must be manually deleted and then a manual warm restart initiated.

As an alternative to a warm restart: save the parameters and carry out a POWER ON (switch-off/switch-on).

When the function "safety without encoder" (p9306/p9506) is activated, this setting is not permissible and results in monitoring errors.

For bit 6 = 1:

The following applies for sensorless vector control of induction motors:

For a blocked motor (see p2175, p2177) the time condition in p1758 is bypassed and a change is not made into open-loop controlled operation.

The following applies for sensorless vector control of synchronous motors:

For a blocked motor (see p2175, p2177), the speed ramp-function generator is held in open-loop speed controlled operation, and a switchover is not made into closed-loop controlled operation.

For bit 7 = 1:

The following applies for sensorless vector control of induction motors:

If the changeover limits are parameterized too low (p1755, p1756), then they are automatically increased to rugged values by the absolute amount p1749 * p1755.

The effective time condition for changing over into open-controlled operation is obtained from the minimum of p1758 and 0.5 * r0384.

Activation can make sense for applications that demand a high torque at low frequencies and therefore low speed gradients.

Adequate parameterization must be ensured (p1610, p1611).

For bit 8 = 1: no influence on the functionality of bits 0, 1, 2

The following applies for sensorless vector control of induction motors:

Changeover into open-loop speed controlled operation is no longer dependent on the speed setpoint (except for OFF3), but instead is essentially dependent on time condition p1758. As a consequence, a drive can be started or reversed in closed-loop speed controlled operation with setpoints from an external control system, if these briefly lie in the open-loop speed control range.

r1751 Motor model status / MotMod status

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status of the motor model.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Controlled operation	Active	Inactive	6721
01	Set ramp-function generator	Active	Inactive	-
02	Stop RsLh adaptation	Yes	No	-
03	Feedback	Active	Inactive	-
04	Encoder operation	Active	Inactive	-
05	Holding angle	Yes	No	-
06	Acceleration criterion	Active	Inactive	-
07	Set angular integrator PMSM	Yes	No	-
08	Stop Kt adaptation PMSM	Yes	No	-
09	PolID active PMSM encoderless	Yes	No	-
10	I injection PMSM	Yes	No	-
11	Speed controller output cannot be set to zero	Yes	No	-
12	Rs adapt waits	Yes	No	-
13	Motor operation	Yes	No	-
14	Stator frequency sign	Positive	Negative	-
15	Torque sign	Motor mode	Regenerative mode	-
16	Pulse injection active PMSM	Yes	No	-
17	Operation with rugged model feedback	Enabled	Inhibited	-
18	Operation of the current model with current feedback	Enabled	Inhibited	-
19	Current feedback in the current model	Active	Inactive	-
20	Rugged increase of the changeover limits	Active	Inactive	-
21	Motor blocked (RFG stop) PMSM	No	Yes	-

Note: PMSM: permanent-magnet synchronous motor

For bit 17:

Displays the enabled status of the rugged model feedback (p1784).

The feedback is used to increase the parameter ruggedness of the motor model and is effective in the operating range of the two-component closed loop current control.

For bit 18:

Displays the status when enabling the differential current feedback in the current model for operation with encoder.

The function is automatically enabled with p1784 > 0 or p1731 > 0.

The feedback is used for a rugged change between the current model and complete machine model with active rugged model feedback and combination current.

For bit 19:

Displays the currently active stator circuit feedback in current model operation.

For bit 20:

Displays the currently effective increase of the changeover limits by the value p1749 * p1755.

For bit 21:

For a blocked synchronous motor, the speed ramp-function generator is held in the open-loop speed controlled operating range if the torque setpoint reaches the torque limit and the speed is less than the threshold value in p2175.

p1752[0...n] Motor model changeover speed operation with encoder / MotMod n_chgov enc

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	210000.00 [rpm]

Description: Sets the speed to change over the motor model for operation with encoder.

Dependency: Refer to: p1756

Note: Induction motor (ASM):

The motor model is influenced for speeds greater than p1752.

Synchronous motor (SRM):

A monitoring function (F07412) is activated for speeds greater than p1752.

The motor model is additionally influenced when kT adaptation is activated (p1780.3 = 1).

p1752[0...n] Motor model with encoder changeover velocity / MotMod enc v_chgov

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [m/min]	1000.00 [m/min]	1000.00 [m/min]

Description: Sets the velocity to change over the motor model for operation with encoder.

Dependency: Refer to: p1756

Note: A monitoring function (F07412) is activated for velocities greater than p1752.

The motor model is additionally influenced when kT adaptation is activated (p1780.3 = 1).

p1752[0...n] Motor model changeover speed operation with encoder / MotMod n_chgov enc

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	210000.00 [rpm]

Description: Sets the speed to change over the motor model for operation with encoder.

Dependency: In U/f characteristic mode the parameter is of no significance.

Using the friction characteristic for operation with encoder:

When changing the motor model changeover speed p1752, the points along the friction characteristic should be recalculated (p0340 = 5) and the friction characteristic recorded again (p3845). For slight changes, only the associated friction characteristic points must be recorded (see p3844).

Refer to: p1756

p1753[0...n] Motor model changeover speed hysteresis operation with encoder / MotMod n_chgovHysE

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	90.0 [%]	0.0 [%]

Description: Sets the hysteresis for the changeover speed of the motor model for operation with speed encoder.

Dependency: Refer to: p1752

Note: The value refers to p1752.

In the case of separately excited synchronous motors, the lower hysteresis value is calculated with p1752 * p1753; in the case of all other types of motor, p1752 * (1 - p1753) is used.

p1754[0...n] Flux angle difference smoothing time / Angle diff T_smth

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6733
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.1 [ms]	10000.0 [ms]	5.0 [ms]

Description: Sets the smoothing time constant to filter the main flux angle difference from the voltage and current models.

The filtered value is included in the calculation of the total flux angle.

PMSM:

Sets the smoothing time constant to display the angular difference between the motor model an encoder.

Note: In the case of a separately excited synchronous motor (SESM) and sensorless vector control, the parameter must be set to the minimum value to improve motor model changeover.

PMSM: permanent-magnet synchronous motor

SESM: separately excited synchronous motor

p1755[0...n] Motor model changeover speed encoderless operation / MotMod n_chgSnsorl

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	210000.00 [rpm]

Description: Sets the speed to change over the motor model to encoderless operation.

Dependency: Refer to: p1756

Note: The changeover speed applies for the changeover between open-loop and closed-loop control mode.

p1755[0...n] Motor model changeover velocity encoderless operation / MotMod v_chgSnsorl

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [m/min]	1000.00 [m/min]	1000.00 [m/min]

Description: Sets the velocity to change over the motor model to encoderless operation.

Dependency: Refer to: p1756

Note: The changeover velocity applies for the changeover between open-loop and closed-loop control mode.

p1755[0...n] Motor model changeover speed encoderless operation / MotMod n_chgSnsorl

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	210000.00 [rpm]

Description: Sets the speed to change over the motor model to encoderless operation.

Dependency: In U/f characteristic mode the parameter is of no significance.

Refer to: p1749, p1756

Notice: The changeover speed represents the steady-state minimum speed up to which the motor model can be used in sensorless steady-state operation.

If the stability is not adequate close to the changeover speed, it may make sense to increase the parameter value.

Note: The changeover speed applies for the changeover between open-loop and closed-loop control mode.

p1756 Motor model changeover speed hysteresis / MotMod n_chgov hys

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	90.0 [%]	5.0 [%]

Description: Sets the hysteresis for the changeover speed/velocity of the motor model.

Dependency: Refer to: p1752, p1755

Note: The value is entered relative to p1404, p1752 or p1755.

p1756 Motor model changeover velocity hysteresis / MotMod v_chgov hys

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	90.0 [%]	5.0 [%]

Description: Sets the hysteresis for the changeover speed/velocity of the motor model.

Dependency: Refer to: p1752, p1755

Note: The value is entered relative to p1404, p1752 or p1755.

p1756 Motor model changeover speed hysteresis encoderless operation / MotMod n_chgov hys

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6730, 6731, 6732, 6733
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	95.0 [%]	50.0 [%]

Description: Sets the hysteresis for the changeover speed of the motor model for encoderless operation.

In the case of separately excited synchronous motors, the lower hysteresis value is calculated with p1756 * p1755; in the case of all other types of motor, p1755 * (1 - p1756) is used.

Dependency: In U/f characteristic mode the parameter is of no significance.

Refer to: p1755

Note: The parameter value refers to p1755.

In the case of separately excited synchronous motors, the lower hysteresis value is calculated with p1755 * p1756; in the case of all other types of motor, p1755 * (1 - p1756) is used.

p1757[0...n] Motor model w/o enc. op./cl.-loop controlled stab. controller Kp / MotMod w/o enc Kp

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.01	10.00	0.70

Description: Sets the gain of the transient response controller when the motor model changes over from open-loop controlled operation to closed-loop controlled operation.

Note: Only for ASM and PSM in encoderless operation:
The settling range starts at 0.5 * p1755 * p1756.
For ASM, it ends at p1755 * p1756, or for p1755, if p1759 is at the maximum value.
For PSM it always ends at p1755 * p1756.

p1758[0...n] Motor model changeover delay time closed/open-loop control / MotMod t cl_op

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
100 [ms]	10000 [ms]	1000 [ms]

Description: Sets the minimum time for falling below the changeover speed when changing from closed-loop controlled operation to open-loop controlled operation.

Dependency: The wait time has no significance if the setpoint speed before the ramp-function generator lies in the open-loop speed controlled operating range. In this case, the change is made without any delay.
Refer to: p1755, p1756

Note: If p1758 is changed, commissioning must be selected in order to validate the value for the blocking monitoring.

p1759[0...n] Motor model changeover delay time open/closed-loop control / MotMod t op_cl

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	2000 [ms]	0 [ms]

Description: Sets the minimum time for a transition from open-loop controlled to closed-loop controlled operation after the lower changeover speed p1755 * (1 - p1756 / 100 %) has been exceeded.

Dependency: Refer to: p1755, p1756

Note: With p1759 = 2000 ms, the delay time becomes ineffective and the model changeover is determined by the output frequency only (changeover for p1755).

p1760[0...n] Motor model with encoder speed adaptation Kp / MotMod wE n_ada Kp

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	100000.000	1000.000

Description: Sets the proportional gain Kp of the controller for speed adaptation with encoder

p1761[0...n] Motor model with encoder speed adaptation Tn / MotMod wE n_ada Tn

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	1000 [ms]	4 [ms]

Description: Sets the integral-action time Tn of the controller for speed adaptation with encoder

r1762[0...1] Motor model deviation component 1 / MotMod dev comp 1

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6721, 6730, 6731
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Induction motor (ASM):

Displays the referred imaginary system deviation for the adaptation circuit of the motor model.

Permanent-magnet synchronous motor (PMSM):

Displays the system deviation for speed adaptation.

r1762[0]: Angular deviation [rad-el] of the estimated EMF.

r1762[1]: Angular deviation [rad-el] of the low-level signal response for pulse technique.

Index: [0] = Deviation model 1
[1] = Deviation model 2

r1763 Motor model deviation component 2 / MotMod dev comp 2

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Induction motor (ASM):

Displays the referred real system deviation for the adaptation circuit of the motor model.

Permanent-magnet synchronous motor (PMSM):

Not used.

p1764[0...n] Motor model without encoder speed adaptation Kp / MotMod woE n_adaKp

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6730
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	100000.000	1000.000

Description: Sets the proportional gain of the controller for speed adaptation without encoder.

r1765[0...1] Motor model speed adaptation Kp effective / MotM n_ada Kp act

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: SESM, REL	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the effective proportional gain of the controller for the speed adaptation.

Index: [0] = Model_1
[1] = Model_2

p1766[0...n] Motor model voltage model calculation enable / U_mod calc enab

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	90.0 [%]	50.0 [%]

Description: Sets the speed to enable the voltage model to calculate the speed actual value.

This value is entered as a percentage referred to p1752.

For separately excited synchronous motors without encoder, the parameter is referred to p1748.

Dependency: Refer to: p1748, p1752

p1767[0...n] Motor model without encoder speed adaptation Tn / MotMod woE n_adaTn

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6730
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1 [ms]	200 [ms]	4 [ms]

Description: Sets the integral time of the controller for speed adaptation without encoder

r1768[0...1] Motor model speed adaptation Vi effective / MotM n_ada Vi act

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: SESM, REL	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the effective gain of the integral component of the controller for speed adaptation.

Index:
[0] = Model_1
[1] = Model_2

p1769[0...n] Motor model changeover delay time closed-loop control / MotMod t cl_ctrl

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	10000 [ms]	0 [ms]

Description: Sets the wait time for a transition from open-loop controlled to closed-loop controlled operation after twice the lower changeover speed p1755 * (1 - p1756 / 100 %) has been exceeded - and below the upper switchover speed p1755.

Dependency: Refer to: p1755, p1756

Note: With p1759 = 0 ms and above p1755, the delay time becomes ineffective and the model changeover is determined by the output frequency only (changeover for p1755).

r1770[0...2]	CO: Motor model speed adaptation proportional component / MotMod n_adapt Kp		
VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6730
	P-Group: Closed-loop control	**Unit group:** 3_1	**Unit selection:** p0505
	Not for motor type: SESM, REL	**Scaling:** p2000	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [rpm]	- [rpm]	- [rpm]

Description: Displays the P component of the controller for speed adaptation.

Index:
[0] = Summed signal
[1] = Model_1
[2] = Model_2

r1771	CO: Motor model speed adaptation I comp. / MotMod n_adapt Tn		
VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6730
	P-Group: Closed-loop control	**Unit group:** 3_1	**Unit selection:** p0505
	Not for motor type: SESM, REL	**Scaling:** p2000	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [rpm]	- [rpm]	- [rpm]

Description: Displays the I component of the controller for speed adaptation.

r1773[0...1]	Motor model slip speed / MotMod slip		
VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Closed-loop control	**Unit group:** 3_1	**Unit selection:** p0505
	Not for motor type: SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [rpm]	- [rpm]	- [rpm]

Description: Displays estimated (speed) signals of the motor model.

r1773[0]: Displays the estimated (mechanical) slip of the motor model.

r1773[1]: Displays the estimated input speed of the motor model.

Index:
[0] = Slip speed estimated
[1] = Speed estimated

p1774[0...n]	Motor model offset voltage compensation alpha / MotMod offs comp A		
VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)	**Can be changed:** U, T	**Calculated:** -	**Access level:** 4
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: PMSM, SESM, REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-5.000 [V]	5.000 [V]	0.000 [V]

Description: Sets the offset voltage in the alpha direction; this compensates the offset voltages of the drive converter/inverter at low speeds. The value is valid for the rated (nominal) pulse frequency of the power unit.

Note: The value is pre-set during the rotating measurement.

p1775[0...n] Motor model offset voltage compensation beta / MotMod offs comp B

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-5.000 [V]	5.000 [V]	0.000 [V]

Description: Sets the offset voltage in the beta direction; this compensates the offset voltages of the drive converter/inverter at low speeds. The value is valid for the rated (nominal) pulse frequency of the power unit.

Note: The value is pre-set during the rotating measurement.

r1776[0...6] Motor model status signals / MotMod status sig

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the internal status signals of the motor model:

Index 0: Changeover ramp between current and voltage models

Index 1: Changeover ramp for model feedback (only encoderless induction motors)

Index 2: Changeover ramp for zero frequency range (only encoderless induction motors)

Index 3: Transition ramp actual speed from speed setpoint to model value (SESM without encoder)

Index 4: Speed controller enable (SESM without encoder)

Index 5: Transition ramp between current and voltage models (SESM without encoder)

Index 6: Transition ramp for EMF deviation at PLL input (PMSM without encoder)

Index:
[0] = Changeover ramp motor model
[1] = Changeover ramp model tracking
[2] = Changeover ramp zero frequency encoderless ASM
[3] = Changeover ramp actual speed SESM without encoder
[4] = Enable speed controller SESM without encoder
[5] = Changeover ramp motor model SESM without encoder
[6] = Changeover ramp motor model PMSM without encoder

Note: Indices 3 through 5 are only relevant in the case of encoderless control of separately excited synchronous motors.

r1778 Motor model flux angle difference / MotMod ang diff

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** p2005	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°]	- [°]	- [°]

Description: Induction motor (ASM):

Displays the difference between the motor model flux angle and the transformation angle.

Permanent-magnet synchronous motor (PMSM):

Displays the angular difference between motor model and encoder.

Dependency: A setting for smoothing the display can be made using p1754.

Notice: The display only makes sense for corrected actual value inversion, encoder pulse number and pole pair number.

Example:

Moving in encoderless operation at a speed not equal to zero and without load.

--> Check the sign of r0061 and r0063. If the sign is not equal, then change p0410.0.

--> Check the stationary value of r0061 and r0063. If the value is not equal, change the encoder pulse number (p0408) or pole pair number (p0314).

r1778 Motor model flux angle difference / MotMod ang diff

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** p2005	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°]	- [°]	- [°]

Description: Induction motor (ASM):

Displays the difference between the motor model flux angle and the transformation angle.

Permanent-magnet synchronous motor (PMSM):

Displays the angular difference between motor model and encoder.

Dependency: A setting for smoothing the display can be made using p1754.

r1779 Motor model absolute flux / MotMod abs flux

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, SESM, REL, RESM	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the absolute value of the flux of the motor model.

p1780[0...n] Motor model adaptation configuration / MotMod adapt conf

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0010 0000 bin

Description: Sets the configuration for the adaptation circuit of the motor model.

Induction motor (ASM): Rs, Rr (only for operation with encoder), Lh and offset compensation.

Permanent-magnet synchronous motor (PMSM): kT

Bit field:

Bit	Signal name	1 signal	0 signal	FP
03	Select motor model PMSM kT adaptation	Yes	No	-
05	Reserved	Yes	No	-
07	Reserved	Yes	No	-
08	Compensation voltage emulation error in the drive converter	Yes	No	-
09	kT(iq) characteristic active	Yes	No	-

Caution: For the PMSM kT adaptation (p1780.3) as well as the compensation of the voltage emulation error (p1780.8) and for the kT(iq) characteristic (p1780.9), the function module "Extended torque control" (r0108.1) should be activated.

Note: ASM: Induction motor

PMSM: permanent-magnet synchronous motor

p1780[0...n] Motor/converter model adaptation configuration / MotMod adapt conf

SERVO (Ext M_ctrl), SERVO_AC (Ext M_ctrl), SERVO_I_AC (Ext M_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0001 0010 1000 bin

Description: Sets the configuration for the adaptation circuit of the motor model.

Induction motor (ASM): Rs, Rr (only for operation with encoder), Lh and offset compensation.

Permanent-magnet synchronous motor (PMSM): kT

Bit field:

Bit	Signal name	1 signal	0 signal	FP
03	Select motor model PMSM kT adaptation	Yes	No	-
05	Reserved	Yes	No	-
07	Reserved	Yes	No	-
08	Compensation voltage emulation error in the drive converter	Yes	No	-
09	kT(iq) characteristic active	Yes	No	-

Caution: For the PMSM kT adaptation (p1780.3) as well as the compensation of the voltage emulation error (p1780.8) and for the kT(iq) characteristic (p1780.9), the function module "Extended torque control" (r0108.1) should be activated.

Note: ASM: Induction motor

PMSM: permanent-magnet synchronous motor

The kT adaptation is only active at a speed greater than the changeover speed with encoder (p1752).

The kT adaptation and the kT characteristic can be simultaneously selected.

For kT adaptation (p1780.3 = 1):

- the kT adaptation is only active at a speed greater than the changeover speed with encoder (p1752).

- beforehand, an identification of the voltage emulation error must be started (p1909.14 = 1).

- if the electrical configuration (e.g. Motor Module, cable routing) or the pulse frequency (p1800) changes, then a new identification run must be carried out.

- To identify the voltage emulation error the Motor Module should still be warm.

- the motor temperature (r0035) should not change significantly (i.e. it should not be identified immediately after a load duty cycle).

For kT(iq) characteristic (p1780.9 = 1):

- for the kT(iq) characteristic kT(iq) = kT + kT3 * iq^2 + kT5 * iq^4 + kT7 * iq^6, the parameters must first be identified (p1959.6 = 1, kT: p0316, kT3: p0646, kT5: p0647, kT7: p0647).

p1780[0...n] Motor model adaptation configuration / MotMod adapt conf

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0111 1100 bin

Description: Sets the configuration for the adaptation circuit of the motor model.

Induction motor (ASM): Rs, Rr (only for operation with encoder), Lh and offset compensation.

Permanent-magnet synchronous motor (PMSM): kT

Bit field:

Bit	Signal name	1 signal	0 signal	FP
01	Select motor model ASM Rs adaptation	Yes	No	-
02	Select motor model ASM Lh adaptation	Yes	No	-
03	Select motor model PMSM kT adaptation	Yes	No	-
04	Select motor model offset adaptation	Yes	No	-
05	Select ASM Rr adaptation (only with encoder)	Yes	No	-
06	Select pole position identification PMSM encoderless	Yes	No	-
07	Select T(valve) with Rs adaptation	Yes	No	-

08	Deselect prelim. meas. of inductance for pole position ident.	Yes	No	-
10	Filter time combination current like current ctrl integral time	Yes	No	-
11	Fast flying restart with voltage model for induction motor	Yes	No	-
12	Start PMSM sensorless with last angle	Yes	No	-
13	Fast pulsed pole position identification	Yes	No	-
14	Delay of the precontrol speed to the motor model	Yes	No	-
15	RESM Q flux model linear	Yes	No	-

Dependency: In U/f characteristic operating mode, only bit 7 and bit 11 are relevant.

For active motor model feedback (see p1784), the Lh adaptation is internally deactivated automatically.

When the power units are connected in parallel with separate, offset motor winding systems (p7003 = 2), then the compensation of the valve interlocking times should be implemented as Rs adaptation (bit 7 = 1).

Caution: For bit 11:

The selection is not enabled for dv/dt filters (see p0230).

Notice: It is only permissible to change bit 11 if the drive is switched off.

When selecting bit 11, also for U/f characteristic operation, a standstill measurement must have been performed to set the necessary current controller for a fast flying restart.

Note: ASM: Induction motor

PMSM: permanent-magnet synchronous motor

When selecting the compensation of the valve interlocking via Rs (bit 7), the compensation in the gating unit is deactivated and is instead taken into account in the motor model.

In order that the correction values of the Rs, Lh and kT adaptation (selected using bit 0 ... bit 2) are correctly accepted when changing over the drive data set, a dedicated motor number must be entered into p0826 for each different motor.

Bit 11 has no influence on flying restart with speed encoder. Depending on the motor, the fast flying restart is suitable for speeds of maximum 1.5x to 4x the rated motor speed.

For bit 12 (only for synchronous motors and bit 6 = 1):

The pole position identification is only carried out after power on and after the motor has coasted down. The switch-off speed p1226 should be as low as possible. If the power unit is switched off when the motor is stationary, then the next time that the power unit is switched on, the old angle is used as starting value. The precondition applies that while the power unit is switched off the motor does not rotate.

The duration of the pole position identification is shortened using bit 13. As a consequence, the pole wheel angle error can be slightly greater.

p1784[0...n] Motor model feedback scaling / MotMod fdbk scal

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	1000.0 [%]	0.0 [%]

Description: Sets the scaling for model fault feedback.

Note: Feeding back the measured model fault to the model states increases the control stability and makes the motor model rugged against parameter errors.

When feedback is selected (p1784 > 0), Lh adaptation is not effective.

p1785[0...n] Motor model Lh adaptation Kp / MotMod Lh Kp

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	10.000	0.100

Description: Sets the proportional gain for the Lh adaptation of the motor model for an induction motor (ASM).

p1786[0...n] Motor model Lh adaptation integral time / MotMod Lh Tn

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
10 [ms]	10000 [ms]	100 [ms]

Description: Sets the integral time for the Lh adaptation of the motor model for an induction motor (ASM).

r1787[0...n] Motor model Lh adaptation corrective value / MotMod Lh corr

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [mH]	- [mH]	- [mH]

Description: Displays the corrective value for the Lh adaptation of the motor model for an induction motor (ASM).

Dependency: Refer to: p0826, p1780

Note: The adaptation result is reset if the magnetizing inductance of the induction motor is changed (p0360, r0382). This also happens when changing over the data set if a different motor is not being used (p0826).

The display of the inactive data sets is only updated when changing over the data set.

r1791 Motor model Lh adaptation switch-on frequency / MotMod Lh f_on

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Hz]	- [Hz]	- [Hz]

Description: Displays the switch-on stator frequency/ primary section frequency for the Lh adaptation for the induction motor (ASM).

r1792 Motor model Lh adaptation switch-on slip / MotMod Lh fslip

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Hz]	- [Hz]	- [Hz]

Description: Displays the switch-on slip frequency for the Lh adaptation for the induction motor (ASM).

p1795[0...n] Motor model kT adaptation smoothing time / MotMod kT T_smth

SERVO (Ext M_ctrl), SERVO_AC (Ext M_ctrl), SERVO_I_AC (Ext M_ctrl)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1 [ms]	10000 [ms]	100 [ms]

Description: Sets the smoothing time of the kT adaptation of the motor model for a permanent-magnet synchronous motor (PMSM).

Dependency: Refer to: p1780, r1797

p1795[0...n] Motor model kT adaptation integral time / MotMod kT Tn

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6731
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
10 [ms]	10000 [ms]	100 [ms]

Description: Sets the integral time of the kT adaptation of the motor model for a permanent-magnet synchronous motor (PMSM).

r1797 Motor model kT adaptation corrective value / MotMod kT corr

SERVO (Ext M_ctrl, Lin), SERVO_AC (Ext M_ctrl, Lin), SERVO_I_AC (Ext M_ctrl, Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [N/Arms]	- [N/Arms]	- [N/Arms]

Description: Displays the corrective value of the kT adaptation of the motor model for a permanent magnet synchronous motor (PMSM).

Dependency: Refer to: p1780, p1795

r1797 Motor model kT adaptation corrective value / MotMod kT corr

SERVO (Ext M_ctrl), SERVO_AC (Ext M_ctrl), SERVO_I_AC (Ext M_ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Nm/A]	- [Nm/A]	- [Nm/A]

Description: Displays the corrective value of the kT adaptation of the motor model for a permanent magnet synchronous motor (PMSM).

Dependency: Refer to: p1780, p1795

r1797[0...n] Motor model kT adaptation corrective value / MotMod kT corr

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6731
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Nm/A]	- [Nm/A]	- [Nm/A]

Description: Displays the corrective value of the kT adaptation of the motor model for a permanent-magnet synchronous motor (PMSM).

Dependency: Refer to: p0826, p1780

Note: The display of the inactive data sets is only updated when changing over the data set.

p1798[0...n] Motor model pulse technique speed adaptation Kp / MotMod PulsTech Kp

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	1000.000	1.000

Description: Sets the proportional gain Kp for speed adaptation with active pulse technique for the estimation of the continuous rotor position.

p1799[0...n] Motor model pulse technique speed adaptation Tn / MotMod PulsTech Tn

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	1000 [ms]	10 [ms]

Description: Sets the integral time Tn for speed adaptation with active pulse technique for the estimation of the continuous rotor position for a synchronous reluctance motor.

p1800[0...n] Manipulated variable filter activation / ManVarFilt act

HLA	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** 4966
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	0000 bin

Description: Setting for activating/deactivating the manipulated variable filter.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Activate filter	Yes	No	-

Dependency: The manipulated variable filter is parameterized from p1801 and higher.

Refer to: p1699, r1801, p1801, p1802, p1803, p1804, p1805

p1800[0...n] Pulse frequency setpoint / Pulse freq setp

SERVO, SERVO_AC, SERVO_I_AC	**Can be changed:** U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8021
	P-Group: Modulation	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	1.000 [kHz]	32.000 [kHz]	4.000 [kHz]

Description: Sets the pulse frequency for the converter.

This parameter is pre-set to the rated converter value when the drive is first commissioned.

Dependency: The pulse frequency can, depending on the current controller sampling time (p0115[0]) assume the following values:

a) p1800 = 1000 / (p0115[0] * n) with n = 2, 3, 4, 5

b) p1800 = 1000 * n / p0115[0] with n = 1, 2, 3, 4, ...

Example:

p0115[0] = 125 µs -> p1800 = 1.6, 2, 2.6, 4 kHz (from equation a)

p0115[0] = 125 µs -> p1800 = 8, 16 kHz (from equation b)

Possible setting values can be taken from r0114 (if p0009 = p0010 = 0).

Refer to: r0110, r0111, p0112, p0113, r0114, p0115, r0193, p0230, p1817

Note: The maximum possible pulse frequency is also determined by the power unit being used.

When the pulse frequency is increased, depending on the particular power unit, the maximum output current can be reduced (derating, refer to r0067).

If p1800 is changed while commissioning (p0009, p0010 > 0), then it is possible that the old value will no longer be able to be set. The reason for this is that the dynamic limits of p1800 have been changed by a parameter that was set when the drive was commissioned (e.g. p1082).

For encoderless operation (p1404 = 0 or p1300 = 20), the following conditions apply:

p1800 = 1 / (n * p0115[0]) with n = 2, 3, 4

or

p1800 >= n / p0115[0], n = 1, 2, ...

For motors with a low power rating (< 300 W) we recommend that p1800 is set acc. to the second condition.

Although, pulse frequencies p1800 = 1/ (n * p0115[0]) with n = 3 or 4 are possible, for p0115[0] > 62.5 µs, they result in unsteady closed-loop control and should be avoided.

For motors with a low leakage inductance, it is not permissible to set the pulse frequency to an excessively low value.

p1800[0...n]	Pulse frequency setpoint / Pulse freq setp		
VECTOR, VECTOR_AC, VECTOR_I_AC	**Can be changed:** U, T	**Calculated:** -	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8021
	P-Group: Modulation	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	1.000 [kHz]	16.000 [kHz]	4.000 [kHz]

Description: Sets the pulse frequency for the converter.

This parameter is pre-set to the rated converter value when the drive is first commissioned.

Dependency: The pulse frequency can, depending on the current controller sampling time (p0115[0]) assume the following values:

p1800 = 1000 / (p0115[0] * 2)

or

p1800 = n * 1000 / p0115[0] with n = 1, 2, 3, ...

Example:

p0115[0] = 250 µs --> p1800 = 2, 4, 8, 12, 16 kHz

Possible setting values can be taken from r0114 (if p0009 = p0010 = 0).

Minimum pulse frequency: p1800 >= 12 * p1082 * r0313 / 60

If p0092 = 1 the sampling times p0115 and the pulse frequency p1800 are checked every time the parameters are downloaded, and reset to the initial values if necessary. This check can be deactivated by setting p0092 = 0 (making this setting does not influence isochronous PROFIBUS operation).

The pulse frequency cannot be changed when motor data identification is active (p1910).

If the pulse frequency is set asynchronously to the current controller sampling time (p1810.12), the following limit applies:

p1800 <= 1000 * 2 / p0115[0]

If wobbulation is selected (p1810.2), the pulse frequency can only be changed as part of pulse enabling to values with the following ratio:

a) p1800 <= 1000 / p0115[0] for p1811 > 0 %

b) p1800 <= 1000 * 2 / p0115[0] for p 1811 = 0 %

When the pulses are inhibited

p1800 > 1000 / p0115[0] -> p1811 = 0

p1800 > 1000 * 2 / p0115[0] -> 1810.2 = 0 and p1811 = 0

(applicable for all indices)

Refer to: r0110, r0111, p0112, p0113, r0114, p0115, r0193, p0230, p1817

Notice: The pulse frequency p1800 can also be asynchronously set to the current controller sampling time (0.05 kHz increment). To do this, p1810.12 must be set to 1 (secondary condition, see p1810).

Effects:

- switching over the gating unit (p1810.2).
- activating the current actual value correction (p1840.0).
- minimum pulse frequency 1000 * 0.5 / p0115[0].
- maximum pulse frequency 1000 * 2 / p0115[0].
- fluctuating deadtimes and dynamic performance in the current control loop.
- increased level of current ripple in the current display.

Note: The maximum possible pulse frequency is also determined by the power unit being used.

When the pulse frequency is increased, depending on the particular power unit, the maximum output current can be reduced (derating, refer to r0067).

When using output reactors and dv/dt filters (see p0230), the following restrictions apply:

- maximum 4 kHz
- maximum double rated pulse frequency (2.5 or 4 kHz)
- maximum rated pulse frequency for chassis converters with set property bit r0193.14

When using a sine-wave filter as output filter (p0230 = 3), then the pulse frequency cannot be set below the minimum value required for the filter.

For an external sine-wave filter (p0230 = 4), then the minimum pulse frequency is calculated as follows:

f_puls_min = 1.6 / (2 * Pi * root (p0233 * p0234 * p0235))

- p0233 in H
- p0234 in F

In this case, the pulse frequency must be a multiple of the inverse value of the current controller sampling time (p0115[0]).

If a sine-wave filter is parameterized as output filter (p0230 = 3), then the pulse frequency cannot be changed below the minimum value required for the filter.

If p1800 is changed while commissioning (p0009, p0010 > 0), then it is possible that the old value will no longer be able to be set. The reason for this is that the dynamic limits of p1800 have been changed by a parameter that was set when the drive was commissioned (e.g. p1082).

p1800 Pulse frequency / Pulse frequency

A_INF, R_INF	**Can be changed:** U, T	**Calculated:** -	**Access level:** 4
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8021
	P-Group: Modulation	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	1.000 [kHz]	16.000 [kHz]	8.000 [kHz]

Description: Sets the pulse frequency for the converter.

This parameter is pre-set to the rated converter value when the drive is first commissioned.

Dependency: The switching frequency can only be changed so that it remains an integer multiple of the current controller sampling rate (p0115[0]). For p1810.12 = 1, pulse frequency p1800 can also be asynchronously set to the current controller sampling time (increment width, 0.05 kHz).

The minimum pulse frequency is always half the value of the current controller sampling rate (current controller frequency). Further, whether a setting value is actually permissible also depends on the line filter being used (p0220).

Danger: An incorrectly set line filter (p0220) - and a consequentially incorrect setting of the pulse frequency (p1800), which does not match the actually connected line filter (Active Interface Module, AIM) can result in significant damage to the line filter and the converter. Further, this represents a fire hazard.

Notice: The following should be noted for an asynchronous pulse frequency (p1810.12 = 1):

- fluctuating deadtimes and dynamic performance in the current control loop.
- increased level of current ripple in the current display.

Note: The Power Unit being used defines the maximum possible pulse frequency.

p1801[0...n] Manipulated variable filter type / ManVarFilt type

HLA	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 4966
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	1	2	1

Description: Sets the manipulated variable filter as low pass (PT2) or as extended general 2nd order filter.

Value:
1: PT2 low pass
2: General 2nd order filter

Dependency: The manipulated variable filter is activated via p1800.0 and parameterized via p1801 ... p1805.

Refer to: p1800

Note: For an extended general 2nd order filter, by inserting the same natural frequency in both the numerator and in the denominator, i.e. bandstop frequency, a bandstop filter is implemented. If the numerator damping of zero is selected, the bandstop frequency is completely suppressed.

The denominator damping can be determined from the equation for the 3 dB bandwidth:

f_3dB bandwidth = 2 * D_denominator * f_bandstop frequency

r1801 Actual pulse frequency / Pulse freq act

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [kHz]	- [kHz]	- [kHz]

Description: Display and connector output for the actual converter switching frequency.

Note: The selected pulse frequency (p1800) may be reduced if the drive converter has an overload condition (p0290).

The value can be displayed up to 12 current controller sampling times later than when it is actually effective, because it is not transferred in every current controller sampling time.

r1801[0...1] CO: Pulse frequency / Pulse frequency

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [kHz]	- [kHz]	- [kHz]

Description: Display and connector output for the actual converter switching frequency.

Index:
[0] = Actual
[1] = Modulator minimum value

Note: The selected pulse frequency (p1800) may be reduced if the drive converter has an overload condition (p0290).

The following applies for vector drives (p0107):

The pulse frequency can also be reduced when changing over the modulator to an optimized pulse pattern. This is used to avoid overcontrol.

In the case of chassis power units, two-thirds of the setpoint pulse frequency is displayed in the FLB modulation range.

r1801 Actual pulse frequency / Pulse freq act

A_INF, S_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [kHz]	- [kHz]	- [kHz]

Description: Display and connector output for the actual converter switching frequency.

When pulse frequency wobbulation is active (p1810), then the center switching frequency is displayed.

Notice: The displayed frequency value is not valid in the SmartMode.

Note: The displayed frequency always corresponds to the inverted duration of the switching period, which is decisive for selecting a suitable line filter (p0220).

The displayed frequency value is therefore not dependent on whether flattop modulation or space vector modulation is selected (p1810, p3410).

p1802[0...n] Manipulated variable filter denominator natural frequency / ManVarFilt fn_den

HLA	**Can be changed:** U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4966
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.5 [Hz]	16000.0 [Hz]	1999.0 [Hz]

Description: Sets the denominator natural frequency for manipulated variable filter (PT2, general filter).

Dependency: The manipulated variable filter is activated via p1800.0 and parameterized via p1801 ... p1805.

Refer to: p1800

p1802[0...n] Modulator mode / Modulator mode

VECTOR, VECTOR_AC, VECTOR_I_AC	**Can be changed:** T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 3
	Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** -
	P-Group: Modulation	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	19	0

Description: Sets the modulator mode.

Value:
0: Automatic changeover SVM/FLB
1: Flat top modulation (FLB)
2: Space vector modulation (SVM)
3: SVM without overcontrol
4: SVM/FLB without overcontrol
5: SVM with pulse frequency reduction
6: SVM/FLB with pulse frequency reduction
7: No edge modulation up to 100 Hz
8: No edge modulation up to 60 Hz
9: Edge modulation
19: Optimized pulse pattern

Dependency: If a sine-wave filter is parameterized as output filter (p0230 = 3, 4), or if the power unit firmware is not able to calculate edge modulation (r0192.0 = 0), then only space vector modulation without overcontrol can be set as modulation type (p1802 = 3).

For permanent-magnet synchronous motors and chassis power units, the following applies:

Edge modulation or optimized pulse pattern can only be used, if p1810 bit 2 = 1 is set.

Refer to: r0192, p0230, p7003

Notice: If the pulse patterns are enabled with overmodulation option (p1802 < 3) or edge modulation (p1802 > 6), then the current actual value correction is automatically activated (p1840.0 = 0).

Note: When modulation modes are enabled that could lead to overmodulation (p1802 = 0, 1, 2, 5, 6), the modulation depth must be limited using p1803 (default p1803 < 100 %). The higher the overmodulation, the greater the current ripple and torque ripple.

When changing p1802[x], the values for all of the other existing indices are also changed.

p1802 = 7, 8 should be used if the drive is operated below 100 Hz or 60 Hz, and it is necessary to avoid changing over to edge modulation. Above these output frequencies, the modulation depth remains limited so that there the full output voltage of the edge modulation is not reached.

The setting p1802 = 19 is only released for chassis power units and SIMOTICS FD motors.

p1802[0...n] Modulator mode / Modulator mode

VECTOR (F3E), VECTOR_AC (F3E), VECTOR_I_AC (F3E)

Can be changed: T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 3
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	4	4

Description: Sets the modulator mode.

Value:
0: Automatic changeover SVM/FLB
2: Space vector modulation (SVM)
3: SVM without overcontrol
4: SVM/FLB without overcontrol

Dependency: If a sine-wave filter is parameterized as output filter (p0230 = 3, 4), then only space vector modulation without overcontrol can be selected as modulation type (p1802 = 3).

Refer to: r0192, p0230, p7003

Note: When modulation modes are enabled that could lead to overmodulation (p1802 = 0, 2), the modulation depth must be limited using p1803 (default p1803 < 100 %). The higher the overmodulation, the greater the current ripple and torque ripple.

When changing p1802[x], the values for all of the other existing indices are also changed.

p1803[0...n] Manipulated variable filter denominator damping / ManVar_filt D_den

HLA

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4966
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.001	10.000	0.700

Description: Sets the denominator damping for the manipulated variable filter (PT2, general filter).

Dependency: The manipulated variable filter is activated via p1800.0 and parameterized via p1801 ... p1805.

Refer to: p1800

p1803[0...n] Maximum modulation depth / Modulat depth max

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6723
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
20.0 [%]	150.0 [%]	100.0 [%]

Description: Defines the maximum modulation depth.

Note: p1803 = 100% is the overcontrol limit for space vector modulation (for an ideal drive converter without any switching delay).

If optimized pulse patterns are enabled (edge modulation), then the modulation depth is limited to below the output frequency of 28 Hz as there is no optimized pulse pattern in this range.

p1803[0...n] Maximum modulation depth / Modulat depth max

VECTOR (F3E), VECTOR_AC (F3E), VECTOR_I_AC (F3E)

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6723
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
20.0 [%]	150.0 [%]	106.0 [%]

Description: Defines the maximum modulation depth.

Note: p1803 = 100% is the overcontrol limit for space vector modulation (for an ideal drive converter without any switching delay).

p1804[0...n] Manipulated variable filter numerator natural freq. / ManVarFilt fn_num

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4966
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	1999.0 [Hz]

Description: Sets the numerator natural frequency for the manipulated variable filter (general filter).

Dependency: The manipulated variable filter is activated via p1800.0 and parameterized via p1801 ... p1805.

Refer to: p1800

p1804[0...n] Filter time constant smoothed modulation index / T_filt mod_idx sm

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [ms]	10000.0 [ms]	10.0 [ms]

Description: Filter time constant for the smoothed modulation index to change over the modulator mode.

p1805[0...n] Manipulated variable filter numerator damping / ManVarFilt D_num

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4966
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	10.000	0.700

Description: Sets the numerator damping for the manipulated variable filter (general filter).

Dependency: The manipulated variable filter is activated via p1800.0 and parameterized via p1801 ... p1805.

Refer to: p1800

p1806[0...n] Filter time constant Vdc correction / T_filt Vdc_corr

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_REG	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [ms]	10000.0 [ms]	0.0 [ms]

Description: Sets the filter time constant for the DC link voltage.

This time constant is used to calculate the modulation depth.

r1807 Actual DC link voltage to calculate the modulation depth / VdcActValMod_depth

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 5_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: DC link voltage that is used to convert the setpoint voltage into an equivalent modulation depth.

r1808 DC link voltage actual value for U_max calculation / Vdc act val U_max

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 5_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: DC link voltage used to determine the maximum possible output voltage.

r1809 CO: Modulator mode actual / Modulator mode act

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	9	-

Description: Displays the effective modulator mode.

Value:
1: Flat top modulation (FLB)
2: Space vector modulation (SVM)
3: Edge modulation from 28 Hz; 23:3
4: Edge modulation from 28 Hz; 19:1
5: Edge modulation from 60 Hz; 17:3
6: Edge modulation from 60 Hz; 17:1
7: Edge modulation from 100 Hz; 9:2
8: Edge modulation from 100 Hz; 9:1
9: Optimized pulse pattern

p1810 Modulator configuration / Modulator config

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 bin

Description: Sets the configuration for the modulator.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
01	DC link voltage compensation in the power unit.	Yes	No	-
11	Current controller dynamics higher	Yes	No	-

Note: For bit 11:

Prerequisite:

- firmware version 4.4 or higher for the Control Unit and power unit.
- booksize or S120 Combi power unit (r0192.27 = 1).
- current controller sampling time p0115[0} >= 62.5 µs.
- for a Double Motor Module the two drive controls must be operated with the same current controller sampling time (p0115[0]). Otherwise, the higher current controller dynamics can only be activated on the drive with the longer sampling time.
- it is not permissible that the "safety without encoder" is activated (p9306/p9506).

The following changes are necessary after changing bit 11:

- computing dead time (p0118 = 20.5 µs for bit 11 = 1, p0118 = 0 µs for bit 11 = 0).
- controller gains (p1715, p1460).
- with p0340 = 4 computing dead time and controller gains can be automatically pre-assigned. It may be necessary to still optimize the speed controller.

Before commissioning for the first time (p3925.0 = 0 for all data sets) this parameter is automatically pre-assigned to the optimum value.

p1810 Modulator configuration / Modulator config

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0010 bin

Description: Sets the configuration for the modulator.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Avg value filter for V_lim (only for Vdc_comp in modulator)	Yes	No	-
01	DC link voltage compensation in the current control	Yes	No	-
02	Wobbulation activated	Yes	No	-
03	Current measurement oversampling selected	Yes	No	-
08	Pulse frequency reduction (speed dependent) stage 1	Yes	No	-
09	Pulse frequency reduction (speed dependent) stage 2	Yes	No	-
10	Activate pulse-locking/pulse-dropping function	Pulse-Dropping	Pulse-Locking	-
12	Pulse freq. can be asynchronously set to curr. ctrl clock cycle	Yes	No	-
13	Pulse freq. reduction before optimized pulse patterns for 500 µs	Yes	No	-
14	Deactivate maximum angular difference adaptation	Yes	No	-
15	Increase overmodulation range	Yes	No	-

Dependency: If bit 2 is set from 1 to 0, p1811 = 0 is set.

Notice: Bit 1 = 0 can only be set when the pulses are inhibited and for r0192.14 = 1.

Bit 2 can only be set to 1 subject to the following prerequisites:

- Pulse inhibit
- r0192.16 = 1
- p1800 < 2 x 1000/p0115[0]

Bit 12 can only be changed subject to the following prerequisites:

- preconditions, the same as bit 2 = 1
- p1810.3 = 0

For fast current changes, bit 15 = 1 together with p1802 = 0, 2 and p1803 > 106 % result in a significant increase in the torque ripple. As a consequence, increasing the modulation limit must be checked on an application for application basis.

Note: For bit 00 = 0:

Voltage limitation from the minimum of the DC link voltage (lower ripple in the output current, reduced output voltage).

For bit 00 = 1:

Voltage limitation from averaged DC link voltage (higher output voltage with increased ripple in the output current).

The selection is only valid if the DC link compensation is not performed in the Control Unit (bit 1 = 0).

For bit 01 = 0:

DC link voltage compensation in the modulator.

For bit 01 = 1:

DC link voltage compensation in the current control.

For bit 02 = 0:

A gating unit that does not permit wobbulation is used.

Edge modulation is not possible for a parallel connection with a single-winding system (p7003 = 0).

Bit 02 cannot be set to 0 if bit 12 = 1.

For bit 02 = 1:

A gating unit that permits wobbulation is used.

For a wobbulation amplitude p1811 = 0, the maximum possible pulse frequency in p1800 = 2 x 1000 / p0115[0].

For a wobbulation amplitude p1811 > 0, the maximum possible pulse frequency in p1800 = 1000 / p0115[0].

If optimized pulse patterns has been activated (p1802 > 6), then a parameter save is required and switch off and switch on again. This is displayed using a message (F01040).

For bit 03 = 1:

The actual current value sensing and the determination of the valve ON times takes place with a double current controller clock cycle and phase offset.

The activation is only possible with r0192.23 = 1 and p1810.12 = 0 - and takes effect the next time the system is powered up.

For bit 08 = 1:

Above the frequency threshold r1836[0], the pulse frequency is switched to the value in p1800. Below r1836[0] (minus the hysteresis), the pulse frequency is reduced to the next possible pulse frequency (see r0114).

For bit 09 = 1:

Above the frequency threshold r1836[1], the pulse frequency is increased to the next possible value. Below r1836[1] (minus the hysteresis), the pulse frequency is reduced to the next possible pulse frequency.

If bit 8 is set to 0, bit 9 is automatically reset.

For bit 10 = 0:

Pulse-locking function activated.

For bit 10 = 1:

Pulse-dropping function activated.

For bit 12 = 0:

The pulse frequency p1800 can also be synchronously set to the current controller clock cycle (see r0114).

Bit 12 can only be set from 1 to 0 if the pulse frequency p1800 is set synchronously to the current controller clock cycle. In this case, the gating unit is not switched over.

For bit 12 = 1:

The pulse frequency p1800 can also be asynchronously set to the current controller clock cycle. In this case, the effects should be observed (see p1800).

If bit 12 is set to 1, then the gating unit is automatically switched over (p1810.2 = 1). If this is not possible (see above), then bit 12 cannot be set to 1.

Bit 12 cannot be set to 1, if p1810.3 = 1 is set.

For bit 15 = 1:

For p1802 = 0, 2 and p1803 > 106 %, dynamically, a modulation depth of more than 106 % is permitted. When p1803 is increased, the dynamic modulation depth reserve p1574 should be increased so that the maximum output voltage r0071 approximately remains the same. For U/f control, the overcontrol in p1381 can be separately reduced.

p1810 Modulator configuration / Modulator config

VECTOR (F3E), VECTOR_AC (F3E), VECTOR_I_AC (F3E)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 bin

Description: Sets the configuration for the modulator.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Avg value filter for V_lim (only for Vdc_comp in modulator)	Yes	No	-
01	DC link voltage compensation in the current control	Yes	No	-
08	Pulse frequency reduction (speed dependent) stage 1	Yes	No	-
09	Pulse frequency reduction (speed dependent) stage 2	Yes	No	-

Notice: Bit 1 = 0 can only be set when the pulses are inhibited and for r0192.14 = 1.

Note: For bit 00 = 0:

Voltage limitation from the minimum of the DC link voltage (lower ripple in the output current, reduced output voltage).

For bit 00 = 1:

Voltage limitation from averaged DC link voltage (higher output voltage with increased ripple in the output current).

The selection is only valid if the DC link compensation is not performed in the Control Unit (bit 1 = 0).

For bit 01 = 0:

DC link voltage compensation in the modulator.

For bit 01 = 1:

DC link voltage compensation in the current control.

For bit 08 = 1:

Above the frequency threshold r1836[0], the pulse frequency is switched to the value in p1800. Below r1836[0] (minus the hysteresis), the pulse frequency is reduced to the next possible pulse frequency (see r0114).

For bit 09 = 1:

Above the frequency threshold r1836[1], the pulse frequency is increased to the next possible value. Below r1836[1] (minus the hysteresis), the pulse frequency is reduced to the next possible pulse frequency.

If bit 8 is set to 0, bit 9 is automatically reset.

p1810 Modulator configuration / Modulator config

A_INF, S_INF, R_INF

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1000 0100 0001 0000 bin

Description: Sets the configuration for the modulator.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
02	Activate wobbulation in the power unit	Yes	No	-
04	Disable wobbulation amplitude	Yes	No	-
05	Activate extended current limitation control	Yes	No	-
06	Activate isochronous current limitation	Yes	No	-
07	Activate voltage impression with dynamic current limits	Yes	No	-
10	Activate pulse-locking/pulse-dropping function	Pulse-Dropping	Pulse-Locking	-
12	Pulse freq. can be asynchronously set to curr. ctrl clock cycle	Yes	No	-

13	Compute software gating unit on Control Unit	Yes	No	-
14	Activate optimized pulse pattern	Yes	No	-
15	Activate flat-top modulation	Yes	No	-

Dependency: The modulator configuration is overwritten when the power unit (p0201) or the line filter type (p0220) is changed.

It is possible that special settings required for the modulator must be newly set.

Notice: For bit 02 = 1:

The wobble function influences the quality of the current control (grid droop operation with p5401 = 1 is not influenced). This is the reason that the risk of faults due to overcurrent increases for applications with the highest dynamic response in the overload range,

For booksize drive units, the following additionally applies:

This function involves additional computing time. It may be necessary to reduce the number of DO objects computed on the same Control Unit, or longer sampling times must be used (observe the messages). For example, a clock setting p0115[0] = 125 µs is not possible.

For bit 13 = 1:

This function involves additional computing time. It may be necessary to reduce the number of DO objects computed on the same Control Unit, or longer sampling times must be used (observe the messages).

Note: For bit 02, 05, 14, 15:

The setting can only be changed when the pulses are inhibited.

For bit 02 = 0:

A gating unit that does not permit wobbulation is used.

For bit 02 = 1 (only permissible for r0192.16 = 1):

A gating unit that permits wobbulation is used.

The frequency range of the wobbulation function is set using p1811.

The Smart Mode (p3400.0 = 1) is not permissible - and results in F6050.

For bit 04 = 0 (only valid for bit 2 = 1):

The pulse frequency wobbulation amplitude (p1811) is enabled.

For bit 04 = 1 (only valid for bit 2 = 1):

The pulse frequency wobbulation amplitude (p1811) is disabled.

For bit 05 = 1 (only permissible for r0192.19 = 1):

Reserved.

For bit 06 (only valid for bit 05 = 1):

Reserved.

For bit 07 (only valid for bit 05 = 1):

Reserved.

For bit 10 = 0:

The pulse-locking function is activated.

For bit 10 = 1:

The pulse-dropping function is activated.

For bit 12:

Reserved.

For bit 13 = 0:

The gating unit is separately calculated in each power unit.

For bit 13 = 1 (only permissible for r0192.26 = 1):

The gating unit is calculated in the Control Unit.

The Smart Mode (p3400.0 = 1) is not permissible - and results in F6050.

For bit 14:

Reserved.

For bit 15 = 0:

To deactivate flat-top control mode, p3400.1 also needs to be set to 0.

For bit 15 = 1:

Flat-top control mode is active regardless of the setting for p3400.1.

p1811[0...n] Pulse frequency wobbulation amplitude / Puls wobb ampl

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [%]	20 [%]	0 [%]

Description: Sets the amplitude of the statistical wobbulation signal.

This signal is used to vary the pulse frequency to create a more pleasant sound.

Note: p1811 > 0 is possible, if the following applies:

- configuration: p1810.2 = 1 (wobbulation activated)
- pulse frequency: p1800 <= 1000 / p0115[0]
- output filter, filter type: p0230 < 3 (no sine-wave filter)

p1811 Pulse frequency wobbulation amplitude / Puls wobb ampl

A_INF, S_INF, R_INF

Can be changed: T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [%]	20 [%]	0 [%]

Description: Sets the amplitude of the statistical wobbulation signal.

This signal is used to vary the pulse frequency to create a more pleasant sound.

Dependency: The modulator configuration is overwritten when the power unit (p0201) or the line filter type (p0220) is changed.

It is possible that special settings required for the modulator must be newly set.

Note: It is only possible to modify the parameter for p1810.2 = 1 (wobbulation activated).

The change between the selected wobble width and the wobble width zero is also possible in operation with the pulses enabled (p1810.4).

p1812 BI: Offset calibration output current measurement / Off_calibr I_outp

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 4
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source to activate/deactivate offset calibration for output current measurement.

Caution: The absence of offset calibration can have a negative effect on control properties. Offset calibration must be performed before switching on the power unit for the first time after POWER ON.

Note: Offset calibration is only performed with pulses suppressed and can take up to one second.

p1814[0...n] Vdc filter dead band for modulation switchover / Vdc filt dead band

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	12.0 [%]	0.0 [%]

Description: Sets the filter dead bandwidth for the DC link voltage signal to switch over the modulation type for optimized pulse patterns.

The parameter value refers to the rated line voltage of the power unit.

Recommendation: For power units with controlled regenerative line feedback, a value of approximately 2 % is recommended.
For all other power units, a value of approximately 8 % (as a result of the increased DC link voltage ripple under load).

p1815 Phase for PWM generation subgroup / Ph for PWM subgr

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0001 bin

Description: Sets bit 0 for recording the power unit in the subgroup for the "offset clocking".

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Recording in subgroup for offset clocking	Yes	No	-

Dependency: Refer to: p1818, p1819

Note: A change only becomes effective after booting.

If one of the following secondary conditions is not fulfilled, then none of the power units from the subgroup are clocked with an offset.

Secondary conditions for clocking with an offset:

- the PWM frequency (p1800[D]) of all power units in the subgroup must be the same.

- the PWM frequency (p1800[D]) must be the same in all drive data sets in the subgroup.

- the following must apply for the ratio between the PWM cycle (1/p1800[D]) and the current controller cycle (p0115[0]):

The ratio (1/p1800[D]) / (p0115[0]) must be an even integer number (2, 4, 6, ...) for all power units in the subgroup.

or

The ratio (p0115[0]) / (1/p1800[D]) must be an integer number (1, 2, 3, ...) for all power units in the subgroup.

p1816 Set phase for PWM generation manually / Set Ph for PWM

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1	16	-1

Description: Sets manual setting and overwriting of automatically determined phase shift for "offset clocking".

For p1816 = -1, the following applies:

Automatic mode. The phase shift value is automatically determined.

For p1816 = 0 ... 16, the following applies:

Manual mode. The user should define the phase shift value as follows:

1. PWM cycle (1/p1800) > current controller cycle (p0115[0])

The power unit executes a phase shift from Tshift = current controller cycle (p0115[0]) * p1816.

2. PWM cycle (1/p1800) <= current controller clock cycle (p0115[0])

For p1816 >= 1, the power unit executes a phase shift from Tshift = PWM cycle/2.

Dependency: Refer to: r0116, p1800, p1819

p1817 Minimum ratio, pulse frequency to the output frequency / Min f_puls / f_max

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(2)	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
8.3	15.0	12.0

Description: Sets the minimum ratio between the pulse frequency and the output frequency.

Notice: If the ratio between the pulse frequency and the output frequency is reduced, then oscillations can occur in the output current that can result in significant levels of current ripple with the appropriate negative effects.

Note: When the maximum speed is changed, the pulse frequency p1800 is automatically limited to this minimum ratio. It is not permissible to reduce the pulse frequency if this would result in this ratio being undershot.

p1818 Phase for PWM generation configuration / Ph for PWM config

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	1

Description: Sets the phase shift for offset clocking.

For the first active power unit, it is specified whether clocking is to start at 0° (value = 0) or 180° (value = 1). All other active power units are clocked alternately according to the setting made here.

Dependency: Refer to: p1819

Note: A change only becomes effective after a POWER ON.

The parameter is not influenced by setting the factory setting.

p1819 Phase for PWM generation / Ph for PWM

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, S_INF

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1	16	-1

Description: Display for "offset clocking".

Depending on the particular case, the value is interpreted differently:

Case 1:

The PWM clock cycle (1/p1800[D]) is greater than the current controller clock cycle (p115[0]) and the ratio between the PWM clock cycle and the current controller clock cycle and is an integer and even multiple of it (e.g. p0115[0] = 125 µs, p1800[D] = 4 kHz, 2 kHz, 1 kHz).

The value displayed refers to:

- the phase shift in the current-controller cycles to be executed by the power unit.

Case 2:

The PWM clock cycle (1/p1800[D]) is less than or equal to the current controller clock cycle (p0115[0]) and the ratio between the current controller clock cycle and the PWM clock cycle is an integer and even multiple of it (e.g. p0115[0] = 125 µs, p1800[D] = 8 kHz, 16 kHz).

The value 1 displayed means that:

- the power unit is to apply a phase shift of 180 ° (from the PWM cycle).

A value of 0 displayed on all power units of the drive line-up means the following:

- the general conditions of the "offset clocking" (see p1815) are not fulfilled, i.e. no power unit is clocked with an offset.

Dependency: Refer to: p0108, r0108, p0115, p1800, p1815, p1816, p1818

Note: For reasons of compatibility, the parameter is an adjustable parameter. However, it functions solely as a display parameter. This means that factory setting -1 no longer has any significance and is only available for reasons of compatibility.

p1819 Phase for PWM generation / Ph for PWM

A_INF, R_INF

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1	16	0

Description: Display for "offset clocking".

Depending on the particular case, the value is interpreted differently:

Case 1:

The PWM clock cycle is greater than the current controller clock cycle (p0115[0]) and the ratio between the PWM clock cycle and the current controller clock cycle and is an integer and even multiple of it (e.g. p0115[0] = 125 µs, pulse frequency = 4 kHz, 2 kHz).

The value displayed refers to:

- the phase shift in the current-controller cycles to be executed by the power unit.

Case 2:

The PWM clock cycle is less than or equal to the current controller clock cycle (p0115[0]) and the ratio between the current controller clock cycle and the PWM clock cycle is an integer and even multiple of it (e.g. p0115[0] = 125 µs, pulse frequency = 8 kHz, 16 kHz).

The value 1 displayed means that:

- the power unit is to apply a phase shift of 180 ° (from the PWM cycle).

A value of 0 displayed on all power units of the drive line-up means the following:

- the general conditions of the "offset clocking" (see p1815) are not fulfilled, i.e. no power unit is clocked with an offset.

Dependency: Refer to: p0108, r0108, p0115, p1800, p1815, p1816, p1818

Note: For reasons of compatibility, the parameter is an adjustable parameter. However, it functions solely as a display parameter. This means that the minimum value -1 no longer has any significance and is only available for reasons of compatibility.

p1820[0...n] Invert output voltage / U_output inv

HLA

Can be changed: C2(3)	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 4966
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Setting to invert the output voltage.

This means that with the same setpoint, the piston direction is reversed without inverting the encoder actual value.

When a velocity encoder is being used, it may be necessary to also invert the encoder actual value (p0410).

Value:
0: OFF
1: ON

Note: This setting can only be changed when the controller is inhibited.

p1820[0...n] Reverse the output phase sequence / Outp_ph_seq rev

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 6732
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the phase sequence reversal for the motor.

If the motor does not rotate in the required direction, then the output phase sequence can be reversed using this parameter. This means that with the same setpoint, the motor direction is reversed without reversing the encoder actual value.

When a speed encoder is being used, it may be necessary to also invert the encoder actual value (p0410).

Value:
0: OFF
1: ON

Dependency: Refer to: p1821

Caution: For 12-pulse converters with 30° offset angle for system 2, for a direction of rotation reversal, the phase offset changes by 60° as the sign of the angle offset changes. This can be adapted in p1810.15.

Changing the direction using p1820 or p1821 is not recognized by the "Safe Direction without encoder". As a consequence, the limit provided by SDI (Safe Direction) from r9733 no longer functions.

Note: This setting can only be changed when the pulses are inhibited.

p1821 can be used to reverse the phase sequence and encoder actual value.

p1821[0...n] Direction / Direction

HLA

Can be changed: C2(3)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Setting to change the direction.

If the parameter is changed, it reverses the direction of rotation of the cylinder and the encoder actual value without changing the setpoint.

Value:
0: Clockwise
1: Counter-clockwise

Dependency: Refer to: F07434

Notice: For a drive data set changeover with differently set direction and power enable, an appropriate fault is output.

The piston must be recalibrated after a direction reversal.

After changing parameter p1821, the direction of rotation is not automatically adapted in the safety area. The following parameters can be used to set the direction of rotation for safety monitoring:

-SI Motion encoder configuration safety functions - position actual value sign change (p9516.1/p9316.1, only active for operation with encoder)

Note: The actual velocity (e.g. r0063) is also reversed so that the control sense is kept and internally causing the direction of rotation to be reversed with the same setpoint. Further, the position actual values of the actual encoder are reversed (e.g. r0482[0...2]).

p1820 can be used to reverse the direction of the cylinder without reversing the encoder actual value.

p1821[0...n] Direction of rotation / Dir of rot

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C2(3)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 4704, 4710, 4711, 4715, 5730, 6730, 6731, 6732
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Setting to change the direction of rotation.

If the parameter is changed, it reverses the direction of rotation of the motor and the encoder actual value without changing the setpoint.

Value:
0: Clockwise
1: Counter-clockwise

Dependency: Refer to: F07434

Notice: An appropriate fault is output for a drive data set changeover where the direction of rotation changes and the pulses are enabled.

After changing parameter p1821, the direction of rotation is not automatically adapted in the safety area. The following parameters can be used to set the direction of rotation for safety monitoring:

-SI Motion encoder configuration safety functions - position actual value sign change (p9516.1/p9316.1, only active for operation with encoder)

-SI Motion gearbox direction of rotation reversal (p9539/p9339, also active for encoderless operation)

Note: For operation with the phase sequence U/V/W, the direction of rotation is defined when viewing the face side of the motor output shaft.

When changing the direction of rotation, the rotating field direction of the current controller is reversed. The speed actual value (e.g. r0063) is also reversed so that the control sense is kept and internally causing the direction of rotation to be reversed with the same setpoint. Further, the position actual values of the actual encoder are reversed (e.g. r0482[0...2]).

p1821[0...n] Direction / Direction

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: C2(3)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 4704, 4710, 4711, 4715, 5730, 6730, 6731, 6732
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Setting to change the direction.

If the parameter is changed, it reverses the direction of rotation of the motor and the encoder actual value without changing the setpoint.

Value:
0: Clockwise
1: Counter-clockwise

Dependency: Refer to: F07434

Notice: For a drive data set changeover with differently set direction and pulse enable, an appropriate fault is output.

After changing parameter p1821, the direction of rotation is not automatically adapted in the safety area. The following parameters can be used to set the direction of rotation for safety monitoring:

-SI Motion encoder configuration safety functions - position actual value sign change (p9516.1/p9316.1, only active for operation with encoder)

-SI Motion gearbox direction of rotation reversal (p9539/p9339, also active for encoderless operation)

Note: For operation with the phase sequence U/V/W, the direction is defined when viewing the face side of the motor output shaft.

When changing the direction, the rotating field direction of the current controller is reversed. The actual velocity (e.g. r0063) is also reversed so that the control sense is kept and internally causing the direction of rotation to be reversed with the same setpoint. Further, the position actual values of the actual encoder are reversed (e.g. r0482[0...2]).

For VECTOR, the following applies:

p1820 can be used to reverse the direction of the motor without reversing the encoder actual value.

p1821[0...n] Direction of rotation / Dir of rot

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(3)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 4704, 4710, 4711, 4715, 5730, 6730, 6731, 6732
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Setting to change the direction of rotation.

If the parameter is changed, it reverses the direction of rotation of the motor and the encoder actual value without changing the setpoint.

Value:
0: Clockwise
1: Counter-clockwise

Dependency: Refer to: F07434

Danger: When using external speed actual values for the speed controller (see p1440), for a direction of rotation change (p1821 = 1), then its polarity must also be changed (e.g. for drive object ENCODER via p0410). Otherwise, a positive coupling can occur in the speed control loop and the drive would then be accelerated up to the speed limit.

Caution: For 12-pulse converters with 30° offset angle for system 2, for a direction of rotation reversal, the phase offset changes by 60° as the sign of the angle offset changes. This can be adapted in p1810.15.

Notice: An appropriate fault is output for a drive data set changeover where the direction of rotation changes and the pulses are enabled.

After changing parameter p1821, the direction of rotation is not automatically adapted in the safety area. The following parameters can be used to set the direction of rotation for safety monitoring:

-SI Motion encoder configuration safety functions - position actual value sign change (p9516.1/p9316.1, only active for operation with encoder)

-SI Motion gearbox direction of rotation reversal (p9539/p9339, also active for encoderless operation)

Note: For operation with the phase sequence U/V/W, the direction of rotation is defined when viewing the face side of the motor output shaft.

When changing the direction of rotation, the rotating field direction of the current controller is reversed. The speed actual value (e.g. r0063) is also reversed so that the control sense is kept and internally causing the direction of rotation to be reversed with the same setpoint. Further, the position actual values of the actual encoder are reversed (e.g. r0482[0...2]).

p1820 can be used to reverse the direction of the motor without reversing the encoder actual value.

p1821[0...n] Direction of rotation / Dir of rot

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: C2(3)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 4704, 4710, 4711, 4715, 5730, 6730, 6731, 6732
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Setting to change the direction of rotation.

If the parameter is changed, it reverses the direction of rotation of the motor and the encoder actual value without changing the setpoint.

Value:
0: Clockwise
1: Counter-clockwise

Dependency: Refer to: p6278

Refer to: F07434

Danger: When using external speed actual values for the speed controller (see p1440), for a direction of rotation change (p1821 = 1), then its polarity must also be changed (e.g. for drive object ENCODER via p0410). Otherwise, a positive coupling can occur in the speed control loop and the drive would then be accelerated up to the speed limit.

Caution: For 12-pulse converters with 30° offset angle for system 2, for a direction of rotation reversal, the phase offset changes by 60° as the sign of the angle offset changes. This can be adapted in p1810.15.

When using a separately excited synchronous machine with reverse field excitation, when setting p1821, it must be checked as to whether the phase sequence of the exciter converter must also be changed.

Notice: An appropriate fault is output for a drive data set changeover where the direction of rotation changes and the pulses are enabled.

After changing parameter p1821, the direction of rotation is not automatically adapted in the safety area. The following parameters can be used to set the direction of rotation for safety monitoring:

-SI Motion encoder configuration safety functions - position actual value sign change (p9516.1/p9316.1, only active for operation with encoder)

-SI Motion gearbox direction of rotation reversal (p9539/p9339, also active for encoderless operation)

Note: For operation with the phase sequence U/V/W, the direction of rotation is defined when viewing the face side of the motor output shaft.

When changing the direction of rotation, the rotating field direction of the current controller is reversed. The speed actual value (e.g. r0063) is also reversed so that the control sense is kept and internally causing the direction of rotation to be reversed with the same setpoint. Further, the position actual values of the actual encoder are reversed (e.g. r0482[0...2]).

p1820 can be used to reverse the direction of the motor without reversing the encoder actual value.

p1822 Power unit line phases monitoring tolerance time / PU ph monit t_tol

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
500 [ms]	540000 [ms]	1000 [ms]

Description: Sets the tolerance time for line phase monitoring for blocksize power units.

If a line phase fault is present for longer than this tolerance time, then a corresponding fault is output.

Dependency: Refer to: F30011

Notice: When operating with a failed line phase, depending on the active power, values higher than the default value can either immediately damage the power unit or damage it over the long term.

Note: For the setting p1822 = maximum value, line phase monitoring is deactivated.

p1825 Converter valve threshold voltage / Threshold voltage

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [Vrms]	100.0 [Vrms]	0.6 [Vrms]

Description: Sets the threshold voltage drop of the valves (power semiconductor devices) to be compensated.

Note: The value is automatically calculated in the motor data identification routine.

p1827 Infeed compensation valve lockout time operating mode / INFcomp t_lockMode

A_INF, S_INF, R_INF

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the operating mode for the compensation of the valve lockout time.

Value:
0: Compensation valve lockout time deactivated
1: Compensation valve lockout time activated

Note: The compensation is always active, independent of the value of this parameter if the closed-loop control is activated to suppress circulating currents (p7035) for power units connected in parallel.

p1828 Compensation valve lockout time phase U / Comp t_lock ph U

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [µs]	1000000.00 [µs]	0.00 [µs]

Description: Sets the valve lockout time to compensate for phase U.

Notice: Deadtime compensation is deactivated with p7003 = 2.

Note: The value is automatically calculated in the motor data identification routine.
For type PM340 power units, the value is limited to 3.98 µs.

p1829 Compensation valve lockout time phase V / Comp t_lock ph V

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [µs]	1000000.00 [µs]	0.00 [µs]

Description: Sets the valve lockout time to compensate for phase V.

Notice: Deadtime compensation is deactivated with p7003 = 2.

Note: For type PM340 power units, the value is limited to 3.98 µs.

p1830[0...n] Factor plane adaptation positive / Fact pl_adap pos

HLA

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_EQU	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965, 4970, 4975
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
10.0 [%]	200.0 [%]	100.0 [%]

Description: Sets the factor for the plane compensation in the positive direction.

Dependency: Refer to: p1831

p1830 Compensation valve lockout time phase W / Comp t_lock ph W

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [µs]	1000000.00 [µs]	0.00 [µs]

Description: Sets the valve lockout time to compensate for phase W.

Notice: Deadtime compensation is deactivated with p7003 = 2.

Note: For type PM340 power units, the value is limited to 3.98 µs.

p1831[0...n] Factor plane adaptation negative / Fact pl_adap neg

HLA

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_EQU	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4965, 4970, 4975
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
10.0 [%]	200.0 [%]	100.0 [%]

Description: Sets the factor for the plane compensation in the negative direction.

Dependency: Refer to: p1830

p1832[0...n] Valve offset / Valve offset

HLA

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** 4966
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-10.0000 [V]	10.0000 [V]	0.0000 [V]

Description: Sets the offset for the analog valve setpoint.

p1832 Dead time compensation current level / t_dead_comp I_lev

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [Arms]	10000.0 [Arms]	0.0 [Arms]

Description: Sets the current level for the dead time compensation.

Above the current level, the dead time - resulting from the converter switching delays - is compensated by a previously calculated constant value. If the relevant phase current setpoint falls below the absolute value defined by p1832, the corrective value for this phase is continuously reduced.

Dependency: The factory setting of p1832 is automatically set to 0.02 * rated drive converter current (r0207).

p1833[0...n] Transition point compensation Q1 positive zero range / Trans pt Q1 pos

HLA	**Can be changed:** C2(3), U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4966, 4975
	P-Group: Motor	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.01 [%]	95.00 [%]	0.01 [%]

Description: Sets the flow rate Q for point 1 positive (zero range) of the transition point compensation.

The characteristic for the transition point compensation comprises the following value pairs:

Flow rate (Q) / voltage (U)

Positive range:

- p1833 / p1834 --> Point 1 pos (zero range), rounding p1835
- p1839 / p1840 --> Point 2 pos, rounding p1841
- p1845 / p1846 --> Point 3 pos (saturation)

Negative range:

- p1836 / p1837 --> Point 1 neg (zero range), rounding p1838
- p1842 / p1843 --> Point 2 neg, rounding p1844
- p1847 / p1848 --> Point 3 neg (saturation)

Dependency: Refer to: p1834, p1835

r1833[0...2] Setpoints phase currents for HW current control / Setp_I

A_INF, S_INF, R_INF	**Can be changed:** -	**Calculated:** -	**Access level:** 4
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Modulation	**Unit group:** 6_5	**Unit selection:** p0505
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [A]	- [A]	- [A]

Description: Displays the phase setpoint currents for hardware current control.

Index:
[0] = Phase U
[1] = Phase V
[2] = Phase W

p1834[0...n] Transition point compensation U1 positive zero range / Trans pt U1 pos

HLA	**Can be changed:** C2(3), U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4966, 4975
	P-Group: Motor	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [%]	95.00 [%]	0.00 [%]

Description: Sets the voltage U for point 1 positive (zero range) of the transition point compensation.

The characteristic for the transition point compensation comprises the following value pairs:

Flow rate (Q) / voltage (U)

Positive range:

- p1833 / p1834 --> Point 1 pos (zero range), rounding p1835
- p1839 / p1840 --> Point 2 pos, rounding p1841
- p1845 / p1846 --> Point 3 pos (saturation)

Negative range:

- p1836 / p1837 --> Point 1 neg (zero range), rounding p1838
- p1842 / p1843 --> Point 2 neg, rounding p1844
- p1847 / p1848 --> Point 3 neg (saturation)

Dependency: Refer to: r1833, p1833, p1835

p1835[0...n] Transition point compensation rounding 1 positive zero range / Trans pt rnd 1 pos

HLA

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4966, 4975
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	30.00 [%]	0.00 [%]

Description: Sets the rounding for point 1 positive (zero range) of the transition point compensation.
The characteristic for the transition point compensation comprises the following value pairs:
Flow rate (Q) / voltage (U)
Positive range:
- p1833 / p1834 --> Point 1 pos (zero range), rounding p1835
- p1839 / p1840 --> Point 2 pos, rounding p1841
- p1845 / p1846 --> Point 3 pos (saturation)

Negative range:
- p1836 / p1837 --> Point 1 neg (zero range), rounding p1838
- p1842 / p1843 --> Point 2 neg, rounding p1844
- p1847 / p1848 --> Point 3 neg (saturation)

Dependency: Refer to: r1833, p1833, p1834

p1835[0...1] Pulse frequency reduction switchover frequency shift / f_puls_red f_sw

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Hz]	800.00 [Hz]	0.00 [Hz]

Description: Frequency to shift the switchover frequency r1836 for pulse frequency reduction.
The parameter value reduces the switchover frequency threshold with the same parameter index.

Index: [0] = Frequency limit 1
[1] = Frequency limit 2

Dependency: Refer to: r1836, p1836

p1836[0...n] Transition point compensation Q1 negative zero range / Trans pt Q1 neg

HLA

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4966, 4975
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.01 [%]	95.00 [%]	0.01 [%]

Description: Sets the flow rate Q for point 1 negative (zero range) of the transition point compensation.

Dependency: Refer to: r1837, p1837, r1838, p1838

r1836[0...1] Pulse frequency reduction, switchover frequency / f_puls_red f_sw

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Hz]	- [Hz]	- [Hz]

Description: Displays the frequency limits, under which the pulse frequency is automatically reduced.

Starting from the parameterized pulse frequency p1800, the pulse frequency is reduced to the next possible one, if the frequency limits and an additional hysteresis are fallen below.

Index: [0] = Frequency limit 1
[1] = Frequency limit 2

Dependency: Refer to: p1810, p1835

Note: The pulse frequency reduction is not active for U/f control.

A minimum clearance of 10 Hz is kept between the frequency thresholds, which cannot be fallen below when changing p1835.

For index [0]:

Frequency limit for the first pulse frequence reduction (active for p1810.8 = 1).

For index [1]:

Frequency limit for the second pulse frequence reduction (active for p1810.9 = 1).

p1837[0...n] Transition point compensation U1 negative zero range / Trans pt U1 neg

HLA

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4966, 4975
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	95.00 [%]	0.00 [%]

Description: Sets the voltage U for point 1 negative (zero range) of the transition point compensation.

Dependency: Refer to: r1836, p1836, r1838, p1838

r1837 Gating unit configuration / Gating unit config

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display for the configuration of the gating unit driver.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Modulation depth for a flying restart	Limited	Not limited	-
01	Modulation depth for Vdc closed-loop control	Limited	Not limited	-
02	Vdc_min controller	Active	Not active	-
03	Motor data identification routine	Active	Not active	-
04	Current offset calculation	Active	Not active	-
05	Simulation mode	Active	Not active	-
06	Reverse the output phase sequence	Active	Not active	-
07	Counter-clockwise direction of rotation	Active	Not active	-
08	Synchronization (bypass)	Active	Not active	-
09	F07801 monitor by application	Active	Not active	-
10	Chassis Drive active	Yes	No	-
11	Short-circuit test active	No	Yes	-
12	FL modulation prohibited	Yes	No	-
13	F3E present	Yes	No	-

14	Angle prerotation (advance) active in SW	Yes	No	-
15	Power unit with PS interface	Yes	No	-
16	Current measurement oversampling active	Yes	No	-
17	Actual value averaging temporarily suppressed	Yes	No	-
18	Modulation depth limiting	Yes	No	-
19	Reduced DC link capacitance (without F3E)	Yes	No	-
20	The setpoint is not reset	Yes	No	-
21	Voltage calibration active	Yes	No	-
22	Vdc correction deactivated in the gating unit	Yes	No	-

p1838[0...n] Transition point compensation rounding 1 negative zero range / Trans pt rnd 1 neg

HLA

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4966, 4975
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	30.00 [%]	0.00 [%]

Description: Sets the rounding for point 1 negative (zero range) of the transition point compensation.

Dependency: Refer to: r1836, p1836, r1837, p1837

r1838.0...15 CO/BO: Gating unit status word 1 / Gating unit ZSW1

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for status word 1 of the power unit.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Fault time-critical	ON	OFF	-
01	Gating unit mode bit 0	ON	OFF	-
02	Pulse enable	ON	OFF	-
03	Upper switch-off signal path	Inactive	Active	-
04	Lower switch-off signal path	Inactive	Active	-
05	Gating unit mode bit 1	ON	OFF	-
06	Gating unit mode bit 2	ON	OFF	-
07	Brake state	ON	OFF	-
08	Brake diagnostics	ON	OFF	-
09	Armature short-circuit braking	Active	Not active	-
10	Gating unit state bit 0	ON	OFF	-
11	Gating unit state bit 1	ON	OFF	-
12	Gating unit state bit 2	ON	OFF	-
13	Alarm status bit 0	ON	OFF	-
14	Alarm status bit 1	ON	OFF	-
15	Diagnostics 24 V	ON	OFF	-

Note: If the Control Unit is operated with a PM240-2 with hardware STO (HW-STO), then the following assignments are obtained for the two HW-STO input terminals:

Input terminal STO_A -> r1838.4 switch-off signal path lower

Input terminal STO_B -> r1838.3 switch-off signal path upper

The bits that are not written to are used for internal diagnostics.

r1838.0...15 CO/BO: Gating unit status word 1 / Gating unit ZSW1

A_INF, S_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for status word 1 of the power unit.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Fault time-critical	ON	OFF	-
01	Gating unit mode bit 0	ON	OFF	-
02	Pulse enable	ON	OFF	-
03	Upper switch-off signal path	ON	OFF	-
04	Lower switch-off signal path	ON	OFF	-
05	Gating unit mode bit 1	ON	OFF	-
06	Gating unit mode bit 2	ON	OFF	-
07	Current lim	ON	OFF	-
08	Current limiting 2	ON	OFF	-
09	Overcurrent	ON	OFF	-
10	Gating unit state bit 0	ON	OFF	-
11	Gating unit state bit 1	ON	OFF	-
12	Gating unit state bit 2	ON	OFF	-
13	Alarm status bit 0	ON	OFF	-
14	Alarm status bit 1	ON	OFF	-
15	Diagnostics 24 V	ON	OFF	-

p1839[0...n] Transition point compensation Q2 positive / Trans pt Q2 pos

HLA

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4966, 4975
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.20 [%]	95.00 [%]	10.00 [%]

Description: Sets the flow rate Q for point 2 positive of the transition point compensation.

Dependency: Refer to: p1840, r1841, p1841

p1840[0...n] Transition point compensation U2 positive / Trans pt U2 pos

HLA

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4966, 4975
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	95.00 [%]	10.00 [%]

Description: Sets the voltage U for point 2 positive of the transition point compensation.

Dependency: Refer to: p1839, r1841, p1841

p1840[0...n] Actual value correction configuration / ActVal_corr conf

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Sets the configuration of the actual value correction.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Actual value correction deactivated	Yes	No	-
01	Compares the integrals from modulator and setpoint	Yes	No	-

Dependency: Refer to: p1802

Note: During operation (pulses enabled) the configuration cannot be changed by changing over drive data sets.

p1841[0...n] Transition point compensation rounding 2 positive / Trans pt rnd 2 pos

HLA

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4966, 4975
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	30.00 [%]	2.50 [%]

Description: Sets the rounding for point 2 positive of the transition point compensation.

Dependency: Refer to: p1839, p1840

r1841 Actual value correction status word / ActVal_corr status

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status of actual value correction.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Hardware for the actual value correction detected	Yes	No	-
01	Automatic shutdown (too many switching instants)	Yes	No	-
02	Integral scaled to half the gating unit clock cycle freq.	Yes	No	-
03	Actual value correction temporarily suppressed	Yes	No	-
14	Reserved	Yes	No	-
15	Actual value correction active	Yes	No	-

p1842[0...n] Transition point compensation Q2 negative / Trans pt Q2 neg

HLA

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4966, 4975
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	95.00 [%]	10.00 [%]

Description: Sets the flow rate Q for point 2 negative of the transition point compensation.

Dependency: Refer to: p1843, p1844

p1843[0...n] Transition point compensation U2 negative / Trans pt U2 neg

HLA

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4966, 4975
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	95.00 [%]	10.00 [%]

Description: Sets the voltage U for point 2 negative of the transition point compensation.

Dependency: Refer to: p1842, p1844

Note: During operation (pulses enabled) the configuration cannot be changed by changing over drive data sets.

p1844[0...n] Transition point compensation rounding 2 negative / Trans pt rnd 2 neg

HLA

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4966, 4975
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	30.00 [%]	2.50 [%]

Description: Sets the rounding for point 2 negative of the transition point compensation.

Dependency: Refer to: p1842, p1843

p1845[0...n] Transition point compensation Q3 positive saturation / TransPt Q3 pos sat

HLA

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4975
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.20 [%]	100.00 [%]	100.00 [%]

Description: Sets the flow rate Q for point 3 positive (saturation) of the transition point compensation.

Dependency: Refer to: p1846

p1845[0...n] Actual value correction evaluation factor Lsig / ActVal_cor ev Lsig

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00	10.00	1.00

Description: Sets the weighting factor for the leakage inductance of the L-R element of the actual value correction.

Dependency: Refer to: p0391, p0392, p0393

Note: The load-dependent adaptation of the leakage inductance of the current actual value correction is defined using p0391 ... p0393.

p1846[0...n] Transition point compensation U3 positive saturation / TransPt U3 pos sat

HLA

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4975
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.20 [%]	100.00 [%]	100.00 [%]

Description: Sets the voltage U for point 3 positive (saturation) of the transition point compensation.

Dependency: Refer to: p1845

p1846[0...n] Actual value correction damping factor / ActV_corr D_factor

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00	10.00	1.00

Description: Sets the damping factor for the actual value correction.
The factor multiplies the T0/Tsig ratio in the feedback branch of the LR element.

p1847[0...n] Transition point compensation Q3 negative saturation / TransPt Q3 neg sat

HLA

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4975
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.20 [%]	100.00 [%]	100.00 [%]

Description: Sets the flow rate Q for point 3 negative (saturation) of the transition point compensation.

Dependency: Refer to: r1848, p1848

p1848[0...n] Transition point compensation U3 negative saturation / TransPt U3 neg sat

HLA

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4975
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.20 [%]	100.00 [%]	100.00 [%]

Description: Sets the voltage U for point 3 negative (saturation) of the transition point compensation.

Dependency: Refer to: p1847

r1848[0...5] Actual value correction phase currents / ActVal_corr I_ph

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays phase correction currents as well as the drive converter phase currents

Index:
[0] = Harmonics phase U
[1] = Harmonics phase V
[2] = Harmonics phase W
[3] = Measured value phase U
[4] = Measured value phase V
[5] = Measured value phase W

r1849[0...5] Actual value correction phase voltages / ActVal_corr U_ph

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the phase correction voltages and and the drive converter phase voltages

Index:
[0] = Harmonics phase U
[1] = Harmonics phase V
[2] = Harmonics phase W
[3] = Measured value phase U
[4] = Measured value phase V
[5] = Measured value phase W

p1850[0...n] Control voltage limiting positive / U_ctrl lim pos

HLA

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4966
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [V]	10.0 [V]	10.0 [V]

Description: Sets the limit for the positive control voltage.

Dependency: Refer to: p1851

p1851[0...n] Control voltage limiting negative / U_ctrl limit neg

HLA

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4966
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-10.0 [V]	0.0 [V]	-10.0 [V]

Description: Sets the limit for the negative control voltage.

Dependency: Refer to: p1850

p1882 SW_sts filter time constant angle offset flattop modulation / T_filt flattop

A_INF (SW_gating unit), R_INF (SW_gating unit)

Can be changed: U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [ms]	10000.0 [ms]	80.0 [ms]

Description: Sets the filter time constant for loss-optimized flattop modulation.

p1900 Motor data identification and rotating measurement / MotID and rot meas

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(1), T	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	2	2

Description: Sets the motor data identification and speed controller optimization.

p1900 = 0:

Function inhibited.

p1900 = 2:

Induction motors --> set p1910 = 1 and p1960 = 0

Permanent-magnet or separately excited synchronous motors --> set p1910 = 1, p1990 = 1 and p1960 = 0

When the drive enable signals are present, a motor data identification routine is carried out at standstill with the next switch-on command. Current flows through the motor which means that it can align itself by up to a quarter of a revolution.

For permanent-magnet or separately excited synchronous motors, the encoder is adjusted with the next switch-on command. The motor must be free to rotate and rotates through 1.5 revolutions of the motor encoder.

Value:
0: Inhibited
2: Identify motor data (stationary)

Dependency: In the simulation mode, the parameter cannot be written into.

When selecting the motor data identification routine, the drive data set changeover is suppressed.

Refer to: p1272, p1300, p1910

Refer to: F07990, A07991

Notice: If there is a motor holding brake, it must be open (p1215 = 2).

To permanently accept the determined settings they must be saved in a non-volatile fashion (p0971, p0977).

It is not permissible to activate write protection during the motor identification (p7761).

During the rotating measurement it is not possible to save the parameters (p0971, p0977).

Note: The motor and control parameters of the vector control are only optimally set when both measurements are carried out (initially at standstill, and then with the motor rotating). The measurement with rotating motor is not performed for p1300 < 20 (U/f controls).

An appropriate alarm is output when the parameter is set.

The switch-on command must remain set during a measurement and after the measurement has been completed, the drive automatically resets it.

The duration of the measurements can lie between 0.3 s and several minutes. This time is, for example, influenced by the motor size and the mechanical conditions.

p1900 is automatically set to 0 after the motor data identification routine has been completed.

For a reluctance motor, a pole position identification is carried out during the stationary measurement. As a consequence, faults that occur can also be assigned to the pole position identification.

For U/f control (p1300), identification with speed controller optimization does not make sense (e.g. p1900 = 1).

p1900	Motor data identification and rotating measurement / MotID and rot meas		
VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)	**Can be changed:** C2(1), T	**Calculated:** -	**Access level:** 1
	Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	3	2

Description: Sets the motor data identification and speed controller optimization.

The motor identification should first be performed with the motor stationary (p1900 = 1, 2; also refer to p1910). Based on this, additional motor and control parameters can be determined using the motor data identification with the motor rotating (p1900 = 1, 3; also refer to p1960); not for p1300 < 20.

p1900 = 0:

Function inhibited.

p1900 = 1:

Induction motors --> set p1910 = 1 and p1960 = 0, 1, 2 depending on p1300

Permanent-magnet or separately excited synchronous motors --> set p1910 = 1, p1990 = 1 and p1960 = 0, 1, 2 depending on p1300

When the drive enable signals are present, a motor data identification routine is carried out at standstill with the next switch-on command. Current flows through the motor which means that it can align itself by up to a quarter of a revolution.

For permanent-magnet or separately excited synchronous motors, the encoder is adjusted with the next switch-on command. The motor must be free to rotate and rotates through 1.5 revolutions of the motor encoder.

With the following switch-on command, a rotating motor data identification routine is carried out - and in addition, a speed controller optimization by making measurements at different motor speeds.

p1900 = 2:

Induction motors --> set p1910 = 1 and p1960 = 0

Permanent-magnet or separately excited synchronous motors --> set p1910 = 1, p1990 = 1 and p1960 = 0

When the drive enable signals are present, a motor data identification routine is carried out at standstill with the next switch-on command. Current flows through the motor which means that it can align itself by up to a quarter of a revolution.

For permanent-magnet or separately excited synchronous motors, the encoder is adjusted with the next switch-on command. The motor must be free to rotate and rotates through 1.5 revolutions of the motor encoder.

p1900 = 3:

Sets p1960 = 0, 1, 2 depending on p1300

This setting should only be selected if the motor data identification was already carried out at standstill.

When the drive enable signals are present, with the next switch-on command, a rotating motor data identification routine is carried out - and in addition, speed controller optimization by taking measurements at different motor speeds.

Value:
0: Inhibited
1: Motor data ident. (stationary) and sp. contr. opt.
2: Identify motor data (stationary)
3: Optimize speed controller (rotating)

Dependency: In the simulation mode, the parameter cannot be written into.

When selecting the motor data identification routine, the drive data set changeover is suppressed.

Refer to: p1272, p1300, p1910, p1960, p1990

Refer to: A07980, A07981, F07982, F07983, F07984, F07985, F07986, A07987, F07988, F07990, A07991

Notice: If there is a motor holding brake, it must be open (p1215 = 2).

To permanently accept the determined settings they must be saved in a non-volatile fashion (p0971, p0977).

It is not permissible to activate write protection during the motor identification (p7761).

During the rotating measurement it is not possible to save the parameters (p0971, p0977).

p1900 = 3:

This setting should only be selected if the motor data identification was already carried out at standstill.

Note: The motor and control parameters of the vector control are only optimally set when both measurements are carried out (initially at standstill, and then with the motor rotating). The measurement with rotating motor is not performed for p1300 < 20 (U/f controls).

An appropriate alarm is output when the parameter is set.

The switch-on command must remain set during a measurement and after the measurement has been completed, the drive automatically resets it.

The duration of the measurements can lie between 0.3 s and several minutes. This time is, for example, influenced by the motor size and the mechanical conditions.

p1900 is automatically set to 0 after the motor data identification routine has been completed.

For a reluctance motor, a pole position identification is carried out during the stationary measurement. As a consequence, faults that occur can also be assigned to the pole position identification.

For U/f control (p1300), identification with speed controller optimization does not make sense (e.g. p1900 = 1).

p1901 Test pulse evaluation configuration / Test puls config

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** CALC_MOD_ALL	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Sets the configuration for the test pulse evaluation.

Bit 00: Check for conductor-to-conductor short circuit once/always when the pulses are enabled.

Bit 01: Check for ground fault once/always when the pulses are enabled.

Bit 02: Activation of the tests selected using bit 00 and/or bit 01 each time the pulses are enabled

Recommendation: If the ground fault test is incorrectly initiated because the motor is not at a complete standstill, then the pulse cancellation delay time (p1228) should be increased.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Phase short-circuit test pulse active	Yes	No	-
01	Ground fault detection test pulse active	Yes	No	-
02	Test pulse at each pulse enable	Yes	No	-

Dependency: The ground fault test is only possible when the motor is stationary, and is therefore only realized when flying restart is deactivated (p1200 = 0).

When a sine-wave filter is connected, the short-circuit and the ground fault test are deactivated, as the filter could be excited by the test pulse.

Refer to: p0287

Note: If a conductor-to-conductor short-circuit is detected during the test, this is displayed in r1902.1.

If a ground fault is detected during the test, this is displayed in r1902.2.

For bit 02 = 0:

If the test was successful once after POWER ON (see r1902.0), it is not repeated.

For bit 02 = 1:

The test is not only performed after POWER ON, but also each time the pulses are enabled.

r1902 Test pulse evaluation status / Test puls ev stat

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status of the test pulse evaluation.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Short-circuit test successfully performed	Yes	No	-
01	Phase short-circuit detected	Yes	No	-
02	Ground fault test successfully performed	Yes	No	-
03	Ground fault detected	Yes	No	-
04	Identification pulse width greater than the minimum pulse width	Yes	No	-

Note: If the ground fault test was selected, but not successfully performed, then sufficient current was not be able to be established during the test pulses.

For bit 04:

A test pulse longer than one sampling time has occurred

p1903 BI: Data identification control / Data ident ctrl

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source to control data identification (moving measurement).

For p1903 = 1 signal, the following applies:

- data identification is started using p1960 = -1 or 1.

For p1903 = 0 signal, the following applies:

- data identification is selected using p1960 = -1 or 1; however, is only actually executed with p1903 = 0/1 signal.

The following generally applies:

- when data identification is running, the function can be canceled with binector input p1903 = 0 signal.

p1905 Parameter tuning selection / Par tuning select

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: C2(1), T	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	90	0

Description: The fine encoder calibration should be started during the first commissioning or after the encoder is replaced.

The fine calibration starts when the pulses are enabled and performs a rotating measurement (approximately 1 minute). In this case, a setpoint speed of at least 40 % of the motor rated speed must be entered, and the torque must be less than half of the motor rated torque.

The phases of the fine calibration of displayed using alarm A07976.

The fine calibration ends with the calculation of p0431 for the following pulse inhibit.

p1905 is automatically set to 0 at the end of the fine calibration.

Value:
0: Inactive
90: Fine encoder calibration

Dependency: If the motor encoder adjustment has not been performed (p3925.4 = 0) or the encoder calibration is activated (p1990 != 0), then encoder fine calibration is prevented.

Refer to: p1272, p1910, p1960, p1990

Refer to: A07976

Notice: During encoder fine calibration, the motor must be operated without a load - and if a motor holding brake is being used, this must be opened.

Note: For p1905 = 90 and with the pulses not enabled, the function is only executed the next time that the pulses are enabled.

When selecting the encoder fine calibration, the changeover of the motor data sets is suppressed.

p1909 Data identification without enabling activation / Data ID w/o enab

HLA

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Activates the stationary data identification without enable.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Pressure sensors execute offset calibration	Yes	No	-
01	Execute piston calibration	Yes	No	-

Dependency: Refer to: p1910

Note: The offset calibration is immediately started when writing to p1909. The associated bit is automatically reset if the function was executed.

For bit 00:

The precondition for the offset calibration is that the pressure at all of the pressure sensors is zero. The offset is entered in p0241, p0243 and p0245.

For bit 01:

The precondition is that the cylinder must have been completely retracted (piston at the A side). The position offset is entered in p0476.

p1909[0...n] Motor data identification control word / MotID STW

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0010 0111 0000 0000 bin

Description: Sets the configuration for the motor data identification.

Recommendation: For the stationary motor data identification, if a motor holding brake is being used it should be opened and the motor finely synchronized before the measurement. This should only be done if it can be safely carried out and no external forces can act on the motor. This determines the angular commutation offset (p1909.13, p0431).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
08	Measure D inductance	Yes	No	-
09	Measure Q inductance	Yes	No	-
10	Magnetizing field inductance and measure rotor resistance	Yes	No	-
13	Measure commutation angle and direction of rotation	Yes	No	-
14	Determining the voltage emulation error	Yes	No	-

Dependency: Refer to: p1910, r1912, r1913, r1915, r1925, r1927, r1932, r1933, r1934, r1935, r1936, r1950, r1951, p1952, p1953

Note: For an induction motor (ASM) the following bits: 8, 9, 10, 13 are effective

For a synchronous motor (SRM) the following bits: 8, 9, 13, 14 are effective

For bit 14:

- the display of the phase voltage actual values (r0089), the actual active power value (r0082) and the torque actual value (r0080) is significantly more accurate after successfully determining the voltage emulation error.
- the voltage emulation errors should be identified with the Motor Module in the warm state.
- the motor temperature (r0035) should not change significantly (i.e. it should not be identified immediately after a load duty cycle).

p1909[0...n] Motor data identification control word / MotID STW

SERVO (Ext M_ctrl, Lin), SERVO_AC (Ext M_ctrl, Lin), SERVO_I_AC (Ext M_ctrl, Lin)

Can be changed: T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0110 0111 0000 0000 bin

Description: Sets the configuration for the motor data identification.

Recommendation: For the stationary motor data identification, if a motor holding brake is being used it should be opened and the motor finely synchronized before the measurement. This should only be done if it can be safely carried out and no external forces can act on the motor. This determines the angular commutation offset (p1909.13, p0431).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
08	Measure D inductance	Yes	No	-
09	Measure Q inductance	Yes	No	-
10	Magnetizing field inductance and measure rotor resistance	Yes	No	-
13	Measure commutation angle and direction of rotation	Yes	No	-
14	Determining the voltage emulation error	Yes	No	-

Dependency: Refer to: p1910, r1912, r1913, r1915, r1925, r1927, r1932, r1933, r1934, r1935, r1936, r1950, r1951, p1952, p1953

Note: For an induction motor (ASM) the following bits: 8, 9, 10, 13 are effective

For a synchronous motor (SRM) the following bits: 8, 9, 13, 14 are effective

For bit 14:

- the display of the phase voltage actual values (r0089), the actual active power value (r0082) and the force actual value (r0080) is significantly more accurate after successfully determining the voltage emulation error.
- the voltage emulation errors should be identified with the Motor Module in the warm state.
- the motor temperature (r0035) should not change significantly (i.e. it should not be identified immediately after a load duty cycle).

p1909[0...n] Motor data identification control word / MotID STW

SERVO (Ext M_ctrl), SERVO_AC (Ext M_ctrl), SERVO_I_AC (Ext M_ctrl)

Can be changed: T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0110 0111 0000 0000 bin

Description: Sets the configuration for the motor data identification.

Recommendation: For the stationary motor data identification, if a motor holding brake is being used it should be opened and the motor finely synchronized before the measurement. This should only be done if it can be safely carried out and no external forces can act on the motor. This determines the angular commutation offset (p1909.13, p0431).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
08	Measure D inductance	Yes	No	-
09	Measure Q inductance	Yes	No	-
10	Magnetizing field inductance and measure rotor resistance	Yes	No	-
13	Measure commutation angle and direction of rotation	Yes	No	-
14	Determining the voltage emulation error	Yes	No	-

Dependency: Refer to: p1910, r1912, r1913, r1915, r1925, r1927, r1932, r1933, r1934, r1935, r1936, r1950, r1951, p1952, p1953

Note: For an induction motor (ASM) the following bits: 8, 9, 10, 13 are effective

For a synchronous motor (SRM) the following bits: 8, 9, 13, 14 are effective

For bit 14:

- the display of the phase voltage actual values (r0089), the actual active power value (r0082) and the torque actual value (r0080) is significantly more accurate after successfully determining the voltage emulation error.
- the voltage emulation errors should be identified with the Motor Module in the warm state.
- the motor temperature (r0035) should not change significantly (i.e. it should not be identified immediately after a load duty cycle).

p1909[0...n] Motor data identification control word / MotID STW

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0010 0111 0000 0000 bin

Description: Sets the configuration for the motor data identification.

Recommendation: For the stationary motor data identification, if a motor holding brake is being used it should be opened and the motor finely synchronized before the measurement. This should only be done if it can be safely carried out and no external forces can act on the motor. This determines the angular commutation offset (p1909.13, p0431).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
08	Measure D inductance	Yes	No	-
09	Measure Q inductance	Yes	No	-
10	Magnetizing field inductance and measure rotor resistance	Yes	No	-
13	Measure commutation angle and direction of rotation	Yes	No	-
14	Determining the voltage emulation error	Yes	No	-

Dependency: Refer to: p1910, r1912, r1913, r1915, r1925, r1927, r1932, r1933, r1934, r1935, r1936, r1950, r1951, p1952, p1953

Note: For an induction motor (ASM) the following bits: 8, 9, 10, 13 are effective

For a synchronous motor (SRM) the following bits: 8, 9, 13, 14 are effective

For bit 14:

- the display of the phase voltage actual values (r0089), the actual active power value (r0082) and the force actual value (r0080) is significantly more accurate after successfully determining the voltage emulation error.
- the voltage emulation errors should be identified with the Motor Module in the warm state.
- the motor temperature (r0035) should not change significantly (i.e. it should not be identified immediately after a load duty cycle).

p1909[0...n] Motor data identification control word / MotID STW

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 0000 0000 0000 0000 bin

Description: Sets the configuration for the motor data identification.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Stator inductance estimate no measurement	Yes	No	-
01	Cl.-loop current control w/ dead-beat controller	Yes	No	-
02	Rotor time constant estimate no measurement	Yes	No	-
03	Leakage inductance estimate no measurement	Yes	No	-

04	Activates the identification dynamic leakage inductance	Yes	No	-
05	Determine Tr and Lsig evaluation in the time range	Yes	No	-
06	Activate vibration damping	Yes	No	-
07	Deactivate vibration detection	Yes	No	-
11	Deactivate pulse measurement Lq Ld	Yes	No	-
12	Deactivate rotor resistance Rr measurement	Yes	No	-
14	Deactivate valve interlocking time measurement	Yes	No	-
15	Determine only stator resistance, valve voltage fault, dead time	Yes	No	-
16	Short motor identification (lower quality)	Yes	No	-
17	Measurement without control parameter calculation	Yes	No	-
20	Estimate cable resistance	Yes	No	-
22	Only identify circle	Yes	No	-
23	Deactivate circle identification	Yes	No	-
24	Circle identification with 0 and 90 degrees	Yes	No	-
25	Deactivate gating unit switchover	Yes	No	-

Note: The following applies to permanent-magnet synchronous motors:

Without de-selection in bit 11, in the closed-loop control mode, the direct inductance LD and the quadrature inductance Lq are measured at a low current.

When de-selecting with bit 11 or in the U/f mode, the stator inductance is measured at half the rated motor current.

If the stator is inductance is not measured but is to be estimated, then bit 0 should be set and bit 11 should be de-selected.

p1910 Valve offset calibration standstill activation / Valv_off_calib act

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Setting to activate the standstill data valve offset calibration when enabled.

Value:
0: Inactive/cancel
1: Start calibration

Dependency: Precondition is position-controlled operation.

Refer to: p1909

Refer to: A07991

Note: The offset is entered in p1832.

The calibration is started when enabled, and after data identification has been completed, is automatically set back to a value of zero.

p1910 Motor data identification routine stationary (standstill) / MotID standstill

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-3	1	0

Description: Setting to control the motor data identification with the motor stationary.

Value:
-3: Accept identified parameters
-2: Acknowledge encoder inversion actual value (F07993)
-1: Start motor data identification without acceptance
0: Inactive/inhibit
1: Start motor data identification with acceptance

Recommendation: For motors with brakes, the brake should be opened before carrying out the stationary motor data identification routine (p1215 = 2) as long as this can be done without incurring any danger. The commutation angle and the direction of rotation are also determined.

Motor data identification is not required for catalog motors and DRIVE-CLiQ motors. It is recommended to increase the torque accuracy or for third-party motors.

Dependency: Refer to: p1909, r1912, r1913, r1915, r1925, r1927, r1932, r1933, r1934, r1935, r1936, r1950, r1951, p1952, p1953

Refer to: F07990, A07991, F07993

Caution: For motors without brake or with the brake open (p1215 = 2), for the stationary (zero speed) measurement, the motor may rotate slightly.

Note: If there is a motor holding brake, it must be open (p1215 = 2).

To permanently accept the determined settings they must be saved in a non-volatile fashion (p0971, p0977).

Motor data identification can only be selected when the pulses of all of the drive objects of the Control Unit have been suppressed. After selection, all of the other drive objects of the Control Unit are interlocked so that they cannot be switched on until the motor data identification has been completed or de-selected.

After a started motor identification is ended, the parameter is automatically reset to 0.

A motor data identification that is presently being carried out can be terminated with p1910 = 0.

p1910 Motor data identification selection / MotID selection

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	28	1

Description: Sets the motor data identification routine.

The motor data identification routine is carried out after the next switch-on command.

p1910 = 1:

All motor data and the drive converter characteristics are identified and then transferred to the following parameters:

p0350, p0354, p0356, p0357, p0358, p0360, p1825, p1828, p1829, p1830

After this, the control parameter p0340 = 3 is automatically calculated.

Value:
0: Inhibited
1: Complete identification (ID) and acceptance of motor data
2: Complete identification (ID) of motor data without acceptance
3: ID of the saturation characteristic and acceptance
4: ID of the saturation characteristic without acceptance
5: ID of dynamic leakage inductance Lsig (r1920) without acceptance
6: ID of lockout time (r1926) without acceptance
7: ID of stator resistance Rs (r1912) without acceptance
8: ID of stator inductance Ls (r1915) Rr (r1927) without acceptance
9: ID of rotor time constant Tr (r1913) without acceptance
10: ID of static leakage inductance Lsig (r1914) without acceptance
20: Voltage vector input
21: Voltage vector input without filter
22: Rectangular voltage vector input without filter
23: Triangular voltage vector input without filter
24: Rectangular voltage vector input with filter
25: Triangular voltage vector input with filter
26: Enter voltage vector with DTC correction
27: Enter voltage vector with AVC
28: Enter voltage vector with DTC + AVC correction

Dependency: "Quick commissioning" must be carried out (p0010 = 1) before executing the motor data identification routine!

In the simulation mode, the parameter cannot be written into. When selecting the motor data identification routine, the drive data set changeover is suppressed.

Refer to: p1272, p1900

Refer to: F07990, A07991

Notice: After the motor data identification (p1910 > 0) has been selected, alarm A07991 is output and a motor data identification routine is carried out as follows at the next switch-on command:

- current flows through the motor and a voltage is present at the drive converter output terminals.

- during the identification routine, the motor shaft can rotate through a maximum of half a revolution.

- however, no torque torque is generated.

Note: If there is a motor holding brake, it must be open (p1215 = 2).

To permanently accept the determined settings they must be saved in a non-volatile fashion (p0971, p0977).

When setting p1910, the following should be observed:

1. "With acceptance" means:

The parameters specified in the description are overwritten with the identified values and therefore have an influence on the controller setting.

2. "Without acceptance" means:

The identified parameters are only displayed in the range r1912 ... r1926. The controller settings remain unchanged.

3. p1910 = 3, 4, 5 can only be selected for induction motors.

4. For settings 27 and 28, the AVC configuration set using p1840 is active.

The switch-on command must remain set during a measurement and after the measurement has been completed, the drive automatically resets it. The duration of the measurements can lie between 0.3 s and several minutes. This time is mainly influenced by the motor size. At the end of the motor data identification, p1910 is automatically set to 0, if only the stationary measurement is selected, then p1900 is also reset to 0, otherwise, the rotating measurement is activated.

p1911 Phases to be identified number / Ph to ident qty

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 4
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	3	1

Description: Sets the number of phases to be identified.

Value:
1: 1 phase U
2: 2 phases U, V
3: 3 phases U, V, W

Note: When identifying with several phases, the accuracy increases and also the time it takes to make the measurement.

r1912 Stator resistance identified / R_stator ident

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [ohm]	- [ohm]	- [ohm]

Description: Displays the identified stator resistance.

Dependency: Refer to: p1909, p1910, r1913, r1915, r1925, r1927, r1932, r1933, r1934, r1935, r1936, r1950, r1951, p1952, p1953

r1912[0...2] Identified stator resistance / R_stator ident

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [ohm]	- [ohm]	- [ohm]

Description: Displays the identified stator resistance.

Index:
[0] = Phase U
[1] = Phase V
[2] = Phase W

r1913 Rotor time constant identified / T_rotor ident

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [ms]	- [ms]	- [ms]

Description: Displays the identified rotor time constant.

Dependency: Refer to: p1909, p1910, r1912, r1915, r1925, r1927, r1932, r1933, r1934, r1935, r1936, r1950, r1951, p1952, p1953

r1913[0...2] Identified rotor time constant / T_rotor ident

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [ms]	- [ms]	- [ms]

Description: Displays the identified rotor time constant.

Index:
[0] = Phase U
[1] = Phase V
[2] = Phase W

r1914[0...2] Identified total leakage inductance / L_total_leak ident

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [mH]	- [mH]	- [mH]

Description: Displays the identified total leakage inductance.

Index:
[0] = Phase U
[1] = Phase V
[2] = Phase W

r1915 Stator inductance identified / L_stator ident

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [mH]	- [mH]	- [mH]

Description: Displays the identified stator inductance.

Dependency: Refer to: p1909, p1910, r1912, r1913, r1925, r1927, r1932, r1933, r1934, r1935, r1936, r1950, r1951, p1952, p1953

r1915[0...2] Identified nominal stator inductance / L_stator ident

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [mH]	- [mH]	- [mH]

Description: Displays the nominal stator inductance identified.

Index:
[0] = Phase U
[1] = Phase V
[2] = Phase W

r1916[0...2] Identified stator inductance 1 / L_stator 1 ident

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [mH]	- [mH]	- [mH]

Description: Displays the stator inductance identified for the 1st point of the saturation characteristic.

Index:
[0] = Phase U
[1] = Phase V
[2] = Phase W

r1917[0...2] Identified stator inductance 2 / L_stator 2 ident

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [mH]	- [mH]	- [mH]

Description: Displays the stator inductance identified for the 2nd point of the saturation characteristic.

Index:
[0] = Phase U
[1] = Phase V
[2] = Phase W

r1918[0...2] Identified stator inductance 3 / L_stator 3 ident

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [mH]	- [mH]	- [mH]

Description: Displays the stator inductance identified for the 3rd point of the saturation characteristic.

Index:
[0] = Phase U
[1] = Phase V
[2] = Phase W

r1919[0...2] Identified stator inductance 4 / L_stator 4 ident

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [mH]	- [mH]	- [mH]

Description: Displays the stator inductance identified for the 4th point of the saturation characteristic.

Index:
[0] = Phase U
[1] = Phase V
[2] = Phase W

r1920[0...2] Identified dynamic leakage inductance / L_leak dyn ident

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [mH]	- [mH]	- [mH]

Description: Displays the identified dynamic total leakage inductance.

Index:
[0] = Phase U
[1] = Phase V
[2] = Phase W

r1921[0...2] Identified dynamic leakage inductance 1 / L_leak 1 dyn id

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [mH]	- [mH]	- [mH]

Description: Displays the identified dynamic leakage inductance 1.

Index:
[0] = Phase U
[1] = Phase V
[2] = Phase W

r1922[0...2] Identified dynamic leakage inductance 2 / L_leak 2 dyn id

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [mH]	- [mH]	- [mH]

Description: Displays the identified dynamic leakage inductance 2.

Index:
[0] = Phase U
[1] = Phase V
[2] = Phase W

r1923[0...2] Identified dynamic leakage inductance 3 / L_leak 3 dyn id

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [mH]	- [mH]	- [mH]

Description: Displays the identified dynamic leakage inductance 3.

Index:
[0] = Phase U
[1] = Phase V
[2] = Phase W

r1924[0...2] Identified dynamic leakage inductance 4 / L_leak 4 dyn id

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [mH]	- [mH]	- [mH]

Description: Displays the identified dynamic leakage inductance 4.

Index:
[0] = Phase U
[1] = Phase V
[2] = Phase W

r1925 Threshold voltage identified / U_threshold ident

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Displays the identified threshold voltage of the power unit.

Dependency: Refer to: p1909, p1910, r1912, r1913, r1915, r1927, r1932, r1933, r1934, r1935, r1936, r1950, r1951, p1952, p1953

r1925[0...2] Identified threshold voltage / U_threshold ident

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Displays the identified IGBT threshold voltage.

Index:
[0] = Phase U
[1] = Phase V
[2] = Phase W

r1926[0...2] Identified effective valve lockout time / t_lock_valve id

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [µs]	- [µs]	- [µs]

Description: Displays the identified effective valve lockout time.

Index:
[0] = Phase U
[1] = Phase V
[2] = Phase W

r1927 Rotor resistance identified / R_rotor ident

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [ohm]	- [ohm]	- [ohm]

Description: Displays the identified rotor resistance.

Dependency: Refer to: p1909, p1910, r1912, r1913, r1915, r1925, r1932, r1933, r1934, r1935, r1936, r1950, r1951, p1952, p1953

r1927[0...2] Identified rotor resistance / R_rotor ident

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [ohm]	- [ohm]	- [ohm]

Description: Displays the identified rotor resistance (for separately-excited synchronous motors: damping resistance).

Index:
[0] = Phase U
[1] = Phase V
[2] = Phase W

r1929[0...2] Identified cable resistance / R_cable ident

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [ohm]	- [ohm]	- [ohm]

Description: Displays the identified cable resistance.

Index:
[0] = Phase U
[1] = Phase V
[2] = Phase W

r1932[0...19] d inductance identified / Ld ident

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [mH]	- [mH]	- [mH]

Description: Displays the identified (differential) d-inductance.

Dependency: Refer to: p1909, p1910, r1912, r1913, r1915, r1925, r1927, r1933, r1934, r1935, r1936, r1950, r1951, p1952, p1953

Note: The Ld characteristic consists of the value pairs from p1932 and p1933 with the same index.

This value corresponds to the value of the total leakage inductance (r0377).

r1933[0...19] d inductance identification current / Ld I_ident

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the identification current of the d inductance.

Dependency: Refer to: p1909, p1910, r1912, r1913, r1915, r1925, r1927, r1932, r1934, r1935, r1936, r1950, r1951, p1952, p1953

Note: The Ld characteristic consists of the value pairs from p1932 and p1933 with the same index.

r1934[0...9] q inductance identified / Lq ident

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [mH]	- [mH]	- [mH]

Description: Displays the identified (differential) q-inductance.

Dependency: Refer to: p1909, p1910, r1932, r1933

Note: The Lq characteristic consists of the value pairs from p1934 and p1935 with the same index.

This value corresponds to the value of the total leakage inductance (r0377).

r1934[0...9] q inductance identified / Lq ident

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [mH]	- [mH]	- [mH]

Description: Displays the identified (differential) q-inductance.

Dependency: Refer to: r1935, p1959, p1960

Note: The Lq characteristic consists of the value pairs from p1934 and p1935 with the same index.

This value corresponds to the value of the total leakage inductance (r0377).

r1935[0...20] Identification current / I_ident

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the identification current for the identification of the q-inductance ([0...9]) as well as the torque constant ([10]) and the torque characteristic ([11...20]).

Index:
[0] = q inductance identification current measuring point 1
[1] = q inductance identification current measuring point 2
[2] = q inductance identification current measuring point 3
[3] = q inductance identification current measuring point 4
[4] = q inductance identification current measuring point 5
[5] = q inductance identification current measuring point 6
[6] = q inductance identification current measuring point 7
[7] = q inductance identification current measuring point 8
[8] = q inductance identification current measuring point 9
[9] = q inductance identification current measuring point 10
[10] = Torque constant identification current
[11] = Torque characteristic identification current measuring point 1
[12] = Torque characteristic identification current measuring point 2
[13] = Torque characteristic identification current measuring point 3
[14] = Torque characteristic identification current measuring point 4
[15] = Torque characteristic identification current measuring point 5
[16] = Torque characteristic identification current measuring point 6
[17] = Torque characteristic identification current measuring point 7
[18] = Torque characteristic identification current measuring point 8
[19] = Torque characteristic identification current measuring point 9
[20] = Torque characteristic identification current measuring point 10

Dependency: Refer to: p1909, p1910, r1934, p1959, p1960

Note:
- the Lq characteristic consists of the value pairs from r1934 and r1935 with the same index.
- the torque constant is identified with the current r1935[10] and displayed in r1937[0]. If the reluctance torque constant is identified (p1959.7 = 1), the torque constant is identified with 150% rated current (p0305), otherwise with 100% rated current.
- the torque characteristic (r1937[1...10]) is identified in the range between the rated current (p0305) and the maximum current (p0640) (r1935[11...20]).

r1935[0...20] Identification current / I_ident

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the identification current for the identification of the q-inductance ([0...9]) as well as the force constant ([10]) and the force characteristic ([11...20]).

Index:
[0] = q inductance identification current measuring point 1
[1] = q inductance identification current measuring point 2
[2] = q inductance identification current measuring point 3
[3] = q inductance identification current measuring point 4
[4] = q inductance identification current measuring point 5
[5] = q inductance identification current measuring point 6
[6] = q inductance identification current measuring point 7
[7] = q inductance identification current measuring point 8
[8] = q inductance identification current measuring point 9
[9] = q inductance identification current measuring point 10
[10] = Force constant identification current
[11] = Force characteristic identification current measuring point 1

[12] = Force characteristic identification current measuring point 2
[13] = Force characteristic identification current measuring point 3
[14] = Force characteristic identification current measuring point 4
[15] = Force characteristic identification current measuring point 5
[16] = Force characteristic identification current measuring point 6
[17] = Force characteristic identification current measuring point 7
[18] = Force characteristic identification current measuring point 8
[19] = Force characteristic identification current measuring point 9
[20] = Force characteristic identification current measuring point 10

Dependency: Refer to: p1909, p1910, r1934, p1959, p1960

Note: - the Lq characteristic consists of the value pairs from r1934 and r1935 with the same index.

- the force constant is identified with the current r1935[10] and displayed in r1937[0]. If the reluctance force constant is identified (p1959.7 = 1), the force constant is identified with 150% rated current (p0305), otherwise with 100% rated current.

- the force characteristic (r1937[1...10]) is identified in the range between the rated current (p0305) and the maximum current (p0640) (r1935[11...20]).

r1935[0...9] q inductance identification current / Lq I_ident

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the identification current to identify the q inductance ([0...9]).

Dependency: Refer to: r1934, p1959, p1960

Note: The Lq characteristic consists of the value pairs from r1934 and r1935 with the same index.

r1936 Magnetizing inductance identified / L_H ident

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [mH]	- [mH]	- [mH]

Description: Displays the identified magnetizing inductance(gamma equivalent circuit diagram).

Dependency: Refer to: p1909, p1910, r1913, r1915, r1927, p1959, p1960, r1962, r1963

Note: This value corresponds to the value of the transformed magnetizing inductance (r0382).

r1937[0...10] Torque constant identified / kT ident

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** 28_1	**Unit selection:** p0100
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Nm/A]	- [Nm/A]	- [Nm/A]

Description: Displays the identified torque constant/torque characteristic over the q current.

Index:
[0] = Torque constant identified
[1] = Torque characteristic identified measuring point 1
[2] = Torque characteristic identified measuring point 2
[3] = Torque characteristic identified measuring point 3
[4] = Torque characteristic identified measuring point 4
[5] = Torque characteristic identified measuring point 5
[6] = Torque characteristic identified measuring point 6
[7] = Torque characteristic identified measuring point 7

[8] = Torque characteristic identified measuring point 8
[9] = Torque characteristic identified measuring point 9
[10] = Torque characteristic identified measuring point 10

Dependency: Refer to: r1938, r1939, p1959, p1960, r1969

Note: - the value in r1937[0] corresponds to the torque constant (p0316) and was identified with the current in r1935[10]. If the reluctance torque is identified (p1959.7 = 1), the torque constant is identified with 150% rated current (p0305), otherwise with 100% rated current.

- if indices r1937[1...10] are not equal to zero, they show the values of the torque characteristic identified for the current in r1935[11...20]. The torque characteristic is identified in the range between rated current (p0305) and maximum current (p0640).

r1937[0...10] Force constant identified / kT ident

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** 29_1	**Unit selection:** p0100
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [N/Arms]	- [N/Arms]	- [N/Arms]

Description: Displays the identified force constant.

Index:
[0] = Force constant identified
[1] = Force characteristic identified measuring point 1
[2] = Force characteristic identified measuring point 2
[3] = Force characteristic identified measuring point 3
[4] = Force characteristic identified measuring point 4
[5] = Force characteristic identified measuring point 5
[6] = Force characteristic identified measuring point 6
[7] = Force characteristic identified measuring point 7
[8] = Force characteristic identified measuring point 8
[9] = Force characteristic identified measuring point 9
[10] = Force characteristic identified measuring point 10

Dependency: Refer to: r1938, r1939, p1959, p1960, r1969

Note: - the value in r1937[0] corresponds to the force constant (p0316) and was identified with the current in r1935[10]. If the reluctance force constant is identified (p1959.7 = 1), the force constant is identified with 150% rated current (p0305), otherwise with 100% rated current.

r1938 Voltage constant identified / kE ident

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Displays the identified voltage constant.

Dependency: Refer to: r1937, r1939, p1959, p1960, r1969

Note: This value corresponds to the voltage constant (p0317).

r1938 Voltage constant identified / kE ident

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Vrms s/m]	- [Vrms s/m]	- [Vrms s/m]

Description: Displays the identified voltage constant.

Dependency: Refer to: r1937, r1939, p1959, p1960, r1969

Note: This value corresponds to the voltage constant (p0317).

r1939 Reluctance torque constant identified / kT_reluct ident

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [mH]	- [mH]	- [mH]

Description: Displays the identified reluctance torque constant.
Dependency: Refer to: r1937, r1938, p1959, p1960, r1969
Note: This value corresponds to the reluctance torque constant (p0328).

r1939 Reluctance force constant identified / kT_reluct ident

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [mH]	- [mH]	- [mH]

Description: Displays the identified reluctance force constant.
Dependency: Refer to: r1937, r1938, p1959, p1960, r1969
Note: This value corresponds to the reluctance force constant (p0328).

r1947 Optimum load angle identified / phi_load ident

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°]	- [°]	- [°]

Description: Displays the identified, optimum load angle.
Note: This value corresponds to the optimum load angle (p0327).

r1948 Magnetizing current identified / I_mag ident

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the identified magnetizing current.
Dependency: Refer to: r1936, p1959, p1960
Note: This value corresponds to the magnetizing current (p0320 / r0331).

r1949.0...1 CO/BO: Status word data identification / ZSW data ident

HLA	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Display and BICO output for the status word data identification.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Data identification active	Yes	No	-
01	Traversing range identification completed	Yes	No	-

r1950[0...39] Voltage emulation error voltage values / U_error U_values

SERVO, SERVO_AC, SERVO_I_AC	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [V]	- [V]	- [V]

Description: The identified characteristic of the voltage emulation error is displayed r1950[0...19] and r1951[0...19].

Dependency: Refer to: r1951

r1951[0...19] Voltage emulation error current values / U_error I_error

SERVO, SERVO_AC, SERVO_I_AC	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [A]	- [A]	- [A]

Description: The identified characteristic of the voltage emulation error is displayed r1950[0...19] and r1951[0...19].

Dependency: Refer to: r1950

p1952[0...n] Voltage emulation error final value / U_error final val

SERVO (Ext M_ctrl), SERVO_AC (Ext M_ctrl), SERVO_I_AC (Ext M_ctrl)	**Can be changed:** T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
	P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.000 [V]	100.000 [V]	0.000 [V]

Description: Sets the final value to compensate the voltage emulation error.

Dependency: Refer to: p1953

Note: The voltage emulation error is calculated and compensated for every phase according to the following formula:

u_error = u0 * i / (abs(i) + i0)

u0: This is set in p1952.

i0: This is set in p1953.

i: Phase current to which the emulation error u_error belongs.

For p1954 not equal to zero, p1952 refers to a pulse frequency of 4 kHz and a DC link voltage of 600V. Changes to the DC link voltage and pulse frequency are then automatically adapted, and the formula is as follows:

u_error = p1954 + p1952 * i / (abs(i) + p1953 * 600 V/r0070) * r1801/4 kHz * r0070/600 V

p1953[0...n] Voltage emulation error current offset / U_error I_offset

SERVO (Ext M_ctrl), SERVO_AC (Ext M_ctrl), SERVO_I_AC (Ext M_ctrl)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [A]	100.000 [A]	0.000 [A]

Description: Sets the current offset to compensate the voltage emulation error.

Dependency: Refer to: p1952

Note: The voltage emulation error is calculated and compensated for every phase according to the following formula:

u_error = u0 * i / (abs(i) + i0)

u0: This is set in p1952.

i0: This is set in p1953.

i: Phase current to which the emulation error u_error belongs.

For p1954 not equal to zero, p1952 refers to a DC link voltage of 600V, and the formula is.

u_error = p1954 + p1952 * i / (abs(i) + p1953 * 600 V/r0070) * r1801/4 kHz * r0070/600 V

p1954[0...n] Voltage emulation error semiconductor voltage / U_error U_semi

SERVO (Ext M_ctrl), SERVO_AC (Ext M_ctrl), SERVO_I_AC (Ext M_ctrl)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-10.000 [V]	10.000 [V]	0.000 [V]

Description: Sets the semiconductor voltage drop to compensate the voltage emulation error.

The value is determined with the motor data identification routine (p1910).

Note: The voltage emulation error is calculated and compensated for every phase according to the following formula:

For p1954 = 0:

u_error = p1952 * i / (abs(i) + p1953)

For p1954 > 0:

u_error = p1954 + p1952 * i / (abs(i) + p1953 * 600 V/r0070) * r1801/4 kHz * r0070/600 V

i: Phase current to which the emulation error u_error belongs.

p1955[0...3] Valve identification voltage / Valve ident U

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [V]	10.00 [V]	[0] 0.00 [V] [1] 10.00 [V] [2] 2.00 [V] [3] 2.00 [V]

Description: Sets the voltage to identify the valve characteristic.

Index:
[0] = Measuring range start
[1] = Measuring range end
[2] = Travel positive
[3] = Travel negative

Dependency: Refer to: p1956, p1957, p1958, p1960, p1961, r1961, r1962

Note: The characteristic is measured with a positive and negative voltage in the range of p1955[0] to p1955[1].

To move to a suitable starting position, either p1955[2] or -p1955[3] is used.

p1956[0...1] Valve identification measuring distance / Valve ident dist

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	100.0 [%]	[0] 10.0 [%] [1] 90.0 [%]

Description: Sets the range for the maximum measuring distance for valve identification.

Index:
[0] = Minimum
[1] = Maximum

Dependency: Refer to: p1955, p1957, p1958, p1960, p1961, r1961, r1962

Note: The parameter is referred to the maximum valve stroke (p0313).

The values are only effective when the piston position is known (r1407.3 = 1).

p1957[0...1] Valve identification measured value / Valve ident val

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1000	[0] 100 [1] 4

Description: Sets the measured value for valve identification.

Index:
[0] = Number
[1] = Standstill identification encoder pulses

Dependency: Refer to: p1955, p1956, p1958, p1960, p1961, r1961, r1962

Note: For index [0]:

The entered value is used for the positive and negative ranges.

For index [1]:

Standstill is identified if these encoder pulses are not passed within the standstill monitoring time.

p1958[0...4] Valve identification time / Valve ident t

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [s]	100.00 [s]	[0] 0.10 [s] [1] 0.10 [s] [2] 0.10 [s] [3] 4.00 [s] [4] 4.00 [s]

Description: Sets the times for valve identification.

Index:
[0] = Ramp time
[1] = Settling time
[2] = Measuring time
[3] = Standstill time
[4] = Wait time

Dependency: Refer to: p1955, p1956, p1957, p1960, p1961, r1961, r1962

Note: For index [0]:
In this time, the voltage is changed from 0 ... 10 V. The ramp time is effective for all voltage changes.
For index [1]:
After the target voltage has been reached, the system waits this time before the measurement is started.
For index [2]:
The velocity is averaged within this time.
For index [3]:
If there is no motion, time before the next measurement is made.
For index [4]:
Time between 2 measurements in order to fill the pressure accumulator. The value applies for the maximum velocity, and is internally reduced depending on the velocity.

p1958[0...n] Rotating measurement ramp-up/ramp-down time / Rot meas t_r up/dn

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1.00 [s]	999999.00 [s]	-1.00 [s]

Description: Sets the ramp-up/ramp-down time for the rotating measurement.
The following applies for negative values:
When the function module "extended setpoint channel" is activated (r0108.8 = 1), the maximum of the ramp-up/ramp-down time of the setpoint channel becomes effective. When this function module is inactive, then no ramp-up/ramp-down time is effective.
The following applies for positive values:
The selected ramp-up/ramp-down time becomes effective.

Recommendation: A ramp-up/ramp-down time should not be activated for the motor data identification (p1958 = 0) as long as this can be safely done without incurring any danger. This means that the identification is complete and more accurate. When the ramp-up/ramp-down time is activated, the following steps of the rotating motor data identification are not executed:
- p1959.5 (identifying the q inductance)
- p1959.7 (identifying the reluctance torque constant)

Dependency: Refer to: p1959, p1960

p1958[0...n] Moving measurement ramp-up/ramp-down time / Mov meas t_r up/dn

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1.00 [s]	999999.00 [s]	-1.00 [s]

Description: Sets the ramp-up/ramp-down time for the moving measurement.
The following applies for negative values:
When the function module "extended setpoint channel" is activated (r0108.8 = 1), the maximum of the ramp-up/ramp-down time of the setpoint channel becomes effective. When this function module is inactive, then no ramp-up/ramp-down time is effective.
The following applies for positive values:
The selected ramp-up/ramp-down time becomes effective.

Recommendation: A ramp-up/ramp-down time should not be activated for the motor data identification (p1958 = 0) as long as this can be safely done without incurring any danger. This means that the identification is complete and more accurate. When the ramp-up/ramp-down time is activated, the following steps of the moving motor data identification are not executed:
- p1959.5 (identifying the q inductance)
- p1959.7 (identifying the reluctance force constant)

Dependency: Refer to: p1959, p1960

p1959[0...n] Data identification moving configuration / Dat_id mov config

HLA	**Can be changed:** U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 2
	Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** -
	P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
	Not for motor type: REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	0000 0001 0011 1111 bin

Description: Sets the configuration for data identification with movement.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Control sense correction	Yes	No	-
01	Valve offset correction	Yes	No	-
02	Automatic piston calibration	Yes	No	-
03	Automatic traversing range detection	Yes	No	-
04	Automatic characteristic identification	Yes	No	-
05	Stiction forces	Yes	No	-
08	System pressure correction for characteristic identification	Yes	No	-

Dependency: Refer to: F07988

Notice: To permanently accept the determined settings they must be saved in a non-volatile fashion (p0971, p0977).

Note: For bit 00:

In order to automatically correct the control sense for the velocity controller, the complete traversing distance must be free. When required, p1820 is automatically adapted.

For bit 01:

The drive moves to correct the valve offset. When required, p1832 is automatically adapted.

For bit 02:

Full automatic piston calibration, the drive must either be referenced, or must be equipped with an absolute encoder. Further, the complete traversing distance must be free.

For piston calibration, the drive is traversed to the end stop (completely inserted) with a negative search voltage (p1955[3]) and the associated absolute position entered in p0476.

For bit 03:

For automatic traversing range identification, the drive must either be referenced (homed), or must be equipped with an absolute encoder. Further, the piston must have been calibrated and the complete traversing distance must be free.

To prepare for the identification of the characteristic, the possible traversing range is determined. To do this, the drive is traversed to the right-hand and left-hand end stops with the search voltage (p1955[3...4]) and the position with distance reserve is entered into p1956.

If there are pressure sensors, then the correct interconnection for pressure measurements A and B is checked.

For bit 04:

For automatic characteristic identification, the drive must either be referenced (homed), or must be equipped with an absolute encoder. Further, the piston must have been calibrated and the free traversing range must have been entered in p1956.

The drive traverses with different valve voltages and takes into account p1958.

For bit 05:

The drive is moved with a positive and negative velocity, and the measured stiction forces are entered into p1555 and p1556.

For bit 06:

The drive is traversed to both end stops. In so doing, the dead volume and the loop gain of the force control loop is measured, and entered into p0314 and p0315.

For bit 08:

For the automatic characteristic identification (p1959.4), the measured velocity with the measured system pressure is converted to the average system pressure; this means that system pressure fluctuations hardly influence the measurement. The system pressure as well as pressures A and B must be measured. The conversion is not performed if the pressure measurements are not available. If the pressure measurements do not measure the specified pressures, then the conversion must be deactivated in order to avoid any errors.

p1959[0...n] Rotating measurement configuration / Rot meas config

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 1110 1110 0111 bin

Description: Sets the configuration of the rotating measurement.

Recommendation: A direction inhibit should not be activated for the rotating measurement (p1959.14 = 1 and p1959.15 = 1) as long as this can be done without incurring any danger. This means that the identification is complete and more accurate.

When the direction inhibit is activated, the reluctance torque constant (p1959.7) is not identified and the angular commutation offset (p1959.10, p0431) is inaccurately determined.

The reluctance torque constant (p1959.7) is also not identified in encoderless operation.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Identify periodic position error	Yes	No	-
01	Identify the saturation characteristic	Yes	No	-
02	Identify the moment of inertia	Yes	No	-
05	Identify the q inductance	Yes	No	-
06	Identify the torque constant	Yes	No	-
07	Identify the reluctance torque constant	Yes	No	-
08	Identify the q inductance at the test stand	Yes	No	-
09	Identify the magnetizing current / magnetizing inductance	Yes	No	-
10	Identify the commutation angle and direction of rotation	Yes	No	-
11	Identify rotor resistance	Yes	No	-
14	Positive direction permitted	Yes	No	-
15	Negative direction permitted	Yes	No	-

Dependency: Refer to: p1958, p1960

Notice: The step p1959.8 (identify q inductance on the test stand) may only be selected if the drive can be kept at zero speed or at a fixed speed either using a test stand or other mechanical measures.

During steps p1959.2 (identifying the moment of inertia) and p1959.6 (identifying the torque constant) the Vdc_min controller is disabled (p1240).

During step p1959.7 (identifying the reluctance torque constant) the Vdc_min controller and Vdc_max controller are disabled (p1240).

Note: For an induction motor (ASM), the following bits 1, 2, 5, 8, 9, 10, 14, 15 are effective

For a synchronous motor (SRM), the following bits 2, 5, 6, 7, 8, 10, 14, 15 are effective

For bit 00:

This function is only active when the "Cogging torque compensation" function module is activated (r0108.22 = 1). The motor should not be operated with any mounted load.

For bit 05:

For "motor holding brake the same as sequence control" (p1215 = 1 or 3), the Lq characteristic is only measured up to approximately the rated motor current (p0305) instead of up to the current limit (p0640). Before carrying out the rotation measurement for motors with brake, the brake should be opened (p1215 = 2) - as long as this can be done without incurring any danger.

For bit 10:

If the motor holding brake is set just the same as the sequence control (p1215 = 1 or 3), the commutation angle and the direction of rotation are not measured. Before carrying out the rotation measurement for motors with brake, the brake should be opened (p1215 = 2) - as long as this can be done without incurring any danger.

For bit 14, 15:

The following applies for bit 14 and 15 = 0:

When the function module "extended setpoint channel" is activated (r0108.8 = 1), the direction inhibit of the setpoint channel becomes effective. No direction of inhibit is effective if the function module is inactive.

The following applies for minimum bit 14 = 1 or bit 15 = 1:

The direction inhibit set in p1959 becomes effective.

p1959[0...n] Moving measurement configuration / Mov meas config

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 1110 1110 0111 bin

Description: Sets the configuration of the moving measurement.

Recommendation: A direction inhibit should not be activated for the moving measurement (p1959.14 = 1 and p1959.15 = 1) as long as this can be done without incurring any danger. This means that the identification is complete and more accurate.

When the direction inhibit is activated, the reluctance force constant (p1959.7) is not identified and the angular commutation offset (p1959.10, p0431) is inaccurately determined. The reluctance force constant (p1959.7) is also not identified in encoderless operation.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Identify periodic position error	Yes	No	-
01	Identify the saturation characteristic	Yes	No	-
02	Identify the moment of inertia	Yes	No	-
05	Identify the q inductance	Yes	No	-
06	Identify the force constant	Yes	No	-
07	Identify the reluctance force constant	Yes	No	-
08	Identify the q inductance at the test stand	Yes	No	-
09	Identify the magnetizing current / magnetizing inductance	Yes	No	-
10	Identify commutation angle and direction	Yes	No	-
11	Identify rotor resistance	Yes	No	-
14	Positive direction permitted	Yes	No	-
15	Negative direction permitted	Yes	No	-

Dependency: Refer to: p1958, p1960

Notice: The step p1959.8 (identify q inductance on the test stand) may only be selected if the drive can be kept at zero speed or at a fixed velocity either using a test stand or other mechanical measures.

During steps p1959.2 (identifying the moment of inertia) and p1959.6 (identifying the force constant) the Vdc_min controller is disabled (p1240).

During step p1959.7 (identifying the reluctance force constant) the Vdc_min controller and Vdc_max controller are disabled (p1240).

Note: For an induction motor (ASM), the following bits 1, 2, 5, 8, 9, 10, 14, 15 are effective

For a synchronous motor (SRM), the following bits 2, 5, 6, 7, 8, 10, 14, 15 are effective

For bit 00:

This function is only active when the "Cogging torque compensation" function module is activated (r0108.22 = 1). The motor should not be operated with any mounted load.

For bit 05:

For "motor holding brake the same as sequence control" (p1215 = 1 or 3), the Lq characteristic is only measured up to approximately the rated motor current (p0305) instead of up to the current limit (p0640). Before carrying out the rotation measurement for motors with brake, the brake should be opened (p1215 = 2) - as long as this can be done without incurring any danger.

For bit 10:

If the motor holding brake is set just the same as the sequence control (p1215 = 1 or 3), the commutation angle and the direction of rotation are not measured. Before carrying out the rotation measurement for motors with brake, the brake should be opened (p1215 = 2) - as long as this can be done without incurring any danger.

For bit 14, 15:

The following applies for bit 14 and 15 = 0:

When the function module "extended setpoint channel" is activated (r0108.8 = 1), the direction inhibit of the setpoint channel becomes effective. No direction of inhibit is effective if the function module is inactive.

The following applies for minimum bit 14 = 1 or bit 15 = 1:

The direction inhibit set in p1959 becomes effective.

p1959[0...n] Rotating measurement configuration / Rot meas config

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** CALC_MOD_ALL	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0001 1111 bin

Description: Sets the configuration of the rotating measurement.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Encoder test active	Yes	No	-
01	Saturation characteristic identification	Yes	No	-
02	Moment of inertia identification	Yes	No	-
03	Re-calculates the speed controller parameters	Yes	No	-
04	Speed controller optimization (vibration test)	Yes	No	-
05	q leakage inductance ident. (for current controller adaptation)	Yes	No	-
11	Do not change the controller parameters during the measurement	Yes	No	-
12	Measurement shortened	Yes	No	-
13	After measurement direct transition into operation	Yes	No	-
14	Calculate speed actual value smoothing time	Yes	No	-

Dependency: Refer to: F07988

Note: The encoder is only tested if the rotating measurement with encoder is selected (p1960 = 2).

The following parameters are influenced for the individual optimization steps:

Bit 00: None

Bit 01: p0320, p0360, p0362 ... p0369

Bit 02: p0341, p0342

Bit 03: p1400.0, p1458, p1459, p1460, p1462, p1463, p1470, p1472, p1496

Bit 04: Dependent on p1960

Bit 05: p0391, p0392, p0393, p1402.2 only for induction motors

p1960 = 1, 3: p1458, p1459, p1470, p1472, p1496, p1400.0

p1960 = 2, 4: p1458, p1459, p1460, p1462, p1496, p1461, p1463

The identification of the q leakage inductance can only be carried out for unloaded motors or motors with a low load (load approx. 30% below the rated motor torque). Only then is a current controller adaptation (p0391 ... p0393) parameterized if the q-leakage inductance under no-load conditions is at least 30 % higher than the total leakage inductance (p0356, p0358).

For bit 11 = 1:

Bits 02, 03, 04 no longer have any effect. It makes sense to set bit 11 if the speed controller and its adaptation were already set before the measurement.

For bit 12 = 1:

The selection only has an effect on the measurement p1960 = 1, 2. For the shortened measurement, the magnetizing current and moment of inertia are determined with a somewhat lower accuracy.

For bit 13 = 1:

After the measurement has been completed, the system immediately goes into closed-loop speed controlled operation.

p1960 Moving measurement selection / Mov meas sel

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-3	1	0

Description: Activates the moving measurement.

Value:
-3: Accept identified Ch parameters
-1: Start data identification without Ch transfer
0: Inactive/cancel
1: Start data identification with transfer

Dependency: Refer to: p1955, p1956, p1957, p1958, p1961, r1961, r1962

Refer to: F07990, A07991, F07993

Notice: The drive moves after data identification with movement has been activated and enabled. In this case the force limiting is not active.

If it is not permissible that the complete traversing range is traversed, then the following must be executed before the start:

- deselect automatic traversing range detection (p1959.3 = 0).
- deselect automatic piston calibration (p1959.2 = 0).
- calibrate the piston manually.
- manually enter the traversing range limits (p1956).

For the identification of the characteristic (p1959.4), the velocities are traversed up to the maximum velocity, depending on the setting in p1955[0...1].

p1960 Rotating measurement selection / Rot meas sel

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-3	1	0

Description: Activates the rotating measurement.

Value:
-3: Accept identified parameters
-2: Acknowledge encoder inversion actual value (F07993)
-1: Start motor data identification without acceptance
0: Inactive/inhibit
1: Start motor data identification with acceptance

Recommendation: Before carrying out the rotation measurement for motors with brake, the brake should be opened (p1215 = 2) - as long as this can be done without incurring any danger. The commutation angle and the direction are also determined.

Motor data identification is not required for catalog motors and DRIVE-CLiQ motors. It is recommended to increase the torque accuracy or for third-party motors.

Dependency: Refer to: r1934, r1935, r1936, r1937, r1938, r1939, r1947, r1948, p1958, p1959, r1962, r1963, r1969

Refer to: F07990, A07991, F07993

Danger: For the rotating measurement, the motor is accelerated up to the maximum speed. Only the parameterized current limit (p0640) and the maximum speed (p1082) are effective.

The behavior of the motor can be influenced using the direction inhibit (p1959.14, p1959.15) and the ramp-up/ramp-down time (p1958).

Notice: If there is a motor holding brake, it must be open (p1215 = 2).

To permanently accept the determined settings they must be saved in a non-volatile fashion (p0971, p0977).

Note: The rotating measurement can only be selected when the pulses of all of the drive objects of the Control Unit have been suppressed. After selection, all of the other drive objects of the Control Unit are interlocked so that they cannot be switched on until the rotating measurement has been completed or de-selected.

When the rotating measurement is activated (p1960 = 1), it is not possible to save the parameters (p0971, p0977).

p1960 Moving measurement selection / Mov meas sel

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-3	1	0

Description: Activates the moving measurement.

Value:
-3: Accept identified parameters
-2: Acknowledge encoder inversion actual value (F07993)
-1: Start motor data identification without acceptance
0: Inactive/inhibit
1: Start motor data identification with acceptance

Recommendation: Before carrying out the rotation measurement for motors with brake, the brake should be opened (p1215 = 2) - as long as this can be done without incurring any danger. The commutation angle and the direction are also determined.

Motor data identification is not required for catalog motors and DRIVE-CLiQ motors. It is recommended to increase the torque accuracy or for third-party motors.

Dependency: Refer to: r1934, r1935, r1936, r1937, r1938, r1939, r1947, r1948, p1958, p1959, r1962, r1963, r1969

Refer to: F07990, A07991, F07993

Danger: For the moving measurement, the motor is accelerated up to the maximum velocity. Only the parameterized current limit (p0640) and the maximum velocity (p1082) are effective.

The behavior of the motor can be influenced using the direction inhibit (p1959.14, p1959.15) and the ramp-up/ramp-down time (p1958).

Notice: If there is a motor holding brake, it must be open (p1215 = 2).

To permanently accept the determined settings they must be saved in a non-volatile fashion (p0971, p0977).

Note: The moving measurement can only be selected when the pulses of all of the drive objects of the Control Unit have been suppressed. After selection, all of the other drive objects of the Control Unit are interlocked so that they cannot be switched on until the moving measurement has been completed or de-selected.

When the moving measurement is activated (p1960 = 1), it is not possible to save the parameters (p0971, p0977).

p1960 Rotating measurement selection / Rot meas sel

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	4	0

Description: Sets the rotating measurement.

The rotating measurement is carried out after the next switch-on command.

The setting possibilities of the parameter depend on the open-loop/closed-loop control mode (p1300).

p1300 < 20 (U/f open-loop control):

It is not possible to select rotating measurement or speed controller optimization.

p1300 = 20, 22 (encoderless operation):

Only rotating measurement or speed controller optimization can be selected in the encoderless mode.

p1300 = 21, 23 (operation with encoder):

Both versions (encoderless and with encoder) of the rotating measurement and speed controller optimization can be selected.

Value:
0: Inhibited
1: Rotating measurement in encoderless operation
2: Rotating measurement with encoder
3: Speed controller optimization in encoderless operation
4: Speed controller optimization with encoder

Dependency: Before the rotating measurement is carried out, the motor data identification routine (p1900, p1910, r3925) should have already been done.

In the simulation mode, a value of 1 cannot be written into the parameter.

When selecting the rotating measurement, the drive data set changeover is suppressed.

When selecting rotating measurement (with the exception for p1959.13 = 1) the following BICO parameters are set to standard values, and after the measurement has been completed, are reset back to the original parameter assignments:

p1020 ... p1023, p1070, p1075, p1138, p1139, p1140 ... p1143, p1155, p1160, p1437, p1476, p1477

Refer to: p1272, p1300, p1900, p1959, p1967, r1968

Refer to: A07987

Danger: For drives with a mechanical system that limits the distance moved, it must be ensured that this is not reached during the rotating measurement. If this is not the case, then it is not permissible that the measurement is carried out.

Notice: If there is a motor holding brake, it must be open (p1215 = 2).

To permanently accept the determined settings they must be saved in a non-volatile fashion (p0971, p0977).

During the rotating measurement it is not possible to save the parameters (p0971, p0977).

Note: When the rotating measurement is activated, it is not possible to save the parameters (p0971, p0977).

Parameter changes are automatically made for the rotating measurement (e.g. p1120); this is the reason that up to the end of the measurement, and if no faults are present, no manual changes should be made.

The ramp-up and ramp-down times (p1120, p1121) are limited, for the rotating measurement, to 900 s.

For speed controller optimization with encoder (p1960 = 2, 4), the speed controller for encoderless operation is also pre-assigned (p1470, p1472).

Depending on whether the speed controller optimization is carried out with or without encoder, different Kp/Tn adaptations of the speed controller are set (p1464, p1465). If the drive should be controlled with as well as without speed encoder, then we recommend the use of two drive data sets (p0180). These can then be executed with different speed controller adaptations.

r1961[0...511] Valve identification voltage characteristic / Valve ID char U

HLA

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the voltage values for the valve characteristic.

Dependency: Refer to: p1955, p1956, p1957, p1958, p1960, r1962

Note: The valve characteristic consists of the value pairs from r1961 and r1962 with the same index.

p1961 Saturation characteristic speed to determine / Sat_char n determ

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
26 [%]	75 [%]	40 [%]

Description: Sets the speed to determine the saturation characteristic and the encoder test.

The percentage value is referred to p0310 (rated motor frequency).

Dependency: Refer to: p0310, p1959

Refer to: F07983

Note: The saturation characteristics should be determined at an operating point with the lowest possible load.

r1962[0...511] Valve identification characteristic velocity / Valve ID char v

HLA

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Displays the velocity values for the valve characteristic.

Dependency: Refer to: p1955, p1956, p1957, p1958, p1960, p1961, r1961

Note: The valve characteristic consists of the value pairs from r1961 and r1962 with the same index.

r1962[0...9] Saturation characteristic magnetizing current identified / Sat_char I_mag

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the magnetizing currents of the identified saturation characteristic.

The values are referred to r0331.

Dependency: Refer to: p1959, p1960, r1963

Note: The saturation characteristic consists of the value pairs from p1962 and p1963 with the same index.

r1962[0...4] Saturation characteristic magnetizing current / Sat_char I_mag

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the magnetizing currents of the identified saturation characteristic.

The values are referred to r0331.

After they have been determined, the values are transferred to p0366 ... p0369.

Index:
[0] = Value 1
[1] = Value 2
[2] = Value 3
[3] = Value 4
[4] = Value 5

Dependency: Refer to: r0331

r1963[0...511] Valve identification system pressure characteristic / Valve ID char pp

HLA

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [bar]	- [bar]	- [bar]

Description: Displays the system pressure actual values for the valve characteristic.

Note: The valve characteristic consists of the value pairs from r1961 and r1963 with the same index.

r1963[0...9] Saturation characteristic stator flux identified / Sat_char flux

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the stator flux of the identified saturation characteristic.

The values are referred to the stator flux at the magnetizing current (r0331).

Dependency: Refer to: p1959, p1960, r1962

Note: The saturation characteristic consists of the value pairs from p1962 and p1963 with the same index.

r1963[0...4] Saturation characteristic magnetizing inductance / Sat_char L_main

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the magnetizing inductances of the identified saturation characteristic.

The values are referred to r0382.

Index:
[0] = Value 1
[1] = Value 2
[2] = Value 3
[3] = Value 4
[4] = Value 5

Dependency: Refer to: r0382

r1964[0...511] Valve identification characteristic force / Valve ID char F

HLA

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [N]	- [N]	- [N]

Description: Displays the force actual values for the valve characteristic.

Note: The valve characteristic consists of the value pairs from r1961 and r1964 with the same index.

r1964[0...4] Saturation characteristic rotor flux / Sat_char rot flux

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the rotor flux values of the identified saturation characteristic.

After they have been determined, the values are transferred to p0362 ... p0365.

Index:
[0] = Value 1
[1] = Value 2
[2] = Value 3
[3] = Value 4
[4] = Value 5

p1965	**Speed_ctrl_opt speed / n_opt speed**		
VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
	Not for motor type: REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	10 [%]	75 [%]	40 [%]

Description: Sets the speed for the identification of the moment of inertia and the vibration test.

Induction motor:

The percentage value is referred to p0310 (rated motor frequency).

Synchronous motor:

The percentage value is referred to the minimum from p0310 (rated motor frequency) and p1082 (maximum speed).

Dependency: Refer to: p0310, p1959

Refer to: F07984, F07985

Note: In order to calculate the inertia, sudden speed changes are carried out - the specified value corresponds to the lower speed setpoint. This value is increased by 20 % for the upper speed value.

The q leakage inductance (refer to p1959.5) is determined at zero speed and at 50 % of p1965 - however, with a maximum output frequency of 15 Hz and at a minimum of 10% of the rated motor speed.

p1967	**Speed_ctrl_opt dynamic factor / n_opt dyn_factor**		
VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)	**Can be changed:** U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
	Not for motor type: REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	1 [%]	400 [%]	100 [%]

Description: Sets the dynamic response factor for speed controller optimization.

After optimization, the dynamic response achieved is displayed in r1968.

Dependency: Refer to: p1959, r1968

Refer to: F07985

Note: For a rotating measurement, this parameter can be used to optimize the speed controller.

p1967 = 100 % --> speed controller optimization according to a symmetric optimum.

p1967 > 100 % --> optimization with a higher dynamic response (Kp higher, Tn lower).

If the actual dynamic response (see r1968) is significantly reduced with respect to the required dynamic response (p1967), then this can be as a result of mechanical load oscillations. If, in spite of this load behavior, a higher dynamic response is required, then the oscillation test (p1959.4 = 0) should be deactivated and the measurement repeated.

r1968	**Speed_ctrl_opt dynamic factor actual / n_opt dyn_fact act**		
VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
	Not for motor type: REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [%]	- [%]	- [%]

Description: Displays the dynamic factor which is actually achieved for the vibration test

Dependency: Refer to: p1959, p1967

Refer to: F07985

Note: This dynamic factor only refers to the control mode of the speed controller set in p1960.

r1969 Moment of inertia identified / M_inert ident

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** 25_1	**Unit selection:** p0100
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [kgm²]	- [kgm²]	- [kgm²]

Description: Displays the identified moment of inertia.

Dependency: IEC drives (p0100 = 0): unit kg m^2

NEMA drives (p0100 = 1): unit lb ft^2

Refer to: p0341, p0342, p1498, p1959, p1960

r1969 High load inertia identified / High load inert id

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** 27_1	**Unit selection:** p0100
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [kg]	- [kg]	- [kg]

Description: Displays the identified high load inertia.

Dependency: IEC drives (p0100 = 0): unit kg m^2

NEMA drives (p0100 = 1): unit lb ft^2

Refer to: p0341, p0342, p1498, p1959, p1960

r1969 Speed_ctrl_opt moment of inertia determined / n_opt M_inert det

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** 25_1	**Unit selection:** p0100
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [kgm²]	- [kgm²]	- [kgm²]

Description: Displays the determined moment of inertia of the drive.

After it has been determined, the value is transferred to p0341, p0342.

Dependency: IEC drives (p0100 = 0): unit kg m^2

NEMA drives (p0100 = 1): unit lb ft^2

Refer to: p0341, p0342, p1959

Refer to: F07984

r1970[0...1] Speed_ctrl_opt vibration test vibration frequency determined / n_opt f_vib det

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Hz]	- [Hz]	- [Hz]

Description: Displays the vibration frequencies determined by the vibration test.

Index: [0] = Frequency low
[1] = Frequency high

Dependency: Refer to: p1959

Refer to: F07985

r1971[0...1] Speed_ctrl_opt vibration test standard deviation determined / n_opt std_dev det

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Hz]	- [Hz]	- [Hz]

Description: Displays the standard deviations of the vibration frequencies determined by the vibration test

Index: [0] = Standard deviation of low frequency
[1] = Standard deviation of high frequency

Dependency: Refer to: p1959
Refer to: F07985

r1972[0...1] Speed_ctrl_opt vibration test number of periods determined / n_opt per_qty det

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the period number determined by the vibration test.

Index: [0] = No. of periods of the low frequency
[1] = No. of periods of the high frequency

Dependency: Refer to: p1959
Refer to: F07985

r1973[0...1] Encoder pulse number identified / Pulse No. ident

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the identified encoder pulse number/grid spacing.

For index [0]:

Rotating motors: Displays the identified encoder pulse number (per revolution).

Linear motors: Encoder pulse number per meter. Grid division = 1/p1973 [meter].

For index [1]:

Rotating motors: No significance.

Linear motors: Identified grid division in nm.

Index: [0] = Rotating motor encoder pulse number
[1] = Linear motor grid division in nm

Notice: Due to the measuring accuracy (approx. 5 %) only the approximate value is shown in p1973 and may not be directly transferred into p0407 or p0408. An incorrect pole pair number (r0313, p0314) or pole pair width (p0315) results in an incorrect value in p1973.

Note: A negative signal indicates an incorrect polarity of the encoder signal.

r1973 Rotating measurement encoder test pulse number determined / n_opt puls no. det

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the number of pulses determined during the vibration test.

Note: A negative signal indicates an incorrect polarity of the encoder signal.

p1974 Speed_ctrl_opt saturation characteristic rotor flux maximum / n_opt rot_fl max

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
104 [%]	120 [%]	120 [%]

Description: Sets the maximum flux setpoint to measure the saturation characteristic.

r1979.0...12 BO: Speed_ctrl_opt status / n_opt status

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status to check and monitor the states of speed controller optimization.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Speed controller optimization activated	Yes	No	-
01	Speed controller optimization completed	Yes	No	-
02	Speed controller optimization interrupted	Yes	No	-
04	Encoder test active	Yes	No	-
05	Saturation characteristic identification active	Yes	No	-
06	Moment of inertia identification active	Yes	No	-
07	Recalculate speed controller parameters active	Yes	No	-
08	Speed controller vibration test active	Yes	No	-
09	Magnetizing inductance adapt. active	Yes	No	-
10	Operation with encoder after encoderless operation	Yes	No	-
11	q-leakage inductance identification	Yes	No	-
12	Moment of inertia estimator inhibited	Yes	No	-

p1980[0...n] PolID technique / PolID technique

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: Integer16	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	99	99

Description: Sets the pole position identification technique.

Value:
0: Saturation-based 1st + 2nd harmonics
1: Saturation-based 1st harmonics
4: Saturation based 2-stage
10: Motion-based
20: Elasticity-based
99: No technique selected

Dependency: Refer to: p0325, p0329, p1981, p1982, p1983, r1984, r1985, r1986, r1987, p1990, r1992, p1993, p1994, p1995, p1996, p1997, p3090, p3091, p3092, p3093, p3094, p3095, p3096, r3097

Refer to: F07995

Notice: If the incorrect technique is applied, this can cause the motor to accelerate in an uncontrolled fashion.

Under the following conditions, the integral time must be disabled (p1996 = 0):

- p1980 = 10 (motion-based)
- motor encoder with track A/B sq-wave (p0404.3 = 1)
- p0430.20 = 0 (flank time measurement)

Once the integral time has been disabled, the motion is increased during the identification (a minimum of 90 ° electrical). As a result of this, the maximum distance (p1981) must also be increased.

Note: PolID: Pole position identification

When commissioning a catalog motor, the technique is automatically selected depending on the motor type being used.

The following applies for 1FN3 motors:

A technique with 2nd harmonic may not be used (do not use p1980 = 0, 4).

For 1FK7 motors, the following applies:

A two-stage technique may not be used (do not use p1980 = 4).

The automatically set value in p0329 may not be changed.

p1980[0...n] PolID technique / PolID technique

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: Integer16	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	12	4

Description: Sets the pole position identification technique.

The current magnitudes are limited to the rated power unit values.

p1980 = 1, 8:

The current magnitude is set using p0329.

p1980 = 4, 6:

The current magnitude of the first measurement section is set using p0325, the second using p0329.

p1980 = 10:

The rated motor current is impressed to align.

p1980 = 12: The induced stator voltage is sensed using a VSM and evaluated. This rotor position identification technique can only be used for separately excited synchronous motors with incremental encoder.

Value:
1: Voltage pulsing 1st harmonics
4: Voltage pulsing 2-stage
6: Voltage pulsing 2-stage inverse
8: Voltage pulsing 2nd harmonic inverse
10: DC current injection
12: Rotor position sensing VSM for SESM with incremental encoder

Dependency: When commissioning a catalog motor, the technique is automatically selected depending on the motor type being used.

In the simulation mode, the parameter cannot be written into.

Refer to: p0325, p0329, p1272, p1780

Refer to: F07969

Note: For p1980 = 1, 4, 6, 8:

Voltage pulse technique cannot be applied to separately excited synchronous motors (p0300 = 5) and for for operation with sine-wave output filters (p0230).

For p1980 = 12:

This technique can only be applied for separately excited synchronous motors (SESM) with voltage measurement (VSM).

The rotor position identification technique (p1980 = 12) cannot be used for permanent-magnet synchronous motors.

p1981[0...n] PolID distance max / PolID distance max

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [°]	180 [°]	10 [°]

Description: Sets the maximum distance (electrical angle) when carrying out the pole position identification routine.

If this distance (travel) is exceeded, an appropriate fault is output.

Dependency: Refer to: p0325, p0329, p1980, p1982, p1983, r1984, r1985, r1986, r1987, p1990, r1992, p1993, p1994, p1995, p1996, p1997

Refer to: F07995

Notice: Value = 180 °: Monitoring is deactivated.

Note: PolID: Pole position identification

p1982[0...n] PolID selection / PolID selection

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	2	0

Description: Activates the pole position identification routine to determine the commutation angle and to carry out a plausibility check.

Value:
0: Pole position identification off
1: Pole position identification for commutation
2: Pole position identification for plausibility check

Recommendation: For p1982 = 1:

This is used for synchronous motors with motor encoder without absolute data.

The information/data regarding the absolute commutation angle is supplied via a track C/D, Hall sensors, an absolute encoder or from the pole position identification routine.

For p1982 = 2:

This is used for synchronous motor with motor encoder with absolute data to check this data.

Dependency: Refer to: p0325, p0329, p1980, p1981, p1983, r1984, r1985, r1986, r1987, p1990, r1992, p1993, p1994, p1995, p1996, p1997, p3090, p3091, p3092, p3093, p3094, p3095, p3096, r3097

Note: PolID: Pole position identification

p1982[0...n] PolID selection / PolID selection

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	2	0

Description: Activates the pole position identification routine to determine the commutation angle and to carry out a plausibility check.

Value:
0: Pole position identification off
1: Pole position identification for commutation
2: Pole position identification for plausibility check

Recommendation: For p1982 = 1:

This is used for synchronous motors with motor encoder without absolute data.

The information/data regarding the absolute commutation angle is supplied via a track C/D, Hall sensors, an absolute encoder or from the pole position identification routine.

For separately excited synchronous motors, the position identification is realized using the voltage measurement of a Voltage Sensing Module VSM (p1980 = 12). If there is no VSM then the setting is not possible.

For p1982 = 2:

This is used for synchronous motor with motor encoder with absolute data to check this data.

With p1982 = 2, each time the pulses are enabled it is checked whether the absolute position supplied from the encoder does not exceed a deviation of 45 degrees to the identified pole wheel position.

Not possible for separately excited synchronous motors.

Dependency: Refer to: p0325, p0329, p1980, p1981, p1983, r1984, r1985, r1986, r1987, p1990, r1992, p1993, p1994, p1995, p1996, p1997, p3090, p3091, p3092, p3093, p3094, p3095, p3096, r3097

Note: For encoderless operation, the pole position identification routine is selected with p1780.6

p1983 PolID test / PolID test

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Starts the pole position identification routine for test purposes.

p1983 = 1:

Start of pole position identification. The parameter is set to zero automatically on completion of the identification process.

Dependency: Refer to: p0325, p0329, p1980, p1981, p1982, r1984, r1985, r1986, r1987, p1990, r1992, p1993, p1994, p1995, p1996, p1997, p3090, p3091, p3092, p3093, p3094, p3095, p3096, r3097

Notice: For p1983 = 1 and if the pulses are not enabled, then the function is only executed the next time that the pulses are enabled.

Note: When this test is executed, it does not influence the commutation angle.

r1984 PolID angular difference / PolID ang diff

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°]	- [°]	- [°]

Description: Displays the angular difference between the actual electrical commutation angle and the angle determined by the pole position identification.

Dependency: Refer to: p0325, p0329, p1980, p1981, p1982, p1983, r1985, r1986, r1987, p1990, r1992, p1993, p1994, p1995, p1996, p1997, p3090, p3091, p3092, p3093, p3094, p3095, p3096, r3097

Note: PolID: Pole position identification

When the pole position identification routine is executed several times using p1983, the spread of the measured values can be determined using this value. At the same position, the spread should be less than 2 degrees electrical.

r1984 PolID angular difference / PolID ang diff

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°]	- [°]	- [°]

Description: Displays the angular difference between the actual electrical commutation angle and the angle determined by the pole position identification.

Dependency: Refer to: p0325, p0329, p1980, p1981, p1982, p1983, r1985, r1986, r1987, p1990, r1992, p1993, p1994, p1995, p1996, p1997, p3090, p3091, p3092, p3093, p3094, p3095, p3096, r3097

Note: PolID: Pole position identification

When the pole position identification routine is executed several times using p1983, the spread of the measured values can be determined using this value. At the same position, the spread should be less than 2 degrees electrical.

r1985 ChId v/U characteristic velocity measured / ChId v/U v meas

HLA

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Displays the measured v/U characteristics in m/min.

Dependency: Refer to: p1960

Note: The values for the characteristic of the last identification routine are output every 1 ms in order to record signals (e.g. trace).

r1985 PolID saturation curve / PolID sat_char

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the saturation curve of the pole position identification (saturation technique).

Displays the current characteristic of the pole position identification routine (elasticity technique).

Dependency: Refer to: p0325, p0329, p1980, p1981, p1982, p1983, r1984, r1986, r1987, p1990, r1992, p1993, p1994, p1995, p1996, p1997, p3090, p3091, p3092, p3093, p3094, p3095, p3096, r3097

Note: PolID: Pole position identification

Regarding the saturation technique:

The values for the characteristic of the last saturation-based pole position identification routine are output every 1 ms in order to record signals (e.g. trace).

r1985 PolID saturation curve / PolID sat_char

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the saturation curve of the pole position identification (saturation technique).

Displays the current characteristic of the pole position identification routine (elasticity technique).

Dependency: Refer to: p0325, p0329, p1980, p1981, p1982, p1983, r1984, r1986, r1987, p1990, r1992, p1993, p1994, p1995, p1996, p1997, p3090, p3091, p3092, p3093, p3094, p3095, p3096, r3097

Note: PolID: Pole position identification

Regarding the saturation technique:

The values for the characteristic of the last saturation-based pole position identification routine are output every 1 ms in order to record signals (e.g. trace).

r1986 ChId v/U characteristic velocity parameterized / ChId v/U v par

HLA

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Displays the parameterized v/U characteristics in m/min.

Dependency: Refer to: p1960, p3030, p3031, p3033, p3034, p3035, p3036, p3037, p3038, p3039, p3040, p3041, p3042, p3043, p3044, p3045, p3046, p3047, p3048, p3075

Note: The values for the characteristic of the last identification routine are output every 1 ms in order to record signals (e.g. trace).

r1986 PolID saturation characteristic 2 / PoleID sat_curve 2

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the pole position characteristic of the elasticity-based pole position identification routine.

The values for the characteristic of the last pole position identification routine are output every 1 ms in order to record signals (e.g. trace).

Dependency: Refer to: p3090, p3091, p3092, p3093, p3094, p3095, p3096, r3097

Note: PolID: Pole position identification

r1987 ChId v/U characteristic voltage / ChId v/U U

HLA

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the voltage of the v/U characteristics in V unit.

Dependency: Refer to: p1960

Note: The values for the characteristic of the last identification routine are output every 1 ms in order to record signals (e.g. trace).

r1987 PolID trigger characteristic / PolID trig_char

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the trigger characteristic of the pole position identification routine.

The values for the characteristic of the last pole position identification routine are output every 1 ms in order to record signals (e.g. trace).

The values for trigger characteristic and saturation characteristic are always output in synchronism from a time perspective.

Dependency: Refer to: p0325, p0329, p1980, p1981, p1982, p1983, r1984, r1985, r1986, p1990, r1992, p1993, p1994, p1995, p1996, p1997, p3090, p3091, p3092, p3093, p3094, p3095, p3096, r3097

Note: PolID: Pole position identification

The following information and data can be taken from the trigger characteristic.

- the value -100% marks the angle at the start of the measurement.
- the value +100 % marks the commutation angle determined from the pole position identification routine.

r1987 PolID trigger characteristic / PolID trig_char

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the trigger characteristic of the pole position identification routine.

The values for the characteristic of the last pole position identification routine are output every 1 ms in order to record signals (e.g. trace).

The values for trigger characteristic and saturation characteristic are always output in synchronism from a time perspective.

Dependency: Refer to: p0325, p0329, p1980, p1981, p1982, p1983, r1984, r1985, r1986, p1990, r1992, p1993, p1994, p1995, p1996, p1997, p3090, p3091, p3092, p3093, p3094, p3095, p3096, r3097

Note: PolID: Pole position identification

The following information and data can be taken from the trigger characteristic.

- the value -100% marks the angle at the start of the measurement.
- the value +100 % marks the commutation angle determined from the pole position identification routine.

p1990 Encoder adjustment determine angular commutation offset / Enc_adj det ang

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: This function is only required for synchronous motors and can be started when commissioning for the first time or after replacing an encoder.

The function acts on the active motor data set.

When adjusting the encoder, the angular commutation offset is determined and transferred into p0431.

Alarm A07971 is output while the angular commutation offset is being determined.

p1990 is automatically set to 0 after the angular commutation offset has been determined.

p1990 = 0: Deactivated

p1990 = 1: Activated with transfer

Dependency: Refer to: p0325, p0329, p0431, p1980, p1981, p1982, p1983, r1984, r1985, r1986, r1987, p1999

Refer to: A07971

Danger: For recommendation 3:

When performing this measurement there is a danger of coming into contact with system parts that are at a high (hazardous) electrical voltage.

This measurement may only be performed by authorized service personnel.

Warning: The motor can move in an uncontrolled fashion.

To determine the angular commutation offset, pulses must be immediately enabled after p1990 = 1. For commutation with a zero mark - or with distance-coded zero marks - the drive must also be traversed over the zero mark or over two zero marks. If a POWER ON is carried out before activating the pulse enable and where relevant before passing the zero mark, then after powering up p1990 = 0, and the commutation angle is not determined.

Notice: When the pulses are enabled, the function is immediately executed with p1990 = 1; otherwise, the next time that the pulses are enabled.

In order to prevent an incorrect orientation of the electrical pole position (uncontrolled motor movement), the automatically determined angular commutation offset (p0431) should, for reasons of safety, be checked using one of the following recommendations:

Recommendation 1:

Set encoderless operation (p1300 = 20 or p1404 = 0), de-select pole position identification (p1982 = 0), operate under no-load conditions with a speed > p1755, correct the actual value inversion (p0410.0) (e.g. r0061 = r0063), read the angular error in r1778; the result in r1778 should be approximately 0, for |r1778| > 2 degrees, add the value to p0431 - taking into account the sign - and enter in p0431.

Recommendation 2:

Set current limit to 0 (p0640 = 0), activate travel to fixed stop (p1545 = 1); record r0089[0] (phase voltage) and r0093 (pole position, electrically scaled), (e.g. trace) while the motor is being externally moved.

When doing this, the rising zero crossing of the phase voltage must coincide with the step 360 ° --> 0 ° from r0093.

Recommendation 3:

Measure phase voltage U (measure phase U with respect to a virtual neutral point created using 3 resistors) and r0093 (pole position, electrically scaled).

When doing this, the rising zero crossing of the phase voltage must coincide with the step 360 ° --> 0 ° from r0093.

Recommendation 4:

Determine the average value from several results of a pole position identification routine executed as test (p1983) at various electrical angles and add the value to p0431 - taking into account the sign and enter into p0431.

Note: If fault F07414 is present, the following applies:

First set p1990 to 1, then acknowledge the fault and then issue the enable signals.

p1990 Encoder adjustment determine angular commutation offset / Enc_adj det ang

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	3	0

Description: This function is only required for synchronous motors and can be started when commissioning for the first time or after replacing an encoder.

The function acts on the active motor data set.

Alarm A07971 is output while the angular commutation offset is being determined.

p1990 is automatically set to 0 after the angular commutation offset has been determined.

For p1990 = 1 (encoder adjustment with transfer), the following applies:

The angular commutation offset is determined and transferred into p0431.

For p1990 = 2 (encoder adjustment for checking), the following applies:

The angular commutation offset is determined and is not transferred into p0431. For a deviation of more than 6 ° electrical, fault F07413 is output.

For p1990 = 3 (encoder adjustment in operation), the following applies:

PolID procedure runs before the zero mark detection. The angular commutation offset is determined and transferred into p0431. A fine adjustment (p1905) is then optionally possible.

Value:
0: Deactivated
1: Activated with transfer
2: Activated for checking
3: Activates encoder adjustment in operation

Dependency: In the simulation mode, the parameter cannot be written into.

When selecting the encoder adjustment, the changeover of the drive data sets is suppressed.

Encoder adjustment is only carried out if the function module for "speed/torque control" is activated (r0108.2 = 1).

Refer to: p0325, p0329, p0431, p1272, p1900

Caution: When the encoder is being adjusted, the motor must be operated without a load - and if a motor holding brake is being used, this must be opened.

p1991[0...n] Motor changeover angular commutation correction / Ang_com corr

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-180 [°]	180 [°]	0 [°]

Description: Sets the angle that is added to the commutating angle.

Caution: If the angular correction is not correctly set, when changing over and with closed-loop torque control, the motor can accelerate to high speeds in spite of the fact that a setpoint of zero has been entered.

p1991[0...n] Motor changeover angular commutation correction / Ang_com corr

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-180 [°]	180 [°]	0 [°]

Description: Sets the angle that is added to the commutating angle.

Caution: If the angular correction is not correctly set, when changing over and with closed-loop torque control, the motor can accelerate to high speeds in spite of the fact that a setpoint of zero has been entered.

r1992.0...15 CO/BO: PolID diagnostics / PolID diag

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the diagnostics information of the pole position identification (polID)

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Critical encoder fault occurred	Yes	No	-
02	Encoder parking active	Yes	No	-
05	Encoder fault Class 1	Yes	No	-
06	Encoder fault Class 2	Yes	No	-
07	Pole position identification for encoder carried out	Yes	No	-
08	Fine synchronization carried out	Yes	No	-
09	Coarse synchronization carried out	Yes	No	-
10	Commutation information available	Yes	No	-
11	Speed information available	Yes	No	-
12	Position information available	Yes	No	-
15	Zero mark passed	Yes	No	-

Dependency: Refer to: p0325, p0329, p1980, p1981, p1982, p1983, r1984, r1985, r1986, r1987, p1990, p1993, p1994, p1995, p1996, p1997, p3090, p3091, p3092, p3093, p3094, p3095, p3096, r3097

Note: The data of p1992 are updated in a 4 ms cycle.

Fast changes of the encoder status word bits can be better investigated using p7830 and following.

PolID: Pole position identification

r1992.0...15 CO/BO: PolID diagnostics / PolID diag

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the diagnostics information of the pole position identification (polID)

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Critical encoder fault occurred	Yes	No	-
02	Encoder parking active	Yes	No	-
05	Encoder fault Class 1	Yes	No	-
06	Encoder fault Class 2	Yes	No	-
07	Pole position identification for encoder carried out	Yes	No	-
08	Fine synchronization carried out	Yes	No	-
09	Coarse synchronization carried out	Yes	No	-
10	Commutation information available	Yes	No	-
11	Velocity information available	Yes	No	-
12	Position information available	Yes	No	-
15	Zero mark passed	Yes	No	-

Dependency: Refer to: p0325, p0329, p1980, p1981, p1982, p1983, r1984, r1985, r1986, r1987, p1990, p1993, p1994, p1995, p1996, p1997, p3090, p3091, p3092, p3093, p3094, p3095, p3096, r3097

Note: The data of p1992 are updated in a 4 ms cycle.

Fast changes of the encoder status word bits can be better investigated using p7830 and following.

PolID: Pole position identification

p1993[0...n] PolID motion-based current / PolID I mot_bas

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_EQU	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Arms]	20000.00 [Arms]	0.00 [Arms]

Description: Sets the current when executing the motion-based pole position identification.

Dependency: Refer to: p1980, p1981, p1982, p1983, r1984, r1985, r1986, r1987, p1990, r1992, p1994, p1995, p1996, p1997

Note: PolID mot: Motion-based pole position identification

p1994[0...n] PolID motion-based rise time / PolID T mot_bas

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	2500 [ms]	100 [ms]

Description: Sets the rise time of the current when executing the motion-based pole position identification.

Dependency: Refer to: p1980, p1981, p1982, p1983, r1984, r1985, r1986, r1987, p1990, r1992, p1993, p1995, p1996, p1997

Note: PolID mot: Motion-based pole position identification

p1995[0...n] PolID motion-based gain / PolID kp mot_bas

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** 17_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0000 [Nms/rad]	999999.0000 [Nms/rad]	0.3000 [Nms/rad]

Description: Sets the gain when executing the motion-based pole position identification.

Dependency: Refer to: p1980, p1981, p1982, p1983, r1984, r1985, r1986, r1987, p1990, r1992, p1993, p1994, p1996, p1997

Note: PolID mot: Motion-based pole position identification

p1995[0...n] PolID motion-based gain / PolID kp mot_bas

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** 24_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0000 [Ns/m]	999999.0000 [Ns/m]	10.0000 [Ns/m]

Description: Sets the gain when executing the motion-based pole position identification.

Dependency: Refer to: p1980, p1981, p1982, p1983, r1984, r1985, r1986, r1987, p1990, r1992, p1993, p1994, p1996, p1997

Note: PolID mot: Motion-based pole position identification

p1996[0...n] PolID motion-based integral time / PolID Tn mot_bas

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [ms]	500.0 [ms]	2.0 [ms]

Description: Sets the integral time when executing the motion-based pole position identification.

Dependency: Refer to: p1980, p1981, p1982, p1983, r1984, r1985, r1986, r1987, p1990, r1992, p1993, p1994, p1995, p1997

Note: The value 0 deactivates the I component.

Once the integral time has been disabled, the motion is increased during the identification (a minimum of 90 ° electrical).

PolID mot: Motion-based pole position identification

p1997[0...n] PolID motion-based smoothing time / PolID t_sm mot_bas

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [ms]	50.0 [ms]	0.0 [ms]

Description: Sets the smoothing time when executing the motion-based pole position identification.

Dependency: Refer to: p1980, p1981, p1982, p1983, r1984, r1985, r1986, r1987, p1990, r1992, p1993, p1994, p1995, p1996

Note: PolID mot: Motion-based pole position identification

p1998[0...n] PolID circle center point / PolID circ center

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0000 [A]	10000.0000 [A]	0.0000 [A]

Description: Determined current offset to determine the speed (RESM).

Dependency: Refer to: p1980, p1981, p1982, p1983, r1984, r1985, r1986, r1987, p1990, r1992, p1993, p1994, p1995, p1996

Note: RESM: reluctance synchronous motor (synchronous reluctance motor)

p1999[0...n] Ang. commutation offset calibr. and PolID scaling / Com_ang_offs scal

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
10 [%]	5000 [%]	100 [%]

Description: Sets the scaling for the runtime of the automatic encoder calibration and of the pole position identification technique in which the current is injected.

Dependency: Refer to: p0341, p0342

Caution: For p1999 > 100 % (setting large moments of inertia) the following applies:

There is no locked rotor monitoring (F07970 fault value 2).

The plausibility check of the encoder signal (F07970 fault value 4) only checks the sign.

Note: For high moments of inertia, it is practical to scale the runtime of the calibration higher.

p2000 Reference velocity / v_ref

HLA

Can be changed: T	**Calculated:** CALC_MOD_ALL	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.600 [m/min]	600.000 [m/min]	120.000 [m/min]

Description: Sets the reference quantity for velocity.

All velocities specified as relative value are referred to this reference quantity.

The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

Dependency: Refer to: p0500, p2001, p2002, p2003, r2004

Note: If a BICO interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.

Example 1:

The signal of an analog input (e.g. r4055[0]) is connected to a velocity setpoint (e.g. p1155[0]). The actual percentage input value is cyclically converted into the absolute velocity setpoint using the reference velocity (p2000).

Example 2:

The setpoint from PROFIBUS (r2060[1]) is connected to a velocity setpoint (e.g. p1155[0]). The actual input value is cyclically converted into a percentage value via the pre-specified scaling 4000 0000 hex. This percentage value is converted to the absolute velocity setpoint via reference velocity (p2000).

p2000 Reference speed reference frequency / n_ref f_ref

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: T	**Calculated:** CALC_MOD_ALL	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
6.00 [rpm]	210000.00 [rpm]	3000.00 [rpm]

Description: Sets the reference quantity for speed and frequency.

All speeds or frequencies specified as relative value are referred to this reference quantity.

The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

Dependency: Refer to: p0500, p2001, p2002, p2003, r2004

Note: For the automatic calculation (p0340 = 1, p3900 > 0) an appropriate pre-assignment is only made if the parameter is not inhibited from being overwritten using p0573 = 1.

If a BICO interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.

Example 1:

The signal of an analog input (e.g. r4055[0]) is connected to a speed setpoint (e.g. p1070[0]). The actual percentage input value is cyclically converted into the absolute speed setpoint using the reference speed (p2000).

Example 2:

The setpoint from PROFIBUS (r2050[1]) is connected to a speed setpoint (e.g. p1070[0]). The actual input value is cyclically converted into a percentage value via the pre-specified scaling 4000 hex. This percentage value is converted to the absolute speed setpoint via reference speed (p2000).

p2000 Reference velocity reference frequency / v_ref f_ref

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** CALC_MOD_ALL	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.60 [m/min]	700.00 [m/min]	120.00 [m/min]

Description: Sets the reference quantity for velocity and frequency.

All velocities or frequencies specified as relative value are referred to this reference quantity.

The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

The following applies: Reference frequency (in Hz) = reference velocity (in (m/min) / 60)

Dependency: Refer to: p0500, p2001, p2002, p2003, r2004

Note: For the automatic calculation (p0340 = 1, p3900 > 0) an appropriate pre-assignment is only made if the parameter is at the factory setting.

If a BICO interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.

Example 1:

The signal of an analog input (e.g. r4055[0]) is connected to a velocity setpoint (e.g. p1070[0]). The actual percentage input value is cyclically converted into the absolute velocity setpoint using the reference velocity (p2000).

Example 2:

The setpoint from PROFIBUS (r2050[1]) is connected to a velocity setpoint (e.g. p1070[0]). The actual input value is cyclically converted into a percentage value via the pre-specified scaling 4000 hex. This percentage value is converted to the absolute velocity setpoint via reference velocity (p2000).

p2000 Reference speed reference frequency / n_ref f_ref

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** CALC_MOD_ALL	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
6.00 [rpm]	210000.00 [rpm]	3000.00 [rpm]

Description: Sets the reference quantity for speed and frequency.

All speeds or frequencies specified as relative value are referred to this reference quantity.

The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

The following applies: Reference frequency (in Hz) = reference speed (in ((rpm) / 60) x pole pair number)

Dependency: Refer to: p2001, p2002, p2003, r2004

Note: For the automatic calculation (p0340 = 1, p3900 > 0) an appropriate pre-assignment is only made if the parameter is not inhibited from being overwritten using p0573 = 1.

If a BICO interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.

Example 1:

The signal of an analog input (e.g. r4055[0]) is connected to a speed setpoint (e.g. p1070[0]). The actual percentage input value is cyclically converted into the absolute speed setpoint using the reference speed (p2000).

Example 2:

The setpoint from PROFIBUS (r2050[1]) is connected to a speed setpoint (e.g. p1070[0]). The actual input value is cyclically converted into a percentage value via the pre-specified scaling 4000 hex. This percentage value is converted to the absolute speed setpoint via reference speed (p2000).

p2000 Reference frequency / f_ref

A_INF, S_INF, R_INF, B_INF

Can be changed: T	**Calculated:** CALC_MOD_ALL	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.10 [Hz]	1000.00 [Hz]	50.00 [Hz]

Description: Sets the reference quantity for the frequency.

All frequencies specified as relative value are referred to this reference quantity.

The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

The following applies: Reference frequency (in Hz)

p2000 Reference speed reference frequency / n_ref f_ref

TM41

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
6.00 [rpm]	210000.00 [rpm]	3000.00 [rpm]

Description: Sets the reference quantity for speed and frequency.

All speeds or frequencies specified as relative value are referred to this reference quantity.

The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

Dependency: Refer to: p2001, p2002, p2003, r2004

Note: For the automatic calculation (p0340 = 1, p3900 > 0) an appropriate pre-assignment is only made if the parameter is not inhibited from being overwritten using p0573 = 1.

If a BICO interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.

Example 1:

The signal of an analog input (e.g. r4055[0]) is connected to a speed setpoint (e.g. p1070[0]). The actual percentage input value is cyclically converted into the absolute speed setpoint using the reference speed (p2000).

Example 2:

The setpoint from PROFIBUS (r2050[1]) is connected to a speed setpoint (e.g. p1070[0]). The actual input value is cyclically converted into a percentage value via the pre-specified scaling 4000 hex. This percentage value is converted to the absolute speed setpoint via reference speed (p2000).

p2000 Reference speed reference frequency / n_ref f_ref

ENC

Can be changed: T	**Calculated:** CALC_MOD_ALL	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
6.00 [rpm]	210000.00 [rpm]	3000.00 [rpm]

Description: Sets the reference quantity for speed and frequency.

All speeds or frequencies specified as relative value are referred to this reference quantity.

The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

Note: If a BICO interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.

p2000 Reference velocity reference frequency / v_ref f_ref

ENC (Lin_enc)

Can be changed: T	**Calculated:** CALC_MOD_ALL	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.60 [m/min]	600.00 [m/min]	120.00 [m/min]

Description: Sets the reference quantity for velocity and frequency.

All velocities or frequencies specified as relative value are referred to this reference quantity.

The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

The following applies: Reference frequency (in Hz) = reference velocity (in (m/min) / 60)

Note: If a BICO interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.

p2001 Reference voltage / Reference voltage

HLA

Can be changed: T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
10 [V]	100000 [V]	1000 [V]

Description: Sets the reference quantity for voltages.

All voltages specified as relative value are referred to this reference quantity. This also applies for direct voltage values (= rms value) like the DC link voltage.

The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

Note: If a BICO interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.

p2001 Reference voltage / Reference voltage

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM41

Can be changed: T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
10 [Vrms]	100000 [Vrms]	1000 [Vrms]

Description: Sets the reference quantity for voltages.

All voltages specified as relative value are referred to this reference quantity. This also applies for direct voltage values (= rms value) like the DC link voltage.

The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

Note:

This reference quantity also applies to direct voltage values. It is not interpreted as rms value, but as DC voltage value.

Note: For the automatic calculation (p0340 = 1, p3900 > 0) an appropriate pre-assignment is only made if the parameter is not inhibited from being overwritten using p0573 = 1.

If a BICO interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.

For infeed units, the parameterized device supply voltage (p0210) is pre-assigned as the reference quantity.

Example:

The actual value of the DC link voltage (r0070) is connected to a test socket (e.g. p0771[0]). The actual voltage value is cyclically converted into a percentage of the reference voltage (p2001) and output according to the parameterized scaling.

p2002 Reference pressure / p_ref

HLA

Can be changed: T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.10 [bar]	5000.00 [bar]	100.00 [bar]

Description: Sets the reference quantity for pressures.

All pressures specified as relative value are referred to this reference quantity.

The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

Notice: If various DDS are used with different valve/cylinder data, then the reference quantities remain the same as these are not changed over with the DDS. The resulting conversion factor should be taken into account (e.g. for BICO interconnections).

Note: If a BICO interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.

p2002 Reference current / I_ref

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM41

Can be changed: T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.10 [Arms]	100000.00 [Arms]	100.00 [Arms]

Description: Sets the reference quantity for currents.

All currents specified as relative value are referred to this reference quantity.

The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

Notice: If various DDS are used with different motor data, then the reference quantities remain the same as these are not changed over with the DDS. The resulting conversion factor should be taken into account (e.g. for trace records).

Example:

p2002 = 100 A

Reference quantity 100 A corresponds to 100 %

p0305[0] = 100 A

Rated motor current 100 A for MDS0 in DDS0 --> 100 % corresponds to 100 % of the rated motor current

p0305[1] = 50 A

Rated motor current 50 A for MDS1 in DDS1 --> 100 % corresponds to 200 % of the rated motor current

Note: For the automatic calculation (p0340 = 1, p3900 > 0) an appropriate pre-assignment is only made if the parameter is not inhibited from being overwritten using p0573 = 1.

SERVO:

Pre-assigned value for p0338 > 0.001 is p0338, otherwise 2 * p0305.

VECTOR:

Pre-assigned value is p0640.

If a BICO interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.

For infeed units, the rated line current, which is obtained from the rated power and parameterized rated line supply voltage (p2002 = r0206 / p0210 / 1.73) is pre-assigned as the reference quantity.

Example:

The actual value of a phase current (r0069[0]) is connected to a test socket (e.g. p0771[0]). The actual current value is cyclically converted into a percentage of the reference current (p2002) and output according to the parameterized scaling.

p2003 Reference force / F_ref

HLA

Can be changed: T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** 8_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.01 [N]	20000000.00 [N]	100.00 [N]

Description: Sets the reference quantity for forces.

All forces specified as relative value are referred to this reference quantity.

The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

Note: For the automatic calculation (p0340 = 1, p3900 > 0) an appropriate pre-assignment is only made if the parameter is at the factory setting.

If a BICO interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.

Example:

The actual value of the total force (r0079[0]) is connected to a test socket (e.g. p0771[0]). The actual force is cyclically converted into a percentage of the reference force (p2003) and output according to the parameterized scaling.

p2003 Reference torque / M_ref

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, TM41

Can be changed: T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** 7_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.01 [Nm]	20000000.00 [Nm]	1.00 [Nm]

Description: Sets the reference quantity for torque.

All torques specified as relative value are referred to this reference quantity.

The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

Note: For the automatic calculation (p0340 = 1, p3900 > 0) an appropriate pre-assignment is only made if the parameter is not inhibited from being overwritten using p0573 = 1.

SERVO:

Pre-assigned value for p0338 and p0334 > 0.001 is p0338 * p0334, otherwise 2 * p0333.

VECTOR:

Pre-assigned value is 2 * p0333.

If a BICO interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.

Example:

The actual value of the total torque (r0079) is connected to a test socket (e.g. p0771[0]). The actual torque is cyclically converted into a percentage of the reference torque (p2003) and output according to the parameterized scaling.

p2003 Reference force / Reference force

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** 8_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.01 [N]	20000000.00 [N]	100.00 [N]

Description: Sets the reference quantity for forces.

All forces specified as relative value are referred to this reference quantity.

The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

Note: For the automatic calculation (p0340 = 1, p3900 > 0) an appropriate pre-assignment is only made if the parameter is at the factory setting.

Pre-assigned value for p0338 and p0334 > 0.001 is p0338 * p0334, otherwise 2 * p0333.

If a BICO interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.

Example:

The actual value of the total force (r0079[0]) is connected to a test socket (e.g. p0771[0]). The actual force is cyclically converted into a percentage of the reference force (p2003) and output according to the parameterized scaling.

r2004 Reference power / P_ref

HLA

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** 14_10	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [kW]	- [kW]	- [kW]

Description: Displays the reference quantity for power.

All power ratings specified as relative value are referred to this reference quantity.

The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

Dependency: This value is calculated as follows:

Calculated from the torque x speed (rotating) or from the force x velocity (linear).

Refer to: p2000, p2001, p2002, p2003

Note: If a BICO interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.

The reference power is calculated as follows:

- 2 * Pi * reference speed / 60 * reference torque (rotating)
- reference velocity / 60*reference force (linear)

r2004 Reference power / P_ref

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM41

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** 14_10	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [kW]	- [kW]	- [kW]

Description: Displays the reference quantity for power.

All power ratings specified as relative value are referred to this reference quantity.

The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

Dependency: This value is calculated as follows:

Infeed: Calculated from voltage times current.

Closed-loop control: Calculated from torque times speed.

Refer to: p2000, p2001, p2002, p2003

Note: If a BICO interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.

The reference power is calculated as follows:

- 2 * Pi * reference speed / 60 * reference torque (motor)
- reference voltage * reference current * root(3) (infeed)

p2005 Reference angle / Reference angle

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM41

Can be changed: T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
90.00 [°]	180.00 [°]	90.00 [°]

Description: Sets the reference quantity for angle.

All angles specified as relative value are referred to this reference quantity.

The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

Note: For the automatic calculation (p0340 = 1, p3900 > 0) an appropriate pre-assignment is only made if the parameter is not inhibited from being overwritten using p0573 = 1.

If a BICO interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.

p2006 Reference temperature / Ref temp

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM41

Can be changed: T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** 21_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
50.00 [°C]	300.00 [°C]	100.00 [°C]

Description: Sets the reference quantity for temperature.

All temperatures specified as relative value are referred to this reference quantity.

The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

p2006 Reference temperature / Ref temp

TM31, TM120, TM150

Can be changed: T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
50.00 [°C]	300.00 [°C]	100.00 [°C]

Description: Sets the reference quantity for temperature.

All temperatures specified as relative value are referred to this reference quantity.

The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

p2007 Reference acceleration / a_ref

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, TM41

Can be changed: T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.01 [rev/s²]	500000.00 [rev/s²]	0.01 [rev/s²]

Description: Sets the reference quantity for acceleration rates.

All acceleration rates specified as relative value are referred to this reference quantity.

The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

Note: For the automatic calculation (p0340 = 1, p3900 > 0) an appropriate pre-assignment is only made if the parameter is not inhibited from being overwritten using p0573 = 1. If a BICO interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.

The reference acceleration is calculated as follows:

Reference speed (p2000) converted from 1/min to 1/s divided by 1 s

--> p2007 = p2000 [rpm] / (60 [s/min] * 1 [s])

p2007 Reference acceleration / a_ref

SERVO (Lin), HLA, SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** 22_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.01 [m/s²]	10000.00 [m/s²]	0.01 [m/s²]

Description: Sets the reference quantity for acceleration rates.

All acceleration rates specified as relative value are referred to this reference quantity.

The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

Note: For the automatic calculation (p0340 = 1, p3900 > 0) an appropriate pre-assignment is only made if the parameter is not inhibited from being overwritten using p0573 = 1. If a BICO interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.

The reference acceleration is calculated as follows:

Reference speed (p2000) converted from 1/min to 1/s divided by 1 s

--> p2007 = p2000 [rpm] / (60 [s/min] * 1 [s])

r2019[0...7] Comm IF error statistics / Comm err

CU_I, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the receive errors at the commissioning interface (RS232).

Index:
[0] = Number of error-free telegrams
[1] = Number of rejected telegrams
[2] = Number of framing errors
[3] = Number of overrun errors
[4] = Number of parity errors
[5] = Number of starting character errors
[6] = Number of checksum errors
[7] = Number of length errors

p2020 Field bus interface baud rate / Field bus baud

CU_S_AC_DP, CU_S120_DP, CU_S150_DP

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
4	8	8

Description: Sets the baud rate for the fieldbus interface USS.

Value:
4: 2400 baud
5: 4800 baud
6: 9600 baud
7: 19200 baud
8: 38400 baud

Note: Fieldbus IF: Fieldbus interface

Changes only become effective after POWER ON.

The parameter is not influenced by setting the factory setting.

The parameter is set to the factory setting when the protocol is reselected.

p2021 Field bus interface address / Field bus address

CU_S_AC_DP, CU_S120_DP, CU_S150_DP

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	31	0

Description: Displays or sets the address for the fieldbus interface USS.

The address can be set as follows:

1) Using the address switch on the Control Unit.

--> p2021 displays the address setting.

--> A change only becomes effective after a POWER ON.

2) Using p2021

--> Only if an address of 0 or an address that is invalid for the fieldbus selected in p2030 has been set using the address switch.

--> The address is saved in a non-volatile fashion using the function "copy from RAM to ROM".

--> A change only becomes effective after a POWER ON.

Dependency: Refer to: p2030

Note: Changes only become effective after POWER ON.
The parameter is not influenced by setting the factory setting.
The parameter is set to the factory setting when the protocol is reselected.

p2022 Field bus int USS PZD no. / Field bus USS PZD

CU_S_AC_DP, CU_S120_DP, CU_S150_DP

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	16	2

Description: Sets the number of 16-bit words in the PZD part of the USS telegram for the field bus interface.

Dependency: Refer to: p2030

Note: The parameter is not influenced by setting the factory setting.

p2023 Field bus interface USS PKW count / Field bus USS PKW

CU_S_AC_DP, CU_S120_DP, CU_S150_DP

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	127	127

Description: Sets the number of 16-bit words in the PKW part of the USS telegram for the field bus interface.

Value:
0: PKW 0 words
3: PKW 3 words
4: PKW 4 words
127: PKW variable

Dependency: Refer to: p2030

Note: The parameter is not influenced by setting the factory setting.

p2024[0...2] Fieldbus interface times / Fieldbus times

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	10000 [ms]	[0] 1000 [ms] [1] 0 [ms] [2] 0 [ms]

Description: Sets the time values for the fieldbus interface.
For Modbus the following applies:
p2024[0, 1]: Not relevant.
p2024[2]: Telegram pause time (pause time between two telegrams).

Index:
[0] = Max. processing time
[1] = Character delay time
[2] = Telegram pause time

Dependency: Refer to: p2020, p2030

Note: For p2024[2] (Modbus):
If the field bus baud rate is changed (p2020), the default time setting is restored.
The default setting corresponds to a time of 3.5 characters (dependent on the baud rate that has been set).

r2029[0...7] Field bus interface error statistics / Field bus error

CU_S_AC_DP, CU_S120_DP, CU_S150_DP

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the receive errors on the field bus interface (USS).

Index:
[0] = Number of error-free telegrams
[1] = Number of rejected telegrams
[2] = Number of framing errors
[3] = Number of overrun errors
[4] = Number of parity errors
[5] = Number of starting character errors
[6] = Number of checksum errors
[7] = Number of length errors

p2030 Field bus interface protocol selection / Field bus protocol

CU_S_AC_DP, CU_S120_DP, CU_S150_DP

Can be changed: T	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
3	6	3

Description: Sets the communication protocol for the field bus interface.

Value:
3: PROFIBUS
6: USS (X140)

Note: Changes only become effective after POWER ON.

The parameter is not influenced by setting the factory setting.

p2030 Field bus interface protocol selection / Field bus protocol

CU_S_AC_PN, CU_S120_PN, CU_S150_PN

Can be changed: T	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
7	13	7

Description: Sets the communication protocol for the field bus interface.

Value:
7: PROFINET
10: EtherNet/IP
13: Modbus TCP

Note: Changes only become effective after POWER ON.

The parameter is not influenced by setting the factory setting.

r2032 Master control control word effective / PcCtrl STW eff

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the effective control word 1 (STW1) of the drive for the master control.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	ON/OFF1	Yes	No	-
01	OC / OFF2	Yes	No	-
02	OC / OFF3	Yes	No	-
03	Enable operation	Yes	No	-
04	Enable ramp-function generator	Yes	No	-
05	Start ramp-function generator	Yes	No	-
06	Enable speed setpoint	Yes	No	-
07	Acknowledge fault	Yes	No	-
08	Jog bit 0	Yes	No	3030
09	Jog bit 1	Yes	No	3030
10	Master control by PLC	Yes	No	-

Notice: The master control only influences control word 1 and speed setpoint 1. Other control word/setpoints can be transferred from another automation device.

Note: OC: Operating condition

r2032 Master control control word effective / PcCtrl STW eff

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the effective control word 1 (STW1) of the drive for the master control.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	ON/OFF1	Yes	No	-
01	OC / OFF2	Yes	No	-
02	OC / OFF3	Yes	No	-
03	Enable operation	Yes	No	-
04	Enable ramp-function generator	Yes	No	-
05	Start ramp-function generator	Yes	No	-
06	Enable velocity setpoint	Yes	No	-
07	Acknowledge fault	Yes	No	-
08	Jog bit 0	Yes	No	3030
09	Jog bit 1	Yes	No	3030
10	Master control by PLC	Yes	No	-

Notice: The master control only influences control word 1 and speed setpoint 1. Other control word/setpoints can be transferred from another automation device.

Note: OC: Operating condition

r2032 Master control control word effective / PcCtrl STW eff

A_INF, S_INF, R_INF, B_INF

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the effective control word 1 (STW1) of the drive for the master control.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	ON/OFF1	Yes	No	-
01	OC / OFF2	Yes	No	-
03	Enable operation	Yes	No	-
07	Acknowledge fault	Yes	No	-
10	Master control by PLC	Yes	No	-

Notice: The master control only influences control word 1 and speed setpoint 1. Other control word/setpoints can be transferred from another automation device.

Note: OC: Operating condition

p2035 Fieldbus interface USS PIV drive object number / Fieldbus USS DO_no

CU_S_AC_DP, CU_S120_DP, CU_S150_DP

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	62	2

Description: Sets the drive object number for communication via the field bus interface (USS).

Dependency: Refer to: p0978

Note: p2035 defines the destination for USS parameter requests (PIV).

p0978[0] defines the destination for USS process data (PZD).

The parameter is available globally on all drive objects.

The parameter is not influenced by setting the factory setting.

p2037 IF1 PROFIdrive STW1.10 = 0 mode / IF1 PD STW1.10=0

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM41, ENC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	2	0

Description: Sets the processing mode for PROFIdrive STW1.10 "master control by PLC".

Generally, control world 1 is received with the first receive word (PZD1) (this is in conformance to the PROFIdrive profile). The behavior of STW1.10 = 0 corresponds to that of the PROFIdrive profile. For other applications that deviate from this, the behavior can be adapted using this particular parameter.

Value:
0: Freeze setpoints and continue to process sign-of-life
1: Freeze setpoints and sign-of-life
2: Do not freeze setpoints

Recommendation: Do not change the setting p2037 = 0.

Note: If the STW1 is not transferred according to the PROFIdrive with PZD1 (with bit 10 "master control by PLC"), then p2037 should be set to 2.

p2038 IF1 PROFIdrive STW/ZSW interface mode / PD STW/ZSW IF mode

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	2	0

Description: Displays the interface mode of the PROFIdrive control words and status words.

Value:
0: SINAMICS
1: SIMODRIVE 611 universal
2: VIK-NAMUR

Dependency: Refer to: p0922, p2079

Notice: The parameter is protected and cannot be changed.

Note: For telegram selection p0922 (p2079) = 102, 103, 105, 106, 116, 118, 125, 126, 136, 138, 139, then p2038 is automatically set = 1.

When another telegram is selected, then p2038 is automatically set = 0.

p2038 IF1 PROFIdrive STW/ZSW interface mode / PD STW/ZSW IF mode

SERVO (EPOS, Pos ctrl), SERVO_AC (EPOS, Pos ctrl)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	0	0

Description: Displays the interface mode of the PROFIdrive control words and status words.

Value:
0: SINAMICS

Dependency: Refer to: p0922, p2079

Notice: The parameter is protected and cannot be changed.

p2038 IF1 PROFIdrive STW/ZSW interface mode / PD STW/ZSW IF mode

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	2	0

Description: Displays the interface mode of the PROFIdrive control words and status words.

Value:
0: SINAMICS
1: SIMODRIVE 611 universal
2: VIK-NAMUR

Dependency: Refer to: p0922, p2079

Notice: The parameter is protected and cannot be changed.

Note: For telegram selection p0922 (p2079) = 20, then p2038 is automatically set = 2.

When another telegram is selected, then p2038 is automatically set = 0.

p2038 IF1 PROFIdrive STW/ZSW interface mode / PD STW/ZSW IF mode

VECTOR (EPOS, Pos ctrl), VECTOR_AC (EPOS, Pos ctrl)	**Can be changed:** T	**Calculated:** -	**Access level:** 3
	Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Communications	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	0	0

Description: Displays the interface mode of the PROFIdrive control words and status words.

Value: 0: SINAMICS

Dependency: Refer to: p0922, p2079

Notice: The parameter is protected and cannot be changed.

Note: For p0922 (p2079) = 7, 9, 110, 111, p2038 is automatically set to 0 and cannot be changed.

p2039 Select debug monitor interface / Debug monit select

CU_I, CU_I_D410	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Communications	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	3	1

Description: Sets the serial interface for the debug monitor.

The serial interface for the debug monitor is COM1 (X140) or COM2 (internal).

Value = 0: COM2 (internal)

Value = 1: COM1 (X140), commissioning protocol is deactivated

Value = 2: COM2 (internal)

Value = 3: Reserved

p2039 Select debug monitor interface / Debug monit select

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP	**Can be changed:** U, T	**Calculated:** -	**Access level:** 4
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Communications	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	3	0

Description: Sets the serial interface for the debug monitor.

The serial interface for the debug monitor is COM1 (X140) or COM2 (internal).

Value = 0: COM2 (internal)

Value = 1: COM1 (X140), commissioning protocol is deactivated

Value = 2: COM2 (internal)

Value = 3: Reserved

p2040 COMM INT monitoring time / COMM INT t_monit

CU_I, CU_NX_CX, CU_I_D410, CU_LINK	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Communications	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0 [ms]	1999999 [ms]	20 [ms]

Description: Sets the monitoring time to monitor the process data received via the internal communications interface.

If no process data is received within this time, then an appropriate message is output.

Note: Value = 0: Monitoring is deactivated.

p2040 Fieldbus interface monitoring time / Fieldbus t_monit

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	1999999 [ms]	100 [ms]

Description: Sets the monitoring time to monitor the process data received via the fieldbus interface.

If no process data is received within this time, then an appropriate message is output.

Dependency: Refer to: p2030

Note: The parameter is only relevant for the setting of the following fieldbus protocols.

- USS (X140) (p2030 = 6)
- Modbus TCP (p2030 = 13)

Value = 0: Monitoring is deactivated.

p2042 PROFIBUS Ident Number / PB ident No.

CU_S_AC_DP, CU_S120_DP, CU_S150_DP

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the PROFIBUS ident number (PNO-ID).

SINAMICS can be operated with various identities on PROFIBUS. This allows the use of a PROFIBUS GSD that is independent of the device (e.g. PROFIdrive VIK-NAMUR with ident number 3AA0 hex).

Value:
0: SINAMICS
1: VIK-NAMUR

Note: Every change only becomes effective after a POWER ON.

r2043.0...2 BO: IF1 PROFIdrive PZD state / IF1 PD PZD state

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** 2410
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the PROFIdrive PZD state.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Setpoint failure	Yes	No	-
01	Clock cycle synchronous operation active	Yes	No	-
02	Fieldbus operation	Yes	No	-

Dependency: Refer to: p2044

Note: When using the "setpoint failure" signal, the bus can be monitored and an application-specific response triggered when the setpoint fails.

p2044 IF1 PROFIdrive fault delay / IF1 PD fault delay

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM41, ENC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2410
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [s]	100 [s]	0 [s]

Description: Sets the delay time to initiate fault F01910 after a setpoint failure.

The time until the fault is initiated can be used by the application. This means that is is possible to respond to the failure while the drive is still operational (e.g. emergency retraction).

Dependency: Refer to: r2043

p2045 CI: PB/PN clock synchronous controller sign-of-life signal source / PB/PN ctrSoL s_src

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, SERVO, VECTOR (n/M), HLA, SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M), TM41, ENC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Integer16	**Dyn. index:** -	**Func. diagram:** 2410
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Connector input for the sign-of-life of the clock synchronous PROFIBUS/PROFINET controller.

The sign-of-life is expected at bits 12 to 15. Bits 0 to 11 are not evaluated.

The sign-of-life signal is normally received in PZD4 (control word 2) from the controller.

Dependency: Refer to: p0925, r2065

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p2047 PROFIBUS additional monitoring time / PB suppl t_monit

CU_S_AC_DP, CU_S120_DP, CU_S150_DP

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2410
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	20000 [ms]	0 [ms]

Description: Sets the additional monitoring time to monitor the process data received via PROFIBUS.

Enables short bus faults to be compensated.

If no process data is received within this time, then an appropriate message is output.

Recommendation: In the isochronous mode, the additional monitoring time should not be set.

Note: For controller STOP, the additional monitoring time is not effective.

p2048 IF1 PROFIdrive PZD sampling time / IF1 PZD t_sample

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: C1(3)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1.00 [ms]	16.00 [ms]	4.00 [ms]

Description: Sets the sampling time for the cyclic interface 1 (IF1).

Note: The system only permits certain sampling times and after writing to this parameter, displays the value that has actually been set.

For clock cycle synchronous operation, the specified bus cycle time applies (Tdp).

p2049 PROFIdrive isochronous operation asynchronous participation / Isochron async

SERVO, VECTOR, SERVO_I_AC, VECTOR_I_AC

Can be changed: C1(3)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Setting for asynchronous participation in isochronous operation.

For p2049 = 1:

The axis only asynchronously participates in isochronous PROFIdrive operation.

The control sampling times of this axis are not included in the bus cycle time check (Tdp), in the time of the actual value sensing (Ti) and in the time of the setpoint sensing (To).

For p2049 = 0:

No effect on the setting in p0092.

Value:
0: No
1: Yes

Dependency: Refer to: p0092

Caution: Restrictions for asynchronous participation in isochronous PROFIBUS operation:

- the setpoints are effective at undefined instant in time (deviating from To). As a consequence, interpolating operation with other axes is not possible, for example.

- the actual values are read at undefined instant in time (deviating from Ti). As a consequence, the actual values cannot be used to control other axes, for example.

r2050[0...19] CO: IF1 PROFIdrive PZD receive word / IF1 PZD recv word

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** 4000H	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Connector output to interconnect PZD (setpoints) with word format received from the fieldbus controller.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11

[11] = PZD 12
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17
[17] = PZD 18
[18] = PZD 19
[19] = PZD 20

Note: IF1: Interface 1

r2050[0...19] CO: IF1 PROFIdrive PZD receive word / IF1 PZD recv word

SERVO, HLA, SERVO_AC, SERVO_I_AC, TM41

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 2440, 2468
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** 4000H	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Connector output to interconnect PZD (setpoints) with word format received from the fieldbus controller.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17
[17] = PZD 18
[18] = PZD 19
[19] = PZD 20

Dependency: Refer to: r2060

Notice: Where there is a multiple interconnection of a connector output, all the connector inputs must either have Integer or FloatingPoint data types.

A BICO interconnection for a single PZD can only take place either on r2050 or r2060.

Note: IF1: Interface 1

r2050[0...31] CO: IF1 PROFIdrive PZD receive word / IF1 PZD recv word

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 2440, 2468
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** 4000H	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Connector output to interconnect PZD (setpoints) with word format received from the fieldbus controller.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7

[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17
[17] = PZD 18
[18] = PZD 19
[19] = PZD 20
[20] = PZD 21
[21] = PZD 22
[22] = PZD 23
[23] = PZD 24
[24] = PZD 25
[25] = PZD 26
[26] = PZD 27
[27] = PZD 28
[28] = PZD 29
[29] = PZD 30
[30] = PZD 31
[31] = PZD 32

Dependency: Refer to: r2060

Notice: Where there is a multiple interconnection of a connector output, all the connector inputs must either have Integer or FloatingPoint data types.

A BICO interconnection for a single PZD can only take place either on r2050 or r2060.

Note: IF1: Interface 1

r2050[0...9] CO: IF1 PROFIdrive PZD receive word / IF1 PZD recv word

A_INF, S_INF, R_INF, B_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** 4000H	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Connector output to interconnect PZD (setpoints) with word format received from the fieldbus controller.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10

Note: IF1: Interface 1

r2050[0...4] CO: IF1 PROFIdrive PZD receive word / IF1 PZD recv word

TM31, TM15DI_DO, TM120, TM150, TB30

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** 4000H	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Connector output to interconnect PZD (setpoints) with word format received from the fieldbus controller.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5

Note: IF1: Interface 1

r2050[0...3] CO: IF1 PROFIdrive PZD receive word / IF1 PZD recv word

ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 2440, 2468
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** 4000H	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Connector output to interconnect PZD (setpoints) with word format received from the fieldbus controller.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4

Dependency: Refer to: r2060

Notice: Where there is a multiple interconnection of a connector output, all the connector inputs must either have Integer or FloatingPoint data types.

A BICO interconnection for a single PZD can only take place either on r2050 or r2060.

Note: IF1: Interface 1

p2051[0...24] CI: IF1 PROFIdrive PZD send word / IF1 PZD send word

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** 4000H	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Selects the PZD (actual values) with word format to be sent to the fieldbus controller.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15

[15] = PZD 16
[16] = PZD 17
[17] = PZD 18
[18] = PZD 19
[19] = PZD 20
[20] = PZD 21
[21] = PZD 22
[22] = PZD 23
[23] = PZD 24
[24] = PZD 25

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: IF1: Interface 1

p2051[0...27] CI: IF1 PROFIdrive PZD send word / IF1 PZD send word

SERVO, HLA, SERVO_AC, SERVO_I_AC, TM41

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Integer16	**Dyn. index:** -	**Func. diagram:** 2470
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** 4000H	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Selects the PZD (actual values) with word format to be sent to the fieldbus controller.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17
[17] = PZD 18
[18] = PZD 19
[19] = PZD 20
[20] = PZD 21
[21] = PZD 22
[22] = PZD 23
[23] = PZD 24
[24] = PZD 25
[25] = PZD 26
[26] = PZD 27
[27] = PZD 28

Dependency: Refer to: p2061

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: IF1: Interface 1

p2051[0...31] CI: IF1 PROFIdrive PZD send word / IF1 PZD send word

VECTOR, VECTOR_AC, VECTOR_I_AC			
	Can be changed: U, T	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32 / Integer16	**Dyn. index:** -	**Func. diagram:** 2470
	P-Group: Communications	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** 4000H	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	0

Description: Selects the PZD (actual values) with word format to be sent to the fieldbus controller.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17
[17] = PZD 18
[18] = PZD 19
[19] = PZD 20
[20] = PZD 21
[21] = PZD 22
[22] = PZD 23
[23] = PZD 24
[24] = PZD 25
[25] = PZD 26
[26] = PZD 27
[27] = PZD 28
[28] = PZD 29
[29] = PZD 30
[30] = PZD 31
[31] = PZD 32

Dependency: Refer to: p2061

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: IF1: Interface 1

p2051[0...9] CI: IF1 PROFIdrive PZD send word / IF1 PZD send word

A_INF, S_INF, R_INF, B_INF			
	Can be changed: U, T	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32 / Integer16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Communications	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** 4000H	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	0

Description: Selects the PZD (actual values) with word format to be sent to the fieldbus controller.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7

[7] = PZD 8
[8] = PZD 9
[9] = PZD 10

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: IF1: Interface 1

p2051[0...4] CI: IF1 PROFIdrive PZD send word / IF1 PZD send word

TM31, TM15DI_DO, TM120, TM150, TB30

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** 4000H	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Selects the PZD (actual values) with word format to be sent to the fieldbus controller.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: IF1: Interface 1

p2051[0...11] CI: IF1 PROFIdrive PZD send word / IF1 PZD send word

ENC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Integer16	**Dyn. index:** -	**Func. diagram:** 2470
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** 4000H	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Selects the PZD (actual values) with word format to be sent to the fieldbus controller.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12

Dependency: Refer to: p2061

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: IF1: Interface 1

r2053[0...24] IF1 PROFIdrive diagnostics PZD send word / IF1 diag send word

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the PZD (actual values) with word format sent to the fieldbus controller.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17
[17] = PZD 18
[18] = PZD 19
[19] = PZD 20
[20] = PZD 21
[21] = PZD 22
[22] = PZD 23
[23] = PZD 24
[24] = PZD 25

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	ON	OFF	-
01	Bit 1	ON	OFF	-
02	Bit 2	ON	OFF	-
03	Bit 3	ON	OFF	-
04	Bit 4	ON	OFF	-
05	Bit 5	ON	OFF	-
06	Bit 6	ON	OFF	-
07	Bit 7	ON	OFF	-
08	Bit 8	ON	OFF	-
09	Bit 9	ON	OFF	-
10	Bit 10	ON	OFF	-
11	Bit 11	ON	OFF	-
12	Bit 12	ON	OFF	-
13	Bit 13	ON	OFF	-
14	Bit 14	ON	OFF	-
15	Bit 15	ON	OFF	-

Note: IF1: Interface 1

r2053[0...27] IF1 PROFIdrive diagnostics PZD send word / IF1 diag send word

SERVO, HLA, SERVO_AC, SERVO_I_AC, TM41

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2450, 2470
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the PZD (actual values) with word format sent to the fieldbus controller.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17
[17] = PZD 18
[18] = PZD 19
[19] = PZD 20
[20] = PZD 21
[21] = PZD 22
[22] = PZD 23
[23] = PZD 24
[24] = PZD 25
[25] = PZD 26
[26] = PZD 27
[27] = PZD 28

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	ON	OFF	-
01	Bit 1	ON	OFF	-
02	Bit 2	ON	OFF	-
03	Bit 3	ON	OFF	-
04	Bit 4	ON	OFF	-
05	Bit 5	ON	OFF	-
06	Bit 6	ON	OFF	-
07	Bit 7	ON	OFF	-
08	Bit 8	ON	OFF	-
09	Bit 9	ON	OFF	-
10	Bit 10	ON	OFF	-
11	Bit 11	ON	OFF	-
12	Bit 12	ON	OFF	-
13	Bit 13	ON	OFF	-
14	Bit 14	ON	OFF	-
15	Bit 15	ON	OFF	-

Dependency: Refer to: p2051, p2061

Note: IF1: Interface 1

r2053[0...31] IF1 PROFIdrive diagnostics PZD send word / IF1 diag send word

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2450, 2470
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the PZD (actual values) with word format sent to the fieldbus controller.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17
[17] = PZD 18
[18] = PZD 19
[19] = PZD 20
[20] = PZD 21
[21] = PZD 22
[22] = PZD 23
[23] = PZD 24
[24] = PZD 25
[25] = PZD 26
[26] = PZD 27
[27] = PZD 28
[28] = PZD 29
[29] = PZD 30
[30] = PZD 31
[31] = PZD 32

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	ON	OFF	-
01	Bit 1	ON	OFF	-
02	Bit 2	ON	OFF	-
03	Bit 3	ON	OFF	-
04	Bit 4	ON	OFF	-
05	Bit 5	ON	OFF	-
06	Bit 6	ON	OFF	-
07	Bit 7	ON	OFF	-
08	Bit 8	ON	OFF	-
09	Bit 9	ON	OFF	-
10	Bit 10	ON	OFF	-
11	Bit 11	ON	OFF	-
12	Bit 12	ON	OFF	-
13	Bit 13	ON	OFF	-
14	Bit 14	ON	OFF	-
15	Bit 15	ON	OFF	-

Dependency: Refer to: p2051, p2061

Note: IF1: Interface 1

r2053[0...9] IF1 PROFIdrive diagnostics PZD send word / IF1 diag send word

A_INF, S_INF, R_INF, B_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the PZD (actual values) with word format sent to the fieldbus controller.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	ON	OFF	-
01	Bit 1	ON	OFF	-
02	Bit 2	ON	OFF	-
03	Bit 3	ON	OFF	-
04	Bit 4	ON	OFF	-
05	Bit 5	ON	OFF	-
06	Bit 6	ON	OFF	-
07	Bit 7	ON	OFF	-
08	Bit 8	ON	OFF	-
09	Bit 9	ON	OFF	-
10	Bit 10	ON	OFF	-
11	Bit 11	ON	OFF	-
12	Bit 12	ON	OFF	-
13	Bit 13	ON	OFF	-
14	Bit 14	ON	OFF	-
15	Bit 15	ON	OFF	-

Note: IF1: Interface 1

r2053[0...4] IF1 PROFIdrive diagnostics PZD send word / IF1 diag send word

TM31, TM15DI_DO, TM120, TM150, TB30

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the PZD (actual values) with word format sent to the fieldbus controller.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	ON	OFF	-
01	Bit 1	ON	OFF	-
02	Bit 2	ON	OFF	-
03	Bit 3	ON	OFF	-
04	Bit 4	ON	OFF	-
05	Bit 5	ON	OFF	-
06	Bit 6	ON	OFF	-
07	Bit 7	ON	OFF	-
08	Bit 8	ON	OFF	-
09	Bit 9	ON	OFF	-
10	Bit 10	ON	OFF	-
11	Bit 11	ON	OFF	-
12	Bit 12	ON	OFF	-
13	Bit 13	ON	OFF	-
14	Bit 14	ON	OFF	-
15	Bit 15	ON	OFF	-

Note: IF1: Interface 1

r2053[0...11] IF1 PROFIdrive diagnostics PZD send word / IF1 diag send word

ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2450, 2470
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the PZD (actual values) with word format sent to the fieldbus controller.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	ON	OFF	-
01	Bit 1	ON	OFF	-
02	Bit 2	ON	OFF	-
03	Bit 3	ON	OFF	-
04	Bit 4	ON	OFF	-
05	Bit 5	ON	OFF	-
06	Bit 6	ON	OFF	-
07	Bit 7	ON	OFF	-
08	Bit 8	ON	OFF	-
09	Bit 9	ON	OFF	-
10	Bit 10	ON	OFF	-
11	Bit 11	ON	OFF	-
12	Bit 12	ON	OFF	-
13	Bit 13	ON	OFF	-
14	Bit 14	ON	OFF	-
15	Bit 15	ON	OFF	-

Dependency: Refer to: p2051, p2061

Note: IF1: Interface 1

r2054 COMM INT state / C INT state

CU_I, CU_NX_CX, CU_I_D410, CU_LINK

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	-

Description: Status display for the internal communications interface.

Value:
0: No initialization
1: Fatal fault
2: Initialization
3: Send configuration
4: Receive configuration
5: Non-cyclic communication
6: Cyclic communications but no setpoints (stop/no clock cycle)
255: Cyclic communication

r2054 PROFIBUS status / PB status

CU_S_AC_DP, CU_S120_DP, CU_S150_DP

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 2410
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	4	-

Description: Status display for the PROFIBUS interface.

Value:
0: OFF
1: No connection (search for baud rate)
2: Connection OK (baud rate found)
3: Cyclic connection with master (data exchange)
4: Cyclic data OK

Note: For r2054 = 2:

If the state is not exited, then set or check the PROFIBUS address in p0918.

For r2054 = 3:

In state 3 (the LED flashes green), a cyclic connection has been established to the PROFIBUS master; however, one of the following prerequisites is missing for cyclic operation:

- no setpoints are being received as the PROFIBUS master is in the STOP condition.

Only for isochronous operation, the following applies:

- the drive is not in synchronism as the global control (GC) has an error.

For r2054 = 4:

In the status 4 (LED green), the cyclic connection to the PROFIBUS master has been established and setpoints are being received. The clock cycle synchronization is OK, the global control (GC) is error-free.

This state does not provide any statement regarding the quality of the clock cycle synchronous sign-of-life characters on the drive objects.

r2055[0...2] PROFIBUS diagnostics standard / PB diag standard

CU_S_AC_DP, CU_S120_PN, CU_S120_DP, CU_S150_DP

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2410
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Diagnostics display for the PROFIBUS interface.

Index:
[0] = Master bus address
[1] = Master input total length bytes
[2] = Master output total length bytes

r2057 PROFIBUS address switch diagnostics / PB addr sw diag

CU_S_AC_DP, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2410
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the setting of the PROFIBUS address switch "DP ADDRESS" on the Control Unit.

Dependency: Refer to: p0918

Notice: The display is updated after switching on, and not cyclically.

r2058[0...139] COMM INT receive configuration data / C INT E_config_dat

CU_I, CU_NX_CX, CU_I_D410, CU_LINK

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the configuration data received via COMM BOARD.

r2059[0...7] COMM INT identification data / C INT ident_dat

CU_I, CU_NX_CX, CU_I_D410, CU_LINK

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the identification data of the COMM BOARD.

Note: Index 0: CB data structure version (e.g.: 100 = V1.00).

Index 1: CB driver version (e.g.: 100 = V1.00).

Index 2: Company, (e.g.: 42 = Siemens).

Index 3: Device type

Index 4: Firmware version.

Index 5: Firmware date (year).

Index 6: Firmware date (day/month).

r2060[0...18] CO: IF1 PROFIdrive PZD receive double word / IF1 PZD recv DW

SERVO, HLA, SERVO_AC, SERVO_I_AC, TM41

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 2440, 2468
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** 4000H	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Connector output to interconnect PZD (setpoints) with double word format received from the fieldbus controller.

Index:
[0] = PZD 1 + 2
[1] = PZD 2 + 3
[2] = PZD 3 + 4
[3] = PZD 4 + 5
[4] = PZD 5 + 6
[5] = PZD 6 + 7
[6] = PZD 7 + 8
[7] = PZD 8 + 9
[8] = PZD 9 + 10

[9] = PZD 10 + 11
[10] = PZD 11 + 12
[11] = PZD 12 + 13
[12] = PZD 13 + 14
[13] = PZD 14 + 15
[14] = PZD 15 + 16
[15] = PZD 16 + 17
[16] = PZD 17 + 18
[17] = PZD 18 + 19
[18] = PZD 19 + 20

Dependency: Refer to: r2050

Notice: Where there is a multiple interconnection of a connector output, all the connector inputs must either have Integer or FloatingPoint data types.

A BICO interconnection for a single PZD can only take place either on r2050 or r2060.

A maximum of 4 indices of the "trace" function can be used.

Note: IF1: Interface 1

r2060[0...30] CO: IF1 PROFIdrive PZD receive double word / IF1 PZD recv DW

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 2440, 2468
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** 4000H	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Connector output to interconnect PZD (setpoints) with double word format received from the fieldbus controller.

Index:
[0] = PZD 1 + 2
[1] = PZD 2 + 3
[2] = PZD 3 + 4
[3] = PZD 4 + 5
[4] = PZD 5 + 6
[5] = PZD 6 + 7
[6] = PZD 7 + 8
[7] = PZD 8 + 9
[8] = PZD 9 + 10
[9] = PZD 10 + 11
[10] = PZD 11 + 12
[11] = PZD 12 + 13
[12] = PZD 13 + 14
[13] = PZD 14 + 15
[14] = PZD 15 + 16
[15] = PZD 16 + 17
[16] = PZD 17 + 18
[17] = PZD 18 + 19
[18] = PZD 19 + 20
[19] = PZD 20 + 21
[20] = PZD 21 + 22
[21] = PZD 22 + 23
[22] = PZD 23 + 24
[23] = PZD 24 + 25
[24] = PZD 25 + 26
[25] = PZD 26 + 27
[26] = PZD 27 + 28
[27] = PZD 28 + 29
[28] = PZD 29 + 30
[29] = PZD 30 + 31
[30] = PZD 31 + 32

Dependency: Refer to: r2050

Notice: Where there is a multiple interconnection of a connector output, all the connector inputs must either have Integer or FloatingPoint data types.

A BICO interconnection for a single PZD can only take place either on r2050 or r2060.

A maximum of 4 indices of the "trace" function can be used.

Note: IF1: Interface 1

r2060[0...2] CO: IF1 PROFIdrive PZD receive double word / IF1 PZD recv DW

ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 2440, 2468
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** 4000H	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Connector output to interconnect PZD (setpoints) with double word format received from the fieldbus controller.

Index:
[0] = PZD 1 + 2
[1] = PZD 2 + 3
[2] = PZD 3 + 4

Dependency: Refer to: r2050

Notice: Where there is a multiple interconnection of a connector output, all the connector inputs must either have Integer or FloatingPoint data types.

A BICO interconnection for a single PZD can only take place either on r2050 or r2060.

Note: IF1: Interface 1

p2061[0...26] CI: IF1 PROFIdrive PZD send double word / IF1 PZD send DW

SERVO, HLA, SERVO_AC, SERVO_I_AC, TM41

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Integer32	**Dyn. index:** -	**Func. diagram:** 2470
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** 4000H	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Selects the PZD (actual values) with double word format to be sent to the fieldbus controller.

Index:
[0] = PZD 1 + 2
[1] = PZD 2 + 3
[2] = PZD 3 + 4
[3] = PZD 4 + 5
[4] = PZD 5 + 6
[5] = PZD 6 + 7
[6] = PZD 7 + 8
[7] = PZD 8 + 9
[8] = PZD 9 + 10
[9] = PZD 10 + 11
[10] = PZD 11 + 12
[11] = PZD 12 + 13
[12] = PZD 13 + 14
[13] = PZD 14 + 15
[14] = PZD 15 + 16
[15] = PZD 16 + 17
[16] = PZD 17 + 18
[17] = PZD 18 + 19
[18] = PZD 19 + 20
[19] = PZD 20 + 21
[20] = PZD 21 + 22
[21] = PZD 22 + 23
[22] = PZD 23 + 24
[23] = PZD 24 + 25
[24] = PZD 25 + 26
[25] = PZD 26 + 27
[26] = PZD 27 + 28

Dependency: Refer to: p2051

Notice: A BICO interconnection for a single PZD can only take place either on p2051 or p2061.
The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: IF1: Interface 1

p2061[0...30] CI: IF1 PROFIdrive PZD send double word / IF1 PZD send DW

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Integer32	**Dyn. index:** -	**Func. diagram:** 2470
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** 4000H	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Selects the PZD (actual values) with double word format to be sent to the fieldbus controller.

Index:
[0] = PZD 1 + 2
[1] = PZD 2 + 3
[2] = PZD 3 + 4
[3] = PZD 4 + 5
[4] = PZD 5 + 6
[5] = PZD 6 + 7
[6] = PZD 7 + 8
[7] = PZD 8 + 9
[8] = PZD 9 + 10
[9] = PZD 10 + 11
[10] = PZD 11 + 12
[11] = PZD 12 + 13
[12] = PZD 13 + 14
[13] = PZD 14 + 15
[14] = PZD 15 + 16
[15] = PZD 16 + 17
[16] = PZD 17 + 18
[17] = PZD 18 + 19
[18] = PZD 19 + 20
[19] = PZD 20 + 21
[20] = PZD 21 + 22
[21] = PZD 22 + 23
[22] = PZD 23 + 24
[23] = PZD 24 + 25
[24] = PZD 25 + 26
[25] = PZD 26 + 27
[26] = PZD 27 + 28
[27] = PZD 28 + 29
[28] = PZD 29 + 30
[29] = PZD 30 + 31
[30] = PZD 31 + 32

Dependency: Refer to: p2051

Notice: A BICO interconnection for a single PZD can only take place either on p2051 or p2061.
The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: IF1: Interface 1

p2061[0...10] CI: IF1 PROFIdrive PZD send double word / IF1 PZD send DW

ENC	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32 / Integer32	**Dyn. index:** -	**Func. diagram:** 2470
	P-Group: Communications	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** 4000H	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	0

Description: Selects the PZD (actual values) with double word format to be sent to the fieldbus controller.

Index:
[0] = PZD 1 + 2
[1] = PZD 2 + 3
[2] = PZD 3 + 4
[3] = PZD 4 + 5
[4] = PZD 5 + 6
[5] = PZD 6 + 7
[6] = PZD 7 + 8
[7] = PZD 8 + 9
[8] = PZD 9 + 10
[9] = PZD 10 + 11
[10] = PZD 11 + 12

Dependency: Refer to: p2051

Notice: A BICO interconnection for a single PZD can only take place either on p2051 or p2061.

The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: IF1: Interface 1

r2063[0...26] IF1 PROFIdrive diagnostics PZD send double word / IF1 diag send DW

SERVO, HLA, SERVO_AC, SERVO_I_AC, TM41	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2450, 2470
	P-Group: Communications	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the PZD (actual values) with double word format sent to the fieldbus controller.

Index:
[0] = PZD 1 + 2
[1] = PZD 2 + 3
[2] = PZD 3 + 4
[3] = PZD 4 + 5
[4] = PZD 5 + 6
[5] = PZD 6 + 7
[6] = PZD 7 + 8
[7] = PZD 8 + 9
[8] = PZD 9 + 10
[9] = PZD 10 + 11
[10] = PZD 11 + 12
[11] = PZD 12 + 13
[12] = PZD 13 + 14
[13] = PZD 14 + 15
[14] = PZD 15 + 16
[15] = PZD 16 + 17
[16] = PZD 17 + 18
[17] = PZD 18 + 19
[18] = PZD 19 + 20
[19] = PZD 20 + 21
[20] = PZD 21 + 22
[21] = PZD 22 + 23
[22] = PZD 23 + 24
[23] = PZD 24 + 25
[24] = PZD 25 + 26
[25] = PZD 26 + 27
[26] = PZD 27 + 28

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	ON	OFF	-
01	Bit 1	ON	OFF	-
02	Bit 2	ON	OFF	-
03	Bit 3	ON	OFF	-
04	Bit 4	ON	OFF	-
05	Bit 5	ON	OFF	-
06	Bit 6	ON	OFF	-
07	Bit 7	ON	OFF	-
08	Bit 8	ON	OFF	-
09	Bit 9	ON	OFF	-
10	Bit 10	ON	OFF	-
11	Bit 11	ON	OFF	-
12	Bit 12	ON	OFF	-
13	Bit 13	ON	OFF	-
14	Bit 14	ON	OFF	-
15	Bit 15	ON	OFF	-
16	Bit 16	ON	OFF	-
17	Bit 17	ON	OFF	-
18	Bit 18	ON	OFF	-
19	Bit 19	ON	OFF	-
20	Bit 20	ON	OFF	-
21	Bit 21	ON	OFF	-
22	Bit 22	ON	OFF	-
23	Bit 23	ON	OFF	-
24	Bit 24	ON	OFF	-
25	Bit 25	ON	OFF	-
26	Bit 26	ON	OFF	-
27	Bit 27	ON	OFF	-
28	Bit 28	ON	OFF	-
29	Bit 29	ON	OFF	-
30	Bit 30	ON	OFF	-
31	Bit 31	ON	OFF	-

Notice: A maximum of 4 indices of the "trace" function can be used.

Note: IF1: Interface 1

r2063[0...30] IF1 PROFIdrive diagnostics PZD send double word / IF1 diag send DW

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2450, 2470
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the PZD (actual values) with double word format sent to the fieldbus controller.

Index:
[0] = PZD 1 + 2
[1] = PZD 2 + 3
[2] = PZD 3 + 4
[3] = PZD 4 + 5
[4] = PZD 5 + 6
[5] = PZD 6 + 7
[6] = PZD 7 + 8
[7] = PZD 8 + 9
[8] = PZD 9 + 10
[9] = PZD 10 + 11
[10] = PZD 11 + 12
[11] = PZD 12 + 13
[12] = PZD 13 + 14
[13] = PZD 14 + 15
[14] = PZD 15 + 16
[15] = PZD 16 + 17
[16] = PZD 17 + 18
[17] = PZD 18 + 19
[18] = PZD 19 + 20

[19] = PZD 20 + 21
[20] = PZD 21 + 22
[21] = PZD 22 + 23
[22] = PZD 23 + 24
[23] = PZD 24 + 25
[24] = PZD 25 + 26
[25] = PZD 26 + 27
[26] = PZD 27 + 28
[27] = PZD 28 + 29
[28] = PZD 29 + 30
[29] = PZD 30 + 31
[30] = PZD 31 + 32

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	ON	OFF	-
01	Bit 1	ON	OFF	-
02	Bit 2	ON	OFF	-
03	Bit 3	ON	OFF	-
04	Bit 4	ON	OFF	-
05	Bit 5	ON	OFF	-
06	Bit 6	ON	OFF	-
07	Bit 7	ON	OFF	-
08	Bit 8	ON	OFF	-
09	Bit 9	ON	OFF	-
10	Bit 10	ON	OFF	-
11	Bit 11	ON	OFF	-
12	Bit 12	ON	OFF	-
13	Bit 13	ON	OFF	-
14	Bit 14	ON	OFF	-
15	Bit 15	ON	OFF	-
16	Bit 16	ON	OFF	-
17	Bit 17	ON	OFF	-
18	Bit 18	ON	OFF	-
19	Bit 19	ON	OFF	-
20	Bit 20	ON	OFF	-
21	Bit 21	ON	OFF	-
22	Bit 22	ON	OFF	-
23	Bit 23	ON	OFF	-
24	Bit 24	ON	OFF	-
25	Bit 25	ON	OFF	-
26	Bit 26	ON	OFF	-
27	Bit 27	ON	OFF	-
28	Bit 28	ON	OFF	-
29	Bit 29	ON	OFF	-
30	Bit 30	ON	OFF	-
31	Bit 31	ON	OFF	-

Notice: A maximum of 4 indices of the "trace" function can be used.

Note: IF1: Interface 1

r2063[0...10] IF1 PROFIdrive diagnostics PZD send double word / IF1 diag send DW

ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2450, 2470
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the PZD (actual values) with double word format sent to the fieldbus controller.

Index:
[0] = PZD 1 + 2
[1] = PZD 2 + 3
[2] = PZD 3 + 4
[3] = PZD 4 + 5
[4] = PZD 5 + 6
[5] = PZD 6 + 7

[6] = PZD 7 + 8
[7] = PZD 8 + 9
[8] = PZD 9 + 10
[9] = PZD 10 + 11
[10] = PZD 11 + 12

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	ON	OFF	-
01	Bit 1	ON	OFF	-
02	Bit 2	ON	OFF	-
03	Bit 3	ON	OFF	-
04	Bit 4	ON	OFF	-
05	Bit 5	ON	OFF	-
06	Bit 6	ON	OFF	-
07	Bit 7	ON	OFF	-
08	Bit 8	ON	OFF	-
09	Bit 9	ON	OFF	-
10	Bit 10	ON	OFF	-
11	Bit 11	ON	OFF	-
12	Bit 12	ON	OFF	-
13	Bit 13	ON	OFF	-
14	Bit 14	ON	OFF	-
15	Bit 15	ON	OFF	-
16	Bit 16	ON	OFF	-
17	Bit 17	ON	OFF	-
18	Bit 18	ON	OFF	-
19	Bit 19	ON	OFF	-
20	Bit 20	ON	OFF	-
21	Bit 21	ON	OFF	-
22	Bit 22	ON	OFF	-
23	Bit 23	ON	OFF	-
24	Bit 24	ON	OFF	-
25	Bit 25	ON	OFF	-
26	Bit 26	ON	OFF	-
27	Bit 27	ON	OFF	-
28	Bit 28	ON	OFF	-
29	Bit 29	ON	OFF	-
30	Bit 30	ON	OFF	-
31	Bit 31	ON	OFF	-

Notice: A maximum of 4 indices of the "trace" function can be used.

Note: IF1: Interface 1

r2064[0...7] PB/PN diagnostics clock cycle synchronism / PB/PN diag clock

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 2410
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the last parameter received from the PROFIBUS/PROFINET controller for clock synchronism.

The parameters for clock synchronism are created when configuring the bus and are transferred at the start of cyclic operation from the controller to the device.

Index:
[0] = Clock synchronous mode activated
[1] = Bus cycle time (Tdp) [µs]
[2] = Master cycle time (Tmapc) [µs]
[3] = Instant of actual value acquisition (Ti) [µs]
[4] = Instant of setpoint acquisition (To) [µs]
[5] = Data exchange interval (Tdx) [µs]
[6] = PLL window (Tpll-w) [1/12 µs]
[7] = PLL delay time (Tpll-d) [1/12 µs]

r2065 PB/PN controller sign of life diagnostics / PB/PN ctr SoL diag

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, SERVO, VECTOR (n/M), HLA, SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M), TM41, ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2410
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays how often the sign-of-life from the clock synchronous PROFIBUS/PROFINET controller last failed.
An appropriate fault is output when the tolerance, specified in p0925, is exceeded.

Dependency: Refer to: F01912

r2067[0...1] IF1 PZD maximum interconnected / IF1 PZDmaxIntercon

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM15DI_DO, TM120, TM150, TB30, ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display for the maximum interconnected PZD in the receive/send direction
Index 0: receive (r2050, r2060)
Index 1: send (p2051, p2061)

p2070 IF1 PROFIdrive supplementary telegram receive beginning / Suppl_tele rec beg

SERVO, HLA, SERVO_AC, SERVO_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** 2423
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	18	0

Description: Sets the beginning for the first supplementary telegram (p8864, p60122) in receive words (r2050, r2060).

Dependency: Refer to: p0922, p2071, p2079, p8864, p60122

Note: For setting p0922/p2079, the value is preset to the end of the PZD telegram.
For p0922 equal to 999 and p2079 not equal to 999, the preset value can be increased.
The value must be set again after changing p0922/p2079.

p2070 IF1 PROFIdrive supplementary telegram receive beginning / Suppl_tele rec beg

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** 2423
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	30	0

Description: Sets the beginning for the first supplementary telegram (p8864, p60122) in receive words (r2050, r2060).

Dependency: Refer to: p0922, p2071, p2079, p8864, p60122

Note: For setting p0922/p2079, the value is preset to the end of the PZD telegram.
For p0922 equal to 999 and p2079 not equal to 999, the preset value can be increased.
The value must be set again after changing p0922/p2079.

p2071 IF1 PROFIdrive supplementary telegram send beginning / Suppl_tel send beg

SERVO, HLA, SERVO_AC, SERVO_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** 2423
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	26	0

Description: Sets the beginning for the first supplementary telegram (p8864, p60122) in receive words (p2051, p2061).

Dependency: Refer to: p0922, p2070, p2079, p60122

Note: For setting p0922/p2079, the value is preset to the end of the PZD telegram.
For p0922 equal to 999 and p2079 not equal to 999, the preset value can be increased.
The value must be set again after changing p0922/p2079.

p2071 IF1 PROFIdrive supplementary telegram send beginning / Suppl_tel send beg

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** 2423
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	30	0

Description: Sets the beginning for the first supplementary telegram (p8864, p60122) in receive words (p2051, p2061).

Dependency: Refer to: p0922, p2079, p60122

Note: For setting p0922/p2079, the value is preset to the end of the PZD telegram.
For p0922 equal to 999 and p2079 not equal to 999, the preset value can be increased.
The value must be set again after changing p0922/p2079.

p2072 Response receive value after PZD failure / Resp aft PZD fail

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Sets the response for the receive value (r2090) after PZD failure.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Unconditionally open holding brake (p0855)	Freeze value	Zero the value	-

r2074[0...19] IF1 PROFIdrive diagnostics bus address PZD receive / IF1diag addr recv

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, SERVO, HLA, SERVO_AC, SERVO_I_AC, TM41

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the PROFIBUS address of the sender from which the process data (PZD) is received.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17
[17] = PZD 18
[18] = PZD 19
[19] = PZD 20

Note: IF1: Interface 1

Value range:

0 - 125: Bus address of the sender

65535: Not assigned

r2074[0...31] IF1 PROFIdrive diagnostics bus address PZD receive / IF1diag addr recv

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the PROFIBUS address of the sender from which the process data (PZD) is received.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16

[16] = PZD 17
[17] = PZD 18
[18] = PZD 19
[19] = PZD 20
[20] = PZD 21
[21] = PZD 22
[22] = PZD 23
[23] = PZD 24
[24] = PZD 25
[25] = PZD 26
[26] = PZD 27
[27] = PZD 28
[28] = PZD 29
[29] = PZD 30
[30] = PZD 31
[31] = PZD 32

Note: IF1: Interface 1

Value range:

0 - 125: Bus address of the sender

65535: Not assigned

r2074[0...9] IF1 PROFIdrive diagnostics bus address PZD receive / IF1diag addr recv

A_INF, S_INF, R_INF, B_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the PROFIBUS address of the sender from which the process data (PZD) is received.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10

Note: IF1: Interface 1

Value range:

0 - 125: Bus address of the sender

65535: Not assigned

r2074[0...4] IF1 PROFIdrive diagnostics bus address PZD receive / IF1diag addr recv

TM31, TM15DI_DO, TM120, TM150, TB30

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the PROFIBUS address of the sender from which the process data (PZD) is received.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5

Note: IF1: Interface 1
Value range:
0 - 125: Bus address of the sender
65535: Not assigned

r2074[0...3] IF1 PROFIdrive diagnostics bus address PZD receive / IF1diag addr recv

ENC			
	Can be changed: -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Communications	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the PROFIBUS address of the sender from which the process data (PZD) is received.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4

Note: IF1: Interface 1
Value range:
0 - 125: Bus address of the sender
65535: Not assigned

r2075[0...19] IF1 PROFIdrive diagnostics telegram offset PZD receive / IF1 diag offs recv

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, SERVO, HLA, SERVO_AC, SERVO_I_AC, TM41			
	Can be changed: -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2410
	P-Group: Communications	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the PZD byte offset in the PROFIdrive receive telegram (controller output).

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17
[17] = PZD 18
[18] = PZD 19
[19] = PZD 20

Note: IF1: Interface 1
Value range:
0 - 242: Byte offset
65535: Not assigned

r2075[0...31] IF1 PROFIdrive diagnostics telegram offset PZD receive / IF1 diag offs recv

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2410
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the PZD byte offset in the PROFIdrive receive telegram (controller output).

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17
[17] = PZD 18
[18] = PZD 19
[19] = PZD 20
[20] = PZD 21
[21] = PZD 22
[22] = PZD 23
[23] = PZD 24
[24] = PZD 25
[25] = PZD 26
[26] = PZD 27
[27] = PZD 28
[28] = PZD 29
[29] = PZD 30
[30] = PZD 31
[31] = PZD 32

Note: IF1: Interface 1

Value range:

0 - 242: Byte offset

65535: Not assigned

r2075[0...9] IF1 PROFIdrive diagnostics telegram offset PZD receive / IF1 diag offs recv

A_INF, S_INF, R_INF, B_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2410
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the PZD byte offset in the PROFIdrive receive telegram (controller output).

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6

[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10

Note: IF1: Interface 1

Value range:

0 - 242: Byte offset

65535: Not assigned

r2075[0...4] IF1 PROFIdrive diagnostics telegram offset PZD receive / IF1 diag offs recv

TM31, TM15DI_DO, TM120, TM150, TB30

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2410
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the PZD byte offset in the PROFIdrive receive telegram (controller output).

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5

Note: IF1: Interface 1

Value range:

0 - 242: Byte offset

65535: Not assigned

r2075[0...3] IF1 PROFIdrive diagnostics telegram offset PZD receive / IF1 diag offs recv

ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2410
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the PZD byte offset in the PROFIdrive receive telegram (controller output).

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4

Note: IF1: Interface 1

Value range:

0 - 242: Byte offset

65535: Not assigned

r2076[0...24] IF1 PROFIdrive diagnostics telegram offset PZD send / IF1 diag offs send

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2410
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the PZD byte offset in the PROFIdrive send telegram (controller input).

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17
[17] = PZD 18
[18] = PZD 19
[19] = PZD 20
[20] = PZD 21
[21] = PZD 22
[22] = PZD 23
[23] = PZD 24
[24] = PZD 25

Note: IF1: Interface 1

Value range:

0 - 242: Byte offset

65535: Not assigned

r2076[0...27] IF1 PROFIdrive diagnostics telegram offset PZD send / IF1 diag offs send

SERVO, HLA, SERVO_AC, SERVO_I_AC, TM41

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2410
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the PZD byte offset in the PROFIdrive send telegram (controller input).

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12
[12] = PZD 13

[13] = PZD 14
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17
[17] = PZD 18
[18] = PZD 19
[19] = PZD 20
[20] = PZD 21
[21] = PZD 22
[22] = PZD 23
[23] = PZD 24
[24] = PZD 25
[25] = PZD 26
[26] = PZD 27
[27] = PZD 28

Note: IF1: Interface 1

Value range:

0 - 242: Byte offset

65535: Not assigned

r2076[0...31] IF1 PROFIdrive diagnostics telegram offset PZD send / IF1 diag offs send

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2410
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the PZD byte offset in the PROFIdrive send telegram (controller input).

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17
[17] = PZD 18
[18] = PZD 19
[19] = PZD 20
[20] = PZD 21
[21] = PZD 22
[22] = PZD 23
[23] = PZD 24
[24] = PZD 25
[25] = PZD 26
[26] = PZD 27
[27] = PZD 28
[28] = PZD 29
[29] = PZD 30
[30] = PZD 31
[31] = PZD 32

Note: IF1: Interface 1

Value range:

0 - 242: Byte offset

65535: Not assigned

r2076[0...9] IF1 PROFIdrive diagnostics telegram offset PZD send / IF1 diag offs send

A_INF, S_INF, R_INF, B_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2410
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the PZD byte offset in the PROFIdrive send telegram (controller input).

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10

Note: IF1: Interface 1

Value range:

0 - 242: Byte offset

65535: Not assigned

r2076[0...4] IF1 PROFIdrive diagnostics telegram offset PZD send / IF1 diag offs send

TM31, TM15DI_DO, TM120, TM150, TB30

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2410
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the PZD byte offset in the PROFIdrive send telegram (controller input).

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5

Note: IF1: Interface 1

Value range:

0 - 242: Byte offset

65535: Not assigned

r2076[0...11] IF1 PROFIdrive diagnostics telegram offset PZD send / IF1 diag offs send

ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2410
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the PZD byte offset in the PROFIdrive send telegram (controller input).

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12

Note: IF1: Interface 1

Value range:

0 - 242: Byte offset

65535: Not assigned

r2077[0...15] PROFIBUS diagnostics peer-to-peer data transfer addresses / PB diag peer addr

CU_S_AC_DP, CU_S120_DP, CU_S150_DP

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the addresses of the slaves (peers) where peer-to-peer data transfer has been configured via PROFIBUS.

p2079 IF1 PROFIdrive PZD telegram selection extended / IF1 PZD telegr ext

CU_I_D410

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
390	999	999

Description: Sets the send and receive telegram.

Contrary to p0922, a telegram can be selected using p2079 and subsequently expanded.

Value:
390: SIEMENS telegram 390, PZD-2/2
391: SIEMENS telegram 391, PZD-3/7
392: SIEMENS telegram 392, PZD-3/15
393: SIEMENS telegram 393, PZD-4/21
394: SIEMENS telegram 394, PZD-3/3
395: SIEMENS telegram 395, PZD-4/25
396: SIEMENS telegram 396, PZD-20/21
999: Free telegram configuration with BICO

Note: For p0922 < 999 the following applies:

p2079 has the same value and is inhibited. All of the interconnections and extensions contained in the telegram are inhibited.

For p0922 = 999 the following applies:

p2079 can be freely set. If p2079 is also set to 999, then all of the interconnections can be set.

For p0922 = 999 and p2079 < 999 the following applies:

The interconnections contained in the telegram are inhibited. However, the telegram can be extended.

p2079 IF1 PROFIdrive PZD telegram selection extended / IF1 PZD telegr ext

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
390	999	999

Description: Sets the send and receive telegram.

Contrary to p0922, a telegram can be selected using p2079 and subsequently expanded.

Value:
390: SIEMENS telegram 390, PZD-2/2
391: SIEMENS telegram 391, PZD-3/7
392: SIEMENS telegram 392, PZD-3/15
393: SIEMENS telegram 393, PZD-4/21
394: SIEMENS telegram 394, PZD-3/3
395: SIEMENS telegram 395, PZD-4/25
999: Free telegram configuration with BICO

Note: For p0922 < 999 the following applies:

p2079 has the same value and is inhibited. All of the interconnections and extensions contained in the telegram are inhibited.

For p0922 = 999 the following applies:

p2079 can be freely set. If p2079 is also set to 999, then all of the interconnections can be set.

For p0922 = 999 and p2079 < 999 the following applies:

The interconnections contained in the telegram are inhibited. However, the telegram can be extended.

p2079 IF1 PROFIdrive PZD telegram selection extended / IF1 PZD telegr ext

HLA

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
166	999	999

Description: Sets the send and receive telegram.

Contrary to p0922, a telegram can be selected using p2079 and subsequently expanded.

Value:
166: SIEMENS telegram 166, PZD-14/20
999: Free telegram configuration with BICO

Dependency: Refer to: p0922

Note: For p0922 < 999 the following applies:

p2079 has the same value and is inhibited. All of the interconnections and extensions contained in the telegram are inhibited.

For p0922 = 999 the following applies:

p2079 can be freely set. If p2079 is also set to 999, then all of the interconnections can be set.

For p0922 = 999 and p2079 < 999 the following applies:

The interconnections contained in the telegram are inhibited. However, the telegram can be extended.

p2079 IF1 PROFIdrive PZD telegram selection extended / IF1 PZD telegr ext

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	999	999

Description: Sets the send and receive telegram.

Contrary to p0922, a telegram can be selected using p2079 and subsequently expanded.

Value:
1: Standard telegram 1, PZD-2/2
2: Standard telegram 2, PZD-4/4
3: Standard telegram 3, PZD-5/9
4: Standard telegram 4, PZD-6/14
5: Standard telegram 5, PZD-9/9
6: Standard telegram 6, PZD-10/14
102: SIEMENS telegram 102, PZD-6/10
103: SIEMENS telegram 103, PZD-7/15
105: SIEMENS telegram 105, PZD-10/10
106: SIEMENS telegram 106, PZD-11/15
116: SIEMENS telegram 116, PZD-11/19
118: SIEMENS telegram 118, PZD-11/19
125: SIEMENS telegram 125, PZD-14/10
126: SIEMENS telegram 126, PZD-15/15
136: SIEMENS telegram 136, PZD-15/19
138: SIEMENS telegram 138, PZD-15/19
220: SIEMENS telegram 220, PZD-10/10
999: Free telegram configuration with BICO

Dependency: Refer to: p0922

Note: For p0922 < 999 the following applies:

p2079 has the same value and is inhibited. All of the interconnections and extensions contained in the telegram are inhibited.

For p0922 = 999 the following applies:

p2079 can be freely set. If p2079 is also set to 999, then all of the interconnections can be set.

For p0922 = 999 and p2079 < 999 the following applies:

The interconnections contained in the telegram are inhibited. However, the telegram can be extended.

p2079 IF1 PROFIdrive PZD telegram selection extended / IF1 PZD telegr ext

SERVO (EPOS, Pos ctrl, Spin_diag), VECTOR (EPOS, n/M, Pos ctrl), SERVO_AC (EPOS, Pos ctrl, Spin_diag), VECTOR_AC (EPOS, n/M, Pos ctrl)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
7	999	999

Description: Sets the send and receive telegram.

Contrary to p0922, a telegram can be selected using p2079 and subsequently expanded.

Value:
7: Standard telegram 7, PZD-2/2
9: Standard telegram 9, PZD-10/5
110: SIEMENS telegram 110, PZD-12/7
111: SIEMENS telegram 111, PZD-12/12
999: Free telegram configuration with BICO

Dependency: Refer to: p0922

Note: For p0922 < 999 the following applies:

p2079 has the same value and is inhibited. All of the interconnections and extensions contained in the telegram are inhibited.

For p0922 = 999 the following applies:

p2079 can be freely set. If p2079 is also set to 999, then all of the interconnections can be set.

For p0922 = 999 and p2079 < 999 the following applies:

The interconnections contained in the telegram are inhibited. However, the telegram can be extended.

p2079 IF1 PROFIdrive PZD telegram selection extended / IF1 PZD telegr ext

SERVO (Pos ctrl, Spin_diag), VECTOR (n/M, Pos ctrl), SERVO_AC (Pos ctrl, Spin_diag), VECTOR_AC (n/M, Pos ctrl)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
999	999	999

Description: Sets the send and receive telegram.

Contrary to p0922, a telegram can be selected using p2079 and subsequently expanded.

Value: 999: Free telegram configuration with BICO

Dependency: Refer to: p0922

Note: For p0922 < 999 the following applies:

p2079 has the same value and is inhibited. All of the interconnections and extensions contained in the telegram are inhibited.

For p0922 = 999 the following applies:

p2079 can be freely set. If p2079 is also set to 999, then all of the interconnections can be set.

For p0922 = 999 and p2079 < 999 the following applies:

The interconnections contained in the telegram are inhibited. However, the telegram can be extended.

p2079 IF1 PROFIdrive PZD telegram selection extended / IF1 PZD telegr ext

SERVO (Spin_diag), SERVO_AC (Spin_diag)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	999	999

Description: Sets the send and receive telegram.

Contrary to p0922, a telegram can be selected using p2079 and subsequently expanded.

Value:
1: Standard telegram 1, PZD-2/2
2: Standard telegram 2, PZD-4/4
3: Standard telegram 3, PZD-5/9
4: Standard telegram 4, PZD-6/14
5: Standard telegram 5, PZD-9/9
6: Standard telegram 6, PZD-10/14
102: SIEMENS telegram 102, PZD-6/10
103: SIEMENS telegram 103, PZD-7/15
105: SIEMENS telegram 105, PZD-10/10
106: SIEMENS telegram 106, PZD-11/15
116: SIEMENS telegram 116, PZD-11/19
118: SIEMENS telegram 118, PZD-11/19
125: SIEMENS telegram 125, PZD-14/10
126: SIEMENS telegram 126, PZD-15/15
136: SIEMENS telegram 136, PZD-15/19
138: SIEMENS telegram 138, PZD-15/19
139: SIEMENS telegram 139, PZD-15/19
220: SIEMENS telegram 220, PZD-10/10
999: Free telegram configuration with BICO

Dependency: Refer to: p0922

Note: For p0922 < 999 the following applies:

p2079 has the same value and is inhibited. All of the interconnections and extensions contained in the telegram are inhibited.

For p0922 = 999 the following applies:

p2079 can be freely set. If p2079 is also set to 999, then all of the interconnections can be set.

For p0922 = 999 and p2079 < 999 the following applies:

The interconnections contained in the telegram are inhibited. However, the telegram can be extended.

p2079 IF1 PROFIdrive PZD telegram selection extended / IF1 PZD telegr ext

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	999	999

Description: Sets the send and receive telegram.

Contrary to p0922, a telegram can be selected using p2079 and subsequently expanded.

Value:
1: Standard telegram 1, PZD-2/2
2: Standard telegram 2, PZD-4/4
20: Standard telegram 20, PZD-2/6
220: SIEMENS telegram 220, PZD-10/10
352: SIEMENS telegram 352, PZD-6/6
999: Free telegram configuration with BICO

Dependency: Refer to: p0922

Note: For p0922 < 999 the following applies:

p2079 has the same value and is inhibited. All of the interconnections and extensions contained in the telegram are inhibited.

For p0922 = 999 the following applies:

p2079 can be freely set. If p2079 is also set to 999, then all of the interconnections can be set.

For p0922 = 999 and p2079 < 999 the following applies:

The interconnections contained in the telegram are inhibited. However, the telegram can be extended.

p2079 IF1 PROFIdrive PZD telegram selection extended / IF1 PZD telegr ext

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	999	999

Description: Sets the send and receive telegram.

Contrary to p0922, a telegram can be selected using p2079 and subsequently expanded.

Value:
1: Standard telegram 1, PZD-2/2
2: Standard telegram 2, PZD-4/4
3: Standard telegram 3, PZD-5/9
4: Standard telegram 4, PZD-6/14
20: Standard telegram 20, PZD-2/6
220: SIEMENS telegram 220, PZD-10/10
352: SIEMENS telegram 352, PZD-6/6
999: Free telegram configuration with BICO

Dependency: Refer to: p0922

Note: For p0922 < 999 the following applies:

p2079 has the same value and is inhibited. All of the interconnections and extensions contained in the telegram are inhibited.

For p0922 = 999 the following applies:

p2079 can be freely set. If p2079 is also set to 999, then all of the interconnections can be set.

For p0922 = 999 and p2079 < 999 the following applies:

The interconnections contained in the telegram are inhibited. However, the telegram can be extended.

p2079 IF1 PROFIdrive PZD telegram selection extended / IF1 PZD telegr ext

A_INF, S_INF, R_INF, B_INF

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
370	999	999

Description: Sets the send and receive telegram.

Contrary to p0922, a telegram can be selected using p2079 and subsequently expanded.

Value:
370: SIEMENS telegram 370, PZD-1/1
371: SIEMENS telegram 371, PZD-5/8
999: Free telegram configuration with BICO

Dependency: Refer to: p0922

Note: For p0922 < 999 the following applies:

p2079 has the same value and is inhibited. All of the interconnections and extensions contained in the telegram are inhibited.

For p0922 = 999 the following applies:

p2079 can be freely set. If p2079 is also set to 999, then all of the interconnections can be set.

For p0922 = 999 and p2079 < 999 the following applies:

The interconnections contained in the telegram are inhibited. However, the telegram can be extended.

p2079 IF1 PROFIdrive PZD telegram selection extended / IF1 PZD telegr ext

TM41

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
3	999	999

Description: Sets the send and receive telegram.

Contrary to p0922, a telegram can be selected using p2079 and subsequently expanded.

Value:
3: Standard telegram 3, PZD-5/9
999: Free telegram configuration with BICO

Dependency: Refer to: p0922

Note: For p0922 < 999 the following applies:

p2079 has the same value and is inhibited. All of the interconnections and extensions contained in the telegram are inhibited.

For p0922 = 999 the following applies:

p2079 can be freely set. If p2079 is also set to 999, then all of the interconnections can be set.

For p0922 = 999 and p2079 < 999 the following applies:

The interconnections contained in the telegram are inhibited. However, the telegram can be extended.

p2079 IF1 PROFIdrive PZD telegram selection extended / IF1 PZD telegr ext

ENC	**Can be changed:** T	**Calculated:** -	**Access level:** 3
	Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Communications	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	81	999	999

Description: Sets the send and receive telegram.

Contrary to p0922, a telegram can be selected using p2079 and subsequently expanded.

Value:
81: SIEMENS telegram 81, PZD-2/6
82: SIEMENS telegram 82, PZD-2/7
83: SIEMENS telegram 83, PZD-2/8
999: Free telegram configuration with BICO

Dependency: Refer to: p0922

Note: For p0922 < 999 the following applies:

p2079 has the same value and is inhibited. All of the interconnections and extensions contained in the telegram are inhibited.

For p0922 = 999 the following applies:

p2079 can be freely set. If p2079 is also set to 999, then all of the interconnections can be set.

For p0922 = 999 and p2079 < 999 the following applies:

The interconnections contained in the telegram are inhibited. However, the telegram can be extended.

p2080[0...15] BI: Binector-connector converter status word 1 / Bin/con ZSW1

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM15DI_DO, TM120, TM150, TB30, ENC	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2472
	P-Group: Communications	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	0

Description: Selects bits to be sent to the PROFIdrive controller.

The individual bits are combined to form status word 1.

Index:
[0] = Bit 0
[1] = Bit 1
[2] = Bit 2
[3] = Bit 3
[4] = Bit 4
[5] = Bit 5
[6] = Bit 6
[7] = Bit 7
[8] = Bit 8
[9] = Bit 9
[10] = Bit 10
[11] = Bit 11
[12] = Bit 12
[13] = Bit 13
[14] = Bit 14
[15] = Bit 15

Dependency: Refer to: p2088, r2089

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p2081[0...15] BI: Binector-connector converter status word 2 / Bin/con ZSW2

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM15DI_DO, TM120, TM150, TB30, ENC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2472
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Selects bits to be sent to the PROFIdrive controller.

The individual bits are combined to form status word 2.

Index:
[0] = Bit 0
[1] = Bit 1
[2] = Bit 2
[3] = Bit 3
[4] = Bit 4
[5] = Bit 5
[6] = Bit 6
[7] = Bit 7
[8] = Bit 8
[9] = Bit 9
[10] = Bit 10
[11] = Bit 11
[12] = Bit 12
[13] = Bit 13
[14] = Bit 14
[15] = Bit 15

Dependency: Refer to: p2088, r2089

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: For clock synchronous operation, bit 12 to 15 to transfer the sign-of-life are reserved in status word 2 - and may not be freely interconnected.

p2082[0...15] BI: Binector-connector converter status word 3 / Bin/con ZSW3

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM15DI_DO, TM120, TM150, TB30, ENC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2472
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Selects bits to be sent to the PROFIdrive controller.
The individual bits are combined to form free status word 3.

Index:
[0] = Bit 0
[1] = Bit 1
[2] = Bit 2
[3] = Bit 3
[4] = Bit 4
[5] = Bit 5
[6] = Bit 6
[7] = Bit 7
[8] = Bit 8
[9] = Bit 9
[10] = Bit 10
[11] = Bit 11
[12] = Bit 12
[13] = Bit 13
[14] = Bit 14
[15] = Bit 15

Dependency: Refer to: p2088, r2089

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p2083[0...15] BI: Binector-connector converter status word 4 / Bin/con ZSW4

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM15DI_DO, TM120, TM150, TB30, ENC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2472
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Selects bits to be sent to the PROFIdrive controller.
The individual bits are combined to form free status word 4.

Index: [0] = Bit 0
[1] = Bit 1
[2] = Bit 2
[3] = Bit 3
[4] = Bit 4
[5] = Bit 5
[6] = Bit 6
[7] = Bit 7
[8] = Bit 8
[9] = Bit 9
[10] = Bit 10
[11] = Bit 11
[12] = Bit 12
[13] = Bit 13
[14] = Bit 14
[15] = Bit 15

Dependency: Refer to: p2088, r2089

p2084[0...15] BI: Binector-connector converter status word 5 / Bin/con ZSW5

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM15DI_DO, TM120, TM150, TB30, ENC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2472
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Selects bits to be sent to the PROFIdrive controller.

The individual bits are combined to form free status word 5.

Index: [0] = Bit 0
[1] = Bit 1
[2] = Bit 2
[3] = Bit 3
[4] = Bit 4
[5] = Bit 5
[6] = Bit 6
[7] = Bit 7
[8] = Bit 8
[9] = Bit 9
[10] = Bit 10
[11] = Bit 11
[12] = Bit 12
[13] = Bit 13
[14] = Bit 14
[15] = Bit 15

Dependency: Refer to: p2088, r2089

p2088[0...4] Invert binector-connector converter status word / Bin/con ZSW inv

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM15DI_DO, TM120, TM150, TB30, ENC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2472
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 bin

Description: Setting to invert the individual binector inputs of the binector-connector converter.

Index:
[0] = Status word 1
[1] = Status word 2
[2] = Free status word 3
[3] = Free status word 4
[4] = Free status word 5

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	Inverted	Not inverted	-
01	Bit 1	Inverted	Not inverted	-
02	Bit 2	Inverted	Not inverted	-
03	Bit 3	Inverted	Not inverted	-
04	Bit 4	Inverted	Not inverted	-
05	Bit 5	Inverted	Not inverted	-
06	Bit 6	Inverted	Not inverted	-
07	Bit 7	Inverted	Not inverted	-
08	Bit 8	Inverted	Not inverted	-
09	Bit 9	Inverted	Not inverted	-
10	Bit 10	Inverted	Not inverted	-
11	Bit 11	Inverted	Not inverted	-
12	Bit 12	Inverted	Not inverted	-
13	Bit 13	Inverted	Not inverted	-
14	Bit 14	Inverted	Not inverted	-
15	Bit 15	Inverted	Not inverted	-

Dependency: Refer to: p2080, p2081, p2082, p2083, r2089

r2089[0...4] CO: Send binector-connector converter status word / Bin/con ZSW send

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM15DI_DO, TM120, TM150, TB30, ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2472
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Connector output to interconnect the status words to a PZD send word.

Index:
[0] = Status word 1
[1] = Status word 2
[2] = Free status word 3
[3] = Free status word 4
[4] = Free status word 5

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	ON	OFF	-
01	Bit 1	ON	OFF	-
02	Bit 2	ON	OFF	-
03	Bit 3	ON	OFF	-
04	Bit 4	ON	OFF	-
05	Bit 5	ON	OFF	-
06	Bit 6	ON	OFF	-
07	Bit 7	ON	OFF	-
08	Bit 8	ON	OFF	-
09	Bit 9	ON	OFF	-
10	Bit 10	ON	OFF	-
11	Bit 11	ON	OFF	-
12	Bit 12	ON	OFF	-
13	Bit 13	ON	OFF	-
14	Bit 14	ON	OFF	-
15	Bit 15	ON	OFF	-

Dependency: Refer to: p2051, p2080, p2081, p2082, p2083

Note: r2089 together with p2080 to p2084 forms five binector-connector converters.

r2090.0...15 BO: IF1 PROFIdrive PZD1 receive bit-serial / IF1 PZD1 recv bitw

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM15DI_DO, TM120, TM150, TB30, ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2468
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Binector output for bit-serial interconnection of PZD1 (normally control word 1) received from the PROFIdrive controller.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	ON	OFF	-
01	Bit 1	ON	OFF	-
02	Bit 2	ON	OFF	-
03	Bit 3	ON	OFF	-
04	Bit 4	ON	OFF	-
05	Bit 5	ON	OFF	-
06	Bit 6	ON	OFF	-
07	Bit 7	ON	OFF	-
08	Bit 8	ON	OFF	-
09	Bit 9	ON	OFF	-
10	Bit 10	ON	OFF	-
11	Bit 11	ON	OFF	-
12	Bit 12	ON	OFF	-
13	Bit 13	ON	OFF	-
14	Bit 14	ON	OFF	-
15	Bit 15	ON	OFF	-

Note: IF1: Interface 1

r2091.0...15 BO: IF1 PROFIdrive PZD2 receive bit-serial / IF1 PZD2 recv bitw

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM15DI_DO, TM120, TM150, TB30, ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2468
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Binector output for bit-serial interconnection of PZD2 received from the PROFIdrive controller.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	ON	OFF	-
01	Bit 1	ON	OFF	-
02	Bit 2	ON	OFF	-

03	Bit 3	ON	OFF	-
04	Bit 4	ON	OFF	-
05	Bit 5	ON	OFF	-
06	Bit 6	ON	OFF	-
07	Bit 7	ON	OFF	-
08	Bit 8	ON	OFF	-
09	Bit 9	ON	OFF	-
10	Bit 10	ON	OFF	-
11	Bit 11	ON	OFF	-
12	Bit 12	ON	OFF	-
13	Bit 13	ON	OFF	-
14	Bit 14	ON	OFF	-
15	Bit 15	ON	OFF	-

Note: IF1: Interface 1

r2092.0...15 BO: IF1 PROFIdrive PZD3 receive bit-serial / IF1 PZD3 recv bitw

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, TM41, ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2468
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Binector output for bit-serial interconnection of PZD3 received from the PROFIdrive controller.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	ON	OFF	-
01	Bit 1	ON	OFF	-
02	Bit 2	ON	OFF	-
03	Bit 3	ON	OFF	-
04	Bit 4	ON	OFF	-
05	Bit 5	ON	OFF	-
06	Bit 6	ON	OFF	-
07	Bit 7	ON	OFF	-
08	Bit 8	ON	OFF	-
09	Bit 9	ON	OFF	-
10	Bit 10	ON	OFF	-
11	Bit 11	ON	OFF	-
12	Bit 12	ON	OFF	-
13	Bit 13	ON	OFF	-
14	Bit 14	ON	OFF	-
15	Bit 15	ON	OFF	-

Note: IF1: Interface 1

r2093.0...15 BO: IF1 PROFIdrive PZD4 receive bit-serial / IF1 PZD4 recv bitw

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, TM41, ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2468
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Binector output for bit-serial interconnection of PZD4 (normally control word 2) received from the PROFIdrive controller.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	ON	OFF	-
01	Bit 1	ON	OFF	-
02	Bit 2	ON	OFF	-
03	Bit 3	ON	OFF	-
04	Bit 4	ON	OFF	-
05	Bit 5	ON	OFF	-
06	Bit 6	ON	OFF	-
07	Bit 7	ON	OFF	-
08	Bit 8	ON	OFF	-
09	Bit 9	ON	OFF	-
10	Bit 10	ON	OFF	-
11	Bit 11	ON	OFF	-
12	Bit 12	ON	OFF	-
13	Bit 13	ON	OFF	-
14	Bit 14	ON	OFF	-
15	Bit 15	ON	OFF	-

Note: IF1: Interface 1

r2094.0...15 BO: Connector-binector converter binector output / Con/bin outp

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM15DI_DO, TM120, TM150, TB30, ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2468
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Binector output for bit-serial onward interconnection of a PZD word received from the PROFIdrive controller.

The PZD is selected via p2099[0].

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	ON	OFF	-
01	Bit 1	ON	OFF	-
02	Bit 2	ON	OFF	-
03	Bit 3	ON	OFF	-
04	Bit 4	ON	OFF	-

05	Bit 5	ON	OFF	-
06	Bit 6	ON	OFF	-
07	Bit 7	ON	OFF	-
08	Bit 8	ON	OFF	-
09	Bit 9	ON	OFF	-
10	Bit 10	ON	OFF	-
11	Bit 11	ON	OFF	-
12	Bit 12	ON	OFF	-
13	Bit 13	ON	OFF	-
14	Bit 14	ON	OFF	-
15	Bit 15	ON	OFF	-

Dependency: Refer to: p2099

r2095.0...15 BO: Connector-binector converter binector output / Con/bin outp

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM15DI_DO, TM120, TM150, TB30, ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2468
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Binector output for bit-serial interconnection of a PZD word received from the PROFIdrive controller.

The PZD is selected via p2099[1].

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	ON	OFF	-
01	Bit 1	ON	OFF	-
02	Bit 2	ON	OFF	-
03	Bit 3	ON	OFF	-
04	Bit 4	ON	OFF	-
05	Bit 5	ON	OFF	-
06	Bit 6	ON	OFF	-
07	Bit 7	ON	OFF	-
08	Bit 8	ON	OFF	-
09	Bit 9	ON	OFF	-
10	Bit 10	ON	OFF	-
11	Bit 11	ON	OFF	-
12	Bit 12	ON	OFF	-
13	Bit 13	ON	OFF	-
14	Bit 14	ON	OFF	-
15	Bit 15	ON	OFF	-

Dependency: Refer to: p2099

p2098[0...1] Inverter connector-binector converter binector output / Con/bin outp inv

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM15DI_DO, TM120, TM150, TB30, ENC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2468
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 bin

Description: Setting to invert the individual binector outputs of the connector-binector converter.

Using p2098[0], the signals of connector input p2099[0] are influenced.

Using p2098[1], the signals of connector input p2099[1] are influenced.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	Inverted	Not inverted	-
01	Bit 1	Inverted	Not inverted	-
02	Bit 2	Inverted	Not inverted	-
03	Bit 3	Inverted	Not inverted	-
04	Bit 4	Inverted	Not inverted	-
05	Bit 5	Inverted	Not inverted	-
06	Bit 6	Inverted	Not inverted	-
07	Bit 7	Inverted	Not inverted	-
08	Bit 8	Inverted	Not inverted	-
09	Bit 9	Inverted	Not inverted	-
10	Bit 10	Inverted	Not inverted	-
11	Bit 11	Inverted	Not inverted	-
12	Bit 12	Inverted	Not inverted	-
13	Bit 13	Inverted	Not inverted	-
14	Bit 14	Inverted	Not inverted	-
15	Bit 15	Inverted	Not inverted	-

Dependency: Refer to: r2094, r2095, p2099

p2099[0...1] CI: Connector-binector converter signal source / Con/bin S_src

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM15DI_DO, TM120, TM150, TB30, ENC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Integer16	**Dyn. index:** -	**Func. diagram:** 2468
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the connector-binector converter.

A PZD receive word can be selected as signal source. The signals are available to be serially passed-on (interconnection).

Dependency: Refer to: r2094, r2095

Note: From the signal source set via the connector input, the corresponding lower 16 bits are converted.

p2099[0...1] together with r2094.0...15 and r2095.0...15 forms two connector-binector converters:

Connector input p2099[0] to binector output in r2094.0...15

Connector input p2099[1] to binector output in r2095.0...15

p2100[0...19] Change fault response fault number / Chng resp F_no

All objects

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 8050, 8075
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	65535	0

Description: Selects the faults for which the fault response should be changed

Dependency: The fault is selected and the required response is set under the same index.

Refer to: p2101

Note: Re-parameterization is also possible if a fault is present. The change only becomes effective after the fault has been resolved.

p2101[0...19] Change fault response response / Chng resp resp

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, TM31, TM17, TM15, TM15DI_DO, TM120, TM150, TB30, TM54F_MA, TM54F_SL, ENC, HUB, CU_LINK

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 8050, 8075
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	0	0

Description: Sets the fault response for the selected fault.

Value: 0: NONE

Dependency: The fault is selected and the required response is set under the same index.

Notice: For the following cases, it is not possible to re-parameterize the fault response to a fault:

- fault number does not exist (exception value = 0).
- Message type is not "fault" (F).
- fault response is not permissible for the set fault number.

Note: Re-parameterization is also possible if a fault is present. The change only becomes effective after the fault has been resolved.

p2101[0...19] Change fault response response / Chng resp resp

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, TM41	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 8050, 8075
	P-Group: Messages	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	7	0

Description: Sets the fault response for the selected fault.

Value:
0: NONE
1: OFF1
2: OFF2
3: OFF3
5: STOP2
6: Internal armature short-circuit / DC braking
7: ENCODER (p0491)

Dependency: The fault is selected and the required response is set under the same index.

Refer to: p2100

Notice: For the following cases, it is not possible to re-parameterize the fault response to a fault:

- fault number does not exist (exception value = 0).
- Message type is not "fault" (F).
- fault response is not permissible for the set fault number.

Note: Re-parameterization is also possible if a fault is present. The change only becomes effective after the fault has been resolved.

The fault response can only be changed for faults with the appropriate identification (see the List Manual, chapter "Faults and alarms").

Example:

F12345 and fault response = OFF3 (OFF1, OFF2, NONE)

--> The default fault response OFF3 can be changed to OFF1, OFF2 or NONE.

For value = 1 (OFF1):

Braking along the ramp-function generator down ramp followed by a pulse inhibit.

For value = 2 (OFF2):

Internal/external pulse inhibit.

For value = 3 (OFF3):

Braking along the OFF3 down ramp followed by a pulse inhibit.

For value = 5 (STOP2):

n_set = 0

For value = 6 (armature short-circuit, internal/DC braking):

The value can only be set for all motor data sets when p1231 = 3, 4.

a) For synchronous motors (p0300 = 2xx, 4xx), an internal armature short-circuit is executed.

b) For induction motors (p0300 = 1xx), a DC braking is initiated.

For value = 7 (ENCODER (p0491)):

The fault response set in p0491 is executed if applicable.

Note:

IASC: Internal Armature Short Circuit

DCBRK: DC braking

p2101[0...19] Change fault response response / Chng resp resp

A_INF, S_INF, R_INF, B_INF

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 8050, 8075
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	2	0

Description: Sets the fault response for the selected fault.

Value:
0: NONE
1: OFF1
2: OFF2

Dependency: The fault is selected and the required response is set under the same index.

Notice: For the following cases, it is not possible to re-parameterize the fault response to a fault:
- fault number does not exist (exception value = 0).
- Message type is not "fault" (F).
- fault response is not permissible for the set fault number.

Note: Re-parameterization is also possible if a fault is present. The change only becomes effective after the fault has been resolved.

p2102 BI: Acknowledge all faults / Ackn all faults

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2546, 8060
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to acknowledge all faults at all drive objects of the drive system.

Note: A fault acknowledgment is triggered with a 0/1 signal.

p2103 BI: 1st acknowledge faults / 1st acknowledge

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, TM31, TM17, TM15, TM15DI_DO, TM120, TM150, TB30, TM54F_MA, TM54F_SL, ENC, HUB, CU_LINK

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the first signal source to acknowledge faults.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: A fault acknowledgment is triggered with a 0/1 signal.

p2103[0...n] BI: 1st acknowledge faults / 1st acknowledge

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM41

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2441, 2442, 2443, 2447, 2475, 2546, 9220, 9677, 9678
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the first signal source to acknowledge faults.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: A fault acknowledgment is triggered with a 0/1 signal.

p2104 BI: 2nd acknowledge faults / 2nd acknowledge

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, TM31, TM17, TM15, TM15DI_DO, TM120, TM150, TB30, TM54F_MA, TM54F_SL, ENC, HUB, CU_LINK

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the second signal source to acknowledge faults.

Note: A fault acknowledgment is triggered with a 0/1 signal.

p2104[0...n] BI: 2nd acknowledge faults / 2nd acknowledge

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM41

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2546, 8060
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the second signal source to acknowledge faults.

Note: A fault acknowledgment is triggered with a 0/1 signal.

p2105 BI: 3rd acknowledge faults / 3rd acknowledge

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, TM31, TM17, TM15, TM15DI_DO, TM120, TM150, TB30, TM54F_MA, TM54F_SL, ENC, HUB, CU_LINK

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the third signal source to acknowledge faults.

Note: A fault acknowledgment is triggered with a 0/1 signal.

p2105[0...n] BI: 3rd acknowledge faults / 3rd acknowledge

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM41

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2546, 8060
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the third signal source to acknowledge faults.

Note: A fault acknowledgment is triggered with a 0/1 signal.

p2106 BI: External fault 1 / External fault 1

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, TM31, TM17, TM15, TM15DI_DO, TM120, TM150, TB30, TM54F_MA, TM54F_SL, ENC, HUB, CU_LINK

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for external fault 1.

Dependency: Refer to: F07860

Note: An external fault is triggered with a 0 signal.

If this fault is output at the Control Unit, then it is transferred to all existing drive objects.

p2106[0...n] BI: External fault 1 / External fault 1

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM41

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2546
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for external fault 1.

Dependency: Refer to: F07860

Note: An external fault is triggered with a 0 signal.
If this fault is output at the Control Unit, then it is transferred to all existing drive objects.

p2107 BI: External fault 2 / External fault 2

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, TM31, TM17, TM15, TM15DI_DO, TM120, TM150, TB30, TM54F_MA, TM54F_SL, ENC, HUB, CU_LINK

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for external fault 2.

Dependency: Refer to: F07861

Note: An external fault is triggered with a 0 signal.
If this fault is output at the Control Unit, then it is transferred to all existing drive objects.

p2107[0...n] BI: External fault 2 / External fault 2

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM41

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2546
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for external fault 2.

Dependency: Refer to: F07861

Note: An external fault is triggered with a 0 signal.
If this fault is output at the Control Unit, then it is transferred to all existing drive objects.

p2108 BI: External fault 3 / External fault 3

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, TM31, TM17, TM15, TM15DI_DO, TM120, TM150, TB30, TM54F_MA, TM54F_SL, ENC, HUB, CU_LINK

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for external fault 3.
External fault 3 is initiated by the following AND logic operation:
- BI: p2108 negated
- BI: p3111
- BI: p3112 negated

Dependency: Refer to: p3110, p3111, p3112
Refer to: F07862

Note: An external fault is triggered with a 0 signal.
If this fault is output at the Control Unit, then it is transferred to all existing drive objects.

p2108[0...n]	BI: External fault 3 / External fault 3		
SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM41	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2546
	P-Group: Messages	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	1

Description: Sets the signal source for external fault 3.
External fault 3 is initiated by the following AND logic operation:
- BI: p2108 negated
- BI: p3111
- BI: p3112 negated

Dependency: Refer to: p3110, p3111, p3112
Refer to: F07862

Note: An external fault is triggered with a 0 signal.
If this fault is output at the Control Unit, then it is transferred to all existing drive objects.

r2109[0...63]	Fault time removed in milliseconds / t_flt resolved ms		
All objects	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 8050, 8060
	P-Group: Messages	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [ms]	- [ms]	- [ms]

Description: Displays the system runtime in milliseconds when the fault was removed.

Dependency: Refer to: r0945, r0947, r0948, r0949, r2114, r2130, r2133, r2136, r3115, r3120, r3122

Notice: The time comprises r2136 (days) and r2109 (milliseconds).

Note: The buffer parameters are cyclically updated in the background (refer to status signal in r2139).
The structure of the fault buffer and the assignment of the indices is shown in r0945.

r2110[0...63]	Alarm number / Alarm number		
All objects	**Can be changed:** -	**Calculated:** -	**Access level:** 2
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 8065
	P-Group: Messages	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: This parameter is identical to r2122.

p2111	Alarm counter / Alarm counter		
All objects	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 8050, 8065
	P-Group: Messages	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	65535	0

Description: Number of alarms that have occurred after the last reset.

Dependency: When p2111 is set to 0, the following is initiated:
- all of the alarms of the alarm buffer that have gone [0...7] are transferred into the alarm history [8...63].
- the alarm buffer [0...7] is deleted.
Refer to: r2110, r2122, r2123, r2124, r2125

Note: The parameter is reset to 0 at POWER ON.

p2112 BI: External alarm 1 / External alarm 1

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, TM31, TM17, TM15, TM15DI_DO, TM120, TM150, TB30, TM54F_MA, TM54F_SL, ENC, HUB, CU_LINK

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for external alarm 1.

Dependency: Refer to: A07850

Note: An external alarm is triggered with a 0 signal.

p2112[0...n] BI: External alarm 1 / External alarm 1

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM41

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2546
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for external alarm 1.

Dependency: Refer to: A07850

Note: An external alarm is triggered with a 0 signal.

r2114[0...1] System runtime total / Sys runtime tot

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the total system runtime for the drive unit.

The time comprises r2114[0] (milliseconds) and r2114[1] (days).

After r2114[0] has reached a value of 86.400.000 ms (24 hours) this value is reset and r2114[1] is incremented.

Index: [0] = Milliseconds
[1] = Days

Dependency: Refer to: r0948, r2109, r2123, r2125, r2130, r2136, r2145, r2146

Note: The time in r2114 is used to display the times for faults and alarms.

When the electronic power supply is switched out, the counter values are saved.

After the drive unit is switched on, the counter continues to run with the last value that was saved.

p2116 BI: External alarm 2 / External alarm 2

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, TM31, TM17, TM15, TM15DI_DO, TM120, TM150, TB30, TM54F_MA, TM54F_SL, ENC, HUB, CU_LINK

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for external alarm 2.

Dependency: Refer to: A07851

Note: An external alarm is triggered with a 0 signal.

p2116[0...n] BI: External alarm 2 / External alarm 2

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM41

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2546
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for external alarm 2.

Dependency: Refer to: A07851

Note: An external alarm is triggered with a 0 signal.

p2117 BI: External alarm 3 / External alarm 3

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, TM31, TM17, TM15, TM15DI_DO, TM120, TM150, TB30, TM54F_MA, TM54F_SL, ENC, HUB, CU_LINK

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for external alarm 3.

Dependency: Refer to: A07852

Note: An external alarm is triggered with a 0 signal.

p2117[0...n]	BI: External alarm 3 / External alarm 3		
SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM41	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 2546
	P-Group: Messages	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	1

Description: Sets the signal source for external alarm 3.

Dependency: Refer to: A07852

Note: An external alarm is triggered with a 0 signal.

p2118[0...19]	Change message type message number / Chng type msg_no		
All objects	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 8050, 8075
	P-Group: Messages	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	65535	0

Description: Selects faults or alarms for which the message type should be changed.

Dependency: Selects the fault or alarm selection and sets the required type of message realized under the same index.

Refer to: p2119

Note: Re-parameterization is also possible if a message is present. The change only becomes effective after the message has gone.

p2119[0...19]	Change message type type / Change type type		
All objects	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 8050, 8075
	P-Group: Messages	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	1	3	1

Description: Sets the message type for the selected fault or alarm.

Value:
1: Fault (F)
2: Alarm (A)
3: No message (N)

Dependency: Selects the fault or alarm selection and sets the required type of message realized under the same index.

Refer to: p2118

Note: Re-parameterization is also possible if a message is present. The change only becomes effective after the message has gone.

The message type can only be changed for messages with the appropriate identification (exception, value = 0).

Example:

F12345(A) --> Fault F12345 can be changed to alarm A12345.

In this case, the message number that may be possibly entered in p2100[0...19] and p2126[0...19] is automatically removed.

r2120 CO: Sum of fault and alarm buffer changes / Sum buffer changed

All objects

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 8065
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the sum of all of the fault and alarm buffer changes in the drive unit.

Dependency: Refer to: r0944, r2121

r2121 CO: Counter alarm buffer changes / Alrm buff changed

All objects

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 8065
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: This counter is incremented every time the alarm buffer changes.

Dependency: Refer to: r2110, r2122, r2123, r2124, r2125

r2122[0...63] Alarm code / Alarm code

All objects

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 8050, 8065
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the number of alarms that have occurred.

Dependency: Refer to: r2110, r2123, r2124, r2125, r2134, r2145, r2146, r3121, r3123

Notice: The properties of the alarm buffer should be taken from the corresponding product documentation.

Note: The buffer parameters are cyclically updated in the background (refer to status signal in r2139).

Alarm buffer structure (general principle):

r2122[0], r2124[0], r2123[0], r2125[0] --> alarm 1 (the oldest)

. . .

r2122[7], r2124[7], r2123[7], r2125[7] --> Alarm 8 (the latest)

When the alarm buffer is full, the alarms that have gone are entered into the alarm history:

r2122[8], r2124[8], r2123[8], r2125[8] --> Alarm 1 (the latest)

. . .

r2122[63], r2124[63], r2123[63], r2125[63] --> alarm 56 (the oldest)

r2123[0...63] Alarm time received in milliseconds / t_alarm recv ms

All objects

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 8050, 8065
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [ms]	- [ms]	- [ms]

Description: Displays the system runtime in milliseconds when the alarm occurred.

Dependency: Refer to: r2110, r2114, r2122, r2124, r2125, r2134, r2145, r2146, r3121, r3123

Notice: The time comprises r2145 (days) and r2123 (milliseconds).

Note: The buffer parameters are cyclically updated in the background (refer to status signal in r2139).

The structure of the alarm buffer and the assignment of the indices is shown in r2122.

r2124[0...63] Alarm value / Alarm value

All objects

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 8050, 8065
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays additional information about the active alarm (as integer number).

Dependency: Refer to: r2110, r2122, r2123, r2125, r2134, r2145, r2146, r3121, r3123

Note: The buffer parameters are cyclically updated in the background (refer to status signal in r2139).

The structure of the alarm buffer and the assignment of the indices is shown in r2122.

r2125[0...63] Alarm time removed in milliseconds / t_alarm res ms

All objects

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 8050, 8065
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [ms]	- [ms]	- [ms]

Description: Displays the system runtime in milliseconds when the alarm was cleared.

Dependency: Refer to: r2110, r2114, r2122, r2123, r2124, r2134, r2145, r2146, r3121, r3123

Notice: The time comprises r2146 (days) and r2125 (milliseconds).

Note: The buffer parameters are cyclically updated in the background (refer to status signal in r2139).

The structure of the alarm buffer and the assignment of the indices is shown in r2122.

p2126[0...19] Change acknowledge mode fault number / Chng ackn F_no

All objects

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 8050, 8075
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	65535	0

Description: Selects the faults for which the acknowledge mode is to be changed

Dependency: Selects the faults and sets the required acknowledge mode realized under the same index

Refer to: p2127

Note: Re-parameterization is also possible if a fault is present. The change only becomes effective after the fault has been resolved.

p2127[0...19] Change acknowledge mode mode / Chng ackn mode

All objects

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 8050, 8075
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	3	1

Description: Sets the acknowledge mode for selected fault.

Value:
1: Acknowledgment only using POWER ON
2: Ack IMMEDIATELY after the fault cause has been removed
3: Acknowledgment only for PULSE INHIBIT

Dependency: Selects the faults and sets the required acknowledge mode realized under the same index

Refer to: p2126

Notice: It is not possible to re-parameterize the acknowledge mode for a fault in the following cases:

- fault number does not exist (exception value = 0).
- Message type is not "fault" (F).
- Acknowledge mode is not permissible for the set fault number.

Note: Re-parameterization is also possible if a fault is present. The change only becomes effective after the fault has been resolved.

The acknowledge mode can only be changed for faults with the appropriate identification.

Example:

F12345 and acknowledge mode = IMMEDIATELY (POWER ON)

--> The acknowledge mode can be changed from IMMEDIATELY to POWER ON.

p2128[0...15] Faults/alarms trigger selection / F/A trigger sel

All objects

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 8050, 8070
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	65535	0

Description: Sets the faults/alarms for which a trigger signal should be generated in r2129.0...15.

Dependency: If the fault/alarm set in p2128[0...15] occurs, then the particular binector output r2129.0...15 is set.

Refer to: r2129

r2129.0...15 CO/BO: Faults/alarms trigger word / F/A trigger word

All objects

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 8070
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the trigger signals of the faults/alarms set in p2128[0...15].

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Trigger signal p2128[0]	ON	OFF	-
01	Trigger signal p2128[1]	ON	OFF	-
02	Trigger signal p2128[2]	ON	OFF	-
03	Trigger signal p2128[3]	ON	OFF	-
04	Trigger signal p2128[4]	ON	OFF	-
05	Trigger signal p2128[5]	ON	OFF	-
06	Trigger signal p2128[6]	ON	OFF	-
07	Trigger signal p2128[7]	ON	OFF	-
08	Trigger signal p2128[8]	ON	OFF	-
09	Trigger signal p2128[9]	ON	OFF	-
10	Trigger signal p2128[10]	ON	OFF	-
11	Trigger signal p2128[11]	ON	OFF	-
12	Trigger signal p2128[12]	ON	OFF	-
13	Trigger signal p2128[13]	ON	OFF	-
14	Trigger signal p2128[14]	ON	OFF	-
15	Trigger signal p2128[15]	ON	OFF	-

Dependency: If the fault/alarm set in p2128[0...15] occurs, then the particular binector output r2129.0...15 is set.

Refer to: p2128

Note: CO: r2129 = 0 --> None of the selected messages has occurred.

CO: r2129 > 0 --> At least one of the selected messages has occurred.

r2130[0...63] Fault time received in days / t_fault recv days

All objects

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 8060
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the system runtime in days when the fault occurred.

Dependency: Refer to: r0945, r0947, r0948, r0949, r2109, r2114, r2133, r2136, p3100, r3115, r3120, r3122

Notice: The time comprises r2130 (days) and r0948 (milliseconds).
The time display depends on the selected mode (p3100).

Note: The buffer parameters are cyclically updated in the background (refer to status signal in r2139).

r2131 CO: Actual fault code / Act fault code

All objects

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 8060
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the code of the oldest active fault.

Dependency: Refer to: r3131, r3132

Note: 0: No fault present.

r2132 CO: Actual alarm code / Actual alarm code

All objects

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 8065
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the code of the last alarm that occurred.

Note: 0: No alarm present.

r2133[0...63] Fault value for float values / Fault val float

All objects

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8060
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays additional information about the fault that occurred for float values.

Dependency: Refer to: r0945, r0947, r0948, r0949, r2109, r2130, r2136, r3115

Note: The buffer parameters are cyclically updated in the background (refer to status signal in r2139).

r2134[0...63] Alarm value for float values / Alarm value float

All objects

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8065
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays additional information about the active alarm for float values.

Dependency: Refer to: r2110, r2122, r2123, r2124, r2125, r2145, r2146, r3121, r3123

Note: The buffer parameters are cyclically updated in the background (refer to status signal in r2139).

r2135.0...15 CO/BO: Status word faults/alarms 2 / ZSW fault/alarm 2

All objects

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2548
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the second status word of faults and alarms.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Fault encoder 1	Yes	No	-
01	Fault encoder 2	Yes	No	-
02	Fault encoder 3	Yes	No	-
12	Fault motor overtemperature	Yes	No	8016
13	Fault power unit thermal overload	Yes	No	8021
14	Alarm motor overtemperature	Yes	No	8016
15	Alarm power unit thermal overload	Yes	No	8021

r2136[0...63] Fault time removed in days / t_flt resolv days

All objects

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 8060
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the system runtime in days when the fault was removed.

Dependency: Refer to: r0945, r0947, r0948, r0949, r2109, r2114, r2130, r2133, r3115, r3120, r3122

Notice: The time comprises r2136 (days) and r2109 (milliseconds).

Note: The buffer parameters are cyclically updated in the background (refer to status signal in r2139).

r2138.7...15 CO/BO: Control word faults/alarms / STW fault/alarm

All objects

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2546
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the control word of faults and alarms.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
07	Acknowledge fault	Yes	No	8060
10	External alarm 1 (A07850) effective	Yes	No	8065
11	External alarm 2 (A07851) effective	Yes	No	8065
12	External alarm 3 (A07852) effective	Yes	No	8065
13	External fault 1 (F07860) effective	Yes	No	8060
14	External fault 2 (F07861) effective	Yes	No	8060
15	External fault 3 (F07862) effective	Yes	No	8060

Dependency: Refer to: p2103, p2104, p2105, p2106, p2107, p2108, p2112, p2116, p2117, p3110, p3111, p3112

r2139.0...15 CO/BO: Status word faults/alarms 1 / ZSW fault/alarm 1

All objects

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2548
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for status word 1 of faults and alarms.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Being acknowledged	Yes	No	-
01	Acknowledgment required	Yes	No	-
03	Fault present	Yes	No	8060
05	Safety message present	Yes	No	-
06	Internal message 1 present	Yes	No	-
07	Alarm present	Yes	No	8065
08	Internal message 2 present	Yes	No	-
11	Alarm class bit 0	High	Low	-
12	Alarm class bit 1	High	Low	-
13	Maintenance required	Yes	No	-
14	Maintenance urgently required	Yes	No	-
15	Fault gone/can be acknowledged	Yes	No	-

Note: For bit 03, 05, 07:

These bits are set if at least one fault/alarm occurs. Data is entered into the fault/alarm buffer with delay. For this reason, the fault/alarm buffer should only be read if, after "Fault active" or "Alarm active" occurs, a change is also identified in the buffer (r0944, r9744, r2121).

For bit 06, 08:

These status bits are used for internal diagnostic purposes only.

For bit 12, 11:

These status bits are used for the classification of internal alarm classes and are intended for diagnostic purposes only on certain automation systems with integrated SINAMICS functionality.

p2140[0...n] Hysteresis speed 2 / n_hysteresis 2

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8010
P-Group: Messages	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	300.00 [rpm]	90.00 [rpm]

Description: Sets the hysteresis speed (bandwidth) for the following signals:
"|n_act| < = speed threshold value 2" (BO: r2197.1)
"|n_act| > speed threshold value 2" (BO: r2197.2)

Dependency: Refer to: p2155, r2197

p2140[0...n] Hysteresis velocity 2 / v_hysteresis 2

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8010
P-Group: Messages	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [m/min]	10.00 [m/min]	0.90 [m/min]

Description: Sets the hysteresis velocity (bandwidth) for the following signals:
"|n_act| < = velocity threshold value 2" (BO: r2197.1)
"|n_act| > velocity threshold value 2" (BO: r2197.2)

Dependency: Refer to: p2155, r2197

p2141[0...n] Speed threshold 1 / n_thresh val 1

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8010
P-Group: Messages	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	5.00 [rpm]

Description: Sets the speed threshold value for the signal "f or n comparison value reached or exceeded" (BO: r2199.1).

Dependency: Refer to: p2142, r2199

p2141[0...n] Velocity threshold value 1 / v_thresh val 1

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8010
P-Group: Messages	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [m/min]	1000.00 [m/min]	0.05 [m/min]

Description: Sets the velocity threshold value for the signal "f or n comparison value reached or exceeded" (BO: r2199.1).

Dependency: Refer to: p2142, r2199

p2142[0...n] Hysteresis speed 1 / n_hysteresis 1

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8010
P-Group: Messages	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	300.00 [rpm]	2.00 [rpm]

Description: Sets the hysteresis speed (bandwidth) for the signal "f or n / v comparison value reached or exceeded" (BO: r2199.1).

Dependency: Refer to: p2141, r2199

p2142[0...n] Hysteresis speed 1 / n_hysteresis 1

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8010
P-Group: Messages	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [m/min]	10.00 [m/min]	0.02 [m/min]

Description: Sets the hysteresis speed (bandwidth) for the signal "f or n / v comparison value reached or exceeded" (BO: r2199.1).

Dependency: Refer to: p2141, r2199

p2144[0...n] BI: Motor stall monitoring enable (negated) / Mot stall enab neg

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 8012
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the negated enable (0 = enable) of the motor stall monitoring.

Dependency: Refer to: p2163, p2164, p2166, r2197, r2198

Refer to: F07900

Note: When interconnecting the enable signal with r2197.7 then the stall signal is suppressed if there is no speed setpoint - actual value deviation.

r2145[0...63] Alarm time received in days / t_alarm recv days

All objects

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 8065
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the system runtime in days when the alarm occurred.

Dependency: Refer to: r2110, r2114, r2122, r2123, r2124, r2125, r2134, r2146, r3121, r3123

Notice: The time comprises r2145 (days) and r2123 (milliseconds).

Note: The buffer parameters are cyclically updated in the background (refer to status signal in r2139).

r2146[0...63] Alarm time removed in days / t_alarm res days

All objects

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 8065
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the system runtime in days when the alarm was cleared.

Dependency: Refer to: r2110, r2114, r2122, r2123, r2124, r2125, r2134, r2145, r3121, r3123

Notice: The time comprises r2146 (days) and r2125 (milliseconds).

Note: The buffer parameters are cyclically updated in the background (refer to status signal in r2139).

p2147 Delete fault buffer of all drive objects / Del fault buffer

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 8060
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Setting to delete the fault buffer of all existing drive objects.

Value:
0: Inactive
1: Start to delete the fault buffer of all drive objects

Dependency: Refer to: r0945, r0947, r0948, r0949, r2109, r2130, r2133, r2136

Note: p2147 is automatically set to 0 after execution.

p2148[0...n] BI: RFG active / RFG active

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 8011
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the signal "ramp-function generator active" for the following signals/messages:

"Speed setpoint - actual value deviation within tolerance t_on" (BO: r2199.4)

"Ramp-up/ramp-down completed" (BO: r2199.5)

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: The binector input is automatically pre-assigned to r1199.2.

The following applies for SERVO:

The pre-assignment using the automatic calculation of the motor/control parameters in the drive (p0340 = 1, 3, 5) is only realized if, at the instant of the calculation, the "setpoint channel" function module is active (r0108.8 = 1). If the calculation in p0340 is not selected when downloading parameters, then the parameter is not pre-assigned.

p2149[0...n] Monitoring configuration / Monit config

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 bin

Description: Sets the configuration for messages and monitoring functions.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Enable alarm A07903	Yes	No	8011
01	Load monitoring only in the 1st quadrant	Yes	No	8013
03	Reserved			-
15	Automatic parameterization carried out (p0340 = 1, p3900 > 0)	Yes	No	-

Dependency: Refer to: r2197

Refer to: A07903

Note: For bit 00:

Alarm A07903 is output when the bit is set with r2197.7 = 0 (n_set <> n_act).

For bit 01:

When the bit is set, the load monitoring is only executed in the 1st quadrant as a result of the positive characteristic parameters (p2182 ... p2190).

For bit 03:

When the bit is set, r2197.1 and r2197.2 are determined using separate hysteresis functions.

For bit 15:

The bit indicates whether the automatic parameterization (p0340 = 1, p3900 > 0) for the parameters of the extended monitoring functions was carried out.

If the bit is not set (e.g. when the configuration is activated (p0108.15)), the parameterization is automatically carried out during booting even if r3925.0 is already 1.

p2149[0...n] Monitoring configuration / Monit config

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0001 bin

Description: Sets the configuration for messages and monitoring functions.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Enable alarm A07903	Yes	No	8011
01	Load monitoring only in the 1st quadrant	Yes	No	8013
03	Reserved			-
06	Enable underspeed monitoring	Yes	No	8010
15	Automatic parameterization carried out (p0340 = 1, p3900 > 0)	Yes	No	-

Dependency: Refer to: r2197

Refer to: A07903

Note: For bit 00:

Alarm A07903 is output when the bit is set with r2197.7 = 0 (n_set <> n_act).

For bit 01:

When the bit is set, the load monitoring is only executed in the 1st quadrant as a result of the positive characteristic parameters (p2182 ... p2190).

For bit 03:

When the bit is set, r2197.1 and r2197.2 are determined using separate hysteresis functions.

For bit 06:

When the bit is set, with r2197.1 = 1 (n_act < p2155 speed threshold value 2), then alarm A08721 is output, and with r2199.0 = 1 (n_act < p2161 speed threshold value 3), then fault F07822 is output.

For separately excited synchronous motors (without encoder) in torque control (p1501 set), the underspeed speed monitoring is automatically activated if conditions (p0300 = 5, p1300 = 20) for the automatic pre-assignment of the threshold values during commissioning (p0340 = 1) are fulfilled.

The alarm threshold p2155 is preassigned with 1.5 * p1755 - and the fault threshold p2161, with p1755.

For bit 15:

The bit indicates whether the automatic parameterization (p0340 = 1, p3900 > 0) for the parameters of the extended monitoring functions was carried out.

If the bit is not set (e.g. when the configuration is activated (p0108.15)), the parameterization is automatically carried out during booting even if r3925.0 is already 1.

p2150[0...n] Hysteresis speed 3 / n_hysteresis 3

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8010, 8011
P-Group: Messages	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	300.00 [rpm]	2.00 [rpm]

Description: Sets the hysteresis speed (bandwidth) for the following signals:

"|n_act| < speed threshold value 3" (BO: r2199.0)

"n_set >= 0" (BO: r2198.5)

"n_act >= 0" (BO: r2197.3)

Dependency: Refer to: p2161, r2197, r2199

p2150[0...n] Hysteresis velocity 3 / v_hysteresis 3

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8010, 8011
P-Group: Messages	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [m/min]	3.00 [m/min]	0.02 [m/min]

Description: Sets the hysteresis velocity (bandwidth) for the following signals:

"|n_act| < speed threshold value 3" (BO: r2199.0)

"n_set >= 0" (BO: r2198.5)

"n_act >= 0" (BO: r2197.3)

Dependency: Refer to: p2161, r2197, r2199

p2151[0...n] CI: Speed setpoint for messages/signals / n_set for msg

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 8011
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1438[0]

Description: Sets the signal source for the speed setpoint for the following messages:

"Speed setpoint - actual value deviation within tolerance t_off" (BO: r2197.7)

"Ramp-up/ramp-down completed" (BO: r2199.5)

"|n_set| < p2161" (BO: r2198.4)

"n_set > 0" (BO: r2198.5)

Dependency: Refer to: r2197, r2198, r2199

p2151[0...n] CI: Velocity setpoint for messages/signals / v_set for msg

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 8011
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1438[0]

Description: Sets the signal source for the velocity setpoint for the following messages:
"Velocity setpoint - actual value deviation within tolerance t_off" (BO: r2197.7)
"Ramp-up/ramp-down completed" (BO: r2199.5)
"|v_set| < p2161" (BO: r2198.4)
"v_set > 0" (BO: r2198.5)

Dependency: Refer to: r2197, r2198, r2199

p2151[0...n] CI: Speed setpoint for messages/signals / n_set for msg

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 8011
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1170[0]

Description: Sets the signal source for the speed setpoint for the following messages:
"Speed setpoint - actual value deviation within tolerance t_off" (BO: r2197.7)
"Ramp-up/ramp-down completed" (BO: r2199.5)
"|n_set| < p2161" (BO: r2198.4)
"n_set > 0" (BO: r2198.5)

Dependency: Refer to: r2197, r2198, r2199

p2153[0...n] Velocity actual value filter time constant / v_act_filt T

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	1000000 [ms]	0 [ms]

Description: Sets the time constant of the PT1 element to smooth the speed / velocity actual value.
The smoothed actual speed/velocity is compared with the threshold values and is only used for messages and signals.

Dependency: Refer to: r2169

p2153[0...n] Speed actual value filter time constant / n_act_filt T

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8010
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	1000000 [ms]	0 [ms]

Description: Sets the time constant of the PT1 element to smooth the speed / velocity actual value.
The smoothed actual speed/velocity is compared with the threshold values and is only used for messages and signals.

Dependency: Refer to: r2169

p2153[0...n] Velocity actual value filter time constant / v_act_filt T

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8010
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	1000000 [ms]	0 [ms]

Description: Sets the time constant of the PT1 element to smooth the speed / velocity actual value.

The smoothed actual speed/velocity is compared with the threshold values and is only used for messages and signals.

Dependency: Refer to: r2169

p2154[0...n] CI: Speed setpoint 2 / n_set 2

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 8010
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for speed setpoint 2.

The sum of p2151 and p2154 is used for the following messages/signals:

"Speed setpoint - actual value deviation within tolerance t_off" (r2197.7)

"Speed setpoint - actual value deviation within tolerance t_on" (r2199.4)

"Ramp-up/ramp-down completed" (r2199.5)

Dependency: Refer to: p2151, r2197, r2199

p2154[0...n] CI: Velocity setpoint 2 / v_set 2

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 8010
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the velocity setpoint 2.

The sum of p2151 and p2154 is used for the following messages/signals:

"Velocity setpoint - actual value deviation within tolerance t_off" (r2197.7)

"Velocity setpoint - actual value deviation within tolerance t_on" (r2199.4)

"Ramp-up/ramp-down completed" (r2199.5)

Dependency: Refer to: p2151, r2197, r2199

p2155[0...n] Speed threshold 2 / n_thresh val 2

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8010
P-Group: Messages	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	900.00 [rpm]

Description: Sets the speed threshold value for the following messages:

"|n_act| < = speed threshold value 2" (BO: r2197.1)

"|n_act| > speed threshold value 2" (BO: r2197.2)

Dependency: Refer to: p2140, r2197

p2155[0...n] Velocity threshold value 2 / v_thresh val 2

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8010
P-Group: Messages	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [m/min]	1000.00 [m/min]	9.00 [m/min]

Description: Sets the velocity threshold value for the following messages:

"|v_act| < = velocity threshold value 2" (BO: r2197.1)

"|v_act| > velocity threshold value 2" (BO: r2197.2)

Dependency: Refer to: p2140, r2197

p2155[0...n] Speed threshold 2 / n_thresh val 2

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8010
P-Group: Messages	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	900.00 [rpm]

Description: Sets the speed threshold value for the following messages:

"|n_act| < = speed threshold value 2" (BO: r2197.1)

"|n_act| > speed threshold value 2" (BO: r2197.2)

Dependency: Refer to: p2140, r2197

Caution: The filter monitoring function is deactivated with p2155 = 0.0.

Note: The parameter is used as alarm threshold for underspeed monitoring.

Monitoring for an underspeed condition is automatically activated internally for encoderless separately-excited synchronous motors in closed-loop torque controlled operation (p0300 = 5, p1300 = 20, p1501 = 1 signal) - and can be manually activated with p2149.6 = 1.

For separately excited synchronous motors, when exiting commissioning (p0340 = 5), this parameter is automatically assigned 1.5 * p1755.

p2156[0...n] On delay comparison value reached / t_on cmpr val rchd

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8010
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [ms]	10000.0 [ms]	0.0 [ms]

Description: Sets the switch-in delay time for the signal "comparison value reached" (BO: r2199.1).

Dependency: Refer to: p2141, p2142, r2199

p2161[0...n] Speed threshold 3 / n_thresh val 3

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8010, 8011
P-Group: Messages	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	5.00 [rpm]

Description: Sets the speed threshold value for the signal "|n_act| < speed threshold value 3" (BO: r2199.0).

Dependency: Refer to: p2142, r2199

p2161[0...n] Velocity threshold value 3 / v_thresh val 3

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8010, 8011
P-Group: Messages	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [m/min]	1000.00 [m/min]	0.05 [m/min]

Description: Sets the velocity threshold value for the signal "|v_act| < velocity threshold value 3" (BO: r2199.0).

Dependency: Refer to: p2142, r2199

p2161[0...n] Speed threshold 3 / n_thresh val 3

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8010, 8011
P-Group: Messages	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	5.00 [rpm]

Description: Sets the speed threshold value for the signal "|n_act| < speed threshold value 3" (BO: r2199.0).

Dependency: Refer to: p2142, r2199

Caution: The threshold monitoring function is deactivated with p2161 = 0.0.

Note: The parameter is used as fault threshold for underspeed monitoring

Monitoring for an underspeed condition is automatically activated internally for encoderless separately-excited synchronous motors in closed-loop torque controlled operation (p0300 = 5, p1300 = 20, p1501 = 1 signal) - and can be manually activated with p2149.6 = 1.

For separately excited synchronous motors, when exiting commissioning (p0340 = 5), this parameter is automatically assigned p1755.

p2162[0...n] Hysteresis speed n_act > n_max / Hyst n_act>n_max

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8010
P-Group: Messages	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	60000.00 [rpm]	0.00 [rpm]

Description: Sets the hysteresis speed (bandwidth) for the signal "n_act > n_max" (BO: r2197.6).

Dependency: Refer to: r1084, r1087, r2197

Notice: For p0322 = 0, the following applies: p2162 <= 0.1 * p0311

For p0322 > 0, the following applies: p2162 <= 1.02 * p0322 - p1082

If one of the conditions is violated, p2162 is appropriately and automatically reduced when exiting the commissioning mode.

Note: For a negative speed limit (r1087) the hysteresis is effective below the limit value and for a positive speed limit (r1084) above the limit value.

If significant overshoot occurs in the maximum speed range (e.g. due to load shedding), you are advised to increase the dynamic response of the speed controller (if possible). If this is insufficient, the hysteresis p2162 can only be increased by more than 10% of the rated speed when the maximum speed (p0322) of the motor is sufficiently greater than the speed limit p1082.

p2162[0...n] Hysteresis velocity v_act > v_max / Hyst v_act>v_max

SERVO (Lin), HLA, SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8010
P-Group: Messages	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [m/min]	1000.00 [m/min]	6.00 [m/min]

Description: Sets the hysteresis velocity (bandwidth) for the signal "v_act > v_max" (BO: r2197.6).

Dependency: Refer to: r1084, r1087, r2197

Notice: For p0322 = 0, the following applies: p2162 <= 0.1 * p0311

For p0322 > 0, the following applies: p2162 <= 1.02 * p0322 - p1082

If one of the conditions is violated, p2162 is appropriately and automatically reduced when exiting the commissioning mode.

Note: For a negative velocity limit (r1087) the hysteresis is effective below the limit value and for a positive velocity limit (r1084) above the limit value.

p2163[0...n] Velocity threshold value 4 / v_thresh val 4

HLA

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Messages	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [m/min]	1000.00 [m/min]	0.90 [m/min]

Description: Sets the velocity threshold value for the "velocity setpoint - actual value deviation in tolerance t_off" message (BO: r2197.7).

Dependency: Refer to: p2164, p2166, r2197

p2163[0...n] Speed threshold 4 / n_thresh val 4

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8011
P-Group: Messages	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	90.00 [rpm]

Description: Sets the speed threshold value for the "speed setpoint - actual value deviation in tolerance t_off" signal/message (BO: r2197.7).

Dependency: Refer to: p2164, p2166, r2197

p2163[0...n]	Velocity threshold value 4 / v_thresh val 4		
SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)	**Can be changed:** U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8011
	P-Group: Messages	**Unit group:** 4_1	**Unit selection:** p0505
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [m/min]	1000.00 [m/min]	0.90 [m/min]

Description: Sets the velocity threshold value for the "speed setpoint - actual value deviation in tolerance t_off" message (BO: r2197.7).

Dependency: Refer to: p2164, p2166, r2197

p2164[0...n]	Hysteresis velocity 4 / v_hysteresis 4		
HLA	**Can be changed:** U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
	P-Group: Messages	**Unit group:** 4_1	**Unit selection:** p0505
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [m/min]	10.00 [m/min]	0.02 [m/min]

Description: Sets the hysteresis velocity (bandwidth) for the "velocity setpoint - actual value deviation in tolerance t_off" message (BO: r2197.7).

Dependency: Refer to: p2163, p2166, r2197

p2164[0...n]	Hysteresis speed 4 / n_hysteresis 4		
SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC	**Can be changed:** U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8011
	P-Group: Messages	**Unit group:** 3_1	**Unit selection:** p0505
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [rpm]	200.00 [rpm]	2.00 [rpm]

Description: Sets the hysteresis speed (bandwidth) for the "speed setpoint - actual value deviation in tolerance t_off" signal/message (BO: r2197.7).

Dependency: Refer to: p2163, p2166, r2197

p2164[0...n]	Hysteresis velocity 4 / v_hysteresis 4		
SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)	**Can be changed:** U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8011
	P-Group: Messages	**Unit group:** 4_1	**Unit selection:** p0505
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [m/min]	10.00 [m/min]	0.02 [m/min]

Description: Sets the hysteresis velocity (bandwidth) for the "speed setpoint - actual value deviation in tolerance t_off" message (BO: r2197.7).

Dependency: Refer to: p2163, p2166, r2197

p2166[0...n]	Off delay v_act = v_set / t_del_off n_i=n_so		
HLA	**Can be changed:** U, T	**Calculated:** -	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
	P-Group: Messages	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.0 [ms]	10000.0 [ms]	200.0 [ms]

Description: Sets the switch-off delay time for the "velocity setpoint - actual value deviation in tolerance t_off" signal/message (BO: r2197.7).

Dependency: Refer to: p2163, p2164, r2197

p2166[0...n]	Off delay n_act = n_set / t_del_off n_i=n_so		
SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC	**Can be changed:** U, T	**Calculated:** -	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8011
	P-Group: Messages	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.0 [ms]	10000.0 [ms]	200.0 [ms]

Description: Sets the switch-off delay time for the "speed setpoint - actual value deviation in tolerance t_off" signal/message (BO: r2197.7).

Dependency: Refer to: p2163, p2164, r2197

p2166[0...n]	Off delay v_act = v_set / t_del_off n_i=n_so		
SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)	**Can be changed:** U, T	**Calculated:** -	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8011
	P-Group: Messages	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.0 [ms]	10000.0 [ms]	200.0 [ms]

Description: Sets the switch-off delay time for the "velocity setpoint - actual value deviation in tolerance t_off" signal/message (BO: r2197.7).

Dependency: Refer to: p2163, p2164, r2197

p2167[0...n]	Switch-on delay n_act = n_set / t_on n_act=n_set		
SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC	**Can be changed:** U, T	**Calculated:** -	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8011
	P-Group: Messages	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.0 [ms]	10000.0 [ms]	200.0 [ms]

Description: Sets the switch-on delay for the "speed setpoint - actual value deviation in tolerance t_on" signal/message (BO: r2199.4).

p2167[0...n]	On delay v_act = v_set / t_on n_act=n_set		
SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)	**Can be changed:** U, T	**Calculated:** -	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8011
	P-Group: Messages	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.0 [ms]	10000.0 [ms]	200.0 [ms]

Description: Sets the switch-on delay for the "speed setpoint - actual value deviation in tolerance t_on" signal/message (BO: r2199.4).

r2169 CO: Actual velocity smoothed signals / v_act smth message

HLA

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Messages	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Display and connector output of the smoothed velocity actual value for messages.

Dependency: Refer to: p2153

r2169 CO: Actual speed smoothed signals / n_act smth message

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8010
P-Group: Messages	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Display and connector output of the smoothed speed actual value for messages.

Dependency: Refer to: p2153

r2169 CO: Actual velocity smoothed signals / v_act smth message

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8010
P-Group: Messages	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Display and connector output of the smoothed velocity actual value for messages.

Dependency: Refer to: p2153

p2174[0...n] Torque threshold value 1 / M_thresh val 1

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8012
P-Group: Messages	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Nm]	20000000.00 [Nm]	5.13 [Nm]

Description: Sets the torque threshold value for the signal "Torque setpoint < torque threshold value 1" (BO: r2198.10).

Dependency: Refer to: p2195, r2198

p2174[0...n] Force threshold value 1 / F_thresh val 1

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8012
P-Group: Messages	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [N]	20000000.00 [N]	1000.00 [N]

Description: Sets the force threshold value for the signal "force setpoint < force threshold value 1" (BO: r2198.10).

Dependency: Refer to: p2195, r2198

p2174[0...n] Torque threshold value 1 / M_thresh val 1

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8012
P-Group: Messages	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Nm]	20000000.00 [Nm]	5.13 [Nm]

Description: Sets the torque threshold value for the messages:
"Torque setpoint < torque threshold value 1 and n_set reached" (BO: r2198.9)
"Torque setpoint < torque threshold value 1" (BO: r2198.10)
"Torque setpoint > torque threshold value 1" (BO: r2198.13)

Dependency: Refer to: p2195, r2198

p2175[0...n] Motor blocked velocity threshold / Mot lock v_thresh

HLA

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8012
P-Group: Messages	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [m/min]	1000.00 [m/min]	1.20 [m/min]

Description: Sets the velocity threshold for the message "Motor locked".

Dependency: Refer to: p2177
Refer to: F07900

p2175[0...n] Motor blocked speed threshold / Mot lock n_thresh

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8012
P-Group: Messages	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	120.00 [rpm]

Description: Sets the speed threshold for the message "Motor blocked" (BO: r2198.6).

Dependency: Refer to: p0500, p2177, r2198
Refer to: F07900

p2175[0...n] Motor blocked velocity threshold / Mot lock v_thresh

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8012
P-Group: Messages	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [m/min]	1000.00 [m/min]	1.20 [m/min]

Description: Sets the velocity threshold for the message "Motor blocked" (BO: r2198.6).

Dependency: Refer to: p0500, p2177, r2198
Refer to: F07900

p2175[0...n] Motor blocked speed threshold / Mot lock n_thresh

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8012
P-Group: Messages	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	120.00 [rpm]

Description: Sets the speed threshold for the message "Motor blocked" (BO: r2198.6).

Dependency: Refer to: p0500, p2177, r2198

Refer to: F07900

Note: The following applies for sensorless vector control for induction motors:

At low speeds in open-loop speed controlled operation (see p1755, p1756), a blocked motor cannot be detected.

The following applies for sensorless vector control for permanent magnet synchronous motors:

At low speeds in open-loop speed controlled operation (see p1755, p1756), a blocked motor can only be detected if p2175 = p1755, and p1750.6 is set to 1.

p2177[0...n] Motor blocked delay time / Mot lock t_del

HLA

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	65.000 [s]	1.000 [s]

Description: Sets the delay time for the message "Motor locked".

Dependency: Refer to: p0500, p2175, r2198

Refer to: F07900

p2177[0...n] Motor blocked delay time / Mot lock t_del

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8012
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	65.000 [s]	1.000 [s]

Description: Sets the delay time for the message "Motor blocked" (BO: r2198.6).

Dependency: Refer to: p0500, p2175, r2198

Refer to: F07900

p2177[0...n] Motor blocked delay time / Mot lock t_del

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8012
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	65.000 [s]	1.000 [s]

Description: Sets the delay time for the message "Motor blocked" (BO: r2198.6).

Dependency: Refer to: p0500, p2175, r2198

Refer to: F07900

Note: The following applies for sensorless vector control:

At low speeds a locked motor can only be detected if no change is made to open-loop speed controlled operation. If this is the case, the value in p2177 must be reduced accordingly (p2177 < p1758) before time p2177 has elapsed in order to detect the locked state reliably.

As countermeasure, it is generally also possible to set p1750.6. This is only not permitted if the drive is slowly reversed by the load at the torque limit (speed below p1755 for longer than p1758).

p2178[0...n] Motor stalled delay time / Mot stall t_del

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_REG	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8012
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	10.000 [s]	0.010 [s]

Description: Sets the delay time for the message "Motor stalled" (BO: r2198.7).

Dependency: Refer to: r2198

p2181[0...n] Load monitoring response / Load monit resp

SERVO (Ext msg), VECTOR (Ext msg), SERVO_AC (Ext msg), VECTOR_AC (Ext msg), SERVO_I_AC (Ext msg), VECTOR_I_AC (Ext msg)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 8013
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	6	0

Description: Sets the response when evaluating the load monitoring.

Value:
0: Load monitoring disabled
1: A07920 for torque/speed too low
2: A07921 for torque/speed too high
3: A07922 for torque/speed out of tolerance
4: F07923 for torque/speed too low
5: F07924 for torque/speed too high
6: F07925 for torque/speed out of tolerance

Dependency: Refer to: p2182, p2183, p2184, p2185, p2186, p2187, p2188, p2189, p2190, p2192, r2198

Refer to: A07920, A07921, A07922, F07923, F07924, F07925

Note: The response to the faults F07923 ... F07925 can be set.

This parameter setting has no effect on the generation of fault F07936.

p2182[0...n] Load monitoring velocity threshold 1 / v_thresh 1

SERVO (Ext msg, Lin), SERVO_AC (Ext msg, Lin), SERVO_I_AC (Ext msg, Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8013
P-Group: Messages	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [m/min]	1000.00 [m/min]	0.05 [m/min]

Description: Sets the speed/torque envelope curve for load monitoring.

The envelope curve (upper and lower envelope curve) is defined as follows based on 3 speed thresholds:

p2182 (n_threshold 1) --> p2185 (M_threshold 1, upper), p2186 (M_threshold 1, lower)

p2183 (n_threshold 2) --> p2187 (M_threshold 2, upper), p2188 (M_threshold 2, lower)

p2184 (n_threshold 3) --> p2189 (M_threshold 3, upper), p2190 (M_threshold 3, lower)

Dependency: The following applies: p2182 < p2183 < p2184

Refer to: p2183, p2184, p2185, p2186

Refer to: A07926

Note: In order that the load monitoring can reliably respond, the speed threshold p2182 should always be set lower than the minimum motor speed to be monitored.

p2182[0...n] Load monitoring speed threshold value 1 / n_thresh 1

SERVO (Ext msg), VECTOR (Ext msg), SERVO_AC (Ext msg), VECTOR_AC (Ext msg), SERVO_I_AC (Ext msg), VECTOR_I_AC (Ext msg)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8013
P-Group: Messages	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	150.00 [rpm]

Description: Sets the speed/torque envelope curve for load monitoring.
The envelope curve (upper and lower envelope curve) is defined as follows based on 3 speed thresholds:
p2182 (n_threshold 1) --> p2185 (M_threshold 1, upper), p2186 (M_threshold 1, lower)
p2183 (n_threshold 2) --> p2187 (M_threshold 2, upper), p2188 (M_threshold 2, lower)
p2184 (n_threshold 3) --> p2189 (M_threshold 3, upper), p2190 (M_threshold 3, lower)

Dependency: The following applies: p2182 < p2183 < p2184
Refer to: p2183, p2184, p2185, p2186
Refer to: A07926

Note: In order that the load monitoring can reliably respond, the speed threshold p2182 should always be set lower than the minimum motor speed to be monitored.

p2183[0...n] Load monitoring velocity threshold 2 / v_thresh 2

SERVO (Ext msg, Lin), SERVO_AC (Ext msg, Lin), SERVO_I_AC (Ext msg, Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8013
P-Group: Messages	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [m/min]	1000.00 [m/min]	0.05 [m/min]

Description: Sets the speed/torque envelope curve for load monitoring.
The envelope curve (upper and lower envelope curve) is defined as follows based on 3 speed thresholds:
p2182 (n_threshold 1) --> p2185 (M_threshold 1, upper), p2186 (M_threshold 1, lower)
p2183 (n_threshold 2) --> p2187 (M_threshold 2, upper), p2188 (M_threshold 2, lower)
p2184 (n_threshold 3) --> p2189 (M_threshold 3, upper), p2190 (M_threshold 3, lower)

Dependency: The following applies: p2182 < p2183 < p2184
Refer to: p2182, p2184, p2187, p2188
Refer to: A07926

p2183[0...n] Load monitoring speed threshold value 2 / n_thresh 2

SERVO (Ext msg), VECTOR (Ext msg), SERVO_AC (Ext msg), VECTOR_AC (Ext msg), SERVO_I_AC (Ext msg), VECTOR_I_AC (Ext msg)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8013
P-Group: Messages	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	900.00 [rpm]

Description: Sets the speed/torque envelope curve for load monitoring.
The envelope curve (upper and lower envelope curve) is defined as follows based on 3 speed thresholds:
p2182 (n_threshold 1) --> p2185 (M_threshold 1, upper), p2186 (M_threshold 1, lower)
p2183 (n_threshold 2) --> p2187 (M_threshold 2, upper), p2188 (M_threshold 2, lower)
p2184 (n_threshold 3) --> p2189 (M_threshold 3, upper), p2190 (M_threshold 3, lower)

Dependency: The following applies: p2182 < p2183 < p2184
Refer to: p2182, p2184, p2187, p2188
Refer to: A07926

p2184[0...n] Load monitoring velocity threshold 3 / v_thresh 3

SERVO (Ext msg, Lin), SERVO_AC (Ext msg, Lin), SERVO_I_AC (Ext msg, Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8013
P-Group: Messages	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [m/min]	1000.00 [m/min]	0.05 [m/min]

Description: Sets the speed/torque envelope curve for load monitoring.

The envelope curve (upper and lower envelope curve) is defined as follows based on 3 speed thresholds:

p2182 (n_threshold 1) --> p2185 (M_threshold 1, upper), p2186 (M_threshold 1, lower)

p2183 (n_threshold 2) --> p2187 (M_threshold 2, upper), p2188 (M_threshold 2, lower)

p2184 (n_threshold 3) --> p2189 (M_threshold 3, upper), p2190 (M_threshold 3, lower)

Dependency: The following applies: p2182 < p2183 < p2184

Refer to: p2182, p2183, p2189, p2190

Refer to: A07926

Note: In order that the load monitoring can reliably respond, the speed threshold p2184 should always be set higher than the maximum motor speed to be monitored.

p2184[0...n] Load monitoring speed threshold value 3 / n_thresh 3

SERVO (Ext msg), VECTOR (Ext msg), SERVO_AC (Ext msg), VECTOR_AC (Ext msg), SERVO_I_AC (Ext msg), VECTOR_I_AC (Ext msg)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8013
P-Group: Messages	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	1500.00 [rpm]

Description: Sets the speed/torque envelope curve for load monitoring.

The envelope curve (upper and lower envelope curve) is defined as follows based on 3 speed thresholds:

p2182 (n_threshold 1) --> p2185 (M_threshold 1, upper), p2186 (M_threshold 1, lower)

p2183 (n_threshold 2) --> p2187 (M_threshold 2, upper), p2188 (M_threshold 2, lower)

p2184 (n_threshold 3) --> p2189 (M_threshold 3, upper), p2190 (M_threshold 3, lower)

Dependency: The following applies: p2182 < p2183 < p2184

Refer to: p2182, p2183, p2189, p2190

Refer to: A07926

Note: In order that the load monitoring can reliably respond, the speed threshold p2184 should always be set higher than the maximum motor speed to be monitored.

p2185[0...n] Load monitoring force threshold 1 upper / F_thresh 1 upper

SERVO (Ext msg, Lin), SERVO_AC (Ext msg, Lin), SERVO_I_AC (Ext msg, Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8013
P-Group: Messages	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [N]	100000.00 [N]	100000.00 [N]

Description: Sets the speed/torque / velocity/force envelope curve for the load monitoring.

Dependency: The following applies: p2185 > p2186

Refer to: p2182, p2186

Refer to: A07926

Note: The upper envelope curve is defined by p2185, p2187 and p2189.

p2185[0...n] Load monitoring torque threshold 1 upper / M_thresh 1 upper

SERVO (Ext msg), VECTOR (Ext msg), SERVO_AC (Ext msg), VECTOR_AC (Ext msg), SERVO_I_AC (Ext msg), VECTOR_I_AC (Ext msg)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8013
P-Group: Messages	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Nm]	20000000.00 [Nm]	10000000.00 [Nm]

Description: Sets the speed/torque / velocity/force envelope curve for the load monitoring.

Dependency: The following applies: p2185 > p2186
Refer to: p2182, p2186
Refer to: A07926

Note: The upper envelope curve is defined by p2185, p2187 and p2189.

p2186[0...n] Load monitoring force threshold 1 lower / F_thresh 1 lower

SERVO (Ext msg, Lin), SERVO_AC (Ext msg, Lin), SERVO_I_AC (Ext msg, Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8013
P-Group: Messages	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [N]	100000.00 [N]	0.00 [N]

Description: Sets the speed/torque / velocity/force envelope curve for the load monitoring.

Dependency: The following applies: p2186 < p2185
Refer to: p2182, p2185
Refer to: A07926

Note: The lower envelope curve is defined by p2186, p2188 and p2190.

p2186[0...n] Load monitoring torque threshold 1 lower / M_thresh 1 lower

SERVO (Ext msg), VECTOR (Ext msg), SERVO_AC (Ext msg), VECTOR_AC (Ext msg), SERVO_I_AC (Ext msg), VECTOR_I_AC (Ext msg)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8013
P-Group: Messages	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Nm]	20000000.00 [Nm]	0.00 [Nm]

Description: Sets the speed/torque / velocity/force envelope curve for the load monitoring.

Dependency: The following applies: p2186 < p2185
Refer to: p2182, p2185
Refer to: A07926

Note: The lower envelope curve is defined by p2186, p2188 and p2190.

p2187[0...n] Load monitoring force threshold 2 upper / F_thresh 2 upper

SERVO (Ext msg, Lin), SERVO_AC (Ext msg, Lin), SERVO_I_AC (Ext msg, Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8013
P-Group: Messages	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [N]	100000.00 [N]	100000.00 [N]

Description: Sets the speed/torque / velocity/force envelope curve for the load monitoring.

Dependency: The following applies: p2187 > p2188
Refer to: p2183, p2188
Refer to: A07926

Note: The upper envelope curve is defined by p2185, p2187 and p2189.

p2187[0...n] Load monitoring torque threshold 2 upper / M_thresh 2 upper

SERVO (Ext msg), VECTOR (Ext msg), SERVO_AC (Ext msg), VECTOR_AC (Ext msg), SERVO_I_AC (Ext msg), VECTOR_I_AC (Ext msg)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8013
P-Group: Messages	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Nm]	20000000.00 [Nm]	10000000.00 [Nm]

Description: Sets the speed/torque / velocity/force envelope curve for the load monitoring.

Dependency: The following applies: p2187 > p2188

Refer to: p2183, p2188

Refer to: A07926

Note: The upper envelope curve is defined by p2185, p2187 and p2189.

p2188[0...n] Load monitoring force threshold 2 lower / F_thresh 2 lower

SERVO (Ext msg, Lin), SERVO_AC (Ext msg, Lin), SERVO_I_AC (Ext msg, Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8013
P-Group: Messages	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [N]	100000.00 [N]	0.00 [N]

Description: Sets the speed/torque / velocity/force envelope curve for the load monitoring.

Dependency: The following applies: p2188 < p2187

Refer to: p2183, p2187

Refer to: A07926

Note: The lower envelope curve is defined by p2186, p2188 and p2190.

p2188[0...n] Load monitoring torque threshold 2 lower / M_thresh 2 lower

SERVO (Ext msg), VECTOR (Ext msg), SERVO_AC (Ext msg), VECTOR_AC (Ext msg), SERVO_I_AC (Ext msg), VECTOR_I_AC (Ext msg)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8013
P-Group: Messages	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Nm]	20000000.00 [Nm]	0.00 [Nm]

Description: Sets the speed/torque / velocity/force envelope curve for the load monitoring.

Dependency: The following applies: p2188 < p2187

Refer to: p2183, p2187

Refer to: A07926

Note: The lower envelope curve is defined by p2186, p2188 and p2190.

p2189[0...n] Load monitoring force threshold 3 upper / F_thresh 3 upper

SERVO (Ext msg, Lin), SERVO_AC (Ext msg, Lin), SERVO_I_AC (Ext msg, Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8013
P-Group: Messages	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [N]	100000.00 [N]	100000.00 [N]

Description: Sets the speed/torque / velocity/force envelope curve for the load monitoring.

Dependency: The following applies: p2189 > p2190

Refer to: p2184, p2190

Refer to: A07926

Note: The upper envelope curve is defined by p2185, p2187 and p2189.

p2189[0...n] Load monitoring torque threshold 3 upper / M_thresh 3 upper

SERVO (Ext msg), VECTOR (Ext msg), SERVO_AC (Ext msg), VECTOR_AC (Ext msg), SERVO_I_AC (Ext msg), VECTOR_I_AC (Ext msg)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8013
P-Group: Messages	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Nm]	20000000.00 [Nm]	10000000.00 [Nm]

Description: Sets the speed/torque / velocity/force envelope curve for the load monitoring.

Dependency: The following applies: p2189 > p2190

Refer to: p2184, p2190

Refer to: A07926

Note: The upper envelope curve is defined by p2185, p2187 and p2189.

p2190[0...n] Load monitoring force threshold 3 lower / F_thresh 3 lower

SERVO (Ext msg, Lin), SERVO_AC (Ext msg, Lin), SERVO_I_AC (Ext msg, Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8013
P-Group: Messages	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [N]	100000.00 [N]	0.00 [N]

Description: Sets the speed/torque / velocity/force envelope curve for the load monitoring.

Dependency: The following applies: p2190 < p2189

Refer to: p2184, p2189

Refer to: A07926

Note: The lower envelope curve is defined by p2186, p2188 and p2190.

p2190[0...n] Load monitoring torque threshold 3 lower / M_thresh 3 lower

SERVO (Ext msg), VECTOR (Ext msg), SERVO_AC (Ext msg), VECTOR_AC (Ext msg), SERVO_I_AC (Ext msg), VECTOR_I_AC (Ext msg)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8013
P-Group: Messages	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Nm]	20000000.00 [Nm]	0.00 [Nm]

Description: Sets the speed/torque / velocity/force envelope curve for the load monitoring.

Dependency: The following applies: p2190 < p2189

Refer to: p2184, p2189

Refer to: A07926

Note: The lower envelope curve is defined by p2186, p2188 and p2190.

p2192[0...n] Load monitoring delay time / Load monit t_del

SERVO (Ext msg), VECTOR (Ext msg), SERVO_AC (Ext msg), VECTOR_AC (Ext msg), SERVO_I_AC (Ext msg), VECTOR_I_AC (Ext msg)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8013
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [s]	65.00 [s]	10.00 [s]

Description: Sets the delay time to evaluate the load monitoring.

p2194[0...n] Torque threshold value 2 / M_thresh val 2

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8012
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	100.00 [%]	90.00 [%]

Description: Sets the torque threshold value for the message "Torque utilization < torque threshold value 2" (BO: r2199.11).

The message "torque setpoint < p2174" (BO: r2198.10) and "torque utilization < p2194" (BO: r2199.11) are only evaluated after the run-up and the delay time has expired.

Dependency: Refer to: r0033, p2195, r2199

p2194[0...n] Force threshold value 2 / F_thresh val 2

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8012
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	100.00 [%]	90.00 [%]

Description: Sets the force threshold value for the signal "force utilization < force threshold value 2" (BO: r2199.11).

The message "force setpoint < p2174" (BO: r2198.10) and "force utilization < p2194" (BO: r2199.11) are only evaluated after the run-up and the delay time has expired.

Dependency: Refer to: r0033, p2195, r2199

p2195[0...n] Torque utilization switch-off delay / M_util t_off

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8012
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [ms]	1000.0 [ms]	800.0 [ms]

Description: Sets the switch-off delay time for the negated signal "run-up completed".

The message "torque setpoint < p2174" (BO: r2198.10) and "torque utilization < p2194" (BO: r2199.11) are only evaluated after the run-up and the delay time has expired.

Dependency: Refer to: p2174, p2194

p2195[0...n] Force utilization switch-off delay / F_util t_off

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8012
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [ms]	1000.0 [ms]	800.0 [ms]

Description: Sets the switch-off delay time for the negated signal "run-up completed".

The message "force setpoint < p2174" (BO: r2198.10) and "force utilization < p2194" (BO: r2199.11) are only evaluated after the run-up and the delay time has expired.

Dependency: Refer to: p2174, p2194

p2196[0...n] Torque utilization scaling / M_util scal

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	1000.00 [%]	100.00 [%]

Description: Sets the scaling factor for torque utilization (r0033).

r2197.1...13 CO/BO: Status word monitoring 1 / ZSW monitor 1

HLA

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the first status word of the monitoring functions.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
01	|v_act| < = velocity threshold value 2 p2155	Yes	No	8010
02	|v_act| > velocity threshold value 2 p2155	Yes	No	8010
03	v_act >= 0	Yes	No	8011
06	|v_act| > v_max	Yes	No	8010
07	Velocity setpoint - actual value deviation in tolerance t_off	Yes	No	8011
13	|v_act| > v_max (F07901)	Yes	No	-

Note: For bit 01, 02:

The threshold value is set in p2155 and the hysteresis in p2140.

For bit 03:

The hysteresis is set in p2150.

For bit 06:

The hysteresis is set in p2162.

For bit 07:

The threshold value is set in p2163 and the hysteresis is set in p2164.

For bit 13:

Only for internal Siemens use.

r2197.1...13 CO/BO: Status word monitoring 1 / ZSW monitor 1

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2534
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the first status word of the monitoring functions.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
01	|n_act| <= speed threshold value 2 p2155	Yes	No	8010
02	|n_act| > speed threshold value 2 p2155	Yes	No	8010
03	n_act >= 0	Yes	No	8011
06	|n_act| > n_max	Yes	No	8010
07	Speed setpoint - actual value deviation in tolerance t_off	Yes	No	8011
13	|n_act| > n_max (F07901)	Yes	No	-

Note: For bit 01, 02:
The threshold value is set in p2155 and the hysteresis in p2140.
For bit 03:
The hysteresis is set in p2150.
For bit 06:
The hysteresis is set in p2162.
For bit 07:
The threshold value is set in p2163 and the hysteresis is set in p2164.
For bit 13:
Only for internal Siemens use.

r2197.1...13 CO/BO: Status word monitoring 1 / ZSW monitor 1

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2534
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the first status word of the monitoring functions.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
01	|v_act| < = velocity threshold value 2 p2155	Yes	No	8010
02	|v_act| > velocity threshold value 2 p2155	Yes	No	8010
03	v_act >= 0	Yes	No	8011
06	|v_act| > v_max	Yes	No	8010
07	Velocity setpoint - actual value deviation in tolerance t_off	Yes	No	8011
13	|v_act| > v_max (F07901)	Yes	No	-

Note: For bit 01, 02:
The threshold value is set in p2155 and the hysteresis in p2140.
For bit 03:
The hysteresis is set in p2150.
For bit 06:
The hysteresis is set in p2162.
For bit 07:
The threshold value is set in p2163 and the hysteresis is set in p2164.
For bit 13:
Only for internal Siemens use.

r2198.4...12 CO/BO: Status word monitoring 2 / ZSW monitor 2

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2536
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the second status word of the monitoring functions.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
04	|n_set| < p2161	Yes	No	8011
05	n_set > 0	Yes	No	8011
06	Motor blocked	Yes	No	8012
10	|M_set| < torque threshold value 1	Yes	No	8012
11	Load in the alarm range	Yes	No	8013
12	Load in the fault range	Yes	No	8013

Note: For bit 10:

The torque threshold value 1 is set in p2174.

For bit 12:

This bit is reset after the fault cause disappears, even if the fault itself is still present.

r2198.4...12 CO/BO: Status word monitoring 2 / ZSW monitor 2

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2536
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the second status word of the monitoring functions.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
04	|n_set| < p2161	Yes	No	8011
05	v_set > 0	Yes	No	8011
06	Motor blocked	Yes	No	8012
10	Force setpoint < force threshold value 1	Yes	No	8012
11	Load in the alarm range	Yes	No	8013
12	Load in the fault range	Yes	No	8013

Note: For bit 10:

The force threshold value 1 is set in p2174.

r2198.4...12 CO/BO: Status word monitoring 2 / ZSW monitor 2

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2536
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the second status word of the monitoring functions.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
04	|n_set| < p2161	Yes	No	8011
05	n_set > 0	Yes	No	8011
06	Motor blocked	Yes	No	8012
07	Motor stalled	Yes	No	8012
10	|M_set| < torque threshold value 1	Yes	No	8012
11	Load in the alarm range	Yes	No	8013
12	Load in the fault range	Yes	No	8013

Note: For bit 10:

The torque threshold value 1 is set in p2174.

For bit 12:

This bit is reset after the fault cause disappears, even if the fault itself is still present.

r2199.0...11 CO/BO: Status word monitoring 3 / ZSW monitor 3

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2537
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the third status word of the monitoring functions.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	|n_act| < speed threshold value 3	Yes	No	8010
01	f or n comparison value reached or exceeded	Yes	No	8010
04	Speed setpoint - actual value deviation in tolerance t_on	Yes	No	8011
05	Ramp-up/ramp-down completed	Yes	No	8011
06	Current below the zero current threshold	Yes	No	8020
11	Torque utilization < torque threshold value 2	Yes	No	8012

Dependency: Refer to: F07913

Note: For bit 00:

The speed threshold value 3 is set in p2161.

For bit 01:

The comparison value is set in p2141. We recommend setting the hysteresis (p2142) for canceling the bit to a value lower than that in p2141. Otherwise, the bit is not reset.

For bit 11:

The torque threshold value 2 is set in p2194.

r2199.0...11 CO/BO: Status word monitoring 3 / ZSW monitor 3

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2537
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the third status word of the monitoring functions.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	|v_act| < velocity threshold value 3	Yes	No	8010
01	f or v comparison value reached or exceeded	Yes	No	8010
04	Velocity setpoint - actual value deviation in tolerance t_on	Yes	No	8011
05	Ramp-up/ramp-down completed	Yes	No	8011
06	Current below the zero current threshold	Yes	No	8020
11	Force utilization < force threshold value 2	Yes	No	8012

Dependency: Refer to: F07913

Note: For bit 00:

The velocity threshold value 3 is set in p2161.

For bit 01:

The comparison value is set in p2141.

For bit 11:

The force threshold value 2 is set in p2194.

r2199.0...14 CO/BO: Status word monitoring 3 / ZSW monitor 3

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2537
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the third status word of the monitoring functions.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	|n_act| < speed threshold value 3	Yes	No	8010
01	f or n comparison value reached or exceeded	Yes	No	8010
04	Speed setpoint - actual value deviation in tolerance t_on	Yes	No	8011
05	Ramp-up/ramp-down completed	Yes	No	8011
06	Current below the zero current threshold	Yes	No	8020
07	Speed deviation model/external intolerance	Yes	No	8012
11	Torque utilization < torque threshold value 2	Yes	No	8012
12	Excitation current out of tolerance (only SESM)	Yes	No	8020
13	I2t alarm threshold exceeded (only SESM)	Yes	No	8022
14	I2t fault threshold exceeded (only SESM)	Yes	No	8022

Dependency: Refer to: F07913

Note: SESM: separately excited synchronous motor

For bit 00:

The speed threshold value 3 is set in p2161.

For bit 01:

The comparison value is set in p2141. We recommend setting the hysteresis (p2142) for canceling the bit to a value lower than that in p2141. Otherwise, the bit is not reset.

For bit 11:

The torque threshold value 2 is set in p2194.

For bit 13:

The I2t monitoring detects when the alarm threshold is exceeded (p3243), outputs alarm A07823 and sets the status bit.

For bit 14:

The I2t monitoring detects when the fault threshold is exceeded (100 %), outputs fault A07824 and sets the status bit.

p2200[0...n] BI: Technology controller enable / Tec_ctrl enable

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 7958
P-Group: Technology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to switch in/switch out the technology controller.

The technology controller is switched in with a 1 signal.

p2201[0...n] CO: Technology controller fixed value 1 / Tec_ctrl fix val1

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7950, 7951
P-Group: Technology	**Unit group:** 9_1	**Unit selection:** p0595
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	10.00 [%]

Description: Sets the value for fixed value 1 of the technology controller.

Dependency: Refer to: p2220, p2221, p2222, p2223, r2224, r2229

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p2202[0...n] CO: Technology controller fixed value 2 / Tec_ctr fix val 2

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7950, 7951
P-Group: Technology	**Unit group:** 9_1	**Unit selection:** p0595
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	20.00 [%]

Description: Sets the value for fixed value 2 of the technology controller.

Dependency: Refer to: p2220, p2221, p2222, p2223, r2224, r2229

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p2203[0...n] CO: Technology controller fixed value 3 / Tec_ctr fix val 3

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7950, 7951
P-Group: Technology	**Unit group:** 9_1	**Unit selection:** p0595
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	30.00 [%]

Description: Sets the value for fixed value 3 of the technology controller.

Dependency: Refer to: p2220, p2221, p2222, p2223, r2224, r2229

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p2204[0...n] CO: Technology controller fixed value 4 / Tec_ctr fix val 4

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7950, 7951
P-Group: Technology	**Unit group:** 9_1	**Unit selection:** p0595
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	40.00 [%]

Description: Sets the value for fixed value 4 of the technology controller.

Dependency: Refer to: p2220, p2221, p2222, p2223, r2224, r2229

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p2205[0...n] CO: Technology controller fixed value 5 / Tec_ctr fix val 5

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7950
P-Group: Technology	**Unit group:** 9_1	**Unit selection:** p0595
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	50.00 [%]

Description: Sets the value for fixed value 5 of the technology controller.

Dependency: Refer to: p2220, p2221, p2222, p2223, r2224, r2229

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p2206[0...n] CO: Technology controller fixed value 6 / Tec_ctr fix val 6

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7950
P-Group: Technology	**Unit group:** 9_1	**Unit selection:** p0595
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	60.00 [%]

Description: Sets the value for fixed value 6 of the technology controller.

Dependency: Refer to: p2220, p2221, p2222, p2223, r2224, r2229

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p2207[0...n] CO: Technology controller fixed value 7 / Tec_ctr fix val 7

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7950
P-Group: Technology	**Unit group:** 9_1	**Unit selection:** p0595
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	70.00 [%]

Description: Sets the value for fixed value 7 of the technology controller.

Dependency: Refer to: p2220, p2221, p2222, p2223, r2224, r2229

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p2208[0...n] CO: Technology controller fixed value 8 / Tec_ctr fix val 8

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7950
P-Group: Technology	**Unit group:** 9_1	**Unit selection:** p0595
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	80.00 [%]

Description: Sets the value for fixed value 8 of the technology controller.

Dependency: Refer to: p2220, p2221, p2222, p2223, r2224, r2229

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p2209[0...n] CO: Technology controller fixed value 9 / Tec_ctr fix val 9

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7950
P-Group: Technology	**Unit group:** 9_1	**Unit selection:** p0595
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	90.00 [%]

Description: Sets the value for fixed value 9 of the technology controller.

Dependency: Refer to: p2220, p2221, p2222, p2223, r2224, r2229

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p2210[0...n] CO: Technology controller fixed value 10 / Tec_ctr fix val 10

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7950
P-Group: Technology	**Unit group:** 9_1	**Unit selection:** p0595
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	100.00 [%]

Description: Sets the value for fixed value 10 of the technology controller.

Dependency: Refer to: p2220, p2221, p2222, p2223, r2224, r2229

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p2211[0...n] CO: Technology controller fixed value 11 / Tec_ctr fix val 11

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7950
P-Group: Technology	**Unit group:** 9_1	**Unit selection:** p0595
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	110.00 [%]

Description: Sets the value for fixed value 11 of the technology controller.

Dependency: Refer to: p2220, p2221, p2222, p2223, r2224, r2229

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p2212[0...n] CO: Technology controller fixed value 12 / Tec_ctr fix val 12

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7950
P-Group: Technology	**Unit group:** 9_1	**Unit selection:** p0595
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	120.00 [%]

Description: Sets the value for fixed value 12 of the technology controller.

Dependency: Refer to: p2220, p2221, p2222, p2223, r2224, r2229

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p2213[0...n] CO: Technology controller fixed value 13 / Tec_ctr fix val 13

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7950
P-Group: Technology	**Unit group:** 9_1	**Unit selection:** p0595
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	130.00 [%]

Description: Sets the value for fixed value 13 of the technology controller.

Dependency: Refer to: p2220, p2221, p2222, p2223, r2224, r2229

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p2214[0...n] CO: Technology controller fixed value 14 / Tec_ctr fix val 14

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7950
P-Group: Technology	**Unit group:** 9_1	**Unit selection:** p0595
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	140.00 [%]

Description: Sets the value for fixed value 14 of the technology controller.

Dependency: Refer to: p2220, p2221, p2222, p2223, r2224, r2229

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p2215[0...n] CO: Technology controller fixed value 15 / Tec_ctr fix val 15

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7950
P-Group: Technology	**Unit group:** 9_1	**Unit selection:** p0595
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	150.00 [%]

Description: Sets the value for fixed value 15 of the technology controller.

Dependency: Refer to: p2220, p2221, p2222, p2223, r2224, r2229

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p2216[0...n] Technology controller fixed value selection method / Tec_ctr FixVal sel

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 7950, 7951
P-Group: Technology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	2	2

Description: Sets the method to select the fixed setpoints.

Value:
1: Direct selection
2: Binary selection

p2220[0...n] BI: Technology controller fixed value selection bit 0 / Tec_ctrl sel bit 0

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 7950, 7951
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to select a fixed value of the technology controller.

Dependency: Refer to: p2221, p2222, p2223

p2221[0...n] BI: Technology controller fixed value selection bit 1 / Tec_ctrl sel bit 1

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 7950, 7951
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to select a fixed value of the technology controller.

Dependency: Refer to: p2220, p2222, p2223

p2222[0...n] BI: Technology controller fixed value selection bit 2 / Tec_ctrl sel bit 2

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 7950, 7951
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to select a fixed value of the technology controller.

Dependency: Refer to: p2220, p2221, p2223

p2223[0...n] BI: Technology controller fixed value selection bit 3 / Tec_ctrl sel bit 3

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 7950, 7951
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to select a fixed value of the technology controller.

Dependency: Refer to: p2220, p2221, p2222

r2224 CO: Technology controller fixed value effective / Tec_ctr FixVal eff

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7950, 7951
P-Group: Technology	**Unit group:** 9_1	**Unit selection:** p0595
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Display and connector output for the selected and active fixed value of the technology controller.

Dependency: Refer to: r2229

r2225.0 CO/BO: Technology controller fixed value selection status word / Tec_ctr FixVal ZSW

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Technology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status word of the fixed value selection of the technology controller.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Technology controller fixed value selected	Yes	No	7950, 7951

r2229 Technology controller number actual / Tec_ctrl No. act

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 7950
P-Group: Technology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the number of the selected fixed setpoint of the technology controller.

Dependency: Refer to: r2224

p2230[0...n] Technology controller motorized potentiometer configuration / Tec_ctr mop config

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7954
P-Group: Technology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0100 bin

Description: Sets the configuration for the motorized potentiometer of the technology controller.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Data save active	Yes	No	-
02	Initial rounding-off active	Yes	No	-
03	Non-volatile data save active for p2230.0 = 1	Yes	No	-
04	Ramp-function generator always active	Yes	No	-

Dependency: Refer to: r2231, p2240

Notice: The following prerequisites must be fulfilled in order to be able to save the setpoint in a non-volatile fashion:

- Firmware with V2.3 or higher.

- Control Unit 320 (CU320) with hardware version C or higher (module with NVRAM).

Note: For bit 00:

0: The setpoint for the motorized potentiometer is not saved and after ON is entered using p2240.

1: The setpoint for the motorized potentiometer is saved and after ON is entered using r2231. In order to save in a non-volatile fashion, bit 03 should be set to 1.

For bit 02:

0: Without initial rounding-off

1: With initial rounding-off.

The selected ramp-up/down time is correspondingly exceeded. The initial rounding-off is a sensitive way of specifying small changes (progressive reaction when keys are pressed). The jerk for initial rounding is independent of the ramp-up time and only depends on the selected maximum value (p2237).

It is calculated as follows:

r = 0.0001 x max(p2237, |p2238|) [%] / 0.13^2 [s^2]

The jerk is active until maximum acceleration is reached (a_max = p2237 [%] / p2247 [s] or a_max = p2238 [%] / p2248 [s]); after this, the drive continues to operate with constant, linear acceleration.

The higher the maximum acceleration (the lower that p2247 is), the longer the ramp-up time increases with respect to the set ramp-up time.

For bit 03:

0: Non-volatile data save deactivated.

1. The setpoint for the motorized potentiometer is saved in a non-volatile fashion (for p2230.0 = 1).

For bit 04:

When the bit is set, the ramp-function generator is computed independent of the pulse enable. The actual output value of the motorized potentiometer is always in r2250.

r2231 Technology controller motorized potentiometer setpoint memory / Tec_ctrl mop mem

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7954
P-Group: Technology	**Unit group:** 9_1	**Unit selection:** p0595
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the setpoint memory for the motorized potentiometer of the technology controller.

For p2230.0 = 1, the last setpoint that was saved is entered after ON.

Dependency: Refer to: p2230

p2235[0...n] BI: Technology controller motorized potentiometer raise setpoint / Tec_ctrl mop raise

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 7954
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to continually increase the setpoint for the motorized potentiometer of the technology controller.

The setpoint change (CO: r2250) depends on the set ramp-up time (p2247) and the duration of the signal that is present (BI: p2235).

Dependency: Refer to: p2236

p2236[0...n] BI: Technology controller motorized potentiometer lower setpoint / Tec_ctrl mop lower

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 7954
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to continually reduce the setpoint for the motorized potentiometer of the technology controller.

The setpoint change (CO: r2250) depends on the set ramp-down time (p2248) and the duration of the signal that is present (BI: p2236).

Dependency: Refer to: p2235

p2237[0...n] Technology controller motorized potentiometer maximum value / Tec_ctrl mop max

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7954
P-Group: Technology	**Unit group:** 9_1	**Unit selection:** p0595
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	100.00 [%]

Description: Sets the maximum value for the motorized potentiometer of the technology controller.

Dependency: Refer to: p2238

p2238[0...n] Technology controller motorized potentiometer minimum value / Tec_ctrl mop min

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7954
P-Group: Technology	**Unit group:** 9_1	**Unit selection:** p0595
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	-100.00 [%]

Description: Sets the minimum value for the motorized potentiometer of the technology controller.

Dependency: Refer to: p2237

p2240[0...n] Technology controller motorized potentiometer starting value / Tec_ctrl mop start

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7954
P-Group: Technology	**Unit group:** 9_1	**Unit selection:** p0595
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	0.00 [%]

Description: Sets the starting value for the motorized potentiometer of the technology controller.
For p2230.0 = 0, this setpoint is entered after ON.

Dependency: Refer to: p2230

r2245 CO: Technology controller mot. potentiometer setpoint before RFG / Tec_ctr mop befRFG

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7954
P-Group: Technology	**Unit group:** 9_1	**Unit selection:** p0595
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Sets the effective setpoint in front of the internal motorized potentiometer ramp-function generator of the technology controller.

Dependency: Refer to: r2250

p2247[0...n] Technology controller motorized potentiometer ramp-up time / Tec_ctr mop t_r-up

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7954
P-Group: Technology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [s]	1000.0 [s]	10.0 [s]

Description: Sets the ramp-up time for the internal ramp-function generator for the motorized potentiometer of the technology controller.

Dependency: Refer to: p2248

Note: The time is referred to 100 %.

When the initial rounding-off is activated (p2230.2 = 1) the ramp-up is correspondingly extended.

p2248[0...n] Technology controller motorized potentiometer ramp-down time / Tec_ctrMop t_rdown

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7954
P-Group: Technology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [s]	1000.0 [s]	10.0 [s]

Description: Sets the ramp-down time for the internal ramp-function generator for the motorized potentiometer of the technology controller.

Dependency: Refer to: p2247

Note: The time is referred to 100 %.

When the initial rounding-off is activated (p2230.2 = 1) the ramp-down is correspondingly extended.

r2250 CO: Technology controller motorized potentiometer setpoint after RFG / Tec_ctr mop aftRFG

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7954
P-Group: Technology	**Unit group:** 9_1	**Unit selection:** p0595
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the effective setpoint after the internal ramp-function generator for the motorized potentiometer of the technology controller.

Dependency: Refer to: r2245

p2252 Technology controller configuration / Tec_ctrl config

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0111 bin

Description: Sets the configuration of the technology controller.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Ramp-up/down time independent of setpoint sign	Yes	No	-
01	Integrator independent of Kp	Yes	No	-
02	Output signal without ramp active	Yes	No	-
03	Actual value limit	Yes	No	-
07	Activate Kp adaptation	Yes	No	7958
08	Activate Tn adaptation	Yes	No	7958

Dependency: Refer to: p2257, p2258, p2267, p2268, p2280, p2285

Note: For bit 00 = 0:

The ramp-down time (p2258) switches to the ramp-up time (p2257) when the sign for the output signal r2260 changes. When the sign changes, the output signal is kept at zero for one arithmetic cycle.

For bit 00 = 1:

When r2260 exhibits a positive gradient, the ramp-up time (p2257) is active; when it exhibits a negative gradient, the ramp-down time (p2258) is active. The sign for r2260 does not have any effect on the ramp time.

For bit 01 = 0:

The integration time of the PID controller is evaluated with the gain factor Kp (p2280) (p2285 = integral time).

For bit 01 = 1:

The integration time of the PID controller is independent of the gain factor (p2285 = integration time) if p2280 > 0.

For bit 02 = 0:

When the PID controller is deactivated via p2200, the output signal r2294 is reduced to zero via the ramp-down time p2293.

For bit 02 = 1:

When the PID controller is deactivated via p2200, the output signal r2294 is set directly to zero.

For bit 03 = 0:

The actual values are not limited by p2267 and p2268.

For bit 03 = 1:

The actual values are limited by p2267 and p2268.

p2253[0...n] CI: Technology controller setpoint 1 / Tec_ctrl setp 1

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 7958
P-Group: Technology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the setpoint 1 of the technology controller.

Dependency: Refer to: p2254, p2255

p2254[0...n] CI: Technology controller setpoint 2 / Tec_ctrl setp 2

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 7958
	P-Group: Technology	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source for the setpoint 2 of the technology controller.

Dependency: Refer to: p2253, p2256

p2255 Technology controller setpoint 1 scaling / Tec_ctrl set1 scal

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7958
	P-Group: Technology	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [%]	100.00 [%]	100.00 [%]

Description: Sets the scaling for the setpoint 1 of the technology controller.

Dependency: Refer to: p2253

p2256 Technology controller setpoint 2 scaling / Tec_ctrl set2 scal

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7958
	P-Group: Technology	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [%]	100.00 [%]	100.00 [%]

Description: Sets the scaling for the setpoint 2 of the technology controller.

Dependency: Refer to: p2254

p2257 Technology controller ramp-up time / Tec_ctrl t_ramp-up

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)	**Can be changed:** U, T	**Calculated:** -	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7958
	P-Group: Technology	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [s]	650.00 [s]	1.00 [s]

Description: Sets the ramp-up time of the technology controller.

Dependency: Refer to: p2252, p2258

Note: The ramp-up time is referred to 100 %.

p2258 Technology controller ramp-down time / Tec_ctrl t_ramp-dn

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7958
P-Group: Technology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [s]	650.00 [s]	1.00 [s]

Description: Sets the ramp-down time of the technology controller.

Dependency: Refer to: p2252, p2257

Note: The ramp-down time is referred to 100 %.

r2260 CO: Technology controller setpoint after ramp-function generator / Tec_ctr set aftRFG

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7958
P-Group: Technology	**Unit group:** 9_1	**Unit selection:** p0595
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Sets the setpoint after the ramp-function generator of the technology controller.

p2261 Technology controller setpoint filter time constant / Tec_ctrl set T

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7958
P-Group: Technology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	60.000 [s]	0.000 [s]

Description: Sets the time constant for the setpoint filter (PT1) of the technology controller.

r2262 CO: Technology controller setpoint after filter / Tec_ctr set aftFlt

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7958
P-Group: Technology	**Unit group:** 9_1	**Unit selection:** p0595
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Display and connector output for the smoothed setpoint after the setpoint filter (PT1) of the technology controller.

p2263 Technology controller type / Tec_ctrl type

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 7958
P-Group: Technology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the type of technology controller.

Value:
0: D component in the actual value signal
1: D component in system deviation

p2264[0...n] CI: Technology controller actual value / Tec_ctrl act val

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 7958
P-Group: Technology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the actual value of the technology controller.

p2265 Technology controller actual value filter time constant / Tec_ctrl act T

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7958
P-Group: Technology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	60.000 [s]	0.000 [s]

Description: Sets the time constant for the actual value filter (PT1) of the technology controller.

r2266 CO: Technology controller actual value after filter / Tec_ctr act aftFlt

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7958
P-Group: Technology	**Unit group:** 9_1	**Unit selection:** p0595
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Display and connector output for the smoothed actual value after the filter (PT1) of the technology controller.

p2267 Technology controller upper limit actual value / Tec_ctrl u_lim act

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7958
P-Group: Technology	**Unit group:** 9_1	**Unit selection:** p0595
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-10000.00 [%]	10000.00 [%]	200.00 [%]

Description: Sets the upper limit for the actual value signal of the technology controller.

Dependency: Refer to: p2252, p2264, p2265, p2271

Refer to: F07426

Notice: If the actual value exceeds this upper limit, this results in fault F07426.

Note: Limiting only active for p2252.3 = 1.

p2268 Technology controller lower limit actual value / Tec_ctrl l_lim act

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7958
P-Group: Technology	**Unit group:** 9_1	**Unit selection:** p0595
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-10000.00 [%]	10000.00 [%]	-200.00 [%]

Description: Sets the lower limit for the actual value signal of the technology controller.

Dependency: Refer to: p2252, p2264, p2265, p2271

Refer to: F07426

Notice: If the actual value falls below this lower limit, this results in fault F07426.

Note: Limiting only active for p2252.3 = 1.

p2269 Technology controller gain actual value / Tech_ctrl gain act

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7958
P-Group: Technology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	500.00 [%]	100.00 [%]

Description: Sets the scaling factor for the actual value of the technology controller.

Dependency: Refer to: p2264, p2265, p2267, p2268, p2271

Note: For 100%, the actual value is not changed.

p2270 Technology controller actual value function / Tec_ctr ActVal fct

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 7958
P-Group: Technology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	3	0

Description: Setting to use an arithmetic function for the actual value signal of the technology controller.

Value:
0: Output (y) = input (x)
1: Root function (root from x)
2: Square function (x * x)
3: Cube function (x * x * x)

Dependency: Refer to: p2264, p2265, p2267, p2268, p2269, p2271

p2271 Technology controller actual value inversion (sensor type) / Tech_ctrl act inv

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 7958
P-Group: Technology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Setting to invert the actual value signal of the technology controller.
The inversion depends on the sensor type for the actual value signal.

Value:
0: No inversion
1: Inversion actual value signal

Caution: If the actual value inversion is incorrectly selected, then the closed-loop control with the technology controller can become unstable and can oscillate!

Note: The correct setting can be determined as follows:
- inhibit the technology controller (p2200 = 0).
- increase the motor speed and in so doing, measure the actual value signal of the technology controller.
--> If the actual value increases as the motor speed increases, then p2271 should be set to 0 (no inversion).
--> If the actual value decreases as the motor speed increases, then p2271 should be set to 1 (the actual value signal is inverted).

r2272 CO: Technology controller actual value scaled / Tech_ctrl act scal

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7958
P-Group: Technology	**Unit group:** 9_1	**Unit selection:** p0595
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Display and connector output for the scaled actual value signal of the technology controller.

Dependency: Refer to: p2264, p2265, r2266, p2267, p2268, p2269, p2270, p2271

r2273 CO: Technology controller system deviation / Tec_ctrl sys_dev

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7958
P-Group: Technology	**Unit group:** 9_1	**Unit selection:** p0595
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the system deviation between the setpoint and actual value of the technology controller.

Dependency: Refer to: p2263

p2274 Technology controller differentiation time constant / Tec_ctrl D comp T

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7958
P-Group: Technology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	60.000 [s]	0.000 [s]

Description: Sets the time constant for the differentiation (D component) of the technology controller.

Note: p2274 = 0: Differentiation is disabled.

p2280 Technology controller proportional gain / Tec_ctrl Kp

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7958
P-Group: Technology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	1000.000	1.000

Description: Sets the proportional gain (P component) of the technology controller.

Dependency: Refer to: p2252

Note: p2280 = 0: The proportional gain is disabled.

p2285 Technology controller integral time / Tec_ctrl Tn

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7958
P-Group: Technology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	60.000 [s]	0.000 [s]

Description: Sets the integral time (I component, integrating time constant) of the technology controller.

Dependency: Refer to: p2252

Note: p2285 = 0: The integral time is disabled.

p2286[0...n] BI: Hold technology controller integrator / Tec_ctr integ hold

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 7958
P-Group: Technology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to hold the integrator for the technology controller.

p2289[0...n] CI: Technology controller precontrol signal / Tec_ctr prectr_sig

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 7958
P-Group: Technology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the precontrol signal of the technology controller.

p2291 CO: Technology controller maximum limiting / Tec_ctrl max_lim

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7958
P-Group: Technology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	100.00 [%]

Description: Sets the maximum limit of the technology controller.

Dependency: Refer to: p2292

Caution: The maximum limit must always be greater than the minimum limit (p2291 > p2292).

p2292 CO: Technology controller minimum limiting / Tec_ctrl min_lim

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7958
P-Group: Technology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	0.00 [%]

Description: Sets the minimum limit of the technology controller.

Dependency: Refer to: p2291

Caution: The maximum limit must always be greater than the minimum limit (p2291 > p2292).

p2293 Technology controller ramp-up/ramp-down time / Tec_ctr t_RU/RD

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7958
P-Group: Technology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [s]	100.00 [s]	1.00 [s]

Description: Sets the ramping time for the output signal of the technology controller.

Dependency: Refer to: p2291, p2292

Note: The time refers to the set maximum and minimum limits (p2291, p2292).

r2294 CO: Technology controller output signal / Tec_ctrl outp_sig

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7958
P-Group: Technology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Display and connector output for the output signal of the technology controller.

Dependency: Refer to: p2295

p2295 CO: Technology controller output scaling / Tec_ctrl outp scal

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7958
P-Group: Technology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-100.00 [%]	100.00 [%]	100.00 [%]

Description: Sets the scaling for the output signal of the technology controller.

p2296[0...n] CI: Technology controller output scaling / Tec_ctrl outp scal

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 7958
P-Group: Technology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	2295[0]

Description: Sets the signal source for the scaling value of the technology controller.

Dependency: Refer to: p2295

p2297[0...n] CI: Technology controller maximum limit signal source / Tec_ctrMaxLimS_src

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 7958
P-Group: Technology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	2291[0]

Description: Sets the signal source for the maximum limiting of the technology controller.

Dependency: Refer to: p2291

p2298[0...n] CI: Technology controller minimum limit signal source / Tec_ctrl min_l s_s

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 7958
P-Group: Technology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	2292[0]

Description: Sets the signal source for the minimum limiting of the technology controller.

Dependency: Refer to: p2292

p2299[0...n] CI: Technology controller limit offset / Tech_ctrl lim offs

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 7958
P-Group: Technology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the offset of the output limiting of the technology controller.

p2306 Technology controller system deviation inversion / Tec_ctr SysDev inv

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 7958
P-Group: Technology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Setting to invert the system deviation of the technology controller.
The setting depends on the type of control loop.

Value:
0: No inversion
1: Inversion

Caution: ⚠ If the actual value inversion is incorrectly selected, then the closed-loop control with the technology controller can become unstable and can oscillate!

Note: The correct setting can be determined as follows:
- inhibit the technology controller (p2200 = 0).
- increase the motor speed and in so doing, measure the actual value signal (of the technology controller).
- if the actual value increases with increasing motor speed, then the inversion should be switched out.
- if the actual value decreases with increasing motor speed, then the inversion should be set.
If value = 0:
The drive reduces the output speed when the actual value rises (e.g. for heating fans, intake pump, compressor).
If value = 1:
The drive increases the output speed when the actual value increases (e.g. for cooling fans, discharge pumps).

p2310 CI: Technology controller Kp adaptation input value signal source / Kp adapt inp s_src

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7959
P-Group: Technology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the input value of the adaptation of proportional gain Kp for the technology controller.

Dependency: Refer to: p2252, p2311, p2312, p2313, p2314, p2315, r2316

p2311 Technology controller Kp adaptation lower value / Kp adapt lower val

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7959
P-Group: Technology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	1000.000	1.000

Description: Sets the lower value for the adaptation of proportional gain Kp for the technology controller.

Dependency: Refer to: p2310, p2312, p2313, p2314, p2315, r2316

Caution: The upper value must be set higher than the lower value (p2312 > p2311).

Note: Kp adaptation is activated with p2252.7 = 1.

p2312 Technology controller Kp adaptation upper value / Kp adapt upper val

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7959
P-Group: Technology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	1000.000	10.000

Description: Sets the upper value for the adaptation of proportional gain Kp for the technology controller.

Dependency: Refer to: p2310, p2311, p2313, p2314, p2315, r2316

Caution: The upper value must be set higher than the lower value (p2312 > p2311).

Note: Kp adaptation is activated with p2252.7 = 1.

p2313 Technology controller Kp adaptation lower starting point / Kp adapt lower pt

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7959
P-Group: Technology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	400.00 [%]	0.00 [%]

Description: Sets the lower starting point for the adaptation of proportional gain Kp for the technology controller.

Dependency: Refer to: p2310, p2311, p2312, p2314, p2315, r2316

Caution: The upper starting point must be set higher than the lower starting point (p2314 > p2313).

Note: Kp adaptation is activated with p2252.7 = 1.

p2314 Technology controller Kp adaptation upper starting point / Kp adapt upper pt

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7959
P-Group: Technology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	400.00 [%]	100.00 [%]

Description: Sets the upper activation point for the adaptation of proportional gain Kp for the technology controller.

Dependency: Refer to: p2310, p2311, p2312, p2313, p2315, r2316

Caution: The upper starting point must be set higher than the lower starting point (p2314 > p2313).

Note: Kp adaptation is activated with p2252.7 = 1.

p2315 CI: Technology controller Kp adaptation scaling signal source / Kp adapt scal s_s

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7959
P-Group: Technology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source to scale the results of the adaptation of the proportional gain Kp for the technology controller.

Dependency: Refer to: p2310, p2311, p2312, p2313, p2314, r2316

Note: Kp adaptation is activated with p2252.7 = 1.

r2316 CO: Technology controller, Kp adaptation output / Kp adapt outp

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7959
P-Group: Technology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output for the output signal of the adaption of proportional gain Kp for the technology controller.

Dependency: Refer to: p2252, p2310, p2311, p2312, p2313, p2314, p2315

p2317 CI: Technology controller Tn adaptation input value signal source / Tn adapt inp s_src

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7959
P-Group: Technology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the input value of the adaptation of integral time Tn for the technology controller.

Dependency: Refer to: p2252, p2318, p2319, p2320, p2321, r2322

Note: Tn adaptation is activated with p2252.8 = 1.

p2318 Technology controller Tn adaptation lower value / Tn adapt lower val

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7959
P-Group: Technology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	60.000 [s]	3.000 [s]

Description: Sets the lower value for the adaptation of integral time Tn for the technology controller.

Dependency: Refer to: p2317, p2319, p2320, p2321, r2322

Caution: The upper value must be set higher than the lower value (p2319 > p2318).

Note: Tn adaptation is activated with p2252.8 = 1.

p2319 Technology controller Tn adaptation upper value / Tn adapt upper val

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7959
P-Group: Technology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	60.000 [s]	10.000 [s]

Description: Sets the upper value for the adaptation of integral time Tn for the technology controller.

Dependency: Refer to: p2317, p2318, p2320, p2321, r2322

Caution: The upper value must be set higher than the lower value (p2319 > p2318).

Note: Tn adaptation is activated with p2252.8 = 1.

p2320 Technology controller Tn adaptation lower starting point / Tn adapt lower pt

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7959
P-Group: Technology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	400.00 [%]	0.00 [%]

Description: Sets the lower activation point for the adaptation of integral time Tn for the technology controller.

Dependency: Refer to: p2317, p2318, p2319, p2321, r2322

Caution: The upper starting point must be set higher than the lower starting point (p2321 > p2320).

Note: Tn adaptation is activated with p2252.8 = 1.

p2321 Technology controller Tn adaptation upper starting point / Tn adapt upper pt

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7959
P-Group: Technology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	400.00 [%]	100.00 [%]

Description: Sets the upper activation point for the adaptation of integral time Tn for the technology controller.

Dependency: Refer to: p2317, p2318, p2319, p2320, r2322

Caution: The upper starting point must be set higher than the lower starting point (p2321 > p2320).

Note: Tn adaptation is activated with p2252.8 = 1.

r2322 CO: Technology controller Tn adaptation output / Tn adapt output

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7959
P-Group: Technology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [s]	- [s]	- [s]

Description: Display and connector output for the output signal of the adaption of integral time Tn for the technology controller.

Dependency: Refer to: p2252, p2317, p2318, p2319, p2320, p2321

Note: Tn adaptation is activated with p2252.8 = 1.

r2349.0...13 CO/BO: Technology controller status word / Tec_ctrl ZSW

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 7958
P-Group: Technology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status word of the technology controller.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Technology controller deactivated	Yes	No	-
01	Technology controller limited	Yes	No	-
02	Technology controller motorized potentiometer limited max	Yes	No	-
03	Technology controller motorized potentiometer limited min	Yes	No	-
04	Technology controller speed setpoint total in setpoint channel	Yes	No	-
05	Technology controller RFG bypassed in the setpoint channel	Yes	No	-
06	Technology controller starting value at the current limit	No	Yes	-
07				-
08	Technology controller actual value at the minimum	Yes	No	-
09	Technology controller actual value at the maximum	Yes	No	-
10	Technology controller output at the minimum	Yes	No	-
11	Technology controller output at the maximum	Yes	No	-
12	Fault response active	Yes	No	-
13	Technology controller limiting enable	Yes	No	-

p2369 BI: Closed-loop cascade control, control word / Csc_ctrl STW

VECTOR (Tech_ctrl), VECTOR_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the selection of the "Switch in motor" function.

When the function is selected, monitoring of the switches is deactivated with the "bypass" function. This means that the power unit can be connected to other motors via an external control without switch monitoring responding.

p2502[0...n] LR encoder assignment / Encoder assignment

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: C2(25)	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 4010
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	3	1

Description: Setting to assign the encoder.

The actual value preprocessing and the closed-loop position control are carried out using the assigned encoder.

Value:
0: No encoder
1: Encoder 1
2: Encoder 2
3: Encoder 3

Dependency: Refer to: p0187, p0188, p0189

Notice: For the setting p2502 = 0 (no encoder), closed-loop position control is not possible. This setting is only practical as supportive measure to implement encoderless closed-loop speed control (e.g. if the motor encoder is defective).

Note: The assigned encoder (p2502 = 1, 2, 3) must be allocated an encoder data set (p0187, p0188, p0189).

p2503[0...n] LR length unit LU per 10 mm / LU per 10 mm

SERVO (APC, Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (APC, Pos ctrl), VECTOR_AC (Pos ctrl), SERVO_I_AC (APC)

Can be changed: C2(25)	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4010
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1 [LU]	2147483647 [LU]	10000 [LU]

Description: Sets the neutral length units LU per 10 mm.

Therefore, for a linear scale, a reference is established between the physical arrangement and the neutral length units LU used in the drive.

Example:

Linear scale, 10 mm should be broken down to units of µm (i.e. 1 LU = 1 µm).

--> p2503 = 10000

Note: The assignment to the grid spacing can be achieved using this for a rotary axis with linear encoder.

LU: Length Unit

p2504[0...n] LR motor/load motor distance / Mot/load motor dis

SERVO (APC, Lin, Pos ctrl), SERVO_AC (APC, Lin, Pos ctrl), SERVO_I_AC (APC, Lin)

Can be changed: C2(25)	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4010, 4704, 4711
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	1048576	1

Description: Sets the motor distance for the gearbox factor between the motor shaft and load shaft.

Gearbox factor = motor distance (p2504) / load path (p2505)

Dependency: Refer to: p0432, p0433, p2505

Note: The gearbox factor between the encoder shaft and the motor shaft is set using p0432 and p0433.

p2504[0...n] LR motor/load motor revolutions / Mot/load motor rev

SERVO (APC, Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (APC, Pos ctrl), VECTOR_AC (Pos ctrl), SERVO_I_AC (APC)

Can be changed: C2(25)	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4010, 4704, 4711
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	1048576	1

Description: Sets the motor revolutions for the gearbox factor between the motor shaft and load shaft.

Gearbox factor = motor revolutions (p2504) / load revolutions (p2505)

Dependency: Refer to: p0432, p0433, p2505

Note: The gearbox factor between the encoder shaft and the motor shaft is set using p0432 and p0433.

p2505[0...n] LR motor/load load revolutions / Mot/load load rev

SERVO (APC, Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (APC, Pos ctrl), VECTOR_AC (Pos ctrl), SERVO_I_AC (APC)

Can be changed: C2(25)	**Calculated:** -	**Access level:** 1
Data type: Integer32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4010, 4704, 4711
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1048576	1048576	1

Description: Sets the load revolutions for the gearbox factor between the motor shaft and load shaft.

Gearbox factor = motor revolutions (p2504) / load revolutions (p2505)

Dependency: Refer to: p0432, p0433, p2504

Note: The gearbox factor between the encoder shaft and the motor shaft is set using p0432 and p0433.

p2506[0...n] LR length unit LU per load path / LU per load path

SERVO (APC, Lin, Pos ctrl), SERVO_AC (APC, Lin, Pos ctrl), SERVO_I_AC (APC, Lin)

Can be changed: C2(25)	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4010
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1 [LU]	2147483647 [LU]	10000 [LU]

Description: Sets the neutral length units LU per load path.

Therefore, for a rotary encoder, a reference is established between the physical arrangement and the neutral length units LU used in the drive.

Example:

Rotary encoder, ballscrew with 10 mm/revolution, 10 mm should be broken down to units of µm (i.e. 1 LU = 1 µm).

--> One load path corresponds to 10000 LU

--> p2506 = 10000

Note: The position controller can only process position setpoints in the interpolator clock cycle (IPO clock cycle) in integer length units (LU, Length Unit). This is the reason that speed setpoints that are not a multiple integer of 1 LU per IPO clock cycle can only be realized as an average. The result speed setpoint steps are especially noticeable for a high loop gain or when the precontrol is active. Increasing p2506 counteracts this behavior.

p2506[0...n] LR length unit LU per load revolution / LU per load rev

SERVO (APC, Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (APC, Pos ctrl), VECTOR_AC (Pos ctrl), SERVO_I_AC (APC)

Can be changed: C2(25)	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4010
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1 [LU]	2147483647 [LU]	10000 [LU]

Description: Sets the neutral length units LU per load revolution.

Therefore, for a rotary encoder, a reference is established between the physical arrangement and the neutral length units LU used in the drive.

Example:

Rotary encoder, ballscrew with 10 mm/revolution, 10 mm should be broken down to units of µm (i.e. 1 LU = 1 µm).

--> One load revolution corresponds to 10000 LU

--> p2506 = 10000

Note: The position controller can only process position setpoints in the interpolator clock cycle (IPO clock cycle) in integer length units (LU, Length Unit). This is the reason that speed setpoints that are not a multiple integer of 1 LU per IPO clock cycle can only be realized as an average. The result speed setpoint steps are especially noticeable for a high loop gain or when the precontrol is active. Increasing p2506 counteracts this behavior.

p2507[0...n] LR absolute encoder adjustment status / Abs_enc_adj stat

SERVO (EPOS, Pos ctrl), VECTOR (EPOS, Pos ctrl), SERVO_AC (EPOS, Pos ctrl), VECTOR_AC (EPOS, Pos ctrl)

Can be changed: C2(25), U, T	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** EDS, p0140	**Func. diagram:** 4010
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	4	1

Description: Activates the adjustment and display of the status of the adjustment for absolute encoders.

For p2507 = 2:

This initiates encoder adjustment. The status is displayed using the other values.

For p2507 = 4:

This means that the encoder adjustment offset (p2525) can be directly accepted after new commissioning, without having to approach the adjustment point.

Value:
0: Error occurred while adjusting
1: Absolute encoder not adjusted
2: Absolute encoder not adjusted and encoder adjustment initiated
3: Absolute encoder adjusted
4: Absolute encoder adjustment by accepting the offset

Dependency: Refer to: p2525, p2598, p2599, p2733

Caution: For rotating absolute encoders, when adjusting, a range is set up symmetrically around zero with half of the encoder range, within which the position must be re-established after switch-off/switch-on. In this range, it is only permissible that the encoder overflows.

After the adjustment has been completed, it must be guaranteed that the range is not exited. The reason for this is that outside the range, there is no clear reference any longer between the encoder actual value and mechanical system.

If the reference point (CI: p2598) lies in this range, then the position actual value is set when adjusting to the reference point. Otherwise, adjustment is canceled with F07443.

There is no overflow for linear absolute encoders. This means that after the adjustment, the position can be re-established in the complete traversing range after switch-off/switch-on. When adjusting, the position actual value is set to the reference point.

For p2507 = 4:

For an adjustment where the offset is accepted, the position actual value manifests a step.

Note: The data (p0971, p0977) must be retentively saved to permanently accept the determined position offset (p2525) and the number of the drive data set (p2733).

This adjustment can only be initiated for an absolute encoder.

p2508[0...3] BI: LR activate reference mark search / Ref_mark act

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: C2(25), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 4010
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the function "activate reference mark search".

Index:
[0] = Position control
[1] = Encoder 1
[2] = Encoder 2
[3] = Encoder 3

Dependency: Refer to: p0490, p0495, p2502, p2509, r2684

Refer to: A07495

Notice: When activating the function "set position actual value" while the function "reference mark search" is activated, then the function "reference mark search" is automatically deactivated.

Note: When the function module "basic positioner" (r0108.4 = 1) is activated, the following BICO interconnection is established:

BI: p2508[0] = r2684.0

The function can only be activated using a 0/1 signal if no reference function is active (r2526.2).

If "reference mark search" and "measuring probe evaluation" are simultaneously activated, then no function is activated and the actual function is interrupted.

p2509[0...3] BI: LR activate measuring probe evaluation / MT_eval act

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: C2(25), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 4010
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the function "activate measuring probe evaluation".

0/1 signal:

The function "activate measuring probe evaluation" is started.

Index:
[0] = Position control
[1] = Encoder 1
[2] = Encoder 2
[3] = Encoder 3

Dependency: Refer to: p0488, p0489, p0490, p2502, p2508, p2510, p2511, p2517, p2518

Refer to: A07495

Notice: When the "set position actual value" is activated while the function "measuring probe evaluation" is activated, then the function "measuring probe evaluation" is automatically deactivated.

Note: When the function module "basic positioner" (r0108.4 = 1) is activated, the following BICO interconnection is established:

BI: p2509[0] = r2684.1

The function can only be activated using a 0/1 signal if no reference function is active (r2526.2).

If "reference mark search" and "measuring probe evaluation" are simultaneously activated, then no function is activated and the actual function is interrupted.

p2510[0...3] BI: LR selecting measuring probe evaluation / MT_eval select

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: C2(25), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3615, 4010
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to select the measuring probe.

1 signal = measuring probe 2 is activated for binector input p2509 = 0/1 edge.

0 signal = measuring probe 1 is activated for binector input p2509 = 0/1 edge.

Index:
[0] = Position control
[1] = Encoder 1
[2] = Encoder 2
[3] = Encoder 3

Dependency: Refer to: p2502, p2509, p2511

Note: When the function module "basic positioner" (r0108.4 = 1) is activated, the following BICO interconnection is established:

BI: p2509[0] = r2684.1

The measuring probe is selected at the 0/1 signal transition at r2684.1 (flying referencing active).

p2511[0...3] BI: LR measuring probe evaluation edge / MT_eval edge

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: C2(25), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3615, 4010
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the edge evaluation of the measuring probe.

1 signal:

Falling edge of the measuring probe (p2510) is activated for binector input p2509 = 0/1 edge.

0 signal:

Rising edge of the measuring probe (p2510) is activated for binector input p2509 = 0/1 edge.

Index:
[0] = Position control
[1] = Encoder 1
[2] = Encoder 2
[3] = Encoder 3

Dependency: Refer to: p2502, p2509, p2510

p2512[0...3] BI: LR pos. actual value preprocessing activate corr. value (edge) / ActVal_prepCorrAct

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: C2(25), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 4010, 4015
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the function "activate position actual value preprocessing, corrective value (edge)".

0/1 signal:

The correction value available via CI: p2513 is activated.

Index:
[0] = Position control
[1] = Encoder 1
[2] = Encoder 2
[3] = Encoder 3

Dependency: Refer to: p2502, p2513, r2684

Note: When the function module "basic positioner" (r0108.4 = 1) is activated, the following BICO interconnection is established:

BI: p2512[0] = r2684.7

p2513[0...3] CI: LR Position actual value preprocessing corrective value / Act val_prep corr

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: C2(25), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Integer32	**Dyn. index:** -	**Func. diagram:** 4010, 4015
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the corrective value for position actual value preprocessing.

Index:
[0] = Position control
[1] = Encoder 1
[2] = Encoder 2
[3] = Encoder 3

Dependency: Refer to: p2502, p2512, r2521, r2685

Note: When the function module "basic positioner" (r0108.4 = 1) is activated, the following BICO interconnection is established:

CI: p2513[0] = r2685

For binector input: p2512[0] = 0/1 signal, the position actual value (CO: r2521[0]) is corrected corresponding to the value via connector input: p2513[0]. In so doing, the sign of the corrective value present is taken into account.

p2514[0...3] BI: LR activate position actual value setting / s_act setting act

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: C2(25), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 4010
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to activate the function "set position actual value".

Index:
[0] = Position control
[1] = Encoder 1
[2] = Encoder 2
[3] = Encoder 3

Dependency: Refer to: p2502, p2515

Refer to: A07495, A07497

Warning: As long as the position actual value is set, encoder increments that are received are not evaluated. In this state, any position difference cannot be corrected!

Notice: When the function "set position actual value" is activated while the function "reference mark search" or "measuring probe evaluation" is activated, then the corresponding function is deactivated.

Note: BI: p2514 = 1 signal:

The position actual value is set to the setting value in CI: p2515. Alarm A07497 "position setting value activated" is output. Encoder increments that are received in the meantime, are not taken into account.

BI: p2514 = 1/0 signal:

The position actual value preprocessing is activated and is based on the setting value.

p2515[0...3] CI: LR position actual setting setting value / s_act set setVal

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: C2(25), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Integer32	**Dyn. index:** -	**Func. diagram:** 4010
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the setting value of the function "setting position actual value".

Index:
[0] = Position control
[1] = Encoder 1
[2] = Encoder 2
[3] = Encoder 3

Dependency: Refer to: p2502, p2514

p2516[0...3] CI: LR position offset / Position offset

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: C2(25), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Integer32	**Dyn. index:** -	**Func. diagram:** 4010
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the position offset.

Index:
[0] = Position control
[1] = Encoder 1
[2] = Encoder 2
[3] = Encoder 3

Dependency: Refer to: p2502, r2667

Note: When the function module "basic positioner" (r0108.4 = 1) is activated, the following BICO interconnection is established:

CI: p2516[0] = r2667

p2517[0...2] LR direct measuring probe 1 / Direct MT 1

SERVO (Dig IO, Pos ctrl)

Can be changed: C2(25), U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 4010
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	51	0

Description: Sets the input terminal for direct measuring probe 1.

The direct measuring probe can either be parameterized as a non-cyclic (value 1 ... 8) or a cyclic (value 11 ... 18) measuring probe.

After it has been activated via binector input: p2509 = 0/1 signal, the non-cyclic measuring probe measures once and can be used with EPOS.

After it has been activated via the p2509 = 1 signal, the cyclic measuring probe measures cyclically and cannot be used with EPOS.

In order to process signals faster, the direct measuring probe bypasses the handshake technique via the encoder control word and encoder status word.

Value:
0: No measuring probe
1: DI/DO 9 (X122.10/X121.8)
2: DI/DO 10 (X122.12/X121.10)
3: DI/DO 11 (X122.13/X121.11)
4: DI/DO 13 (X132.10/X131.2)
5: DI/DO 14 (X132.12/X131.4)
6: DI/DO 15 (X132.13/X131.5)
7: DI/DO 8 (X122.9/X121.7)
8: DI/DO 12 (X132.9/X131.1)

11: DI/DO 9 cyclic
12: DI/DO 10 cyclic
13: DI/DO 11 cyclic
14: DI/DO 13 cyclic
15: DI/DO 14 cyclic
16: DI/DO 15 cyclic
17: DI/DO 8 cyclic
18: DI/DO 12 cyclic
50: DI/DO 0 distributed (X3.2)
51: DI/DO 1 distributed (X3.4)

Index: [0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Dependency: Refer to: p0490, p0728, p2509, p2510, p2511

Caution: In order to prevent incorrect measurement values, these parameters may not be written during an active measurement.

Notice: To select the values:

For CX32, NX10 and NX15, only DI/DO 8, 9, 10, 11 can be selected as fast inputs (refer to the Equipment Manual).

Regarding the terminal designation:

The first designation is valid for CU320, the second for CU310.

Note: DI/DO: Bidirectional Digital Input/Output

The terminal must be set as input (p0728).

If a parameter change is rejected, a check should be performed as to whether the input terminal is already being used in p0488, p0489, p0493, p0494, p0495, p0580 or p0680.

Direct measurement via p2517 has a higher priority than measurements via p0488.

For the direct measuring probe evaluation, the DP clock cycle must be integer multiple of the position controller clock cycle.

p2517[0...2] LR direct measuring probe 1 / Direct MT 1

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: C2(25), U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 4010
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	18	0

Description: Sets the input terminal for direct measuring probe 1.

The direct measuring probe can either be parameterized as a non-cyclic (value 1 ... 8) or a cyclic (value 11 ... 18) measuring probe.

After it has been activated via binector input: p2509 = 0/1 signal, the non-cyclic measuring probe measures once and can be used with EPOS.

After it has been activated via the p2509 = 1 signal, the cyclic measuring probe measures cyclically and cannot be used with EPOS.

In order to process signals faster, the direct measuring probe bypasses the handshake technique via the encoder control word and encoder status word.

Value: 0: No measuring probe
1: DI/DO 9 (X122.10/X121.8)
2: DI/DO 10 (X122.12/X121.10)
3: DI/DO 11 (X122.13/X121.11)
4: DI/DO 13 (X132.10/X131.2)
5: DI/DO 14 (X132.12/X131.4)
6: DI/DO 15 (X132.13/X131.5)
7: DI/DO 8 (X122.9/X121.7)
8: DI/DO 12 (X132.9/X131.1)
11: DI/DO 9 cyclic
12: DI/DO 10 cyclic
13: DI/DO 11 cyclic
14: DI/DO 13 cyclic
15: DI/DO 14 cyclic

16: DI/DO 15 cyclic
17: DI/DO 8 cyclic
18: DI/DO 12 cyclic

Index: [0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Dependency: Refer to: p0490, p0728, p2509, p2510, p2511

Caution: In order to prevent incorrect measurement values, these parameters may not be written during an active measurement.

Notice: To select the values:

For CX32, NX10 and NX15, only DI/DO 8, 9, 10, 11 can be selected as fast inputs (refer to the Equipment Manual).

Regarding the terminal designation:

The first designation is valid for CU320, the second for CU310.

Note: DI/DO: Bidirectional Digital Input/Output

The terminal must be set as input (p0728).

If a parameter change is rejected, a check should be performed as to whether the input terminal is already being used in p0488, p0489, p0493, p0494, p0495, p0580 or p0680.

Direct measurement via p2517 has a higher priority than measurements via p0488.

For the direct measuring probe evaluation, the DP clock cycle must be integer multiple of the position controller clock cycle.

p2518[0...2] LR direct measuring probe 2 / Direct MT 2

SERVO (Dig IO, Pos ctrl)

Can be changed: C2(25), U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 4010
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	51	0

Description: Sets the input terminal for direct measuring probe 2.

The direct measuring probe can either be parameterized as a non-cyclic (value 1 ... 8) or a cyclic (value 11 ... 18) measuring probe.

After it has been activated via binector input: p2509 = 0/1 signal, the non-cyclic measuring probe measures once and can be used with EPOS.

After it has been activated via the p2509 = 1 signal, the cyclic measuring probe measures cyclically and cannot be used with EPOS.

In order to process signals faster, the direct measuring probe bypasses the handshake technique via the encoder control word and encoder status word.

Value:
0: No measuring probe
1: DI/DO 9 (X122.10/X121.8)
2: DI/DO 10 (X122.12/X121.10)
3: DI/DO 11 (X122.13/X121.11)
4: DI/DO 13 (X132.10/X131.2)
5: DI/DO 14 (X132.12/X131.4)
6: DI/DO 15 (X132.13/X131.5)
7: DI/DO 8 (X122.9/X121.7)
8: DI/DO 12 (X132.9/X131.1)
11: DI/DO 9 cyclic
12: DI/DO 10 cyclic
13: DI/DO 11 cyclic
14: DI/DO 13 cyclic
15: DI/DO 14 cyclic
16: DI/DO 15 cyclic
17: DI/DO 8 cyclic
18: DI/DO 12 cyclic
50: DI/DO 0 distributed (X3.2)
51: DI/DO 1 distributed (X3.4)

Index: [0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Dependency: Refer to: p0490, p0728, p2509, p2510, p2511

Caution: In order to prevent incorrect measurement values, these parameters may not be written during an active measurement.

Notice: To select the values:

For CX32, NX10 and NX15, only DI/DO 8, 9, 10, 11 can be selected as fast inputs (refer to the Equipment Manual).

Regarding the terminal designation:

The first designation is valid for CU320, the second for CU310.

Note: DI/DO: Bidirectional Digital Input/Output

The terminal must be set as input (p0728).

If a parameter change is rejected, a check should be performed as to whether the input terminal is already being used in p0488, p0489, p0493, p0494, p0495, p0580 or p0680.

Direct measurement via p2518 has a higher priority than measurements via p0489.

For the direct measuring probe evaluation, the DP clock cycle must be integer multiple of the position controller clock cycle.

p2518[0...2] LR direct measuring probe 2 / Direct MT 2

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: C2(25), U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 4010
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	18	0

Description: Sets the input terminal for direct measuring probe 2.

The direct measuring probe can either be parameterized as a non-cyclic (value 1 ... 8) or a cyclic (value 11 ... 18) measuring probe.

After it has been activated via binector input: p2509 = 0/1 signal, the non-cyclic measuring probe measures once and can be used with EPOS.

After it has been activated via the p2509 = 1 signal, the cyclic measuring probe measures cyclically and cannot be used with EPOS.

In order to process signals faster, the direct measuring probe bypasses the handshake technique via the encoder control word and encoder status word.

Value:
0: No measuring probe
1: DI/DO 9 (X122.10/X121.8)
2: DI/DO 10 (X122.12/X121.10)
3: DI/DO 11 (X122.13/X121.11)
4: DI/DO 13 (X132.10/X131.2)
5: DI/DO 14 (X132.12/X131.4)
6: DI/DO 15 (X132.13/X131.5)
7: DI/DO 8 (X122.9/X121.7)
8: DI/DO 12 (X132.9/X131.1)
11: DI/DO 9 cyclic
12: DI/DO 10 cyclic
13: DI/DO 11 cyclic
14: DI/DO 13 cyclic
15: DI/DO 14 cyclic
16: DI/DO 15 cyclic
17: DI/DO 8 cyclic
18: DI/DO 12 cyclic

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Dependency: Refer to: p0490, p0728, p2509, p2510, p2511

Caution: In order to prevent incorrect measurement values, these parameters may not be written during an active measurement.

Notice: To select the values:

For CX32, NX10 and NX15, only DI/DO 8, 9, 10, 11 can be selected as fast inputs (refer to the Equipment Manual).

Regarding the terminal designation:

The first designation is valid for CU320, the second for CU310.

Note: DI/DO: Bidirectional Digital Input/Output

The terminal must be set as input (p0728).

If a parameter change is rejected, a check should be performed as to whether the input terminal is already being used in p0488, p0489, p0493, p0494, p0495, p0580 or p0680.

Direct measurement via p2518 has a higher priority than measurements via p0489.

For the direct measuring probe evaluation, the DP clock cycle must be integer multiple of the position controller clock cycle.

p2519[0...n] LR position actual value preprocessing config. DDS changeover / s_act config DDS

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: C2(25), U, T	**Calculated:** -	**Access level:** 4
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	5	1

Description: Sets the behavior of the position actual value preprocessing for the position controller for a DDS changeover.

For p2519 = 1:

In the following cases, for a DDS changeover, the actual position actual value becomes invalid and the reference point is reset:

- the EDS effective for the closed-loop position control changes.
- the encoder assignment changes (p2502).
- the mechanical relationships change (p2503 ... p2506).
- the direction of rotation changes (p1821).

For absolute encoders, the status of the adjustment (p2507) is also reset if the same absolute encoder remains selected for the closed-loop position control, but the mechanical relationships or the direction of rotation have changed.

In the operation state, in addition, a fault (F07494) is generated.

Notice: The remaining setting values are intended for expanded functionality.

Note: The behavior for a DDS changeover is determined using the value of p2519 in the target data set.

r2520[0...2] CO: LR Position actual value preprocessing encoder control word / ActVal_prep STW

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 4010
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output for the encoder control word generated by the position actual value preprocessing.

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Request function 1	Yes	No	-
01	Request function 2	Yes	No	-
02	Request function 3	Yes	No	-
03	Request function 4	Yes	No	-
04	Request command bit 0	Yes	No	-
05	Request command bit 1	Yes	No	-
06	Request command bit 2	Yes	No	-
07	Flying measurement mode/search for reference mark	Flying measurement	Reference marks	-
13	Request absolute value cyclic	Yes	No	-
14	Request parking encoder	Yes	No	-
15	Request acknowledge encoder fault	Yes	No	-

Dependency: Refer to: p0480

Note: When the function module "basic positioner" (r0108.4 = 1) is activated, the following BICO interconnection is established:
CI: p0480[0] = r2520[0], CI: p0480[1] = r2520[1] and CI: p0480[2] = r2520[2]

r2521[0...3] CO: LR position actual value / s_act

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 4010
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [LU]	- [LU]	- [LU]

Description: Display and connector output for the actual position actual value determined by the position actual value preprocessing.

Index:
[0] = Position control
[1] = Encoder 1
[2] = Encoder 2
[3] = Encoder 3

Dependency: Refer to: p2502, r2526

Note: r2526.0 = 1 --> The position actual value in r2521[0] for the position control is valid.
r2527.0 = 1 --> The position actual value in r2521[1] for encoder 1 is valid.
r2528.0 = 1 --> The position actual value in r2521[2] for encoder 2 is valid.
r2529.0 = 1 --> The position actual value in r2521[3] for encoder 3 is valid.

r2522[0...3] CO: LR velocity actual value / v_act

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 4010
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [1000 LU/min]	- [1000 LU/min]	- [1000 LU/min]

Description: Display and connector output for the actual position actual value determined by the velocity actual value preprocessing.

Index:
[0] = Position control
[1] = Encoder 1
[2] = Encoder 2
[3] = Encoder 3

Dependency: Refer to: p2502, r2526

Note: r2526.0 = 1 --> The velocity actual value in r2522[0] for the position control is valid.
r2527.0 = 1 --> The velocity actual value in r2522[1] for encoder 1 is valid.
r2528.0 = 1 --> The velocity actual value in r2522[2] for encoder 2 is valid.
r2529.0 = 1 --> The velocity actual value in r2522[3] for encoder 3 is valid.

r2523[0...3] CO: LR measured value / Measured value

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 4010
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [LU]	- [LU]	- [LU]

Description: Display and connector output for the value determined by the function "reference mark search" and "measuring probe evaluation".

Index:
[0] = Position control
[1] = Encoder 1
[2] = Encoder 2
[3] = Encoder 3

Dependency: Refer to: p2502, r2526

Note: r2526.2 = 1 --> The measured value in r2523[0] for the position control is valid.
r2527.2 = 1 --> The measured value in r2523[1] for encoder 1 is valid.
r2528.2 = 1 --> The measured value in r2523[2] for encoder 2 is valid.
r2529.2 = 1 --> The measured value in r2523[3] for encoder 3 is valid.

r2524 CO: LR LU/mm / LU/mm

SERVO (Lin, Pos ctrl), SERVO_AC (Lin, Pos ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3630, 4010
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [LU]	- [LU]	- [LU]

Description: Display and connector output for the internal length units LU/mm.

Dependency: Refer to: p0404

r2524 CO: LR LU/revolution / LU/revolution

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3630, 4010
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [LU]	- [LU]	- [LU]

Description: Display and connector output for the internal length units LU/motor revolution.

Dependency: Refer to: p0404

p2525[0...n] CO: LR encoder adjustment offset / Enc_adj offset

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: C2(25), T	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** EDS, p0140	**Func. diagram:** 4010
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [LU]	4294967295 [LU]	0 [LU]

Description: Position offset when adjusting the absolute encoder.

Dependency: Refer to: p0404, p2507, p2733

Note: The position offset is only relevant for absolute encoders.
The drive determines the value when adjusting the absolute encoder and the user should not change it.

r2526.0...9 CO/BO: LR status word / ZSW

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status word of the position controller.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Position actual value valid	Yes	No	4010, 4015
01	Referencing active	Yes	No	4010
02	Measured value valid	Yes	No	3615, 4010
03	Position control active	Yes	No	4015
04	Fixed stop reached	Yes	No	3617, 4025

05	Fixed stop outside window	Yes	No	3617, 4025
06	Position controller output limited	Yes	No	4015
07	Request tracking mode	Yes	No	-
08	Clamping active when traveling to fixed stop	Yes	No	4025
09	Setting value for adjustment valid	Yes	No	-

Dependency: Refer to: r2521, r2522, r2523

Note: For bit 04:

The signal is influenced via p2634.

For bit 05:

The signal is influenced via p2635.

r2527.0...2 CO/BO: LR actual value sensing status word encoder 1 / ActValSensZSW enc1

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status word of the position actual value sensing from encoder 1.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Position actual value valid	Yes	No	-
01	Referencing active	Yes	No	-
02	Measured value valid	Yes	No	-

r2528.0...2 CO/BO: LR actual value sensing status word encoder 2 / ActValSensZSW enc2

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status word of the position actual value sensing from encoder 2.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Position actual value valid	Yes	No	-
01	Referencing active	Yes	No	-
02	Measured value valid	Yes	No	-

r2529.0...2 CO/BO: LR actual value sensing status word encoder 3 / ActValSensZSW enc3

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status word of the position actual value sensing from encoder 3.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Position actual value valid	Yes	No	-
01	Referencing active	Yes	No	-
02	Measured value valid	Yes	No	-

p2530 CI: LR position setpoint / s_set

SERVO (EPOS, Pos ctrl), VECTOR (EPOS, Pos ctrl), SERVO_AC (EPOS, Pos ctrl), VECTOR_AC (EPOS, Pos ctrl)

Can be changed: C2(25), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Integer32	**Dyn. index:** -	**Func. diagram:** 4015, 4020
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the position setpoint of the position controller.

Dependency: Refer to: r2665

Note: When the function module "basic positioner" (r0108.4 = 1) is activated, the following BICO interconnection is established:

BI: p2530 = r2665

p2531 CI: LR velocity setpoint / v_set

SERVO (EPOS, Pos ctrl), VECTOR (EPOS, Pos ctrl), SERVO_AC (EPOS, Pos ctrl), VECTOR_AC (EPOS, Pos ctrl)

Can be changed: C2(25), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Integer32	**Dyn. index:** -	**Func. diagram:** 4015
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the velocity setpoint of the position controller.

Dependency: Refer to: r2666

Note: When the function module "basic positioner" (r0108.4 = 1) is activated, the following BICO interconnection is established:

BI: p2531 = r2666

p2532 CI: LR position actual value / s_act

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: C2(25), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Integer32	**Dyn. index:** -	**Func. diagram:** 4015, 4020, 4025
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	2521[0]

Description: Sets the signal source for the position actual value of the position controller.

Dependency: Refer to: r2521

p2533[0...n] LR position setpoint filter time constant / s_set_filt T

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: C2(25), U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4015
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	1000.00 [ms]	0.00 [ms]

Description: Sets the time constant for the position setpoint filter (PT1).

Note: The effective Kv factor (position loop gain) is reduced with the filter. This allows a softer control behavior with improved tolerance with respect to noise/disturbances.

Applications:

- reduces the precontrol dynamic response.
- jerk limiting.

p2534[0...n] LR velocity precontrol factor / v_prectrl fact

SERVO (Lin, Pos ctrl), SERVO_AC (Lin, Pos ctrl)

Can be changed: C2(25), U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4015, 4025
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	200.00 [%]	0.00 [%]

Description: Setting to activate and weight the velocity precontrol value.

Value = 0 % --> The precontrol is deactivated.

Dependency: Refer to: p2535, p2536, r2563

Note: When the axis control loop is optimally set as well as a precisely determined equivalent time constant of the velocity control loop, the precontrol factor is 100%.

p2534[0...n] LR speed precontrol factor / n_prectrl fact

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: C2(25), U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4015, 4025
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	200.00 [%]	0.00 [%]

Description: Setting for activation and weighting of the speed precontrol value.

Value = 0 % --> The precontrol is deactivated.

Dependency: Refer to: p2535, p2536, r2563

Note: When the axis control loop is optimally set as well as a precisely determined equivalent time constant of the speed control loop, the precontrol factor is 100%.

p2535[0...n] LR velocity precontrol symmetrizing filter dead time / v_prectrFlt t_dead

SERVO (Lin, Pos ctrl), SERVO_AC (Lin, Pos ctrl)

Can be changed: C2(25), U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4015
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00	2.00	0.00

Description: Sets the "fractional" dead time to emulate the timing behavior of the velocity control loop.

The selected multiplier refers to the position controller clock cycle (dead time= p2535 * p0115[4]).

Dependency: Refer to: p0115, p2536

Notice: When velocity precontrol is active (p2534 > 0 %), the following applies:

In addition to the set dead time (p2535), internally two position controller clock cycles are effective.

When velocity precontrol is inactive (p2534 = 0 %), the following applies:

No dead time is effective (p2535 and internal).

Note: Together with p2536, the timing behavior of the velocity control loop can be emulated.

p2535[0...n] LR speed precontrol symmetrizing filter dead time / n_prectrFlt t_dead

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: C2(25), U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4015
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00	2.00	0.00

Description: Sets the "fractional" dead time to emulate the timing behavior of the speed control loop.

The selected multiplier refers to the position controller sampling time (dead time= p2535 * p0115[4]).

Dependency: Refer to: p0115, p2536

Notice: When speed precontrol is active (p2534 > 0 %), the following applies:
In addition to the set dead time (p2535), internally two position controller sampling times are effective.
When speed precontrol is inactive (p2534 = 0 %), the following applies:
No dead time is effective (p2535 and internal).

Note: Together with p2536, the timing behavior of the closed-loop control loop can be emulated.

p2536[0...n] LR velocity precontrol symmetrizing filter PT1 / v_prectrl filt PT1

SERVO (Lin, Pos ctrl), SERVO_AC (Lin, Pos ctrl)

Can be changed: C2(25), U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4015
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	100.00 [ms]	0.00 [ms]

Description: Sets a PT1 filter to emulate the timing behavior of the velocity control loop.

Dependency: Refer to: p2535

Notice: When velocity precontrol is inactive (p2534 = 0 %), the following applies:
If a PT1 filter has been set, it is not effective.

Note: Together with p2535, the timing behavior of the velocity control loop can be emulated.

p2536[0...n] LR speed precontrol symmetrizing filter PT1 / n_prectrl filt PT1

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: C2(25), U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4015
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	100.00 [ms]	0.00 [ms]

Description: Sets a PT1 filter to emulate the timing behavior of the closed-speed control loop.

Dependency: Refer to: p2535

Notice: When speed precontrol is inactive (p2534 = 0 %), the following applies:
If a PT1 filter has been set, it is not effective.

Note: Together with p2535, the timing behavior of the closed-loop control loop can be emulated.

p2537 CI: LR position controller adaptation / Adaptation

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: C2(25), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4015
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for the adaptation of the proportional gain of the position controller.

Dependency: Refer to: p2538

p2538[0...n] LR proportional gain / Kp

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: C2(25), U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4015
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [1000 rpm]	300.000 [1000 rpm]	1.000 [1000 rpm]

Description: Sets the proportional gain (P gain, position loop gain, Kv factor) of the position controller.

Dependency: Refer to: p2537, p2539, p2555, r2557, r2558

Note: The proportional gain is used define at which traversing velocity which following error is obtained (without precontrol)
Low proportional gain:
Slow response to a setpoint - actual value difference, the following error becomes large.
High proportional gain:
Fast response to the setpoint - actual value difference, the following error becomes small.

p2539[0...n] LR integral time / Tn

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: C2(25), U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4015
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	100000.00 [ms]	0.00 [ms]

Description: Setting to activate the integral time of the position controller.
Value = 0 ms --> The I component of the position controller is deactivated.

Dependency: Refer to: p2538, r2559

p2540 CO: LR position controller output velocity limit / LR_outp v_lim

SERVO (Lin, Pos ctrl), SERVO_AC (Lin, Pos ctrl)

Can be changed: C2(25), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4015
P-Group: Closed loop position control	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [m/min]	1000.000 [m/min]	1000.000 [m/min]

Description: Setting and connector output for the velocity limit of the position controller output.

Dependency: Refer to: p2541

p2540 CO: LR position controller output speed limit / LR_outp n_lim

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: C2(25), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4015
P-Group: Closed loop position control	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [rpm]	210000.000 [rpm]	210000.000 [rpm]

Description: Setting and connector output for the speed limit of the position controller output.

Dependency: Refer to: p2541

p2541 CI: LR position controller output velocity limit signal source / LR_out v_lim S_src

SERVO (Lin, Pos ctrl), SERVO_AC (Lin, Pos ctrl)

Can be changed: C2(25), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4015
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	2540[0]

Description: Sets the signal source for the position controller output limit.

Dependency: Refer to: p2540

p2541 CI: LR position controller output speed limit signal source / LR_out n_lim S_src

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: C2(25), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4015
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	2540[0]

Description: Sets the signal source for the position controller output limit.

Dependency: Refer to: p2540

p2542 LR standstill window / Standstill window

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: C2(25), U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 4020
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [LU]	2147483647 [LU]	200 [LU]

Description: Sets the standstill window for the standstill monitoring function.

After the standstill monitoring time expires, it is cyclically checked whether the difference between the setpoint and actual position is located within the standstill window and, if required, an appropriate fault is output.

Value = 0 --> The standstill monitoring is deactivated.

Dependency: Refer to: p2543, p2544

Refer to: F07450

Note: The following applies for the setting of the standstill window and positioning window:

Standstill window (p2542) >= positioning window (p2544)

p2543 LR standstill monitoring time / t_standstill monit

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: C2(25), U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4020
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	100000.00 [ms]	200.00 [ms]

Description: Sets the standstill monitoring time for the standstill monitoring function.

After the standstill monitoring time expires, it is cyclically checked whether the difference between the setpoint and actual position is located within the standstill window and, if required, an appropriate fault is output.

Dependency: Refer to: p2542, p2545

Refer to: F07450

Note: The following applies for the setting of the standstill and positioning monitoring time:

Standstill monitoring time (p2543) <= positioning monitoring time (p2545)

p2544 LR positioning window / Pos_window

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: C2(25), U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 4020
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [LU]	2147483647 [LU]	40 [LU]

Description: Sets the positioning window for the positioning monitoring function.

After the positioning monitoring time expires, it is checked once as to whether the difference between the setpoint and actual position lies within the positioning window and if required an appropriate fault is output.

Value = 0 --> The positioning monitoring function is deactivated.

Dependency: Refer to: p2542, p2545, r2684

Refer to: F07451

Note: The following applies for the setting of the standstill and positioning window:

Standstill window (p2542) >= positioning window (p2544)

p2545 LR positioning monitoring time / t_pos_monit

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: C2(25), U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4020
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	100000.00 [ms]	1000.00 [ms]

Description: Sets the positioning monitoring time for the positioning monitoring.

After the positioning monitoring time expires, it is checked once as to whether the difference between the setpoint and actual position lies within the positioning window and if required an appropriate fault is output.

Dependency: Refer to: p2543, p2544, r2684

Refer to: F07451

Note: The following applies for the setting of the standstill and positioning monitoring time:

Standstill monitoring time (p2543) <= positioning monitoring time (p2545)

p2546[0...n] LR dynamic following error monitoring tolerance / s_delta_monit tol

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: C2(25), U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4025
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [LU]	2147483647 [LU]	1000 [LU]

Description: Sets the tolerance for the dynamic following error monitoring.

If the dynamic following error (r2563) exceeds the selected tolerance, then an appropriate fault is output.

Value = 0 --> The dynamic following error monitoring is deactivated.

Dependency: Refer to: r2563, r2684

Refer to: F07452

Note: The tolerance bandwidth is intended to prevent the dynamic following error monitoring incorrectly responding due to operational control sequences (e.g. during load surges).

p2547 LR cam switching position 1 / Cam position 1

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: C2(25), U, T	**Calculated:** -	**Access level:** 1
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 4025
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-2147483648 [LU]	2147483647 [LU]	0 [LU]

Description: Sets the cam switching position 1.

Dependency: Refer to: p2548, r2683

Caution: Only after the axis has been referenced can it be guaranteed that the cam switching signals when output have a "true" position reference.

Note: Position actual value <= cam switching position 1 --> r2683.8 = 1 signal

Position actual value > cam switching position 1 --> r2683.8 = 0 signal

p2548 LR cam switching position 2 / Cam position 2

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: C2(25), U, T	**Calculated:** -	**Access level:** 1
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 4025
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-2147483648 [LU]	2147483647 [LU]	0 [LU]

Description: Sets the cam switching position 2.

Dependency: Refer to: p2547, r2683

Caution: Only after the axis has been referenced can it be guaranteed that the cam switching signals when output have a "true" position reference.

Note: Position actual value <= cam switching position 2 --> r2683.9 = 1 signal

Position actual value > cam switching position 2 --> r2683.9 = 0 signal

p2549 BI: LR enable 1 / Enable 1

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: C2(25), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 4015
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	899.2

Description: Sets the signal source for the position controller enable 1.

Dependency: Refer to: r0899, p2550

Note: The position controller is enabled by the following AND logic operation:

- BI: p2549
- BI: p2550

p2550[0...n] BI: LR enable 2 / Enable 2

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: C2(25), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 4015
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the position controller enable 2.

Dependency: Refer to: p2549

Note: The position controller is enabled by the following AND logic operation:

- BI: p2549
- BI: p2550

When the "Position control" or "Basic positioner" function module is activated, the following BICO interconnection is established:

- BI: p2550 = 1

p2551 BI: LR setpoint signal fixed / Mess setp fixed

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: C2(25), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 4020
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the "setpoint fixed" signal.

BI: p2551 = 1 signal:

The end of the positioning operation on the setpoint side is signaled and the positioning and standstill monitoring activated.

BI: p2551 = 0 signal:

The start of a positioning operation or tracking mode on the setpoint side is signaled and the positioning and standstill monitoring deactivated.

Dependency: Refer to: p2554, r2683

Note: When the function module "basic positioner" (r0108.4 = 1) is activated, the following BICO interconnection is established:

BI: p2551 = r2683.2

p2552 BI: LR signal travel to fixed stop active / Signal TfS act

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: C2(25), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 4025
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the signal "travel to fixed stop active".

BI: p2552 = 1 signal:

The activity associated with travel to fixed stop is signaled and the detection of the fixed stop is started via the maximum following error (p2634).

Dependency: Refer to: r2683

Note: When the function module "basic positioner" (r0108.4 = 1) is activated, the following BICO interconnection is established:

BI: p2552 = r2683.14

p2553 BI: LR signal fixed stop reached / Signal fixed stop

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: C2(25), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 4025
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the signal "fixed stop reached".

BI: p2553 = 1 signal:

When the fixed stop is reached, this is signaled and the fixed stop monitoring window is activated.

Dependency: Refer to: r2683

Note: When the function module "basic positioner" (r0108.4 = 1) is activated, the following BICO interconnection is established:

BI: p2553 = r2683.12

p2554 BI: LR signal traversing command active / Sig trav_cmnd act

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: C2(25), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 4020
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the signal "traversing command active".

BI: p2554 = 1 signal:

It is signaled that positioning is active and therefore the positioning monitoring is not activated with the signal "setpoint fixed" (p2551).

Dependency: Refer to: p2551, r2684

Note: When the function module "basic positioner" (r0108.4 = 1) is activated, the following BICO interconnection is established:

BI: p2554 = r2684.15

p2555 CI: LR LU/revolution LU/mm / LU/rev LU/mm

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: C2(25), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4015
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	2524[0]

Description: Sets the signal source for the reference of the internal length units LU to motor revolution for rotary encoders and to mm for linear encoders.

Dependency: Refer to: p0404, r2524

Note: The signal value is used to convert the length unit to the speed or velocity setpoint.

r2556 CO: LR position setpoint after setpoint smoothing / s_set after interp

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 4015
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [LU]	- [LU]	- [LU]

Description: Display and connector output for the position setpoint after setpoint smoothing.

r2557 CO: LR position controller input system deviation / LR_inp sys dev

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 4015
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [LU]	- [LU]	- [LU]

Description: Display and connector output for the difference between the position setpoint and the position actual value at the position controller input.

r2558 CO: LR position controller output P component / LR_outp P comp

SERVO (Lin, Pos ctrl), SERVO_AC (Lin, Pos ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4015
P-Group: Closed loop position control	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Display and connector output for the P component at the output of the position controller (velocity setpoint).

r2558 CO: LR position controller output P component / LR_outp P comp

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4015
P-Group: Closed loop position control	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Display and connector output for the P component at the output of the position controller (speed setpoint).

r2559 CO: LR position controller output I component / LR_outp I comp

SERVO (Lin, Pos ctrl), SERVO_AC (Lin, Pos ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4015
P-Group: Closed loop position control	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Display and connector output for the I component at the output of the position controller (velocity setpoint).

r2559 CO: LR position controller output I component / LR_outp I comp

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4015
P-Group: Closed loop position control	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Display and connector output for the I component at the output of the position controller (speed setpoint).

r2560 CO: LR velocity setpoint / v_set

SERVO (Lin, Pos ctrl), SERVO_AC (Lin, Pos ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4015
P-Group: Closed loop position control	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Display and connector output for the velocity setpoint after limiting (CI: p2541).

r2560 CO: LR speed setpoint / n_set

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4015
P-Group: Closed loop position control	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Display and connector output for the speed setpoint after limiting (CI: p2541).

r2561 CO: LR velocity precontrol value / v_prectrl val

SERVO (Lin, Pos ctrl), SERVO_AC (Lin, Pos ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4015
P-Group: Closed loop position control	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Display and connector output for the velocity setpoint as a result of precontrol.

r2561 CO: LR speed precontrol value / n_prectrl val

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4015
P-Group: Closed loop position control	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Display and connector output for the speed setpoint as a result of precontrol.

r2562 CO: LR velocity setpoint total / v_set total

SERVO (Lin, Pos ctrl), SERVO_AC (Lin, Pos ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4015
P-Group: Closed loop position control	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Display and connector output for the total velocity setpoint.
This value is obtained from the sum of the velocity precontrol and position controller output.

Dependency: Refer to: r2560, r2561

r2562 CO: LR total speed setpoint / n_set total

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4015
P-Group: Closed loop position control	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Display and connector output for the total speed setpoint.
This value is obtained from the sum of the speed precontrol and position controller output.

Dependency: Refer to: r2560, r2561

r2563 CO: LR following error dynamic model / Follow error dyn

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 4025
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [LU]	- [LU]	- [LU]

Description: Display and connector output for the dynamic following error.

This value is the deviation, corrected by the velocity-dependent component, between the position setpoint and the position actual value.

Note: For p2534 >= 100 % (precontrol activated) the following applies:

The dynamic following error (r2563) corresponds to the system deviation (r2557) at the position controller input.

For 0 % < p2534 < 100 % (precontrol activated) or p2534 = 0 % (precontrol deactivated) the following applies:

The dynamic following error (r2563) is the deviation between the measured position actual value and a value that is calculated from the position setpoint via a PT1 model. This compensates the system-related velocity-dependent system deviation for a P controller.

r2564 CO: LR force precontrol value / F_prectrl val

SERVO (Lin, Pos ctrl), SERVO_AC (Lin, Pos ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4015
P-Group: Closed loop position control	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [N]	- [N]	- [N]

Description: Display and connector output for the force setpoint.

Dependency: Refer to: p1511, p1512

Note: The force precontrol value is the derivation over time of the velocity precontrol value and is referred to a high inertia mass of 1000.0 kg. When using the precontrol, then this should be evaluated corresponding to the actual mass.

r2564 CO: LR torque precontrol value / M_prectrl val

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4015
P-Group: Closed loop position control	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Display and connector output for the torque precontrol value.

Dependency: Refer to: p1511, p1512

Note: The torque precontrol value is the derivation over time of the speed precontrol value and is referred to a moment of inertia of 1 kgm^2/2 PI. When using the precontrol, then this should be evaluated corresponding to the actual moment of inertia.

r2565 CO: LR following error actual / Following err act

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 4015
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [LU]	- [LU]	- [LU]

Description: Display and connector output for the actual following error.

This value is the deviation between the position setpoint - after fine interpolation - and the position actual value.

Notice: When speed precontrol is active (p2534 > 0 %), the following applies:

To calculate this value, the position setpoint is delayed by two position controller sampling times.

When speed precontrol is inactive (p2534 = 0 %), the following applies:

To calculate this value, the position setpoint is delayed by two position controller clock cycles.

r2566 LR velocity input precontrol / v inp prectrl

SERVO (Lin, Pos ctrl), SERVO_AC (Lin, Pos ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4015
P-Group: Closed loop position control	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Displays the velocity at the input of the precontrol channel.

Note: This display parameter is used for diagnostics even when the precontrol is inactive (p2534 = 0%).

r2566 LR speed input precontrol / n inp prectrl

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4015
P-Group: Closed loop position control	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the speed at the input of the precontrol channel.

Note: This display parameter is used for diagnostics even when the precontrol is inactive (p2534 = 0%).

p2567[0...n] LR force precontrol mass / F_prectrl mass

SERVO (Lin, Pos ctrl), SERVO_AC (Lin, Pos ctrl)

Can be changed: C2(25), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4015
P-Group: Closed loop position control	**Unit group:** 27_1	**Unit selection:** p0100
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000000 [kg]	100000.000000 [kg]	1.000000 [kg]

Description: Sets the mass for the force precontrol.

Dependency: Refer to: p2534, r2564

Note: When calculating the force precontrol value (r2654), the derivation over time of the speed precontrol value is multiplied by p2567.

For reasons associated with the compatibility to earlier firmware releases, the factory setting for p2567 = 1 kg. This means that CO: r2564 remains, as standard, the derivation over time of the velocity precontrol value and refers, as before, to a weight of 1 kg. For force precontrol, the mass can now be directly entered into p2567 (instead of subsequently evaluating the precontrol value).

p2567[0...n] LR torque precontrol moment of inertia / M_prectr M_inertia

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: C2(25), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4015
P-Group: Closed loop position control	**Unit group:** 25_1	**Unit selection:** p0100
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000000 [kgm²]	100000.000000 [kgm²]	0.159155 [kgm²]

Description: Sets the moment of inertia for the torque precontrol.

Dependency: Refer to: p2534, r2564

Note: When calculating the torque precontrol value (r2654), the time derivation of the speed precontrol value is multiplied by 2 PI * p2567.

For reasons associated with the compatibility to earlier firmware versions, the factory setting for p2567 = 1 kgm^2/2 PI. This means that CO: r2564 remains as standard the derivation over time of the speed precontrol value and is referred, as before, to a moment of inertia of 1 kgm^2/2 PI. For torque precontrol, the moment of inertia can now be directly entered into p2567 (instead of subsequently evaluating the precontrol value).

p2568 BI: EPOS STOP cam activation / STOP cam act

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3630
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to activate the function "STOP cam".

BI: p2568 = 1 signal

--> The evaluation of the STOP cam minus (BI: p2569) and STOP cam plus (BI: p2570) is active.

Dependency: Refer to: p2569, p2570

Note: The traversing range can also be limited using software limit switches.

p2569 BI: EPOS STOP cam minus / STOP cam minus

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3630
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for the STOP cam in the negative direction of travel.

Recommendation: Set the OFF3 ramp-down time (p1135) so that after the axis reaches the STOP cam at maximum velocity, the braking distance traveled by the axis is not greater than the distance that is available.

Sets message 07491 as alarm (A07491):

Set the maximum deceleration (p2573), so that the axis, after reaching the STOP cam at the maximum velocity, does not move through a higher braking travel than is actually available.

Dependency: Refer to: p1135, p2568, p2570, p2573, r2684

Refer to: F07491

Caution: The STOP cams are low active.

Sets message 07491 as fault (F07491):

For a 0 signal, the drive stops with the OFF3 ramp-down time (p1135), status signal r2684.13 = 1 is set, saved and the corresponding fault is output. After the fault has been acknowledged, only motion moving away from the STOP cam is permitted.

For a 0/1 signal and valid travel direction, when the STOP cam is exited, this is detected and the status signal r2684.13 is set to 0.

Sets message 07491 as alarm (A07491):

For a 0 signal, the axis is stopped with the maximum deceleration (p2573), status signal r2684.13 is set to 1, saved and the appropriate alarm is output. Only motion away from the STOP cam is permitted.

For a 0/1 signal and valid travel direction, when the STOP cam is exited, this is detected and the status signal r2684.13 is set to 0 and the alarm is deleted.

p2570 BI: EPOS STOP cam plus / STOP cam plus

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3630
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for the STOP cam in the positive direction of travel.

Recommendation: Set the OFF3 ramp-down time (p1135) so that after the axis reaches the STOP cam at maximum velocity, the braking distance traveled by the axis is not greater than the distance that is available.

Sets message 07492 as alarm (A07492):

Set the maximum deceleration (p2573), so that the axis, after reaching the STOP cam at the maximum velocity, does not move through a higher braking travel than is actually available.

Dependency: Refer to: p1135, p2568, p2569, p2573, r2684

Refer to: F07492

Caution: The STOP cams are low active.

Sets message 07492 as fault (F07492):

For a 0 signal, the drive stops with the OFF3 ramp-down time (p1135), status signal r2684.14 = 1 is set, saved and the corresponding fault is output. After the fault has been acknowledged, only motion moving away from the STOP cam is permitted.

For a 0/1 signal and valid travel direction, when the STOP cam is exited, this is detected and the status signal r2684.14 is set to 0.

Sets message 07492 as alarm (A07492):

For a 0 signal, the axis is stopped with the maximum deceleration (p2573), status signal r2684.14 is set to 1, saved and the appropriate alarm is output. Only motion away from the STOP cam is permitted.

For a 0/1 signal and valid travel direction, when the STOP cam is exited, this is detected and the status signal r2684.14 is set to 0 and the alarm is deleted.

p2571 EPOS maximum velocity / v_max

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 3630
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1 [1000 LU/min]	40000000 [1000 LU/min]	30000 [1000 LU/min]

Description: Sets the maximum velocity for the "basic positioner" function (EPOS).

Dependency: Refer to: r1084, r1087, p2503, p2504, p2505, p2506

Note: The maximum velocity is active in all of the operating modes of the basic positioner.

The maximum velocity for the basic positioner should be aligned with the maximum speed/velocity of the speed/velocity controller:

Rotary encoders:

p2571[1000 LU/min] = min(|r1084|, |r1087|)[rpm] x p2505/p2504 x p2506/1000

Linear encoders:

p2571[1000 LU/min] = min(|r1084|, |r1087|)[m/min] x p2503/10[m]

p2572 EPOS maximum acceleration / a_max

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 3630
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1 [1000 LU/s²]	2000000 [1000 LU/s²]	100 [1000 LU/s²]

Description: Sets the maximum acceleration for the "basic positioner" function (EPOS).

Dependency: Refer to: p2619, p2644

Note: The maximum acceleration appears to exhibit jumps (without jerk).

"Traversing blocks" operating mode:

The programmed acceleration override (p2619) acts on the maximum acceleration.

"Direct setpoint input/MDI" mode:

The acceleration override is effective (p2644, 4000 hex = 100 %).

"Jog" and "search for reference" modes

No acceleration override is active. The axis starts with the maximum acceleration.

p2573 EPOS maximum deceleration / -a_max

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 3630
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1 [1000 LU/s²]	2000000 [1000 LU/s²]	100 [1000 LU/s²]

Description: Sets the maximum deceleration for the "basic positioner" function (EPOS).

Dependency: Refer to: p2620, p2645

Note: The maximum deceleration appears to exhibit jumps (without jerk).

"Traversing blocks" operating mode:

The programmed deceleration override (p2620) acts on the maximum deceleration.

"Direct setpoint input/MDI" mode:

The deceleration override is effective (p2645, 4000 hex = 100 %).

"Jog" and "search for reference" modes

No deceleration override is effective. The axis breaks with the maximum deceleration.

p2574 EPOS jerk limiting / Jerk lim

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 3635
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1 [1000 LU/s³]	100000000 [1000 LU/s³]	10000 [1000 LU/s³]

Description: Sets the jerk limiting

Dependency: Refer to: p2572, p2573, p2575

Note: The jerk limiting is internally converted into a jerk time as follows:

Jerk time Tr = max(p2572, p2573) / p2574

The jerk time is internally limited to 1000 ms and is rounded-off to an integer multiple of the sampling time positioning (p0115[5]).

The jerk time is valid for the acceleration and deceleration phases also for unequal maximum acceleration (p2572) and maximum deceleration (p2573).

For unequal maximum acceleration and maximum deceleration, the motion is not optimal from a time perspective as the jerk limit cannot be used for the lower of the two values.

If, in the travel profile, the acceleration time without jerk limiting is shorter than jerk time Tr, then motion with jerk limiting is not time-optimized.

For traversing motion with a direct transition between acceleration and deceleration (i.e. jerk time is greater than the constant velocity phase), jerk can increase up to twice the parameterized jerk.

CONTINUE_FLYING with direction reversal acts internally just like a CONTINUE_WITH_STOP without the "position reached" being set. Without jerk limiting, this behavior can hardly be noticed as, when reversing, the position setpoint is only kept at zero for one interpolator clock cycle.

For block change enable CONTINUE_WITH_STOP, jerk limiting results in a longer delay time.

p2575 BI: EPOS jerk limiting activation / Jerk limit act

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3635
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to activate the jerk limiting.

Activating/deactivating:

- using BI: p2575 = 1 signal or 0 signal.
- using the command JERK in the traversing block (only for BI: p2575 = 0 signal).

Dependency: Refer to: p2574

Note: A change of the signal state at the binector input is only accepted at zero speed.

p2576 EPOS modulo correction modulo range / Modulo corr range

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 3635
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1 [LU]	2147482647 [LU]	360000 [LU]

Description: Sets the modulo range for axes with modulo correction.

Dependency: Refer to: p2577

p2577 BI: EPOS modulo correction activation / Modulo corr act

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3630, 3635
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to activate modulo correction.

Dependency: Refer to: p2576

Note: When the signal state changes at the binector input, this only becomes effective in the "ready for switching on" state.

Selecting modulo correction:

The actual position setpoint in the modulo range is corrected. The position actual value differs from the position setpoint by the following error and can also leave the modulo range.

De-selecting modulo correction:

It is based on the actual position actual value.

p2578 CI: EPOS software limit switch minus signal source / SW limSw Min S_src

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Integer32	**Dyn. index:** -	**Func. diagram:** 3630
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	2580[0]

Description: Sets the signal source for the software limit switch minus.

Dependency: Refer to: p2579, p2580, p2581, p2582

Refer to: A07469, A07477, A07479, F07481

Notice: A change to the software limit switch becomes immediately effective.

If the software limit switch is changed, then this results in the positions in the traversing blocks being checked.

Note: The following applies for the setting of the software limit switch:
Software limit switch minus < software limit switch plus

p2579 CI: EPOS software limit switch plus signal source / SW limSwPlus S_src

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Integer32	**Dyn. index:** -	**Func. diagram:** 3630
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	2581[0]

Description: Sets the signal source for the software limit switch plus.

Dependency: Refer to: p2578, p2580, p2581, p2582
Refer to: A07470, A07478, A07480, F07482

Notice: A change to the software limit switch becomes immediately effective.
If the software limit switch is changed, then this results in the positions in the traversing blocks being checked.

Note: The following applies for the setting of the software limit switch:
Software limit switch minus < software limit switch plus

p2580 CO: EPOS software limit switch minus / SW limSwitch minus

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), U, T	**Calculated:** -	**Access level:** 1
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 3630
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-2147482648 [LU]	2147482647 [LU]	-2147482648 [LU]

Description: Sets the software limit switch, in the negative direction of travel.

Dependency: Refer to: p2578, p2579, p2581, p2582

p2581 CO: EPOS software limit switch plus / SW lim switch plus

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), U, T	**Calculated:** -	**Access level:** 1
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 3630
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-2147482648 [LU]	2147482647 [LU]	2147482647 [LU]

Description: Sets the software limit switch, in the positive direction of travel.

Dependency: Refer to: p2578, p2579, p2580, p2582

p2582 BI: EPOS software limit switch activation / SW lim sw act

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3630
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to activate the "software limit switch".

Dependency: Refer to: p2578, p2579, p2580, p2581

Caution: Software limit switch effective:
- axis is referenced (r2684.11 = 1) and BI: p2582 = 1 signal.

Software limit switch ineffective:
- modulo correction active (BI: p2577 = 1 signal).
- search for reference is executed.

Notice: Target position for relative positioning outside software limit switch:

The traversing block is started and the axis comes to a standstill at the software limit switch. An appropriate alarm is output and the traversing block is interrupted. Traversing blocks with valid position can be activated.

Target position for absolute positioning outside software limit switch:

In the "traversing blocks" mode, the traversing block is not started and an appropriate fault is output.

Axis outside the valid traversing range:

If the axis is already outside the valid traversing range, then an appropriate fault is output. The fault can be acknowledged at standstill. Traversing blocks with valid position can be activated.

Note: The traversing range can also be limited using STOP cams.

p2583 EPOS backlash compensation / Backlash comp

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), U, T	**Calculated:** -	**Access level:** 1
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 3635
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-200000 [LU]	200000 [LU]	0 [LU]

Description: Sets the amount of play (backlash) for positive or negative play.

0: backlash compensation is deactivated.

> 0: Positive backlash (normal case)

When the direction is reversed, the encoder actual value leads the actual value.

< 0: Negative backlash

When the direction is reversed, the actual value leads the encoder actual value.

Dependency: If a stationary axis is referenced by setting the reference point, or an adjusted with absolute encoder is switched on, then the setting of p2604 is relevant for entering the compensation value.

p2604 = 1:

Traveling in the positive direction -> A compensation value is immediately entered.

Traveling in the negative direction -> A compensation value is not entered

p2604 = 0:

Traveling in the positive direction -> A compensation value is not entered

Traveling in the negative direction -> A compensation value is immediately entered.

When again setting the reference point (a referenced axis) or for "flying referencing", p2604 is not relevant but instead the history of the axis.

Refer to: p2604, r2667

p2584 EPOS functions configuration / EPOS fct. config

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Sets the configuration for additional functions for the basic positioner (EPOS).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Activate position feedback signal	Yes	No	-

Note: For bit 00:

When the bit is set, for traversing blocks with absolute target positions (p2617[x]) when the tolerance window (p2688) is reached, the traversing block number (p2616[x]) is output bit-coded (r2689).

p2585 EPOS jog 1 setpoint velocity / Jog 1 v_set

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), U, T	**Calculated:** -	**Access level:** 1
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 3610
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-40000000 [1000 LU/min]	40000000 [1000 LU/min]	-300 [1000 LU/min]

Description: Sets the setpoint velocity for jog 1.

Dependency: Refer to: p2587, p2589, p2591

p2586 EPOS jog 2 setpoint velocity / Jog 2 v_set

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), U, T	**Calculated:** -	**Access level:** 1
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 3610
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-40000000 [1000 LU/min]	40000000 [1000 LU/min]	300 [1000 LU/min]

Description: Sets the setpoint velocity for jog 2.

Dependency: Refer to: p2588, p2590, p2591

p2587 EPOS jog 1 traversing distance / Jog 1 distance

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 3610
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [LU]	2147482647 [LU]	1000 [LU]

Description: Sets the traversing distance for incremental jog 1.

Dependency: Refer to: p2585, p2589, p2591

Note: Incremental jog 1 is started with BI: p2591 = 1 signal and BI: p2589 = 0/1 signal.
With BI: p2589 = 0 signal, incremental jog is interrupted.

p2588 EPOS jog 2 traversing distance / Jog 2 distance

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 3610
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [LU]	2147482647 [LU]	1000 [LU]

Description: Sets the traversing distance for incremental jog 2.

Dependency: Refer to: p2586, p2590, p2591

Note: Incremental jog 2 is started with BI: p2591 = 1 signal and BI: p2590 = 0/1 signal.
With BI: p2590 = 0 signal, incremental jogging is interrupted.

p2589 BI: EPOS jog 1 signal source / Jog 1 S_src

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3610, 3625
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for jog 1.

Dependency: When jogging, the axis is accelerated or braked with the maximum acceleration/deceleration (p2572/p2573).
BI: p2591 = 0 signal
The axis endlessly moves with the setpoint velocity, jog 1 (p2585).
BI: p2591 = 1 signal
The axis traverses through a parameterized distance (p2585) with the setpoint velocity, jog 1 (p2587).
Refer to: p2572, p2573, p2585, p2587, p2591

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p2590 BI: EPOS jog 2 signal source / Jog 2 S_src

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3610, 3625
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for jog 2.

Dependency: When jogging, the axis is accelerated or braked with the maximum acceleration/deceleration (p2572/p2573).
BI: p2591 = 0 signal
The axis endlessly moves with the setpoint velocity, jog 2 (p2586).
BI: p2591 = 1 signal
The axis traverses through a parameterized distance (p2586) with the setpoint velocity, jog 2 (p2588).
Refer to: p2572, p2573, p2586, p2588, p2591

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p2591 BI: EPOS jogging incremental / Jog incr

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3610
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for jogging incremental.

Dependency: Refer to: p2585, p2586, p2587, p2588, p2589, p2590

p2593 CI: EPOS LU/revolution LU/mm / LU/rev LU/mm

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3630
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	2524[0]

Description: Sets the signal source for the reference of the internal length units LU to motor revolution for rotary encoders and to mm for linear encoders.

Dependency: Refer to: p0404, r2524, p2594

Note: The signal value is used to convert the length unit to the speed or velocity setpoint.

p2594[0...2] CI: EPOS Maximum velocity externally limited / v_Max ext lim

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3630
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the externally limited maximum velocity.

Index:
[0] = Setpoint limit absolute
[1] = Setpoint limiting positive
[2] = Setpoint limiting negative

Dependency: Refer to: r2524, p2571, p2593

Warning: In order that the externally limited velocity can be effective for the EPOS operating modes, connector input p2593 must be correctly interconnected.

p2595 BI: EPOS referencing start / Ref start

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3612, 3625, 3614
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to start the "search for reference" or "flying referencing".

BI: p2595 = 0/1 signal

Referencing is started.

BI: p2595 = 1/0 signal

Referencing is interrupted.

Dependency: Refer to: p2597, p2598, p2599, r2684

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: Search for reference (BI: p2597 = 0 signal):

The reference point approach can only be activated (0/1 edge) after traversing motion that is being processed has been completed.

With the start, where relevant, the state signal "reference point set" (r2684.11) is reset.

Flying referencing (BI: p2597 = 1 signal):

With the start, the state signal "reference point set" (r2684.11) is not reset.

p2596 BI: EPOS set reference point / Set ref_pt

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3612
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the "set reference point".

Dependency: Refer to: p2598, p2599, r2684

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: Reference point setting is effective in the following operating states:
- in the basic state.
- for FIXED STOP with progress condition END (corresponds to the initial state).
- for traversing block interrupted via BI: p2640 = 0 signal (intermediate stop).
- for EPOS not enabled (BI: p2656 = 0 signal) and position actual value valid (BI: p2658 = 1 signal).

p2597 BI: EPOS referencing type selection / Ref_typ select

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3612, 3614, 3625
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to select referencing type.
1 signal: Flying referencing
0 signal: Search for reference

Dependency: Refer to: p2595

Note: Referencing is activated as follows:
- Select the referencing type (BI: p2597)
- Start referencing (BI: p2595 = 0/1 signal)

p2598[0...3] CI: EPOS reference point coordinate signal source / Ref_pt coord S_src

SERVO (EPOS, Pos ctrl), VECTOR (EPOS, Pos ctrl), SERVO_AC (EPOS, Pos ctrl), VECTOR_AC (EPOS, Pos ctrl)

Can be changed: C2(25), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Integer32	**Dyn. index:** -	**Func. diagram:** 3612, 3614
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	[0] 2599[0] [1] 0 [2] 0 [3] 0

Description: Sets the signal source for the reference point coordinate.
This value is used as reference for the following referencing operations:
- search for reference
- set reference point
- flying referencing
- absolute value adjustment

Index:
[0] = Position control
[1] = Encoder 1
[2] = Encoder 2
[3] = Encoder 3

Dependency: Refer to: p2502, p2507, p2595, p2596, p2597, p2599

Note: When the function module "basic positioner" (r0108.4 = 1) is activated, the following applies:
Incremental measuring system:
After the reference point is reached, the drive accepts the actual axis position from the position received via the connector input p2598[0].
Absolute encoder:
When adjusting the encoder, the position received via the connector input is set as the actual axis position. The position offset to the actual encoder value is displayed in p2525.

p2599 CO: EPOS reference point coordinate value / Ref_pt coord val

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: C2(25), U, T	**Calculated:** -	**Access level:** 1
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 3612
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-2147482648 [LU]	2147482647 [LU]	0 [LU]

Description: Sets the position value for the reference point coordinate.

This value is set as the actual axis position after referencing or adjustment.

Dependency: Refer to: p2507, p2525, p2595, p2596, p2597, p2598

p2600 EPOS search for reference reference point offset / Ref_pt offset

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), U, T	**Calculated:** -	**Access level:** 1
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 3612
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-2147482648 [LU]	2147482647 [LU]	0 [LU]

Description: Sets the reference point offset for search for reference.

Dependency: Refer to: p2598

p2601 EPOS flying referencing inner window / Inner window

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), U, T	**Calculated:** -	**Access level:** 1
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 3614
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [LU]	2147482647 [LU]	0 [LU]

Description: Sets the inner window for flying referencing.

Value = 0:

The evaluation of the inner window is deactivated.

Dependency: Refer to: p2597, p2602, r2684

Notice: The inner window must be set so that it is smaller than the outer window.

Note: If the difference between the reference point coordinate and detected actual position is less than the inner window, then no correction is executed for a referenced axis.

If the difference between the reference point coordinate and detected actual position is greater than the inner window and less than the outer window (p2602), then a correction is executed for a referenced axis.

p2602 EPOS flying referencing outer window / Outer window

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), U, T	**Calculated:** -	**Access level:** 1
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 3614
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [LU]	2147482647 [LU]	0 [LU]

Description: Sets the outer window for flying referencing.

Value = 0:

The evaluation of the outer window is deactivated.

Dependency: Refer to: p2597, r2684

Refer to: A07489

Notice: The inner window must be set so that it is smaller than the outer window.

Note: If the difference between the reference point coordinate and detected actual position is greater than the outer window, then no correction is executed for the referenced axis. Further, an appropriate message is output and r2684.3 is set to 1.

p2603 EPOS flying referencing, positioning mode relative / Pos_mode relative

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), U, T	**Calculated:** -	**Access level:** 1
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 3635
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	1

Description: Sets the relative positioning mode for flying referencing.

Value = 1:

The corrected setpoint is not calculated into the traversing distance.

Value = 0:

The corrected setpoint is calculated into the traversing distance.

Dependency: Refer to: p2597, p2623, p2648

Notice: For p2603 = 0 the direction can change.

p2604 BI: EPOS search for reference start direction / Srch for ref dir

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3612
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal sources for the start direction of the search for reference.

1 signal: Start in the negative direction.

0 signal: Start in the positive direction.

Dependency: Refer to: p2583, p2595, p2597

p2605 EPOS search for reference approach velocity reference cam / v_appr ref_cam

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 3612
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1 [1000 LU/min]	40000000 [1000 LU/min]	5000 [1000 LU/min]

Description: Sets the approach velocity to the reference cam for the search for reference.

Dependency: The search for reference only starts with the approach velocity to the reference cam when there is a reference cam (p2607 = 1).

Refer to: p2595, p2597, p2604, p2606, p2607

Note: When traversing to the reference cam, the velocity override is effective.

If, at the start of the search for reference, the axis is already at the reference cam, then the axis immediately starts to traverse to the zero mark.

p2606 EPOS search for reference reference cam maximum distance / Ref_cam max s

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)			
	Can be changed: C2(17), U, T	**Calculated:** -	**Access level:** 1
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 3612
	P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0 [LU]	2147482647 [LU]	2147482647 [LU]

Description: Sets the maximum distance after the start of the search for reference when traversing to the reference cam.

Dependency: Refer to: p2595, p2597, p2604, p2605, p2607

Refer to: F07458

Note: When using a reversing cam, the maximum distance must be set appropriately long.

p2607 EPOS search for reference reference cam present / Ref_cam pres

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)			
	Can be changed: C2(17), U, T	**Calculated:** -	**Access level:** 1
	Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** 3612
	P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	1	1

Description: Sets whether or not a reference cam is present for the search for reference.

Value = 1: Reference cam present.

Value = 0: No reference cam present.

Dependency: Refer to: p2595, p2597, p2604, p2605, p2606

p2608 EPOS search for reference approach velocity zero mark / v_appr ref_ZM

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)			
	Can be changed: C2(17), U, T	**Calculated:** -	**Access level:** 1
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 3612
	P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	1 [1000 LU/min]	40000000 [1000 LU/min]	300 [1000 LU/min]

Description: Sets the approach velocity after detecting the reference cam to search for the zero mark for the search for reference.

Dependency: If there is no reference cam (p2607 = 0), the search for reference immediately starts with the axis traversing to the zero mark.

Refer to: p2595, p2597, p2604, p2607, p2609, p2610

Caution: If the reference cam is not adjusted so that at each search for reference the same zero mark for synchronization is detected, then an "incorrect" axis reference point is obtained.

After the reference cam has been left, the search for the zero mark is activated with a time delay due to internal factors. This is the reason that the reference cam should be adjusted in this center between two zero marks and the approach velocity should be adapted to the distance between two zero marks.

Note: The velocity override is not effective when traversing to the zero mark.

p2609 EPOS search for reference max distance ref cam and zero mark / Max s ref_cam ZM

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)			
	Can be changed: C2(17), U, T	**Calculated:** -	**Access level:** 1
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 3612
	P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0 [LU]	2147482647 [LU]	20000 [LU]

Description: Sets the maximum distance after leaving the reference cam when traversing to the zero mark.

Dependency: Refer to: p2595, p2597, p2604, p2607, p2608, p2610

Refer to: F07459

p2610 EPOS search for ref. tol. bandwidth for distance to zero mark / Tol_band to ZM

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 3612
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [LU]	2147482647 [LU]	2147482647 [LU]

Description: Sets the tolerance bandwidth for the distance to the zero mark

The zero mark is evaluated within the maximum distance between the reference cam and zero mark (p2609) minus the tolerance bandwidth for the distance to the zero mark (p2610).

Dependency: Refer to: p2609

p2611 EPOS search for reference approach velocity reference point / v_appr ref_pt

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 3612
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1 [1000 LU/min]	40000000 [1000 LU/min]	300 [1000 LU/min]

Description: Sets the approach velocity after detecting the zero mark to approach the reference point.

Dependency: Refer to: p2595, p2597, p2604, p2607, p2609, p2610

Note: When traversing to the reference point, the velocity override is not effective.

p2612 BI: EPOS search for reference reference cam / Ref_cam

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3612
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the reference cam.

Dependency: Refer to: p2607

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p2613 BI: EPOS search for reference reversing cam minus / Rev minus

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3612
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for the reversing cam in the negative direction of travel.

1 signal: Reversing cam not reached.

0 signal: Reversing cam reached.

Dependency: Refer to: p2614

Note: If, during the search for reference from the reversing cam minus and plus, a 0 signal is detected, then the axis remains stationary (at standstill).

p2614 BI: EPOS search for reference reversing cam plus / Rev plus

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3612
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for the reversing cam in the negative direction of travel.

1 signal: Reversing cam not reached.

0 signal: Reversing cam reached.

Dependency: Refer to: p2613

Note: If, during the search for reference from the reversing cam minus and plus, a 0 signal is detected, then the axis remains stationary (at standstill).

p2615 EPOS maximum number of traversing blocks / Trav_block qty max

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17)	**Calculated:** -	**Access level:** 1
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** 3616
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	64	64

Description: Sets the maximum number of traversing blocks that are available.

Dependency: Refer to: p2616, p2617, p2618, p2619, p2620, p2621, p2622, p2623, p2624

p2616[0...n] EPOS traversing block block number / Trav_blk, blkNo.

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), U, T	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** p2615	**Func. diagram:** 3616
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1	63	-1

Description: Sets a block number.

-1: Invalid block number. These blocks are not taken into account.

0 ... 63: valid block number.

Dependency: The number of indices depends on p2615.

Refer to: p2615, p2617, p2618, p2619, p2620, p2621, p2622, p2623, p2624

p2617[0...n] EPOS traversing block position / Trav_block pos

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), U, T	**Calculated:** -	**Access level:** 1
Data type: Integer32	**Dyn. index:** p2615	**Func. diagram:** 3616
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-2147482648 [LU]	2147482647 [LU]	0 [LU]

Description: Sets the target position for the traversing block.

Dependency: The number of indices depends on p2615.

Refer to: p2615, p2616, p2618, p2619, p2620, p2621, p2622, p2623, p2624

Note: The target position is approached in either relative or absolute terms depending on p2623.

p2618[0...n] EPOS traversing block velocity / Trav_block v

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), U, T	**Calculated:** -	**Access level:** 1
Data type: Integer32	**Dyn. index:** p2615	**Func. diagram:** 3616
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1 [1000 LU/min]	40000000 [1000 LU/min]	600 [1000 LU/min]

Description: Sets the velocity for the traversing block.

Dependency: The number of indices depends on p2615.

Refer to: p2615, p2616, p2617, p2619, p2620, p2621, p2622, p2623, p2624, p2646

Note: The velocity can be influenced using the velocity override (p2646).

p2619[0...n] EPOS traversing block acceleration override / Trav_block a_over

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** p2615	**Func. diagram:** 3616
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1.0 [%]	100.0 [%]	100.0 [%]

Description: Sets the acceleration override for the traversing block.

The override refers to the maximum acceleration (p2572).

Dependency: The number of indices depends on p2615.

Refer to: p2572, p2615, p2616, p2617, p2618, p2620, p2621, p2622, p2623, p2624

p2620[0...n] EPOS traversing deceleration override / Trav_block -a_over

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** p2615	**Func. diagram:** 3616
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1.0 [%]	100.0 [%]	100.0 [%]

Description: Sets the deceleration override for the traversing block.

The override refers to the maximum deceleration (p2573).

Dependency: The number of indices depends on p2615.

Refer to: p2573, p2615, p2616, p2617, p2618, p2619, p2621, p2622, p2623, p2624

Notice: If, when calculating the traversing profile, it is identified that the target position of the next block with the programmed deceleration override will not be reached without direction reversal (flying block change), then the old (actual) deceleration override remains effective.

p2621[0...n] EPOS traversing block task / Trav_block task

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), U, T	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** p2615	**Func. diagram:** 3616
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	9	1

Description: Sets the required task for the traversing block.

Value:
1: POSITIONING
2: FIXED STOP
3: ENDLESS_POS
4: ENDLESS_NEG
5: WAITING
6: GOTO
7: SET_O
8: RESET_O
9: JERK

Dependency: The number of indices depends on p2615.

Refer to: p2615, p2616, p2617, p2618, p2619, p2620, p2622, p2623, p2624

p2622[0...n] EPOS traversing block task parameter / Trav_blck task_par

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), U, T	**Calculated:** -	**Access level:** 1
Data type: Integer32	**Dyn. index:** p2615	**Func. diagram:** 3616
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-2147483648	2147483647	0

Description: Sets additional information/data of the appropriate task for the traversing block.

Dependency: The number of indices depends on p2615.

Refer to: p2615, p2616, p2617, p2618, p2619, p2620, p2621, p2623, p2624

Note: The following should be set depending on the task:

FIXED STOP: Clamping torque and clamping force (rotary 0...65536 [0.01 Nm], linear 0...65536 [N])

WAIT: Delay time [ms]

GOTO: Block number

SET_O: 1, 2 or 3 - set direct output 1, 2 or 3 (both)

RESET_O: 1, 2 or 3 - reset direct output 1, 2 or 3 (both)

JERK: 0 - deactivate, 1 - activate

p2623[0...n] EPOS traversing block task mode / Trav_block mode

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned16	**Dyn. index:** p2615	**Func. diagram:** 3515, 3616
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	65535	0

Description: Sets the influence of the task for the traversing block.

Value = 0000 cccc bbbb aaaa

cccc: Positioning mode

cccc = 0000 --> ABSOLUTE

cccc = 0001 --> RELATIVE

cccc = 0010 --> ABS_POS (only for a rotary axis with modulo correction)

cccc = 0011 --> ABS_NEG (only for a rotary axis with modulo correction)

bbbb: Progression condition

bbbb = 0000 --> END

bbbb = 0001 --> CONTINUE WITH STOP

bbbb = 0010 --> CONTINUE FLYING

bbbb = 0011 --> CONTINUE EXTERNAL

bbbb = 0100 --> CONTINUE EXTERNAL WAIT

bbbb = 0101 --> CONTINUE EXTERNAL ALARM

aaaa: IDs

aaaa = 000x --> show/hide block (x = 0: show, x = 1: hide)

Dependency: The number of indices depends on p2615.

Refer to: p2615, p2616, p2617, p2618, p2619, p2620, p2621, p2622, p2624

p2624 EPOS traversing block sorting / Trav_block sort

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 3616
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the traversing blocks for sorting corresponding to their block number.

Procedure: Set p2624 = 0 --> 1.

Sorting is started and the parameters are automatically reset to zero once the operation has been completed.

Dependency: Refer to: p2615, p2616, p2617, p2618, p2619, p2620, p2621, p2622, p2623

Note: After sorting, the traversing blocks are written at the beginning of the memory in increasing sequence without any gaps.

p2625 BI: EPOS traversing block selection bit 0 / Trav_blk sel bit 0

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3616, 3640
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to select the traversing block, bit 0.

Dependency: Binector inputs p2625, p2626, p2627, p2628, p2629 and p2630 are used to select one of the maximum of 64 traversing blocks.

Refer to: p2626, p2627, p2628, p2629, p2630

p2626 BI: EPOS traversing block selection bit 1 / Trav_blk sel bit 1

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3616, 3640
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to select the traversing block, bit 1.

Dependency: Binector inputs p2625, p2626, p2627, p2628, p2629 and p2630 are used to select one of the maximum of 64 traversing blocks.

Refer to: p2625, p2627, p2628, p2629, p2630

p2627 BI: EPOS traversing block selection bit 2 / Trav_blk sel bit 2

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3616, 3640
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to select the traversing block, bit 2.

Dependency: Binector inputs p2625, p2626, p2627, p2628, p2629 and p2630 are used to select one of the maximum of 64 traversing blocks.

Refer to: p2625, p2626, p2628, p2629, p2630

p2628 BI: EPOS traversing block selection bit 3 / Trav_blk sel bit 3

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3616, 3640
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to select the traversing block, bit 3.

Dependency: Binector inputs p2625, p2626, p2627, p2628, p2629 and p2630 are used to select one of the maximum of 64 traversing blocks.

Refer to: p2625, p2626, p2627, p2629, p2630

p2629 BI: EPOS traversing block selection bit 4 / Trav_blk sel bit 4

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3616, 3640
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to select the traversing block, bit 4.

Dependency: Binector inputs p2625, p2626, p2627, p2628, p2629 and p2630 are used to select one of the maximum of 64 traversing blocks.

Refer to: p2625, p2626, p2627, p2628, p2630

p2630 BI: EPOS traversing block selection bit 5 / Trav_blk sel bit 5

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3616, 3640
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to select the traversing block, bit 5.

Dependency: Binector inputs p2625, p2626, p2627, p2628, p2629 and p2630 are used to select one of the maximum of 64 traversing blocks.

Refer to: p2625, p2626, p2627, p2628, p2629

p2631 BI: EPOS activate traversing task (0 -> 1) / Trav_task act

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3616, 3625
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for "activating traversing task".

BI: p2631 = 0/1 signal

The traversing task, selected using BI: p2625 ... p2630, is started.

Dependency: Refer to: p2625, p2626, p2627, p2628, p2629, p2630, p2640, p2641

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: To start a traversing block, the axis must be referenced (r2684.11 = 1).

The status signal r2684.12 = 0/1 signal is used for acknowledgment.

A traversing task can be influenced using the following signals:

- intermediate stop via BI: p2640.
- reject traversing task via BI: p2641.

p2632 EPOS external block change evaluation / Ext BlckChg eval

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 3615, 3616
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the mode to evaluate "external block change".

Value:
0: External block change via the measuring probe
1: External block change via BI: p2633

Dependency: Refer to: p2623, p2633, r2677, r2678

Note: In the mode "external block change via measuring probe" (p2632 = 0), the following applies:

When starting a traversing block with the block change enable CONTINUE_EXTERNAL, CONTINUE_EXTERNAL_WAIT and CONTINUE_EXTERNAL_ALARM an activated "flying referencing" is interrupted. After ending the block, "flying referencing" must be re-activated via BI: p2595 = 0/1 signal.

p2633 BI: EPOS external block change (0 -> 1) / Ext BlckChg (0->1)

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3615
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for "external block change".

BI: p2633 = 0/1 signal

Dependency: The evaluation of the signal is only active p2632 = 1.

Refer to: p2623, p2632, p2640, p2641, r2677, r2678

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: A 0/1 edge initiates a flying block change in the subsequent traversing block.

When the external block change is identified, the actual position is saved in r2678.

A traversing task can be influenced using the following signals:

- intermediate stop via BI: p2640.
- reject traversing task via BI: p2641.

p2634[0...n] EPOS fixed stop maximum following error / Following err max

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: C2(25), U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** DDS, p0180	**Func. diagram:** 3617, 4025
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [LU]	2147482647 [LU]	1000 [LU]

Description: Sets the following error to detect the "fixed stop reached" state (r2526.4).

Dependency: Refer to: r2526, p2621, r2675

Note: The state "fixed stop reached" is detected if the following error exceeds the theoretically calculated following error value by p2634.

p2635 EPOS fixed stop monitoring window / Fixed stop monit

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: C2(25), U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 3617, 4025
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [LU]	2147482647 [LU]	100 [LU]

Description: Sets the monitoring window of the actual position after the fixed stop is reached.

Dependency: Refer to: r2526, r2683

Refer to: F07484

Note: If, after the fixed stop is reached, the end stop shifts in either the positive or negative direction by more than the value set here, then BO: r2526.5 is set to 1 and an appropriate message is output.

p2637 BI: EPOS fixed stop reached / Fixed stop reached

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3616, 3617
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	2526.4

Description: Sets the signal source for the feedback signal "fixed stop reached".

BI: p2637 = 1 signal

Fixed stop is reached.

BI: p2637 = 0 signal

Fixed stop is not reached.

Dependency: Refer to: r2526, p2634

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: The identification of "fixed stop reached" is, for the factory setting, dependent on the signal BO: r2526.4 (fixed stop reached). This signal is influenced via p2634 (EPOS fixed stop, maximum following error).

p2638 BI: EPOS fixed stop outside the monitoring window / Fixed stop outside

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3616, 3617
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	2526.5

Description: Sets the signal source for the feedback signal "fixed stop outside the monitoring window".

BI: p2638 = 1 signal

Fixed stop is located outside the monitoring window.

BI: p2638 = 0 signal

Fixed stop is inside the monitoring window.

Dependency: Refer to: r2526, p2635

Note: The identification of "fixed stop outside the monitoring window" is, for the factory setting, dependent on signal BO: r2526.5 (fixed stop outside window). This signal is influenced via p2635 (EPOS fixed stop monitoring window).

p2639 BI: EPOS force limit reached / F_limit reached

SERVO (EPOS, Lin), SERVO_AC (EPOS, Lin)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3616
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1407.7

Description: Sets the signal source for the feedback signal "force limit reached" when traversing to fixed stop.

BI: p2639 = 1 signal

Force limit has been reached.

BI: p2639 = 0 signal

Force limit has not been reached.

Dependency: Refer to: r1407

Note: The feedback signal from "force limit reached" is, for the factory setting, dependent on the signal BO: r1407.7 (torque limit reached).

p2639 BI: EPOS torque limit reached / M_limit reached

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3616
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1407.7

Description: Sets the signal source for the feedback signal "torque limit reached" when traversing to fixed stop.

BI: p2639 = 1 signal

Torque limit is reached.

BI: p2639 = 0 signal

Torque limit is not reached.

Dependency: Refer to: r1407

Note: The feedback signal from "torque limit reached" is, for the factory setting, dependent on the signal BO: r1407.7 (torque limit reached).

p2640 BI: EPOS intermediate stop (0 signal) / Intermediate stop

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3616, 3620, 3625
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the "no intermediate stop/intermediate stop".

BI: p2640 = 1 signal

No intermediate stop.

BI: p2640 = 0 signal

Intermediate stop.

Dependency: Refer to: p2631, p2641, p2647, p2649

Caution: For BI: p2649 = 1 signal, the following applies:

Motion starts without any explicit control signal.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: This signal is only effective in the modes "traversing blocks" and "direct setpoint input/MDI".

When activating the intermediate stop, the axis brakes with the parameterized deceleration (p2620 or p2645).

p2641 BI: EPOS reject traversing task (0 signal) / Trav_task reject

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3616, 3620, 3625
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for "do not reject traversing task/reject traversing task".
BI: p2641 = 1 signal
Do not reject traversing task.
BI: p2641 = 0 signal
Reject traversing task.

Dependency: Refer to: p2631, p2640, p2647, p2649

Caution: For BI: p2649 = 1 signal, the following applies:
Motion starts without any explicit control signal.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: This signal is only effective in the modes "traversing blocks" and "direct setpoint input/MDI".
When activating reject traversing tasks, then the axis brakes with the maximum deceleration (p2573).

p2642 CI: EPOS direct setpoint input/MDI position setpoint / MDI s_set

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Integer32	**Dyn. index:** -	**Func. diagram:** 3618
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	2690[0]

Description: Sets the signal source for the position setpoint in the mode "direct setpoint input/MDI".

Dependency: Refer to: p2648, p2649, p2650, p2690

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: Depending on p2649, the position setpoint is either transferred continuously or edge-triggered.
The position setpoint input is interpreted as length unit [LU].

p2643 CI: EPOS direct setpoint input/MDI velocity setpoint / MDI v_set

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Integer32	**Dyn. index:** -	**Func. diagram:** 3618
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	2691[0]

Description: Sets the signal source for the velocity setpoint in the "direct setpoint input/MDI mode".

Dependency: Refer to: p2649, p2650, p2691

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: Depending on p2649, the velocity setpoint is either transferred continuously or edge-triggered.
The velocity setpoint input is interpreted as [1000 LU/min].

p2644 CI: EPOS direct setpoint input/MDI acceleration override / MDI a_over

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3618
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	2692[0]

Description: Sets the signal source for the acceleration override in the operating mode "direct setpoint input/MDI".

Dependency: Refer to: p2649, p2650, p2692

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: Depending on p2649, the acceleration override is either transferred continuously or edge-triggered.

The signal value 4000 hex (16384 dec) corresponds to 100 %.

p2645 CI: EPOS direct setpoint input/MDI deceleration override / MDI -a_over

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3618
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	2693[0]

Description: Sets the signal source for the deceleration override in the operating mode "direct setpoint input/MDI".

Dependency: Refer to: p2649, p2650, p2693

Notice: If, when calculating the traversing profile, it is identified that the target position with the programmed deceleration override cannot be reached without reversing the direction, then when accepting the dynamic values, the larger deceleration override is accepted and becomes effective.

The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: Depending on p2649, the deceleration override is either transferred continuously or edge-triggered.

The signal value 4000 hex (16384 dec) corresponds to 100 %.

p2646 CI: EPOS velocity override / v_over

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3630
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for the velocity override.

This velocity override is effective in the following operating modes "direct setpoint input/MDI", "traversing blocks", "jogging" and "search for reference" (when approaching the reference cam).

Dependency: Refer to: p2571, p2585, p2586, p2605, p2618, p2643, r2681

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: The effective override (r2681) can differ from the specified override due to limits (e.g. maximum velocity).

p2647 BI: EPOS direct setpoint input/MDI selection / MDI selection

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3620, 3625, 3640
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for selecting the operating mode "direct setpoint input/MDI".

Dependency: Refer to: p2640, p2641, p2642, p2643, p2644, p2645, p2646, p2648, p2649, p2650, p2651, p2652, p2653

Note: In this mode, using BI: p2653 it is possible to make a flying changeover between setting-up and positioning.
In this mode, even if the axis is not referenced (r2684.11 = 0) relative positioning is possible.

p2648 BI: EPOS direct setpoint input/MDI positioning type / MDI pos_type

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3620
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the positioning type in the mode "direct setpoint input/MDI".
BI: p2648 = 1 signal
Absolute positioning is selected.
BI: p2648 = 0 signal
Relative positioning is selected.

Dependency: Refer to: p2649, p2650, p2654
Refer to: A07461, F07488

Notice: Absolute positioning:
To traverse, the reference point must be set (r2684.11 = 1).
Relative positioning:
To traverse, it is not necessary that the reference point is set.

Note: Depending on p2649, the positioning type is either transferred continuously or edge-triggered.
Binector input p2648 is only evaluated when connector input p2654 = 0. If p2654 is a value other than 0, the positioning type is evaluated by means of the set signal source.

p2649 BI: EPOS direct setpoint input/MDI transfer type selection / MDI trans_type sel

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3620
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to define how values are transferred in the operating mode "direct setpoint input/MDI".
BI: p2649 = 1 signal
Values are continually transferred (refer to parameter under dependency).
BI: p2649 = 0 signal
The values are transferred for BI: p2650 = 0/1 signal.

Dependency: Refer to: p2642, p2643, p2644, p2645, p2648, p2650, p2651, p2652

Caution: For BI: p2649 = 1 signal, the following applies:
Motion starts without any explicit control signal.

Note: Parameter p2649 can only be changed when p0922 (p2079) = 999.

p2650 BI: EPOS direct setpoint input/MDI setpoint acceptance edge / MDI setp_accept

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3620
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to accept the values for edge-triggered selection (BI: p2649 = 0 signal) in the operating mode "direct setpoint input/MDI".
BI: p2650 = 0/1 signal and BI: p2649 = 0 signal
Values are accepted, edge-triggered (refer to parameter under dependency).

Dependency: Refer to: p2640, p2641, p2642, p2643, p2644, p2645, p2648, p2649, p2651, p2652, r2684

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: The status signal r2684.12 = 0/1 signal is used for acknowledgment.

The operating mode "direct setpoint input/MDI" can be influenced via the following signals:

- intermediate stop via BI: p2640.
- reject traversing task via BI: p2641.

p2651 BI: EPOS direct setpoint input/MDI direction selection, positive / MDI dir_sel pos

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3620
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the positive direction selection in the operating mode "direct setpoint input/MDI".

Dependency: Refer to: p2576, p2648, p2649, p2650, p2652, p2653, p2654

Note: The following applies for "setting-up":

- the traversing direction can be entered using this binector input.
- if both directions (p2651, p2652) are selected, then the axis remains stationary (zero speed).
- if both directions (p2651, p2652) are de-selected, then the axis remains stationary (zero speed).

The following applies for "positioning":

Using binector inputs p2651 and p2652, when the modulo correction (BI: p2577 = 1 signal) is activated and for absolute positioning (BI: p2648 = 1 signal), the traversing direction is specified as follows:

BI: p2651 / BI: p2652

0 signal / 0 signal: Absolute positioning through the shortest distance.

1 signal / 0 signal: Absolute positioning in the positive direction.

0 signal / 1 signal: Absolute positioning in the negative direction.

1 signal / 1 signal: Absolute positioning through the shortest distance.

p2652 BI: EPOS direct setpoint input/MDI direction selection negative / MDI dir_sel neg

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3620
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the negative direction selection in the operating mode "direct setpoint input/MDI".

Dependency: Refer to: p2576, p2648, p2649, p2650, p2651, p2653, p2654

Note: The following applies for "setting-up":

- the traversing direction can be entered using this binector input.
- if both directions (p2651, p2652) are selected, then the axis remains stationary (zero speed).
- if both directions (p2651, p2652) are de-selected, then the axis remains stationary (zero speed).

The following applies for "positioning":

Using binector inputs p2651 and p2652, when the modulo correction (BI: p2577 = 1 signal) is activated and for absolute positioning (BI: p2648 = 1 signal), the traversing direction is specified as follows:

BI: p2651 / BI: p2652

0 signal / 0 signal: Absolute positioning through the shortest distance.

1 signal / 0 signal: Absolute positioning in the positive direction.

0 signal / 1 signal: Absolute positioning in the negative direction.

1 signal / 1 signal: Absolute positioning through the shortest distance.

p2653 BI: EPOS direct setpoint input/MDI setting-up selection / MDI setting-up sel

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)	**Can be changed:** C2(17), T	**Calculated:** -	**Access level:** 1
	Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3620
	P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source for setting-up in the operating mode "direct setpoint input/MDI".

BI: p2653 = 1 signal

Setting-up selected.

BI: p2653 = 0 signal

Positioning selected.

Dependency: Refer to: p2651, p2652

Note: In the operating mode "direct setpoint input/MDI", it is possible to make a flying changeover between setting-up and positioning.

For "setup" (BI: p2653 = 1 signal), the following applies:

A traversing direction must be selected via binector inputs p2651 and p2652.

p2654 CI: EPOS direct setpoint input/MDI mode adaptation / MDI mode adapt

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)	**Can be changed:** C2(17), T	**Calculated:** -	**Access level:** 1
	Data type: Unsigned32 / Integer16	**Dyn. index:** -	**Func. diagram:** 3620
	P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source to interconnect the MDI mode to the operating mode "direct setpoint input MDI" via PROFIBUS telegram 110.

CI: p2654 = 0

The binector inputs listed below are evaluated.

CI: p2654 > 0

The following binector inputs are not evaluated:

- BI: p2648 (positioning type)
- BI: p2651 (direction selection, positive)
- BI: p2652 (direction selection, negative)

In this case, the following definitions apply:

Signal via CI: p2654 = xx0x hex -> absolute

Signal via CI: p2654 = xx1x hex -> relative

Signal via CI: p2654 = xx2x hex -> abs_pos (only for modulo correction)

Signal via CI: p2654 = xx3x hex -> abs_neg (only for modulo correction)

Dependency: Refer to: p2648, p2651, p2652

p2655[0...1] BI: EPOS select tracking mode / Sel tracking mode

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3635
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	[0] 1 [1] 2526.7

Description: Sets the signal source to select tracking mode.

BI: p2655[0] or BI: p2655[1] = 1 signal

Tracking mode after withdrawing the enable signal from EPOS (BI: p2656 = 0 signal).

BI: p2655[0] or BI: p2655[1] = 0 signal

No tracking mode after withdrawing the enable signal from EPOS (BI: p2656 = 0 signal).

Dependency: Refer to: p2656

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: For the following events, independent of the signal that is present, tracking mode is selected:

- after booting.
- after a 0/1 signal at binector input p2658 (feedback signal, EPOS position actual value valid).
- while a fault is present.

p2656 BI: EPOS enable basic positioner / EPOS enable

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3635
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	2526.3

Description: Sets the signal source to enable the basic positioner.

BI: p2656 = 1 signal

The basic positioner is enabled.

BI: p2656 = 0 signal

The basic positioner is not enabled.

Dependency: Refer to: r2526, p2655

p2657 CI: EPOS position actual value/position setting value / Pos act/set value

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Integer32	**Dyn. index:** -	**Func. diagram:** 3610, 3616, 3620, 3635
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	2521[0]

Description: Sets the signal source for the position actual value/position setting value.

Dependency: Refer to: r2521, p2658

Note: In the tracking mode, the position setpoint is taken from this connector input.

p2658 BI: EPOS position actual value valid feedback signal / Pos valid feedback

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3635
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	2526.0

Description: Sets the signal source for the feedback signal "position actual value is valid".

BI: p2658 = 1 signal

The position actual value received via CI: p2657 is valid.

BI: p2658 = 0 signal

The position actual value received via CI: p2657 is invalid.

Dependency: Refer to: r2526, p2657

Note: While a 0 signal is present, the position setpoint (p2665) is held at the value of 0.

p2659 BI: EPOS referencing active feedback signal / Ref act fdbk

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3612
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	2526.1

Description: Sets the signal source for the feedback signal "referencing active".

BI: p2659 = 1 signal

Referencing is active.

BI: p2659 = 0 signal

Referencing is not active.

Dependency: Refer to: r2526

p2660 CI: EPOS measured value referencing / Meas val ref

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Integer32	**Dyn. index:** -	**Func. diagram:** 3612, 3614
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	2523[0]

Description: Sets the signal source for the measured value for the function "referencing".

Dependency: Refer to: r2523

p2661 BI: EPOS measured value valid feedback signal / MeasVal valid fdbk

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3612, 3614, 3615
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	2526.2

Description: Sets the signal source for the feedback signal "measured value valid".

BI: p2661 = 1 signal

The measured value received via CI: p2660 is valid.

BI: p2661 = 0 signal

The measured value received via CI: p2660 is invalid.

Dependency: Refer to: r2526, p2660

p2662 BI: EPOS adjustment value valid feedback signal / Adj val valid FS

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	2526.9

Description: Sets the signal source for the feedback signal "adjustment value valid".

BI: p2662 = 1 signal

The adjustment value received via CI: p2660 is valid.

BI: p2662 = 0 signal

The adjustment value received via CI: p2660 is not valid.

Dependency: Refer to: r2526, p2660

p2663 BI: EPOS clamping active feedback signal / Clamping active FS

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 3616
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	2526.8

Description: Sets the signal source for the feedback signal "clamping active for travel to fixed stop".

BI: p2663 = 1 signal

Clamping is active

BI: p2663 = 0 signal

Clamping is not active.

Dependency: Refer to: r2526

Note: The feedback signal from "terminals active" is, for the factory setting, dependent on the signal BO: r2526.8 (terminals active when moving to a fixed stop).

r2665 CO: EPOS position setpoint / s_set

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 3635
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [LU]	- [LU]	- [LU]

Description: Displays the actual absolute position setpoint.

Dependency: Refer to: p2530

Note: As standard, the following BICO interconnection is established: CI: p2530 = r2665

r2666 CO: EPOS velocity setpoint / v_set

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 3635
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [1000 LU/min]	- [1000 LU/min]	- [1000 LU/min]

Description: Displays the actual velocity setpoint.

Dependency: Refer to: p2531

Note: As standard, the following BICO interconnection is established: CI: p2531 = r2666

r2667 CO: EPOS backlash compensation value / Backlash value

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 3635
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [LU]	- [LU]	- [LU]

Description: Displays the actual effective value for backlash compensation.

Dependency: Refer to: p2516

Note: As standard, the following BICO interconnection is established: CI: p2516 = r2667

r2669 CO/BO: EPOS actual operating mode / Op mode act

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 3625, 3630
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the actual active operating mode.

Value = 00 hex -> no operating mode active

Value = 01 hex -> jogging active

Value = 02 hex -> search for reference active

Value = 04 hex -> traversing blocks active

Value = 08 hex -> Positioning for direct setpoint input/MDI active

Value = 10 hex -> Setting-up for direct setpoint input/MDI active

Value = 20 hex -> flying referencing active

Dependency: Refer to: p2589, p2590, p2595, p2631, p2647, p2653

r2670.0...15 CO/BO: EPOS status word active traversing block / ZSW act trav_block

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 3615, 3625, 3650
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status word for the active traversing block.

r2670.0: Active traversing block, bit 0

...

r2670.5: Active traversing block, bit 5

r2670.15: MDI active

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Active traversing block bit 0	Active	Not active	-
01	Active traversing block bit 1	Active	Not active	-
02	Active traversing block bit 2	Active	Not active	-
03	Active traversing block bit 3	Active	Not active	-
04	Active traversing block bit 4	Active	Not active	-
05	Active traversing block bit 5	Active	Not active	-
15	MDI active	Active	Not active	-

Dependency: Refer to: p2631, p2647

Note: For bit 00 ... 05:

Displays the active traversing block in the traversing blocks operating mode.

For bit 15:

For a 1 signal, the operating mode - direct setpoint input/MDI - is active

r2671 CO: EPOS actual position setpoint / s_set act

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 3610, 3616, 3620
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [LU]	- [LU]	- [LU]

Description: Displays the position setpoint presently being processed.

Note: A position of 0 is displayed for non position-related tasks (e.g. ENDLESS_POS, ENDLESS_NEG).

r2672 CO: EPOS actual velocity setpoint / v_set act

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 3610, 3612, 3616, 3620
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [1000 LU/min]	- [1000 LU/min]	- [1000 LU/min]

Description: Displays the velocity setpoint presently being processed.

r2673 CO: EPOS actual acceleration override / a_over act

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3610, 3612, 3616, 3620
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the acceleration override presently being processed.

Note: An override of 100% is effective in the "jogging" and "search for reference" operating modes.

r2674 CO: EPOS actual deceleration override / -a_over act

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3610, 3612, 3616, 3620
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the deceleration override presently being processed.

Note: An override of 100% is effective in the "jogging" and "search for reference" operating modes.

r2675 CO: EPOS actual task / Task act

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 3616
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	9	-

Description: Display and connector output for the order presently being processed.

Value:
0: Inactive
1: POSITIONING
2: FIXED STOP
3: ENDLESS_POS
4: ENDLESS_NEG
5: WAITING
6: GOTO
7: SET_O
8: RESET_O
9: JERK

Dependency: Refer to: p2621

r2676 CO: EPOS actual task parameter / Task para act

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 3616
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the task parameter presently being processed in the "traversing blocks" operating mode.

Dependency: Refer to: p2622

Note: The following is displayed depending on the task:
FIXED STOP: Clamping torque (0 ... 65536 [0.01 Nm]) or clamping force (0 ... 65536 [N])
WAIT: Delay time [ms]
GOTO: Block number
SET_O: 1, 2, 3 --> direct output 1, 2 or 3 (both) is set
RESET_O: 1, 2, 3 --> direct output 1, 2 or 3 (both) is reset
JERK: 0 --> deactivate, 1 --> activate

r2677 CO: EPOS actual task mode / Task mode act

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 3616
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the task mode presently being processed.

Dependency: Refer to: p2623

r2678 CO: EPOS external block change actual position / Ext BlckChg s_act

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 3615, 3616, 3620
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [LU]	- [LU]	- [LU]

Description: Displays the actual position for the following events:
- external block change via measuring probe (p2632 = 0, BI: p2661 = 0/1 signal).
- external block change via BI: p2633 (p2632 = 1, BI: p2633 = 0/1 signal).
- activate traversing task (BI: p2631 = 0/1 signal).

Dependency: Refer to: p2631, p2632, p2633, p2661

r2680 CO: EPOS clearance reference cam and zero mark / Clearance cam/ZM

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 3612
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [LU]	- [LU]	- [LU]

Description: Displays the clearance determined between the reference cam and zero mark in the search for reference.

r2681 CO: EPOS velocity override effective / v_over effective

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3630
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the actual effective velocity override.

Dependency: Refer to: p2571, p2646

Note: The effective override can differ from the specified override due to limits (e.g. p2571, maximum velocity).

r2682 CO: EPOS residual distance to go / Residual distance

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 3635
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [LU]	- [LU]	- [LU]

Description: Displays the current residual distance.

The remaining distance is the distance to still to be moved through up to the end of the actual positioning task.

Dependency: Refer to: r2665, r2671, r2678

r2683.0...14 CO/BO: EPOS status word 1 / POS_ZSW1

SERVO (Lin, Pos ctrl), SERVO_AC (Lin, Pos ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 3645
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays status word 1 for the basic positioner (EPOS).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Tracking mode active	Yes	No	3635, 4020
01	Velocity limiting active	Yes	No	3630
02	Setpoint fixed	Yes	No	3635
03	Set position reached	Yes	No	3635
04	Axis moves forward	Yes	No	3635
05	Axis moves backward	Yes	No	3635
06	Software limit switch minus reached	Yes	No	3635
07	Software limit switch plus reached	Yes	No	3635
08	Position actual value <= cam switching position 1	Yes	No	4025
09	Position actual value <= cam switching position 2	Yes	No	4025
10	Direct output 1 via traversing block	Yes	No	3616
11	Direct output 2 via traversing block	Yes	No	3616
12	Fixed stop reached	Yes	No	3616, 3617
13	Fixed stop clamping force reached	Yes	No	3616, 3617
14	Travel to fixed stop active	Yes	No	3616, 3617

Dependency: Refer to: r2684

Note: For bit 02, 04, 05, 06, 07:

This signals designate the state after jerk limiting.

For bits 08, 09:

These signals are generated in the "closed-loop position control" function module.

r2683.0...14 CO/BO: EPOS status word 1 / POS_ZSW1

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 3645
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays status word 1 for the basic positioner (EPOS).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Tracking mode active	Yes	No	3635, 4020
01	Velocity limiting active	Yes	No	3630
02	Setpoint fixed	Yes	No	3635
03	Set position reached	Yes	No	3635
04	Axis moves forward	Yes	No	3635
05	Axis moves backward	Yes	No	3635
06	Software limit switch minus reached	Yes	No	3635
07	Software limit switch plus reached	Yes	No	3635
08	Position actual value <= cam switching position 1	Yes	No	4025
09	Position actual value <= cam switching position 2	Yes	No	4025
10	Direct output 1 via traversing block	Yes	No	3616
11	Direct output 2 via traversing block	Yes	No	3616
12	Fixed stop reached	Yes	No	3616, 3617
13	Fixed stop clamping torque reached	Yes	No	3616, 3617
14	Travel to fixed stop active	Yes	No	3616, 3617

Dependency: Refer to: r2684

Note: For bit 02, 04, 05, 06, 07:

This signals designate the state after jerk limiting.

For bits 08, 09:

These signals are generated in the "closed-loop position control" function module.

r2684.0...15 CO/BO: EPOS status word 2 / POS_ZSW2

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 3646
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays status word 2 for the basic positioner (EPOS).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Search for reference active	Active	Not active	3612
01	Flying referencing active	Active	Not active	3614
02	Referencing active	Active	Not active	-
03	Printing mark outside outer window	Yes	No	3614
04	Axis accelerating	Yes	No	3635
05	Axis decelerating	Yes	No	3635
06	Jerk limiting active	Yes	No	3635
07	Activate correction	Yes	No	3635
08	Following error in tolerance	Yes	No	4025
09	Modulo correction active	Yes	No	-
10	Target position reached	Yes	No	4020

11	Reference point set	Yes	No	3612, 3614, 3630
12	Acknowledgment traversing block activated	Yes	No	3616, 3620
13	STOP cam minus active	Yes	No	3630
14	STOP cam plus active	Yes	No	3630
15	Traversing command active	Yes	No	3635

Note: For bit 02:

The "referencing active" signal is an OR logic operation of "search for reference active" and "flying referencing active".

For bit 00 ... 07 and 11 ... 14:

These signals are generated in the function module "basic positioner".

For bit 08:

The signal is generated in the "closed-loop position control" function module.

r2685 CO: EPOS corrective value / Correction value

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 3635
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [LU]	- [LU]	- [LU]

Description: Displays the corrective value for the position actual value.

Dependency: Refer to: r2684

Note: As standard, the following BICO interconnection is established: CI: p2513 = r2685

Using this value, for example, modulo corrections are carried out.

r2686[0...1] CO: EPOS force limit effective / F_limit eff

SERVO (EPOS, Lin), SERVO_AC (EPOS, Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3616, 3617
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the effective force limiting.

r2686[0]:

Displays the effective upper force limiting when traversing to fixed stop (referred to CI: p1522, CI: p1523).

r2686[1]:

Displays the effective lower force limiting when traversing to fixed stop (referred to CI: p1522, CI: p1523).

Index:
[0] = Upper
[1] = Lower

Dependency: Refer to: p1520, p1521, p1522, p1523, r2676

Note: As standard, the following BICO interconnections are established:

CI: p1528 = r2686[0]

CI: p1529 = r2686[1]

r2686[0...1] CO: EPOS torque limiting effective / M_limit eff

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3616, 3617
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the effective torque limiting.

r2686[0]:

Displays the effective upper torque limiting when traversing to fixed stop (referred to CI: p1522, CI: p1523).

r2686[1]:

Displays the effective lower torque limiting when traversing to fixed stop (referred to CI: p1522, CI: p1523).

Index: [0] = Upper
[1] = Lower

Dependency: Refer to: p1520, p1521, p1522, p1523, r2676

Note: As standard, the following BICO interconnections are established:

CI: p1528 = r2686[0]

CI: p1529 = r2686[1]

r2687 CO: EPOS force setpoint / F_set

SERVO (EPOS, Lin), SERVO_AC (EPOS, Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3616, 3617
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [N]	- [N]	- [N]

Description: Displays the effective force setpoint when reaching the fixed stop (referred to CI: p1522, CI: p1523).

Dependency: Refer to: p1520, p1521, p1522, p1523, r2676

r2687 CO: EPOS torque setpoint / M_set

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3616, 3617
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Displays the effective torque setpoint when reaching the fixed stop (referred to CI: p1522, CI: p1523).

Dependency: Refer to: p1520, p1521, p1522, p1523, r2676

p2688 EPOS position feedback signal tolerance window / Pos_FS tol

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [LU]	2147482647 [LU]	40 [LU]

Description: Sets the tolerance window for the position feedback signal.

If, for a positioning operation, the actual value (r2521) lies within this tolerance window of the target position, then the traversing block number is displayed at connector output r2689.

Dependency: This parameter is only active when the "Position feedback signal" function is activated (p2584.0 = 1).

Refer to: p2584, r2689

r2689[0...1] CO: EPOS position feedback signal display / Pos_FS display

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 3616
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output for the traversing block number for position feedback signal.

Here, the block number of the traversing blocks is displayed bit-coded, whose absolute target positions lie within the tolerance window around the actual position.

Index: [0] = Position feedback signal low
[1] = Position feedback signal high

Dependency: This parameter is only active when the "Position feedback signal" function is activated (p2584.0 = 1).

Refer to: p2584, p2688

Note: CO: r2689[0]:

Bit-coded display of traversing block numbers 0 to 31

CO: r2689[1]:

Bit-coded display of traversing block numbers 32 to 63

p2690 CO: EPOS position fixed setpoint / Pos fixed value

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), U, T	**Calculated:** -	**Access level:** 1
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 3618
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-2147482648 [LU]	2147482647 [LU]	0 [LU]

Description: Sets a fixed setpoint for the position.

Dependency: Refer to: p2642, p2648

Note: As standard, the following BICO interconnection is established: CI: p2642 = r2690

p2691 CO: EPOS velocity fixed setpoint / v fixed value

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 3618
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1 [1000 LU/min]	40000000 [1000 LU/min]	600 [1000 LU/min]

Description: Sets a fixed setpoint for the velocity.

Dependency: Refer to: p2643

Note: As standard, the following BICO interconnection is established: CI: p2643 = r2691

p2692 CO: EPOS acceleration override, fixed setpoint / a_over fixed val

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3618
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.100 [%]	100.000 [%]	100.000 [%]

Description: Sets a fixed setpoint for the acceleration override.

Dependency: Refer to: p2572, p2644

Note: As standard, the following BICO interconnection is established: CI: p2644 = r2692

The percentage value refers to the maximum acceleration (p2572).

p2693 CO: EPOS deceleration override, fixed setpoint / -a_over fixed val

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: C2(17), U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3618
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.100 [%]	100.000 [%]	100.000 [%]

Description: Sets a fixed setpoint for the deceleration override.

Dependency: Refer to: p2573, p2645

Note: As standard, the following BICO interconnection is established: CI: p2645 = r2693

The percentage value refers to the maximum deceleration (p2573).

p2694 CI: LR supplementary setpoint position / Suppl setp pos

SERVO (EPOS, Pos ctrl), VECTOR (EPOS, Pos ctrl), SERVO_AC (EPOS, Pos ctrl), VECTOR_AC (EPOS, Pos ctrl)

Can be changed: C2(25), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the supplementary position setpoint of the position controller for

Dependency: Refer to: r2665, r2696

Note: When the function module "basic positioner" (r0108.4 = 1) is activated, the following BICO interconnection is established:

BI: p2694 = r2696

p2695 CI: LR supplementary setpoint velocity / Suppl setp vel

SERVO (EPOS, Pos ctrl), VECTOR (EPOS, Pos ctrl), SERVO_AC (EPOS, Pos ctrl), VECTOR_AC (EPOS, Pos ctrl)

Can be changed: C2(25), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the supplementary velocity setpoint of the position controller.

Dependency: Refer to: r2666

Note: When the function module "basic positioner" (r0108.4 = 1) is activated, the following BICO interconnection is established:

BI: p2695 = r2697

r2696 CO: EPOS position setpoint fine resolution / s_set fine res

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [LU]	- [LU]	- [LU]

Description: Display and connector output for the actual absolute position setpoint (floating point component).

Dependency: Refer to: r2665, p2694

Note: As standard, the following BICO interconnection is established:

CI: p2694 = r2696

r2697 CO: EPOS velocity setpoint fine resolution / v_set fine res

SERVO (EPOS), VECTOR (EPOS), SERVO_AC (EPOS), VECTOR_AC (EPOS)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Basic positioner	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [1000 LU/min]	- [1000 LU/min]	- [1000 LU/min]

Description: Display and connector output for actual velocity setpoint (floating point component).

Dependency: Refer to: r2666

Note: As standard, the following BICO interconnection is established:

CI: p2695 = r2697

r2700 CO: Reference speed/reference frequency / n_ref/f_ref

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, TM41, ENC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output for the reference quantity for speed and frequency (p2000).

All speeds or frequencies specified as relative value are referred to this reference quantity.

The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

This parameter has the unit rpm.

The following applies:

Reference frequency (in Hz) = reference speed (in rpm) / 60

Dependency: Refer to: p2000

Note: This BICO parameter provides the numerical value of the reference quantity p2000 as a connector output for interconnection with Drive Control Chart (DCC). The numerical value can be adopted unchanged from this connector output in DCC.

This BICO parameter is not suitable for interconnecting for cyclic communication.

r2700 CO: Reference velocity/reference frequency actual / v_ref/f_ref act

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output for the actual reference quantity for velocity and frequency.

All velocities or frequencies specified as relative value are referred to this reference quantity.

The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

The following applies:

Reference frequency (in Hz) = reference velocity (in m/min) / 60

Dependency: Refer to: p2000

Note: This parameter represents the numerical value of the reference quantity in the currently selected units and is only available for interconnection with Drive Control Chart (DCC).

If a BICO interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.

Example 1:

The signal of an analog input (e.g. r4055[0]) is connected to a velocity setpoint (e.g. p1070[0]). The actual percentage input value is cyclically converted into the absolute velocity setpoint using the reference velocity (p2000).

Example 2:

The setpoint from PROFIBUS (r2050[1]) is connected to a velocity setpoint (e.g. p1070[0]). The actual input value is cyclically converted into a percentage value via the pre-specified scaling 4000 hex. This percentage value is converted to the absolute velocity setpoint via reference velocity (p2000).

r2700 CO: Reference frequency / f_ref

A_INF, R_INF, B_INF

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output of the actual reference quantity for the frequency (p2000).

All frequencies specified as relative value are referred to this reference quantity.

The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

This parameter has the unit Hz.

Dependency: Refer to: p2000

Note: This BICO parameter provides the numerical value of the reference quantity p2000 as a connector output for interconnection with Drive Control Chart (DCC). The numerical value can be adopted unchanged from this connector output in DCC.

This BICO parameter is not suitable for interconnecting for cyclic communication.

r2700 CO: Reference frequency actual / f_ref act

S_INF

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output of the actual reference quantity for the frequency (p2000).

All frequencies specified as relative value are referred to this reference quantity.

The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

This parameter has the unit Hz.

Dependency: Refer to: p2000

Note: This BICO parameter provides the numerical value of the reference quantity p2000 as a connector output for interconnection with Drive Control Chart (DCC). The numerical value can be adopted unchanged from this connector output in DCC.

This BICO parameter is not suitable for interconnecting for cyclic communication.

r2700 CO: Reference velocity/reference frequency actual / v_ref/f_ref act

ENC (Lin_enc)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output for the actual reference quantity for velocity and frequency.

All velocities or frequencies specified as relative value are referred to this reference quantity.

The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

The following applies:

Reference frequency (in Hz) = reference velocity (in m/min) / 60

Dependency: Refer to: p2000

Note: This BICO parameter provides the numerical value of the reference quantity p2000 as a connector output for interconnection with Drive Control Chart (DCC). The numerical value can be adopted unchanged from this connector output in DCC.

This BICO parameter is not suitable for interconnecting for cyclic communication.

r2701 CO: Reference voltage / Reference voltage

HLA

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output of the reference quantity for voltages p2001.

All voltages specified as relative value are referred to this reference quantity.

The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

This parameter has the unit V.

Dependency: Refer to: p2001

Note: This BICO parameter provides the numerical value of the reference quantity p2001 as a connector output for interconnection with Drive Control Chart (DCC). The numerical value can be adopted unchanged from this connector output in DCC.

This BICO parameter is not suitable for interconnecting for cyclic communication.

r2701 CO: Reference voltage / Reference voltage

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM41

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Connector output of the reference quantity for voltages p2001.

All voltages specified as relative value are referred to this reference quantity.

The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

This parameter has the unit Vrms.

Dependency: Refer to: p2001

Note: This BICO parameter provides the numerical value of the reference quantity p2001 as a connector output for interconnection with Drive Control Chart (DCC). The numerical value can be adopted unchanged from this connector output in DCC.

This BICO parameter is not suitable for interconnecting for cyclic communication.

r2702 CO: Reference current / Reference current

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM41

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Connector output of the reference quantity for currents p2002.

All currents specified as relative value are referred to this reference quantity.

The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

This parameter has the unit Arms.

Dependency: Refer to: p2002

Note: This BICO parameter provides the numerical value of the reference quantity p2002 as a connector output for interconnection with Drive Control Chart (DCC). The numerical value can be adopted unchanged from this connector output in DCC.

This BICO parameter is not suitable for interconnecting for cyclic communication.

r2703 CO: Reference torque / Reference torque

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, TM41

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Connector output of the reference quantity p2003 for torque (r0108.12 = 0) or force (r0108.12 = 1).

All torques specified as relative values (r0108.12 = 0) or forces (r0108.12 = 1) are referred to this reference quantity.

The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

The unit of this parameter is the same as the unit selected for p2003.

Dependency: p0505, r0108.12

Refer to: p2003

Note: This BICO parameter provides the numerical value of the reference quantity p2003 in the currently selected unit as a connector output for interconnection with Drive Control Chart (DCC). The numerical value can be adopted unchanged from this connector output in DCC.

This BICO parameter is not suitable for interconnecting for cyclic communication.

r2703 CO: Reference force actual / Ref force cur

SERVO (Lin), HLA, SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the actual reference quantity for forces.

All forces specified as relative value are referred to this reference quantity.

The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

Dependency: p0505, r0108.12

Refer to: p2003

Note: This BICO parameter represents the numerical value of the reference quantity in the currently selected units and is only available for interconnection with Drive Control Chart (DCC).

This BICO parameter is not suitable for interconnecting for cyclic communication.

If a BICO interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.

Example:

The actual value of the total force (r0079[0]) is connected to a test socket (e.g. p0771[0]). The actual force is cyclically converted into a percentage of the reference force (p2003) and output according to the parameterized scaling.

r2704 CO: Reference power / Reference power

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM41

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Connector output of the reference quantity for powers p2004.

All power ratings specified as relative value are referred to this reference quantity.

The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

The unit of this parameter is the same as the unit selected for p2004.

Dependency: This value is calculated as voltage x current for the infeed and as torque x speed for closed-loop controls.

Refer to: r2004

Note: This BICO parameter provides the numerical value of the reference quantity p2004 in the currently selected unit as a connector output for interconnection with Drive Control Chart (DCC). The numerical value can be adopted unchanged from this connector output in DCC.

This BICO parameter is not suitable for interconnecting for cyclic communication.

The reference power is calculated as follows:

- 2 * Pi * reference speed / 60 * reference torque (motor)
- reference voltage * reference current * root(3) (infeed)

r2705 CO: Reference angle / Reference angle

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM41

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Connector output of the reference quantity for angles p2005.

All angles specified as relative value are referred to this reference quantity.

The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

This parameter has the unit degree.

Dependency: Refer to: p2005

Note: This BICO parameter provides the numerical value of the reference quantity p2005 as a connector output for interconnection with Drive Control Chart (DCC). The numerical value can be adopted unchanged from this connector output in DCC.

This BICO parameter is not suitable for interconnecting for cyclic communication.

r2706 CO: Reference temperature / Reference temp

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM120, TM150

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Connector output of the reference quantity for temperatures.

All temperatures specified as relative value are referred to this reference quantity.

The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

This parameter has the unit degree Celsius.

Note: This BICO parameter provides the numerical value of the reference quantity for the temperature as a connector output for interconnection with Drive Control Chart (DCC). The numerical value can be adopted unchanged from this connector output in DCC.

This BICO parameter is not suitable for interconnecting for cyclic communication.

r2707 CO: Reference acceleration / Ref accel

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, TM41

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Connector output of the reference quantity for accelerations p2007.

All acceleration rates specified as relative value are referred to this reference quantity.

The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

The unit of this parameter is the same as the unit selected for p2007.

Dependency: r0108.12, p0505

Refer to: p2007

Note: This BICO parameter provides the numerical value of the reference quantity p2007 as a connector output for interconnection with Drive Control Chart (DCC). The numerical value in the currently selected unit can be adopted unchanged from this connector output in DCC.

This BICO parameter is not suitable for interconnecting for cyclic communication.

p2720[0...n] Load gear configuration / Load gear config

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(1, 4)	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Sets the configuration for position tracking of a load gear.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Load gear activate position tracking	Yes	No	-
01	Axis type	Linear axis	Rotary axis	-
02	Load gear reset position	Yes	No	-

Note: For the following events, the non-volatile, saved position values are automatically reset:

- when an encoder replacement has been identified.
- when changing the configuration of the Encoder Data Set (EDS).
- when adjusting the absolute encoder again

p2721[0...n] Load gear rotary absolute encoder revolutions virtual / Abs rot rev

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(1, 4)	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	4194303	0

Description: Sets the number of rotations that can be resolved for a rotary absolute encoder with activated position tracking of the load gear.

Dependency: This parameter is only of significance for an absolute encoder (p0404.1 = 1) with activated position tracking of the load gear (p2720.0 = 1).

Note: The resolution that is set must be able to be represented using r2723.

For rotary axes/modulo axes, the following applies:

This parameter is pre-set with p0421 when activating position tracking and can be changed.

For linear axes, the following applies:

This parameter is pre-assigned with p0421 when activating position tracking, expanded by 6 bits for multiturn information (maximum number of overflows) and cannot be changed.

p2722[0...n] Load gear position tracking tolerance window / Pos track tol

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(1, 4)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00	4294967300.00	0.00

Description: Sets a tolerance window for position tracking.

After the system is switched on, the difference between the saved position and the actual position is determined, and depending on this, the following is initiated:

Difference within the tolerance window --> The position is reproduced as a result of the encoder actual value.

Difference outside the tolerance window --> An appropriate message is output.

Dependency: Refer to: F07449

Caution: Rotation, for example through a complete encoder range is not detected.

Note: The value is entered in integer (complete) encoder pulses.

For p2720.0 = 1, the value is automatically pre-assigned quarter of the encoder range.

Example:

Quarter of the encoder range = (p0408 * p0421) / 4

It is possible that the tolerance window may not be able to be precisely set due to the data type (floating point number with 23 bit mantissa).

r2723[0...n] CO: Load gear absolute value / Load gear abs_val

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4010, 4704
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the absolute value after the load gear.

Notice: The encoder position actual value must be requested using the encoder control word Gn_STW.13.

Note: The increments are displayed in the format the same as r0483.

r2724[0...n] CO: Load gear position difference / Load gear pos diff

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Integer32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the position difference before the load gear between switching off and switching on.

Note: The increments are displayed in the same format as for r0483/r2723.

If the measuring gear of the motor encoder is not activated, the position difference should be read in encoder increments.

If the measuring gear of the motor encoder is activated, the position difference is converted using the measuring gear factor.

p2730[0...3] BI: LR pos. actual value preprocessing activate neg. corr. (edge) / ActV_prep neg corr

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: C2(25), T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 4010, 4015
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the function "activate position actual value preprocessing, negative corrective value (edge)".

0/1 signal:

The correction value available via CI: p2513 is negated and activated.

Index:
[0] = Position control
[1] = Encoder 1
[2] = Encoder 2
[3] = Encoder 3

Dependency: Refer to: p2502, p2513, r2684

p2733[0...n] CO: LR encoder adjustment DDS / Enc_adjust DDS

SERVO (Pos ctrl), VECTOR (Pos ctrl), SERVO_AC (Pos ctrl), VECTOR_AC (Pos ctrl)

Can be changed: C2(25), T	**Calculated:** -	**Access level:** 4
Data type: Unsigned8	**Dyn. index:** EDS, p0140	**Func. diagram:** 4010
P-Group: Closed loop position control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Number of the drive data set when adjusting the absolute encoder.

Dependency: Refer to: p0404, p2507, p2525

Note: This DDS number is only relevant for absolute encoders.

The drive determines the value when adjusting the absolute encoder and the user should not change it.

DDS: Drive Data Set

p2810[0...1] BI: AND logic operation inputs / AND inputs

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2634
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal sources for the inputs of the AND logic operation.

Dependency: Refer to: r2811

Note: [0]: AND logic operation, input 1 --> the result is displayed in r2811.0.

[1]: AND logic operation, input 2 --> the result is displayed in r2811.0.

r2811.0 CO/BO: AND logic operation result / AND result

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2634
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the result of the AND logic operation.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	AND condition fulfilled	Yes	No	-

Dependency: Refer to: p2810

p2816[0...1] BI: OR logic operation inputs / OR inputs

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2634
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal sources for the inputs of the OR logic operation.

Dependency: Refer to: r2817

Note: [0]: OR logic operation, input 1 --> the result is displayed in r2817.0.

[1]: OR logic operation, input 2 --> the result is displayed in r2817.0.

r2817.0 CO/BO: OR logic operation result / OR result

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2634
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the result of the OR logic operation.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	OR condition fulfilled	Yes	No	-

Dependency: Refer to: p2816

p2822[0...3] BI: NOT logic operation input / NOT input

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2634
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal sources for the inputs of the NOT logic operations.

Index:
[0] = NOT logic operation 0 input
[1] = NOT logic operation 1 input
[2] = NOT logic operation 2 input
[3] = NOT logic operation 3 input

Dependency: Refer to: r2823

Note:
[0]: NOT logic operation 0 --> result is displayed in r2823.0.
[1]: NOT logic operation 1 --> result is displayed in r2823.1.
[2]: NOT logic operation 2 --> result is displayed in r2823.2.
[3]: NOT logic operation 3 --> the result is displayed in r2823.3.

r2823.0...3 CO/BO: NOT logic operation result / NOT result

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2634
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the results of the NOT logic operations.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	NOT logic operation 0 result	High	Low	-
01	NOT logic operation 1 result	High	Low	-
02	NOT logic operation 2 result	High	Low	-
03	NOT logic operation 3 result	High	Low	-

Dependency: Refer to: p2822

p2900[0...n] CO: Fixed value 1 [%] / Fixed value 1 [%]

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 1021
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-10000.00 [%]	10000.00 [%]	0.00 [%]

Description: Setting and connector output for a fixed percentage value.

Dependency: Refer to: p2901, r2902, p2930

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

Note: The value can be used to interconnect a scaling function (e.g. scaling the main setpoint).

p2900 CO: Fixed value 1 [%] / Fixed value 1 [%]

A_INF (Dyn. grid support, Line transf, Suppl cl-loop ctrl), R_INF (Dyn. grid support, Line transf, Suppl cl-loop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 1021
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-10000.00 [%]	10000.00 [%]	0.00 [%]

Description: Setting and connector output for a fixed percentage value.

Dependency: Refer to: p2901, r2902, p2930

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

Note: The value can be used to interconnect a scaling function (e.g. scaling the main setpoint).

p2901[0...n] CO: Fixed value 2 [%] / Fixed value 2 [%]

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 1021
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-10000.00 [%]	10000.00 [%]	0.00 [%]

Description: Setting and connector output for a fixed percentage value.

Dependency: Refer to: p2900, p2930

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

Note: The value can be used to interconnect a scaling function (e.g. scaling of the supplementary setpoint)

p2901 CO: Fixed value 2 [%] / Fixed value 2 [%]

A_INF (Dyn. grid support, Line transf, Suppl cl-loop ctrl), R_INF (Dyn. grid support, Line transf, Suppl cl-loop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 1021
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-10000.00 [%]	10000.00 [%]	0.00 [%]

Description: Setting and connector output for a fixed percentage value.

Dependency: Refer to: p2900, p2930

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

Note: The value can be used to interconnect a scaling function (e.g. scaling of the supplementary setpoint)

r2902[0...14] CO: Fixed values [%] / Fixed values [%]

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 1021
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Display and connector output for frequently used percentage values.

Index:
[0] = Fixed value +0 %
[1] = Fixed value +5 %
[2] = Fixed value +10 %
[3] = Fixed value +20 %
[4] = Fixed value +50 %
[5] = Fixed value +100 %
[6] = Fixed value +150 %
[7] = Fixed value +200 %
[8] = Fixed value -5 %
[9] = Fixed value -10 %
[10] = Fixed value -20 %
[11] = Fixed value -50 %
[12] = Fixed value -100 %
[13] = Fixed value -150 %
[14] = Fixed value -200 %

Dependency: Refer to: p2900, p2901, p2930

Note: The signal sources can, for example, be used to interconnect scalings.

p2930[0...n] CO: Fixed value F [N] / Fixed value F [N]

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Setpoints	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
-100000.00 [N]	100000.00 [N]	0.00 [N]

Description: Setting and connector output for a fixed force value.

Dependency: Refer to: p2900, p2901, r2902

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

Note: The value can, for example, be used to interconnect a supplementary force.

p2930[0...n] CO: Fixed value M [Nm] / Fixed value M [Nm]

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 1021
P-Group: Setpoints	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
-100000.00 [Nm]	100000.00 [Nm]	0.00 [Nm]

Description: Setting and connector output for a fixed torque value.

Dependency: Refer to: p2900, p2901, r2902

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

Note: The value can, for example, be used to interconnect a supplementary torque.

p2930[0...n] CO: Fixed value F [N] / Fixed value F [N]

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 1021
	P-Group: Setpoints	**Unit group:** 8_1	**Unit selection:** p0505
	Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-100000.00 [N]	100000.00 [N]	0.00 [N]

Description: Setting and connector output for a fixed force value.

Dependency: Refer to: p2900, p2901, r2902

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

Note: The value can, for example, be used to interconnect a supplementary force.

r2969[0...6] Flux model value display / Psi_mod val displ

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: ASM, PMSM, SESM, REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the values of the direct access flux model for the synchronous reluctance motor (RESM) for diagnostic purposes.

Valid values are only displayed when the pulses are inhibited.

For index [0]:

Displays the entered direct axis current id in Arms:

For index [1, 2, 3]:

Displays the saturation curves of the direct axis flux psid(id, iq):

- r2969[1]: flux in Vsrms with respect to the direct axis current for iq = 0
- r2969[2]: flux in Vsrms with respect to the direct axis current for iq = 0.5 * p2950
- r2969[3]: flux in Vsrms with respect to the direct axis current for iq = p2950

For index [4, 5, 6]:

Displays the relative error of the current inversion (id(psid, iq) - id) / p2950:

- r2969[4]: error with respect to direct axis current for iq = 0
- r2969[5]: error with respect to direct axis current for iq = 0.5 * p2950
- r2969[6]: error with respect to direct axis current for iq = p2950

Index:
[0] = d-current
[1] = d-flux iq0
[2] = d-flux iq1
[3] = d-flux iq2
[4] = d-current error iq0
[5] = d-current error iq1
[6] = d-current error iq2

Note: RESM: reluctance synchronous motor (synchronous reluctance motor)

p3011[0...n] MotID current control adaptation lower starting point identified / I_adapt low ident

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Arms]	6000.00 [Arms]	0.00 [Arms]

Description: Starting point of the current-dependent current controller adaptation determined by the motor data identification routine.

This value can be changed after the identification and accepted in p0391 with p1910/p1960 = -3.

Dependency: Refer to: p0356, p0391, p0392, p0393, r1934, r1935, p1960

p3012[0...n] MotID current control adaptation upper starting point identified / I_adapt up ident

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Arms]	6000.00 [Arms]	0.00 [Arms]

Description: Starting point of the current-dependent current controller adaptation for the upper point determined by the motor data identification routine.

This value can be changed after the identification and accepted in p0392 with p1910/p1960 = -3.

Dependency: Refer to: p0356, p0391, p0392, p0393, r1934, r1935, p1960

p3013[0...n] MotId current controller adaptation P gain identified / I_adapt Kp ident

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	1000.00 [%]	0.00 [%]

Description: Factor for the P gain of the current controller in the adaptation range determined by the motor data identification routine. The value is referred to p1715.

This value can be changed after the identification and accepted in p0393 with p1910/p1960 = -3.

Dependency: Refer to: p0356, p0391, p0392, p0393, r1934, r1935, p1960

p3016 MotId torque constant identified / kT ident

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** 28_1	**Unit selection:** p0100
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Nm/A]	100.00 [Nm/A]	0.00 [Nm/A]

Description: Torque constant for the synchronous motor determined by the motor data identification.

This torque constant can be changed after the identification and accepted in p0316 with p1910/p1960 = -3.

Dependency: Refer to: p0316, r0334, r1937, p1960

p3016 MotId force constant identified / kT ident

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** 29_1	**Unit selection:** p0100
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [N/Arms]	1000.00 [N/Arms]	0.00 [N/Arms]

Description: Force constant for a synchronous linear motor determined by the motor data identification.

This force constant can be changed after the identification and is accepted in p0316 with p1910/p1960 = -3.

Dependency: Refer to: p0316, r0334, r1937, p1960

p3017 MotId voltage constant identified / kE ident

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [Vrms]	10000.0 [Vrms]	0.0 [Vrms]

Description: Voltage constant for a synchronous motor determined by the motor data identification.

This voltage constant can be changed after the identification and accepted in p0317 with p1910/p1960 = -3.

Units for rotating synchronous motors: Vrms/(1000 rpm), phase-to-phase

Dependency: Refer to: p0317, r1938, p1960

p3017 MotId voltage constant identified / kE ident

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [Vrms s/m]	1000.0 [Vrms s/m]	0.0 [Vrms s/m]

Description: Voltage constant for a synchronous linear motor determined by the motor data identification.

This voltage constant can be changed after the identification and accepted in p0317 with p1910/p1960 = -3.

Units for linear synchronous motors: Vrms s/m, phase

Dependency: Refer to: p0317, r1938, p1960

p3020 MotId magnetizing current identified / I_mag ident

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [Arms]	5000.000 [Arms]	0.000 [Arms]

Description: Magnetizing current for an induction motor determined by the motor data identification.

This magnetizing current can be changed after the identification and accepted in p0320 with p1910/p1960 = -3.

Dependency: Refer to: p0320, r0331, p1910, r1948, p1960

p3027 MotId optimum load angle identified / phi_load opt ident

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [°]	135.0 [°]	0.0 [°]

Description: Optimum load angle for a synchronous motor determined by the motor data identification.

This optimum load angle can be changed after the identification and accepted in p0327 with p1910/p1960 = -3.

Dependency: Refer to: p0327, r1947, p1960

p3028 MotId reluctance torque constant identified / kT_reluct ident

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000.00 [mH]	1000.00 [mH]	0.00 [mH]

Description: Reluctance torque constant for a synchronous motor determined by the motor data identification.

This reluctance torque constant can be changed after the identification and accepted in p0328 with p1910/p1960 = -3.

Dependency: Refer to: p0328, r1939, p1960

p3028 MotId reluctance force constant identified / kT_reluct ident

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000.00 [mH]	1000.00 [mH]	0.00 [mH]

Description: Reluctance force constant for a synchronous motor determined by the motor data identification.

This reluctance force constant can be changed after the identification and accepted in p0328 with p1910/p1960 = -3.

Dependency: Refer to: p0328, r1939, p1960

p3030 ChId factor plane adaptation positive / ChId pl_adap pos

HLA

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
10.00 [%]	200.00 [%]	100.00 [%]

Description: Sets the factor for the plane compensation in the positive direction from the characteristic identification.

This value corresponds to p1830 of the drive data set selected for the identification.

Dependency: Refer to: p1830

p3030 MotId angular commutation offset identified / Ang_com offset

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-180.00 [°]	180.00 [°]	0.00 [°]

Description: Angular commutation offset for a synchronous motor determined by the motor data identification.

This angular commutation offset can be changed after the identification and accepted in p0431 with p1910/p1960 = -3.

Dependency: Refer to: p0431, p1910, p1960, r1984

p3031 ChId factor plane adaptation negative / ChId pl_adap neg

HLA

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
10 [%]	200 [%]	100 [%]

Description: Sets the factor for the plane compensation in the negative direction from the characteristic identification.

This value corresponds to p1831 of the drive data set selected for the identification.

Dependency: Refer to: p1831

p3031 MotId encoder inversion actual value identified / EncInvActVal ident

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Inversion of the encoder actual value determined by the motor data identification.

This inversion can be changed after the identification and accepted in p0410 with p1910/p1960 = -3.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Invert speed actual value	Yes	No	4710, 4711, 4715
01	Invert position actual value	Yes	No	4704

Dependency: Refer to: p0410, p1910, p1960

p3031 MotId encoder inversion actual value identified / EncInvActVal ident

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Inversion of the encoder actual value determined by the motor data identification.

This inversion can be changed after the identification and accepted in p0410 with p1910/p1960 = -3.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Invert velocity actual value	Yes	No	4710, 4711, 4715
01	Invert position actual value	Yes	No	4704

Dependency: Refer to: p0410, p1910, p1960

p3033 ChId transition point compensation Q1 positive zero range / ChId tr pt Q1 pos

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.01 [%]	95.00 [%]	0.01 [%]

Description: Displays the flow rate Q for point 1 positive (zero range) of the transition point compensation from the characteristic identification.

This value corresponds to p1833 of the drive data set selected for the identification.

Dependency: Refer to: r1833, p1833

p3034 ChID transition point compensation U1 positive zero range / ChId tr pt U1 pos

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	95.00 [%]	0.00 [%]

Description: Displays the voltage U for point 1 positive (zero range) of the transition point compensation from the characteristic identification.

This value corresponds to p1834 of the drive data set selected for the identification.

Dependency: Refer to: p1834

p3035 ChID transition point compensation rounding 1 pos. zero range / ChId TrPtRnd 1 pos

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	30.00 [%]	0.00 [%]

Description: Displays the rounding for point 1 positive (zero range) of the transition point compensation from the characteristic identification.

This value corresponds to p1835 of the drive data set selected for the identification.

Dependency: Refer to: p1835

p3036 ChId transition point compensation Q1 negative zero range / ChId tr pt Q1 neg

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.01 [%]	95.00 [%]	0.01 [%]

Description: Displays the flow rate Q for point 1 negative (zero range) of the transition point compensation from the characteristic identification.

This value corresponds to p1836 of the drive data set selected for the identification.

Dependency: Refer to: r1836, p1836

p3037 ChId transition point compensation U1 negative zero range / ChId tr pt U1 neg

HLA	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [%]	95.00 [%]	0.00 [%]

Description: Displays the voltage U for point 1 negative (zero range) of the transition point compensation from the characteristic identification.

This value corresponds to p1837 of the drive data set selected for the identification.

Dependency: Refer to: r1837, p1837

p3038 ChId transition point compensation rounding 1 neg. zero range / ChId TrPtRnd 1 neg

HLA	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [%]	30.00 [%]	0.00 [%]

Description: Displays the rounding for point 1 negative (zero range) of the transition point compensation from the characteristic identification.

This value corresponds to p1838 of the drive data set selected for the identification.

Dependency: Refer to: r1838, p1838

p3039 ChId transition point compensation Q2 positive / ChId tr pt Q2 pos

HLA	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.02 [%]	95.00 [%]	10.00 [%]

Description: Displays the flow rate Q for point 2 positive of the transition point compensation from the characteristic identification.

This value corresponds to p1839 of the drive data set selected for the identification.

Dependency: Refer to: p1839

p3040 ChId transition point compensation U2 positive / ChId tr pt U2 pos

HLA	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [%]	95.00 [%]	10.00 [%]

Description: Displays the voltage U for point 2 positive of the transition point compensation from the characteristic identification.

This value corresponds to p1840 of the drive data set selected for the identification.

Dependency: Refer to: p1840

p3041 ChId transition point compensation rounding 2 positive / ChId TrPtRnd 2 pos

HLA

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	30.00 [%]	0.00 [%]

Description: Displays the rounding for point 2 positive of the transition point compensation from the characteristic identification.
This value corresponds to p1841 of the drive data set selected for the identification.

Dependency: Refer to: r1841, p1841

p3041 MotId moment of inertia identified / M_inertia ident

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** 25_1	**Unit selection:** p0100
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000000 [kgm²]	100000.000000 [kgm²]	0.000000 [kgm²]

Description: Motor moment of inertia determined by the motor data identification.
This motor moment of inertia can be changed after the identification and accepted in p0341 with p1910/p1960 = -3.

Dependency: Refer to: p0341, p1960, r1969

p3041 MotId motor mass identified / Mot mass ident

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** 27_1	**Unit selection:** p0100
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000000 [kg]	10000.000000 [kg]	0.000000 [kg]

Description: Mass of the motor determined by the motor data identification.
This mass can be changed after the identification and accepted in p0341 with p1910/p1960 = -3.

Dependency: Refer to: p0341, p1960, r1969

p3042 ChId transition point compensation Q2 negative / ChId tr pt Q2 neg

HLA

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	95.00 [%]	0.00 [%]

Description: Displays the flow rate Q for point 2 negative of the transition point compensation from the characteristic identification.
This value corresponds to p1842 of the drive data set selected for the identification.

Dependency: Refer to: p1842

p3042 MotId load moment of inertia identified / Load mom ident

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** 25_1	**Unit selection:** p0100
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [kgm²]	- [kgm²]	- [kgm²]

Description: Load moment of inertia determined by the motor data identification.

This load moment of inertia can be changed after the identification and accepted in p1498 with p1910/p1960 = -3.

Dependency: Refer to: p0342, p1498, p1960, r1969

Note: For p1910/p1960 = -3, p0342 is set to 1 (ratio between the total and motor).

p3042 MotId load mass identified / Load mass ident

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** 27_1	**Unit selection:** p0100
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [kg]	- [kg]	- [kg]

Description: Load mass determined by the motor data identification.

This load mass can be changed after the identification and accepted in p1498 with p1910/p1960 = -3.

Dependency: Refer to: p0342, p1498, p1960, r1969

Note: For p1910/p1960 = -3, p0342 is set to 1 (ratio between the total and motor).

p3043 ChId transition point compensation U2 negative / ChId tr pt U2 neg

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	95.00 [%]	0.00 [%]

Description: Displays the voltage U for point 2 negative of the transition point compensation from the characteristic identification.

This value corresponds to p1843 of the drive data set selected for the identification.

Dependency: Refer to: p1843

p3044 ChId transition point compensation rounding 2 negative / ChId TrPtRnd 2 neg

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	30.00 [%]	0.00 [%]

Description: Displays the rounding for point 2 negative of the transition point compensation from the characteristic identification.

This value corresponds to p1844 of the drive data set selected for the identification.

Dependency: Refer to: p1844

p3045 ChId transition point compensation Q3 positive saturation / ChId TrPt Q3 pos S

HLA

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.20 [%]	100.00 [%]	100.00 [%]

Description: Displays the flow rate Q for point 3 positive (saturation) of the transition point compensation from the characteristic identification.

This value corresponds to p1845 of the drive data set selected for the identification.

Dependency: Refer to: p1845

p3045 MotId force characteristic kT1 identified / kT1 ident

SERVO (Ext M_ctrl, Lin), SERVO_AC (Ext M_ctrl, Lin), SERVO_I_AC (Ext M_ctrl, Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-340.28235E36 [N/Arms]	340.28235E36 [N/Arms]	0.00 [N/Arms]

Description: Coefficient kT1 for the force characteristic for a synchronous linear motor determined by the motor data identification.

This coefficient can be changed after the identification and accepted in p0645 with p1910/p1960 = -3.

Dependency: Refer to: p0645, p0646, p0647, p0648, p1960, p3046, p3047, p3048

p3045 MotId torque characteristic kT1 identified / kT1 ident

SERVO (Ext M_ctrl), SERVO_AC (Ext M_ctrl), SERVO_I_AC (Ext M_ctrl)

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-340.28235E36 [Nm/A]	340.28235E36 [Nm/A]	0.00 [Nm/A]

Description: Coefficient kT1 for the torque characteristic for a synchronous motor determined by the motor data identification.

This coefficient can be changed after the identification and accepted in p0645 with p1910/p1960 = -3.

Dependency: Refer to: p0645, p0646, p0647, p0648, p1960, p3046, p3047, p3048

p3046 ChId transition point compensation U3 positive saturation / ChId TrPt U3 pos S

HLA

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.20 [%]	100.00 [%]	100.00 [%]

Description: Displays the voltage U for point 3 positive (saturation) of the transition point compensation from the characteristic identification.

This value corresponds to p1846 of the drive data set selected for the identification.

Dependency: Refer to: p1846

p3046 MotId force characteristic kT3 identified / kT3 ident

SERVO (Ext M_ctrl, Lin), SERVO_AC (Ext M_ctrl, Lin), SERVO_I_AC (Ext M_ctrl, Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Coefficient kT3 for the force characteristic for a synchronous linear motor determined by the motor data identification.

This coefficient can be changed after the identification and accepted in p0646 with p1910/p1960 = -3.

Dependency: Refer to: p0645, p0646, p0647, p0648, p1960, p3045, p3047, p3048

p3046 MotId torque characteristic kT3 identified / kT3 ident

SERVO (Ext M_ctrl), SERVO_AC (Ext M_ctrl), SERVO_I_AC (Ext M_ctrl)

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Coefficient kT3 for the torque characteristic for a synchronous motor determined by the motor data identification.

This coefficient can be changed after the identification and accepted in p0646 with p1910/p1960 = -3.

Dependency: Refer to: p0645, p0646, p0647, p0648, p1960, p3045, p3047, p3048

p3047 ChId transition point compensation Q3 negative saturation / ChId TrPt Q3 neg S

HLA

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.20 [%]	100.00 [%]	100.00 [%]

Description: Displays the flow rate Q for point 3 negative (saturation) of the transition point compensation from the characteristic identification.

This value corresponds to p1845 of the drive data set selected for the identification.

Dependency: Refer to: p1847

p3047 MotId force characteristic kT5 identified / kT5 ident

SERVO (Ext M_ctrl, Lin), SERVO_AC (Ext M_ctrl, Lin), SERVO_I_AC (Ext M_ctrl, Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Coefficient kT5 for the force characteristic for a synchronous linear motor determined by the motor data identification.

This coefficient can be changed after the identification and accepted in p0647 with p1910/p1960 = -3.

Dependency: Refer to: p0645, p0646, p0647, p0648, p1960, p3045, p3046, p3048

p3047 MotId torque characteristic kT5 identified / kT5 ident

SERVO (Ext M_ctrl), SERVO_AC (Ext M_ctrl), SERVO_I_AC (Ext M_ctrl)

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Coefficient kT5 for the torque characteristic for a synchronous motor determined by the motor data identification.

This coefficient can be changed after the identification and accepted in p0647 with p1910/p1960 = -3.

Dependency: Refer to: p0645, p0646, p0647, p0648, p1960, p3045, p3046, p3048

p3048 ChId transition point compensation U3 negative saturation / ChId TrPt U3 neg S

HLA

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.20 [%]	100.00 [%]	100.00 [%]

Description: Displays the voltage U for point 3 negative (saturation) of the transition point compensation from the characteristic identification.

This value corresponds to p1848 of the drive data set selected for the identification.

Dependency: Refer to: r1848, p1848

p3048 MotId force characteristic kT7 identified / kT7 ident

SERVO (Ext M_ctrl, Lin), SERVO_AC (Ext M_ctrl, Lin), SERVO_I_AC (Ext M_ctrl, Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Coefficient kT7 for the force characteristic for a synchronous linear motor determined by the motor data identification.

This coefficient can be changed after the identification and accepted in p0648 with p1910/p1960 = -3.

Dependency: Refer to: p0645, p0646, p0647, p0648, p1960, p3045, p3046, p3047

p3048 MotId torque characteristic kT7 identified / kT7 ident

SERVO (Ext M_ctrl), SERVO_AC (Ext M_ctrl), SERVO_I_AC (Ext M_ctrl)

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Coefficient kT7 for the torque characteristic for a synchronous motor determined by the motor data identification.

This coefficient can be changed after the identification and accepted in p0648 with p1910/p1960 = -3.

Dependency: Refer to: p0645, p0646, p0647, p0648, p1960, p3045, p3046, p3047

p3049[0...n] MotId Speed at start of field weakening identified / ident

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00000 [rpm]	210000.00000 [rpm]	0.00000 [rpm]

Description: Speed at the start of field weakening determined by the motor data identification.
This start speed can be changed after the identification and accepted in p0348 with p1910/p1960 = -3.

Dependency: Refer to: p0348, p1910, p1960

p3049[0...n] MotId Speed at start of field weakening identified / v_Fieldweak ident

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00000 [m/min]	1300.00000 [m/min]	0.00000 [m/min]

Description: Velocity at the start of field weakening determined by the motor data identification.
This start velocity can be changed after the identification and accepted in p0348 with p1910/p1960 = -3.

Dependency: Refer to: p0348, p1910, p1960

p3050[0...n] MotorId stator resistance identified / R_stator ident

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** 16_1	**Unit selection:** p0349
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00000 [ohm]	2000.00000 [ohm]	0.00000 [ohm]

Description: Stator resistance determined by the motor data identification.
This stator resistance can be changed after the identification and accepted in p0350 with p1910/p1960 = -3.

Dependency: Refer to: p0350, p1910, r1912

p3054[0...n] MotId rotor resistance identified / R_rotor ident

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** 16_1	**Unit selection:** p0349
Not for motor type: PMSM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00000 [ohm]	300.00000 [ohm]	0.00000 [ohm]

Description: Rotor resistance for an induction motor determined by the motor data identification.
This stator resistance can be changed after the identification and accepted in p0354 with p1910/p1960 = -3.

Dependency: Refer to: p0354, p0625, p1910, r1927, p1960

Note: The parameter is not used for synchronous motors (p0300 = 2xx).

p3056[0...n] MotId stator leakage inductance identified / L_stator leak

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** 15_1	**Unit selection:** p0349
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00000 [mH]	1000.00000 [mH]	0.00000 [mH]

Description: Stator leakage inductance determined by the motor data identification.

This stator leakage inductance can be changed after the identification and accepted in p0356 with p1910/p1960 = -3.

Dependency: Refer to: p0356, p1910, r1932

p3058[0...n] MotId rotor leakage inductance identified / L_rotor leak

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** 15_1	**Unit selection:** p0349
Not for motor type: PMSM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00000 [mH]	1000.00000 [mH]	0.00000 [mH]

Description: Rotor leakage induction for an induction motor determined by the motor data identification.

This rotor leakage inductance can be changed after the identification and accepted in p0358 with p1910/p1960 = -3.

Dependency: Refer to: p0358, p1910, r1932

p3060[0...n] MotId magnetizing inductance identified / MotId Lh ident

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** 15_1	**Unit selection:** p0349
Not for motor type: PMSM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00000 [mH]	10000.00000 [mH]	0.00000 [mH]

Description: Magnetizing inductance for an induction motor determined by the motor data identification.

This magnetizing inductance can be changed after the identification and accepted in p0360 with p1910/p1960 = -3.

Dependency: Refer to: p0360, p1910, r1936, p1960

p3065 MotID periodic position error amplitude 1 / MotID pos err amp1

SERVO (Cog_M_comp), SERVO_AC (Cog_M_comp), SERVO_I_AC (Cog_M_comp)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0	20000.0	0.0

Description: Determined amplitude to compensate periodic position errors in fine pulses for the error with one sinusoidal period per mechanical revolution.

The value is determined by the motor data identification routine.

Dependency: Refer to: p5250, p5265

Note: This value can be changed after the identification and accepted in p5265 with p1910/p1960 = -3.

p3066 MotID periodic position error angle 1 / MotID pos err ang1

SERVO (Cog_M_comp), SERVO_AC (Cog_M_comp), SERVO_I_AC (Cog_M_comp)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-180.00 [°]	180.00 [°]	0.00 [°]

Description: Determined angle to compensate periodic position errors for the error with one sinusoidal period per mechanical revolution.

The value is determined by the motor data identification routine.

Dependency: Refer to: p5250, p5266

Note: This value can be changed after the identification and accepted in p5266 with p1910/p1960 = -3.

p3067 MotID periodic position error amplitude 2 / MotID pos err amp2

SERVO (Cog_M_comp), SERVO_AC (Cog_M_comp), SERVO_I_AC (Cog_M_comp)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0	20000.0	0.0

Description: Determined amplitude to compensate periodic position errors in fine pulses for the error with two sinusoidal periods per mechanical revolution.

The value is determined by the motor data identification routine.

Dependency: Refer to: p5250, p5267

Note: This value can be changed after the identification and accepted in p5267 with p1910/p1960 = -3.

p3068 MotID periodic position error angle 2 / MotID pos err ang2

SERVO (Cog_M_comp), SERVO_AC (Cog_M_comp), SERVO_I_AC (Cog_M_comp)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-180.00 [°]	180.00 [°]	0.00 [°]

Description: Determined angle to compensate periodic position errors for the error with two sinusoidal periods per mechanical revolution.

The value is determined by the motor data identification routine.

Dependency: Refer to: p5250, p5268

Note: This value can be changed after the identification and accepted in p5268 with p1910/p1960 = -3.

p3070 MotId voltage emulation error final value identified / U_err final ident

SERVO (Ext M_ctrl), SERVO_AC (Ext M_ctrl), SERVO_I_AC (Ext M_ctrl)

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [V]	100.000 [V]	0.000 [V]

Description: Final value of the voltage emulation error determined by the motor data identification.

This final value can be changed after the identification and accepted in p1952 with p1910/p1960 = -3.

Dependency: Refer to: p1910, p1952, p1953, p3071

p3071 MotId voltage emulation error current offset identified / U_error I_offset

SERVO (Ext M_ctrl), SERVO_AC (Ext M_ctrl), SERVO_I_AC (Ext M_ctrl)

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [A]	100.000 [A]	0.000 [A]

Description: Current offset of the voltage emulation error determined by the motor data identification.
This current offset can be changed after the identification and accepted in p1953 with p1910/p1960 = -3.

Dependency: Refer to: p1910, p1952, p1953, p3070

p3072 MotId voltage emulation error semiconductor voltage identified / U_error_semi ident

SERVO (Ext M_ctrl), SERVO_AC (Ext M_ctrl), SERVO_I_AC (Ext M_ctrl)

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-10.000 [V]	10.000 [V]	0.000 [V]

Description: Semiconductor voltage of the voltage emulation error determined by the motor data identification.
This value can be changed after the identification and accepted in p1954 with p1910/p1960 = -3.

Dependency: Refer to: p1910, p1952, p1953, p3071

p3075 ChId velocity controller loop gain / ChId v loop_gain

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [mm/Vmin]	20000.0 [mm/Vmin]	0.0 [mm/Vmin]

Description: Sets the loop gain of the velocity controller from the characteristic identification.
This value corresponds to r1475 of the data set selected for the identification.

Dependency: Refer to: p1475

p3080 MotId flux controller P gain identified / Flux ctrl Kp ident

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [A/Vs]	999999.0 [A/Vs]	0.0 [A/Vs]

Description: P gain of the flux controller for an induction motor determined by the motor data identification.
This P gain can be changed after the identification and accepted in p1590 with p1910/p1960 = -3.

Dependency: Refer to: p1590, p1910

p3081 MotId flux controller integral time identified / Flux ctrl Tn ident

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	10000 [ms]	0 [ms]

Description: Integral time of the flux controller for an induction motor determined by the motor data identification.
This integral time can be changed after the identification and accepted in p1592 with p1910/p1960 = -3.

Dependency: Refer to: p1592, p1910

p3082 MotId current controller P gain identified / I_ctrl Kp ident

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** 18_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [V/A]	100000.000 [V/A]	0.000 [V/A]

Description: P gain of the current controller determined by the motor data identification.
This P gain can be changed after the identification and accepted in p1715 with p1910/p1960 = -3.

Dependency: Refer to: p1715, p1910

p3083 ChId maximum positive velocity / ChId v_max pos

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [m/min]	1300.000 [m/min]	0.000 [m/min]

Description: Displays the maximum velocity for the positive direction from the characteristic identification.
This value corresponds to the maximum possible value in p1083 of the drive data set selected for the identification.

Dependency: Refer to: p1083

p3083 MotId current controller integral time identified / I_ctrl Tn ident

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	1000.00 [ms]	0.00 [ms]

Description: Integral time of the current controller determined by the motor data identification.
This integral time can be changed after the identification and accepted in p1717 with p1910/p1960 = -3.

Dependency: Refer to: p1717, p1910

p3086 ChId maximum negative velocity / ChId v_max neg

HLA

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1300.000 [m/min]	0.000 [m/min]	0.000 [m/min]

Description: Displays the maximum velocity for the negative direction from the characteristic identification.

This value corresponds to the minimum possible value in p1086 of the drive data set selected for the identification.

Dependency: Refer to: p1086

p3088 MotId Motor model changeover speed operation with encoder ident. / MotMod n_chgSnsorI

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00000 [rpm]	210000.00000 [rpm]	0.00000 [rpm]

Description: Changeover speed for the motor model with encoder determined by the motor data identification.

This changeover speed can be changed after the identification and accepted in p1752 with p1910/p1960 = -3.

Dependency: Refer to: p1752, p1910

p3088 MotId Motor model changeover vel. operat. with encod. ident. / v_chg Ident encod

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00000 [m/min]	1300.00000 [m/min]	0.00000 [m/min]

Description: Changeover velocity for the motor model with encoder determined by the motor data identification.

This changeover velocity can be changed after the identification and accepted in p1752 with p1910/p1960 = -3.

Dependency: Refer to: p1752, p1910

p3090[0...n] PolID elasticity-based configuration / PolID el config

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Sets the configuration for the elasticity-based pole position identification.

Depending on the mechanical design (sequence: motor - encoder - brake) and on the braking force, the pole position identification routine can result in deflections with a different control sense.

For bit 00 = 0:

The deflection caused by the pole position identification acts in the positive control sense.

For bit 00 = 1:

The deflection caused by the pole position identification acts in the negative control sense.

This can only occur for a linear measuring system if a brake is installed between the machine and the measuring system and the brake is powerful enough to do this.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Sign change	Yes	No	-

Dependency: Refer to: p1980, p1981, p1982, p1983, r1984, r1985, r1986, r1987, p1990, r1992, p3091, p3092, p3093, p3094, p3095, p3096, r3097

Refer to: F07995

Note: PolID el: pole position identification, elasticity-based

p3091[0...n] PolID elasticity-based ramp time / PolID el t_ramp

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [ms]	1000.0 [ms]	250.0 [ms]

Description: Sets the ramp time for the current increase when executing the elasticity-based pole position identification.

The current is ramped up in order to reduce the mechanical load on the machine.

Dependency: Refer to: p1980, p1981, p1982, p1983, r1984, r1985, r1986, r1987, p1990, r1992, p3090, p3092, p3093, p3094, p3095, p3096, r3097

Refer to: F07995

Note: PolID el: pole position identification, elasticity-based

p3092[0...n] PolID elasticity-based wait time / PolID el t_wait

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [ms]	1000.0 [ms]	100.0 [ms]

Description: Sets the wait time between two measurements when executing the elasticity-based pole position identification.

The wait time between two measurements is necessary in order to avoid mechanical resonance effects.

Dependency: Refer to: p1980, p1981, p1982, p1983, r1984, r1985, r1986, r1987, p1990, r1992, p3090, p3091, p3093, p3094, p3095, p3096, r3097

Refer to: F07995

Note: PolID el: pole position identification, elasticity-based

p3093[0...n] PolID elasticity-based measurement number / PolID el meas

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
6	56	12

Description: Sets the number of measuring operations when executing the elasticity-based pole position identification.

When the value is increased, the result is more accurate, however, the identification takes longer.

Dependency: Refer to: p1980, p1981, p1982, p1983, r1984, r1985, r1986, r1987, p1990, r1992, p3090, p3091, p3092, p3094, p3095, p3096, r3097

Refer to: F07995

Note: PolID el: pole position identification, elasticity-based

p3094[0...n] PolID elasticity-based deflection expected / PolID el defl exp

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0000 [°]	90.0000 [°]	0.0030 [°]

Description: Sets the expected deflection when executing the elasticity-based pole position identification.

The following setting makes sense: p3094 < p3095

Dependency: Refer to: p1980, p1981, p1982, p1983, r1984, r1985, r1986, r1987, p1990, r1992, p3090, p3091, p3092, p3093, p3095, p3096, r3097

Refer to: F07995

Note: PolID el: pole position identification, elasticity-based

p3094[0...n] PolID elasticity-based deflection expected / PolID el defl exp

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0000 [mm]	90.0000 [mm]	0.0030 [mm]

Description: Sets the expected deflection when executing the elasticity-based pole position identification.

The following setting makes sense: p3094 < p3095

Dependency: Refer to: p1980, p1981, p1982, p1983, r1984, r1985, r1986, r1987, p1990, r1992, p3090, p3091, p3092, p3093, p3095, p3096, r3097

Refer to: F07995

Note: PolID el: pole position identification, elasticity-based

p3095[0...n] PolID elasticity-based deflection permissible / PolID el defl exp

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0000 [°]	90.0000 [°]	1.0000 [°]

Description: Sets the permissible deflection when executing the elasticity-based pole position identification.

The following setting makes sense: p3094 < p3095

Dependency: Refer to: p1980, p1981, p1982, p1983, r1984, r1985, r1986, r1987, p1990, r1992, p3090, p3091, p3092, p3093, p3094, p3096, r3097

Refer to: F07995

Note: PolID el: pole position identification, elasticity-based

p3095[0...n] PolID elasticity-based deflection permissible / PolID el defl exp

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0000 [mm]	90.0000 [mm]	1.0000 [mm]

Description: Sets the permissible deflection when executing the elasticity-based pole position identification.

The following setting makes sense: p3094 < p3095

Dependency: Refer to: p1980, p1981, p1982, p1983, r1984, r1985, r1986, r1987, p1990, r1992, p3090, p3091, p3092, p3093, p3094, p3096, r3097

Refer to: F07995

Note: PolID el: pole position identification, elasticity-based

p3096[0...n] PolID elasticity-based current / PolID el curr

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [Arms]	20000.000 [Arms]	0.000 [Arms]

Description: Sets the maximum permissible current when executing the elasticity-based pole position identification.

The following setting makes sense: p3096 <= min (p0305, p0640, p0209)

Dependency: Refer to: p1980, p1981, p1982, p1983, r1984, r1985, r1986, r1987, p1990, r1992, p3090, p3091, p3092, p3093, p3094, p3095, r3097

Refer to: F07995

Note: PolID el: pole position identification, elasticity-based

r3097.0...31 BO: PolID elasticity-based status / PolID el status

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status for the elasticity-based pole position identification.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	PolID el selected	Yes	No	-
01	PolID el background registered	Yes	No	-
02	PolID el initialization completed	Yes	No	-
03	PolID el background started	Yes	No	-
04	PolID el time slice registered	Yes	No	-
05	PolID el time slice started	Yes	No	-
06	PolID el phi used	Yes	No	-
07	PolID el time slice ready	Yes	No	-
08	PolID el background ready	Yes	No	-
14	PolID el is repeated	Yes	No	-
15	PolID el fault present	Yes	No	-
16	Background state machine bit 0	Active	Inactive	-
17	Background state machine bit 1	Active	Inactive	-
18	Background state machine bit 2	Active	Inactive	-
19	Background state machine bit 3	Active	Inactive	-
20	Background state machine bit 4	Active	Inactive	-
21	Background state machine bit 5	Active	Inactive	-
22	Background state machine bit 6	Active	Inactive	-
23	Background state machine bit 7	Active	Inactive	-
24	Time slice state machine bit 0	Active	Inactive	-
25	Time slice state machine bit 1	Active	Inactive	-
26	Time slice state machine bit 2	Active	Inactive	-
27	Time slice state machine bit 3	Active	Inactive	-
28	Time slice state machine bit 4	Active	Inactive	-
29	Time slice state machine bit 5	Active	Inactive	-
30	Time slice state machine bit 6	Active	Inactive	-
31	Time slice state machine bit 7	Active	Inactive	-

Dependency: Refer to: p1980, p1981, p1982, p1983, r1984, r1985, r1986, r1987, p1990, r1992, p3090, p3091, p3092, p3093, p3094, p3095, p3096

Refer to: F07995

Note: PolID el: pole position identification, elasticity-based

For bit 00 ... 15:

Displays the actual status of the elasticity-based pole position identification.

For bits 16 ... 23:

Displays the status for the background state machine.

For bits 24 ... 31:

Displays the status for the time slices state machine.

p3100 RTC time stamp mode / RTC t_stamp mode

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	2	2

Description: Sets the mode for the time stamp

Value:
0: Operating hours
1: UTC format
2: Operating hours + 01.01.2000

Notice: For p3100 = 1:

The system prevents this setting from being changed. The parameter can only be influenced after "Set factory setting" or with a "Project download".

Note: RTC: Real-time clock

UTC: Universal Time Coordinates

For p3100 = 1:

Time of day synchronization is only possible with this setting.

The UTC time started, according to the definition on 01.01.1970 at 00:00:00 and is output in days and milliseconds.

p3101[0...1] Setting UTC time / Set UTC time

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	4294967295	0

Description: Setting the UTC time.

This means that the drive system is synchronized to the time specified by the time master.

To start p3101[1] must be written to followed by p3101[0]. After writing to p3101[0], the UTC time is accepted.

Index:
[0] = Milliseconds
[1] = Days

Dependency: Refer to: p3100

r3102[0...1] Displaying UTC time / Display UTC time

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displaying the current UTC time.

Index:
[0] = Milliseconds
[1] = Days

Dependency: Refer to: p3100

Notice: The time display depends on the selected mode (p3100).

p3103 UTC synchronization process / UTC sync_process

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	3	0

Description: Setting the synchronization process.

Value:
0: PING/SNAP
1: Reserved
2: Parameter
3: Reserved

Dependency: Refer to: p3101, p3104

Note: For p3103 = 0:

The PING/SNAP technique allows the UTC time to be set with a high degree of accuracy using p3104 and p3101.

See the SINAMICS S120 Function Manual Drive Functions for more information.

For p3103 = 2:

Simply setting the UTC time via p3101.

For p3103 = 4:

Only for CU3x0-2 PN X150.

Synchronization via Network Time Protocol (NTP).

p3103 UTC synchronization process / UTC sync_process

CU_S_AC_PN, CU_S120_PN, CU_S150_PN

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	99	0

Description: Setting the synchronization process.

Value:
0: PING/SNAP
1: Reserved
2: Parameter
3: Reserved
4: Network Time Protocol
99: No synchronization

Dependency: Refer to: p3101, p3104

Note: For p3103 = 0:

The PING/SNAP technique allows the UTC time to be set with a high degree of accuracy using p3104 and p3101.

See the SINAMICS S120 Function Manual Drive Functions for more information.

For p3103 = 2:

Simply setting the UTC time via p3101.

For p3103 = 4:

Only for CU3x0-2 PN X150.

Synchronization via Network Time Protocol (NTP).

p3104 BI: UTC PING synchronization / UTC PING sync

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the PING event to set the UTC time.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p3105[0...3] NTP server IP address / NTP IP addr

CU_S_AC_PN, CU_S120_PN, CU_S150_PN

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the IP address of the NTP server for time synchronization via Network Time Protocol (NTP).

Dependency: Refer to: p3103

Note: p3105[0...3] = 0 means:
PROFINET controller is NTP server.

p3106 NTP time zone / Time zone

CU_S_AC_PN, CU_S120_PN, CU_S150_PN

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	38	14

Description: Sets the local time zone for NTP (Network Time Protocol).

Value:
0: UTC-12 (AOE)
1: UTC-11 (NURT)
2: UTC-10 (HAST)
3: UTC-9:30 (MART)
4: UTC-9 (AKST)
5: UTC-8 (PST)
6: UTC-7 (MST)
7: UTC-6 (CST)
8: UTC-5 (EST)
9: UTC-4 (VET)
10: UTC-3:30 (NST)
11: UTC-3 (ART)
12: UTC-2 (GST)
13: UTC-1 (CVT)
14: UTC+0 (GMT)
15: UTC+1 (CET)
16: UTC+2 (EEK)
17: UTC+3 (MISK)
18: UTC+3:30 (IRST)
19: UTC+4 (GST)
20: UTC+4:30 (AFT)
21: UTC+5 (UZT)
22: UTC+5:30 (IST)
23: UTC+5:45 (NPT)
24: UTC+6 (BST)
25: UTC+6:30 (MMT)

26: UTC+7 (WIB)
27: UTC+8 (CST)
28: UTC+8:30 (PYT)
29: UTC+8:45 (ACWST)
30: UTC+9 (JST)
31: UTC+9:30 (ACST)
32: UTC+10 (AEST)
33: UTC+10:30 (ACDT)
34: UTC+11 (AEDT)
35: UTC+12 (ANAT)
36: UTC+13 (NZDT)
37: UTC+13:45 (CHADT)
38: UTC+14 (LINT)

Dependency: Refer to: p3103

r3107[0...3] UTC synchronization time out of tolerance / UTC t_sync out tol

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the last synchronizing event that was out of tolerance.

Index:
[0] = Milliseconds after sync
[1] = Days after sync
[2] = Milliseconds before sync
[3] = Days before sync

Dependency: Refer to: p3109

Refer to: A01099

Note: For r3107[0, 1]:

Displays the UTC time after synchronization.

For 3107[2, 3]:

Displays the UTC time before synchronization.

r3108[0...1] UTC synchronization deviation / UTC sync_dev

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the absolute value of the last synchronization deviation that was determined.

Index:
[0] = Milliseconds
[1] = Days

p3109 UTC synchronization tolerance / UTC sync tol

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	10000 [ms]	100 [ms]

Description: Sets the tolerance for time of day synchronization.

When this tolerance is exceeded, an appropriate alarm is output.

Dependency: Refer to: A01099

p3110 External fault 3 switch-on delay / Ext fault 3 t_on

All objects

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2546
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	1000 [ms]	0 [ms]

Description: Sets the delay time for external fault 3.

Dependency: Refer to: p2108, p3111, p3112

Refer to: F07862

p3111 BI: External fault 3 enable / Ext fault 3 enab

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, TM31, TM17, TM15, TM15DI_DO, TM120, TM150, TB30, TM54F_MA, TM54F_SL, ENC, HUB, CU_LINK

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2546
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for the enable signal of external fault 3.

External fault 3 is initiated by the following AND logic operation:

- BI: p2108 negated
- BI: p3111
- BI: p3112 negated

Dependency: Refer to: p2108, p3110, p3112

Refer to: F07862

p3111[0...n] BI: External fault 3 enable / Ext fault 3 enab

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM41

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** -
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for the enable signal of external fault 3.

External fault 3 is initiated by the following AND logic operation:

- BI: p2108 negated
- BI: p3111
- BI: p3112 negated

Dependency: Refer to: p2108, p3110, p3112

Refer to: F07862

p3112 BI: External fault 3 enable negated / Ext flt 3 enab neg

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, TM31, TM17, TM15, TM15DI_DO, TM120, TM150, TB30, TM54F_MA, TM54F_SL, ENC, HUB, CU_LINK

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2546
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the negated enable signal of external fault 3.

External fault 3 is initiated by the following AND logic operation:

- BI: p2108 negated
- BI: p3111
- BI: p3112 negated

Dependency: Refer to: p2108, p3110, p3111

Refer to: F07862

p3112[0...n] BI: External fault 3 enable negated / Ext flt 3 enab neg

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM41

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** -
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the negated enable signal of external fault 3.

External fault 3 is initiated by the following AND logic operation:

- BI: p2108 negated
- BI: p3111
- BI: p3112 negated

Dependency: Refer to: p2108, p3110, p3111

Refer to: F07862

r3113.0...15 CO/BO: NAMUR message bit bar / NAMUR bit bar

All objects

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status of the NAMUR message bit bar.

The faults and alarms are assigned to the appropriate signaling/message classes and influence a specific message bit.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Fault converter information electronics/software error	Yes	No	-
01	Network fault	Yes	No	-
02	DC link overvoltage	Yes	No	-
03	Fault drive converter power electronics	Yes	No	-
04	Drive converter overtemperature	Yes	No	-
05	Ground fault	Yes	No	-

06	Motor overload	Yes	No	-
07	Bus error	Yes	No	-
08	External safety-relevant shutdown	Yes	No	-
09	Mot encoder fault	Yes	No	-
10	Error communication internal	Yes	No	-
11	Fault infeed	Yes	No	-
15	Other faults	Yes	No	-

Note: For bit 00:

Hardware or software malfunction was identified. Carry out a POWER ON of the component involved. If it occurs again, contact Technical Support.

For bit 01:

A line supply fault has occurred (phase failure, voltage level, ...). Check the line supply / fuses. Check the supply voltage. Check the wiring.

For bit 02:

The DC link voltage has assumed an inadmissibly high value. Check the dimensioning of the system (line supply, reactor, voltages). Check the infeed settings.

For bit 03:

An inadmissible operating state of the power electronics was identified (overcurrent, overtemperature, IGBT failure, ...). Check that the permissible load cycles are maintained. Check the ambient temperatures (fan).

For bit 04:

The temperature in the component has exceeded the highest permissible limit. Check the ambient temperature / control cabinet cooling.

For bit 05:

A ground fault / inter-phase short-circuit was detected in the power cables or in the motor windings. Check the power cables (connection). Check the motor.

For bit 06:

The motor was operated outside the permissible limits (temperature, current, torque, ...). Check the load cycles and limits that have been set. Check the ambient temperature / motor cooling.

For bit 07:

The communication to the higher-level control system (internal coupling, PROFIBUS, PROFINET, ...) is either faulted or interrupted. Check the state of the higher-level control system. Check the communication connection/wiring. Check the bus configuration / clock cycles.

For bit 08:

A safety operation monitoring function (Safety) has detected an error.

For bit 09:

When evaluating the encoder signals (track signals, zero marks, absolute values, ...) an illegal signal state was detected. Check the encoder / state of the encoder signals. Observe the maximum frequencies.

For bit 10:

The internal communication between the SINAMICS components is faulted or interrupted. Check the DRIVE-CLiQ wiring. Ensure an EMC-compliant design. Observe the maximum permissible quantity structure / clock cycles.

For bit 11:

The infeed is faulted or has failed. Check the infeed and the surroundings (line supply, filter, reactors, fuses, ...). Check the closed-loop infeed control.

For bit 15:

Group fault. Determine the precise cause of the fault using the commissioning tool.

r3114.9...11 CO/BO: Messages status word global / Msg ZSW global

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the global status word for messages.

The appropriate bit is set if at least one message is present at the drive objects.

Bit field:	Bit	Signal name	1 signal	0 signal	FP
	09	Group alarm present	Yes	No	8065
	10	Group fault present	Yes	No	8060
	11	Safety group message present	Yes	No	-

Note: The status bits are displayed with delay.

r3115[0...63] Fault drive object initiating / F DO initiating

All objects

Can be changed: - | **Calculated:** - | **Access level:** 3
Data type: Integer32 | **Dyn. index:** - | **Func. diagram:** 8050, 8060
P-Group: Messages | **Unit group:** - | **Unit selection:** -
Not for motor type: - | **Scaling:** - | **Expert list:** 1

Min	Max	Factory setting
-	-	-

Description: Displays the drive object number of the initiating drive object for this fault as integer number.

Value = 63:

The fault was initiated by the drive object itself.

Dependency: Refer to: r0945, r0947, r0948, r0949, r2109, r2130, r2133, r2136, r3120, r3122

Notice: The values of this parameter are only saved in a volatile fashion and are lost when switching off or for a warm restart.

Note: The buffer parameters are cyclically updated in the background (refer to status signal in r2139).

The structure of the fault buffer and the assignment of the indices is shown in r0945.

p3116 BI: Suppress automatic acknowledgment / Ackn suppress

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T | **Calculated:** - | **Access level:** 3
Data type: Unsigned32 / Binary | **Dyn. index:** - | **Func. diagram:** -
P-Group: Messages | **Unit group:** - | **Unit selection:** -
Not for motor type: - | **Scaling:** - | **Expert list:** 1

Min	Max	Factory setting
-	-	0

Description: Sets the signal source for the automatic acknowledgment of Control Unit faults.

BI: p3116 = 0 signal

Acknowledgeable faults are automatically acknowledged on the Control Unit.

Control Unit faults with LOCAL propagation are passed on to the first active drive object.

BI: p3116 = 1 signal

Acknowledgeable faults are not automatically acknowledged on the Control Unit.

Control Unit faults with LOCAL propagation are not passed on.

Dependency: Refer to: p2102, p2103, p2104, p2105, p3981

Note: When selecting a standard telegram, the BICO interconnection for control signal STW1.10 (master control by PLC) is automatically established.

p3117 Change safety message type / Ch. SI mess type

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: C1(1) | **Calculated:** - | **Access level:** 3
Data type: Unsigned32 | **Dyn. index:** - | **Func. diagram:** -
P-Group: Messages | **Unit group:** - | **Unit selection:** -
Not for motor type: - | **Scaling:** - | **Expert list:** 1

Min	Max	Factory setting
0	1	0

Description: Sets the re-parameterization of all safety messages for faults and alarms.

The relevant message type during changeover is selected by the firmware.

0: Safety messages are not re-parameterized

1: Safety messages are re-parameterized

Note: A change only becomes effective after a POWER ON.

r3120[0...63] Component fault / Comp fault

All objects

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 8060
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the component of the fault which has occurred.

Dependency: Refer to: r0945, r0947, r0948, r0949, r2109, r2130, r2133, r2136, r3122

Note: Value = 0: Assignment to a component not possible.

The buffer parameters are cyclically updated in the background (refer to status signal in r2139).

The structure of the fault buffer and the assignment of the indices is shown in r0945.

r3121[0...63] Component alarm / Comp alarm

All objects

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 8065
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the component of the alarm which has occurred.

Dependency: Refer to: r2110, r2122, r2123, r2124, r2125, r2134, r2145, r2146, r3123

Note: Value = 0: Assignment to a component not possible.

The buffer parameters are cyclically updated in the background (refer to status signal in r2139).

The structure of the alarm buffer and the assignment of the indices is shown in r2122.

r3122[0...63] Diagnostic attribute fault / Diag_attr fault

All objects

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 8060
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the diagnostic attribute of the fault which has occurred.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Hardware replacement recommended	Yes	No	-
15	Message has gone	Yes	No	-
16	PROFIdrive fault class bit 0	High	Low	-
17	PROFIdrive fault class bit 1	High	Low	-
18	PROFIdrive fault class bit 2	High	Low	-
19	PROFIdrive fault class bit 3	High	Low	-
20	PROFIdrive fault class bit 4	High	Low	-

Dependency: Refer to: r0945, r0947, r0948, r0949, r2109, r2130, r2133, r2136, r3120

Note: The buffer parameters are cyclically updated in the background (refer to status signal in r2139).

The structure of the fault buffer and the assignment of the indices is shown in r0945.

For bits 20 ... 16:

Bits 20, 19, 18, 17, 16 = 0, 0, 0, 0, 0 --> PROFIdrive message class 0: not assigned

Bits 20, 19, 18, 17, 16 = 0, 0, 0, 0, 1 --> PROFIdrive message class 1: hardware fault/software error

Bits 20, 19, 18, 17, 16 = 0, 0, 0, 1, 0 --> PROFIdrive message class 2: line fault

Bits 20, 19, 18, 17, 16 = 0, 0, 0, 1, 1 --> PROFIdrive message class 3: supply voltage fault

Bits 20, 19, 18, 17, 16 = 0, 0, 1, 0, 0 --> PROFIdrive message class 4: DC link fault

Bits 20, 19, 18, 17, 16 = 0, 0, 1, 0, 1 --> PROFIdrive message class 5: power electronics faulted

Bits 20, 19, 18, 17, 16 = 0, 0, 1, 1, 0 --> PROFIdrive message class 6: overtemperature electronic components

Bits 20, 19, 18, 17, 16 = 0, 0, 1, 1, 1 --> PROFIdrive message class 7: ground fault/phase fault detected

Bits 20, 19, 18, 17, 16 = 0, 1, 0, 0, 0 --> PROFIdrive message class 8: motor overload

Bits 20, 19, 18, 17, 16 = 0, 1, 0, 0, 1 --> PROFIdrive message class 9: communication error to the higher-level control

Bits 20, 19, 18, 17, 16 = 0, 1, 0, 1, 0 --> PROFIdrive message class 10: safe monitoring channel has identified an error

Bits 20, 19, 18, 17, 16 = 0, 1, 0, 1, 1 --> PROFIdrive message class 11: incorrect position actual value/speed actual value or not available

Bits 20, 19, 18, 17, 16 = 0, 1, 1, 0, 0 --> PROFIdrive message class 12: internal (DRIVE-CLiQ) communication error

Bits 20, 19, 18, 17, 16 = 0, 1, 1, 0, 1 --> PROFIdrive message class 13: infeed unit faulted

Bits 20, 19, 18, 17, 16 = 0, 1, 1, 1, 0 --> PROFIdrive message class 14: braking controller/Braking Module faulted

Bits 20, 19, 18, 17, 16 = 0, 1, 1, 1, 1 --> PROFIdrive message class 15: line filter faulted

Bits 20, 19, 18, 17, 16 = 1, 0, 0, 0, 0 --> PROFIdrive message class 16: external measured value/signal state outside the permissible range

Bits 20, 19, 18, 17, 16 = 1, 0, 0, 0, 1 --> PROFIdrive message class 17: application/technology function faulted

Bits 20, 19, 18, 17, 16 = 1, 0, 0, 1, 0 --> PROFIdrive message class 18: error in the parameterization/configuration/commissioning sequence

Bits 20, 19, 18, 17, 16 = 1, 0, 0, 1, 1 --> PROFIdrive message class 19: general drive fault

Bits 20, 19, 18, 17, 16 = 0, 1, 1, 0, 0 --> PROFIdrive message class 20: auxiliary unit faulted

r3123[0...63] Diagnostic attribute alarm / Diag_attr alarm

All objects

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 8065
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the diagnostic attribute of the alarm which has occurred.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Hardware replacement recommended	Yes	No	-
11	Alarm class bit 0	High	Low	-
12	Alarm class bit 1	High	Low	-
13	Maintenance required	Yes	No	-
14	Maintenance urgently required	Yes	No	-
15	Message has gone	Yes	No	-
16	PROFIdrive fault class bit 0	High	Low	-
17	PROFIdrive fault class bit 1	High	Low	-
18	PROFIdrive fault class bit 2	High	Low	-
19	PROFIdrive fault class bit 3	High	Low	-
20	PROFIdrive fault class bit 4	High	Low	-

Dependency: Refer to: r2110, r2122, r2123, r2124, r2125, r2134, r2145, r2146, r3121

Note: The buffer parameters are cyclically updated in the background (refer to status signal in r2139).

The structure of the alarm buffer and the assignment of the indices is shown in r2122.

For bit 12, 11:

These status bits are used for the classification of internal alarm classes and are intended for diagnostic purposes only on certain automation systems with integrated SINAMICS functionality.

For bits 20 ... 16:

Bits 20, 19, 18, 17, 16 = 0, 0, 0, 0, 0 --> PROFIdrive message class 0: not assigned

Bits 20, 19, 18, 17, 16 = 0, 0, 0, 0, 1 --> PROFIdrive message class 1: hardware fault/software error

Bits 20, 19, 18, 17, 16 = 0, 0, 0, 1, 0 --> PROFIdrive message class 2: line fault

Bits 20, 19, 18, 17, 16 = 0, 0, 0, 1, 1 --> PROFIdrive message class 3: supply voltage fault

Bits 20, 19, 18, 17, 16 = 0, 0, 1, 0, 0 --> PROFIdrive message class 4: DC link fault

Bits 20, 19, 18, 17, 16 = 0, 0, 1, 0, 1 --> PROFIdrive message class 5: power electronics faulted

Bits 20, 19, 18, 17, 16 = 0, 0, 1, 1, 0 --> PROFIdrive message class 6: overtemperature electronic components

Bits 20, 19, 18, 17, 16 = 0, 0, 1, 1, 1 --> PROFIdrive message class 7: ground fault/phase fault detected

Bits 20, 19, 18, 17, 16 = 0, 1, 0, 0, 0 --> PROFIdrive message class 8: motor overload

Bits 20, 19, 18, 17, 16 = 0, 1, 0, 0, 1 --> PROFIdrive message class 9: communication error to the higher-level control

Bits 20, 19, 18, 17, 16 = 0, 1, 0, 1, 0 --> PROFIdrive message class 10: safe monitoring channel has identified an error

Bits 20, 19, 18, 17, 16 = 0, 1, 0, 1, 1 --> PROFIdrive message class 11: incorrect position actual value/speed actual value or not available

Bits 20, 19, 18, 17, 16 = 0, 1, 1, 0, 0 --> PROFIdrive message class 12: internal (DRIVE-CLiQ) communication error

Bits 20, 19, 18, 17, 16 = 0, 1, 1, 0, 1 --> PROFIdrive message class 13: infeed unit faulted

Bits 20, 19, 18, 17, 16 = 0, 1, 1, 1, 0 --> PROFIdrive message class 14: braking controller/Braking Module faulted

Bits 20, 19, 18, 17, 16 = 0, 1, 1, 1, 1 --> PROFIdrive message class 15: line filter faulted

Bits 20, 19, 18, 17, 16 = 1, 0, 0, 0, 0 --> PROFIdrive message class 16: external measured value/signal state outside the permissible range

Bits 20, 19, 18, 17, 16 = 1, 0, 0, 0, 1 --> PROFIdrive message class 17: application/technology function faulted

Bits 20, 19, 18, 17, 16 = 1, 0, 0, 1, 0 --> PROFIdrive message class 18: error in the parameterization/configuration/commissioning sequence

Bits 20, 19, 18, 17, 16 = 1, 0, 0, 1, 1 --> PROFIdrive message class 19: general drive fault

Bits 20, 19, 18, 17, 16 = 0, 1, 1, 0, 0 --> PROFIdrive message class 20: auxiliary unit faulted

r3131 CO: Actual fault value / Act fault val

All objects

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 8060
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the fault value of the oldest active fault.

Dependency: Refer to: r2131, r3132

r3132 CO: Actual component number / Comp_no act

All objects

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 8060
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the component number of the oldest fault that is still active.

Dependency: Refer to: r2131, r3131

p3135 Suppress active fault / Supp act flt

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM41

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 8060
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 bin

Description: Sets the suppression of r2139.3 "Fault present" for certain fault responses.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
08	Suppression of fault response ENCODER	ON	OFF	-
10	Suppression of fault response NONE	ON	OFF	-

Dependency: Refer to: p0491, r2139

Note: Depending on the suppression of a fault reaction in this parameter, r2139.1 "Acknowledgment required" is set when at least one fault occurs.

For bit 08:

The suppression is only effective if p0491 = 1.

p3201[0...n] Excitation current outside the tolerance threshold value / I_exc n Tol thresh

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.1 [%]	100.0 [%]	10.0 [%]

Description: Sets the threshold value for the "excitation current outside tolerance" message for the excitation current monitoring.

If the absolute value of the difference between the excitation current setpoint and actual value (r1641 - r1626) exceeds the threshold value and the hysteresis is longer than the selected delay time, then fault F07913 is output.

This fault is withdrawn when the threshold voltage is undershot.

Dependency: Refer to: r1626, r1641, p3202, p3203

Refer to: F07913

Note: The monitoring function is only carried out for separately excited synchronized motors (p0300 = 5).

p3202[0...n] Excitation current outside the tolerance hysteresis / I_exc n Tol hyst

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.1 [%]	100.0 [%]	10.0 [%]

Description: Sets the hysteresis for the "excitation current outside tolerance" message for the excitation current monitoring.

Dependency: Refer to: p3201, p3203

Refer to: F07913

Note: The monitoring function is only carried out for separately excited synchronized motors (p0300 = 5).

p3203[0...n] Excitation current outside the tolerance delay time / I_exc n Tol t_del

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [s]	10.0 [s]	1.0 [s]

Description: Sets the delay time for the "excitation current outside tolerance" message for the excitation current monitoring.

Dependency: Refer to: p3201, p3202

Refer to: F07913

Note: The monitoring function is only carried out for separately excited synchronized motors (p0300 = 5).

p3204[0...n] Flux outside the tolerance threshold value / Flux n tol thresh

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.1 [%]	100.0 [%]	10.0 [%]

Description: Sets the threshold value for the "flux outside the tolerance" message for the flux monitoring.

If the absolute value of the difference between the flux setpoint and actual value (r0083 - r0084) falls below the threshold value with hysteresis longer than the selected delay time, then fault F07914 is output.

This fault is withdrawn when the threshold voltage is undershot.

Dependency: Refer to: r0083, r0084, p3205, p3206

Refer to: F07914

Note: The monitoring function is only carried out for separately excited synchronized motors (p0300 = 5).

The flux monitoring is only active after magnetizing (r0056.4 = 1).

p3205[0...n] Flux outside the tolerance hysteresis / Flux n tol hyst

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.1 [%]	50.0 [%]	10.0 [%]

Description: Sets the hysteresis for the "flux outside tolerance" message for the flux monitoring.

Dependency: Refer to: p3204, p3206

Refer to: F07914

Note: The monitoring function is only carried out for separately excited synchronized motors (p0300 = 5).

The flux monitoring is only active after magnetizing (r0056.4 = 1).

p3206[0...n] Flux outside tolerance delay time / Flux n tol t_del

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [s]	10.0 [s]	5.0 [s]

Description: Sets the delay time for the "flux outside tolerance" message for the flux monitoring.

Dependency: Refer to: p3204, p3205

Refer to: F07914

Note: The monitoring function is only carried out for separately excited synchronized motors (p0300 = 5).

The flux monitoring is only active after magnetizing (r0056.4 = 1).

p3207[0...n] Zero current signal threshold value / I_0_sig thresh

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Messages	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.01 [Arms]	10000.00 [Arms]	1.00 [Arms]

Description: Sets the threshold value for the zero current signal for the zero current monitoring.

If the absolute current falls below the threshold value then r2199.6 is set to 1 after the delay time has expired. The bit is reset if the threshold value and the hysteresis are exceeded again.

Dependency: Refer to: r2199, p3208, p3209

Note: The monitoring function is only carried out for separately excited synchronized motors (p0300 = 5).

The monitoring is only carried out for speeds less than the speed threshold value in p2161 (r2199.0 = 1).

p3208[0...n] Zero current signal hysteresis / I_0_sig hyst

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Messages	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.01 [Arms]	10000.00 [Arms]	1.00 [Arms]

Description: Sets the hysteresis for the zero current signal for the zero current monitoring.

Dependency: Refer to: p3207, p3209

Note: The monitoring function is only carried out for separately excited synchronized motors (p0300 = 5).

The monitoring is only carried out for speeds less than the speed threshold value in p2161 (r2199.0 = 1).

p3209[0...n] Zero current signal delay time / I_0_sig t_del

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [s]	10.00 [s]	0.02 [s]

Description: Sets the delay time for the zero current signal for the zero current monitoring.

Dependency: Refer to: p3207, p3208

Note: The monitoring function is only carried out for separately excited synchronized motors (p0300 = 5).

The monitoring is only carried out for speeds less than the speed threshold in p2161 (r2199.0 = 1).

p3233[0...n] Torque actual value filter time constant / M_act_filt T

SERVO (Ext msg), VECTOR (Ext msg), SERVO_AC (Ext msg), VECTOR_AC (Ext msg), SERVO_I_AC (Ext msg), VECTOR_I_AC (Ext msg)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8013
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	1000000 [ms]	0 [ms]

Description: Sets the time constant for the PT1 element to smooth the torque actual value.

The smoothed torque actual value is compared with the threshold values and is only used for messages and signals.

p3235 Phase failure signal motor monitoring time / Ph_fail t_monit

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	2000 [ms]	320 [ms]

Description: Sets the monitoring time for phase failure detection of the motor.

Notice: After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

Note: Monitoring is only effective for blocksize and booksize power units.

For p3235 = 0 the function is deactivated.

For VECTOR, the following applies:

The monitoring is automatically deactivated during a flying restart for a motor that is still rotating.

p3236[0...n] Speed threshold value 7 / n_thresh val 7

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8012
P-Group: Messages	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	3000.00 [rpm]	100.00 [rpm]

Description: Sets the speed threshold value for the signal "speed deviation model/external in tolerance" (BO: r2199.7).

Dependency: Refer to: r1443, r2169, r2199, p3237

p3237[0...n] Hysteresis speed 7 / n_hysteresis 7

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8012
P-Group: Messages	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	200.00 [rpm]	2.00 [rpm]

Description: Sets the hysteresis speed for the signal "speed deviation model/external" (BO: r2199.7).

Dependency: Refer to: r2199, p3236

p3238[0...n] OFF delay n_act_motor model = n_act external / t_del n_a = n_ext

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8012
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [s]	100.0 [s]	3.0 [s]

Description: Sets the OFF delay for the signal "speed deviation model/external in tolerance" (BO: r2199.7).

The smoothed actual speed of the motor model r2169 is compared with the externally measured speed r1443 (threshold value p3236).

Dependency: Refer to: p3236, p3237

p3240[0...n] CI: I2t input value signal source / I2t in_value s_src

VECTOR (Ext msg), VECTOR_AC (Ext msg), VECTOR_I_AC (Ext msg)

Can be changed: T	**Calculated:** -	**Access level:** 4
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 8022
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the input value of the freely parameterizable I2t monitoring.

Dependency: Refer to: p3241, p3242, p3243, r3244

Notice: To activate the freely parameterizable I2t monitoring, the following applies:

- the function module "Extended messages/monitoring" must be activated (r0108.17 = 1).
- the maximum duration must be set greater than zero (p3242 > 0).

Note: Application example:

Excitation current monitoring for the separately excited synchronous motor.

p3241[0...n] Permissible I2t continuous value / Perm I2t cont val

VECTOR (Ext msg), VECTOR_AC (Ext msg), VECTOR_I_AC (Ext msg)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8022
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
10.00 [%]	200.00 [%]	100.00 [%]

Description: Sets the permissible continuous value of the freely parameterizable I2t monitoring.

The integrator value in r3244 decreases if the value received via connector input p3240 is higher than the value set in p3241.

The integrator value in r3244 increases if the value received via connector input p3240 is less than the value set in p3241.

Dependency: Refer to: p3240, p3242, p3243, r3244

p3242[0...n] I2t maximum duration / I2t max_dur

VECTOR (Ext msg), VECTOR_AC (Ext msg), VECTOR_I_AC (Ext msg)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8022
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [s]	3600.00 [s]	0.00 [s]

Description: Sets the maximum duration for 100 % overload (corresponding to p3241 + 100 %) of the freely parameterizable I2t monitoring.

Setting example:

Operation should be possible at 150 % of the input quantity for a duration of 3 s for a permissible continuous value p3241 = 110 %.

As a consequence, the following settings value is obtained:

p3242 = ((150 x 150 - 110 x 110) / ((100 + 110) x (100 + 110) - 110 x 110) x 3 s = 0.975 s

Dependency: Refer to: p3240, p3241, p3243, r3244

Notice: For p3242 = 0, the freely parameterizable I2t monitoring is deactivated.

Note: After this time expires for 100 % overload, fault F07824 is output and status bit r2199.14 is set.

For lower overload conditions, the permissible duration extends corresponding to the specified setting example.

p3243[0...n] I2t alarm threshold / I2t alarm thresh

VECTOR (Ext msg), VECTOR_AC (Ext msg), VECTOR_I_AC (Ext msg)			
	Can be changed: U, T	**Calculated:** -	**Access level:** 4
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 8022
	P-Group: -	**Unit group:** -	**Unit selection:** -
	Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [%]	99.90 [%]	50.00 [%]

Description: Sets the alarm threshold for the I2t integrator value (r3244) scaled to 100 %.
When the alarm threshold is reached, alarm A07823 is output and status bit r2199.13 is set.

Dependency: Refer to: p3240, p3241, p3242, r3244

r3244 CO: Actual I2t integrator value / Act I2t integ_val

VECTOR (Ext msg), VECTOR_AC (Ext msg), VECTOR_I_AC (Ext msg)			
	Can be changed: -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8022
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** PERCENT	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [%]	- [%]	- [%]

Description: Display and connector output for the actual integrator value of the freely parameterizable I2t monitoring.
The value is scaled, so that the maximum permissible overload is reached at 100 %.

Dependency: Refer to: p3240, p3241, p3242, p3243

p3290 Variable signaling function start / Var sig start

SERVO, HLA, SERVO_AC, SERVO_I_AC			
	Can be changed: U, T	**Calculated:** -	**Access level:** 3
	Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** 5301
	P-Group: -	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	0010 bin

Description: Settings for start/stop and the comparison type for the variable signaling function.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Activate function	Active	Not active	-
01	Comparison with sign	With sign	Without sign	-

Dependency: Refer to: p3291, p3292, p3293, r3294, p3295, p3296, p3297, p3298, p3299
Refer to: A02085

Notice: The parameters of the variable message function are only checked and become effective when starting. Otherwise, an alarm is output.

p3291 CI: Variable signaling function signal source / Var sig S_src

SERVO, HLA, SERVO_AC, SERVO_I_AC			
	Can be changed: U, T	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32 / Integer16	**Dyn. index:** -	**Func. diagram:** 5301
	P-Group: -	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source for the variable signaling function.

Dependency: Refer to: p3290, p3292, p3293

Notice: This parameter is only checked and becomes effective when restarting the variable message function.

Note: For p3291 = 1: (internal Siemens):
In this case, the signal source is defined via the memory address (p3292) and the data type (p3293).
As the memory address can be different for each version, it must always be redetermined.
Procedure:
- set the memory address and data type (p3292, p3293).
- establish the BICO interconnection (p3291 = 1).

p3292 Variable signaling function signal source address / Var sig S_src addr

SERVO, HLA, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 5301
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the address of the signal source for the variable signaling function.

Dependency: Refer to: p3290, p3291

Caution: The software can crash if an incorrect address and data type are set.

Notice: This parameter is only checked and becomes effective when restarting the variable message function.

Note: This parameter should only be set for p3291 = 1.

p3293 Variable signaling function signal source data type / Var sig S_src type

SERVO, HLA, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 5301
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	7	0

Description: Sets the data type of the signal source for the variable signaling function.

Value:
0: Unknown
1: U8, Unsigned8
2: I8, Signed8
3: U16, Unsigned16
4: I16, Signed16
5: U32, Unsigned32
6: I32, Signed32
7: Float, FloatingPoint32

Dependency: Refer to: p3290, p3291

Caution: The software can crash if an incorrect address and data type are set.

Notice: This parameter is only checked and becomes effective when restarting the variable message function.

Note: This parameter should only be set for p3291 = 1.

r3294 BO: Variable signaling function output signal / Var sig outp_sig

SERVO, HLA, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** 5301
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and binector output of the output signal for the variable signaling function.

Dependency: Refer to: p3290, p3291, p3295, p3296, p3297, p3298

p3295 Variable signaling function threshold value / Var sig thresh_val

SERVO, HLA, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5301
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-340.28235E36	340.28235E36	0.000

Description: Sets the threshold value for the variable signaling function.

Dependency: Refer to: p3290

Notice: This parameter is only checked and becomes effective when restarting the variable message function.

p3296 Variable signaling function hysteresis / Var sig hyst

SERVO, HLA, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5301
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	340.28235E36	0.000

Description: Sets the hysteresis for the variable signaling function.

Dependency: Refer to: p3290

Notice: This parameter is only checked and becomes effective when restarting the variable message function.

p3297 Variable signaling function pickup delay / Var sig t_pickup

SERVO, HLA, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 5301
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	10000 [ms]	0 [ms]

Description: Sets the pickup delay for the variable signaling function.

Dependency: Refer to: p3290

Notice: This parameter is only checked and becomes effective when restarting the variable message function.
Values that do not comply with the following condition are rejected:
Pickup delay (p3297) >= sampling time (p3299)

Note: For a value of 0, the pickup delay is disabled.
The output signal is set if the condition for the 1 signal is fulfilled for longer than the selected time.

p3298 Variable signaling function dropout delay / Var sig t_dropout

SERVO, HLA, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 5301
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	10000 [ms]	0 [ms]

Description: Sets the dropout delay for the variable signaling function.

Dependency: Refer to: p3290

Notice: This parameter is only checked and becomes effective when restarting the variable message function.
Values that do not comply with the following condition are rejected:
Dropout delay (p3298) >= sampling time (p3299)

Note: For a value of 0, the dropout delay is disabled.
The output signal is reset if the condition for the 0 signal is fulfilled for longer than the selected time.

p3299 Variable signaling function sampling time / Var sig t_sample

SERVO, HLA, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5301
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1.000 [ms]	4.000 [ms]	4.000 [ms]

Description: Sets the sampling time for the variable signaling function.

Dependency: Refer to: p3290

Notice: This parameter is only checked and becomes effective when restarting the variable message function.

The following must apply for the setting:

Sampling time (p3299) <= pickup delay (p3297), dropout delay (p3298)

Note: Only the following values can be set:

1.000, 2.000, 3.000, 4.000

r3313 Efficiency optimization 2 optimum flux / Optimum flux

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6722, 6837
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, SESM, REL, RESM	**Scaling:** r2004	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the calculated, optimum flux.

Dependency: Refer to: p1401, p3315, p3316

Note: The function is activated via p1401.14 = 1.

p3315[0...n] Efficiency optimization 2 minimum flux limit value / Min flux lim val

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6722, 6837
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
10.0 [%]	200.0 [%]	50.0 [%]

Description: Sets the minimal limit value for the calculated optimum flux.

Dependency: Refer to: p1401, r3313, p3316

Note: The function is activated via p1401.14 = 1.

p3316[0...n] Efficiency optimization 2 maximum flux limit value / Max flux lim val

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 6722, 6837
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
10.0 [%]	200.0 [%]	110.0 [%]

Description: Sets the maximum limit value for the calculated optimum flux.

Dependency: Refer to: p1401, r3313, p3315

Note: The function is activated via p1401.14 = 1.

p3320[0...n] Fluid flow machine power point 1 / Fluid_mach P1

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00	100.00	25.00

Description: For the energy-saving display of a fluid-flow machine, a typical flow characteristic P = f(n) with 5 points along the characteristic is required.

This parameter specifies the power (P) of point 1 as a [%].

The characteristic comprises the following value pairs:

Power (P) / speed (n)

p3320 / p3321 --> point 1 (P1 / n1)

p3322 / p3323 --> point 2 (P2 / n2)

p3324 / p3325 --> point 3 (P3 / n3)

p3326 / p3327 --> point 4 (P4 / n4)

p3328 / p3329 --> point 5 (P5 / n5)

Dependency: Refer to: r0041, p3321, p3322, p3323, p3324, p3325, p3326, p3327, p3328, p3329

Note: The reference value for power and speed is the rated power/rated speed.

The energy saved is displayed in r0041.

p3321[0...n] Fluid flow machine speed point 1 / Fluid_mach n1

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00	100.00	0.00

Description: For the energy-saving display of a fluid-flow machine, a typical flow characteristic P = f(n) with 5 points along the characteristic is required.

This parameter specifies the speed (n) of point 1 as a [%].

The characteristic comprises the following value pairs:

Power (P) / speed (n)

p3320 / p3321 --> point 1 (P1 / n1)

p3322 / p3323 --> point 2 (P2 / n2)

p3324 / p3325 --> point 3 (P3 / n3)

p3326 / p3327 --> point 4 (P4 / n4)

p3328 / p3329 --> point 5 (P5 / n5)

Dependency: Refer to: r0041, p3320, p3322, p3323, p3324, p3325, p3326, p3327, p3328, p3329

Note: The reference value for power and speed is the rated power/rated speed.

The energy saved is displayed in r0041.

p3322[0...n] Fluid flow machine power point 2 / Fluid_mach P2

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00	100.00	50.00

Description: For the energy-saving display of a fluid-flow machine, a typical flow characteristic P = f(n) with 5 points along the characteristic is required.

This parameter specifies the power (P) of point 2 as a [%].

Dependency: Refer to: r0041, p3320, p3321, p3323, p3324, p3325, p3326, p3327, p3328, p3329

Note: The reference value for power and speed is the rated power/rated speed.
The energy saved is displayed in r0041.

p3323[0...n] Fluid flow machine speed point 2 / Fluid_mach n2

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00	100.00	25.00

Description: For the energy-saving display of a fluid-flow machine, a typical flow characteristic P = f(n) with 5 points along the characteristic is required.
This parameter specifies the speed (n) of point 2 as a [%].

Dependency: Refer to: r0041, p3320, p3321, p3322, p3324, p3325, p3326, p3327, p3328, p3329

Note: The reference value for power and speed is the rated power/rated speed.
The energy saved is displayed in r0041.

p3324[0...n] Fluid flow machine power point 3 / Fluid_mach P3

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00	100.00	77.00

Description: For the energy-saving display of a fluid-flow machine, a typical flow characteristic P = f(n) with 5 points along the characteristic is required.
This parameter specifies the power (P) of point 3 as a [%].

Dependency: Refer to: r0041, p3320, p3321, p3322, p3323, p3325, p3326, p3327, p3328, p3329

Note: The reference value for power and speed is the rated power/rated speed.
The energy saved is displayed in r0041.

p3325[0...n] Fluid flow machine speed point 3 / Fluid_mach n3

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00	100.00	50.00

Description: For the energy-saving display of a fluid-flow machine, a typical flow characteristic P = f(n) with 5 points along the characteristic is required.
This parameter specifies the speed (n) of point 3 as a [%].

Dependency: Refer to: r0041, p3320, p3321, p3322, p3323, p3324, p3326, p3327, p3328, p3329

Note: The reference value for power and speed is the rated power/rated speed.
The energy saved is displayed in r0041.

p3326[0...n] Fluid flow machine power point 4 / Fluid_mach P4

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00	100.00	92.00

Description: For the energy-saving display of a fluid-flow machine, a typical flow characteristic P = f(n) with 5 points along the characteristic is required.

This parameter specifies the power (P) of point 4 as a [%].

Dependency: Refer to: r0041, p3320, p3321, p3322, p3323, p3324, p3325, p3327, p3328, p3329

Note: The reference value for power and speed is the rated power/rated speed.

The energy saved is displayed in r0041.

p3327[0...n] Fluid flow machine speed point 4 / Fluid_mach n4

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00	100.00	75.00

Description: For the energy-saving display of a fluid-flow machine, a typical flow characteristic P = f(n) with 5 points along the characteristic is required.

This parameter specifies the speed (n) of point 4 as a [%].

Dependency: Refer to: r0041, p3320, p3321, p3322, p3323, p3324, p3325, p3326, p3328, p3329

Note: The reference value for power and speed is the rated power/rated speed.

The energy saved is displayed in r0041.

p3328[0...n] Fluid flow machine power point 5 / Fluid_mach P5

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00	100.00	100.00

Description: For the energy-saving display of a fluid-flow machine, a typical flow characteristic P = f(n) with 5 points along the characteristic is required.

This parameter specifies the power (P) of point 5 as a [%].

Dependency: Refer to: r0041, p3320, p3321, p3322, p3323, p3324, p3325, p3326, p3327, p3329

Note: The reference value for power and speed is the rated power/rated speed.

The energy saved is displayed in r0041.

p3329[0...n] Fluid flow machine speed point 5 / Fluid_mach n5

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00	100.00	100.00

Description: For the energy-saving display of a fluid-flow machine, a typical flow characteristic P = f(n) with 5 points along the characteristic is required.

This parameter specifies the speed (n) of point 5 as a [%].

Dependency: Refer to: r0041, p3320, p3321, p3322, p3323, p3324, p3325, p3326, p3327, p3328

Note: The reference value for power and speed is the rated power/rated speed.
The energy saved is displayed in r0041.

p3370[0...n] Pulse technique configuration / Pulse config

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 4
Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Select possible pulse technique configurations.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Select pulse techniques excitation adaptation	Yes	No	-
01	Select pulse techniques offset correction	Yes	No	-
02	Offset correction only close to no-load operation	Yes	No	-

Dependency: Refer to: p3371, p3372, p3373

p3371[0...n] Pulse technique excitation starting point 1 / Pulse excit pt 1

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Arms]	20000.00 [Arms]	0.00 [Arms]

Description: Sets application point 1 for the load current-dependent adapted value of the excitation amplitude of the pulse technique.

Dependency: Refer to: p1607, p3372, p3373

Note: The active excitation amplitude at application point 1 is specified by the setting value p1607.

p3372[0...n] Pulse technique excitation starting point 2 / Pulse excit pt 2

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Arms]	20000.00 [Arms]	0.00 [Arms]

Description: Sets application point 2 for the load current-dependent adapted value of the excitation amplitude of the pulse technique.

Dependency: Refer to: p1607, p3371, p3373

Note: The active excitation amplitude at application point 2 is specified by the setting value (p3373 * p1607).

p3373[0...n] Pulse technique excitation adaptation / Pulse excit scale

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [%]	1000 [%]	100 [%]

Description: Sets the adaptation value at application point 2 of the load current-dependent adapted excitation amplitude of the pulse technique.

Dependency: Refer to: p1607, p3371, p3372

Note: The active excitation amplitude at application point 2 is (p3373 * p1607).

r3374 CO: Pulse technique excitation actual / Pulse excit actual

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [mVs]	- [mVs]	- [mVs]

Description: Display and connector output for the currently active excitation amplitude of the pulse technique.

Dependency: Refer to: p1605, p1607, p1750, p3371, p3372, p3373

r3375[0...3] CO: Pulse technique response raw values / Pulse resp raw

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 6_5	**Unit selection:** p0505
Not for motor type: ASM, SESM, REL	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [A]	- [A]	- [A]

Description: Displays the signal response raw values to the excitation of the pulse technique.

Index:
[0] = Phase R
[1] = Phase S
[2] = Alpha changed
[3] = Beta changed

Dependency: Refer to: p1605, p1607, p1750

r3376[0...2] Pulse technique model parameters / Pulse model

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the parameters of the pulse model.

Pulse reluctances are displayed in the unit [A / Vs].

Index:
[0] = Pulse reluctance total
[1] = Pulse reluctance difference
[2] = Pulse reluctance cross

r3377[0...2] Pulse technique signals / Pulse signals

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays signals of the pulse technique.

Index:
[0] = Offset correction correction component
[1] = Level relationship A priority
[2] = Anisotropy factor

p3400 Infeed configuration word / INF config_word

A_INF, S_INF, R_INF

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 8940
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 1010 bin

Description: Sets the configuration word of the infeed.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Smart Mode	ON	OFF	-
01	Flat-Top Mode	ON	OFF	-
03	Vdc controller	ON	OFF	-
05	Line supply voltage sensing with VSM	ON	OFF	-

Dependency: Refer to: p0210

Notice: For bit 00:

The following applies for Active Infeed chassis:

When used with an Active Interface Module (AIM), it is not permissible to activate the Smart Mode.

Note: For bit 00:

In the Smart Mode, the DC link voltage is not controlled - however, infeed can still regenerate. The magnitude of the DC link voltage depends on the actual line supply voltage and the DC link load.

The following applies for Active Infeed booksize:

When setting the device supply voltage (p0210) to greater than 415 V, then the Smart Mode is automatically activated. This means that the 660 V limit can be maintained for the steady-state DC link voltage (p0280) up to a line supply voltage of 480 V. If higher DC link voltages are permissible, then p0280 can be increased and the Smart Mode deactivated (see p0210).

For bit 01:

If the Flat Top Mode is deactivated, switching losses are higher. This means that the full power is no longer continuously available.

For p3400.0 = 1 or p1810.15 =1, this bit is not effective.

For bit 03:

If the Vdc controller is switched out, overvoltage or undervoltage conditions occur in the DC link if no other voltage-regulating component is located in the DC link.

For p3400.0 = 1, this bit is not effective.

For bit 05:

If a VSM is detected when commissioning the system, this bit is automatically set.

When the bit is set, the line supply voltage input of the VSM must be connected (connected at the line side of the line reactor).

The bit must be set in the case of chassis power units.

VSM: Voltage Sensing Module

r3402 Infeed internal state / INF state int

A_INF, S_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 8832, 8932
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	12	-

Description: Displays the internal status of the infeed module.

Value:

0: Initialization
1: Fault
2: No ON command
3: Offset measurement running
4: ON delay active
5: Precharging running
6: Pulse enable missing
7: Synchronization running

8: Voltage ramp-up active
9: Operation
10: Shutdown running
11: Identification running
12: Magnetization/black start running

r3402 Infeed status internal BIC / INF state int

B_INF

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 8932
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	6	-

Description: Displays the internal status of the infeed module.

Value:
0: Initialization
1: Fault
2: No ON command
3: Offset measurement running
4: ON delay active
5: Precharging running
6: Operation

r3405.0...7 CO/BO: Infeed status word / Inf ZSW

SERVO (Tech_ctrl), SERVO_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), A_INF, S_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 8828, 8928
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status word of the infeed unit.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Smart Mode active	Yes	No	-
01	Vdc controller active	Yes	No	-
02	Phase failure detected	Yes	No	-
03	Current limit reached	Yes	No	-
04	Infeed operates in generator/motor mode	Regenerative mode	Motor mode	-
05	Motor mode inhibited	Yes	No	-
06	Generator mode inhibited	Yes	No	-
07	DC link undervoltage alarm threshold undershot	Yes	No	-

Dependency: Refer to: A06810

Note: For bit 00:

Smart Mode is activated with p3400.0.

For bit 01:

The DC link voltage closed-loop control is activated with parameters p3400.3 and p3513.

For bit 02:

The bit is set if alarm A06205 (phase failure), A06206 (current asymmetry) or A06208 (voltage asymmetry) is output.

The bit is reset for the following events:

- the infeed had reached the normal operating state again after a phase failure has been bypassed/buffered (p3402 = 9).

- the pulse enable is withdrawn due to a fault or switching off with OFF1/OFF2.

- alarm A06206 is reset.

- alarm A06208 is reset.

For bit 03:

The present current limit is displayed in r0067.

For bit 04:

An active current setting r0078 >= 0 means infeed operation in motor mode; an active current setting r0078 < 0 means regenerative operation in generator mode.

For bit 05:
The motor mode inhibit is activated with p3532.
For bit 06:
The generator mode inhibit is activated with p3533.
For bit 07:
When the alarm threshold is fallen below, alarm A06810 is output and r3405.7 is set = 1.
The alarm threshold is obtained from the sum of the undervoltage threshold r0296 and offset p0279. As a consequence, the alarm threshold is only effective for p0279 > 0.
Monitoring only takes place when operational.
The following applies for states r3402 <= 5 and r3402 = 12: r3405.7 = 0.

r3405.1...8 CO/BO: Status word DC link control / ZSW Vdc_ctrl

VECTOR (Tech_ctrl), VECTOR_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status word of the DC link voltage control.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
01	Vdc controller active	Yes	No	-
08	Vdc controller selected	Yes	No	-

Dependency: Refer to: A06810

Note: For bit 01:
DC link voltage control is disabled and enabled with p3513.
For bit 08 = 1:
DC link voltage control is selected using p3513.

r3405.7 CO/BO: Infeed status word / Inf ZSW

B_INF

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status word of the infeed unit.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
07	DC link undervoltage alarm threshold undershot	Yes	No	-

Dependency: Refer to: A06810

Note: For bit 07:
When the alarm threshold is fallen below, alarm A06810 is output and r3405.7 is set = 1.
The alarm threshold is obtained from the sum of the undervoltage threshold r0296 and offset p0279. As a consequence, the alarm threshold is only effective for p0279 > 0.
Monitoring only takes place when operational.
The following applies for states r3402 <= 5 and r3402 = 12: r3405.7 = 0.

p3409 Infeed line frequency setting / INF f_line_mode

A_INF, S_INF, R_INF

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	1

Description: Sets the mode to detect the line supply frequency.

Value:
0: Line supply frequency setting 50/60 Hz off
1: Line supply frequency setting 50/60 Hz on

Dependency: Refer to: p0211, p0284, p0285

Refer to: A06350, A06351, F06500

Note: For p3409 = 1, the following applies:

After operation has been enabled, the rated line supply frequency (p0211) is automatically set to a value of 50 Hz or 60 Hz corresponding to the currently measured frequency. This means that the parameter value of p0211 is, under certain circumstances, changed.

For p3409 = 0, the following applies:

The system does not change parameter p0211.

p3410 Infeed identification method / INF Ident_type

A_INF, S_INF, R_INF

Can be changed: C2(1), T	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	6	5

Description: Sets the line and DC link parameter identification routine for the infeed module.

Value:
0: Identification (Id) off
1: Activate identification (Id)
2: Set controller settings
3: Save identification and controller settings
4: Save identification and controller settings with L adaptation
5: Reset save Id and controller setting with L adaptation
6: Set robust current controller, C-identification and save

Dependency: Refer to: r3411, r3412, r3414, p3415, p3416, p3417, p3421, p3422, p3424, p3555, p3560, p3614

Refer to: A06400

Notice: For p3410 = 1, 3, 4, 5, 6, alarm A06400 is output, indicating that after the next pulse enable the set identification will take place.

The line and DC link adaptation is not permissible for Smart Line Modules in the chassis format.

During identification, no additional loads may be switched-in/switched out.

Mode p3410 = 6 is only permissible in conjunction with line filters p0220 > 110.

Note: p3410 is automatically set to 0 after an identification run has been completed.

When p3410 = 1 an identification run for the total inductance and DC link capacitance is initiated when the pulses are next enabled. The results are displayed in r3411 and r3412. If a Voltage Sensing Module (VSM) is connected, then the line inductance (r3414) is also measured. The infeed then goes into the ready for switching on state.

For p3410 = 2, the data (r3411, r3412 and r3414) determined during the identification run (p3410 = 1) are transferred into p3421, p3422 and p3424. The control loop parameters are suitably scaled to achieve a rugged controller setting (p3425); the fast controller response (p3555[2]) and the current actual value smoothing (p3614) are pre-set. Calculations for the controller are then repeated. The user must save the data in a non-volatile fashion so that the new controller setting is effective the next time that the system is switched on.

When p3410 = 3 an identification run for the inductance and DC link capacitance is initiated when the pulses are next enabled. Data determined during the identification (r3411, r3412, r3414) are used, as described under p3410 = 2 for the setting of p3421, p3422, p3424, p3425, p3555 as well as p3614, and the controller is re-calculated. All of the parameters for the infeed module are then automatically stored in a non-volatile memory. The infeed continues to operate without any interruption with the new controller parameters.

When p3410 = 4 an identification run for the inductance and DC link capacitance is initiated when the pulses are next enabled. Data determined during the identification (r3411, r3412, r3414) are used, as described under p3410 = 2 for the setting of p3421, p3422, p3424, p3425, p3555 as well as p3614, and the controller is re-calculated. The line inductance identification is then repeated, if p3415[1] > p3514[0]. If the inductance measured the second time is lower than the first, the parameters are written to the current controller adaptation (p3620, p3622). All of the parameters for the infeed module are then automatically stored in a non-volatile memory. The infeed continues to operate without any interruption with the new controller parameters.

For p3410 = 5, the same measurements and write operations are always carried-out as for p3410 = 4. However, initially the controller setting is reset by writing the default values dependent on the power unit to p3421, p3422 and p3424 - and setting p3425[0...1] = 100 %. Further, before the measurements are carried out, a brief identification run is executed to coarsely set the controller.

For p3410 = 6, with the next pulse enable, the system will initiate identification of the DC link capacitance. The data (r3412) determined during the identification is used to set the Vdc controller (p3422). All of the parameters for the infeed module are then automatically stored in a non-volatile fashion. The infeed continues to operate without any interruption with the new controller parameters. This identification mode is used to achieve a robust closed-loop control setting, and is only permissible in conjunction with p0220 > 110.

r3411[0...1] Infeed identified inductance / INF L ident

A_INF, S_INF, R_INF			
	Can be changed: -	**Calculated:** -	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [mH]	- [mH]	- [mH]

Description: Displays the identified total inductance.

The value corresponds to the total inductance between the rigid line supply and the infeed input terminals.

Index: [0] = Run 1
[1] = Run 2

Dependency: Refer to: p3410

Note: The value measured in the first identification run is displayed in r3411[0] (for p3410 = 1, 3, 4, 5). This value is transferred to p3421.

The value measured in the second identification run (for p3410 = 4, 5) is displayed in r3411[1] - this value is used to set the current controller adaptation (p3622).

For a parallel connection, the inductance data corresponds to operation with just one power unit. A line-side filter reactor (p0228) is taken into account in the calculation.

For the inductance of the commutating reactor, the following applies.

r3411 - r3414

r3412[0...1] Infeed DC link capacitance identified / INF C_DClink ident

A_INF, S_INF, R_INF			
	Can be changed: -	**Calculated:** -	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [mF]	- [mF]	- [mF]

Description: Displays the identified total DC link capacitance.

Index: [0] = Run 1
[1] = Run 2

Dependency: Refer to: p3410

Note: The value measured in the first identification run (for p3410 = 1, 3, 4, 5) is displayed in r3412[0]. For p3410 = 1, 3, this value is transferred to p3422.

The DC link capacitance is not measured at the second identification run.

The total DC link capacitance of a DC link group comprises the sum of the sub-capacitances of all motor/infeed modules and the additional DC link capacitors.

r3414[0...1] Infeed line supply inductance identified / INF t_line ident

A_INF, S_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [mH]	- [mH]	- [mH]

Description: Displays the identified line supply inductance.

The value corresponds to the total inductance between the stiff line supply and the connection point of the Voltage Sensing Module (VSM), and also includes a line-side reactor integrated in the line filter.

Index: [0] = Run 1
[1] = Run 2

Dependency: Refer to: p3410

Notice: The value is only automatically determined for the line supply identification (p3410 > 0), if operation with a Voltage Sensing Module is selected (p3400.5 = 1). Otherwise, r3414 = 0 is displayed.

Note: The value measured in the first identification run is displayed in r3414[0] (for p3410 = 1, 3, 4, 5). This value is transferred to p3421.

The value measured in the second identification run is displayed in r3414[1] (for p3410 = 4, 5).

For a parallel connection, the inductance data corresponds to operation with just one power unit. A line-side filter reactor (p0228) is taken into account in the calculation.

For the inductance of the commutating reactor, the following applies.

r3411 - r3414

p3415[0...1] Infeed excitation current L identification / INF I_exc L-ident

A_INF, S_INF, R_INF

Can be changed: T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1.00 [%]	75.00 [%]	20.00 [%]

Description: Sets the magnitude of the excitation frequency for the L identification.

The setting is made as a percentage of the maximum power unit current (r0209).

Index: [0] = Run 1
[1] = Run 2

Dependency: Refer to: p3410, r3411, p3421, p3620, p3622

Notice: To correctly identify the current level (p3410 = 4, 5) depending on the reactor inductance, the following must apply:

p3415[0] < p3415[1]

For A_INF booksize units, the following applies:

The interrelationship between the reactor inductance and the current magnitude should be measured. Generally, the factory setting of p3415[0] and p3415[1] should be kept.

For chassis units and S_INF booksize units, the following applies:

Generally, there is only a very low inter-relationship between the reactor inductance and the current magnitude. This means that for the factory setting p3415[0] = p3415[1] = 20 %, i.e. run 2 is not executed.

Note: The reactive current for identification run 1 is set in p3415[0] (basic controller setting).

The reactive current for identification run 2 is set in p3415[1] (adaptation of the current controller when reducing the reactor inductance with increasing current magnitude).

p3416 Infeed excitation amplitude C identification / INF exc_amp C_Id

A_INF, S_INF, R_INF

Can be changed: T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.10 [%]	20.00 [%]	2.00 [%]

Description: Sets the level of the excitation frequency for identification of the total DC link capacitance.

The amplitude is specified as a percentage of the setpoint DC link voltage (p3510).

Dependency: Refer to: p3410, r3412, p3422

p3417 Infeed excitation frequency C identification / INF f_exc C_ID

A_INF, S_INF, R_INF

Can be changed: T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
10.00 [Hz]	200.00 [Hz]	50.00 [Hz]

Description: Sets the level of the excitation frequency for identification of the total DC link capacitance.

Dependency: Refer to: p3410, r3412, p3422

p3421 Infeed inductance / INF L

A_INF, S_INF, R_INF

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.001 [mH]	2000.000 [mH]	1.000 [mH]

Description: Sets the total effective inductance for the closed-loop current control from the sum of the line supply inductance and inductance of the line reactor.

The parameter is preassigned depending on p0223 and p0228.

Dependency: Refer to: p0223, p0225, p3410, p3425, p3614, p3622

Note: The controller setting is derived from this value and p3425.

The value can be automatically determined using the identification run (p3410).

For a parallel circuit, the value corresponds to the inductance of a power unit.

For the inductance value of the line reactor, p3421 - p3424 applies.

p3422 Infeed DC link capacitance / INF C_DCL

SERVO (Tech_ctrl), SERVO_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), A_INF, S_INF, R_INF

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.20 [mF]	2000.00 [mF]	2.00 [mF]

Description: Sets the DC link capacitance for the closed-loop voltage control.

This value is pre-set with p0227.

Dependency: Refer to: p0227, p3410, p3425

Note: The controller setting is derived from this value and p3425.

A suitable value can be automatically determined using the identification run (p3410).

p3422 DC link capacitance total / C_DC tot

VECTOR (Tech_ctrl), VECTOR_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.20 [mF]	2000.00 [mF]	2.00 [mF]

Description: Sets the total DC link capacitance for closed-loop voltage control.

The capacitance of one power unit is pre-assigned to this value. The value should be adapted according to the number of power units.

Note: The controller setting for the DC link voltage controller is derived from this value.

p3424 Infeed line supply inductance / INF L_line

A_INF, S_INF, R_INF

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.001 [mH]	1000.000 [mH]	0.001 [mH]

Description: Sets the line supply inductance.

This parameter is preassigned depending on p0225 and p0228.

Dependency: Refer to: p0223, p0225, p3410, p3425, p3622

Note: The controller setting is derived from this value and p3425.

The value can be automatically determined using the identification (p3410) if operation with a Voltage Sensing Module is selected. Otherwise, p3424 is set to p3421 - p0223.

For a parallel connection, the inductance data is applicable for operation with just one power unit.

p3425[0...5] Infeed control loop parameter scaling / INF par scal

A_INF, S_INF, R_INF

Can be changed: T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1.00 [%]	1000.00 [%]	100.00 [%]

Description: Setting of the scaling factors for controller parameters p3421, p3422, p3424, p3562 and p3617.

Index:
[0] = Inductance value for closed-loop control
[1] = Capacitance value for closed-loop control
[2] = Inductance value for decoupling
[3] = Inductance value for line model
[4] = Integral time current control
[5] = Integral time Vdc control

Dependency: Refer to: p3410, p3421, p3422, p3424, p3614

Note: For index [0, 1]:

p3425 is automatically and optimally set when setting the controller parameters with the line supply data identification p3410 >= 2.

As the line supply inductance (p3424) increases in comparison to the total inductance (p3421), lower values must be selected for p3425. This means that the control is adapted to weak line supplies with high relative short-circuit voltage uk or high line supply inductance (refer to p3614).

The scaled control loop parameters become effective for closed-loop control, i.e. the products p3421 * p3425[0] and p3422 * p3425[1] represent the controller setting.

For index [2]:

Sets the inductance value, which is used for the calculations in the decoupling block of the closed-loop current control.

The value of 100% corresponds to the inductance p3421 * p3425[0].

Setting values between 100 % and 200 % are recommended for fluctuating line fault levels.

For index [3]:

Sets the value for the line inductance, which is used for the calculations in the line (grid) model of the PLL.

The value of 100 % corresponds to inductance p3424.

Setting values up to 4x of p0223 are recommended for fluctuating line fault levels.

For index [4]:

The dynamic performance of the current control is defined by the scaling p3425[4] * p3617.

An optimized setting of p3425[4] is automatically realized by setting the controller parameters with the line data identification p3410 >= 2.

For index [5]:

The dynamic performance of the Vdc control is defined by the scaling p3425[5] * p3562.

An optimized setting of p3425[5] is automatically realized by setting the controller parameters with the line data identification p3410 >= 2.

p3440 Smart Mode configuration / Smart Mode config

A_INF, S_INF, R_INF

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0001 bin

Description: Sets the configuration of the Smart Mode.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Soft Pulse Mode	ON	OFF	-
01	Extended Smart Mode	ON	OFF	-
02	De-select automatic line identification after POWER ON	Yes	No	-

Notice: For bit 00:

This parameter influences the line harmonics for regenerative operation.

For operation with Active Interface Module (AIM) the soft-pulse mode must be activated.

For bit 01:

Operating BLM and SLM together (mixed operation) with bit 01 = 1 is not permissible.

Note: For bit 00:

When the pulsed mode for Smart Mode is deactivated, when regenerating, higher phase current gradients occur.

For Smart Line Modules in the "chassis" format, pulsed operation is not effective.

For bit 01:

For active Extended Smart Mode, for partial load operation, the line reactive power requirement must be reduced and the average value of the DC link voltage increased.

At rated load and overload, the operating behavior is equivalent to the Smart Mode (p3440.1 = 0).

For bit 02 (only effective for bit 01 = 1):

This line supply identification is only effective in the Extended Smart Mode (it should not be confused with the line supply identification using p3410).

The values for inductance and DC link capacitance are required for the Extended Smart Mode (p3448[0...1]).

Automatic line supply identification must be deselected (p3440.2 = 1) when manually entering p3448[0...1].

When automatic line supply identification is selected (p3440.2 = 0), these values are determined at the first pulse enable after each POWER ON and saved in p3448[0...1].

A new line supply identification with the next pulse enable can be initiated by setting p3440.2 = 1 and then by setting p3440.2 back to = 0.

p3441[0...1] Smart Mode Vdc ctrl Kp/Tn / SLM Vdc_ctrl Kp/Tn

A_INF, S_INF, R_INF	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [%]	1000.00 [%]	100.00 [%]

Description: Sets the standardized proportional gain (index 0) and the integral time (index 1) for the DC link voltage controller (Vdc controller) in Smart Mode.

Index: [0] = Proportional gain
[1] = Integral time

Note: A value of 100% corresponds to the basic setting derived from loop control parameters (p0115, p3409, p3448[1]).

p3442[0...1] Smart Mode smoothing times / SLM t_smooth

A_INF, S_INF, R_INF	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [ms]	20.00 [ms]	[0] 0.25 [ms] [1] 1.00 [ms]

Description: Sets the time constant for PT1 filtering of the DC link voltage for the Vdc controller (index 0) and the monitored DC link load current (index 1) in Smart Mode.

Index: [0] = DC link voltage actual value (r3445)
[1] = Monitored DC link load current (r3446[2])

Dependency: Refer to: r3445, r3446

p3443[0...1] Smart Mode line commutation current threshold values / SLM line com I_thr

A_INF, S_INF, R_INF	**Can be changed:** U, T	**Calculated:** -	**Access level:** 4
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [%]	1000.00 [%]	[0] 100.00 [%] [1] 200.00 [%]

Description: Sets the current threshold values for the deactivation (index 0) and activation (index 1) of line commutation in Smart Mode.

Index: [0] = Deactivation
[1] = Activation

Note: A value of 100% corresponds to the minimum feedback load current derived from the loop control parameters (p0210, p0211, p3409, p3448[0], p3432) without infeed components.

To avoid frequent changeovers in operation close to the changeover point, the value for activation (index 1) must be significantly higher than the value for deactivation (index 0).

p3444[0...3] Smart Mode voltages / SLM voltages

A_INF, S_INF, R_INF

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	105.00 [%]	[0] 90.00 [%] [1] 100.50 [%] [2] 70.00 [%] [3] 70.00 [%]

Description: Sets voltage values for the Extended Smart Mode (p3440.1 = 1).

Index:
[0] = Minimum line voltage for feedback
[1] = DC link voltage setpoint
[2] = Line supply undervoltage threshold
[3] = Line supply symmetry threshold

Note: For index [0]:

Sets the minimum line voltage for regenerative feedback into the line supply (energy recovery).

If the voltage threshold is fallen below, feedback is deactivated to prevent the DC link voltage decaying in the event of a significant system voltage dip.

A value of 100% corresponds to the supply voltage set in p0210.

For index [1]:

Sets the DC link voltage setpoint.

A value of 100% corresponds to the rectified value of the actual line voltage.

The value must be greater than or equal to 100%.

For index [2]:

Sets the voltage threshold to identify a line supply undervoltage condition (A06205 with alarm value 32).

A value of 100 % corresponds to the voltage threshold set using p0283.

For index [3]:

Sets the voltage threshold for monitoring line supply symmetry.

A line supply undervoltage is signaled when this threshold is fallen below (A06205 with alarm value 32).

r3445[0...1] Smart Mode voltages display / SLM voltages disp

A_INF, S_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 5_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the various voltages in Smart Mode.

Index:
[0] = DC link voltage smoothed
[1] = DC link voltage setpoint

Dependency: Refer to: r0070, p3442

Note: The display values are only valid when the Smart Mode (p3400.0 = 1) has been activated and the pulses enabled.

For index [0]:

Displays the DC link voltage actual value measured and smoothed with p3442[0].

The smoothed value is used for the DC link voltage controller (Vdc controller) in Smart Mode.

The DC link voltage is also available unsmoothed (r0070).

For index [1]:

Displays the DC link voltage setpoint for the DC link voltage controller (Vdc controller) in Smart Mode.

r3446[0...2] Smart Mode currents / SLM currents

A_INF, S_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 6_4	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [A]	- [A]	- [A]

Description: Displays the various current values in Smart Mode.

Index:
[0] = DC link current setpoint
[1] = Vdc controller I component
[2] = Monitored DC link load current

Note: For index [0]:

Displays the DC link current setpoint requested by the DC link voltage controller (Vdc controller) in Smart Mode.

For index [1]:

Displays the I component of the DC link voltage controller (Vdc controller).

For index [2]:

Displays the monitored DC link load current.

r3447 Smart Mode OFF angle / SLM phi_OFF

A_INF, S_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2005	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°]	- [°]	- [°]

Description: Displays the OFF angle requested by the DC link voltage controller (Vdc controller) in Smart Mode.

Note: A value = 30 ° deactivates feedback.

A value = 0 ° requests maximum feedback (line commutation).

p3448[0...1] Smart Mode inductance/DC link capacitance / SLM L/C

A_INF, S_INF, R_INF

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
10.00 [%]	10000.00 [%]	[0] 110.00 [%] [1] 100.00 [%]

Description: Sets the inductance and/or the DC link capacitance for the Extended Smart Mode.

Index:
[0] = Inductance referred to p0223
[1] = DC link capacitance referred to p0227

Notice: When automatic line supply identification is selected for the Extended Smart Mode (p3440.2 = 0), the following applies:

- the inductance and DC link capacitance values are calculated at the first pulse enable after each POWER ON and saved in p3448[0...1].

- the value range of the automatic identification is limited (100 % <= p3448[0...1], p3448[0] <= 100 % + 100 % / p0120). As a consequence, the preassigned values for the commutation inductance (p0223) and the DC link capacitance (p0227) must be correctly entered.

- values entered manually are overwritten after the next POWER ON.

When automatic line supply identification is deselected for the Extended Smart Mode (p3440.2 = 1), the following applies:

- the inductance and DC link capacitance values must be entered manually.

Note: For index [0]:

The value is used in the calculation of the reference value of p3443 and in the controller models.

A value of 100% corresponds to the inductance parameterized in p0223.

For a parallel circuit, the value corresponds to the inductance of a power unit.

Values less than 100 % do not make sense - and indicate an incorrect setting of p0223 or unsuitable operating points for the line supply identification (p3440.2).

For index [1]:

The value is used in the calculation of the reference value of p3441 and in the controller models.

A value of 100% corresponds to the capacitance parameterized in p0227.

The value includes the capacitances of all modules connected on the DC link.

Values less than 100 % do not make sense - and indicate an incorrect setting of p0227 or unsuitable operating points for the line supply identification (p3440.2).

r3452 Infeed PLL status / INF PLL status

A_INF, S_INF, R_INF			
	Can be changed: -	**Calculated:** -	**Access level:** 4
	Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	7	-

Description: Displays the status of the line supply PLL.

Value:
0: Initialization running
1: Error when synchronizing
2: Line analysis
3: Calculation line data
4: Pulse enable missing
5: PLL calculation
6: Final status controlled / Smart Mode
7: Reserved

p3457[0...2] Infeed PLL supplementary settings / INF PLL suppl_set

A_INF, S_INF, R_INF			
	Can be changed: U, T	**Calculated:** -	**Access level:** 4
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [%]	300.00 [%]	0.00 [%]

Description: Sets the scaling values for the line PLL of the infeed.

Index:
[0] = Synchronization fixed voltage value
[1] = Synchronization angular offset
[2] = Synchronization angular linearity

Dependency: Refer to: A06205, F06500

Notice: The default settings only have to be changed in exceptional cases.

Unsuitable parameter values result in overcurrents and overvoltages.

Note: The setting values are only directly effective for pulse enable or for line synchronization. For adaptations, which are also effective in operation, the PLL can be switched over to the configurable transformer model (p5495).

For index [0]:

The setting value is used to finely adjust PLL line synchronization.

For setting values not equal to 0, p3457[0] * p0210 is set as output voltage for pulse enable. This is especially practical for booksize devices without VSM line voltage measurement.

For index [1]:

The setting value is used to finely adjust PLL line synchronization, and when the pulses are enabled, is added to the line angle that is measured.

The value of 100% corresponds to an angle of 180 °.

For index [2]:

When synchronizing, the linearity of the phase angle is determined in order to check the line quality, and for instance, to detect whether a phase has failed (A06205, F06500). The setting value is used to scale this linearity measured value.

Setting values less than 100 % reduce the sensitivity of the line supply check, for example.

A setting value of 0 % deactivates scaling.

p3458[0...1] Infeed PLL smoothing time / INF PLL t_smooth

A_INF, S_INF, R_INF

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1.0 [ms]	1000.0 [ms]	[0] 23.1 [ms] [1] 9.1 [ms]

Description: Sets the smoothing time for the line supply PLL.

Index:
[0] = Encoderless operation line supply frequency smoothing time
[1] = VSM operation line supply frequency smoothing time

Note: It may be necessary to reduce the smoothing time for weak line supplies with high frequency fluctuations. There is otherwise a risk of brief orientation errors and the infeed could fail.

r3460 Infeed PLL system deviation / INF PLL sys_dev

A_INF, S_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°]	- [°]	- [°]

Description: Displays the PLL system deviation.

r3461 Infeed PLL system deviation after filtering / INF PLL sys_dev sm

A_INF, S_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°]	- [°]	- [°]

Description: Displays the PLL system deviation after filtering.

Dependency: Refer to: p3458

p3462[0...2] Infeed phase failure detection times / INF ph_fail_det t

A_INF, S_INF, R_INF

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [s]	10000.00 [s]	[0] 0.00 [s] [1] 3.00 [s] [2] 60.00 [s]

Description: Sets the time values for phase failure detection and current symmetry monitoring.

Index:
[0] = Line fault max. duration
[1] = Current symmetry rms value smoothing time
[2] = Current symmetry fault delay time

Dependency: Refer to: p3465, r3466

Refer to: F06200, A06205, A06206, F06207

Note: For index [0]:

Sets the maximum permissible wait time for the line supply to return after identifying a line fault.

This parameter is used to define how long alarm A06205 may be continuously present. Fault F06200 is output after the wait time has expired.

For p3462[0] = 0, the following applies:

The time monitoring is deactivated. Fault F06200 is only output, if in addition to A06205, an additional message is initiated with a stop response.

For index [1]:

Sets the smoothing time to calculate the rms phase current values (r3466) for the current symmetry monitoring (p3465).

The smoothing time is internally limited to 30 s.

For index [2]:

Sets the delay time between the Alarm A06206 being permanently active until Fault F06207 is output for the current symmetry monitoring (p3465).

p3463 Infeed phase failure detection line supply angle change / INF ph_fail phi

A_INF, S_INF, R_INF

Can be changed: T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-180.0 [°]	180.0 [°]	15.0 [°]

Description: If the line supply angle (angle between the line supply phases) suddenly changes by this value, then a phase failure is assumed. The pulses are then inhibited for 10 ms.

Dependency: Refer to: A06205

p3465[0...5] Infeed current symmetry monitoring thresholds / INF I_sym thresh

A_INF, S_INF, R_INF

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	200.0 [%]	[0] 60.0 [%] [1] 100.0 [%] [2] 25.0 [%] [3] 90.0 [%] [4] 100.0 [%] [5] 12.5 [%]

Description: Sets scaling values for monitoring the symmetry between the phase currents (r3466).

The monitoring serves to identify continuous line phase failures in regular operation.

The monitoring for the current-controlled mode is deactivated if one of the indices 0, 1, 2 is set to zero.

The monitoring for the Smart Mode is deactivated if one of the indices 3, 4, 5 is set to zero.

Index:
[0] = Closed-loop control activation minimum current
[1] = Closed-loop control activation maximum current
[2] = Closed-loop control alarm asymmetry
[3] = Smart Mode activation minimum current
[4] = Smart Mode activation maximum current
[5] = Smart Mode asymmetry alarm

Dependency: Refer to: p3462, r3466

Refer to: A06205, F06207

Notice: Current symmetry monitoring is deactivated if the dynamic grid support (p5501) or the grid droop control (p5401) is activated. In these operating cases, asymmetrical loads should also be supplied.

The negative phase sequence system control (p3640) controls the current asymmetry - and includes an additional symmetry monitoring of the output voltage (p3647).

Note: The smoothing time constant for the phase current rms values r3466[0, 1, 2] can be set with p3462[1].

For index [0, 1]:

Sets the current thresholds for activating symmetry monitoring in current-controlled operation (p3400.0 = 0).

Monitoring is active if at least one rms phase current value r3466 is greater than p3465[0] * r0207 - and at least one rms phase current value is less than p3465[1] * r0207.

For index [2]:

Sets the alarm threshold for the symmetry of the phase currents in the current-controlled mode.

The ratio between the lowest and highest rms phase current is monitored (r3466). The thus defined symmetry relationship decreases with increasing asymmetry – and always lies in the range of 0 ... 100 %.

In operation (r3452 >= 4) the following applies:

If the symmetry relationship is less than threshold p3465[2], then alarm A06206 is output and status bit r3405.2 = 1 is set.

If the alarm threshold is permanently exceeded for the time p3462[2], then the device is switched off with fault F06207.

For index [3, 4]:

Sets the current thresholds for activating symmetry monitoring in the Smart Mode (p3400.0 = 1).

The monitoring function is always active if at least one phase current rms value (r3466) is greater than p3465[3] * r0207 - and at least one phase current rms value is less than p3465[4] * r0207.

For index [5]:

Sets the alarm threshold for the symmetry of the phase currents in the Smart Mode.

The ratio between the lowest and highest rms phase current is monitored (r3466). The thus defined symmetry relationship decreases with increasing asymmetry – and always lies in the range of 0 ... 100 %.

In operation (r3452 >= 4) the following applies:

If the symmetry relationship is less than threshold p3465[5], then alarm A06206 is output and status bit r3405.2 = 1 is set.

If the alarm threshold is permanently exceeded for the time p3462[2], then the device is switched off with fault F06207.

r3466[0...2] CO: Infeed phase current rms value smoothed / INF I_ph rms sm

A_INF, S_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Display and connector output for the smoothed rms values of the measured phase currents.

Index:
[0] = Phase U
[1] = Phase V
[2] = Phase W

Dependency: Refer to: p3462, p3465

Refer to: A06206, F06207

Note: The smoothed rms values are used to monitor the symmetry of the phase currents (p3465).

The smoothing time constant is set with p3462[1].

r3467[0...3] CO: Infeed current alpha/beta / INF I a/b

A_INF, S_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [A]	- [A]	- [A]

Description: Display and connector output for the line current in alpha/beta components.

Index:
[0] = Alpha
[1] = Beta
[2] = Alpha
[3] = Beta

Note: For index [0, 1]:
Displays the line current at the input terminals of the line filter.
For index [2, 3]:
Displays the line current at the input terminals of the power unit.

r3468[0...5] CO: Infeed voltage alpha/beta / INF U a/b

A_INF, S_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Display and connector output for the line supply voltage at the input terminals of the line filter in alpha/beta components.

Index:
[0] = Alpha
[1] = Beta
[2] = Alpha
[3] = Beta
[4] = Alpha
[5] = Beta

Note: For index [0, 1]:
The input terminals of the line filter form, for infeeds, the connection point of the Voltage Sensing Module (VSM) to measure the line supply voltage.
For operation with VSM (p3400.5 = 1), the following applies:
The voltage measured values r3661 and r3662, transformed into the alpha/beta system are displayed in r3468.
For encoderless operation without VSM (p3400.5 = 0), the following applies:
The estimated values of the voltages from the line supply model of the PLL transformed into the alpha/beta system are displayed in r3468.
For index [2, 3]:
The basic fundamental amplitudes of the clocked inverter output voltages are displayed.
The values are only valid when operation is enabled.
For index [4, 5]:
The basic fundamental amplitudes of the voltage source calculated using a line model are displayed.
The values are only valid when operation is enabled.

p3469[0...n] Latch delay time correction, zero crossover detection / t_latch corr PLL

A_INF, S_INF, R_INF

Can be changed: T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-10000.0 [µs]	10000.0 [µs]	0.0 [µs]

Description: Calibration value for the RC filter of the zero crossover detection of the line supply voltage in the power unit.
When p3469 = 0, a new calibration is performed the next time identification is carried out with p3410 = 4 or 5.

Note: The calibration value is stored in the EEPROM of the power unit because it is a characteristic of the power unit.

r3470 CO: Infeed active current filter / INF I_act filter

A_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the active current requirement due to the line filter.

Dependency: Refer to: r0038, p0221, p0222

Note: With respect to the line supply, the sum of the active currents of the power unit (p0078) and line filter (r3470) are effective.

The active current demand of the line filter is taken into account when calculating the power factor (r0038).

The magnitude of the line filter active current depends on the capacitance (p0221) and the resistance (p0222) of the line filter.

r3471 CO: Infeed reactive current filter / INF I_reactiveFilt

A_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the reactive current requirement as a result of the line filter.

The reactive current requirement of a line filter is covered by the controlled infeed/regenerative feedback so that the converter always operates with a power factor of 1 compared to the line.

Dependency: Refer to: r0038, r0075, r0076, p0221

Note: With respect to the line supply, the sum of the reactive currents of the power unit (p0076) and line filter (r3471) are effective.

The reactive current requirement of the line filter is taken into account when calculating the power factor (r0038).

The amount of the reactive current depends on the capacitance (p0221) of the line filter that is automatically parameterized when a line filter is selected (p0220).

If the line phases are reversed and the line voltage therefore has a negative orientation (r0066 < 0), it should be noted that the sign of the reactive current is reversed.

p3472[0...4] Line supply PLL line supply voltage smoothing time / Line PLL U_I t_sm

A_INF, S_INF, R_INF

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1.0 [ms]	30000.0 [ms]	[0] 200.0 [ms] [1] 100.0 [ms] [2] 5000.0 [ms] [3] 8.0 [ms] [4] 8.0 [ms]

Description: Sets the smoothing time of the line supply voltage for the line supply PLL.

Index:
[0] = Encoderless operation line supply voltage smoothing time
[1] = VSM operation line supply voltage smoothing time
[2] = Detection line supply undervoltage smoothing time
[3] = Detection line supply overvoltage smoothing time
[4] = Detection line supply voltage step smoothing time

Dependency: Refer to: p3400

Note: For the precontrol of the line supply voltage, a smoothed value of the line supply voltage is used in the closed-loop control.

p3472[0]:

Sets the PT1 time constant to smooth the line supply voltage for operation without VSM (p3400.5 = 0).

p3472[1]:

Sets the PT1 time constant to smooth the line supply voltage for operation with VSM (p3400.5 = 1).

p3472[2]:

Sets the smoothing time constant to slowly detect a line supply undervoltage (F06100).

p3472[3]:

Sets the smoothing time constant to quickly detect line supply overvoltages for phase failure (A06205).

p3472[4]:

Sets the smoothing time constant to quickly adapt the line supply precontrol for line supply voltage steps.

p3473[0...3] CI: cos phi display current signal source / cos phi I S_src

A_INF (cos phi), R_INF (cos phi)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8951
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	[0] 3467[0] [1] 3467[1] [2] 3467[2] [3] 3467[3]

Description: Sets the signal source for the current for the cos phi display.

Index:
[0] = Alpha subsystem 1
[1] = Beta subsystem 1
[2] = Alpha subsystem 2
[3] = Beta subsystem 2

Dependency: Refer to: r3467

Note: Using p3475.1, the signal source format can be converted over from alpha/beta space vector coordinates to a 3-conductor representation. With this setting, measured values can be directly interconnected from the Voltage Sensing Module (VSM) (e.g. r5471[0]).

For index [0]:

Current alpha (current phase 1) for r3478[0] space vector 1.

For index [1]:

Current beta (current phase 2) for r3478[0] space vector 1.

For index [2]:

Current alpha (current phase 1) for r3478[1] space vector 2.

For index [3]:

Current beta (current phase 2) for r3478[1] space vector 2.

p3474[0...3] CI: cos phi display voltage signal source / cos phi U S_src

A_INF (cos phi), R_INF (cos phi)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8951
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	[0] 3468[0] [1] 3468[1] [2] 3468[2] [3] 3468[3]

Description: Sets the signal source for the voltage for the cos phi display.

Index:
[0] = Alpha subsystem 1
[1] = Beta subsystem 1
[2] = Alpha subsystem 2
[3] = Beta subsystem 2

Dependency: Refer to: r3468

Note: Using p3475.1, the signal source format can be converted over from alpha/beta space vector coordinates to a 3-conductor representation. With this setting, measured values from the Voltage Sensing Module (VSM) can be directly interconnected (e.g. r5461[0]).

For index [0]:

Voltage alpha (voltage phase-phase 12) for r3478[0] space vector 1.

For index [1]:

Voltage beta (voltage phase-phase 23) for r3478[0] space vector 1.

For index [2]:

Voltage alpha (voltage phase-phase 12) for r3478[1] space vector 2.

For index [3]:

Voltage beta (voltage phase-phase 23) for r3478[1] space vector 2.

p3475[0...1] cos phi display configuration / cos phi config

A_INF (cos phi), R_INF (cos phi)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 8951
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Sets the configuration for the cos phi display.

Index:
[0] = Space vector 1
[1] = Space vector 2

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	cos phi display activation	ON	OFF	-
01	Signal sources in 3-conductor coordinates	Yes	No	-
02	Signal source phase sequence negated (negative frequency)	Yes	No	-

Note: For bit 00:

For p3475[0].0 = 1 the values in r3477[0] and p3478[0] are updated.

For p3475[1].0 = 1 the values in r3477[1] and p3478[1] are updated.

For bit 01:

For p3475.1 = 0, the following applies:

The format of the signal source in p3473 and p3474 is interpreted as alpha/beta space vector coordinates.

For p3475.1 = 1, the following applies:

The format of the signal source in p3473 and p3474 is interpreted as 3-conductor representation.

For bit 02:

When the bit is activated, the phase sequence of the signal source, interconnected via connector inputs p3473 and p3474, is negated with respect to the signals at the inputs of the infeed. For example, this is the case for a transformer with a phase rotation of 180 ° and the corresponding tapping of the signals.

For p3475.2 = 0, the following applies:

The phase sequence of the signal source in p3473 and p3474 is not negated.

For p3475.2 = 1, the following applies:

The phase sequence of the signal source in p3473 and p3474 is negated.

p3476[0...1] cos phi display smoothing time / cos phi t_smooth

A_INF (cos phi), R_INF (cos phi)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8951
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	2000.00 [ms]	200.00 [ms]

Description: Sets the smoothing time for the cos phi display.

Index:
[0] = Space vector 1
[1] = Space vector 2

r3477[0...1] CO: cos phi display actual value sign / cosphi actVal sign

A_INF (cos phi), R_INF (cos phi)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8951
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output for the sign of the offset factor (cos phi).

The offset factor cos phi is defined as the cosine of the phase angle between the sinusoidal oscillation of the voltage and of the current of the fundamental frequency.

Note: The following definition of the signs corresponds with that used in the relevant standards relating to line supplies (e.g. VDE-AR-4105).

For under-excited operation (negative reactive current: r0076 < 0), the following applies:

Lower output voltage or lagging current is identified with a positive sign.

For over-excited operation (positive reactive current: r0076 > 0), the following applies:

Higher output voltage or leading current is identified with a negative sign.

r3478[0...1] CO: cos phi display absolute actual value / cos phi actVal abs

A_INF (cos phi), R_INF (cos phi)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8951
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output for the absolute value of the offset factor (cos phi).

The offset factor cos phi is defined as the cosine of the phase angle between the sinusoidal oscillation of the voltage and of the current of the fundamental frequency.

Index: [0] = Space vector 1
[1] = Space vector 2

Notice: The current and voltage signals must come from the same line supply to which the Active Line Module is connected (identical line frequency).

p3475.2 can be used to compensate if the phase sequence is reversed with respect to the Active Line Module connection terminals.

p3479[0...1] cos phi display current measurement dead time / cosphi I_m t_dead

A_INF (cos phi), R_INF (cos phi)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-10000.000 [µs]	10000.000 [µs]	620.000 [µs]

Description: Sets a dead time for the current measurement.

This means that a calibration of the current measuring instant ensures a precise cos phi measurement in 3-conductor coordinates.

Index: [0] = Space vector 1
[1] = Space vector 2

Notice: A calibration is only required for signal sources in 3-conductor coordinates (p3475.1 = 1).

Note: A calibration value can be checked as follows:

1. Set p3473[0, 1] = p3467[2, 3], configuration p3475[0] = 1.
2. Determining a cos phi reference value.
3. Set p3473[2, 3] = p3671, p3672, configuration p3475[1] = 3.
4. When the calibration value is correctly set, both indices of "cos phi display actual absolute value" p3478[0, 1] contain the same value.

p3480 Infeed modulation depth limit / INF mod_depth lim

A_INF, R_INF

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8940
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
50.0 [%]	110.0 [%]	97.0 [%]

Description: Sets the maximum steady-state modulation depth.

When this limit is reached, the DC link voltage is boosted to maintain the control margin. This means that the control reserve is maintained.

Dependency: Refer to: p3481, r3485

p3481 Infeed standby controller dynamic response / INF res_ctrl dyn

A_INF, R_INF

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8940
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [ms]	1000.0 [ms]	7.5 [ms]

Description: Sets the dynamic response of the reserve controller for the modulation depth. As the smoothing time increases, the response of the DC link voltage tracking becomes slower.

Dependency: Refer to: p3480, r3485

r3485 Infeed standby controller output / INF res_ctrl outp

A_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8940
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the reserve controller output for the modulation depth.

The DC link voltage is increased by this voltage value - the summed setpoint for the DC link voltage is output in r0088.

The summed setpoint is limited to the maximum steady-stage DC link voltage (p0280).

Dependency: Refer to: p3480, p3481

p3490 Infeed delay time OFF1 command / INF t_del OFF1

A_INF, S_INF, R_INF, B_INF

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8732, 8832, 8932
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [ms]	1000000.0 [ms]	0.0 [ms]

Description: Sets the delay time for the ON/OFF1 command of the infeed.

After ON/OFF1 = 0 the infeed remains in operation for the specified time

Dependency: Refer to: p0840

Notice: The ON/OFF1 command of the infeed can be interrupted.

Note: This parameter is only relevant if a Motor Module and the infeed are controlled by the same OFF command. In this case, the delay time and the stop ramp time of the motor can be coordinated with one another.

p3491 Infeed I-offset measurement monitoring time / INF I_offs t_monit

A_INF, S_INF, R_INF

Can be changed: T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8832, 8932
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	65000 [ms]	2000 [ms]

Description: Sets the monitoring time for the current-offset measurement of the power unit.

The time is started with the normal end of the measurement. If the measurement is invalid and if no valid measurement can be taken within the monitoring period (phase currents too high), an appropriate message is generated.

Note: Set this parameter to 0 to allow variations in the delay when running-up.

p3492 Infeed, line supply undervoltage delay time / INF U_line t_del

A_INF, S_INF, R_INF

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [s]	300 [s]	0 [s]

Description: Sets the delay time for shutdown due to a line supply undervoltage condition (F06100).

After the line supply undervoltage is detected, the power unit is tripped (shut down) after this delay time has expired.

If, during this delay time, the line supply undervoltage is no longer detected, then the power unit is not shut down.

While the closed-loop control is being synchronized to the line supply (r3402 = 7) the delay time p3492 is not effective.

Dependency: Refer to: p0283

Refer to: F06100

Note: The degree of ruggedness of the infeed with respect to fluctuations in the line supply voltage can be increased by parameterizing this delay value.

However, the following should be noted:

- the infeed power decreases proportionally (linearly) with the line supply voltage.

- when other components are connected, for low line supply voltage, operating faults or damage can occur. In this case, the specifications of the connected electrical components should always be carefully observed.

r3496[0...1] CO: cos phi display actual value / cosphi disp ActVal

A_INF (cos phi), R_INF (cos phi)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8951
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output for offset factor cos phi.

The offset factor cos phi is defined as the cosine of the phase angle between the sinusoidal oscillation of the voltage and of the current of the fundamental frequency.

Index: [0] = Space vector 1
[1] = Space vector 2

Notice: The current and voltage signals must come from the same line supply to which the Active Line Module is connected (identical line frequency).

p3475.2 can be used to compensate if the phase sequence is reversed with respect to the Active Line Module connection terminals.

p3508 Infeed step-up factor maximum / Step-up factor max

A_INF, R_INF

Can be changed: C2(2), T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1.60	3.00	1.60

Description: Sets the maximum permissible step-up factor for the power unit used in conjunction with the line filter parameterized in p0220[0].

Dependency: Refer to: p0210, p0220, p3510

Note: The maximum step-up factor determines the maximum ratio between the DC link voltage setpoint (p3510) and the unit supply voltage (p0210).

The input of the DC link voltage setpoint (p3510) is limited corresponding to the permissible step-up factor (p3508): p3510 <= p0210 * p3508.

Pre-setting values:

380 ... 480 V booksize units without Active Interface Module: 1.60

380 ... 480 V booksize units with Active Interface Module (p0220 = 41 ... 45): 2.00

380 ... 480 V chassis units: 2.00

500 ... 690 V chassis units: 2.00

Maximum values:

380 ... 480 V booksize units without Active Interface Module: 1.60

380 ... 480 V booksize units with Active Interface Module (p0220 = 41 ... 45): 2.00

380 ... 480 V chassis units: 2.00

500 ... 690 V chassis units: 2.00

When the filter setting (p0220) is changed, then the setting of the maximum step-up factor (p3508) is also automatically adapted.

p3510 Infeed DC link voltage setpoint / INF Vdc setp

SERVO (Tech_ctrl), SERVO_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), A_INF, R_INF

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8910, 8940
P-Group: Closed-loop control	**Unit group:** 5_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
100.00 [V]	1600.00 [V]	600.00 [V]

Description: Sets the setpoint for the DC link voltage.

Dependency: Refer to: p0210, p0280, p3400, p3508, p3511

Warning: Before increasing the voltage limit for pulsed operation of a controlled booksize infeed with line supply voltages p0210 > 415 V it should be checked whether the motors connected to the DC link are specified for the higher motor voltages.

The warning information associated with p0210 must be carefully observed.

Note: When the Smart Mode is activated (p3400.0 = 1) the DC link voltage is not regulated, i.e. the value entered here is in this case not effective.

The permissible range of the DC link voltage depends on the parameterized unit supply voltage (p0210) and the permissible, maximum continuous DC link voltage (p0280).

In voltage-controlled operation (p3400.0 = 0) the following applies:

p3510 >= 1.42 * p0210 and

p3510 <= p3508 * p0210 and

p3510 <= p0280.

In the Smart Mode (p3400.0 = 1) the following applies:

The setpoint p3510 for the DC link voltage control is inactive. In order to permit an adapted display, deviating from voltage-controlled operation, the lower limit p3510 is >= 1.2 * p0210.

p3510 DC link voltage setpoint / Vdc setp

VECTOR (Tech_ctrl), VECTOR_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7960
P-Group: Closed-loop control	**Unit group:** 5_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
100.00 [V]	1600.00 [V]	600.00 [V]

Description: Sets the setpoint for the DC link voltage on the motor side.

p3511 CI: Infeed DC link voltage supplementary setpoint / INF Vdc Z_set

SERVO (Tech_ctrl), SERVO_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), A_INF, R_INF

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8940
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the supplementary setpoint for the DC link voltage.

Dependency: Refer to: p3510

p3511 CI: DC link voltage supplementary setpoint / Vdc Z_set

VECTOR (Tech_ctrl), VECTOR_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7960
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the supplementary setpoint for the DC link voltage on the motor side.

Dependency: Refer to: p3510

p3513 BI: Voltage-controlled operation inhibit / U_ctrl op inhib

SERVO (Tech_ctrl), SERVO_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 8940
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for inhibiting the voltage-controlled mode of the infeed.

Dependency: Refer to: p3400, r3405

Notice: The DC link voltage must be controlled by a different component at the DC link; otherwise this results in an overvoltage or undervoltage condition.

Note: Parameter being prepared.

For this firmware version, the technology controller "DC link voltage controller" is not supported.

The current controller remains active and can be controlled by means of its setpoint inputs (p3515, p3610).

This binector input is used to change over between master operation (0 signal) and slave operation (1 signal) operation and vice versa.

p3513 BI: Voltage-controlled operation inhibit / U_ctrl op inhib

VECTOR (Tech_ctrl), VECTOR_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 7960
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for disabling DC link voltage control on the motor side.

p3513 BI: Voltage-controlled operation inhibit / U_ctrl op inhib

A_INF, R_INF

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 8940
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for inhibiting the voltage-controlled mode of the infeed.

Dependency: Refer to: p3400, r3405

Notice: The DC link voltage must be controlled by a different component at the DC link; otherwise this results in an overvoltage or undervoltage condition.

Note: The current controller remains active and can be controlled by means of its setpoint inputs (p3515, p3610).

This binector input is used to change over between master operation (0 signal) and slave operation (1 signal) operation and vice versa.

p3514 Infeed supplementary active current steady-state / INF I_sup_eff stat

A_INF, R_INF

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8940
P-Group: Closed-loop control	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-2000.00 [Arms]	2000.00 [Arms]	0.00 [Arms]

Description: Sets a steady-state supplementary setpoint for the active line supply current.

Dependency: Refer to: p3515

p3515 CI: Infeed supplementary active current / INF I_suppl act

A_INF, R_INF

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8940
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the supplementary setpoint of the active current.

Dependency: Refer to: p3514

p3516 Infeed current distribution factor / INF I_distr_factor

A_INF, R_INF

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8940
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	100.00 [%]	100.00 [%]

Description: Sets the factor to be multiplied by the active current setpoint for the current controller.

Dependency: Refer to: p3579

r3517 CO: Infeed active current controller unlimited setpoint / INF I_act ctrl set

SERVO (Tech_ctrl), SERVO_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), A_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8940
P-Group: Closed-loop control	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Display and connector output for the unlimited setpoint of the active current controller.

For a master-slave infeed configuration, the master retrieves this setpoint and distributes it to all of the slaves. The slaves operate in the current-controlled mode.

r3517 CO: DC link controller active current setpoint / Vdc I_act set

VECTOR (Tech_ctrl), VECTOR_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6220, 7960
P-Group: Closed-loop control	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Display and connector output for the unlimited setpoint of the active current controller of the DC link voltage control on the motor side.

p3519[0...3] CI: Infeed precontrol power (scaled) / INF prectrl P scal

SERVO (Tech_ctrl), SERVO_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), A_INF, R_INF

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** r2004	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for power precontrol.

Dependency: Refer to: p3521

Note: Closed-loop control of the DC link voltage is improved by precontrolling the power required for the other components.

p3519[0...3] CI: DC link precontrol power (scaled) / Vdc prectrl P scal

VECTOR (Tech_ctrl), VECTOR_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** r2004	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for power precontrol.

Dependency: Refer to: p3521

Note: Closed-loop control of the DC link voltage is improved by precontrolling the power required for the other components.

A scaled quantity is expected so that the various power reference values (r2004) of the drive objects must be taken into account. The scaling factors are used to adapt the scaling (p3521).

p3520[0...3] CI: Infeed precontrol power (not scaled) / INF prctr P n Scal

SERVO (Tech_ctrl), SERVO_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), A_INF, R_INF

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for power precontrol.

Dependency: Refer to: p3521

Note: Closed-loop control of the DC link voltage is improved by precontrolling the power required for the other modules.

A non-scaled quantity is expected so that the various power reference values (r2004) of the drive objects do not have to be taken into account. The scaling factors are used to adapt the scaling (p3521).

p3520[0...3] CI: DC link precontrol power (not scaled) / Vdc pre-ctrl P

VECTOR (Tech_ctrl), VECTOR_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7960
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for power precontrol.

Dependency: Refer to: p3521

Note: Closed-loop control of the DC link voltage is improved by precontrolling the power required for the other modules.

A non-scaled quantity is expected so that the various power reference values (r2004) of the drive objects do not have to be taken into account. The scaling factors are used to adapt the scaling (p3521).

p3521[0...3] Infeed precontrol power scaling / INF prectrl P scal

SERVO (Tech_ctrl), SERVO_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), A_INF, R_INF

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-100000.00000 [%]	100000.00000 [%]	100.00000 [%]

Description: Sets the scaling factor for the power precontrol.

Dependency: Refer to: p3520

p3521[0...3] DC link precontrol power scaling / Vdc prectrl P scal

VECTOR (Tech_ctrl), VECTOR_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7960
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-100000.00000 [%]	100000.00000 [%]	100.00000 [%]

Description: Sets the scaling factor for the power precontrol.

Dependency: Refer to: p3520

Note: The scaling factor acts on the sum of the associated indices of p3519 and p3520. As one BICO input is scaled (p3519) and the other is not scaled (p3520), for each index, only one of the two inputs should ever be assigned.

r3522[0...4] CO: DC link voltage control precontrol display / Vdc_ctr prectr dis

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7960
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [kW]	- [kW]	- [kW]

Description: Display and connector output for the smoothed power precontrols.

Index:
[0] = Power precontrol 1
[1] = Power precontrol 2
[2] = Power precontrol 3
[3] = Power precontrol 4
[4] = Power precontrol sum linearized

Dependency: Refer to: p3520, p3521, p3523

Note: These displays are used to set the correct scaling for the precontrol.

r3522 CO: Infeed precontrol power display / INF prectrl P_disp

A_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [kW]	- [kW]	- [kW]

Description: Display and connector output for the sum of the precontrol powers.

Dependency: Refer to: p3520, p3521, p3523

Note: This display is used to set the correct scaling for the precontrol.

p3523[0...3] Infeed precontrol power smoothing / INF pre-ctrl P sm

SERVO (Tech_ctrl), SERVO_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	1000 [ms]	0 [ms]

Description: Sets the filter time for power precontrol.

Dependency: Refer to: p3520

p3523[0...3] DC link precontrol power smoothing / Vdc pre-ctrl P sm

VECTOR (Tech_ctrl), VECTOR_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	1000 [ms]	0 [ms]

Description: Sets the filter time for power precontrol.

Dependency: Refer to: p3520

p3524[0...2] CI: Infeed reactive/apparent power limit scaling / I_re/app_lim scal

A_INF (Dyn. grid support, Line transf, Suppl cl-loop ctrl), R_INF (Dyn. grid support, Line transf, Suppl cl-loop ctrl)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8945
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for dynamically limiting the reactive current and apparent current.

Index:
[0] = Inductive reactive current limit
[1] = Capacitive reactive current limit
[2] = Absolute apparent current limit

Dependency: Refer to: r0209, p0209, p3525, p3526, p3527, r3535, r3536

Note: For index [0]:

The effective current limit is obtained from p3524[0] * p3525 * r0209[0].

For index [1]:

The effective current limit is obtained from p3524[1] * p3526 * r0209[0].

For index [2]:

The effective current limit is obtained from p3524[2] * p3527 * r0209[0].

p3525 Infeed inductive reactive current limit / I_re_lim ind

A_INF (Dyn. grid support, Line transf, Suppl cl-loop ctrl), R_INF (Dyn. grid support, Line transf, Suppl cl-loop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-100.00 [%]	0.00 [%]	-100.00 [%]

Description: Sets the limit for the controlled inductive reactive current (r0076 < 0).

The value is referred to the maximum current r0209[0].

Dependency: Refer to: r0209, p0209, p3524, r3535, r3536

p3526 Infeed capacitive reactive current limit / I_re_lim cap

A_INF (Dyn. grid support, Line transf, Suppl cl-loop ctrl), R_INF (Dyn. grid support, Line transf, Suppl cl-loop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	100.00 [%]	100.00 [%]

Description: Sets the limit for the controlled capacitive reactive current (r0076 > 0).

The value is referred to the maximum current r0209[0].

Dependency: Refer to: r0209, p0209, p3524, r3535, r3536

p3527 Infeed absolute apparent current limit / I_app_lim_abs

A_INF (Dyn. grid support, Line transf, Suppl cl-loop ctrl), R_INF (Dyn. grid support, Line transf, Suppl cl-loop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8940
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	100.00 [%]	100.00 [%]

Description: Sets the limit for the controlled apparent current (r0068).

The value is referred to the maximum current r0209[0].

Dependency: Refer to: r0209, p0209, p3524, r3535, r3536

p3528 CI: Infeed current limit motoring scaling / INF I_lim mot scal

A_INF, R_INF

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8940
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for the scaling of the current limit when motoring (p3530) to limit the line active current.

Dependency: Refer to: p3530

Note: The effective current limit is given by the product of p3530 * CI: p3528 .

p3529 CI: Infeed current limit regenerative scaling / INF I_lim gen scal

A_INF, R_INF

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8940
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for the scaling of the current limit when generating (p3531) to limit the line active current.

Dependency: Refer to: p3530

Note: The effective current limit is given by the product of p3531 * CI: p3529.

p3530 Infeed current limit motoring / INF I_lim mot

A_INF, R_INF

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8940
P-Group: Closed-loop control	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1.00 [Arms]	100000.00 [Arms]	10000.00 [Arms]

Description: Sets the motoring limit for the active line current.

The currently effective current limit is displayed in r0067[0].

Dependency: Refer to: r0067, p3532

Notice: If this limit is selected lower than the maximum current permissible for the power unit (r0067), the infeed can no longer provide its full controlled power. Operating faults of the infeed can occur due to the resulting DC link undervoltage.

For self-commutated infeeds, the DC link voltage decreases if more power is drawn from the DC link by the connected load than can be supplied by the line because of the power unit maximum current or a limit in p3530.

If the DC link voltage decreases down to the rectified value, then the complete current - necessary to cover the required active power - flows, uncontrolled into the rectifier circuit via the diodes.

This is the reason that, for physical reasons, the value in p3530 cannot act as current limit that is always maintained.

The value forms a current threshold from which point onwards the DC link energy is used as buffer for brief power fluctuations.

Note: If Smart Mode is activated (p3400.0 = 1), the setting in this parameter is not active.

p3531 Infeed current limit regenerative / INF I_limit regen

A_INF, R_INF

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8940
P-Group: Closed-loop control	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-100000.00 [Arms]	-1.00 [Arms]	-10000.00 [Arms]

Description: Sets the limit for the active line supply current when regenerating.

The currently effective current limit is displayed in r0067[1].

Dependency: Refer to: r0067, p3533

Notice: If this limit is selected lower than the maximum current permissible for the power unit (r0067), the infeed can no longer provide its full controlled power. This can result in an overvoltage condition in the DC link.

For self-commutated infeeds, the DC link voltage increases if more power is input to the DC link through the connected source than can be fed to the line because of the maximum power unit current or a limit in p3531

If the DC link voltage exceeds the permissible threshold (p0297), defined by the hardware, then the unit is tripped due to overvoltage.

The value in p3531 represents a current limit that is always maintained - however, this can result in overvoltage conditions in the DC link.

The value in p3531 represents a current limit from which point onwards the capacitance of the DC link can be used as buffer for brief power fluctuations.

Note: If Smart Mode is activated (p3400.0 = 1), the setting in this parameter is not active.

p3532 BI: Infeed inhibit motoring / INF mot mode inhib

A_INF, R_INF			
	Can be changed: T	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 8920
	P-Group: -	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source for inhibiting the motor mode of the infeed.

Dependency: Refer to: r3405, p3530

Notice: If the motor mode is inhibited although power is withdrawn from the DC link, then the DC link voltage drops to the rectified value.

In this state, the DC link is post-charged through the diodes and motoring power is fed to the power unit in spite of the motoring inhibit.

The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: The inhibit only becomes active after operation has been enabled and the Vdc has been ramped up (r0863.0 = 1).

If Smart Mode is activated (p3400.0 = 1), the setting in this parameter is not active.

p3533 BI: Infeed inhibit generator mode / INF gen mode inhib

A_INF, S_INF, R_INF			
	Can be changed: T	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 8820, 8920
	P-Group: -	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source to inhibit the generator mode of the infeed.

Dependency: Refer to: r3405, p3531

Notice: The DC link voltage will increase if generator mode is inhibited even though power is being regenerated into the DC link.

The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: The inhibit only becomes active after operation has been enabled and the Vdc has been ramped up (r0863.0 = 1).

r3534 Infeed line filter maximum current / INF filter I_max

A_INF, R_INF			
	Can be changed: -	**Calculated:** -	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Converter	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [Arms]	- [Arms]	- [Arms]

Description: Displays the maximum permissible current for the line filter set using p0220[0].

Dependency: Refer to: p0220

Note: The currently effective maximum current for the power unit is displayed in r0067.

The value in r0067 is obtained as minimum of the current limits in r0209, p3530 ... r3534.

r3535[0...4] CO: Infeed current limit display / INF I_lim displ

A_INF (Dyn. grid support, Line transf, Suppl cl-loop ctrl), R_INF (Dyn. grid support, Line transf, Suppl cl-loop ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8945
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Display and connector output for the valid current limits.

Index:
[0] = Active current motoring
[1] = Active current generating
[2] = Inductive reactive current
[3] = Capacitive reactive current
[4] = Absolute apparent current

Dependency: Refer to: r0067, r0209, p0209, p3524, p3525, p3526, p3527, r3536

Note: For index [0]:

The value corresponds to r0067[0] (positive value).

For index [1]:

The value corresponds to r0067[1] (negative value).

For index [2]:

The value is negative.

For index [3]:

The value is positive.

For index [4]:

The value is positive.

r3536.0...4 BO: Infeed current limit status display / INF I_lim stat dis

A_INF (Dyn. grid support, Line transf, Suppl cl-loop ctrl), R_INF (Dyn. grid support, Line transf, Suppl cl-loop ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 8945
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and binector output for the status of the current limits.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Active current limit motoring reached	Yes	No	-
01	Active current limit generating reached	Yes	No	-
02	Inductive reactive current limit reached	Yes	No	-
03	Capacitive reactive current limit reached	Yes	No	-
04	Absolute apparent current limit reached	Yes	No	-

Dependency: Refer to: r0209, p0209, r3405, p3524, p3525, p3526, p3527, r3535

Note: A 1 signal indicates when the limit value is reached.

r3554[0...1] Vdc controller output / INF Vdc_ctrl outp

SERVO (Tech_ctrl), VECTOR (Tech_ctrl), SERVO_AC (Tech_ctrl), VECTOR_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7960
P-Group: Closed-loop control	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the DC link voltage controller output (Vdc controller).

Index:
[0] = I output
[1] = PI output

r3554[0...1] Infeed Vdc controller output / INF Vdc_ctrl outp

A_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8940
P-Group: Closed-loop control	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the DC link voltage controller output (Vdc controller).

Index:
[0] = I output
[1] = PI output

p3555[0...5] Infeed Vdc controller integral component fast intervention / Vdc_ctr I-compFast

A_INF, S_INF, R_INF

Can be changed: T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	200.00 [%]	[0] 2.00 [%] [1] 102.00 [%] [2] 0.00 [%] [3] 5.00 [%] [4] 100.00 [%] [5] 0.00 [%]

Description: Sets the fast Vdc controller intervention for a step-like decrease of the DC link voltage due to a high motor load of the infeed.

The Vdc controller fast intervention is deactivated for p3555[5] = 0 % or p3560 < 100% or p0225 > 0.5 * p0223.

For a line supply and DC link identification (p3410 >= 2) the level of the fast controller intervention (p3555[2]) is automatically adapted to the line supply inductance.

Recommendation: Precise system knowhow is required when correctly changing this parameter!

- generally, the fast controller intervention is used to improve the control behavior for high-speed load changes. The function can therefore always be deactivated with p3555[5] = 0 % if no peak load duty cycles are required in the application.

- using p3555[0], the calculation of the modulation depth is determined in the case of high system deviations also when the controller intervention is deactivated. This is the reason that p3555[0] should generally not be changed.

Index:
[0] = Intervention threshold 1: Vdc deviation from the setpoint
[1] = Intervention threshold 2: Vdc difference to the rectified value
[2] = Fast intervention automatic scaling
[3] = Fast intervention precontrol
[4] = Fast intervention timeout
[5] = Fast intervention manual scaling

Note: p3555[0]:

Vdc system deviation as a percentage of the setpoint of the DC link voltage (first condition to initiate fast controller intervention). The threshold is also used to internally change over the modulation depth calculation for high system deviations and should therefore generally not be changed!

p3555[1]:

Vdc threshold as a percentage of the rectified value of the actual line supply voltage (second condition to initiate the fast controller intervention). Both threshold conditions must be fulfilled to initiate the controller intervention.

p3555[2]:

Percentage overall level of the fast intervention (scaling factor). For a line supply identification with p3410 >= 2, the factor is automatically adapted or, for weak line supplies with a high inductance, set to 0.

p3555[3]:

Percentage correction of the precontrol for a fast voltage dip (dead time compensation).

p3555[4]:

Percentage minimum time between two controller interventions (100% corresponds to 100 ms). If high load change frequencies occur with the application, the minimum time between two controller interventions can be reduced using p3555[4].

p3555[5]:

Percentage overall level of the fast intervention (scaling factor). With p3555[5] = 0, the fast controller intervention is inhibited. For weak line supplies with a high inductance, it makes sense to deactivate the fast intervention.

p3560 Infeed Vdc controller proportional gain / INF Vdc_ctrl Kp

SERVO (Tech_ctrl), SERVO_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), A_INF, R_INF

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8940
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.01 [%]	1000.00 [%]	100.00 [%]

Description: Sets the scaled proportional gain for the DC link voltage controller (Vdc controller).

Note: A value of 100 % corresponds to the basic setting derived from loop control parameters (p3421, p3422).

p3560 Vdc controller proportional gain / Vdc_ctrl Kp

VECTOR (Tech_ctrl), VECTOR_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7960
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.01 [%]	1000.00 [%]	100.00 [%]

Description: Sets the scaled proportional gain for the DC link voltage controller (Vdc controller).

Note: A value of 100% corresponds to the basic setting derived from the loop control parameter (p3422).

p3561 CI: Infeed Vdc controller proportional gain scaling / INF Vdc ctr Kpscal

A_INF (Dyn. grid support, Line transf, Suppl cl-loop ctrl), R_INF (Dyn. grid support, Line transf, Suppl cl-loop ctrl)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8940
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for scaling the proportional gain for the DC link voltage controller (Vdc controller)..

Dependency: Refer to: p3560

Note: The total, effective gain is given by the product p3561 * p3560.

Internally, this product is limited to values greater than 0.01.

p3562 Infeed Vdc controller integral time / INF Vdc_ctrl Tn

SERVO (Tech_ctrl), SERVO_AC (Tech_ctrl), SERVO_I_AC (Tech_ctrl), A_INF, R_INF

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8940
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.10 [%]	100000.00 [%]	100.00 [%]

Description: Sets the scaled integral time for the DC link voltage controller (Vdc).

Note: A value of 100 % corresponds to the basic setting derived from loop control parameters (p3421, p3422).

p3562 Vdc controller integral time / Vdc_ctrl Tn

VECTOR (Tech_ctrl), VECTOR_AC (Tech_ctrl), VECTOR_I_AC (Tech_ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7960
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.10 [%]	100000.00 [%]	100.00 [%]

Description: Sets the scaled integral time for the DC link voltage controller (Vdc).

Note: A value of 100% corresponds to the basic setting derived from the loop control parameter (p3422).

p3564 Infeed Vdc monitor time constant / INF Vdc monit T

A_INF, R_INF

Can be changed: T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [ms]	100.0 [ms]	0.2 [ms]

Description: Sets the filter time constant for the DC link voltage monitor (Vdc).

p3566 Infeed Vdc ramp duration / INF Vdc t_ramp

A_INF, R_INF

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8932
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
40 [ms]	1000 [ms]	100 [ms]

Description: Sets the ramp time for the DC link voltage (Vdc) when switching on and switching off.

Switching on (pulses enabled, r0898.3 = 1):

During this time, the DC link voltage is increased from the rectifier value after precharging to the voltage setpoint (p3510, p3511). The voltage setpoint is increased, when necessary, so that the modulation depth reserve (p3481) is maintained. The reactive current is set to the value 0 while ramping.

Switching off (inhibit pulses, r0898.3 = 0):

During this time, the DC link voltage is reduced to the rectified value (sqrt(2) * line supply voltage). The reactive current value is set to the value 0 when the ramp starts.

p3570 CI: Master/slave active current setpoint / I_act_setp

A_INF (Master/Slave), R_INF (Master/Slave)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8940
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	3573[0]

Description: Sets the signal source of the active current setpoint for the closed-loop current control of the slave.

The signal value is received from the master infeed (e.g. via the mulitplexer or direct).

Dependency: Refer to: p3513, p3571, p3572, r3573

p3571[0...3] CI: Master/slave active current setpoint multiplexer input / I_act multi inp

A_INF (Master/Slave), R_INF (Master/Slave)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8948
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal sources for the input values of the multiplexer.

The signal values are used as setpoint for the closed-loop current control of the slave infeed.

Index:
[0] = Multiplexer input value 0
[1] = Multiplexer input value 1
[2] = Multiplexer input value 2
[3] = Multiplexer input value 3

Dependency: Refer to: p3570, p3572, r3573

Note: For a master infeed and a slave infeed, the active current setpoint can be entered without using a multiplexer. If the multiplexer for the master/slave is not required, then it can also be used for another function.

p3572 CI: Master/slave active current setpoint multiplexer selection / I_act multi sel

A_INF (Master/Slave), R_INF (Master/Slave)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Integer16	**Dyn. index:** -	**Func. diagram:** 8948
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to select the required input value for the multiplexer.

CI: p3572 = 0, 1, 2, 3 --> valid values

Fault F06320 is output for other values.

Dependency: Refer to: p3570, p3571, r3573

Refer to: F06320

Note: For a master infeed and a slave infeed, the active current setpoint can be entered without using a multiplexer. If the multiplexer for the master/slave is not required, then it can also be used for another function.

r3573 CO: Master/slave active current setpoint multiplexer output / I_act multi outp

A_INF (Master/Slave), R_INF (Master/Slave)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8948
P-Group: Closed-loop control	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays (connector output) the output for the multiplexer.

The signal value is used as standard for the active current setpoint for the slave infeed.

Dependency: Refer to: p3570, p3571, p3572

Note: For a master infeed and a slave infeed, the active current setpoint can be entered without using a multiplexer. If the multiplexer for the master/slave is not required, then it can also be used for another function.

p3574[0...3] Master/slave DC link voltage monitoring / Vdc monitoring

A_INF (Master/Slave), R_INF (Master/Slave)

Can be changed: C2(1, 2), T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8948
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-60 [V]	60 [V]	[0] 20 [V] [1] -20 [V] [2] 5 [V] [3] -5 [V]

Description: Sets the upper and lower limit values and hysteresis values for the DC link voltage monitoring.

The values are entered as absolute values and refer to the DC link voltage setpoint (p3510).

For a slave infeed, if the limits are violated, then the closed-loop voltage control is automatically switched in.

Index:
[0] = Vdc upper limit value
[1] = Vdc lower limit value
[2] = Vdc upper hysteresis value
[3] = Vdc lower hysteresis value

Dependency: Refer to: r0088, p0210, p3510, r3575

r3575.0...2 BO: Master/slave DC link voltage monitoring status / Vdc monit status

A_INF (Master/Slave), R_INF (Master/Slave)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 8948
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status of the DC link voltage monitoring for the master/slave.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Upper limit value reached	Yes	No	-
01	Lower limit value reached	Yes	No	-
02	Upper/lower limit value reached	Yes	No	-

Dependency: Refer to: r0088, p3510, p3574

p3576[0...5] Master/slave current distribution factor multiplexer input / I_dist_factor inp

A_INF (Master/Slave), R_INF (Master/Slave)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8948
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	100.00 [%]	100.00 [%]

Description: Sets up to 6 factors to be multiplied by the active current setpoint for the current controller.

For a master slave infeed configuration, the value reduced in this way can be distributed to the slave axes. The overall gain from the perspective of the voltage controller remains the same.

Index:
[0] = Value 0
[1] = Value 1
[2] = Value 2
[3] = Value 3
[4] = Value 4
[5] = Value 5

Dependency: Refer to: p3577, r3578, p3579

Note: If the multiplexer for the master/slave is not required, then it can also be used for another function.

p3577 CI: Master/slave current distribution factor multiplexer selection / I_dist_factor sel

A_INF (Master/Slave), R_INF (Master/Slave)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Integer16	**Dyn. index:** -	**Func. diagram:** 8948
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to select the required input value for the multiplexer.

CI: p3577 = 0, 1, 2, 3, 4, 5 --> valid values

Fault F06321 is output for other values.

Dependency: Refer to: p3576, r3578, p3579

Refer to: F06321

Note: If the multiplexer for the master/slave is not required, then it can also be used for another function.

r3578 CO: Master/slave current distribution factor multiplexer output / I_dist_factor outp

A_INF (Master/Slave), R_INF (Master/Slave)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8948
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Display and connector output for the multiplexer output value.

The signal value is used as standard for the current distribution factor for the infeed master slave operation.

Dependency: Refer to: p3576, p3577, p3579

Note: If the multiplexer for the master/slave is not required, then it can also be used for another function.

p3579 CI: Master/Slave current distribution factor / I_dist_factor

A_INF (Master/Slave), R_INF (Master/Slave)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8940
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	3578[0]

Description: Sets the factor to be multiplied by the active current setpoint for the current controller.

For a master/slave infeed configuration, the value reduced in this way can be distributed to the slave axes. The overall gain from the perspective of the voltage controller remains the same.

Dependency: Refer to: p3576, p3577, r3578

r3602 Infeed control status / INF ctrl state

A_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	8	-

Description: Displays the status of the closed-loop infeed control.

Value:

0: Initialization running
1: Pulse enable missing
2: Ramp-up DC link voltage
3: Ramp-up reactive current
4: Shutdown running
5: Reset identification

6: Operation
7: Identification running
8: Smart Mode running

p3603 Infeed current precontrol factor D component / INF I_ctrl D-comp

A_INF, R_INF

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8946
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	500.00 [%]	100.00 [%]

Description: The D component of the current precontrol is determined from the device data of the filter. p3603 can be used to weigh the pre-calculated D component. If no dynamic precontrol is to be used, set the factor to zero.

p3604 CI: Infeed current precontrol factor D component scaling / INF I_ctrl D scale

A_INF (Dyn. grid support, Line transf, Suppl cl-loop ctrl), R_INF (Dyn. grid support, Line transf, Suppl cl-loop ctrl)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for scaling the current precontrol.

Dependency: Refer to: p3603

Note: The total, effective gain is given by the product p3604 * p3603

Internally, this product is limited to values greater than 0.

r3606 Infeed active current controller system deviation / INF I_act ctrl dev

A_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8946
P-Group: Closed-loop control	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the system deviation of the active current controller.

r3608 Infeed reactive current controller system deviation / INF I_reactvCtrDev

A_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8946
P-Group: Closed-loop control	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the system deviation of the reactive current controller.

p3610 Infeed reactive current fixed setpoint / INF I_reactv F_set

A_INF, R_INF

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8910, 8946
P-Group: Closed-loop control	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-10000.0 [Arms]	10000.0 [Arms]	0.0 [Arms]

Description: Sets the fixed setpoint for the reactive current.

The permissible maximum absolute value for the reactive current is the device rated current r0207.

The following applies: | p3610 | <= r0207

Dependency: Refer to: r0029, r0075, r0076

Notice: If the line phases are reversed and the line voltage therefore has a negative orientation (r0066 < 0), it should be noted that the sign of the reactive current is also reversed. The negated value of p3610 is effective in display parameters r0029, r0075, r0076 as appropriate.

Note: p3610 < 0: Inductive reactive current is produced, i. e. the current follows the voltage.

p3610 > 0: Capacitive reactive current is produced, i. e. the current leads the voltage.

This definition applies to 3AC voltage systems both with positive rotational orientation (r0066 > 0) and for negative rotational orientation (r0066 < 0).

p3611 CI: Infeed reactive current supplementary setpoint / INF I_react Z_set

A_INF, R_INF

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8946
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the supplementary setpoint of the reactive current.

p3612 CI: Infeed reactive power precontrol / INF P_react prectr

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** r2004	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the precontrol of the reactive power.

Dependency: Refer to: p3520

p3614[0...3] Infeed current actual value filter smoothing time / INF I_act t_sm

A_INF, R_INF

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8950
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [ms]	2.000 [ms]	0.000 [ms]

Description: Sets the time constant for the PT1 filtering of the active current actual value and reactive current actual value.

Index:
[0] = Current actual value smoothing with dead time
[1] = Current actual value smoothing without dead time
[2] = System deviation smoothing without dead time
[3] = Automatic system deviation smoothing

Note: The current actual value filter is deactivated with p3614[0, 1, 2] = 0.

For index [0]:

The PT1 filter with a clock cycle dead time can be used to stabilize the closed-loop current control for extremely weak line supplies (with higher relative short-circuit voltage uk).

For an automatic controller setting with p3410 >= 2, the current actual value filter is automatically pre-set.

For index [1]:

The PT1 filter without dead time can be used to optimize the closed-loop current control (e.g. in conjunction with frequency wobbulation).

For index [2]:

The PT1 filter without dead time for the system deviation (r3606, r3608) can be used to stabilize the closed-current control for weak line supplies (with low line fault rating).

For index [3]:

For an automatic controller setting, the PT1 filter without dead time for the system deviation (r3606, r3608) is preset with p3410 >= 2.

The filter is only active, if the following applies: p3614[2] = 0.

p3615 Infeed current controller P gain / INF I_ctrl Kp

A_INF, R_INF	**Can be changed:** U, T	**Calculated:** -	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8946
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [%]	1000.00 [%]	100.00 [%]

Description: Sets the scaled P gain for closed-loop current control of the infeed.

Note: A value of 100 % corresponds to the basic setting derived from loop control parameters (p3421, p3422).

p3616 CI: Infeed current controller P gain scaling / INF I_ctrl Kp scal

A_INF (Dyn. grid support, Line transf, Suppl cl-loop ctrl), R_INF (Dyn. grid support, Line transf, Suppl cl-loop ctrl)	**Can be changed:** T	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: -	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	1

Description: Sets the signal source for scaling the proportional gain of the current controller.

Dependency: Refer to: p3615

Note: The total, effective gain is given by the product p3616 * p3615.

Internally, this product is limited to values greater than 0.

p3617 Infeed current controller integral time / INF I_ctrl Tn

A_INF, R_INF	**Can be changed:** U, T	**Calculated:** -	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8946
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.10 [%]	100000.00 [%]	100.00 [%]

Description: Sets the scaled integral time for the infeed current controller.

Note: A value of 100 % corresponds to the basic setting derived from loop control parameters (p3421, p3422).

r3618 Infeed active current controller integral component / INF I_act_ctrl Tn

A_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8946
P-Group: Closed-loop control	**Unit group:** 5_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Displays the integral component of the active current controller.

r3619 Infeed reactive current controller integral component / INF I_reactv_ctrTn

A_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8946
P-Group: Closed-loop control	**Unit group:** 5_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Displays the integral action component of the reactive current controller.

p3620 Infeed current controller adaptation lower switch-in threshold / INF I_adpt thr low

A_INF, R_INF

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	100.00 [%]	40.00 [%]

Description: Sets the switch-in threshold for the current controller adaptation.

The value refers to the maximum power unit current (r0209).

From the starting threshold onwards, the inductance value (p3421) used for current control is reduced linearly as a function of the current value. The inductance value for the maximum power unit current is therefore p3421 * p3622.

Dependency: Refer to: p3410, p3415, p3622

Note: The parameter can be set automatically using the line supply identification (p3410 = 4, 5) (also refer to p3622).
Prerequisite for a reliable measurement of p3622 is that the current magnitude for run 2 (p3415[1]) is at least 10 % higher than the current magnitude for run 1 of the line supply identification. Otherwise, the measurement result is rejected.

In the case of a correct measurement, p3620 is set to 80% of the current magnitude for run 1 (p3415[0]).

For chassis power units, it is generally not necessary to adapt p3620 and p3622 to the characteristics of the line supply. However, when required, the current controller adaptation can be optimized by selecting suitable current magnitudes for p3415.

For booksize power units, p3620 and p3622 are automatically adapted with the then valid factory setting of the line identification p3415.

p3622 Infeed current controller adaptation reduction factor / INF I_adapt factor

A_INF, R_INF

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.01 [%]	100.00 [%]	85.00 [%]

Description: Sets the inductance of the line reactor at the maximum power unit current (r0209) as a percentage of the inductance (p3421) at the application threshold (p3620).

Dependency: Refer to: p3410, p3415, p3620

Note: The parameter for a line supply identification (p3410 = 4, 5) automatically optimized, if the following applies:

p3415[1] - p3415[0] > 10 %

Otherwise, the measurement result is rejected.

For chassis power units, it is generally not necessary to adapt p3620 and p3622 to the characteristics of the line supply. However, when required, the current controller adaptation can be optimized by selecting suitable current magnitudes for p3415.

For booksize power units, p3620 and p3622 are automatically adapted with the then valid factory setting of the line identification p3415.

p3624[0...1] Infeed harmonics controller order / INF harm_ctr order

A_INF, R_INF			
	Can be changed: T	**Calculated:** -	**Access level:** 2
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
	Min	**Max**	**Factory setting**
	5	13	[0] 5 [1] 7

Description: Sets the Order of the line harmonics for the current harmonics controller.

p3624[0]: Order of the line harmonics for the first harmonics controller.

p3624[1]: Order of the line harmonics for the second harmonics controller.

Dependency: Refer to: p3625, r3626

Note: Harmonics in the line supply voltage can cause harmonics in the converter current. These types of current harmonics can be reduced by activating additional controller modules.

Example:

For a 50 Hz line supply harmonics at 250 Hz in the phase currents can be reduced by activating a harmonic controller with Order 5 (p3624[0] = 5).

p3625[0...1] Infeed harmonics controller scaling / INF harm_ctrl scal

A_INF, R_INF			
	Can be changed: U, T	**Calculated:** -	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.0 [%]	300.0 [%]	100.0 [%]

Description: Sets the gain of the harmonics controller.

p3625[0]: Gain of the first harmonics controller

p3625[1]: Gain of the second harmonics controller

0 %: Controller is deactivated

100 %: Controller is activated with default gain setting

Dependency: Refer to: p3624, r3626

Note: The harmonics controller corrects the power unit voltages so that the line-side current harmonics are reduced.

The order of a current harmonic, that is to be dampened using a harmonics controller, is defined using p3624.

r3626[0...1] Infeed harmonics control output / INF harm_ctrl outp

A_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** 5_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Displays the output voltages of the harmonics controller.
r3626[0]: rms value of the 5th harmonic of the controller output voltage
r3626[1]: rms value of the 7th harmonic of the controller output voltage
The harmonics controller corrects the power unit voltages so that the line-side current harmonics are reduced.

Dependency: Refer to: p3624, p3625

r3632 Infeed input voltage Vsd (active component) / INF U_inp Vsd

A_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8910, 8946, 8950
P-Group: Closed-loop control	**Unit group:** 5_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Displays the voltage Vsd (active component) at the 3-phase line supply input of the power unit.

r3633 Infeed input voltage Vsq (reactive component) / INF U_inp Vsq

A_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8910, 8946, 8950
P-Group: Closed-loop control	**Unit group:** 5_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Displays the voltage Vsq (reactive component) at the 3-phase line supply input of the power unit.

r3635 CO: Infeed input voltage angle / INF U_inp angle

A_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8950
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°]	- [°]	- [°]

Description: Display and connector output for the angle of the input voltage (relative to the line supply angle).

p3636[0...2] CI: Negative phase-sequence system controller phase current scaling / Neg_sys_ctr ph sc

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for scaling the phase current using the negative phase-sequence system controller.

Setpoints not equal to 0 result in shifting the corresponding phase currents to the two other phases. As a consequence, an identical scaling value for all 3 phases does not result in a change in the current.

Index:
[0] = Phase U
[1] = Phase V
[2] = Phase W

Caution: Unequal scaling values result in an oscillating line power and therefore in voltage fluctuations in the DC link and asymmetrical line supply load.

As a consequence, additional thermal losses occur in the inverter

Further, this can have a negative impact on adjacent systems and components - or even damage them.

Depending on the magnitude of the asymmetry, increased harmonics can occur in the phase currents.

It may be necessary to increase the capacitance in the DC link to reduce the amplitude of the DC link voltage fluctuations.

Notice: The phase current scaling requires the calculation of the line voltage negative-phase sequence system (p5500.3 = 1). Grid support (p5501) can be activated or deactivated.

Internally, the value range of p3636 is limited depending on p3527.

The following applies to the maximum absolute value of the scaling value:

(100 % - p3527) * 2

The complete value range [-1, 1] assumes that p3527 is set <= 50 %. For p3527 = 100 %, p3636 is not effective.

Contrary to entering setpoint pointers (p3641), the phase current scaling becomes active with p3636 after the dynamic grid support has entered a setpoint (p5506, p5509). As a consequence, dynamic grid support is influenced by p3636. Inversely, it also applies that the current change as a result of p3636 is not taken into account in the dynamic grid support, and therefore the dynamic phase-by-phase current limiting must be deactivated (p5500.7 = 0).

Note: The scaling signals are internally limited by the value range [-1, 1].

Example:

p3636[0] = 1 signal (corresponds to 100 %) results in a reduction of the current setpoint in phase U to approximately 0, if the following applies:

p3636[1] = p3636[2] = 0 signal

The current amplitudes of the two other phases V and W are then symmetrically increased by 50 %.

The setpoints r5510[4, 6] and the negative phase-sequence system setpoint pointer calculated using p3636 are added.

r3637[0...3] CO: Negative phase-sequence system controller current setpoint / Neg_seq_ctrl I_set

A_INF (Dyn. grid support, Line transf, Suppl cl-loop ctrl), R_INF (Dyn. grid support, Line transf, Suppl cl-loop ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7987
P-Group: Displays, signals	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Display and connector output for the current setpoints of the negative phase-sequence system controller.

The setpoint for the positive phase-sequence system current is compensated in the displayed negative-phase sequence system current.

The setpoint for the negative phase-sequence system current is compensated in the displayed positive-phase sequence system current.

Index:
[0] = Negative phase-sequence system component active current
[1] = Negative phase-sequence system component reactive current
[2] = Positive phase-sequence system component active current
[3] = Positive phase-sequence system component reactive current

Note: The total active current setpoint in the positive phase-sequence system coordinates is displayed in r0077.

The total reactive current setpoint in the positive phase-sequence system coordinates is displayed in r0075.

r3638[0...3] CO: Negative phase-sequence system controller current actual value / Neg_seq ctr I_act

A_INF (Dyn. grid support, Line transf, Suppl cl-loop ctrl), R_INF (Dyn. grid support, Line transf, Suppl cl-loop ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7987
P-Group: Displays, signals	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Display and connector output for the current actual values of the negative phase-sequence system controller.

The setpoint for the positive phase-sequence system current is compensated in the displayed negative-phase sequence system current.

The setpoint for the negative phase-sequence system current is compensated in the displayed positive-phase sequence system current.

Index:
[0] = Negative phase-sequence system component active current
[1] = Negative phase-sequence system component reactive current
[2] = Positive phase-sequence system component active current
[3] = Positive phase-sequence system component reactive current

Note: The total active current actual value in the positive phase-sequence system coordinates is displayed in r0078.

The total reactive current actual value in the positive phase-sequence system coordinates is displayed in r0076.

p3639[0...3] Negative phase-sequence system controller scaling values / Neg_sys_ctrl scal

A_INF (Dyn. grid support, Line transf, Suppl cl-loop ctrl), R_INF (Dyn. grid support, Line transf, Suppl cl-loop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7987
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	300.00 [%]	[0] 100.00 [%] [1] 0.10 [%] [2] 200.00 [%] [3] 1.00 [%]

Description: Sets the scaling values for the negative phase-sequence system controller.

Index:
[0] = Integral time
[1] = Integrator feedback coupling
[2] = DC link voltage extrapolation
[3] = DC link voltage filter

Note: For index [0]:

The value 100% corresponds to the integral time, which is active for the regular positive phase-sequence system current controller (p3617).

With p3639[0] = 0, the integral component of the negative phase sequence system controller is deactivated.

For index [1]:

Sets an integrator feedback loop, which, for values greater than 0, results in a PT1 response. In the control, instead of an integrator, a 1st order delay element with time constant [-p0115[0] / ln(1 - p3639[1])] is active. This allows the negative phase-sequence system controller stability range to be extended.

Internally, the setting value is limited to 10 %.

We only recommend that this parameter is changed if stability problems are encountered. Typical setting values are in the range of 1%.

For index [2]:

Sets the extrapolation width for the actual value of the DC link voltage to compensate for Vdc oscillation. A value of 100% corresponds to an extrapolation of one current controller sampling time (p0115[0]).

The extrapolated value is displayed in r3643[1].

For index [3]:

Sets the scaling factor for the Vdc actual value filter.

At twice the line supply frequency, this component of the Vdc oscillation can pass through the bandstop and causes the Vdc controller to respond. As a consequence, the stability of the overall closed-loop control can be improved.

The setting values are internally limited to 100%.

p3640 Negative phase-sequence system controller configuration / Neg_sys ctr config

A_INF (Dyn. grid support, Line transf, Suppl cl-loop ctrl), R_INF (Dyn. grid support, Line transf, Suppl cl-loop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 7987
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Sets the configuration for the negative phase-sequence system current controller.

Recommendation: Setting p3640 = 7 is recommended if the emphasis is not on correcting current asymmetry, but on identifying high-ohmic line supply phase failures.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Negative phase-sequence system current controller activated	Yes	No	-
01	Asymmetry monitoring activated	Yes	No	-
02	Output limiting activated	Yes	No	-

Note: For bit 00:

The negative phase-sequence system controller controls negative phase-sequence components in the line current.

For asymmetry in the line supply, this means that current harmonics with 2x the line frequency can be compensated.

For bit 01:

Only active for bit 0 = 1.

For bit 1 = 1, the following applies:

The smoothed amplitude of the controller output is monitored, and when a threshold is exceeded (p3647[1]) an alarm is output (A06208) - and the signal bit for phase failure is set (r3405.2 = 1).

When compared to passive monitoring, this negative phase-sequence system control represents active phase failure detection; even under no load conditions, it can be guaranteed that single-phase, high-ohmic line supply faults are detected.

For bit 02:

Only active for bit 0 = 1.

For bit 2 = 1, the following applies:

In the case of high-ohmic line supply faults (e.g. phase failure), the line asymmetry that occurs can result in a significant increase in the controller integral components, and as a consequence in a fault shutdown (e.g. fault F06200).

If these types of line supply faults are to be ridden through without shutdown (as far as is possible), then the controller output voltage limiting must be activated (threshold p3647[0]).

When monitoring is active (bit 1), for example, after A06208 occurs, a higher-level control system can initially shut down the drives in a controlled fashion - and then switch off the Active Infeed.

p3641[0...1] CI: Negative phase-sequence system controller setpoint pointer / Neg_seq ctrl setp

A_INF (Dyn. grid support, Line transf, Suppl cl-loop ctrl), R_INF (Dyn. grid support, Line transf, Suppl cl-loop ctrl)

Can be changed: T	**Calculated:** -	**Access level:** 4
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7987
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the setpoint pointer of the negative phase-sequence system current controller.

Index:
[0] = Active
[1] = Reactive

Warning: Setpoints not equal to zero result in an oscillating line power and therefore in voltage fluctuations in the DC link and asymmetrical line supply load.

Note: When the function module "dynamic grid support" (r0108.7 = 1) is activated, the following applies:

The setpoints r5510[4, 6] and the setpoints of the signal source are summed.

---

r3642[0...1] CO: Negative phase-sequence system controller manipulated variable / NegSeqCtr ManipVar

A_INF (Dyn. grid support, Line transf, Suppl cl-loop ctrl), R_INF (Dyn. grid support, Line transf, Suppl cl-loop ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7987
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Display and connector output for the manipulated variable (output voltage) of the negative phase-sequence system current controller.

The manipulated variable is displayed in alpha/beta coordinates.

Index: [0] = Alpha
[1] = Beta

---

r3643[0...1] Neg phase-sequence system controller DC link voltage correction / NegSeqCtr Vdc corr

A_INF (Dyn. grid support, Line transf, Suppl cl-loop ctrl), R_INF (Dyn. grid support, Line transf, Suppl cl-loop ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7987
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the correction value for the DC link voltage setpoint.

This value is added to the DC link voltage setpoint (p3510), and in the case of a negative phase-sequence system setpoint not equal to 0, compensates any Vdc oscillation.

Index: [0] = Correction value
[1] = Correction value extrapolated

Note: For index [0]:

The corrected DC link voltage setpoint (r0088) is effective for the voltage controller.

For index [1]:

For Vdc compensation, the extrapolated correction value (also see p3639[2]) is used to take into account the current controller dead times – and to avoid current harmonics in the case of a negative phase-sequence system setpoint other than 0.

---

p3645 Neg phase-seq system controller Vdc actual value filter damping / NegSysCtr FiltDamp

A_INF (Dyn. grid support, Line transf, Suppl cl-loop ctrl), R_INF (Dyn. grid support, Line transf, Suppl cl-loop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	10.000	0.300

Description: Sets the denominator damping for the bandstop filter of the Vdc actual value for twice the line frequency.

Note: The bandstop filter is deactivated with p3645 = 0.

r3646[0...1] Negative phase-sequence system controller integral component / neg_sys_ctrl int

A_INF (Dyn. grid support, Line transf, Suppl cl-loop ctrl), R_INF (Dyn. grid support, Line transf, Suppl cl-loop ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7987
P-Group: Closed-loop control	**Unit group:** 5_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Displays the integral components of the negative phase-sequence system controller.

Index:
[0] = Active
[1] = Reactive

p3647[0...2] Negative phase-sequence system controller phase asymmetry / Neg_seq ctrl asym

A_INF (Dyn. grid support, Line transf, Suppl cl-loop ctrl), R_INF (Dyn. grid support, Line transf, Suppl cl-loop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	300.00 [%]	[0] 15.00 [%] [1] 10.00 [%] [2] 50.00 [%]

Description: Sets the threshold limits and monitoring thresholds for the negative phase-sequence system controller.

Index:
[0] = Threshold limit
[1] = Signaling threshold
[2] = Smoothing time

Note: For index [0]:

Sets the limit threshold for the output amplitude of the negative phase-sequence system control.

The value of 100 % corresponds to the smoothed line voltage (r0072[4]).

For p3640.2 = 1, the following applies:

The negative phase-sequence system integral components (r3645) are reduced if the set threshold is exceeded.

For index [1]:

Sets the signaling threshold for the output amplitude of the negative phase-sequence system control.

The negative phase-sequence system output amplitude corresponds to the asymmetry of the line voltage.

The value of 100 % corresponds to the smoothed line voltage (r0072[4]).

The setting value is internally limited to a maximum of 0.9 * p3647[0].

For p3640.1 = 1, the following applies:

A06208 is output and r3405.2 is set = 1 if the set threshold is exceeded. This allows line asymmetry monitoring or phase failure detection to be implemented.

For index [2]:

Sets the smoothing time for identifying the asymmetry described under index 1.

The 100% value corresponds to 1 second.

r3648[0...1] CO: Transformer DC component controller current actual value / Tr DC_ctrl I_act

A_INF (Line transf), R_INF (Line transf)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7987
P-Group: Displays, signals	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Display and connector output for the DC components of the current actual values of the negative phase-sequence system controller.

The DC components of the current actual values are displayed in alpha/beta coordinates.

Index:
[0] = Alpha
[1] = Beta

Dependency: Refer to: p3649, p3650, p3651, r3652, p3654

p3649 Transformer DC component controller integral time / Tr DC_ctrl Tn

A_INF (Line transf), R_INF (Line transf)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7987
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	300.00 [%]	100.00 [%]

Description: Sets the integral time Tn of the DC component controller.

Dependency: Refer to: r3648, p3650, p3651, r3652, p3654

Note: The 100% value corresponds to the standard setting

With p3649 = 0, the integral component of the DC component controller is deactivated.

p3650 Transformer DC component controller proportional gain / Tr DC_ctrl Kp

A_INF (Line transf), R_INF (Line transf)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7987
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	300.00 [%]	0.00 [%]

Description: Sets the proportional gain Kp of the DC component controller.

The DC component control is a very precise control without any remaining system deviation under steady-state operating conditions. It calculates a supplementary voltage for the output voltage of a power unit so that any DC component in the current can be counteracted.

The controller is designed analytically based on a model of the controlled system comprising converter, line filter and transformer.

Dependency: The prerequisite for the "DC component control" function is that the "Line transformer" function module is activated (r0108.4 = 1).

Refer to: r3648, p3649, p3651, r3652, p3654

Note: The 100% value corresponds to the standard setting

The DC component controller is deactivated with p3650 = 0.

p3651 Transformer DC component controller limiting / Tr DC_ctrl lim

A_INF (Line transf), R_INF (Line transf)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7987
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
2.0 [%]	10.0 [%]	5.0 [%]

Description: Sets the limit for the output voltage of the DC component controller.

The value is referred to the device supply voltage (p0210).

Dependency: Refer to: r3648, p3649, p3650, r3652, p3654

Note: If this parameter is set too low, then a DC component can no longer be corrected.

r3652[0...1] CO: Transformer DC component controller manipulated variable / Tr DC_ctrl man_var

A_INF (Line transf), R_INF (Line transf)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7987
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Display and connector output for the manipulated variable (output voltage) of the DC component controller.

Index: [0] = Alpha
[1] = Beta

Dependency: Refer to: r3648, p3649, p3650, p3651, p3654

Note: The manipulated variable is displayed in alpha/beta coordinates, and in comparison to the phase-to-phase rms supply voltage (p0210) is therefore evaluated with a factor of 0.8165.

p3654 Transformer DC component controller PT2 limit frequency / Tr DC_ctrl PT2 f

A_INF (Line transf), R_INF (Line transf)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7987
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.40 [Hz]	10.00 [Hz]	10.00 [Hz]

Description: Sets the limit frequency for the PT2 lowpass filter of the DC component controller.

Dependency: Refer to: r3648, p3649, p3650, p3651, r3652

p3660[0...n] VSM input line supply voltage voltage scaler / VSM inp U_scaler

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** p0150	**Func. diagram:** 9880
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	100000.00 [%]	0.00 [%]

Description: Sets the voltage scaler for the Voltage Sensing Module (VSM).

Note: When the 690 V input is used (X522) without voltage scaler, 0 % should be entered.

When the 100 V input (X521) is used with voltage scaler to measure medium voltages, the dividing (scaling) factor multiplied by 100% should be entered.

Example:

1000 V line supply voltage, voltage scaling, 10:1

--> voltage at the VSM input is 100 V

--> p3660 = 10 * 100 % = 1000 %

p3660 VSM input line supply voltage voltage scaler / VSM inp U_scaler

A_INF, S_INF, R_INF

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9880
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	100000.00 [%]	0.00 [%]

Description: Sets the voltage scaler for the Voltage Sensing Module (VSM).

Note: When the 690 V input is used (X522) without voltage scaler, 0 % should be entered.

When the 100 V input (X521) is used with voltage scaler to measure medium voltages, the dividing (scaling) factor multiplied by 100% should be entered.

Example:

1000 V line supply voltage, voltage scaling, 10:1

--> voltage at the VSM input is 100 V

--> p3660 = 10 * 100 % = 1000 %

r3661[0...n] CO: VSM input line supply voltage u1 - u2 / VSM inp u1-u2

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** p0150	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** 5_3	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the input voltage between phases L1 and L2 for the Voltage Sensing Module (VSM).

Dependency: Refer to: p3660

Note: X521.1 or X522.1: Connection of L1
X521.2 or X522.2: Connection of L2
X521.3 or X522.3: Connection of L3

r3661 CO: VSM input line supply voltage u1 - u2 / VSM inp u1-u2

A_INF, S_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8850, 8950, 9880
P-Group: Closed-loop control	**Unit group:** 5_3	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the input voltage between phases L1 and L2 for the Voltage Sensing Module (VSM).

Dependency: Refer to: r0025, r0072, p3660

Note: X521.1 or X522.1: Connection of L1
X521.2 or X522.2: Connection of L2
X521.3 or X522.3: Connection of L3
The absolute voltage value (3-ph. AC) resulting from the phase voltages is displayed unsmoothed in r0072[1] and smoothed in r0025[1].

r3662[0...n] CO: VSM input line supply voltage u2 - u3 / VSM inp u2-u3

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** p0150	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** 5_3	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the input voltage between phases L2 and L3 for the Voltage Sensing Module (VSM).

Dependency: Refer to: p3660

Note: X521.1 or X522.1: Connection of L1
X521.2 or X522.2: Connection of L2
X521.3 or X522.3: Connection of L3

r3662 CO: VSM input line supply voltage u2 - u3 / VSM inp u2-u3

A_INF, S_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8850, 8950, 9880
P-Group: Closed-loop control	**Unit group:** 5_3	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the input voltage between phases L2 and L3 for the Voltage Sensing Module (VSM).

Dependency: Refer to: r0025, r0072, p3660

Note: X521.2 or X522.2: Connection of L2
X521.3 or X522.3: Connection of L3
The absolute voltage value resulting from the phase voltages is displayed in r0072[1] and smoothed in r0025[1].

r3664[0...n] CO: VSM temperature evaluation status / VSM temp status

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** p0150	**Func. diagram:** 9886
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status of the temperature evaluation using the Voltage Sensing Module (VSM).
This displays whether the temperature actual value has exceeded the alarm/fault threshold.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Alarm is present	Yes	No	-
01	Fault is present	Yes	No	-

Dependency: Refer to: p3665, r3666, p3667, p3668

r3664.0...1 BO: VSM temperature evaluation status / VSM temp status

A_INF, S_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 9886
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status of the temperature evaluation using the Voltage Sensing Module (VSM).
This displays whether the temperature actual value has exceeded the alarm/fault threshold.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Alarm is present	Yes	No	-
01	Fault is present	Yes	No	-

Dependency: Refer to: p3665, r3666, p3667, p3668

Note: If power units are connected in parallel (p0120 > 1), then the individual status words are OR'ed and the result displayed (r7305).

p3665[0...n] VSM temperature evaluation sensor type / VSM TempSensorType

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** p0150	**Func. diagram:** 9886
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	6	0

Description: Sets the temperature sensor for the Voltage Sensing Module (VSM).
The temperature sensor is connected to terminals X520.5 and X520.6 of the VSM.

Value:
0: No sensor
1: PTC
2: KTY84
6: PT1000

p3665[0...n] VSM temperature evaluation sensor type / VSM TempSensorType

A_INF, S_INF, R_INF

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** p0140	**Func. diagram:** 9886
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	6	0

Description: Sets the temperature sensor for the Voltage Sensing Module (VSM).

The temperature sensor is connected to terminals X520.5 and X520.6 of the VSM.

Value:
0: No sensor
1: PTC
2: KTY84
6: PT1000

Notice: If, when connecting AIMs in parallel, the last position of the Article number (MLFB) is different, then the sensor type must be manually set (p3665).

For MLFBs with the last position 1, 5, 7, p3665 should be set = 6.

For MLFBs with the last position 0, 3, p3665 should be set = 2.

Note: The parameter preassignment depends on the set line filter type (p0220).

For chassis power units, the temperature monitoring of the line filter is active (p3665 = 2 or p3665 = 6).

r3666[0...n] CO: VSM temperature actual value / VSM Temp_ActVal

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** p0150	**Func. diagram:** 9886
P-Group: Closed-loop control	**Unit group:** 21_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°C]	- [°C]	- [°C]

Description: Display and connector output for the temperature actual value of a temperature sensor connected to a Voltage Sensing Module (VSM).

Prerequisite:

A KTY/ PT1000 temperature sensor is connected, and correspondingly 3665 is set = 2, 6.

Dependency: Refer to: p3665

Refer to: F34207, A34211

Note: If value r3666 exceeds threshold value p3667 or p3668, then alarm A34211 or fault F34207 is output.

For sensor type PTC (p3665 = 1), the following applies:

- below the nominal response temperature, r3666 = -50°C.

- above the nominal response temperature, r3666 = 250 °C.

r3666 CO: VSM temperature actual value / VSM Temp_ActVal

A_INF, S_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9886
P-Group: Closed-loop control	**Unit group:** 21_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°C]	- [°C]	- [°C]

Description: Display and connector output for the temperature actual value of a temperature sensor connected to a Voltage Sensing Module (VSM).

Prerequisite:

A KTY/ PT1000 temperature sensor is connected, and correspondingly 3665 is set = 2, 6.

Dependency: Refer to: p3665, p3667, p3668

Refer to: F34207, A34211

Note: If value r3666 exceeds threshold value p3667 or p3668, then alarm A34211 or fault F34207 is output.
For sensor type PTC (p3665 = 1), the following applies:
- below the nominal response temperature, r3666 = -50°C.
- above the nominal response temperature, r3666 = 250 °C.
If power units are connected in parallel (p0120 > 1), then the maximum value of r7306[0...n] is displayed.

p3667[0...n] VSM overtemperature alarm threshold / VSM T A thresh

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** p0150	**Func. diagram:** 9886
P-Group: -	**Unit group:** 21_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
Min	**Max**	**Factory setting**
-100.00 [°C]	301.00 [°C]	150.00 [°C]

Description: Sets the alarm threshold for the temperature sensor on the Voltage Sensing Module (VSM).
Prerequisite:
A KTY/PT1000 temperature sensor is connected, and correspondingly p3665 is set = 2, 6.

Dependency: Refer to: p3665
Refer to: F06255, A34211

Note: For sensor type KTY (p3665 = 2) or PT1000 (p3665 = 6), values 181 ... 300 °C result in fault F06255.
The monitoring is deactivated for p3667 = 301.

p3667 VSM line filter overtemperature alarm threshold / VSM filt temp thr

A_INF, S_INF, R_INF

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9886
P-Group: -	**Unit group:** 21_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
Min	**Max**	**Factory setting**
-100 [°C]	301 [°C]	150 [°C]

Description: Sets the alarm threshold for the temperature sensor of the Voltage Sensing Module (VSM) to monitor the line filter temperature.
Prerequisite:
A KTY/PT1000 temperature sensor is connected, and correspondingly p3665 is set = 2, 6.

Dependency: Refer to: p0220, p3665
Refer to: F06255, A34211

Note: For sensor type KTY (p3665 = 2) or PT1000 (p3665 = 6), values 181 ... 300 °C result in fault F06255.
The monitoring is deactivated for p3667 = 301.
Deactivating the monitoring (p3667 = 301) is only permissible, if, as line filter (p0220) a chassis AIM is not set.

p3668[0...n] VSM overtemperature shutdown threshold / VSM T F_thresh

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** p0150	**Func. diagram:** 9886
P-Group: -	**Unit group:** 21_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
Min	**Max**	**Factory setting**
-100.00 [°C]	301.00 [°C]	180.00 [°C]

Description: Sets the shutdown threshold for the temperature sensor of the VSM.
Prerequisite:
A KTY/PT1000 temperature sensor is connected, and correspondingly p3665 is set = 2, 6.

Dependency: Refer to: p3665, p3667
Refer to: F06255, F35207

Note: For sensor type KTY (p3665 = 2), values 181 ... 300 °C result in fault F06255.
The monitoring is deactivated for p3668 = 301.

p3668 VSM line filter overtemperature shutdown threshold / VSM filt_T F_thres

A_INF, S_INF, R_INF

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9886
P-Group: -	**Unit group:** 21_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
Min	**Max**	**Factory setting**
-100 [°C]	301 [°C]	180 [°C]

Description: Sets the shutdown threshold for the temperature sensor of the VSM to monitor the line filter temperature.
Prerequisite:
A KTY/PT1000 temperature sensor is connected, and correspondingly p3665 is set = 2, 6.

Dependency: Refer to: p0220, p3665
Refer to: F06255, F35207

Note: For sensor type KTY (p3665 = 2), values 181 ... 300 °C result in fault F06255.
The monitoring is deactivated for p3668 = 301.
Deactivating the monitoring (p3668 = 301) is only permissible, if, as line filter (p0220) a chassis AIM is not set.

p3669[0...n] VSM overtemperature hysteresis / VSM T hyst

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** p0150	**Func. diagram:** 9886
P-Group: -	**Unit group:** 21_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
Min	**Max**	**Factory setting**
1.00 [K]	50.00 [K]	3.00 [K]

Description: Sets the hysteresis for the alarm threshold/fault threshold of the Voltage Sensing Module (VSM).

Dependency: Refer to: p3667

p3669 VSM line filter overtemperature hysteresis / VSM filt T hyst

A_INF, S_INF, R_INF

Can be changed: T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9886
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
Min	**Max**	**Factory setting**
1.0 [K]	50.0 [K]	3.0 [K]

Description: Sets the hysteresis for the alarm threshold/fault threshold of the Voltage Sensing Module (VSM) to monitor the line filter temperature.

Dependency: Refer to: p3667, p3668

p3670[0...n] VSM 10 V input CT gain / VSM CT_gain

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** p0150	**Func. diagram:** 9880
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [A]	1000.000 [A]	1.000 [A]

Description: Sets CT gain of the CT connected at the 10 V input of the Voltage Sensing Module (VSM).
The parameter specifies the current magnitude in [A] referred to the input voltage at the VSM in [V].
Example:
CT with 1 V per 200 A.
--> p3670 = 200

Dependency: Refer to: r3671, r3672

Note: The CT for phase 1 is connected at terminals X520.1 and X520.2 of the VSM.
The CT for phase 2 is connected at terminals X520.3 and X520.4 of the VSM.

p3670 VSM 10 V input CT gain / VSM CT_gain

A_INF, S_INF, R_INF

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9880
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [A]	1000.000 [A]	1.000 [A]

Description: Sets CT gain of the CT connected at the 10 V input of the Voltage Sensing Module (VSM).

The parameter specifies the current magnitude in [A] referred to the input voltage at the VSM in [V].

Example:

CT with 1 V per 200 A.

--> p3670 = 200

Dependency: Refer to: r3671, r3672

Note: The CT for phase 1 is connected at terminals X520.1 and X520.2 of the VSM.

The CT for phase 2 is connected at terminals X520.3 and X520.4 of the VSM.

r3671[0...n] CO: VSM 10 V input CT 1 actual value / VSM CT 1 I_act

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** p0150	**Func. diagram:** 9880
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [A]	- [A]	- [A]

Description: Displays the current actual value from current transducer (CT) 1 at the 10 V input of the Voltage Sensing Module (VSM).

Dependency: Refer to: p3670

Note: The CT for phase 1 is connected at terminals X520.1 and X520.2 of the VSM.

r3671 CO: VSM 10 V input CT 1 actual value / VSM CT 1 I_act

A_INF, S_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9880
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [A]	- [A]	- [A]

Description: Displays the current actual value from current transducer (CT) 1 at the 10 V input of the Voltage Sensing Module (VSM).

Dependency: Refer to: p3670

Note: The CT for phase 1 is connected at terminals X520.1 and X520.2 of the VSM.

r3672[0...n] CO: VSM 10 V input CT 2 actual value / VSM CT 2 I_act

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** p0150	**Func. diagram:** 9880
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [A]	- [A]	- [A]

Description: Displays the current actual value from current transducer (CT) 2 at the 10 V input of the Voltage Sensing Module (VSM).

Dependency: Refer to: p3670

Note: The CT for phase 2 is connected at terminals X520.3 and X520.4 of the VSM.

r3672 CO: VSM 10 V input CT 2 actual value / VSM CT 2 I_act

A_INF, S_INF, R_INF	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9880
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [A]	- [A]	- [A]

Description: Displays the current actual value from current transducer (CT) 2 at the 10 V input of the Voltage Sensing Module (VSM).

Dependency: Refer to: p3670

Note: The CT for phase 2 is connected at terminals X520.3 and X520.4 of the VSM.

r3673[0...n] CO: VSM 10 V input 1 actual value / VSM inp 1 U_act

VECTOR, VECTOR_AC, VECTOR_I_AC	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** p0150	**Func. diagram:** 9880
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [V]	- [V]	- [V]

Description: Displays the actual value of the voltage measured at the 10 V input 1 of the Voltage Sensing Module (VSM).

Dependency: Refer to: p3670

Note: 10 V input 1: Terminals X520.1 and X520.2

r3673 CO: VSM 10 V input 1 actual value / VSM inp 1 U_act

A_INF, S_INF, R_INF	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9880
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [V]	- [V]	- [V]

Description: Displays the actual value of the voltage measured at the 10 V input 1 of the Voltage Sensing Module (VSM).

Dependency: Refer to: p3670

Note: 10 V input 1: Terminals X520.1 and X520.2

r3674[0...n] CO: VSM 10 V input 2 actual value / VSM inp 2 U_act

VECTOR, VECTOR_AC, VECTOR_I_AC	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** p0150	**Func. diagram:** 9880
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [V]	- [V]	- [V]

Description: Displays the actual value of the voltage measured at the 10 V input 2 of the Voltage Sensing Module (VSM).

Dependency: Refer to: p3670

Note: 10 V input 2: Terminals X520.3 and X520.4

r3674 CO: VSM 10 V input 2 actual value / VSM inp 2 U_act

A_INF, S_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9880
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the actual value of the voltage measured at the 10 V input 2 of the Voltage Sensing Module (VSM).

Dependency: Refer to: p3670

Note: 10 V input 2: Terminals X520.3 and X520.4

p3676 VSM line filter capacitance alarm threshold / VSMfilt C A_thresh

A_INF, S_INF, R_INF

Can be changed: T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	100.00 [%]	0.00 [%]

Description: Sets the alarm threshold for the change of the capacitance of the line filter.

The monitoring of the filter capacitance is deactivated with p3676 = 0.00 %.

Recommendation: Set the value >= 20 % and dependent on the harmonic content of the line supply.

Dependency: Refer to: p3670

Refer to: A06250

Notice: The following must be ensured before activating monitoring (e.g. p3676 = 20 %):

Measured filter capacitance (r3677[0...2]) = 3 x filter capacitance (p0221)

Otherwise, to establish this ratio, p3670 must be appropriately set.

Example:

The filter capacitance is specified with p0221 = 39 µF.

In order that the measured capacitance is 3x so high, p3670 = 6.7 A must be set in the gain factor.

p0221[0] = 39 µF

r3677[0...2] = 3 x 39 = 117 µF

--> p3670 = 6.7 A

Note: Prerequisites for monitoring the filter capacitance:

The phase currents must be measured at two capacitors of the line filter. To do this, current transformers should be connected at the 10 V inputs of the Voltage Sensing Module (VSM).

r3677[0...2] CO: VSM line filter capacitance / VSM filt C

A_INF, S_INF, R_INF

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [µF]	- [µF]	- [µF]

Description: Displays the capacitance of the line filter (for a star connection).

Index:
[0] = Phase U
[1] = Phase V
[2] = Phase W

Dependency: Refer to: p3676

Note: Prerequisite:

The monitoring of the filter capacitance is activated.

p3678[0...1] Filter monitoring threshold values / Filter monit thr

A_INF (Line transf), R_INF (Line transf)

Can be changed: C2(1, 2)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7991
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	10000.00 [%]	[0] 0.00 [%] [1] 0.00 [%]

Description: Sets the threshold values for filter monitoring.

The voltage threshold value is referred to p0210.

The current threshold value is referred to the nominal filter current.

Nominal filter current = 2 x PI x p0211 x 3 x p0221[0] x p0210 x sqrt(2) / sqrt(3)

Index: [0] = Voltage threshold value
[1] = Current threshold value

Dependency: Refer to: r3671, r3672, r7310, r7311

Refer to: F06855

Note: The filter monitoring function is deactivated with p3678 = 0.00.

Recommended setting for activation:

Voltage threshold value: 5.0 %

Current threshold value: 500 %

p3679[0...1] Transformer filter monitoring times / Filter monit times

A_INF (Line transf), R_INF (Line transf)

Can be changed: C2(1, 2)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7991
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	40.00 [ms]	[0] 20.00 [ms] [1] 0.50 [ms]

Description: Sets the times for filter monitoring.

For index [0]:

Smoothing time for the alpha and beta components of the filter voltage.

For index [1]:

An appropriate fault is output if the set current threshold value is exceeded for at least the set time.

Index: [0] = Voltage threshold value
[1] = Current threshold value

Dependency: Refer to: F06855

p3680 BI: Braking Module internal inhibit / BM int inhib

B_INF

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to inhibit the internal Braking Module.

BI: p3680 = 1 signal:

The Braking Module is inhibited.

BI: p3680 = 0 signal:

The Braking Module is enabled.

Dependency: Refer to: A06904

Caution: When the Braking Module is inhibited, no energy can be dissipated in the braking resistor.

p3681 BI: Activating Braking Module internal DC link fast discharge / BM intDCdischg act

B_INF			
	Can be changed: T	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
	P-Group: -	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source to activate the DC link fast discharge for an internal braking module.

When the following conditions apply, the DC link fast discharge is started later with delay time (p3682):

- BI: p3681 = 1 signal.
- an external line contactor is opened via r0863.1 "energize contactor".

The DC link fast discharge is interrupted when the following conditions apply:

- BI: p3681 = 0 signal.
- ON command for the infeed.

Recommendation: The DC link fast discharge should be activated if there is an external line contactor and is correctly interconnected (r0863.1, p0860). If the DC link fast discharge is not activated together with an external line contactor, then faults can occur when precharging (e.g. F30027).

Dependency: Refer to: p3682

Refer to: F30027

Notice: The parameter is only effective for Basic Line Modules with the internal Braking Module (this is valid for Basic Line Modules with a power rating of less than 100 kW).

p3682 Braking Module internal DC link fast discharge delay time / BM int DC dischg t

B_INF			
	Can be changed: C1(3), T	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Communications	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	500 [ms]	4294967295 [ms]	1000 [ms]

Description: Sets the delay time for switching in the DC link fast discharge for an internal Braking Module.

Dependency: Refer to: p3681

Notice: The parameter is only effective for Basic Line Modules with the internal Braking Module (this is valid for Basic Line Modules with a power rating of less than 100 kW).

p3683 Braking Module internal activation threshold brake chopper / BM int act thresh

B_INF			
	Can be changed: C2(1, 2)	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Converter	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	110.00 [V]	780.00 [V]	760.00 [V]

Description: Sets the activation threshold for the braking chopper.

Note: The activation threshold is only effective if the "Device supply voltage reduced" function (p0212.0 = 1) has been activated!

r3685 BO: Digital Braking Module: Pre-alarm I2t shutdown / Dig BM A I2t shutd

B_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: The binector output uses a 1 signal to indicate that 80 % of the highest permissible I2t value has been reached in the Braking Module.

Dependency: Refer to: A06905

r3686 BO: Digital Braking Module fault / Dig BM fault

B_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: The binector output uses a 1 signal to indicate an overcurrent fault or an I2t shutdown in the Braking Module.

Dependency: Refer to: F06906

r3687 BO: Digital Braking Module pre-alarm overtemperature / Dig BM A overtemp

B_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays a fault due to the excessively high temperature.

1 signal:

The connected temperature sensor (X21.1, X21.2) signals an overtemperature.

Recommendation: Measure the braking resistor temperature using the temperature sensor.

r3688 BO: Braking Module internal overtemperature shutdown / BM int temp shutd

B_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the shutdown due to the excessively high temperature.

1 signal:

The connected temperature sensor (X21.1, X21.2) signals an overtemperature. The highest permissible temperature at the connected temperature sensor has been exceeded and results in a shutdown.

Dependency: Refer to: F06908

r3689 BO: Digital Braking Module Uce fault / Dig BM Uce fault

B_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays an Uce fault in the internal Braking Module.

1 signal:

An Uce fault is present in the internal Braking Module.

Dependency: Refer to: F06909

p3700 AVS/APC configuration / APC config

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 7012
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 bin

Description: Sets the configuration for AVS and APC.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Activating APC	Yes	No	-
01	APC acceleration sensor	Yes	No	-
02	APC without sensor on the load side	Yes	No	-
03	Take into account acceleration precontrol	Yes	No	-
04	APC also acts on the I component	Yes	No	-
08	Activating pulse de-coupling/speed weighting	Yes	No	-
09	APC speed actual value via BICO input	Yes	No	-

Note: APC: Advanced Positioning Control

AVS: Active Vibration Suppression

For bit 00:

When the bit is set, the acceleration filter output is added to the speed setpoint.

When the bit is not set, a value of 0 is entered. This must be used to evaluate the filter frequency characteristics.

For bit 01:

When the bit is set, the source of p3750 with high pass filtering is used as the APC acceleration actual value.

When the bit is not set, the encoder actual value selected with p3701 is used as APC actual value.

For bit 02:

When the bit is set, a model value without sensor on the load side is used as APC actual value. In so doing, PT1 filtering with p3709 as smoothing time - and a high pass filter with p3751 as a high pass filter time constant apply.

When the bit is not set, the encoder actual value selected with p3701 is used as APC actual value.

For bit 03:

When the bit is set, when calculating the acceleration, the speed precontrol value in p1432[1] is taken into account.

For bit 04:

When the bit is set, the acceleration filter output also acts on the I component of the speed controller.

For bit 08:

For bit 0 = 1 and bit 8 = 1 (pulse decoupling/speed weighting activated), the speed from the direct measuring system (p3701) selected for APC, weighted with p3702, and the motor speed is used as actual value for the speed controller.

For bit 09:

When the bit is set, instead of the selected encoder actual value, the source of p3749 weighted with p3748 is used.

When the bit is not set, the encoder actual value selected with p3701 is used as APC actual value.

p3701 APC encoder selection / APC enc sel

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: C1(4), C2(15)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Data sets	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
2	3	2

Description: Sets the number of the encoder used for for APC (Advanced Positioning Control).

Value:
2: Encoder 2
3: Encoder 3

Note: Encoder 1 is the motor encoder and cannot be used for APC as APC requires a load measuring system.

An encoder used for APC is, regarding its fault messages, treated just like a motor encoder - this means that its fault messages are assigned to the drive.

p3702[0...n] APC load speed/motor speed weighting / APC n_load/mot wt

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-10.000	10.000	1.000

Description: Sets the weighting factor to form the speed actual value from the load speed and motor speed.

p3700.8 = 1 must be set to activate weighting.

Dependency: Refer to: p3700, p3701

Note: 1.0: only corresponds to the load speed.

0.0: only corresponds to the motor speed.

0.5: corresponds to the average value from the load speed and motor speed.

p3704[0...n] APC filter activation / APC filter act

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 bin

Description: Setting to activate the filter for APC (Advanced Positioning Control).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Activate filter 1.1	Yes	No	7012
04	Activate filter 2.1	Yes	No	7012
05	Activate filter 2.2	Yes	No	7012
08	Activate filter 3.1	Yes	No	7012
09	Activate filter 3.2	Yes	No	7012
12	Activate torque setpoint filter 1	Yes	No	5060
13	Activate torque setpoint filter 2	Yes	No	5060

p3705[0...n] APC filter type / APC filter type

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 bin

Description: Sets the filter type for the filter for APC (Advanced Positioning Control).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Filter 1.1 type	Gen filt 2nd order	Low pass (PT2)	7012
04	Filter 2.1 type	Gen filt 2nd order	Low pass (PT2)	7012
05	Filter 2.2 type	Gen filt 2nd order	Low pass (PT2)	7012
08	Filter 3.1 type	Gen filt 2nd order	Low pass (PT2)	7012
09	Filter 3.2 type	Gen filt 2nd order	Low pass (PT2)	7012
12	Torque setpoint filter 1 type	Gen filt 2nd order	Low pass (PT2)	5060
13	Torque setpoint filter 2 type	Gen filt 2nd order	Low pass (PT2)	5060

p3706[0...n] APC sub-sampling filter 2.x / APC sub-samp. 2.x

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** 7012
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	64	1

Description: Sets the factor for the sub-sampling in the branch of filter 2.1 and 2.2 for APC (Advanced Positioning Control).

Note: The values are integer multiples of the speed controller sampling time (p0115[1]).

p3707[0...n] APC sub-sampling filter 3.x / APC sub-samp. 3.x

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** 7012
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	64	1

Description: Sets the factor for the sub-sampling in the branch of filter 3.1 and 3.2 for APC (Advanced Positioning Control).

Note: The values are integer multiples of the speed controller sampling time (p0115[1]).

p3708[0...n] APC velocity actual value smoothing time encoder 2 / APC v_act t_sm 2

SERVO (APC, Lin), SERVO_AC (APC, Lin), SERVO_I_AC (APC, Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4711
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	50.00 [ms]	0.00 [ms]

Description: Sets the smoothing time constant (PT1) for the velocity actual value of encoder 2 with APC (Advanced Positioning Control).

Note: The speed actual value should be smoothed for encoders with a low pulse number or for resolvers.

p3708[0...n] APC speed actual value smoothing time encoder 2 / APC n_act t_sm 2

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4711
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	50.00 [ms]	0.00 [ms]

Description: Sets the smoothing time constant (PT1) for the speed actual value of encoder 2 with APC (Advanced Positioning Control).

Note: The speed actual value should be smoothed for encoders with a low pulse number or for resolvers.

p3709[0...n] AVS/APC velocity actual value smoothing time encoder 3 / APC v_act t_sm 3

SERVO (APC, Lin), SERVO_AC (APC, Lin), SERVO_I_AC (APC, Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4711
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	50.00 [ms]	0.00 [ms]

Description: Sets the smoothing time constant (PT1) for the velocity actual value of encoder 3 with AVS and APC.

For p3700.2 = 1, the following applies:

Sets the smoothing time constant (PT1) for the model for operation without encoder on the load side for APC.

Note: The speed actual value should be smoothed for encoders with a low pulse number or for resolvers.

APC: Advanced Positioning Control

AVS: Active Vibration Suppression

p3709[0...n] AVS/APC speed act value smoothing time encoder3/ w/o load sensor / APC n_act t_sm 3

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 4711
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	50.00 [ms]	0.00 [ms]

Description: Sets the smoothing time constant (PT1) for the speed actual value of encoder 3 with AVS and APC.

For p3700.2 = 1, the following applies:

Sets the smoothing time constant (PT1) for the model for operation without encoder on the load side for APC.

Note: The speed actual value should be smoothed for encoders with a low pulse number or for resolvers.

APC: Advanced Positioning Control

AVS: Active Vibration Suppression

p3711[0...n] APC filter 1.1 denominator natural frequency / APC Filt1.1 fn_den

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7012
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	2000.0 [Hz]

Description: Sets the denominator natural frequency for filter 1.1 (PT2, general 2nd order filter) for APC (Advanced Positioning Control).

Dependency: Refer to: p3704, p3705

p3712[0...n] APC filter 1.1 denominator damping / APC Filt 1.1 D_den

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7012
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.050	10.000	0.700

Description: Sets the denominator damping for filter 1.1 (PT2, general 2nd order filter) for APC (Advanced Positioning Control).

Dependency: Refer to: p3704, p3705

p3713[0...n] APC filter 1.1 numerator natural frequency / APC Filt 1 fn_num

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7012
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	2000.0 [Hz]

Description: Sets the numerator natural frequency for filter 1.1 (general 2nd order filter) for APC (Advanced Positioning Control).

Dependency: Refer to: p3704, p3705

p3714[0...n] APC filter 1.1 numerator damping / APC Filt 1.1 D_num

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7012
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	10.000	0.700

Description: Sets the numerator damping for filter 1.1 (general 2nd order filter) for APC (Advanced Positioning Control).

Dependency: Refer to: p3704, p3705

p3721[0...n] APC filter 2.1 denominator natural frequency / APC Filt2.1 fn_den

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7012
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	2000.0 [Hz]

Description: Sets the denominator natural frequency for filter 2.1 (PT2, general 2nd order filter) for APC (Advanced Positioning Control).

Dependency: Refer to: p3704, p3705

p3722[0...n] APC filter 2.1 denominator damping / APC Filt 2.1 D_den

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7012
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.050	10.000	0.700

Description: Sets the denominator damping for filter 2.1 (PT2, general 2nd order filter) for APC (Advanced Positioning Control).

Dependency: Refer to: p3704, p3705

p3723[0...n] APC filter 2.1 numerator natural frequency / APC Filt2.1 fn_num

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7012
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	2000.0 [Hz]

Description: Sets the numerator natural frequency for filter 2.1 (general 2nd order filter) for APC (Advanced Positioning Control).

Dependency: Refer to: p3704, p3705

p3724[0...n] APC filter 2.1 numerator damping / APC Filt 2.1 D_num

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7012
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	10.000	0.700

Description: Sets the numerator damping for filter 2.1 (general 2nd Order filter) for APC (Advanced Positioning Control).

Dependency: Refer to: p3704, p3705

p3726[0...n] APC filter 2.2 denominator natural frequency / APC Filt2.2 fn_den

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7012
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	2000.0 [Hz]

Description: Sets the denominator natural frequency for filter 2.2 (PT2, general 2nd order filter) for APC (Advanced Positioning Control).

Dependency: Refer to: p3704, p3705

p3727[0...n] APC filter 2.2 denominator damping / APC Filt 2.2 D_den

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7012
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.050	10.000	0.700

Description: Sets the denominator damping for filter 2.2 (PT2, general 2nd order filter) for APC (Advanced Positioning Control).

Dependency: Refer to: p3704, p3705

p3728[0...n] APC filter 2.2 numerator natural frequency / APC Filt2.2 fn_num

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7012
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	2000.0 [Hz]

Description: Sets the numerator natural frequency for filter 2.2 (general 2nd order filter) for APC (Advanced Positioning Control).

Dependency: Refer to: p3704, p3705

p3729[0...n] APC filter 2.2 numerator damping / APC Filt 2.2 D_num

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7029
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	10.000	0.700

Description: Sets the numerator damping for filter 2.2 (general 2nd order filter) for APC (Advanced Positioning Control).

Dependency: Refer to: p3704, p3705

p3731[0...n] APC filter 3.1 denominator natural frequency / APC Filt3.1 fn_den

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7012
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	2000.0 [Hz]

Description: Sets the denominator natural frequency for filter 3.1 (PT2, general 2nd order filter) for APC (Advanced Positioning Control).

Dependency: Refer to: p3704, p3705

p3732[0...n] APC filter 3.1 denominator damping / APC Filt 3.1 D_den

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7012
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.050	10.000	0.700

Description: Sets the denominator damping for filter 3.1 (PT2, general 2nd order filter) for APC (Advanced Positioning Control).

Dependency: Refer to: p3704, p3705

p3733[0...n] APC filter 3.1 numerator natural frequency / APC Filt3.1 fn_num

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7012
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	2000.0 [Hz]

Description: Sets the numerator natural frequency for filter 3.1 (general 2nd order filter) for APC (Advanced Positioning Control).

Dependency: Refer to: p3704, p3705

p3734[0...n] APC filter 3.1 numerator damping / APC Filt 3.1 D_num

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7012
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	10.000	0.700

Description: Sets the numerator damping for filter 3.1 (general 2nd order filter) for APC (Advanced Positioning Control).

Dependency: Refer to: p3704, p3705

p3736[0...n] APC filter 3.2 denominator natural frequency / APC Filt3.2 fn_den

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7012
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	2000.0 [Hz]

Description: Sets the denominator natural frequency for filter 3.2 (PT2, general 2nd Order filter) for APC (Advanced Positioning Control).

Dependency: Refer to: p3704, p3705

p3737[0...n] APC filter 3.2 denominator damping / APC Filt 3.2 D_den

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7012
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.050	10.000	0.700

Description: Sets the denominator damping for filter 3.2 (PT2, general 2nd Order filter) for APC (Advanced Positioning Control).

Dependency: Refer to: p3704, p3705

p3738[0...n] APC filter 3.2 numerator natural frequency / APC Filt3.2 fn_num

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7012
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	2000.0 [Hz]

Description: Sets the numerator natural frequency for filter 3.2 (general 2nd Order filter) for APC (Advanced Positioning Control).

Dependency: Refer to: p3704, p3705

p3739[0...n] APC filter 3.2 numerator damping / APC Filt 3.2 D_num

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7012
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	10.000	0.700

Description: Sets the numerator damping for filter 3.2 (general 2nd Order filter) for APC (Advanced Positioning Control).

Dependency: Refer to: p3704, p3705

p3740[0...n] APC torque setpoint filter 1 denominator natural frequency / APC M flt 1 fn_den

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5060
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	2000.0 [Hz]

Description: Sets the denominator natural frequency for torque setpoint filter 1 for APC.

Dependency: This parameter is active for the following filter types:
- general 2nd order filter (p3705.12 = 1).
- PT2 (p3705.12 = 0).

Refer to: p3704, p3705

Note: APC: Advanced Positioning Control

p3741[0...n] APC torque setpoint filter 1 denominator damping / APC M filt 1 D_den

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5060
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.001	10.000	0.700

Description: Sets the denominator damping for torque setpoint filter 1 for APC.

Dependency: This parameter is active for the following filter types:
- general 2nd order filter (p3705.12 = 1).
- PT2 (p3705.12 = 0).

Refer to: p3704, p3705

Note: APC: Advanced Positioning Control

p3742[0...n] APC torque setpoint filter 1 numerator natural frequency / APC M flt 1 fn_num

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5060
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	2000.0 [Hz]

Description: Sets the numerator natural frequency for torque setpoint filter 1 for APC.

Dependency: This parameter is active for the following filter type:
- general 2nd order filter (p3705.12 = 1).

Refer to: p3704, p3705

Note: APC: Advanced Positioning Control

p3743[0...n] APC torque setpoint filter 1 numerator damping / APC M flt 1 D_num

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5060
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	10.000	0.700

Description: Sets the numerator damping for torque setpoint filter 1 for APC.

Dependency: This parameter is active for the following filter type:
- general 2nd order filter (p3705.12 = 1).

Refer to: p3704, p3705

Note: APC: Advanced Positioning Control

p3744[0...n] APC torque setpoint filter 2 denominator natural frequency / APC M flt 2 fn_den

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5060
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	2000.0 [Hz]

Description: Sets the denominator natural frequency for torque setpoint filter 2 for APC.

Dependency: This parameter is active for the following filter types:
- general 2nd order filter (p3705.13 = 1).
- PT2 (p3705.13 = 0).

Refer to: p3704, p3705

Note: APC: Advanced Positioning Control

p3745[0...n] APC torque setpoint filter 2 denominator damping / APC M filt 2 D_den

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5060
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.001	10.000	0.700

Description: Sets the denominator damping for torque setpoint filter 2 for APC.

Dependency: This parameter is active for the following filter types:
- general 2nd order filter (p3705.13 = 1).
- PT2 (p3705.13 = 0).

Refer to: p3704, p3705

Note: APC: Advanced Positioning Control

p3746[0...n] APC torque setpoint filter 2 numerator natural frequency / APC M flt 2 fn_num

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5060
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	2000.0 [Hz]

Description: Sets the numerator natural frequency for torque setpoint filter 2 for APC.

Dependency: This parameter is active for the following filter type:
- general 2nd order filter (p3705.13 = 1).

Refer to: p3704, p3705

Note: APC: Advanced Positioning Control

p3747[0...n] APC torque setpoint filter 2 numerator damping / APC M filt 2 D_num

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5060
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	10.000	0.700

Description: Sets the numerator damping for torque setpoint filter 2 for APC.

Dependency: This parameter is active for the following filter type:
- general 2nd order filter (p3705.13 = 1).

Refer to: p3704, p3705

Note: APC: Advanced Positioning Control

p3748[0...n] APC velocity input scaling / APC v_input scale

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7012
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000000.000	1000000.000	1.000

Description: Sets the scaling to adapt the velocity value via a connector input p3749.

Dependency: Refer to: p3749

Note: APC: Advanced Positioning Control

p3749[0...n] CI: APC velocity actual value external input / APC v_act ext inp

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 7012
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the actual value of the external velocity actual value for APC.

Recommendation: When interconnecting a speed actual value from another axis, it is recommended to evaluate the bit "Speed information available" (r1992.11) (e.g. interconnect to an external fault p2106 - p2108).

To avoid additional dead time as a result of the calculation sequence, it is recommended to set the drive object associated with the signal source of p3749 to a higher priority (p7900).

Dependency: Refer to: p3748

Note: APC: Advanced Positioning Control

p3750[0...n] CI: APC acceleration sensor input / APC accel input

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 7012
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** p2007	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the actual value of the acceleration sensor for APC (Advanced Positioning Control).

Dependency: Refer to: p3700

p3751[0...n] AVS/APC acceleration sensor high pass time constant / APC accel DT1 T

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7012
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	10000.00 [ms]	100.00 [ms]

Description: Sets the time constant of the high-pass filter for the acceleration sensor for AVS and APC.

Dependency: Refer to: p3700, p3750

Note: APC: Advanced Positioning Control

AVS: Active Vibration Suppression

p3752[0...n] AVS controller preassignment natural oscillation frequency / AVS ctr_preassn fn

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [Hz]	1000.0 [Hz]	0.0 [Hz]

Description: Sets the natural oscillation frequency for preassignment of the AVS controller data (p3709, p3751, p3761).

The value is only effective for operation without an encoder on the load side (p3700.2 = 1).

The preassignment is started when writing p3752 > 0 (if p3700.2 = 1).

Dependency: Refer to: p3700, p3709, p3751, p3761

Note: The load moment of inertia is used for the calculation. Parameters p0342 and p1498 should be checked, and if required, corrected before the calculation.

p3753[0...n] APC torque setpoint preassignment natural oscillation frequency / APC M_filt def fn

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5060
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [Hz]	1000.0 [Hz]	0.0 [Hz]

Description: Sets the natural oscillation frequency for pre-assigning the APC torque setpoint filter 1 to compensate mounting-related vibration.

The following parameters are preassigned:

p3740, p3741, p3742, p3743

Dependency: Refer to: p3740, p3741, p3742, p3743

Note: The procedure to preassign the filter is started with p3754 > 0.

p3754[0...n] APC torque setpoint filter preassignment gain / APC M_filt def V

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5060
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0	2.0	0.0

Description: Sets the gain for pre-assigning the APC torque setpoint filter 1 to compensate mounting-related vibration.

The following parameters are preassigned:

p3740, p3741, p3742, p3743

Dependency: Refer to: p3740, p3741, p3742, p3743

Note: The procedure to preassign the filter is started with p3754 > 0.

p3755[0...n] AVS/APC motor mass factor / APC mot_mass fact

SERVO (APC, Lin), SERVO_AC (APC, Lin), SERVO_I_AC (APC, Lin)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.25	500.00	1.00

Description: Sets the factor for the weight stiffly attached to the motor for APC without sensor on the load side (p3700.2).

The value is referred to the motor weight (p0341)

Dependency: Refer to: p3700

Note: If the setting results in more than the total mass, then the value of p3755 is automatically limited to this. This can also be realized by changing p1498, p0341 and p0342.

p3755[0...n] AVS/APC motor moment of inertia factor / APC M_inert factor

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.25	500.00	1.00

Description: Sets the factor for the moment of inertia stiffly attached to the motor for APC without sensor on the load side (p3700.2).

The value is referred to the motor moment of inertia (p0341).

Dependency: Refer to: p3700

Note: If the setting results in more than the total moment of inertia, then the value of p3755 is automatically limited to this. This can also be realized by changing p1498, p0341 and p0342.

p3760[0...n] APC load velocity controller 1 P gain / APC v_load ctr1 Kp

SERVO (APC, Lin), SERVO_AC (APC, Lin), SERVO_I_AC (APC, Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7012
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-100.000	100.000	0.000

Description: Sets the proportional gain of the load velocity controller 1 for APC (Advanced Positioning Control).

The gain acts on the difference between the velocity setpoint and load velocity in the branch for filter 2.1 and 2.2.

p3760[0...n] APC load speed controller 1 P gain / APC n_load ctr1 Kp

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7012
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-100.000	100.000	0.000

Description: Sets the proportional gain of the load speed controller 1 for APC (Advanced Positioning Control).

The gain acts on the difference between the speed setpoint and load speed in the branch for filter 2.1 and 2.2.

p3761[0...n] AVS/APC load velocity controller 1 rate time / APC v_load ctr1 Tv

SERVO (APC, Lin), SERVO_AC (APC, Lin), SERVO_I_AC (APC, Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7012
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-500.00 [ms]	500.00 [ms]	0.00 [ms]

Description: Sets the rate time of load velocity controller 1 for AVS and APC.
The rate time acts on the load acceleration in the branch for filter 2.1 and 2.2.

Note: APC: Advanced Positioning Control
AVS: Active Vibration Suppression

p3761[0...n] AVS/APC load speed controller 1 rate time / APC n_load ctr1 Tv

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7012
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-500.00 [ms]	500.00 [ms]	0.00 [ms]

Description: Sets the rate time of load speed controller 1 for AVS and APC.
The rate time acts on the load acceleration in the branch for filter 2.1 and 2.2.

Note: APC: Advanced Positioning Control
AVS: Active Vibration Suppression

p3765[0...n] APC load velocity controller 2 P gain / APC v_load ctr2 Kp

SERVO (APC, Lin), SERVO_AC (APC, Lin), SERVO_I_AC (APC, Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7012
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-100.000	100.000	0.000

Description: Sets the proportional gain of the load velocity controller 2 for APC (Advanced Positioning Control).
The gain acts on the difference between the velocity setpoint and load velocity in the branch for filter 3.1 and 3.2.

p3765[0...n] APC load speed controller 2 P gain / APC n_load ctr2 Kp

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7012
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-100.000	100.000	0.000

Description: Sets the proportional gain of the load speed controller 2 for APC (Advanced Positioning Control).
The gain acts on the difference between the speed setpoint and load speed in the branch for filter 3.1 and 3.2.

p3766[0...n] APC load velocity controller 2 rate time / APC v_load ctr2 Tv

SERVO (APC, Lin), SERVO_AC (APC, Lin), SERVO_I_AC (APC, Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7012
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-500.00 [ms]	500.00 [ms]	0.00 [ms]

Description: Sets the rate time of the load velocity controller 2 for APC (Advanced Positioning Control).
The rate time acts on the load acceleration in the branch for filter 3.1 and 3.2.

p3766[0...n] APC load speed controller 2 rate time / APC n_load ctr2 Tv

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7012
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-500.00 [ms]	500.00 [ms]	0.00 [ms]

Description: Sets the rate time of the load speed controller 2 for APC (Advanced Positioning Control).
The rate time acts on the load acceleration in the branch for filter 3.1 and 3.2.

p3767[0...n] APC differential position high pass time constant / APC s_Dif DT1 T

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7013
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	10000.00 [ms]	100.00 [ms]

Description: Sets the time constant of the high pass filter for the differential position gain for APC.

Dependency: Refer to: p3700, p3768

Note: APC: Advanced Positioning Control

p3768[0...n] APC differential position gain factor / APC s_dif Kp

SERVO (APC, Lin), SERVO_AC (APC, Lin), SERVO_I_AC (APC, Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7013
P-Group: Closed-loop control	**Unit group:** 49_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-50000.00 [Nm/rad]	50000.00 [Nm/rad]	0.00 [Nm/rad]

Description: Sets the gain factor Kp for the differential position controller for APC.
The gain acts on the force setpoint (in front of the current setpoint filters).

Dependency: Refer to: p3700, p3767, r3769

Note: APC: Advanced Positioning Control

p3768[0...n] APC differential position gain factor / APC s_dif Kp

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7013
P-Group: Closed-loop control	**Unit group:** 49_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-50000.00 [Nm/rad]	50000.00 [Nm/rad]	0.00 [Nm/rad]

Description: Sets the gain factor Kp for the differential position controller for APC.
The gain acts on the torque setpoint (in front of the current setpoint filters).
The differential position controller is deactivated with a value = 0.

Dependency: Refer to: p3700, p3767, r3769

Note: APC: Advanced Positioning Control

r3769 CO: APC differential position force setpoint / APC s_dif F_set

SERVO (APC, Lin), SERVO_AC (APC, Lin), SERVO_I_AC (APC, Lin)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5040, 7013
P-Group: Setpoints	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [N]	- [N]	- [N]

Description: Display and connector output for the force setpoint from the differential position controller for APC.
This value is added to the force setpoint of the velocity controller (r1480).

Dependency: Refer to: p3700, p3767, p3768

Note: APC: Advanced Positioning Control

r3769 CO: APC differential position torque setpoint / APC s_dif M_set

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5040, 7013
P-Group: Setpoints	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Display and connector output for the torque setpoint from the differential position controller for APC.
This value is added to the torque setpoint of the speed controller (r1480).

Dependency: Refer to: p3700, p3767, p3768

Note: APC: Advanced Positioning Control

r3770 CO: APC load velocity / APC v_load

SERVO (APC, Lin), SERVO_AC (APC, Lin), SERVO_I_AC (APC, Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4711, 7012
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Display and connector output for the load velocity for APC (Advanced Positioning Control).

Dependency: Refer to: r3771

r3770 CO: APC load speed / APC n_load

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4711, 7012
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Display and connector output for the load speed for APC (Advanced Positioning Control).

Dependency: Refer to: r3771

r3771[0...1] CO: APC velocity actual value / APC v_act

SERVO (APC, Lin), SERVO_AC (APC, Lin), SERVO_I_AC (APC, Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4711, 5040, 5042
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Displays the load/motor velocity actual value weighted with p3702 for APC (Advanced Positioning Control).

Displays the velocity actual values for APC (Advanced Positioning Control).

For index [0]:

Displays the smoothed load velocity.

For index [1]:

Displays the load/motor velocity actual value weighted with p3702 for p3700.8 = 1.

Index: [0] = Load actual value speed smoothed
[1] = Load/motor actual speed weighted

Dependency: Refer to: p1441, r3770

r3771[0...1] CO: APC speed actual value / APC n_act

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 4711, 5040, 5042
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Display and connector output for the speed actual values for APC (Advanced Positioning Control).

For index [0]:

Displays the smoothed load speed.

For index [1]:

Displays the load/motor speed actual value weighted with p3702 for p3700.8=1.

Index: [0] = Load actual value speed smoothed
[1] = Load/motor actual speed weighted

Dependency: Refer to: p1441, r3770

r3772[0...1] APC filter branch 2 display values / APC branch 2 val

SERVO (APC, Lin), SERVO_AC (APC, Lin), SERVO_I_AC (APC, Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7012
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Displays the velocities in filter branch 2.

Index:
[0] = Filter 2.1 input value
[1] = Filter 2.2 output value

r3772[0...1] APC filter branch 2 display values / APC branch 2 val

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7012
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the speeds in filter branch 2.

Index:
[0] = Filter 2.1 input value
[1] = Filter 2.2 output value

r3773[0...1] APC filter branch 3 display values / APC branch 3 val

SERVO (APC, Lin), SERVO_AC (APC, Lin), SERVO_I_AC (APC, Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7012
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Displays the velocities in filter branch 3.

Index:
[0] = Filter 3.1 input value
[1] = Filter 3.2 output value

r3773[0...1] APC filter branch 3 display values / APC branch 3 val

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7012
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the speeds in filter branch 3.

Index:
[0] = Filter 3.1 input value
[1] = Filter 3.2 output value

p3774[0...n] APC differential speed gain factor / APC n_dif Kp

SERVO (APC, Lin), SERVO_AC (APC, Lin), SERVO_I_AC (APC, Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7013
P-Group: Closed-loop control	**Unit group:** 24_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-10000000.00 [Ns/m]	10000000.00 [Ns/m]	0.00 [Ns/m]

Description: Sets the gain factor Kp for the differential position controller for APC.
The gain acts on the force setpoint (in front of the current setpoint filters).
The differential position controller is deactivated with a value = 0.

Dependency: Refer to: p3700, p3768

Note: APC: Advanced Positioning Control

p3774[0...n] APC differential speed gain factor / APC n_dif Kp

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7013
P-Group: Closed-loop control	**Unit group:** 17_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-10000000.00 [Nms/rad]	10000000.00 [Nms/rad]	0.00 [Nms/rad]

Description: Sets gain factor Kp for the differential speed controller for APC.
The gain acts on the torque setpoint (in front of the current setpoint filters).
The differential position controller is deactivated with a value = 0.

Dependency: Refer to: p3700, p3768

Note: APC: Advanced Positioning Control

r3777[0...1] CO: APC filter branch 1 display values / APC branch 1 val

SERVO (APC, Lin), SERVO_AC (APC, Lin), SERVO_I_AC (APC, Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7012
P-Group: Setpoints	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Displays the velocities in filter branch 1.

Index:
[0] = Filter 1.1 input value
[1] = Filter 1.1 output value

r3777[0...1] CO: APC filter branch 1 display values / APC branch 1 val

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7012
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the speeds in filter branch 1.

Index:
[0] = Filter 1.1 input value
[1] = Filter 1.1 output value

p3778[0...n] APC velocity limit / APC v_limit

SERVO (APC, Lin), SERVO_AC (APC, Lin), SERVO_I_AC (APC, Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7012
P-Group: Closed-loop control	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [m/min]	1000.00 [m/min]	1000.00 [m/min]

Description: Sets the velocity limit for APC (Advanced Positioning Control).

Dependency: Refer to: p3779

p3778[0...n] APC speed limit / APC n_limit

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7012
P-Group: Closed-loop control	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	210000.00 [rpm]

Description: Sets the speed limit for APC (Advanced Positioning Control).

Dependency: Refer to: p3779

p3779[0...n] APC velocity limit monitoring time / APC v_limit t

SERVO (APC, Lin), SERVO_AC (APC, Lin), SERVO_I_AC (APC, Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7012
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	1000000 [ms]	0 [ms]

Description: Sets the monitoring time to limit the output for APC (Advanced Positioning Control).

This monitoring time is started after the selected limit value (p3778) has been exceeded. A corresponding fault is output if the limit value is not undershot before this time expires.

Dependency: Refer to: p3778

Refer to: F07425

p3779[0...n] APC speed limit monitoring time / APC n_limit t

SERVO (APC), SERVO_AC (APC), SERVO_I_AC (APC)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7012
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	1000000 [ms]	0 [ms]

Description: Sets the monitoring time to limit the output for APC (Advanced Positioning Control).

This monitoring time is started after the selected limit value (p3778) has been exceeded. A corresponding fault is output if the limit value is not undershot before this time expires.

Dependency: Refer to: p3778

Refer to: F07425

p3800[0...n] Sync-line-drive activation / Sync act

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 7020
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the activation for line-drive synchronization

Value:
0: Sync-line-drive deactivated
1: Sync-line-drive activated VSM-INT

Dependency: Refer to: p3801, p3802

Caution: If there is only one VSM being used, this can either be used for line synchronization or for a flying restart. If the VSM was connected to the line supply, then flying restart should be deselected in p1200. If the VSM was connected at the output (motor side), then line synchronization should be deactivated using p3800.

Line synchronization (first VSM connected with the line supply) and also flying restart (second VSM connected to the motor terminals) can only be used if two VSMs are assigned to the Motor Module.

Note: When the ground fault monitoring initiates a fault for overlapping synchronizing the threshold value p0287[1] for the Motor Module and the associated infeed must be appropriately increased (e.g. p0287[1] = 100 %).

For p3800 = 1, the following applies:

The INTERNAL voltage actual values are used for synchronization. The effects that a (sine-wave) filter - that is connected between the Motor Module and motor - has on the voltage actual values are taken into account (theoretically) by appropriately selecting p0230.

VSM: Voltage Sensing Module

p3801[0...n] Sync-line-drive drive object number / Sync DO_no

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** 7020
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	62	1

Description: Sets the drive object number of the VSM used for the line-drive synchronization.

Dependency: Refer to: p3800, p3802

Notice: The current controller sampling time p0115[0] of the drive object with the VSM used for synchronization must be identical to the current controller sampling time of the drive of the drive used to perform line synchronization.

Note: VSM: Voltage Sensing Module

The setting p3801 = 1 is always possible (no VSM selected).

If the VSM is assigned subsequently to a Motor Module, its drive object number must be entered in p3801.

The line voltage is always measured using the first VSM (p0151[0]).

p3802[0...n] BI: Sync-line-drive enable / Sync enable

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / Binary	**Dyn. index:** CDS, p0170	**Func. diagram:** 7020
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to switch in/switch out for the line-drive synchronization.

BI: p3802 = 1 signal:

The line-drive synchronization is switched in.

Dependency: Refer to: p3800, p3801

r3803.0 CO/BO: Sync-line-drive control word / Sync STW

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the control word for the line-drive synchronization.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Sync-line-drive selected	Yes	No	-

Note: For bit 00:

For a 1 signal, p3800 > 0 is set.

r3804 CO: Sync-line-drive target frequency / Sync f_target

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3030, 7020
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Hz]	- [Hz]	- [Hz]

Description: Displays the target frequency for the line-drive synchronization.

The target frequency corresponds to the absolute value of the line frequency.

Dependency: Refer to: A07941

r3805 CO: Sync-line-drive frequency difference / Sync f_diff

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7020
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Hz]	- [Hz]	- [Hz]

Description: Displays the frequency difference between the measured target frequency and output frequency of the gating unit of the closed-loop control for line-drive synchronization.

p3806[0...n] Sync-line-drive frequency difference threshold value / Sync f_diff thresh

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7020
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Hz]	1.00 [Hz]	0.10 [Hz]

Description: Sets the threshold value of the frequency difference to activate the closed-loop phase control for line-drive synchronization.

The closed-loop phase control is activated (r3819.6 = 1), if the frequency difference is less that the threshold value.

r3808 CO: Sync-line-drive phase difference / Sync phase diff

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7020
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2005	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°]	- [°]	- [°]

Description: Displays the phase difference between the measured target phase and phase of the gating unit of the closed-loop control for line-drive synchronization.

p3809[0...n] Sync-line-drive phase setpoint / Sync phase setp

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7020
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-180.00 [°]	179.90 [°]	0.00 [°]

Description: Sets the phase setpoint for the line-drive synchronization.

p3811[0...n] Sync-line-drive frequency limiting / Sync f_lim

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7020
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Hz]	1.00 [Hz]	0.20 [Hz]

Description: Sets the frequency limiting of the phase controller output for the line-drive synchronization.

r3812 CO: Sync-line-drive correction frequency / Sync f_corr

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 3080, 7020
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Hz]	- [Hz]	- [Hz]

Description: Displays the correction frequency for the line-drive synchronization.

p3813[0...n] Sync-line-drive phase synchronism threshold value / Sync Ph_sync thrsh

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7020
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1.00 [°]	20.00 [°]	2.00 [°]

Description: Sets the threshold value of the phase synchronism for the line-drive synchronization.

A prerequisite for synchronism is achieved if the phase difference is lower than the threshold value.

Note: Synchronism is reached (r3819.2 = 1), if the AND logic operation of the results from the phase measurement (p3813) and voltage measurement (p3815) is fulfilled.

r3814 CO: Sync-line-drive voltage difference / Sync U_diff

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7020
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Display and connector output for the voltage difference between the measured target voltage and output voltage of the gating unit of the closed-loop control for line-drive synchronization.

p3815[0...n] Sync-line-drive voltage difference threshold value / Sync U_diff thresh

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7020
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	20.00 [%]	10.00 [%]

Description: Sets the threshold value of the voltage difference for the line-drive synchronization.

A prerequisite for synchronism is reached if the voltage difference is less than the threshold value.

Note: Synchronism is reached (r3819.2 = 1), if the AND logic operation of the results from the phase measurement (p3813) and voltage measurement (p3815) is fulfilled.

For voltage manipulated quantity margin (reserve) of the drive converter, the amplitude difference (r3814) between the setpoint and actual value is controlled (corrected) to zero.

r3819.0...7 CO/BO: Sync-line-drive status word / Sync ZSW

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 7020
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status word for the line-drive synchronization.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Sync-line-drive enabled	Yes	No	-
02	Sync-line-drive synchronism reached	Yes	No	-
03	Sync-line-drive synchronizing error	Yes	No	-
05	Sync-line-drive frequency measurement active	Yes	No	-
06	Sync-line-drive phase control active	Yes	No	-
07	Sync-line-drive without drive	Yes	No	-

p3820[0...n] Friction characteristic value n0 / Friction n0

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	15.00 [rpm]

Description: The friction characteristic is defined by 10 value pairs.

This parameter specifies the n coordinate of the 1st value pair of the friction characteristic.

Dependency: Refer to: p3830, p3845

p3820[0...n] Friction characteristic value v0 / Friction v0

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [m/min]	21000.00 [m/min]	1.50 [m/min]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the v coordinate of the 1st value pair of the friction characteristic.

Dependency: Refer to: p3830, p3845

p3821[0...n] Friction characteristic value n1 / Friction n1

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	30.00 [rpm]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the n coordinate of the 2nd value pair of the friction characteristic.

Dependency: Refer to: p3831, p3845

p3821[0...n] Friction characteristic value v1 / Friction v1

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [m/min]	21000.00 [m/min]	3.00 [m/min]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the v coordinate of the 2nd value pair of the friction characteristic.

Dependency: Refer to: p3831, p3845

p3822[0...n] Friction characteristic value n2 / Friction n2

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	60.00 [rpm]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the n coordinate of the 3rd value pair of the friction characteristic.

Dependency: Refer to: p3832, p3845

p3822[0...n] Friction characteristic value v2 / Friction v2

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [m/min]	21000.00 [m/min]	6.00 [m/min]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the v coordinate of the 3rd value pair of the friction characteristic.

Dependency: Refer to: p3832, p3845

p3823[0...n] Friction characteristic value n3 / Friction n3

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	120.00 [rpm]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the n coordinate of the 4th value pair of the friction characteristic.

Dependency: Refer to: p3833, p3845

p3823[0...n] Friction characteristic value v3 / Friction v3

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [m/min]	21000.00 [m/min]	12.00 [m/min]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the v coordinate of the 4th value pair of the friction characteristic.

Dependency: Refer to: p3833, p3845

p3824[0...n] Friction characteristic value n4 / Friction n4

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	150.00 [rpm]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the n coordinate of the 5th value pair of the friction characteristic.

Dependency: Refer to: p3834, p3845

p3824[0...n] Friction characteristic value v4 / Friction v4

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [m/min]	21000.00 [m/min]	15.00 [m/min]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the v coordinate of the 5th value pair of the friction characteristic.

Dependency: Refer to: p3834, p3845

p3825[0...n] Friction characteristic value n5 / Friction n5

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	300.00 [rpm]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the n coordinate of the 6th value pair of the friction characteristic.

Dependency: Refer to: p3835, p3845

p3825[0...n] Friction characteristic value v5 / Friction v5

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [m/min]	21000.00 [m/min]	30.00 [m/min]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the v coordinate of the 6th value pair of the friction characteristic.

Dependency: Refer to: p3835, p3845

p3826[0...n] Friction characteristic value n6 / Friction n6

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	600.00 [rpm]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the n coordinate of the 7th value pair of the friction characteristic.

Dependency: Refer to: p3836, p3845

p3826[0...n] Friction characteristic value v6 / Friction v6

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [m/min]	21000.00 [m/min]	60.00 [m/min]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the v coordinate of the 7th value pair of the friction characteristic.

Dependency: Refer to: p3836, p3845

p3827[0...n] Friction characteristic value n7 / Friction n7

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	1200.00 [rpm]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the n coordinate of the 8th value pair of the friction characteristic.

Dependency: Refer to: p3837, p3845

p3827[0...n] Friction characteristic value v7 / Friction v7

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [m/min]	21000.00 [m/min]	120.00 [m/min]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the v coordinate of the 8th value pair of the friction characteristic.

Dependency: Refer to: p3837, p3845

p3828[0...n] Friction characteristic value n8 / Friction n8

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	1500.00 [rpm]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the n coordinate of the 9th value pair of the friction characteristic.

Dependency: Refer to: p3838, p3845

p3828[0...n] Friction characteristic value v8 / Friction v8

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [m/min]	21000.00 [m/min]	150.00 [m/min]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the v coordinate of the 9th value pair of the friction characteristic.

Dependency: Refer to: p3838, p3845

p3829[0...n] Friction characteristic value n9 / Friction n9

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	3000.00 [rpm]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the n coordinate of the 10th value pair of the friction characteristic.

Dependency: Refer to: p3839, p3845

p3829[0...n] Friction characteristic value v9 / Friction v9

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** CALC_MOD_LIM_REF	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [m/min]	21000.00 [m/min]	300.00 [m/min]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the v coordinate of the 10th value pair of the friction characteristic.

Dependency: Refer to: p3839, p3845

p3830[0...n] Friction characteristic value M0 / Friction M0

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000000.0000 [Nm]	1000000.0000 [Nm]	0.0000 [Nm]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the M coordinate of the 1st value pair of the friction characteristic.

Dependency: Refer to: p3820, p3845

p3830[0...n] Friction characteristic value F0 / Friction F0

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000000.0000 [N]	1000000.0000 [N]	0.0000 [N]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the F coordinate of the 1st value pair of the friction characteristic.

Dependency: Refer to: p3820, p3845

p3831[0...n] Friction characteristic value M1 / Friction M1

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000000.0000 [Nm]	1000000.0000 [Nm]	0.0000 [Nm]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the M coordinate of the 2nd value pair of the friction characteristic.

Dependency: Refer to: p3821, p3845

p3831[0...n] Friction characteristic value F1 / Friction F1

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000000.0000 [N]	1000000.0000 [N]	0.0000 [N]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the F coordinate of the 2nd value pair of the friction characteristic.

Dependency: Refer to: p3821, p3845

p3832[0...n] Friction characteristic value M2 / Friction M2

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000000.0000 [Nm]	1000000.0000 [Nm]	0.0000 [Nm]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the M coordinate of the 3rd value pair of the friction characteristic.

Dependency: Refer to: p3822, p3845

p3832[0...n] Friction characteristic value F2 / Friction F2

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000000.0000 [N]	1000000.0000 [N]	0.0000 [N]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the F coordinate of the 3rd value pair of the friction characteristic.

Dependency: Refer to: p3822, p3845

p3833[0...n] Friction characteristic value M3 / Friction M3

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000000.0000 [Nm]	1000000.0000 [Nm]	0.0000 [Nm]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the M coordinate of the 4th value pair of the friction characteristic.

Dependency: Refer to: p3823, p3845

p3833[0...n] Friction characteristic value F3 / Friction F3

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000000.0000 [N]	1000000.0000 [N]	0.0000 [N]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the F coordinate of the 4th value pair of the friction characteristic.

Dependency: Refer to: p3823, p3845

p3834[0...n] Friction characteristic value M4 / Friction M4

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000000.0000 [Nm]	1000000.0000 [Nm]	0.0000 [Nm]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the M coordinate of the 5th value pair of the friction characteristic.

Dependency: Refer to: p3824, p3845

p3834[0...n] Friction characteristic value F4 / Friction F4

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000000.0000 [N]	1000000.0000 [N]	0.0000 [N]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the F coordinate of the 5th value pair of the friction characteristic.

Dependency: Refer to: p3824, p3845

p3835[0...n] Friction characteristic value M5 / Friction M5

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000000.0000 [Nm]	1000000.0000 [Nm]	0.0000 [Nm]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the M coordinate of the 6th value pair of the friction characteristic.

Dependency: Refer to: p3825, p3845

p3835[0...n] Friction characteristic value F5 / Friction F5

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000000.0000 [N]	1000000.0000 [N]	0.0000 [N]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the F coordinate of the 6th value pair of the friction characteristic.

Dependency: Refer to: p3825, p3845

p3836[0...n] Friction characteristic value M6 / Friction M6

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000000.0000 [Nm]	1000000.0000 [Nm]	0.0000 [Nm]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the M coordinate of the 7th value pair of the friction characteristic.

Dependency: Refer to: p3826, p3845

p3836[0...n] Friction characteristic value F6 / Friction F6

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000000.0000 [N]	1000000.0000 [N]	0.0000 [N]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the F coordinate of the 7th value pair of the friction characteristic.

Dependency: Refer to: p3826, p3845

p3837[0...n] Friction characteristic value M7 / Friction M7

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000000.0000 [Nm]	1000000.0000 [Nm]	0.0000 [Nm]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the M coordinate of the 8th value pair of the friction characteristic.

Dependency: Refer to: p3827, p3845

p3837[0...n] Friction characteristic value F7 / Friction F7

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000000.0000 [N]	1000000.0000 [N]	0.0000 [N]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the F coordinate of the 8th value pair of the friction characteristic.

Dependency: Refer to: p3827, p3845

p3838[0...n] Friction characteristic value M8 / Friction M8

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000000.0000 [Nm]	1000000.0000 [Nm]	0.0000 [Nm]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the M coordinate of the 9th value pair of the friction characteristic.

Dependency: Refer to: p3828, p3845

p3838[0...n] Friction characteristic value F8 / Friction F8

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000000.0000 [N]	1000000.0000 [N]	0.0000 [N]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the F coordinate of the 9th value pair of the friction characteristic.

Dependency: Refer to: p3828, p3845

p3839[0...n] Friction characteristic value M9 / Friction M9

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000000.0000 [Nm]	1000000.0000 [Nm]	0.0000 [Nm]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the M coordinate of the 10th value pair of the friction characteristic.

Dependency: Refer to: p3829, p3845

p3839[0...n] Friction characteristic value F9 / Friction F9

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000000.0000 [N]	1000000.0000 [N]	0.0000 [N]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the F coordinate of the 10th value pair of the friction characteristic.

Dependency: Refer to: p3829, p3845

r3840.0...8 CO/BO: Friction characteristic status word / Friction ZSW

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status word of the friction characteristic.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Friction characteristic OK	Yes	No	-
01	Friction characteristic record activated	Yes	No	-
02	Friction characteristic record completed	Yes	No	-
03	Friction characteristic record aborted	Yes	No	-
08	Friction characteristic positive direction	Yes	No	-

Note: Bit 0 = 1:
All friction characteristic values (p3820 ... p3839) of all existing drive data sets are plausible.

r3840.0...9 CO/BO: Friction characteristic status word / Friction ZSW

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status word of the friction characteristic.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Friction characteristic OK	Yes	No	-
01	Friction characteristic record activated	Yes	No	-
02	Friction characteristic record completed	Yes	No	-
03	Friction characteristic record aborted	Yes	No	-
08	Friction characteristic positive direction	Yes	No	-
09	Friction torque model controlled status	Upper	Lower	-

Note: For bit 09:

For closed-control of an induction motors with encoder, the switchover between the current and observer model is displayed (see also r1751.19), if p3844 is > 0.

For bit 9 = 0 (observer model active), the following applies:

The frictional torque is calculated from the characteristic values from the characteristic point entered into p3844.

For bit 9 = 1 (current model active), the following applies:

The frictional torque is calculated from the characteristic values below the characteristic point entered into p3844.

r3841 CO: Friction characteristic output / Frict outp

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Display and connector output for the torque of the friction characteristic dependent on the speed.

Dependency: Refer to: p1569, p3842

r3841 CO: Friction characteristic output / Frict outp

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: REL	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [N]	- [N]	- [N]

Description: Display and connector output for the force of the friction characteristic dependent on the velocity.

Dependency: Refer to: p1569, p3842

p3842 Friction characteristic activation / Friction act

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 7010
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Setting to activate and deactivate the friction characteristic.

Value:
0: Friction characteristic deactivated
1: Friction characteristic activated

Dependency: Refer to: p1569, r3841, p3845

Notice: In order that the friction characteristic can be activated, all friction characteristic values (p3820 ... p3839) of all existing drive data sets must be plausible.

For speed values the following applies:

0.0 < p3820 < p3821 < ... < p3829 <= p0322 or p1082, if p0322 = 0

For torque values, the following applies:

0 <= p3830, p3831 ... p3839 <= r0333

p3843[0...n] Friction characteristic frictional torque diff. smoothing time / Frict M_diff t_sm

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	10000.00 [ms]	0.00 [ms]

Description: Sets the smoothing time constant (PT1) for the friction torque difference.

Smoothing is activated when switching over from status bit r3840.9.

Dependency: Refer to: p3844

p3844[0...n] Friction characteristic number changeover point upper / FricNo chng_pt up

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: PMSM, SESM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	4	0

Description: Selects the upper changeover point of the friction characteristic for the frictional torque input controlled by the motor model of the induction motor.

The speed of this changeover point is pre-assigned when automatically calculating with the changeover speed p1752. The changeover point located below is pre-assigned with the changeover speed p1752 * (1 - p1753).

Example:

p3844 = 3 means that the speed value for the change to the monitor model (p3823 = p1752) is entered into p3823 (friction characteristic value n3).

Depending on the display of r3840.9, the frictional torque is calculated from the friction characteristic values, which are associated with these changeover points. For the changeover of the motor model, with hysteresis, the frictional torque smoothed with p3843 changes between these two states.

Dependency: As part of the automatic calculation (p0340), p3844 is only activated for closed loop control (p1300 = 21, 23) of induction motors with encoder.

Refer to: p3843

Notice: If the changeover point defined using p3844 does not match the changeover speed p1752, then internally, the model-controlled friction torque input is automatically deactivated (same as for p3844 = 0).

Note: For p3844 = 0, the model-controlled frictional torque changeover is deactivated. The frictional torque is then calculated the same as for the encoderless control by interpolating between the points along the friction characteristic.

p3845 Friction characteristic record activation / Frict rec act

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC			
	Can be changed: T	**Calculated:** -	**Access level:** 2
	Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 7010
	P-Group: Functions	**Unit group:** -	**Unit selection:** -
	Not for motor type: REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	3	0

Description: Setting for the friction characteristic record.

After the next switch-on command, the friction characteristic is automatically recorded.

Value:
0: Friction characteristic record deactivated
1: Friction char record activated for all directions
2: Friction char record activated for positive direction
3: Friction char record activated for negative direction

Dependency: When selecting the friction characteristic measurement, the drive data set changeover is suppressed.

For linear drives (refer to r0108.12) it is not permissible to carry out the friction characteristic measurement for mechanical systems that limit travel.

Danger: For drives with a mechanical system that limit the distance moved, it must be ensured that during recording, the friction characteristic is not reached. If this is not the case, then it is not permissible that the measurement is carried out.

Notice: To permanently accept the determined settings they must be saved in a non-volatile fashion (p0971, p0977).

Note: When the friction characteristic record is active, it is not possible to save the parameters (p0971, p0977).

When the friction characteristic record is active (p3845 > 0), it is not possible to change p3820 ... p3829, p3830 ... p3839 and p3842.

When recording the friction characteristic, in addition to the friction, the motor losses are also determined (e.g. iron losses, eddy current losses and re-magnetizing losses). A differentiation is not made between these individual loss components. We recommend that a motor temperature sensor is used because torque deviations can also be emulated/mapped on the characteristic due to the thermal influence.

p3846[0...n] Friction characteristic record ramp-up/ramp-down time / Frict rec t_RU/RD

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)			
	Can be changed: T	**Calculated:** -	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7010
	P-Group: Functions	**Unit group:** -	**Unit selection:** -
	Not for motor type: REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.000 [s]	999999.000 [s]	10.000 [s]

Description: Sets the ramp-up/ramp-down time of the ramp-up/ramp-down function generator to automatically record the friction characteristic.

The drive is accelerated from standstill (setpoint = 0) up to the maximum speed/velocity (p1082) in this time.

Dependency: Refer to: p3845

p3847[0...n] Friction characteristic record warm-up time / Frict rec t_warm

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)			
	Can be changed: T	**Calculated:** -	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 7010
	P-Group: Functions	**Unit group:** -	**Unit selection:** -
	Not for motor type: REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.000 [s]	3600.000 [s]	0.000 [s]

Description: Sets the warm-up time.

For an automatic trace (record) to start, the highest selected speed (p3829) is approached and this time is held. After this, the measurement is started with the highest speed.

Dependency: Refer to: p3829, p3845

p3848[0...n] CI: Friction characteristic speed actual value signal source / Frict n_act s_src

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** CDS, p0170	**Func. diagram:** 7010
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	63[0]

Description: Sets the signal source for the speed actual value of the friction characteristic.

Dependency: Refer to: r1443

Notice: The interconnected signal of the speed actual value must be approximately the same as the real motor speed so that when the motor model is replaced, no significant settling operations occur.

p3860 Number of Braking Modules connected in parallel / BM qty par_cct

A_INF (Brk Mod ext), S_INF (Brk Mod ext), R_INF (Brk Mod ext), B_INF (Brk Mod ext)

Can be changed: C2(2)	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** 9951
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	8	1

Description: Sets the number of Braking Modules connected in parallel in a DC link.

Note: The parameter can only be written to if the infeed is in the commissioning mode (p0010 = 2).

r3861.0...7 BO: Braking Module inhibit/acknowledgment / BM inhib/ackn

A_INF (Brk Mod ext), S_INF (Brk Mod ext), R_INF (Brk Mod ext), B_INF (Brk Mod ext)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9951
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Signal to energize terminal X21.1 "inhibit/acknowledgment" on the Braking Module.

This binector output is used as signal source to interconnect to a digital output.

For "booksize" formats the digital output must be connected to terminal X21.1 and for "chassis" formats the digital output must be connected to terminal X21.3 of the particular Braking Module.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Inhibit/acknowledge Braking Module 1	High	Low	-
01	Inhibit/acknowledge Braking Module 2	High	Low	-
02	Inhibit/acknowledge Braking Module 3	High	Low	-
03	Inhibit/acknowledge Braking Module 4	High	Low	-
04	Inhibit/acknowledge Braking Module 5	High	Low	-
05	Inhibit/acknowledge Braking Module 6	High	Low	-
06	Inhibit/acknowledge Braking Module 7	High	Low	-
07	Inhibit/acknowledge Braking Module 8	High	Low	-

Warning: Check that binector outputs BO: r3861.n are connected correctly and that the appropriate digital outputs are wired correctly.

If the interconnection/wiring is incorrect, the software could execute a different (incorrect) function via binector outputs BO: r3861.n if the Braking Module develops a fault.

p3862 Braking Module DC link fast discharge delay time / BM DC-dischg t_del

A_INF (Brk Mod ext), S_INF (Brk Mod ext), R_INF (Brk Mod ext), B_INF (Brk Mod ext)

Can be changed: C1(3), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9951
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
500 [ms]	4294967295 [ms]	1000 [ms]

Description: Sets the delay time for switching in the DC link fast discharge.

Dependency: Refer to: p3863, r3864

Note: The DC link fast discharge is only possible for "booksize" formats. This function is not supported for "chassis" formats.

p3863 BI: Activating Braking Module DC link fast discharge / BM DC-dischg act

A_INF (Brk Mod ext), S_INF (Brk Mod ext), R_INF (Brk Mod ext), B_INF (Brk Mod ext)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9951
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to activate the DC link fast discharge.

The DC link fast discharge is started later with delay time (p3862) when the following conditions apply:

- BI: p3863 = 1 signal.
- an external line contactor is opened via r0863.1 "energize contactor".

The DC link fast discharge is interrupted when the following conditions apply:

- BI: p3863 = 0 signal.
- ON command for the infeed.

Recommendation: The DC link fast discharge should be activated if there is an external line contactor and is correctly interconnected (r0863.1, p0860). If the DC link fast discharge is not activated together with an external line contactor, then faults can occur when precharging (e.g. F30027).

Dependency: Refer to: r3864

Refer to: F30027

Note: The DC link fast discharge is only possible for "booksize" formats. This function is not supported for "chassis" formats.

r3864.0...7 BO: Braking Module DC link fast discharge / BM DC link dischg

A_INF (Brk Mod ext), S_INF (Brk Mod ext), R_INF (Brk Mod ext), B_INF (Brk Mod ext)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9951
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Signal to control (energize) terminal X21.2 "DC link fast discharge" on the Braking Module.

This binector output is used as signal source to interconnect to a digital output. The digital output must be connected to terminal X21.2 of the particular Braking Module.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Fast discharge Braking Module 1	High	Low	-
01	Fast discharge Braking Module 2	High	Low	-
02	Fast discharge Braking Module 3	High	Low	-
03	Fast discharge Braking Module 4	High	Low	-
04	Fast discharge Braking Module 5	High	Low	-
05	Fast discharge Braking Module 6	High	Low	-
06	Fast discharge Braking Module 7	High	Low	-
07	Fast discharge Braking Module 8	High	Low	-

Dependency: Refer to: p3863

Refer to: F30027

Warning:

It must be carefully ensured that the binector outputs BO: p3864.n are correctly interconnected and also that the appropriate digital outputs are correctly connected up.

If the interconnection/connection is incorrect, in the case of an active DC link fast discharge, the software could execute another function (incorrect function) via binector outputs BO: p3864.n or could also permanently control the DC link fast discharge even if the line contactor is closed.

Note: The DC link fast discharge is only possible for "booksize" formats. This function is not supported for "chassis" formats.

p3865[0...7] BI: Braking Module pre-alarm I2t shutdown / BM pre-A I2t shutd

A_INF (Brk Mod ext), S_INF (Brk Mod ext), R_INF (Brk Mod ext), B_INF (Brk Mod ext)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9951
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the message "Pre-alarm I2t shutdown" of the Braking Module.

BI: p3865[0...7] = 1 signal --> no pre-alarm I2t shutdown

BI: p3865[0...7] = 0 signal --> pre-alarm I2t shutdown (A06901)

Dependency: Refer to: A06901

Note: For the Braking Module, this message is output via the following terminal:

- X21.4 for the "Booksize" format

This function is not supported for the "chassis" format.

p3866[0...7] BI: Braking Module fault / BM fault

A_INF (Brk Mod ext), S_INF (Brk Mod ext), R_INF (Brk Mod ext), B_INF (Brk Mod ext)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9951
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the "Fault" message of the Braking Module.

BI: p3866[0...7] = 1 signal --> No fault

BI: p3866[0...7] = 0 signal --> fault (A06900)

For a 0 signal, an acknowledgment via binector output r3861 is automatically carried out at certain time intervals.

Dependency: Refer to: A06900

Note: For the Braking Module, this message is output via the following terminal:

- X21.4 for the "Booksize" format
- X21.5 for the "Chassis" format

p3870 Long stator configuration / Long stator config

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Sets the configuration when operating a long stator motor.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Activate long stator help functions	Active	Inactive	-
01	Suppress Gx_ZSW.14	Active	Inactive	-

Dependency: Refer to: p3871, p3872, p3873, p3874, r3875, p3876, p3878, p3879

Notice: The following restrictions apply to this function:
- it is not permissible to change over the drive data set.
- the encoder/drive may not be parked using a PROFIBUS telegram.
- a maximum of 4 drives may be connected to the Control Unit.
- it is not permissible to commutate with the zero mark (p0404).

Note: For bit 00:
All of the help functions for long stator motors can be enabled/disabled using this bit.
For bit 01:
When the bit is set, bit 14 (parking encoder active) is set to 0 in the encoder status word GX_ZSW independent of whether the encoder is parked or not.

p3871 BI: Set long stator signal source commutation angle (p3872) / Set s_src com ang

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to set the commutation angle available via connector input p3872.

Dependency: Refer to: p3870, p3872, p3873, p3874, r3875, p3876, p3878, p3879

Danger: Setting an incorrect commutation angle can result in instability in the closed-loop control and in turn injure personnel or cause damage to the machine!

Note: Setting takes place for a 0/1 signal edge.

p3872 CI: Long stator signal source commutation angle / S s com angle

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2005	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	3878[0]

Description: Sets the signal source for the commutation angle.
This angle is set for a 0/1 edge of the signal via binector input p3871.

Dependency: Refer to: p3870, p3871, p3873, r3875, p3876, p3878, p3879

Danger: Setting an incorrect commutation angle can result in instability in the closed-loop control and in turn injure personnel or cause damage to the machine!

p3873 BI: Long stator sig. source changeover to cl.-loop ctrl w/ enc. / S s ctrl w/ enc

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to change over to closed-loop control with encoder.

Dependency: Refer to: p3870, p3871, p3872, p3874, r3875, p3876, p3878, p3879

Danger: Setting an incorrect commutation angle can result in instability in the closed-loop control and in turn injure personnel or cause damage to the machine!

Note: BI: p3873 = 1 signal --> closed-loop control with encoder
BI: p3873 = 0 signal --> encoderless closed-loop control
For a 0/1 edge, the commutation angle is set from connector input p3874.

p3874 CI: Long stator signal source commutation angle oper. with encoder / S s com ang enc

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2005	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	3879[0]

Description: Sets the signal source for the commutation angle for operation with encoder.

Dependency: Refer to: p3870, p3871, p3872, p3873, r3875, p3876, p3878, p3879

Note: This angle is set for a 0/1 signal edge via BI: p3873.

r3875.0...1 CO/BO: Long stator status word / Long stator ZSW

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status word of the long stator motors.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Sensor Module is unparked	Yes	No	-
01	Closed-loop speed control with encoder requested	Active	Inactive	-

Dependency: Refer to: p3870, p3871, p3872, p3873, p3874, p3876, p3878, p3879

Note: The display is updated with a sampling time of 1 ms.

For bit 00 = 1:

The encoder is parked. Contrary to r0481.14, parking is also displayed here if the suppression of the parking bit is active in r0481.14 (p3870.1 = 1).

For bit 01 = 1:

The long-stator functions requested closed-loop speed control with encoder. In r1407.2, it is indicated as to whether an encoder is actually used for the closed-loop control.

r3875.0...1 CO/BO: Long stator status word / Long stator ZSW

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status word of the long stator motors.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Sensor Module is unparked	Yes	No	-
01	Closed-loop velocity control with encoder requested	Active	Inactive	-

Dependency: Refer to: p3870, p3871, p3872, p3873, p3874, p3876, p3878, p3879

Note: The display is updated with a sampling time of 1 ms.

For bit 00 = 1:

The encoder is parked. Contrary to r0481.14, parking is also displayed here if the suppression of the parking bit is active in r0481.14 (p3870.1 = 1).

For bit 01 = 1:

The long-stator functions requested closed-loop velocity control with encoder. In r1407.2, it is indicated as to whether an encoder is actually used for the closed-loop control.

p3876 BI: Unpark long stator signal source 1 encoder / S s 1 enc unpark

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source 1 to unpark the encoder.

Dependency: Refer to: p3870, p3871, p3872, p3873, p3874, r3875, p3878, p3879

Note: BI: p3876 = 1 signal --> encoder is unparked

BI: p3876 = 0 signal --> encoder is parked

p3878 CO: Long stator commutation angle 1 / Com_angle 1

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2005	**Expert list:** 1
Min	**Max**	**Factory setting**
-180 [°]	180 [°]	0 [°]

Description: Sets the commutation angle 1 for long stator motors.

Dependency: Refer to: p3870, p3871, p3872, p3873, p3874, r3875, p3876, p3879

p3879 CO: Long stator commutation angle 2 / Com_angle 2

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2005	**Expert list:** 1
Min	**Max**	**Factory setting**
-180 [°]	180 [°]	0 [°]

Description: Sets the commutation angle 2 for long stator motors.

Dependency: Refer to: p3870, p3871, p3872, p3873, p3874, r3875, p3876, p3878

p3880 BI: ESM activation signal source / ESM act s s

VECTOR, VECTOR_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 7033
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to activate the essential service mode (ESM) via digital input.

Using this function, when required the motor can be operated for as long as possible (e.g. to extract smoke).

BI: p3880 = 1 signal:

The essential service mode is activated.

BI: p3880 = 0 signal:

The essential service mode is deactivated.

Dependency: The function can only be activated for the following products:

- SINAMICS G130/G150/S150 (VECTOR)
- SINAMICS S120 AC drive (AC/AC, CU310-2 with PM240-2, VECTOR_AC)

If the signal source for the ESM activation is interconnected (p3880 > 0), and a motor encoder is parameterized (p0187, p0400), then for an encoder fault, the fault response is automatically activated (p0491 = 1).

Refer to: p3881, p3882, p3883, p3886, r3887, p3888, r3889

Warning: When activating the essential service mode (BI: p3880 = 1 signal), the motor immediately runs according to the selected setpoint source. When the essential service mode is activated, the motor cannot be stopped using the OFF commands.

Note: ESM: Essential Service Mode

Permissible signal sources:

- BO: r0722.x (high active)
- BO: r0723.x (low active), x = 0 ... 17, 20, 21

p3881 ESM setpoint source / ESM setp_src

VECTOR

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 7033
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	7	0

Description: Sets the setpoint source for essential service mode (ESM).

Value:
0: Last known setpoint (r1078 smoothed)
1: Fixed speed setpoint 15 (p1015)
3: Fieldbus
5: TB30/TM31 analog input
6: Enable the response OFF1
7: Enable the response OFF2

Note: ESM: Essential Service Mode

When the essential service mode is activated, the effective speed setpoint is displayed in r1114.

For p3881 = 0:

The last known setpoint value is only safely and reliably transferred if it was present for at least 30 s prior to activating the essential service mode.

Speed setpoints from the jog mode (p1058, p1059) are not taken into account.

For p3881 = 5:

The signal source for the setpoint via analog input for TB30/TM31 is set via p3886.

For p3881 = 6:

n_act = 0: pulse suppression and switching on inhibited.

n_active > 0: braking along the ramp-function generator down ramp (p1121), pulse cancellation and switching on inhibited.

For p3881 = 7:

n_act = 0: pulse suppression and switching on inhibited.

n_act > 0: immediate pulse cancellation and switching on inhibited.

p3881 ESM setpoint source / ESM setp_src

VECTOR_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 7033
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	7	0

Description: Sets the setpoint source for essential service mode (ESM).

Value:
0: Last known setpoint (r1078 smoothed)
1: Fixed speed setpoint 15 (p1015)
2: Control Unit analog input 0 (AI 0, r0755[0])
3: Fieldbus
5: TM31 analog input
6: Enable the response OFF1
7: Enable the response OFF2

Note: ESM: Essential Service Mode

When the essential service mode is activated, the effective speed setpoint is displayed in r1114.

For p3881 = 0:

The last known setpoint value is only safely and reliably transferred if it was present for at least 30 s prior to activating the essential service mode.

Speed setpoints from the jog mode (p1058, p1059) are not taken into account.

For p3881 = 5:

The signal source for the setpoint via analog input for TB30/TM31 is set via p3886.

For p3881 = 6:

n_act = 0: pulse suppression and switching on inhibited.

n_active > 0: braking along the ramp-function generator down ramp (p1121), pulse cancellation and switching on inhibited.

For p3881 = 7:

n_act = 0: pulse suppression and switching on inhibited.

n_act > 0: immediate pulse cancellation and switching on inhibited.

p3882 ESM setpoint source alternative / ESM setp_src alt

VECTOR

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 7033
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	2	0

Description: Sets the alternative setpoint source for essential service mode (ESM).

This setpoint is used when the setpoint source set in p3881 is lost.

Value:
0: Last known setpoint (r1078 smoothed)
1: Fixed speed setpoint 15 (p1015)
2: Maximum speed (p1082)

Dependency: Refer to: p3881

Note: ESM: Essential Service Mode

The alternative setpoint source is only active for p3881 = 3, 5.

p3882 ESM setpoint source alternative / ESM setp_src alt

VECTOR_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 7033
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	2	0

Description: Sets the alternative setpoint source for essential service mode (ESM).

This setpoint is used when the setpoint source set in p3881 is lost.

Value:
0: Last known setpoint (r1078 smoothed)
1: Fixed speed setpoint 15 (p1015)
2: Maximum speed (p1082)

Dependency: Refer to: p3881

Note: ESM: Essential Service Mode

The alternative setpoint source is only active for p3881 = 2, 3, 5.

p3883 BI: ESM direction of rotation signal source / ESM rot dir s s

VECTOR, VECTOR_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 7033
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the direction of rotation during essential service mode (ESM).

p3883 = 1 signal:

Direction of rotation of the setpoint, parameterized for essential service mode, is reversed.

p3883 = 0 signal:

Direction of rotation of the setpoint parameterized for essential service mode is kept.

Note: ESM: Essential Service Mode

p3886 CI: ESM setpoint TB30/TM31 analog input / ESM setp TB30TM31

VECTOR

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7033
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the setpoint for p3881 = 5 (TB30/TM31 analog input) in the essential service mode (ESM).

Dependency: Refer to: p3881

Note: ESM: Essential Service Mode

p3886 CI: ESM setpoint TM31 analog input / ESM setp TM31

VECTOR_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7033
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the setpoint for p3881 = 5 (TB30/TM31 analog input) in the essential service mode (ESM).

Dependency: Refer to: p3881

Note: ESM: Essential Service Mode

r3887[0...1] ESM number of activations/faults / ESM act/fault qty

VECTOR, VECTOR_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 7033
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the number of activations and faults that have occurred for the essential service mode (ESM).

Index:
[0] = Activation of the essential service mode
[1] = Faults during the essential service mode

Dependency: Refer to: p3888

Note: ESM: Essential Service Mode

p3888 ESM reset number of activations/faults / ESM act/F qty r

VECTOR, VECTOR_AC

Can be changed: T	**Calculated:** -	**Access level:** 4
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** 7033
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Setting to reset the number of activations and faults that have occurred for the essential service mode (ESM).

1: counter reset active (r3887[0, 1])

0: inactive

Dependency: Refer to: r3887

Note: ESM: Essential Service Mode

The parameter is automatically reset to zero after the counter has been reset.

r3889.0...10 CO/BO: ESM status word / ESM ZSW

VECTOR

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 7033
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status word of the essential service mode (ESM).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Essential service mode (ESM) activated	Yes	No	-
01	Direction of rotation inverted	Yes	No	-
02	Setpoint signal lost	Yes	No	-
04	Bypass active	Yes	No	-
07	Setpoint TB30/TM31 analog input parameterized (p3886)	Yes	No	-
08	Power unit not permissible (permissible p0201 >= 14000)	Yes	No	-
09	Response OFF1/OFF2 activated	Yes	No	-
10	Automatic restart interrupted (F07320)	Yes	No	-

Note: ESM: Essential Service Mode

r3889.0...10 CO/BO: ESM status word / ESM ZSW

VECTOR_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 7033
P-Group: Functions	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status word of the essential service mode (ESM).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Essential service mode (ESM) activated	Yes	No	-
01	Direction of rotation inverted	Yes	No	-
02	Setpoint signal lost	Yes	No	-
04	Bypass active	Yes	No	-
07	Setpoint TM31 analog input parameterized (p3886)	Yes	No	-
08	Power unit not permissible (permissible p0201 < 10000)	Yes	No	-
09	Response OFF1/OFF2 activated	Yes	No	-
10	Automatic restart interrupted (F07320)	Yes	No	-

Note: ESM: Essential Service Mode

p3900	**Completion of quick commissioning / Compl quick_comm**		
HLA	**Can be changed:** C2(1)	**Calculated:** -	**Access level:** 1
	Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	3	0

Description: Exits quick commissioning (p0010 = 1) with automatic calculation of all parameters of all existing drive data sets that depend on the entries made during quick commissioning.

p3900 = 1 initially includes a parameter reset (factory setting, the same as p0970 = 1) for all parameters of the drive object; however, without overwriting the entries made during the quick commissioning.

The interconnections of PROFIBUS PZD telegram selection (p0922) and the interconnections via p0700, p1000 and p1500 are re-established and all of the dependent motor, open-loop and control-loop control parameters are calculated (corresponding to p0340 = 1).

p3900 = 2 includes the restoration of the interconnections of PROFIBUS PZD telegram selection (p0922) and the interconnections via p0700, p1000 and p1500 and the calculations corresponding to p0340 = 1.

p3900 = 3 only includes the calculations associated with the motor, open-loop and closed-loop control parameters corresponding to p0340 = 1F.

Value:
0: No quick parameterization
1: Quick parameterization after parameter reset
2: Quick parameterization (only) for BICO and motor parameters
3: Quick parameterization for motor parameters (only)

Notice: After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

Note: When the calculations have been completed, p3900 and p0010 are automatically reset to a value of zero.

When calculating motor, open-loop and closed-loop control parameters (such as for p0340 = 1) parameters associated with a selected Siemens catalog motor are not overwritten.

p3900	**Completion of quick commissioning / Compl quick_comm**		
SERVO, SERVO_AC, SERVO_I_AC	**Can be changed:** C2(1)	**Calculated:** -	**Access level:** 1
	Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	3	0

Description: Exits quick commissioning (p0010 = 1) with automatic calculation of all parameters of all existing drive data sets that depend on the entries made during quick commissioning.

p3900 = 1 initially includes a parameter reset (factory setting, the same as p0970 = 1) for all parameters of the drive object; however, without overwriting the entries made during the quick commissioning.

The interconnections of PROFIBUS PZD telegram selection (p0922) and the interconnections via p0700, p1000 and p1500 are re-established and all of the dependent motor, open-loop and control-loop control parameters are calculated (corresponding to p0340 = 1).

p3900 = 2 includes the restoration of the interconnections of PROFIBUS PZD telegram selection (p0922) and the interconnections via p0700, p1000 and p1500 and the calculations corresponding to p0340 = 1.

p3900 = 3 only includes the calculations associated with the motor, open-loop and closed-loop control parameters corresponding to p0340 = 1.

Value:
0: No quick parameterization
1: Quick parameterization after parameter reset
2: Quick parameterization (only) for BICO and motor parameters
3: Quick parameterization for motor parameters (only)

Notice: After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

Note: When the calculations have been completed, p3900 and p0010 are automatically reset to a value of zero.

When calculating motor, open-loop and closed-loop control parameters (such as for p0340 = 1) parameters associated with a selected Siemens catalog motor are not overwritten.

If a catalog motor has not been selected (p0300), then the following parameters are reset with p3900 > 0 in order to restore the situation that applied when commissioning the drive for the first time:

induction motors p0320, p0352, p0353, p0604, p0605, p0626 ... p0628

synchronous motor p0326, p0327, p0352, p0353, p0391 ... p0393, p0604, p0605.

p3900 Completion of quick commissioning / Compl quick_comm

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(1)	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	3	0

Description: Exits quick commissioning (p0010 = 1) with automatic calculation of all parameters of all existing drive data sets that depend on the entries made during quick commissioning.

p3900 = 1 initially includes a parameter reset (factory setting, the same as p0970 = 1) for all parameters of the drive object; however, without overwriting the entries made during the quick commissioning.

The interconnections of PROFIBUS PZD telegram selection (p0922) and the interconnections via p0700, p1000 and p1500 are re-established and all of the dependent motor, open-loop and control-loop control parameters are calculated (corresponding to p0340 = 1).

p3900 = 2 includes the restoration of the interconnections of PROFIBUS PZD telegram selection (p0922) and the interconnections via p0700, p1000 and p1500 and the calculations corresponding to p0340 = 1.

p3900 = 3 only includes the calculations associated with the motor, open-loop and closed-loop control parameters corresponding to p0340 = 1.

Value:
0: No quick parameterization
1: Quick parameterization after parameter reset
2: Quick parameterization (only) for BICO and motor parameters
3: Quick parameterization for motor parameters (only)

Notice: After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

Note: When the calculations have been completed, p3900 and p0010 are automatically reset to a value of zero.

When calculating motor, open-loop and closed-loop control parameters (such as for p0340 = 1) parameters associated with a selected Siemens catalog motor are not overwritten.

If a catalog motor has not been selected (p0300), then the following parameters are reset with p3900 > 0 in order to restore the situation that applied when commissioning the drive for the first time:

induction motors p0320, p0352, p0353, p0362 ... p0369, p0391 ... p0393, p0604, p0605, p0626 ... p0628

synchronous motor p0326, p0327, p0352, p0353, p0391 ... p0393, p0604, p0605.

p3900 Completion of quick commissioning / Compl quick_comm

A_INF, S_INF, R_INF, B_INF

Can be changed: C2(1)	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	3	0

Description: Exits the quick commissioning (p0010 = 1) with automatic calculation of all of the parameters that depend on the entries made during the quick commissioning.

p3900 = 1 initially includes a parameter reset (factory setting, the same as p0970 = 1) for all parameters of the drive object; however, without overwriting the entries made during the quick commissioning. The interconnections of PROFIBUS PZD telegram selection (p0922) and the interconnections via p0700 are re-established and all of the dependent filter and closed-loop control parameters are calculated (corresponding to p0340 = 1).

p3900 = 2 includes the restoration of the interconnections of PROFIBUS PZD telegram selection (p0922) and the interconnections via p0700 and the calculations corresponding to p0340 = 1.

p3900 = 3 only includes the end of quick commissioning.

Value:
0: No quick parameterization
1: Quick parameterization after parameter reset
2: Quick param. (only) for controller par. and reset for BICO par
3: Completion of quick commissioning

Notice: After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

Note: When the calculations have been completed, p3900 and p0010 are automatically reset to a value of zero.

p3901[0...n] Power unit EEPROM Vdc offset calibration / PU EEPROM Vdc offs

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: C1, C2(1), T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: All groups	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-40.0 [V]	40.0 [V]	0.0 [V]

Description: Differential voltage for calibrating the offset for DC link voltage measurement.

Dependency: Refer to: r0192, p0212

Caution: Incorrect use of the calibration can have a negative impact on the closed-loop control.

The parameter influences the upper and lower voltage detection.

Note: Parameter entries are directly saved in the DRIVE-CLiQ component involved.

The parameter is only effective in the case of booksize power units, if r0192.22 = 1 and p0212.0 = 1.

r3925[0...n] Identification final display / Ident final_disp

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the commissioning steps that have been carried out.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Motor/control parameters calculated (p0340 = 1, p3900 > 0)	Yes	No	-
02	Motor data identification carried out at standstill (p1910 = 1)	Yes	No	-
03	Rotating measurement carried out (p1960 = 1, 2)	Yes	No	-
04	Motor encoder adjustment carried out (p1960 = 1, p1990 = 1, 3)	Yes	No	-
05	Motor encoder manually adjusted	Yes	No	-
15	Equivalent circuit diagram parameters changed	Yes	No	-

Note: The individual bits are only set if the appropriate action has been initiated and successfully completed.

The identification final display is reset when changing the type plate parameters.

r3925[0...n] Identification final display / Ident final_disp

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the commissioning steps that have been carried out.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Motor/control parameters calculated (p0340 = 1, p3900 > 0)	Yes	No	-
02	Motor data identification carried out at standstill (p1910 = 1)	Yes	No	-
03	Rotating measurement carried out (p1960 = 1, 2)	Yes	No	-
04	Motor encoder adjustment carried out (p1960 = 1, p1990 = 1, 3)	Yes	No	-
08	Identified motor data are automatically backed up	Yes	No	-
10	Automatic parameterization only for U/f control (r0108.2 = 0)	Yes	No	-
14	First motor commissioning	Yes	No	-
15	Equivalent circuit diagram parameters changed	Yes	No	-
16	Cable resistance measured	Yes	No	-
18	Circle identification executed	Yes	No	-

Note: The individual bits are only set if the appropriate action has been initiated and successfully completed.

The identification final display is reset when changing the type plate parameters.

r3927[0...n] Motor data identification induction motor data determined / MotID ASM dat det

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the data of an induction motor determined and accepted from the stationary motor data identification or rotating measurement.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	p0350 accepted	Yes	No	-
01	p0354 accepted	Yes	No	-
02	p0356 accepted	Yes	No	-
03	p0358 accepted	Yes	No	-
04	p0360 accepted	Yes	No	-
05	p0320 accepted	Yes	No	-
06	p0410 accepted	Yes	No	-
12	p1715 accepted	Yes	No	-
13	p1717 accepted	Yes	No	-
14	p1590 accepted	Yes	No	-
15	p1592 accepted	Yes	No	-
22	p0341 accepted	Yes	No	-
24	p0348 accepted	Yes	No	-
25	p1752 accepted	Yes	No	-
26	p5265 - p5268 accepted	Yes	No	-
27	p0391 - p0393 accepted	Yes	No	-

Dependency: Refer to: r3925

r3927[0...n] Motor data identification control word / MotID STW

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Successfully completed component of the last motor data identification carried out.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Stator inductance estimate no measurement	Yes	No	-
01	Cl.-loop current control w/ dead-beat controller	Yes	No	-
02	Rotor time constant estimate no measurement	Yes	No	-
03	Leakage inductance estimate no measurement	Yes	No	-
04	Activates the identification dynamic leakage inductance	Yes	No	-
05	Determine Tr and Lsig evaluation in the time range	Yes	No	-
06	Activate vibration damping	Yes	No	-
07	Deactivate vibration detection	Yes	No	-
11	Deactivate pulse measurement Lq Ld	Yes	No	-
12	Deactivate rotor resistance Rr measurement	Yes	No	-
14	Deactivate valve interlocking time measurement	Yes	No	-
15	Determine only stator resistance, valve voltage fault, dead time	Yes	No	-
16	Short motor identification (lower quality)	Yes	No	-
17	Measurement without control parameter calculation	Yes	No	-
18	After motID direct transition into operation	Yes	No	-
19	After MotID automatically save results	Yes	No	-
20	Estimate cable resistance	Yes	No	-
21	Calibrate output voltage measurement	Yes	No	-
22	Only identify circle	Yes	No	-
23	Deactivate circle identification	Yes	No	-
24	Circle identification with 0 and 90 degrees	Yes	No	-
25	Deactivate gating unit switchover	Yes	No	-

Dependency: Refer to: r3925

Note: The parameter is a copy of p1909.

r3928[0...n] Motor data identification synchronous motor data determined / MotId PMSM dat det

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Successfully completed component of the last rotating measurement carried out.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	p0350 accepted	Yes	No	-
02	p0356 accepted	Yes	No	-
06	p0410 accepted	Yes	No	-
07	p0431 accepted	Yes	No	-
08	p1952 accepted	Yes	No	-
09	p1953 accepted	Yes	No	-

10	p1954 accepted	Yes	No	-
12	p1715 accepted	Yes	No	-
13	p1717 accepted	Yes	No	-
18	p0316 accepted	Yes	No	-
19	p0317 accepted	Yes	No	-
20	p0327 accepted	Yes	No	-
21	p0328 accepted	Yes	No	-
22	p0341 accepted	Yes	No	-
23	kT characteristic parameter accepted	Yes	No	-
24	p0348 accepted	Yes	No	-
26	p5265 - p5268 accepted	Yes	No	-
27	p0391 - p0393 accepted	Yes	No	-

Dependency: Refer to: r3925

r3928[0...n] Rotating measurement configuration / Rot meas config

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: -	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Successfully completed component of the last rotating measurement carried out.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Encoder test active	Yes	No	-
01	Saturation characteristic identification	Yes	No	-
02	Moment of inertia identification	Yes	No	-
03	Re-calculates the speed controller parameters	Yes	No	-
04	Speed controller optimization (vibration test)	Yes	No	-
05	q leakage inductance ident. (for current controller adaptation)	Yes	No	-
11	Do not change the controller parameters during the measurement	Yes	No	-
12	Measurement shortened	Yes	No	-
13	After measurement direct transition into operation	Yes	No	-
14	Calculate speed actual value smoothing time	Yes	No	-

Dependency: Refer to: r3925

Note: The parameter is a copy of p1959.

p3940[0...n] Motor/controller data calculation / Mot/ctrl_data calc

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: All groups	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	3	0

Description: Selecting the calculation of the motor/controller data for the offline parameterization Startdrive

Value:
0: No calculation
1: Complete calculation
3: Calculation without equivalent circuit diagram data

Dependency: The parameter is preassigned when changing the motor.

Refer to: p0340

p3950 Service parameter / Serv par

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: C1, U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: All groups	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: For service personnel only.

p3961 Fan operating hours counter / Fan op hr counter

CU_S_AC_DP, CU_S_AC_PN

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [h]	340.28235E36 [h]	0.000 [h]

Description: Displays the measured operating hours since the last fan replacement.

r3974 Drive unit status word / Drv_unit ZSW

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status word for the drive unit.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Software reset active	Yes	No	-
01	Writing of parameters disabled as parameter save in progress	Yes	No	-
02	Writing of parameters disabled as macro is running	Yes	No	-

r3977 BICO counter topology / BICO counter topo

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the BICO interconnections that have been parameterized in the complete (overall) topology.

The counter is incremented by one for each modified BICO interconnection.

Dependency: Refer to: r3978, r3979

r3978 BICO CounterDevice / BICO CounterDevice

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the counter reading for modified BICO interconnections on this device.
The counter is incremented by one for each modified BICO interconnection.

r3979 BICO counter drive object / BICO counter DO

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM17, TM15, TM15DI_DO, TM120, TM150, TB30, TM54F_MA, TM54F_SL, ENC, HUB, CU_LINK

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the counter reading for modified BICO interconnections on this drive object.
The counter is incremented by one for each modified BICO interconnection.

p3981 Acknowledge drive object faults / Ackn DO faults

All objects

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** 8060
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Setting to acknowledge all active faults of a drive object.

Notice: Safety messages cannot be acknowledged using this parameter.

Note: Parameter should be set from 0 to 1 to acknowledge.
After acknowledgment, the parameter is automatically reset to 0.

p3985 Master control mode selection / PcCtrl mode select

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the mode to change over the master control / LOCAL mode.

Value:
0: Change master control for STW1.0 = 0
1: Change master control in operation

Danger: When changing the master control in operation, the drive can manifest undesirable behavior - e.g. it can accelerate up to another setpoint.

r3986 Number of parameters / Param count

All objects

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the number of parameters for this drive unit.

The number comprises the device-specific and the drive-specific parameters.

Dependency: Refer to: r0980, r0981, r0989

r3988[0...1] Boot state / Boot_state

CU_I, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	10800	-

Description: Index 0:

Displays the boot state.

Index 1:

Displays the partial boot state.

Value:

0: Not active
1: Fatal fault
10: Fault
20: Reset all parameters
30: Drive object modified
40: Download using the commissioning tool
50: Parameter download using commissioning tool
90: Reset Control Unit and delete drive objects
100: Start initialization
101: Wait for topology input
110: Instantiate Control Unit basis
111: Insert drive object
112: Remove drive object
113: Change drive object number
114: Change component number
115: Parameter download using commissioning tool
117: Remove component
150: Wait until actual topology determined
160: Evaluate topology
170: Instantiate Control Unit reset
180: Initialization YDB configuration information
190: FW update for CU LINK slaves
200: First commissioning
210: Create drive packages
250: Wait for topology acknowledge
325: Wait for input of drive type
350: Determine drive type
360: Write into topology-dependent parameters
370: Wait until p0009 = 0 is set
380: Check topology
550: Call conversion functions for parameter
625: Wait non-cyclic starting DRIVE-CLiQ
650: Start cyclic operation
660: Evaluate drive commissioning status
670: Automatic FW update DRIVE-CLiQ components
680: Wait for CU LINK slaves
690: Wait non-cyclic starting DRIVE-CLiQ

700: Save parameters
725: Wait until DRIVE-CLiQ cyclic
740: Check the ability to operate
745: Start of the time slices
750: Interrupt enable
800: Initialization finished
10050: Wait for synchronization
10100: Wait for CU LINK slaves
10150: Wait until actual topology determined
10200: Evaluate component status
10250: Call conversion functions for parameter
10300: Preparation cyclic operation
10350: Automatic FW update DRIVE-CLiQ components
10400: Wait for slave properties
10450: Check CX/NX status
10500: Wait until DRIVE-CLiQ cyclic
10550: Carry out warm start
10600: Evaluate, encoder status
10800: Partial boot completed

Index: [0] = System
[1] = Partial boot

r3988[0...1] Boot state / Boot_state

CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	10800	-

Description: Index 0:
Displays the boot state.
Index 1:
Displays the partial boot state.

Value:
0: Not active
1: Fatal fault
10: Fault
20: Reset all parameters
30: Drive object modified
40: Download using the commissioning tool
50: Parameter download using commissioning tool
90: Reset Control Unit and delete drive objects
100: Start initialization
101: Wait for topology input
110: Instantiate Control Unit basis
111: Insert drive object
112: Remove drive object
113: Change drive object number
114: Change component number
115: Parameter download using commissioning tool
117: Remove component
150: Wait until actual topology determined
160: Evaluate topology
170: Instantiate Control Unit reset
180: Initialization YDB configuration information
200: First commissioning
210: Create drive packages
250: Wait for topology acknowledge
325: Wait for input of drive type
350: Determine drive type
360: Write into topology-dependent parameters
370: Wait until p0009 = 0 is set
380: Check topology
550: Call conversion functions for parameter

625: Wait non-cyclic starting DRIVE-CLiQ
650: Start cyclic operation
660: Evaluate drive commissioning status
670: Automatic FW update DRIVE-CLiQ components
680: Wait for CU LINK slaves
690: Wait non-cyclic starting DRIVE-CLiQ
700: Save parameters
725: Wait until DRIVE-CLiQ cyclic
740: Check the ability to operate
745: Start of the time slices
750: Interrupt enable
800: Initialization finished
10050: Wait for synchronization
10100: Wait for CU LINK slaves
10150: Wait until actual topology determined
10200: Evaluate component status
10250: Call conversion functions for parameter
10300: Preparation cyclic operation
10350: Automatic FW update DRIVE-CLiQ components
10400: Wait for slave properties
10450: Check CX/NX status
10500: Wait until DRIVE-CLiQ cyclic
10550: Carry out warm start
10600: Evaluate, encoder status
10800: Partial boot completed

Index: [0] = System
[1] = Partial boot

r3996[0...1] Parameter write inhibit status / Par_write inhib st

All objects	**Can be changed:** -	**Calculated:** -	**Access level:** 1
	Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
	P-Group: -	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays whether writing to parameters is inhibited.

r3996[0] = 0:

Parameter write not inhibited.

0 < r3996[0] < 100:

Parameter write inhibited. The value shows how the calculations are progressing.

Index: [0] = Progress calculations
[1] = Cause

Note: For index [1]:

Only for internal Siemens troubleshooting.

r3998 First device commissioning / First dev_comm

HLA	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: -	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	65535	-

Description: Displays whether the device must be commissioned for the first time.

0 = Yes

2 = No

r3998[0...n] First drive commissioning / First drv_comm

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	65535	-

Description: Displays whether the drive still has to be commissioned for the first time.
0 = Yes
2 = No

r3998 First infeed commissioning / First inf_comm

A_INF, S_INF, R_INF, B_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	65535	-

Description: Displays whether the infeed must be commissioned for the first time.
0 = Yes
2 = No

r4021 Digital inputs terminal actual value / DI actual value

SERVO (Dig IO)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2201
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the actual value at the digital inputs.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI/DO 0 distributed (X3.2)	High	Low	2201
01	DI/DO 1 distributed (X3.4)	High	Low	2201

Note: If a DI/DO is parameterized as output (p4028.x = 1), then r4021.x = 0 is displayed.
DI/DO: Bidirectional Digital Input/Output

r4021 TM15DI/DO digital inputs, terminal actual value / TM15D DI act val

TM15DI_DO

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9400, 9401, 9402
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the actual value at the digital inputs.
This means that the actual input signal can be checked at terminal DI x or DI/DO x prior to switching from the simulation mode (p4095.x = 1) to terminal mode (p4095.x = 0).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI/DO 0 (X520.2)	High	Low	-
01	DI/DO 1 (X520.3)	High	Low	-
02	DI/DO 2 (X520.4)	High	Low	-
03	DI/DO 3 (X520.5)	High	Low	-
04	DI/DO 4 (X520.6)	High	Low	-
05	DI/DO 5 (X520.7)	High	Low	-
06	DI/DO 6 (X520.8)	High	Low	-
07	DI/DO 7 (X520.9)	High	Low	-
08	DI/DO 8 (X521.2)	High	Low	-
09	DI/DO 9 (X521.3)	High	Low	-
10	DI/DO 10 (X521.4)	High	Low	-
11	DI/DO 11 (X521.5)	High	Low	-
12	DI/DO 12 (X521.6)	High	Low	-
13	DI/DO 13 (X521.7)	High	Low	-
14	DI/DO 14 (X521.8)	High	Low	-
15	DI/DO 15 (X521.9)	High	Low	-
16	DI/DO 16 (X522.2)	High	Low	-
17	DI/DO 17 (X522.3)	High	Low	-
18	DI/DO 18 (X522.4)	High	Low	-
19	DI/DO 19 (X522.5)	High	Low	-
20	DI/DO 20 (X522.6)	High	Low	-
21	DI/DO 21 (X522.7)	High	Low	-
22	DI/DO 22 (X522.8)	High	Low	-
23	DI/DO 23 (X522.9)	High	Low	-

Note: If a DI/DO is parameterized as output (p4028.x = 1), then r4021.x = 0 is displayed.

DI/DO: Bidirectional Digital Input/Output

r4021 TM31 digital inputs terminal actual value / TM31 DI act value

TM31

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9549, 9550, 9552, 9560, 9562
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the actual value at the digital inputs.

This means that the actual input signal can be checked at terminal DI x or DI/DO x prior to switching from the simulation mode (p4095.x = 1) to terminal mode (p4095.x = 0).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI 0 (X520.1)	High	Low	-
01	DI 1 (X520.2)	High	Low	-
02	DI 2 (X520.3)	High	Low	-
03	DI 3 (X520.4)	High	Low	-
04	DI 4 (X530.1)	High	Low	-
05	DI 5 (X530.2)	High	Low	-
06	DI 6 (X530.3)	High	Low	-
07	DI 7 (X530.4)	High	Low	-
08	DI/DO 8 (X541.2)	High	Low	-
09	DI/DO 9 (X541.3)	High	Low	-
10	DI/DO 10 (X541.4)	High	Low	-
11	DI/DO 11 (X541.5)	High	Low	-

Note: If a DI/DO is parameterized as output (p4028.x = 1), then r4021.x = 0 is displayed.

DI: Digital Input

DI/DO: Bidirectional Digital Input/Output

r4021 TM41 digital inputs terminal actual value / TM41 DI act val

TM41

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the actual value at the digital inputs.

This means that the actual input signal can be checked at terminal DI x or DI/DO x prior to switching from the simulation mode (p4095.x = 1) to terminal mode (p4095.x = 0).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI 0 (X522.1)	High	Low	9660
01	DI 1 (X522.2)	High	Low	9660
02	DI 2 (X522.3)	High	Low	9660
03	DI 3 (X522.4)	High	Low	9660
08	DI/DO 0 (X521.1)	High	Low	9661
09	DI/DO 1 (X521.2)	High	Low	9661
10	DI/DO 2 (X521.3)	High	Low	9662
11	DI/DO 3 (X521.4)	High	Low	9662

Note: If a DI/DO is parameterized as output (p4028.x = 1), then r4021.x = 0 is displayed.

DI: Digital Input

DI/DO: Bidirectional Digital Input/Output

r4021 TB30 digital inputs terminal actual value / TB30 DI act value

TB30

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9100
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the actual value at the digital inputs.

This means that the actual input signal can be checked at terminal DI x prior to switching from the simulation mode (p4095.x = 1) to the terminal mode (p4095.x = 0).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI 0 (X481.1)	High	Low	-
01	DI 1 (X481.2)	High	Low	-
02	DI 2 (X481.3)	High	Low	-
03	DI 3 (X481.4)	High	Low	-

Note: DI: Digital Input

r4022.0...1 CO/BO: Digital inputs status / DI status

SERVO (Dig IO)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2201
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status of the digital inputs.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI/DO 0 distributed (X3.2)	High	Low	2201
01	DI/DO 1 distributed (X3.4)	High	Low	2201

Dependency: Refer to: r4023

Note: If a DI/DO is parameterized as output (p4028.x = 1), then r4021.x = 0 is displayed.

DI/DO: Bidirectional Digital Input/Output

r4022.0...23 CO/BO: TM15DI/DO digital inputs status / TM15D DI status

TM15DI_DO

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9399, 9400, 9401, 9402
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status of the digital inputs of Terminal Module 15 (TM15).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI/DO 0 (X520.2)	High	Low	-
01	DI/DO 1 (X520.3)	High	Low	-
02	DI/DO 2 (X520.4)	High	Low	-
03	DI/DO 3 (X520.5)	High	Low	-
04	DI/DO 4 (X520.6)	High	Low	-
05	DI/DO 5 (X520.7)	High	Low	-
06	DI/DO 6 (X520.8)	High	Low	-
07	DI/DO 7 (X520.9)	High	Low	-
08	DI/DO 8 (X521.2)	High	Low	-
09	DI/DO 9 (X521.3)	High	Low	-
10	DI/DO 10 (X521.4)	High	Low	-
11	DI/DO 11 (X521.5)	High	Low	-
12	DI/DO 12 (X521.6)	High	Low	-
13	DI/DO 13 (X521.7)	High	Low	-
14	DI/DO 14 (X521.8)	High	Low	-
15	DI/DO 15 (X521.9)	High	Low	-
16	DI/DO 16 (X522.2)	High	Low	-
17	DI/DO 17 (X522.3)	High	Low	-
18	DI/DO 18 (X522.4)	High	Low	-
19	DI/DO 19 (X522.5)	High	Low	-
20	DI/DO 20 (X522.6)	High	Low	-
21	DI/DO 21 (X522.7)	High	Low	-
22	DI/DO 22 (X522.8)	High	Low	-
23	DI/DO 23 (X522.9)	High	Low	-

Dependency: Refer to: r4023, r4024, r4025

Notice: For the BICO interconnection of the connector output (CO) only bit 00 ... 15 are transferred.

Note: DI/DO: Bidirectional Digital Input/Output

r4022.0...11 CO/BO: TM31 digital inputs status / TM31 DI status

TM31

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9549, 9550, 9552, 9560, 9562
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status of the digital inputs of Terminal Module 31 (TM31).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI 0 (X520.1)	High	Low	-
01	DI 1 (X520.2)	High	Low	-
02	DI 2 (X520.3)	High	Low	-
03	DI 3 (X520.4)	High	Low	-
04	DI 4 (X530.1)	High	Low	-
05	DI 5 (X530.2)	High	Low	-
06	DI 6 (X530.3)	High	Low	-
07	DI 7 (X530.4)	High	Low	-
08	DI/DO 8 (X541.2)	High	Low	-

09	DI/DO 9 (X541.3)	High	Low	-
10	DI/DO 10 (X541.4)	High	Low	-
11	DI/DO 11 (X541.5)	High	Low	-

Dependency: Refer to: r4023

Note: DI: Digital Input

DI/DO: Bidirectional Digital Input/Output

r4022.0...11 CO/BO: TM41 digital inputs status / TM41 DI status

TM41

Can be changed: -
Calculated: -
Access level: 1

Data type: Unsigned32
Dyn. index: -
Func. diagram: 9659, 9660, 9661, 9662

P-Group: Commands
Unit group: -
Unit selection: -

Not for motor type: -
Scaling: -
Expert list: 1

Min	Max	Factory setting
-	-	-

Description: Displays the status of the digital inputs of Terminal Module 41 (TM41).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI 0 (X522.1)	High	Low	9660
01	DI 1 (X522.2)	High	Low	9660
02	DI 2 (X522.3)	High	Low	9660
03	DI 3 (X522.4)	High	Low	9660
08	DI/DO 0 (X521.1)	High	Low	9661
09	DI/DO 1 (X521.2)	High	Low	9661
10	DI/DO 2 (X521.3)	High	Low	9662
11	DI/DO 3 (X521.4)	High	Low	9662

Dependency: Refer to: r4023

Note: DI: Digital Input

DI/DO: Bidirectional Digital Input/Output

r4022.0...3 CO/BO: TB30 digital inputs status / TB30 DI status

TB30

Can be changed: -
Calculated: -
Access level: 1

Data type: Unsigned32
Dyn. index: -
Func. diagram: 9099, 9100

P-Group: Commands
Unit group: -
Unit selection: -

Not for motor type: -
Scaling: -
Expert list: 1

Min	Max	Factory setting
-	-	-

Description: Displays the status of the digital inputs of the Terminal Board 30 (TB30).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI 0 (X481.1)	High	Low	-
01	DI 1 (X481.2)	High	Low	-
02	DI 2 (X481.3)	High	Low	-
03	DI 3 (X481.4)	High	Low	-

Dependency: Refer to: r4023

Note: DI: Digital Input

r4023.0...1 BO: Digital inputs status inverted / DI status inv

SERVO (Dig IO)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2201
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the inverted status of the digital inputs.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI/DO 0 distributed (X3.2)	High	Low	2201
01	DI/DO 1 distributed (X3.4)	High	Low	2201

Dependency: Refer to: r4022

Note: If a DI/DO is parameterized as output (p4028.x = 1), then r4021.x = 0 is displayed.

DI/DO: Bidirectional Digital Input/Output

r4023.0...23 CO/BO: TM15DI/DO digital inputs status inverted / TM15D DI stat inv

TM15DI_DO

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9399, 9400, 9401, 9402
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the inverted status of the digital inputs of Terminal Module 15 (TM15).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI/DO 0 (X520.2)	High	Low	-
01	DI/DO 1 (X520.3)	High	Low	-
02	DI/DO 2 (X520.4)	High	Low	-
03	DI/DO 3 (X520.5)	High	Low	-
04	DI/DO 4 (X520.6)	High	Low	-
05	DI/DO 5 (X520.7)	High	Low	-
06	DI/DO 6 (X520.8)	High	Low	-
07	DI/DO 7 (X520.9)	High	Low	-
08	DI/DO 8 (X521.2)	High	Low	-
09	DI/DO 9 (X521.3)	High	Low	-
10	DI/DO 10 (X521.4)	High	Low	-
11	DI/DO 11 (X521.5)	High	Low	-
12	DI/DO 12 (X521.6)	High	Low	-
13	DI/DO 13 (X521.7)	High	Low	-
14	DI/DO 14 (X521.8)	High	Low	-
15	DI/DO 15 (X521.9)	High	Low	-
16	DI/DO 16 (X522.2)	High	Low	-
17	DI/DO 17 (X522.3)	High	Low	-
18	DI/DO 18 (X522.4)	High	Low	-
19	DI/DO 19 (X522.5)	High	Low	-
20	DI/DO 20 (X522.6)	High	Low	-
21	DI/DO 21 (X522.7)	High	Low	-
22	DI/DO 22 (X522.8)	High	Low	-
23	DI/DO 23 (X522.9)	High	Low	-

Dependency: Refer to: r4022, r4024, r4025

Notice: For the BICO interconnection of the connector output (CO) only bit 00 ... 15 are transferred.

Note: DI/DO: Bidirectional Digital Input/Output

r4023.0...11 CO/BO: TM31 digital inputs status inverted / TM31 DI status inv

TM31

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9549, 9550, 9552, 9560, 9562
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the inverted status of the digital inputs of Terminal Module 31 (TM31).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI 0 (X520.1)	High	Low	-
01	DI 1 (X520.2)	High	Low	-
02	DI 2 (X520.3)	High	Low	-
03	DI 3 (X520.4)	High	Low	-
04	DI 4 (X530.1)	High	Low	-
05	DI 5 (X530.2)	High	Low	-
06	DI 6 (X530.3)	High	Low	-
07	DI 7 (X530.4)	High	Low	-
08	DI/DO 8 (X541.2)	High	Low	-
09	DI/DO 9 (X541.3)	High	Low	-
10	DI/DO 10 (X541.4)	High	Low	-
11	DI/DO 11 (X541.5)	High	Low	-

Dependency: Refer to: r4022

Note: DI: Digital Input

DI/DO: Bidirectional Digital Input/Output

r4023.0...11 BO: TM41 digital inputs status inverted / TM41 DI status inv

TM41

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9659, 9660, 9661, 9662
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the inverted status of the digital inputs of Terminal Module 41 (TM41).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI 0 (X522.1)	High	Low	9660
01	DI 1 (X522.2)	High	Low	9660
02	DI 2 (X522.3)	High	Low	9660
03	DI 3 (X522.4)	High	Low	9660
08	DI/DO 0 (X521.1)	High	Low	9661
09	DI/DO 1 (X521.2)	High	Low	9661
10	DI/DO 2 (X521.3)	High	Low	9662
11	DI/DO 3 (X521.4)	High	Low	9662

Dependency: Refer to: r4022

Note: DI: Digital Input

DI/DO: Bidirectional Digital Input/Output

r4023.0...3 BO: TB30 digital inputs status inverted / TB30 DI status inv

TB30			
	Can be changed: -	**Calculated:** -	**Access level:** 1
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9099, 9100
	P-Group: Commands	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the inverted status of the digital inputs of the Terminal Board 30 (TB30).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI 0 (X481.1)	High	Low	-
01	DI 1 (X481.2)	High	Low	-
02	DI 2 (X481.3)	High	Low	-
03	DI 3 (X481.4)	High	Low	-

Dependency: Refer to: r4022

Note: DI: Digital Input

r4024 CO: TM15DI/DO digital inputs 16 ... 23 status / TM15D DI 16-23 St

TM15DI_DO			
	Can be changed: -	**Calculated:** -	**Access level:** 1
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 9402
	P-Group: Commands	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the status of digital inputs 16 ... 23 of Terminal Module 15 (TM15).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI/DO 16 (X522.2)	ON	OFF	-
01	DI/DO 17 (X522.3)	ON	OFF	-
02	DI/DO 18 (X522.4)	ON	OFF	-
03	DI/DO 19 (X522.5)	ON	OFF	-
04	DI/DO 20 (X522.6)	ON	OFF	-
05	DI/DO 21 (X522.7)	ON	OFF	-
06	DI/DO 22 (X522.8)	ON	OFF	-
07	DI/DO 23 (X522.9)	ON	OFF	-

Dependency: Refer to: r4022, r4023, r4025

Note: DI: Digital Input

r4025 CO: TM15DI/DO digital inputs 16 ... 23 status inverted / TM15D DI 16-23 inv

TM15DI_DO			
	Can be changed: -	**Calculated:** -	**Access level:** 1
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 9402
	P-Group: Commands	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the inverted status of digital inputs 16 ... 23 of Terminal Module 15 (TM15).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI/DO 16 (X522.2)	ON	OFF	-
01	DI/DO 17 (X522.3)	ON	OFF	-
02	DI/DO 18 (X522.4)	ON	OFF	-
03	DI/DO 19 (X522.5)	ON	OFF	-
04	DI/DO 20 (X522.6)	ON	OFF	-
05	DI/DO 21 (X522.7)	ON	OFF	-
06	DI/DO 22 (X522.8)	ON	OFF	-
07	DI/DO 23 (X522.9)	ON	OFF	-

Dependency: Refer to: r4022, r4023, r4024

Note: DI: Digital Input

p4028 Set input or output / DI or DO

SERVO (Dig IO)

Can be changed: T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2201
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Sets the bidirectional digital inputs/outputs as an input or output.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI/DO 0 distributed (X3.2)	Output	Input	2201
01	DI/DO 1 distributed (X3.4)	Output	Input	2201

Note: DI/DO: Bidirectional Digital Input/Output

p4028 TM15 set input or output / TM15 DI or DO

TM15

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9389
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 0000 0000 0000 0000 bin

Description: Sets the bidirectional digital inputs/outputs on the Terminal Module 15 (TM15) as input or output.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI/DO 0 (X520.2)	Output	Input	-
01	DI/DO 1 (X520.3)	Output	Input	-
02	DI/DO 2 (X520.4)	Output	Input	-
03	DI/DO 3 (X520.5)	Output	Input	-
04	DI/DO 4 (X520.6)	Output	Input	-
05	DI/DO 5 (X520.7)	Output	Input	-
06	DI/DO 6 (X520.8)	Output	Input	-
07	DI/DO 7 (X520.9)	Output	Input	-
08	DI/DO 8 (X521.2)	Output	Input	-
09	DI/DO 9 (X521.3)	Output	Input	-
10	DI/DO 10 (X521.4)	Output	Input	-
11	DI/DO 11 (X521.5)	Output	Input	-
12	DI/DO 12 (X521.6)	Output	Input	-
13	DI/DO 13 (X521.7)	Output	Input	-
14	DI/DO 14 (X521.8)	Output	Input	-
15	DI/DO 15 (X521.9)	Output	Input	-
16	DI/DO 16 (X522.2)	Output	Input	-
17	DI/DO 17 (X522.3)	Output	Input	-
18	DI/DO 18 (X522.4)	Output	Input	-
19	DI/DO 19 (X522.5)	Output	Input	-
20	DI/DO 20 (X522.6)	Output	Input	-
21	DI/DO 21 (X522.7)	Output	Input	-
22	DI/DO 22 (X522.8)	Output	Input	-
23	DI/DO 23 (X522.9)	Output	Input	-

Note: DI/DO: Bidirectional Digital Input/Output

p4028 TM15DI/DO set input or output / TM15D DI or DO

TM15DI_DO

Can be changed: T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9399, 9400, 9401, 9402
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 0000 0000 0000 0000 bin

Description: Sets the bidirectional digital inputs/outputs on the Terminal Module 15 (TM15) as input or output.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI/DO 0 (X520.2)	Output	Input	-
01	DI/DO 1 (X520.3)	Output	Input	-
02	DI/DO 2 (X520.4)	Output	Input	-
03	DI/DO 3 (X520.5)	Output	Input	-
04	DI/DO 4 (X520.6)	Output	Input	-
05	DI/DO 5 (X520.7)	Output	Input	-
06	DI/DO 6 (X520.8)	Output	Input	-
07	DI/DO 7 (X520.9)	Output	Input	-
08	DI/DO 8 (X521.2)	Output	Input	-
09	DI/DO 9 (X521.3)	Output	Input	-
10	DI/DO 10 (X521.4)	Output	Input	-
11	DI/DO 11 (X521.5)	Output	Input	-
12	DI/DO 12 (X521.6)	Output	Input	-
13	DI/DO 13 (X521.7)	Output	Input	-
14	DI/DO 14 (X521.8)	Output	Input	-
15	DI/DO 15 (X521.9)	Output	Input	-
16	DI/DO 16 (X522.2)	Output	Input	-
17	DI/DO 17 (X522.3)	Output	Input	-
18	DI/DO 18 (X522.4)	Output	Input	-
19	DI/DO 19 (X522.5)	Output	Input	-
20	DI/DO 20 (X522.6)	Output	Input	-
21	DI/DO 21 (X522.7)	Output	Input	-
22	DI/DO 22 (X522.8)	Output	Input	-
23	DI/DO 23 (X522.9)	Output	Input	-

Note: DI/DO: Bidirectional Digital Input/Output

p4028 TM17 set input or output / TM17 DI or DO

TM17

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9419
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 bin

Description: Sets the bidirectional digital inputs/outputs on the Terminal Module 17 (TM17) as input or output.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI/DO 0 (X520.2)	Output	Input	-
01	DI/DO 1 (X520.3)	Output	Input	-
02	DI/DO 2 (X520.5)	Output	Input	-
03	DI/DO 3 (X520.6)	Output	Input	-
04	DI/DO 4 (X520.8)	Output	Input	-
05	DI/DO 5 (X520.9)	Output	Input	-
06	DI/DO 6 (X521.2)	Output	Input	-
07	DI/DO 7 (X521.3)	Output	Input	-
08	DI/DO 8 (X521.8)	Output	Input	-
09	DI/DO 9 (X521.9)	Output	Input	-
10	DI/DO 10 (X522.2)	Output	Input	-
11	DI/DO 11 (X522.3)	Output	Input	-
12	DI/DO 12 (X522.5)	Output	Input	-

13	DI/DO 13 (X522.6)	Output	Input	-
14	DI/DO 14 (X522.8)	Output	Input	-
15	DI/DO 15 (X522.9)	Output	Input	-

Note: DI/DO: Bidirectional Digital Input/Output

p4028 TM31 set input or output / TM31 DI or DO

TM31

Can be changed: T | **Calculated:** - | **Access level:** 1

Data type: Unsigned32 | **Dyn. index:** - | **Func. diagram:** 9549, 9560, 9562

P-Group: Commands | **Unit group:** - | **Unit selection:** -

Not for motor type: - | **Scaling:** - | **Expert list:** 1

Min	Max	Factory setting
-	-	0000 0000 0000 0000 bin

Description: Sets the bidirectional digital inputs/outputs as input or output on the Terminal Module 31 (TM31).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
08	DI/DO 8 (X541.2)	Output	Input	-
09	DI/DO 9 (X541.3)	Output	Input	-
10	DI/DO 10 (X541.4)	Output	Input	-
11	DI/DO 11 (X541.5)	Output	Input	-

Note: DI/DO: Bidirectional Digital Input/Output

p4028 TM41 set input or output / TM41 DI or DO

TM41

Can be changed: T | **Calculated:** - | **Access level:** 1

Data type: Unsigned32 | **Dyn. index:** - | **Func. diagram:** 9659, 9661, 9662

P-Group: Commands | **Unit group:** - | **Unit selection:** -

Not for motor type: - | **Scaling:** - | **Expert list:** 1

Min	Max	Factory setting
-	-	0000 0000 0000 0000 bin

Description: Sets the bidirectional digital inputs/outputs on the Terminal Module 41 (TM41) as input or output.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
08	DI/DO 0 (X521.1)	Output	Input	9661
09	DI/DO 1 (X521.2)	Output	Input	9661
10	DI/DO 2 (X521.3)	Output	Input	9662
11	DI/DO 3 (X521.4)	Output	Input	9662

Note: DI/DO: Bidirectional Digital Input/Output

p4030 BI: TM15DI/DO signal source for terminal DI/DO 0 / TM15D s_s DI/DO 0

TM15DI_DO

Can be changed: U, T | **Calculated:** - | **Access level:** 1

Data type: Unsigned32 / Binary | **Dyn. index:** - | **Func. diagram:** 9399, 9400

P-Group: Commands | **Unit group:** - | **Unit selection:** -

Not for motor type: - | **Scaling:** - | **Expert list:** 1

Min	Max	Factory setting
-	-	0

Description: Sets the signal source for terminal DI/DO 0 (X520.2) of Terminal Module 15 (TM15).

Note: Prerequisite: The DI/DO must be set as an output (p4028.0 = 1).

DI/DO: Bidirectional Digital Input/Output

p4030 BI: TM31 signal source for terminal DO 0 / TM31 s_src DO 0

TM31

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9549, 9556
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the digital output DO 0 (X542.1, X542.2, X542.3) of Terminal Module 31 (TM31).

Digital output 0 of TM31 is a relay output.

If the signal at the binector input p4030 is low, then terminal COM 0 (X542.2) is connected to NC 0 (X542.1). This connection also matches the mechanical quiescent setting of the relay.

If the signal at the binector input p4030 is high, then terminal COM 0 (X542.2) is connected to NO 0 (X542.3).

Note: DO: Digital Output

NC: Normally Closed contact

NO: Normally Open contact

p4030 BI: TB30 signal source for terminal DO 0 / TB30 s_src DO 0

TB30

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9099, 9102
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for digital output DO 0 (X481.5) of the Terminal Board 30 (TB30).

Note: DO: Digital Output

p4031 BI: TM15DI/DO signal source for terminal DI/DO 1 / TM15D s_s DI/DO 1

TM15DI_DO

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9400
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 1 (X520.3) of Terminal Module 15 (TM15).

Note: Prerequisite: The DI/DO must be set as an output (p4028.1 = 1).

DI/DO: Bidirectional Digital Input/Output

p4031 BI: TM31 signal source for terminal DO 1 / TM31 s_src DO 1

TM31

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9549, 9556
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the digital output DO 1 (X542.4, X542.5, X542.6) of Terminal Module 31 (TM31).

Digital output 1 of TM31 is a relay output.

If the signal at the binector input p4031 is low, then terminal COM 1 (X542.5) is connected to NC 1 (X542.4). This connection also matches the mechanical quiescent setting of the relay.

If the signal at the binector input p4031 is high, then terminal COM 1 (X542.5) is connected to NO 1 (X542.6).

Note: DO: Digital Output

NC: Normally Closed contact

NO: Normally Open contact

p4031 BI: TB30 signal source for terminal DO 1 / TB30 s_src DO 1

TB30

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9102
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DO 1 (X481.6) of the Terminal Board 30 (TB30).

Note: DO: Digital Output

p4032 BI: TM15DI/DO signal source for terminal DI/DO 2 / TM15D s_s DI/DO 2

TM15DI_DO

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9400
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 2 (X520.4) of Terminal Module 15 (TM15).

Note: Prerequisite: The DI/DO must be set as an output (p4028.2 = 1).
DI/DO: Bidirectional Digital Input/Output

p4032 BI: TB30 signal source for terminal DO 2 / TB30 s_src DO 2

TB30

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9102
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DO 2 (X481.7) of the Terminal Board 30 (TB30).

Note: DO: Digital Output

p4033 BI: TM15DI/DO signal source for terminal DI/DO 3 / TM15D s_s DI/DO 3

TM15DI_DO

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9400
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 3 (X520.5) of Terminal Module 15 (TM15).

Note: Prerequisite: The DI/DO must be set as an output (p4028.3 = 1).
DI/DO: Bidirectional Digital Input/Output

p4033 BI: TB30 signal source for terminal DO 3 / TB30 s_src DO 3

TB30

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9099, 9102
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DO 3 (X481.8) of the Terminal Board 30 (TB30).

Note: DO: Digital Output

p4034 BI: TM15DI/DO signal source for terminal DI/DO 4 / TM15D s_s DI/DO 4

TM15DI_DO			
	Can be changed: U, T	**Calculated:** -	**Access level:** 1
	Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9400
	P-Group: Commands	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source for terminal DI/DO 4 (X520.6) of Terminal Module 15 (TM15).

Note: Prerequisite: The DI/DO must be set as an output (p4028.4 = 1).

DI/DO: Bidirectional Digital Input/Output

p4035 BI: TM15DI/DO signal source for terminal DI/DO 5 / TM15D s_s DI/DO 5

TM15DI_DO			
	Can be changed: U, T	**Calculated:** -	**Access level:** 1
	Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9400
	P-Group: Commands	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source for terminal DI/DO 5 (X520.7) of Terminal Module 15 (TM15).

Note: Prerequisite: The DI/DO must be set as an output (p4028.5 = 1).

DI/DO: Bidirectional Digital Input/Output

p4036 BI: TM15DI/DO signal source for terminal DI/DO 6 / TM15D s_s DI/DO 6

TM15DI_DO			
	Can be changed: U, T	**Calculated:** -	**Access level:** 1
	Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9400
	P-Group: Commands	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source for terminal DI/DO 6 (X520.8) of Terminal Module 15 (TM15).

Note: Prerequisite: The DI/DO must be set as an output (p4028.6 = 1).

DI/DO: Bidirectional Digital Input/Output

p4037 BI: TM15DI/DO signal source for terminal DI/DO 7 / TM15D s_s DI/DO 7

TM15DI_DO			
	Can be changed: U, T	**Calculated:** -	**Access level:** 1
	Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9400
	P-Group: Commands	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source for terminal DI/DO 7 (X520.9) of Terminal Module 15 (TM15).

Note: Prerequisite: The DI/DO must be set as an output (p4028.7 = 1).

DI/DO: Bidirectional Digital Input/Output

p4038 BI: Signal source for terminal DI/DO 0 distributed / S_s DI/DO 0 dis

SERVO (Dig IO)

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2201
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the distributed terminal DI/DO 0 (X3.2).

Note: Prerequisite: The DI/DO must be set as an output (p4028.0 = 1).
DI/DO: Bidirectional Digital Input/Output

p4038 BI: TM15DI/DO signal source for terminal DI/DO 8 / TM15D s_s DI/DO 8

TM15DI_DO

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9401
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 8 (X521.2) of Terminal Module 15 (TM15).

Note: Prerequisite: The DI/DO must be set as an output (p4028.8 = 1).
DI/DO: Bidirectional Digital Input/Output

p4038 BI: TM31 signal source for terminal DI/DO 8 / TM31 s_s DI/DO8

TM31

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9549, 9560
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 8 (X541.2) of Terminal Module 31 (TM31).

Note: Prerequisite: The DI/DO must be set as an output (p4028.8 = 1).
DI/DO: Bidirectional Digital Input/Output

p4038 BI: TM41 signal source for terminal DI/DO 0 / TM41 s_s DI/DO 0

TM41

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9661
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 0 (X521.1) of Terminal Module 41 (TM41).

Note: Prerequisite: The DI/DO must be set as an output (p4028.8 = 1).
DI/DO: Bidirectional Digital Input/Output

p4039	BI: Signal source for terminal DI/DO 1 distributed / S_s DI/DO 1 dis		
SERVO (Dig IO)	**Can be changed:** U, T	**Calculated:** -	**Access level:** 1
	Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2201
	P-Group: Commands	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source for the distributed terminal DI/DO 1 (X3.4).

Note: Prerequisite: The DI/DO must be set as an output (p4028.1 = 1).
DI/DO: Bidirectional Digital Input/Output

p4039	BI: TM15DI/DO signal source for terminal DI/DO 9 / TM15D s_s DI/DO 9		
TM15DI_DO	**Can be changed:** U, T	**Calculated:** -	**Access level:** 1
	Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9401
	P-Group: Commands	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source for terminal DI/DO 9 (X521.3) of Terminal Module 15 (TM15).

Note: Prerequisite: The DI/DO must be set as an output (p4028.9 = 1).
DI/DO: Bidirectional Digital Input/Output

p4039	BI: TM31 signal source for terminal DI/DO 9 / TM31 S_src DI/DO9		
TM31	**Can be changed:** U, T	**Calculated:** -	**Access level:** 1
	Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9560
	P-Group: Commands	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source for terminal DI/DO 9 (X541.3) of Terminal Module 31 (TM31).

Note: Prerequisite: The DI/DO must be set as an output (p4028.9 = 1).
DI/DO: Bidirectional Digital Input/Output

p4039	BI: TM41 signal source for terminal DI/DO 1 / TM41 s_s DI/DO 1		
TM41	**Can be changed:** U, T	**Calculated:** -	**Access level:** 1
	Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9661
	P-Group: Commands	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source for terminal DI/DO 1 (X541.2) of Terminal Module 41 (TM41).

Note: Prerequisite: The DI/DO must be set as an output (p4028.9 = 1).
DI/DO: Bidirectional Digital Input/Output

p4040 BI: TM15DI/DO signal source for terminal DI/DO 10 / TM15D s_s DI/DO 10

TM15DI_DO

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9401
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 10 (X521.4) of Terminal Module 15 (TM15).

Note: Prerequisite: The DI/DO must be set as an output (p4028.10 = 1).

DI/DO: Bidirectional Digital Input/Output

p4040 BI: TM31 signal source for terminal DI/DO 10 / TM31 S_src DI/DO10

TM31

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9562
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 10 (X541.4) of Terminal Module 31 (TM31).

Note: Prerequisite: The DI/DO must be set as an output (p4028.10 = 1).

DI/DO: Bidirectional Digital Input/Output

p4040 BI: TM41 signal source for terminal DI/DO 2 / TM41 s_s DI/DO 2

TM41

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9662
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 2 (X521.3) of Terminal Module 41 (TM41).

Note: Prerequisite: The DI/DO must be set as an output (p4028.10 = 1).

DI/DO: Bidirectional Digital Input/Output

p4041 BI: TM15DI/DO signal source for terminal DI/DO 11 / TM15D s_s DI/DO 11

TM15DI_DO

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9401
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 11 (X521.5) of Terminal Module 15 (TM15).

Note: Prerequisite: The DI/DO must be set as an output (p4028.11 = 1).

DI/DO: Bidirectional Digital Input/Output

p4041 BI: TM31 signal source for terminal DI/DO 11 / TM31 s_s DI/DO 11

TM31

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9549, 9562
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 11 (X541.5) of Terminal Module 31 (TM31).

Note: Prerequisite: The DI/DO must be set as an output (p4028.11 = 1).

DI/DO: Bidirectional Digital Input/Output

p4041 BI: TM41 signal source for terminal DI/DO 3 / TM41 s_s DI/DO 3

TM41

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9662
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 3 (X521.4) of Terminal Module 41 (TM41).

Note: Prerequisite: The DI/DO must be set as an output (p4028.11 = 1).

DI/DO: Bidirectional Digital Input/Output

p4042 BI: TM15DI/DO signal source for terminal DI/DO 12 / TM15D s_s DI/DO 12

TM15DI_DO

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9401
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 12 (X521.6) of Terminal Module 15 (TM15).

Note: Prerequisite: The DI/DO must be set as an output (p4028.12 = 1).

DI/DO: Bidirectional Digital Input/Output

p4043 BI: TM15DI/DO signal source for terminal DI/DO 13 / TM15D s_s DI/DO 13

TM15DI_DO

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9401
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 13 (X521.7) of Terminal Module 15 (TM15).

Note: Prerequisite: The DI/DO must be set as an output (p4028.13 = 1).

DI/DO: Bidirectional Digital Input/Output

p4044 BI: TM15DI/DO signal source for terminal DI/DO 14 / TM15D s_s DI/DO 14

TM15DI_DO

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9401
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 14 (X521.8) of Terminal Module 15 (TM15).

Note: Prerequisite: The DI/DO must be set as an output (p4028.14 = 1).

DI/DO: Bidirectional Digital Input/Output

p4045 BI: TM15DI/DO signal source for terminal DI/DO 15 / TM15D s_s DI/DO 15

TM15DI_DO

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9401
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 15 (X521.9) of Terminal Module 15 (TM15).

Note: Prerequisite: The DI/DO must be set as an output (p4028.15 = 1).

DI/DO: Bidirectional Digital Input/Output

p4046 TM31 digital outputs limit current / TM31 DO limit curr

TM31

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 9560
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the limit for the total output voltage of terminals X541.1, X541.2, X541.3 and X541.4 (DI/DO 8 ... 11) of Terminal Module 31 (TM31).

Value:
0: 0.1 A total current limit DI/DO 8 ... 11
1: 1.0 A total current limit DI/DO 8 ... 11

Dependency: Refer to: p4028

Warning: Since the sum of the output currents at terminals X541.1, X541.2, X541.3 and X541.4 is limited, an overcurrent or short circuit at one output terminal can cause a dip in the signal at the other terminals.

r4047 Digital outputs status / DO status

SERVO (Dig IO)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2201
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status of digital outputs.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI/DO 0 distributed (X3.2)	High	Low	2201
01	DI/DO 1 distributed (X3.4)	High	Low	2201

Note: Inversion using p4048 has been taken into account.

DI/DO: Bidirectional Digital Input/Output

r4047 TM15DI/DO digital outputs status / TM15D DO status

TM15DI_DO

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9400, 9401, 9402
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status of the digital outputs of Terminal Module 15 (TM15).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI/DO 0 (X520.2)	High	Low	-
01	DI/DO 1 (X520.3)	High	Low	-
02	DI/DO 2 (X520.4)	High	Low	-
03	DI/DO 3 (X520.5)	High	Low	-
04	DI/DO 4 (X520.6)	High	Low	-
05	DI/DO 5 (X520.7)	High	Low	-
06	DI/DO 6 (X520.8)	High	Low	-
07	DI/DO 7 (X520.9)	High	Low	-
08	DI/DO 8 (X521.2)	High	Low	-
09	DI/DO 9 (X521.3)	High	Low	-
10	DI/DO 10 (X521.4)	High	Low	-
11	DI/DO 11 (X521.5)	High	Low	-
12	DI/DO 12 (X521.6)	High	Low	-
13	DI/DO 13 (X521.7)	High	Low	-
14	DI/DO 14 (X521.8)	High	Low	-
15	DI/DO 15 (X521.9)	High	Low	-
16	DI/DO 16 (X522.2)	High	Low	-
17	DI/DO 17 (X522.3)	High	Low	-
18	DI/DO 18 (X522.4)	High	Low	-
19	DI/DO 19 (X522.5)	High	Low	-
20	DI/DO 20 (X522.6)	High	Low	-
21	DI/DO 21 (X522.7)	High	Low	-
22	DI/DO 22 (X522.8)	High	Low	-
23	DI/DO 23 (X522.9)	High	Low	-

Note: Inversion using p4048 has been taken into account.

The setting of the DI/DO as either input or output is of no significance (p4028).

DI/DO: Bidirectional Digital Input/Output

r4047 TM31 digital outputs status / TM31 DO status

TM31

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9556, 9560, 9562
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status of the digital outputs of Terminal Module 31 (TM31).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DO 0 (X542.1 - 3)	High	Low	-
01	DO 1 (X542.4 - 6)	High	Low	-
08	DI/DO 8 (X541.2)	High	Low	-
09	DI/DO 9 (X541.3)	High	Low	-
10	DI/DO 10 (X541.4)	High	Low	-
11	DI/DO 11 (X541.5)	High	Low	-

Note: Inversion using p4048 has been taken into account.

The setting of the DI/DO as either input or output is of no significance (p4028).

DO: Digital Output

DI/DO: Bidirectional Digital Input/Output

r4047 TM41 digital outputs status / TM41 DO status

TM41

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status of the digital outputs of Terminal Module 41 (TM41).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
08	DI/DO 0 (X521.1)	High	Low	9661
09	DI/DO 1 (X521.2)	High	Low	9661
10	DI/DO 2 (X521.3)	High	Low	9662
11	DI/DO 3 (X521.4)	High	Low	9662

Note: Inversion using p4048 has been taken into account.

The setting of the DI/DO as either input or output is of no significance (p4028).

DO: Digital Output

DI/DO: Bidirectional Digital Input/Output

r4047 TB30 digital outputs status / TB30 DO status

TB30

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9102
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status of the digital outputs of the Terminal Board 30 (TB30).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DO 0 (X481.5)	High	Low	-
01	DO 1 (X481.6)	High	Low	-
02	DO 2 (X481.7)	High	Low	-
03	DO 3 (X481.8)	High	Low	-

Note: Inversion using p4048 has been taken into account.

DO: Digital Output

p4048 Invert digital outputs / DO inv

SERVO (Dig IO)

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2201
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Setting to invert the signals at the digital outputs.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI/DO 0 distributed (X3.2)	Inverted	Not inverted	2201
01	DI/DO 1 distributed (X3.4)	Inverted	Not inverted	2201

Note: DI/DO: Bidirectional Digital Input/Output

p4048 TM15 invert digital inputs/outputs / TM15 DI/DO inv

TM15

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 0000 0000 0000 0000 bin

Description: Setting to invert the signals at the digital inputs/outputs of Terminal Module 15 (TM15).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI/DO 0 (X520.2)	Inverted	Not inverted	-
01	DI/DO 1 (X520.3)	Inverted	Not inverted	-
02	DI/DO 2 (X520.4)	Inverted	Not inverted	-
03	DI/DO 3 (X520.5)	Inverted	Not inverted	-
04	DI/DO 4 (X520.6)	Inverted	Not inverted	-
05	DI/DO 5 (X520.7)	Inverted	Not inverted	-
06	DI/DO 6 (X520.8)	Inverted	Not inverted	-
07	DI/DO 7 (X520.9)	Inverted	Not inverted	-
08	DI/DO 8 (X521.2)	Inverted	Not inverted	-
09	DI/DO 9 (X521.3)	Inverted	Not inverted	-
10	DI/DO 10 (X522.4)	Inverted	Not inverted	-
11	DI/DO 11 (X521.5)	Inverted	Not inverted	-
12	DI/DO 12 (X521.6)	Inverted	Not inverted	-
13	DI/DO 13 (X521.7)	Inverted	Not inverted	-
14	DI/DO 14 (X521.8)	Inverted	Not inverted	-
15	DI/DO 15 (X521.9)	Inverted	Not inverted	-
16	DI/DO 16 (X522.2)	Inverted	Not inverted	-
17	DI/DO 17 (X522.3)	Inverted	Not inverted	-
18	DI/DO 18 (X522.4)	Inverted	Not inverted	-
19	DI/DO 19 (X522.5)	Inverted	Not inverted	-
20	DI/DO 20 (X522.6)	Inverted	Not inverted	-
21	DI/DO 21 (X522.7)	Inverted	Not inverted	-
22	DI/DO 22 (X522.8)	Inverted	Not inverted	-
23	DI/DO 23 (X522.9)	Inverted	Not inverted	-

Note: DI/DO: Bidirectional Digital Input/Output

p4048 TM15DI/DO invert digital outputs / TM15D DO inv

TM15DI_DO

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9400, 9401, 9402
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 0000 0000 0000 0000 bin

Description: Setting to invert the signals at the digital outputs of Terminal Module 15 (TM15).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI/DO 0 (X520.2)	Inverted	Not inverted	-
01	DI/DO 1 (X520.3)	Inverted	Not inverted	-
02	DI/DO 2 (X520.4)	Inverted	Not inverted	-
03	DI/DO 3 (X520.5)	Inverted	Not inverted	-
04	DI/DO 4 (X520.6)	Inverted	Not inverted	-
05	DI/DO 5 (X520.7)	Inverted	Not inverted	-
06	DI/DO 6 (X520.8)	Inverted	Not inverted	-
07	DI/DO 7 (X520.9)	Inverted	Not inverted	-
08	DI/DO 8 (X521.2)	Inverted	Not inverted	-
09	DI/DO 9 (X521.3)	Inverted	Not inverted	-
10	DI/DO 10 (X521.4)	Inverted	Not inverted	-
11	DI/DO 11 (X521.5)	Inverted	Not inverted	-

12	DI/DO 12 (X521.6)	Inverted	Not inverted	-
13	DI/DO 13 (X521.7)	Inverted	Not inverted	-
14	DI/DO 14 (X521.8)	Inverted	Not inverted	-
15	DI/DO 15 (X521.9)	Inverted	Not inverted	-
16	DI/DO 16 (X522.2)	Inverted	Not inverted	-
17	DI/DO 17 (X522.3)	Inverted	Not inverted	-
18	DI/DO 18 (X522.4)	Inverted	Not inverted	-
19	DI/DO 19 (X522.5)	Inverted	Not inverted	-
20	DI/DO 20 (X522.6)	Inverted	Not inverted	-
21	DI/DO 21 (X522.7)	Inverted	Not inverted	-
22	DI/DO 22 (X522.8)	Inverted	Not inverted	-
23	DI/DO 23 (X522.9)	Inverted	Not inverted	-

Note: DI/DO: Bidirectional Digital Input/Output

p4048 TM17 invert digital inputs/outputs / TM17 DI/DO inv

TM17

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 bin

Description: Setting to invert the signals at the digital inputs/outputs of Terminal Module 17 (TM17).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI/DO 0 (X520.2)	Inverted	Not inverted	-
01	DI/DO 1 (X520.3)	Inverted	Not inverted	-
02	DI/DO 2 (X520.5)	Inverted	Not inverted	-
03	DI/DO 3 (X520.6)	Inverted	Not inverted	-
04	DI/DO 4 (X520.8)	Inverted	Not inverted	-
05	DI/DO 5 (X520.9)	Inverted	Not inverted	-
06	DI/DO 6 (X521.2)	Inverted	Not inverted	-
07	DI/DO 7 (X521.3)	Inverted	Not inverted	-
08	DI/DO 8 (X521.8)	Inverted	Not inverted	-
09	DI/DO 9 (X521.9)	Inverted	Not inverted	-
10	DI/DO 10 (X522.2)	Inverted	Not inverted	-
11	DI/DO 11 (X522.3)	Inverted	Not inverted	-
12	DI/DO 12 (X522.5)	Inverted	Not inverted	-
13	DI/DO 13 (X522.6)	Inverted	Not inverted	-
14	DI/DO 14 (X522.8)	Inverted	Not inverted	-
15	DI/DO 15 (X522.9)	Inverted	Not inverted	-

Note: DI/DO: Bidirectional Digital Input/Output

p4048 TM31 invert digital outputs / TM31 DO inv

TM31

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9556, 9560, 9562
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 bin

Description: Setting to invert the signals at the digital outputs of Terminal Module 31 (TM31).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DO 0 (X542.1 - 3)	Inverted	Not inverted	-
01	DO 1 (X542.4 - 6)	Inverted	Not inverted	-
08	DI/DO 8 (X541.2)	Inverted	Not inverted	-
09	DI/DO 9 (X541.3)	Inverted	Not inverted	-
10	DI/DO 10 (X541.4)	Inverted	Not inverted	-
11	DI/DO 11 (X541.5)	Inverted	Not inverted	-

Note: DO: Digital Output

DI/DO: Bidirectional Digital Input/Output

p4048 TM41 invert digital outputs / TM41 DO inv

TM41

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 bin

Description: Setting to invert the signals at the digital outputs of Terminal Module 41 (TM41).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
08	DI/DO 0 (X521.1)	Inverted	Not inverted	9661
09	DI/DO 1 (X521.2)	Inverted	Not inverted	9661
10	DI/DO 2 (X521.3)	Inverted	Not inverted	9662
11	DI/DO 3 (X521.4)	Inverted	Not inverted	9662

Note: DO: Digital Output

DI/DO: Bidirectional Digital Input/Output

p4048 TB30 invert digital outputs / TB30 DO inv

TB30

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9102
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Setting to invert the signals at the digital outputs of the Terminal Board 30 (TB30).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DO 0 (X481.5)	Inverted	Not inverted	-
01	DO 1 (X481.6)	Inverted	Not inverted	-
02	DO 2 (X481.7)	Inverted	Not inverted	-
03	DO 3 (X481.8)	Inverted	Not inverted	-

Note: DO: Digital Output

p4049 TM15 digital inputs/outputs set the mode / TM15 DI/DO mode

TM15

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 0000 0000 0000 0000 bin

Description: Sets the mode of the DI/DOs of Terminal Module 15 (TM15).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI/DO 0 (X520.2)	I/O with time	I/O	-
01	DI/DO 1 (X520.3)	I/O with time	I/O	-
02	DI/DO 2 (X520.4)	I/O with time	I/O	-
03	DI/DO 3 (X520.5)	I/O with time	I/O	-
04	DI/DO 4 (X520.6)	I/O with time	I/O	-
05	DI/DO 5 (X520.7)	I/O with time	I/O	-
06	DI/DO 6 (X520.8)	I/O with time	I/O	-
07	DI/DO 7 (X520.9)	I/O with time	I/O	-
08	DI/DO 8 (X521.2)	I/O with time	I/O	-
09	DI/DO 9 (X521.3)	I/O with time	I/O	-
10	DI/DO 10 (X522.4)	I/O with time	I/O	-
11	DI/DO 11 (X521.5)	I/O with time	I/O	-
12	DI/DO 12 (X521.6)	I/O with time	I/O	-
13	DI/DO 13 (X521.7)	I/O with time	I/O	-
14	DI/DO 14 (X521.8)	I/O with time	I/O	-

15	DI/DO 15 (X521.9)	I/O with time	I/O	-
16	DI/DO 16 (X522.2)	I/O with time	I/O	-
17	DI/DO 17 (X522.3)	I/O with time	I/O	-
18	DI/DO 18 (X522.4)	I/O with time	I/O	-
19	DI/DO 19 (X522.5)	I/O with time	I/O	-
20	DI/DO 20 (X522.6)	I/O with time	I/O	-
21	DI/DO 21 (X522.7)	I/O with time	I/O	-
22	DI/DO 22 (X522.8)	I/O with time	I/O	-
23	DI/DO 23 (X522.9)	I/O with time	I/O	-

Note: DI/DO: Bidirectional Digital Input/Output

p4049 TM17 digital inputs/outputs set the mode / TM17 DI/DO mode

TM17

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 bin

Description: Sets the mode of the DI/DO of Terminal Module 17 (TM17).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI/DO 0 (X520.2)	I/O with time	I/O	-
01	DI/DO 1 (X520.3)	I/O with time	I/O	-
02	DI/DO 2 (X520.5)	I/O with time	I/O	-
03	DI/DO 3 (X520.6)	I/O with time	I/O	-
04	DI/DO 4 (X520.8)	I/O with time	I/O	-
05	DI/DO 5 (X520.9)	I/O with time	I/O	-
06	DI/DO 6 (X521.2)	I/O with time	I/O	-
07	DI/DO 7 (X521.3)	I/O with time	I/O	-
08	DI/DO 8 (X521.8)	I/O with time	I/O	-
09	DI/DO 9 (X521.9)	I/O with time	I/O	-
10	DI/DO 10 (X522.2)	I/O with time	I/O	-
11	DI/DO 11 (X522.3)	I/O with time	I/O	-
12	DI/DO 12 (X522.5)	I/O with time	I/O	-
13	DI/DO 13 (X522.6)	I/O with time	I/O	-
14	DI/DO 14 (X522.8)	I/O with time	I/O	-
15	DI/DO 15 (X522.9)	I/O with time	I/O	-

Note: DI/DO: Bidirectional Digital Input/Output

r4052[0...1] CO: TM31 analog inputs current input voltage/current / TM31 AI U/I_inp

TM31

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9566, 9568
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the actual input voltage in V when set as voltage input.

Displays the actual input current in mA when set as current input and with the load resistor switched in.

Index: [0] = AI 0 (X521.1/X521.2, S5.0)
[1] = AI 1 (X521.3/X521.4, S5.1)

Dependency: The type of analog input AI x (voltage or current input) is set using p4056.

Refer to: r4056, p4056

Note: AI: Analog Input

r4052[0] CO: TM41 analog inputs actual input voltage / TM41 AI U_inp act

TM41

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9663
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the actual input voltage in V.

Index: [0] = AI 0 (X523.1/X523.2)

Note: AI: Analog Input

r4052[0...1] CO: TB30 analog inputs actual input voltage / TB30 AI U_inp act

TB30

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9104
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the actual input voltage at the analog inputs for Terminal Board 30 (TB30).
Note:
For p4056[x] = 3 (unipolar current input monitored (+4 mA ... +20 mA)) the following applies:
A current less than 4 mA is not displayed in r4052[x] - but instead r4052[x] = 4 mA is output.

Index: [0] = AI 0 (X482.1/X482.2)
[1] = AI 1 (X482.3/X482.4)

Note: AI: Analog Input

p4053[0...1] TM31 analog inputs smoothing time constant / TM31 AI T_smooth

TM31

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9566, 9568
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [ms]	1000.0 [ms]	0.0 [ms]

Description: Sets the smoothing time constant of the 1st order lowpass filter for the analog inputs of Terminal Module 31 (TM31).

Index: [0] = AI 0 (X521.1/X521.2, S5.0)
[1] = AI 1 (X521.3/X521.4, S5.1)

Note: AI: Analog Input

p4053[0] TM41 analog inputs smoothing time constant / TM41 AI T_smooth

TM41

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9663
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [ms]	1000.0 [ms]	0.0 [ms]

Description: Sets the smoothing time constant of the 1st order lowpass filter for the analog input of Terminal Module 41 (TM41).

Index: [0] = AI 0 (X523.1/X523.2)

Note: AI: Analog Input

p4053[0...1] TB30 analog inputs smoothing time constant / TB30 AI T_smooth

TB30	**Can be changed:** U, T	**Calculated:** -	**Access level:** 1
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9104
	P-Group: Terminals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.0 [ms]	1000.0 [ms]	0.0 [ms]

Description: Sets the smoothing time constant of the 1st order lowpass filter for the analog inputs of the Terminal Board 30 (TB30).

Index: [0] = AI 0 (X482.1/X482.2)
[1] = AI 1 (X482.3/X482.4)

Note: AI: Analog Input

r4055[0...1] CO: TM31 analog inputs actual value in percent / TM31 AI value in %

TM31	**Can be changed:** -	**Calculated:** -	**Access level:** 1
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9549, 9566, 9568
	P-Group: Terminals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [%]	- [%]	- [%]

Description: Displays the currently referred input value of the analog inputs of Terminal Module 31 (TM31).
When interconnected, the signals are referred to the reference quantities p200x and p205x.

Index: [0] = AI 0 (X521.1/X521.2, S5.0)
[1] = AI 1 (X521.3/X521.4, S5.1)

Note: AI: Analog Input

r4055[0] CO: TM41 analog inputs actual value in percent / TM41 AI value in %

TM41	**Can be changed:** -	**Calculated:** -	**Access level:** 1
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9663
	P-Group: Terminals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [%]	- [%]	- [%]

Description: Displays the currently referred input value of the analog inputs of Terminal Module 41 (TM41).
When interconnected, the signals are referred to the reference quantities p200x and p205x.

Index: [0] = AI 0 (X523.1/X523.2)

Note: AI: Analog Input

r4055[0...1] CO: TB30 analog inputs actual value in percent / TB30 AI value in %

TB30	**Can be changed:** -	**Calculated:** -	**Access level:** 1
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9099, 9104
	P-Group: Terminals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [%]	- [%]	- [%]

Description: Displays the currently referred input value of the analog inputs of Terminal Board 30 (TB30).
When interconnected, the signals are referred to the reference quantities p200x and p205x.

Index: [0] = AI 0 (X482.1/X482.2)
[1] = AI 1 (X482.3/X482.4)

Note: AI: Analog Input

p4056[0...1] TM31 analog inputs type / TM31 AI type

TM31	**Can be changed:** U, T	**Calculated:** -	**Access level:** 1
	Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 9566, 9568
	P-Group: Terminals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	5	4

Description: Sets the type of analog inputs of Terminal Module 31 (TM31).

p4056[x] = 0, 4 correspond to a voltage input (r4052, p4057, p4059 are displayed in V).

p4056[x] = 2, 3, 5 correspond to a current input (r4052, p4057, p4059 are displayed in mA).

In addition, the associated switch S5 must be appropriately set.

AI 0: S5.0 = V --> voltage input, S5.0 = I --> current input (burden resistor = 250 Ohm)

AI 1: S5.1 = V --> voltage input, S5.1 = I --> current input (burden resistor = 250 Ohm)

Value:
0: Unipolar voltage input (0 V ... +10 V)
2: Unipolar current input (0 mA ... +20 mA)
3: Unipolar current input monitored (+4 mA to +20 mA)
4: Bipolar voltage input (-10 V ... +10 V)
5: Bipolar current input (-20 mA to +20 mA)

Index:
[0] = AI 0 (X521.1/X521.2, S5.0)
[1] = AI 1 (X521.3/X521.4, S5.1)

Warning: The maximum voltage difference between the analog input terminals AI+, AI- and the ground of the TM31 (X520.6, X530.3) may not exceed 35 V.

For operation with the load resistor switched in, the voltage between the differential inputs AI+ and AI- may not exceed 15 V or the impressed current of 60 mA; if this is not carefully observed, the input will be damaged.

Notice: For operation as a voltage input/current input, switch S5.0 or S5.1 must be appropriately set.

Note: When changing p4056, the parameters of the scaling characteristic (p4057, p4058, p4059, p4060) are overwritten with the following default values:

For p4056 = 0, 4, p4057 is set to 0.0 V, p4058 to 0.0 %, p4059 to 10.0 V and p4060 to 100.0 %.

For p4056 = 2, 5, p4057 is set to 0.0 mA, p4058 to 0.0 %, p4059 to 20.0 mA and p4060 to 100.0 %.

For p4056 = 3, p4057 is set to 4.0 mA, p4058 to 0.0 %, p4059 to 20.0 mA and p4060 to 100.0 %.

r4056 TM41 analog input type / TM41 AI type

TM41	**Can be changed:** -	**Calculated:** -	**Access level:** 1
	Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Terminals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	4	4	-

Description: Displays the type of the analog input.

Value:
4: Bipolar voltage input (-10 V ... +10 V)

r4056[0...1] TB30 analog inputs type / TB30 AI type

TB30	**Can be changed:** -	**Calculated:** -	**Access level:** 1
	Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Terminals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	4	4	-

Description: Displays the type of analog inputs.

Value:
4: Bipolar voltage input (-10 V ... +10 V)

Index:
[0] = AI 0 (X482.1/X482.2)
[1] = AI 1 (X482.3/X482.4)

p4057[0...1] TM31 analog inputs characteristic value x1 / TM31 AI char x1

TM31

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9566, 9568
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-20.000	20.000	0.000

Description: Sets the scaling characteristic for the analog inputs of Terminal Module 31 (TM31).

The scaling characteristic for the analog inputs is defined using 2 points.

This parameter specifies the x coordinate (input voltage in V or input current in mA) of the 1st value pair of the characteristic.

Index: [0] = AI 0 (X521.1/X521.2, S5.0)
[1] = AI 1 (X521.3/X521.4, S5.1)

Dependency: The unit of this parameter (V or mA) depends on the analog input type.

Refer to: r4056, p4056

Notice: This parameter is automatically overwritten when the analog input type (p4056) is modified.

Note: The parameters for the characteristic do not have a limiting effect.

p4057[0] TM41 analog input characteristic value x1 / TM41 AI char x1

TM41

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9663
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-20.000 [V]	20.000 [V]	0.000 [V]

Description: Sets the scaling characteristic for the analog input of Terminal Module 41 (TM41).

The scaling characteristic for the analog input is defined using 2 points.

This parameter specifies the x coordinate (input voltage in V) of the 1st value pair of the characteristic.

Index: [0] = AI 0 (X523.1/X523.2)

Note: The parameters for the characteristic do not have a limiting effect.

p4057[0...1] TB30 analog inputs characteristic value x1 / TB30 AI char x1

TB30

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9104
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-11.000 [V]	11.000 [V]	0.000 [V]

Description: Sets the scaling characteristic for the analog inputs of Terminal Board 30 (TB30).

The scaling characteristic for the analog inputs is defined using 2 points.

This parameter specifies the x coordinate (input voltage in V) of the 1st value pair of the characteristic.

Index: [0] = AI 0 (X482.1/X482.2)
[1] = AI 1 (X482.3/X482.4)

Note: The parameters for the characteristic do not have a limiting effect.

p4058[0...1] TM31 analog inputs characteristic value y1 / TM31 AI char y1

TM31

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9566, 9568
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000.00 [%]	1000.00 [%]	0.00 [%]

Description: Sets the scaling characteristic for the analog inputs of Terminal Module 31 (TM31).

The scaling characteristic for the analog inputs is defined using 2 points.

This parameter specifies the y coordinate (percentage) of the 1st value pair of the characteristic.

Index: [0] = AI 0 (X521.1/X521.2, S5.0)
[1] = AI 1 (X521.3/X521.4, S5.1)

Notice: This parameter is automatically overwritten when the analog input type (p4056) is modified.

Note: The parameters for the characteristic do not have a limiting effect.

p4058[0] TM41 analog input characteristic value y1 / TM41 AI char y1

TM41

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9663
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000.00 [%]	1000.00 [%]	0.00 [%]

Description: Sets the scaling characteristic for the analog input of Terminal Module 41 (TM41).

The scaling characteristic for the analog inputs is defined using 2 points.

This parameter specifies the y coordinate (percentage) of the 1st value pair of the characteristic.

Index: [0] = AI 0 (X523.1/X523.2)

Note: The parameters for the characteristic do not have a limiting effect.

p4058[0...1] TB30 analog inputs characteristic value y1 / TB30 AI char y1

TB30

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9104
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000.00 [%]	1000.00 [%]	0.00 [%]

Description: Sets the scaling characteristic for the analog inputs of Terminal Board 30 (TB30).

The scaling characteristic for the analog inputs is defined using 2 points.

This parameter specifies the y coordinate (percentage) of the 1st value pair of the characteristic.

Index: [0] = AI 0 (X482.1/X482.2)
[1] = AI 1 (X482.3/X482.4)

Note: The parameters for the characteristic do not have a limiting effect.

p4059[0...1] TM31 analog inputs characteristic value x2 / TM31 AI char x2

TM31

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9566, 9568
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-20.000	20.000	10.000

Description: Sets the scaling characteristic for the analog inputs of Terminal Module 31 (TM31).

The scaling characteristic for the analog inputs is defined using 2 points.

This parameter specifies the x coordinate (input voltage in V or input current in mA) of the 2nd value pair of the characteristic.

Index: [0] = AI 0 (X521.1/X521.2, S5.0)
[1] = AI 1 (X521.3/X521.4, S5.1)

Dependency: The unit of this parameter (V or mA) depends on the analog input type.

Refer to: r4056, p4056

Notice: This parameter is automatically overwritten when the analog input type (p4056) is modified.

Note: The parameters for the characteristic do not have a limiting effect.

p4059[0] TM41 analog input characteristic value x2 / TM41 AI char x2

TM41

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9663
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-20.000 [V]	20.000 [V]	10.000 [V]

Description: Sets the scaling characteristic for the analog input of Terminal Module 41 (TM41).

The scaling characteristic for the analog inputs is defined using 2 points.

This parameter specifies the x coordinate (input voltage in V) of the 2nd value pair of the characteristic.

Index: [0] = AI 0 (X523.1/X523.2)

Note: The parameters for the characteristic do not have a limiting effect.

p4059[0...1] TB30 analog inputs characteristic value x2 / TB30 AI char x2

TB30

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9104
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-11.000 [V]	11.000 [V]	10.000 [V]

Description: Sets the scaling characteristic for the analog inputs of Terminal Board 30 (TB30).

The scaling characteristic for the analog inputs is defined using 2 points.

This parameter specifies the x coordinate (input voltage in V) of the 2nd value pair of the characteristic.

Index: [0] = AI 0 (X482.1/X482.2)
[1] = AI 1 (X482.3/X482.4)

Note: The parameters for the characteristic do not have a limiting effect.

p4060[0...1] TM31 analog inputs characteristic value y2 / TM31 AI char y2

TM31

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9566, 9568
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000.00 [%]	1000.00 [%]	100.00 [%]

Description: Sets the scaling characteristic for the analog inputs of Terminal Module 31 (TM31).

The scaling characteristic for the analog inputs is defined using 2 points.

This parameter specifies the y coordinate (percentage) of the 2nd value pair of the characteristic.

Index: [0] = AI 0 (X521.1/X521.2, S5.0)
[1] = AI 1 (X521.3/X521.4, S5.1)

Notice: This parameter is automatically overwritten when the analog input type (p4056) is modified.

Note: The parameters for the characteristic do not have a limiting effect.

p4060[0] TM41 analog input characteristic value y2 / TM41 AI char y2

TM41

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9663
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000.00 [%]	1000.00 [%]	100.00 [%]

Description: Sets the scaling characteristic for the analog input of Terminal Module 41 (TM41).

The scaling characteristic for the analog inputs is defined using 2 points.

This parameter specifies the y coordinate (percentage) of the 2nd value pair of the characteristic.

Index: [0] = AI 0 (X523.1/X523.2)

Note: The parameters for the characteristic do not have a limiting effect.

p4060[0...1] TB30 analog inputs characteristic value y2 / TB30 AI char y2

TB30

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9104
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000.00 [%]	1000.00 [%]	100.00 [%]

Description: Sets the scaling characteristic for the analog inputs of Terminal Board 30 (TB30).

The scaling characteristic for the analog inputs is defined using 2 points.

This parameter specifies the y coordinate (percentage) of the 2nd value pair of the characteristic.

Index: [0] = AI 0 (X482.1/X482.2)
[1] = AI 1 (X482.3/X482.4)

Note: The parameters for the characteristic do not have a limiting effect.

p4061[0...1] TM31 analog inputs wire breakage monitoring response threshold / TM31 WireBrkThresh

TM31

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9566, 9568
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [mA]	20.00 [mA]	2.00 [mA]

Description: Sets the response threshold for wire-breakage monitoring of the analog inputs of Terminal Module 31 (TM31).

Index:
[0] = AI 0 (X521.1/X521.2, S5.0)
[1] = AI 1 (X521.3/X521.4, S5.1)

Dependency: For the following analog input type, the wire breakage monitoring is active:

p4056[x] = 3 (unipolar current input monitored (+4 mA ... +20 mA))

Refer to: r4056, p4056

p4062[0...1] TM31 analog inputs wire breakage monitoring delay time / TM31 wirebrk t_del

TM31

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 9566, 9568
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	1000 [ms]	100 [ms]

Description: Sets the delay time for wire-breakage monitoring of the analog inputs on Terminal Module 31 (TM31).

Index:
[0] = AI 0 (X521.1/X521.2, S5.0)
[1] = AI 1 (X521.3/X521.4, S5.1)

p4063[0...1] TM31 analog inputs offset / TM31 AI offset

TM31

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9566, 9568
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-20.000	20.000	0.000

Description: Sets the offset for the analog inputs of Terminal Module 31 (TM31).

The offset is added to the input signal before the scaling characteristic.

Index:
[0] = AI 0 (X521.1/X521.2, S5.0)
[1] = AI 1 (X521.3/X521.4, S5.1)

p4063[0] TM41 analog input offset / TM41 AI offset

TM41

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9663
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-20.000 [V]	20.000 [V]	0.000 [V]

Description: Sets the offset for the analog input of Terminal Module 41 (TM41).

The offset is added to the input signal before the scaling characteristic.

Index: [0] = AI 0 (X523.1/X523.2)

p4063[0...1] TB30 analog inputs offset / TB30 AI offset

TB30	**Can be changed:** U, T	**Calculated:** -	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9104
	P-Group: Terminals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-20.000 [V]	20.000 [V]	0.000 [V]

Description: Sets the offset for the analog inputs of Terminal Board 30 (TB30).
The offset is added to the input signal before the scaling characteristic.

Index: [0] = AI 0 (X482.1/X482.2)
[1] = AI 1 (X482.3/X482.4)

p4066[0...1] TM31 analog inputs activate absolute value generation / TM31 AI absVal act

TM31	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 9566, 9568
	P-Group: Terminals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	1	0

Description: Activates the absolute value generation for the analog input signals of Terminal Module 31 (TM31).

Value: 0: No absolute value generation
1: Absolute value generation switched in

Index: [0] = AI 0 (X521.1/X521.2, S5.0)
[1] = AI 1 (X521.3/X521.4, S5.1)

p4066[0] TM41 analog input activate absolute value generation / TM41 AI absVal act

TM41	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 9663
	P-Group: Terminals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	1	0

Description: Activates the absolute value generation of the analog input signal of Terminal Module 41 (TM41).

Value: 0: No absolute value generation
1: Absolute value generation switched in

Index: [0] = AI 0 (X523.1/X523.2)

p4066[0...1] TB30 analog inputs activate absolute value generation / TB30 AI absVal act

TB30	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 9104
	P-Group: Terminals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	1	0

Description: Activates the absolute value generation for the analog input signals of the Terminal Board 30 (TB30).

Value: 0: No absolute value generation
1: Absolute value generation switched in

Index: [0] = AI 0 (X482.1/X482.2)
[1] = AI 1 (X482.3/X482.4)

p4067[0...1] BI: TM31 analog inputs invert signal source / TM31 AI inv s_src

TM31

Can be changed: U, T | **Calculated:** - | **Access level:** 3
Data type: Unsigned32 / Binary | **Dyn. index:** - | **Func. diagram:** 9566, 9568
P-Group: Terminals | **Unit group:** - | **Unit selection:** -
Not for motor type: - | **Scaling:** - | **Expert list:** 1

Min	Max	Factory setting
-	-	0

Description: Sets the signal source to invert the analog inputs signals of Terminal Module 31 (TM31).

Index: [0] = AI 0 (X521.1/X521.2, S5.0)
[1] = AI 1 (X521.3/X521.4, S5.1)

p4067[0] BI: TM41 analog input invert signal source / TM41 AI inv s s

TM41

Can be changed: U, T | **Calculated:** - | **Access level:** 3
Data type: Unsigned32 / Binary | **Dyn. index:** - | **Func. diagram:** 9663
P-Group: Terminals | **Unit group:** - | **Unit selection:** -
Not for motor type: - | **Scaling:** - | **Expert list:** 1

Min	Max	Factory setting
-	-	0

Description: Sets the signal source to invert the analog input signal of Terminal Module 41 (TM41).

Index: [0] = AI 0 (X523.1/X523.2)

p4067[0...1] BI: TB30 analog inputs invert signal source / TB30 AI inv s_src

TB30

Can be changed: U, T | **Calculated:** - | **Access level:** 3
Data type: Unsigned32 / Binary | **Dyn. index:** - | **Func. diagram:** 9104
P-Group: Terminals | **Unit group:** - | **Unit selection:** -
Not for motor type: - | **Scaling:** - | **Expert list:** 1

Min	Max	Factory setting
-	-	0

Description: Sets the signal source to invert the analog input signals of the Terminal Board 30 (TB30).

Index: [0] = AI 0 (X482.1/X482.2)
[1] = AI 1 (X482.3/X482.4)

p4068[0...1] TM31 analog inputs window to suppress noise / TM31 AI window

TM31

Can be changed: U, T | **Calculated:** - | **Access level:** 3
Data type: FloatingPoint32 | **Dyn. index:** - | **Func. diagram:** 9566, 9568
P-Group: Terminals | **Unit group:** - | **Unit selection:** -
Not for motor type: - | **Scaling:** - | **Expert list:** 1

Min	Max	Factory setting
0.00 [%]	20.00 [%]	0.00 [%]

Description: Sets the noise suppression window of the analog inputs for Terminal Module 31 (TM31).
Changes less than the window are suppressed.

Index: [0] = AI 0 (X521.1/X521.2, S5.0)
[1] = AI 1 (X521.3/X521.4, S5.1)

Note: AI: Analog Input

p4068[0] TM41 analog input window to suppress noise / TM41 AI window

TM41

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9663
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	20.00 [%]	0.00 [%]

Description: Sets the noise suppression window of the analog input for Terminal Module 41 (TM41).
Changes less than the window are suppressed.

Index: [0] = AI 0 (X523.1/X523.2)

Note: AI: Analog Input

p4068[0...1] TB30 analog inputs noise suppression window / TB30 AI window

TB30

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9104
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	20.00 [%]	0.00 [%]

Description: Sets the noise suppression window of the analog inputs for Terminal Board 30 (TB30).
Changes less than the window are suppressed.

Index: [0] = AI 0 (X482.1/X482.2)
[1] = AI 1 (X482.3/X482.4)

Note: AI: Analog Input

p4069[0...1] BI: TM31 analog inputs signal source for enable / TM31 AI enable

TM31

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9566, 9568
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for the enable signal of the analog inputs of Terminal Module 31 (TM31).

Index: [0] = AI 0 (X521.1/X521.2, S5.0)
[1] = AI 1 (X521.3/X521.4, S5.1)

p4069[0] BI: TM41 analog input signal source for enable / TM41 AI enable

TM41

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9663
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for the enable signal of the analog input of Terminal Module 41 (TM41).

Index: [0] = AI 0 (X523.1/X523.2)

p4069[0...1] BI: TB30 analog inputs signal source for enable / TB30 AI enable

TB30	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9104
	P-Group: Terminals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	1

Description: Sets the signal source for enabling the analog inputs of the Terminal Board 30 (TB30).

Index:
[0] = AI 0 (X482.1/X482.2)
[1] = AI 1 (X482.3/X482.4)

p4071[0...1] CI: TM31 analog outputs signal source / TM31 AO s_src

TM31	**Can be changed:** U, T	**Calculated:** -	**Access level:** 1
	Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9549, 9572
	P-Group: Terminals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source for the analog outputs of Terminal Module 31 (TM31).

Index:
[0] = AO 0 (X522.1, X522.2, X522.3)
[1] = AO 1 (X522.4, X522.5, X522.6)

Note: AO: Analog Output

p4071[0...1] CI: TB30 analog outputs signal source / TB30 AO s_src

TB30	**Can be changed:** U, T	**Calculated:** -	**Access level:** 1
	Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9099, 9106
	P-Group: Terminals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source for the analog outputs of the Terminal Board 30 (TB30).

Index:
[0] = AO 0 (X482.5/X482.6)
[1] = AO 1 (X482.7/X482.8)

Note: AO: Analog Output

r4072[0...1] TM31 analog outputs output value currently referred / TM31 AO outp_val

TM31	**Can be changed:** -	**Calculated:** -	**Access level:** 1
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9572
	P-Group: Terminals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [%]	- [%]	- [%]

Description: Displays the actual referred output value of the analog outputs of Terminal Module 31 (TM31).

Index:
[0] = AO 0 (X522.1, X522.2, X522.3)
[1] = AO 1 (X522.4, X522.5, X522.6)

r4072[0...1] TB30 analog outputs output value currently referred / TB30 AO outp_val

TB30	**Can be changed:** -	**Calculated:** -	**Access level:** 1
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9106
	P-Group: Terminals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [%]	- [%]	- [%]

Description: Displays the actual referred output value of the analog outputs of the Terminal Board 30 (TB30).

Index: [0] = AO 0 (X482.5/X482.6)
[1] = AO 1 (X482.7/X482.8)

p4073[0...1] TM31 analog outputs smoothing time constant / TM31 AO T_smooth

TM31	**Can be changed:** U, T	**Calculated:** -	**Access level:** 1
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9572
	P-Group: Terminals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.0 [ms]	1000.0 [ms]	0.0 [ms]

Description: Sets the smoothing time constant of the 1st order lowpass filter for the analog outputs of Terminal Module 31 (TM31).

Index: [0] = AO 0 (X522.1, X522.2, X522.3)
[1] = AO 1 (X522.4, X522.5, X522.6)

p4073[0...1] TB30 analog outputs smoothing time constant / TB30 AO T_smooth

TB30	**Can be changed:** U, T	**Calculated:** -	**Access level:** 1
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9106
	P-Group: Terminals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.0 [ms]	1000.0 [ms]	0.0 [ms]

Description: Sets the smoothing time constant of the 1st order lowpass filter for the analog outputs of the Terminal Board 30 (TB30).

Index: [0] = AO 0 (X482.5/X482.6)
[1] = AO 1 (X482.7/X482.8)

r4074[0...1] TM31 analog outputs current output voltage/current / TM31 AO U/I_outp

TM31	**Can be changed:** -	**Calculated:** -	**Access level:** 1
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9572
	P-Group: Terminals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the actual output voltage in V when set as voltage output.

Displays the actual output voltage in mA when set as current output.

Index: [0] = AO 0 (X522.1, X522.2, X522.3)
[1] = AO 1 (X522.4, X522.5, X522.6)

Dependency: The type of the analog output AO x (voltage or current output) is set using p4076.

Refer to: r4076, p4076

Note: AO: Analog Output

r4074[0...1] TB30 analog outputs actual output voltage / TB30 AO U_outp

TB30

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9106
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the actual output voltage at the analog outputs of the Terminal Board 30 (TB30).

Index: [0] = AO 0 (X482.5/X482.6)
[1] = AO 1 (X482.7/X482.8)

p4075[0...1] TM31 analog outputs activate absolute value generation / TM31 AO absVal act

TM31

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 9572
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Activates the absolute value generation for the analog outputs of Terminal Module 31 (TM31).

Value:
0: No absolute value generation
1: Absolute value generation switched in

Index: [0] = AO 0 (X522.1, X522.2, X522.3)
[1] = AO 1 (X522.4, X522.5, X522.6)

p4075[0...1] TB30 analog outputs activate absolute value generation / TB30 AO absVal act

TB30

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 9106
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Activates the absolute value generation for the analog outputs of the Terminal Board 30 (TB30).

Value:
0: No absolute value generation
1: Absolute value generation switched in

Index: [0] = AO 0 (X482.5/X482.6)
[1] = AO 1 (X482.7/X482.8)

p4076[0...1] TM31 analog outputs type / TM31 AO type

TM31

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 9572
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	4	4

Description: Sets the type of analog outputs of Terminal Module 31 (TM31).

p4076[x] = 1, 4 correspond to a voltage output (p4074, p4078, p4080, p4083 are displayed in V).

p4076[x] = 0, 2, 3 correspond to a current output (p4074, p4078, p4080, p4083 are displayed in mA).

Value:
0: Current output (0 mA ... +20 mA)
1: Voltage output (0 V ... +10 V)
2: Current output (+4 mA ... +20 mA)
3: Current output (-20 mA ... +20 mA)
4: Voltage output (-10 V ... +10 V)

Index: [0] = AO 0 (X522.1, X522.2, X522.3)
[1] = AO 1 (X522.4, X522.5, X522.6)

Dependency: Refer to: p4077, p4078, p4079, p4080

Note: When changing p4076, the parameters of the scaling characteristic (p4077, p4078, p4079, p4080) are overwritten with the following default values:

For p4076 = 0, 3, p4077 is set to 0.0 %, p4078 to 0.0 mA, p4079 to 100.0 % and p4080 to 20.0 mA.

For p4076 = 1, 4, p4077 is set to 0.0 %, p4078 to 0.0 V, p4079 to 100.0 % and p4080 to 10.0 V.

For p4076 = 2, p4077 is set to 0.0 %, p4078 to 4.0 mA, p4079 to 100.0 % and p4080 to 20.0 mA.

r4076[0...1] TB30 analog outputs type / TB30 AO type

TB30			
	Can be changed: -	**Calculated:** -	**Access level:** 1
	Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Terminals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	4	4	-

Description: Displays the type of analog outputs of the Terminal Board 30 (TB30).

Value: 4: Voltage output (-10 V ... +10 V)

Index: [0] = AO 0 (X482.5/X482.6)
[1] = AO 1 (X482.7/X482.8)

p4077[0...1] TM31 analog outputs characteristic value x1 / TM31 AO char x1

TM31			
	Can be changed: U, T	**Calculated:** -	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9572
	P-Group: Terminals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-1000.00 [%]	1000.00 [%]	0.00 [%]

Description: Sets the scaling characteristic for the analog outputs of Terminal Module 31 (TM31).

The scaling characteristic for the analog outputs is defined using 2 points.

This parameter specifies the x coordinate (percentage) of the 1st value pair of the characteristic.

Index: [0] = AO 0 (X522.1, X522.2, X522.3)
[1] = AO 1 (X522.4, X522.5, X522.6)

Dependency: Refer to: r4076, p4076

Notice: This parameter is automatically overwritten when changing p4076 (type of analog outputs).

Note: The parameters for the characteristic do not have a limiting effect.

p4077[0...1] TB30 analog outputs characteristic value x1 / TB30 AO char x1

TB30			
	Can be changed: U, T	**Calculated:** -	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9106
	P-Group: Terminals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-1000.00 [%]	1000.00 [%]	0.00 [%]

Description: Sets the scaling characteristic for the analog outputs of Terminal Board 30 (TB30).

The scaling characteristic for the analog outputs is defined using 2 points.

This parameter specifies the x coordinate (percentage) of the 1st value pair of the characteristic.

Index: [0] = AO 0 (X482.5/X482.6)
[1] = AO 1 (X482.7/X482.8)

Note: The parameters for the characteristic do not have a limiting effect.

p4078[0...1] TM31 analog outputs characteristic value y1 / TM31 AO char y1

TM31	**Can be changed:** U, T	**Calculated:** -	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9572
	P-Group: Terminals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-20.000	20.000	0.000

Description: Sets the scaling characteristic for the analog outputs of Terminal Module 31 (TM31).

The scaling characteristic for the analog outputs is defined using 2 points.

This parameter specifies the y coordinate (output voltage in V or output current in mA) of the 1st value pair of the characteristic.

Index: [0] = AO 0 (X522.1, X522.2, X522.3)
[1] = AO 1 (X522.4, X522.5, X522.6)

Dependency: The unit of this parameter (V or mA) depends on the analog output type.

Refer to: r4076, p4076

Notice: This parameter is automatically overwritten when changing p4076 (type of analog outputs).

Note: The parameters for the characteristic do not have a limiting effect.

p4078[0...1] TB30 analog outputs characteristic value y1 / TB30 AO char y1

TB30	**Can be changed:** U, T	**Calculated:** -	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9106
	P-Group: Terminals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-11.000 [V]	11.000 [V]	0.000 [V]

Description: Sets the scaling characteristic for the analog outputs of Terminal Board 30 (TB30).

The scaling characteristic for the analog outputs is defined using 2 points.

This parameter specifies the y coordinate (output voltage in V) of the 1st value pair of the characteristic.

Index: [0] = AO 0 (X482.5/X482.6)
[1] = AO 1 (X482.7/X482.8)

Note: The parameters for the characteristic do not have a limiting effect.

p4079[0...1] TM31 analog outputs characteristic value x2 / TM31 AO char x2

TM31	**Can be changed:** U, T	**Calculated:** -	**Access level:** 2
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9572
	P-Group: Terminals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-1000.00 [%]	1000.00 [%]	100.00 [%]

Description: Sets the scaling characteristic for the analog outputs of Terminal Module 31 (TM31).

The scaling characteristic for the analog outputs is defined using 2 points.

This parameter specifies the x coordinate (percentage) of the 2nd value pair of the characteristic.

Index: [0] = AO 0 (X522.1, X522.2, X522.3)
[1] = AO 1 (X522.4, X522.5, X522.6)

Dependency: Refer to: r4076, p4076

Notice: This parameter is automatically overwritten when changing p4076 (type of analog outputs).

Note: The parameters for the characteristic do not have a limiting effect.

p4079[0...1] TB30 analog outputs characteristic value x2 / TB30 AO char x2

TB30

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9106
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000.00 [%]	1000.00 [%]	100.00 [%]

Description: Sets the scaling characteristic for the analog outputs of Terminal Board 30 (TB30).

The scaling characteristic for the analog outputs is defined using 2 points.

This parameter specifies the x coordinate (percentage) of the 2nd value pair of the characteristic.

Index: [0] = AO 0 (X482.5/X482.6)
[1] = AO 1 (X482.7/X482.8)

Note: The parameters for the characteristic do not have a limiting effect.

p4080[0...1] TM31 analog outputs characteristic value y2 / TM31 AO char y2

TM31

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9572
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-20.000	20.000	10.000

Description: Sets the scaling characteristic for the analog outputs of Terminal Module 31 (TM31).

The scaling characteristic for the analog outputs is defined using 2 points.

This parameter specifies the y coordinate (output voltage in V or output current in mA) of the 2nd value pair of the characteristic.

Index: [0] = AO 0 (X522.1, X522.2, X522.3)
[1] = AO 1 (X522.4, X522.5, X522.6)

Dependency: The unit of this parameter (V or mA) depends on the analog output type.

Refer to: r4076, p4076

Notice: This parameter is automatically overwritten when changing p4076 (type of analog outputs).

Note: The parameters for the characteristic do not have a limiting effect.

p4080[0...1] TB30 analog outputs characteristic value y2 / TB30 AO char y2

TB30

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9106
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-11.000 [V]	11.000 [V]	10.000 [V]

Description: Sets the scaling characteristic for the analog outputs of Terminal Board 30 (TB30).

The scaling characteristic for the analog outputs is defined using 2 points.

This parameter specifies the y coordinate (output voltage in V) of the 2nd value pair of the characteristic.

Index: [0] = AO 0 (X482.5/X482.6)
[1] = AO 1 (X482.7/X482.8)

Note: The parameters for the characteristic do not have a limiting effect.

p4082[0...1] BI: TM31 analog outputs invert signal source / TM31 AO inv s_src

TM31

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9572
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to invert the analog output signals of Terminal Module 31 (TM31).

Index: [0] = AO 0 (X522.1, X522.2, X522.3)
[1] = AO 1 (X522.4, X522.5, X522.6)

p4082[0...1] BI: TB30 analog outputs invert signal source / TB30 AO inv s_src

TB30

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9106
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for inverting the analog output signals of the Terminal Board 30 (TB30).

Index: [0] = AO 0 (X482.5/X482.6)
[1] = AO 1 (X482.7/X482.8)

p4083[0...1] TM31 analog outputs offset / TM31 AO offset

TM31

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9572
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-20.000	20.000	0.000

Description: Sets the offset for the analog outputs of Terminal Module 31 (TM31).
The offset is added to the output signal after the scaling characteristic.

Index: [0] = AO 0 (X522.1, X522.2, X522.3)
[1] = AO 1 (X522.4, X522.5, X522.6)

Dependency: The unit of this parameter (V or mA) depends on the analog input type.
Refer to: r4076, p4076

Note: This means, for example, the offset of a downstream isolating amplifier can be compensated.

p4083[0...1] TB30 analog outputs offset / TB30 AO offset

TB30

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9106
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-10.000	10.000	0.000

Description: Sets the offset for the analog outputs of Terminal Board 30 (TB30).
The offset is added to the output signal after the scaling characteristic.

Index: [0] = AO 0 (X482.5/X482.6)
[1] = AO 1 (X482.7/X482.8)

p4086 BI: TM15DI/DO signal source for terminal DI/DO 16 / TM15D s_s DI/DO 16

TM15DI_DO

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9402
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 16 (X522.2) of Terminal Module 15 (TM15).

Note: Prerequisite: The DI/DO must be set as an output (p4028.16 = 1).

DI/DO: Bidirectional Digital Input/Output

p4087 BI: TM15DI/DO signal source for terminal DI/DO 17 / TM15D s_s DI/DO 17

TM15DI_DO

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9402
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 17 (X522.3) of Terminal Module 15 (TM15).

Note: Prerequisite: The DI/DO must be set as an output (p4028.17 = 1).

DI/DO: Bidirectional Digital Input/Output

p4088 BI: TM15DI/DO signal source for terminal DI/DO 18 / TM15D s_s DI/DO 18

TM15DI_DO

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9402
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 18 (X522.4) of Terminal Module 15 (TM15).

Note: Prerequisite: The DI/DO must be set as an output (p4028.18 = 1).

DI/DO: Bidirectional Digital Input/Output

p4089 BI: TM15DI/DO signal source for terminal DI/DO 19 / TM15D s_s DI/DO 19

TM15DI_DO

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9402
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 19 (X522.5) of Terminal Module 15 (TM15).

Note: Prerequisite: The DI/DO must be set as an output (p4028.19 = 1).

DI/DO: Bidirectional Digital Input/Output

p4090 BI: TM15DI/DO signal source for terminal DI/DO 20 / TM15D s_s DI/DO 20

TM15DI_DO

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9402
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 20 (X522.6) of Terminal Module 15 (TM15).

Note: Prerequisite: The DI/DO must be set as an output (p4028.20 = 1).

DI/DO: Bidirectional Digital Input/Output

p4091 BI: TM15DI/DO signal source for terminal DI/DO 21 / TM15D s_s DI/DO 21

TM15DI_DO

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9402
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 21 (X522.7) of Terminal Module 15 (TM15).

Note: Prerequisite: The DI/DO must be set as an output (p4028.21 = 1).

DI/DO: Bidirectional Digital Input/Output

p4092 BI: TM15DI/DO signal source for terminal DI/DO 22 / TM15D s_s DI/DO 22

TM15DI_DO

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9402
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 22 (X522.8) of Terminal Module 15 (TM15).

Note: Prerequisite: The DI/DO must be set as an output (p4028.22 = 1).

DI/DO: Bidirectional Digital Input/Output

p4093 BI: TM15DI/DO signal source for terminal DI/DO 23 / TM15D s_s DI/DO 23

TM15DI_DO

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9402
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for terminal DI/DO 23 (X522.9) of Terminal Module 15 (TM15).

Note: Prerequisite: The DI/DO must be set as an output (p4028.23 = 1).

DI/DO: Bidirectional Digital Input/Output

r4094.0...23 BO: TM15 digital inputs status inverted raw data internal / TM15 DI st raw dat

TM15DI_DO

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the inverted status of the raw data of the digital inputs of the Terminal Module 15 (TM15).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI/DO 0 (X520.2)	High	Low	-
01	DI/DO 1 (X520.3)	High	Low	-
02	DI/DO 2 (X520.4)	High	Low	-
03	DI/DO 3 (X520.5)	High	Low	-
04	DI/DO 4 (X520.6)	High	Low	-
05	DI/DO 5 (X520.7)	High	Low	-
06	DI/DO 6 (X520.8)	High	Low	-
07	DI/DO 7 (X520.9)	High	Low	-
08	DI/DO 8 (X521.2)	High	Low	-
09	DI/DO 9 (X521.3)	High	Low	-
10	DI/DO 10 (X521.4)	High	Low	-
11	DI/DO 11 (X521.5)	High	Low	-
12	DI/DO 12 (X521.6)	High	Low	-
13	DI/DO 13 (X521.7)	High	Low	-
14	DI/DO 14 (X521.8)	High	Low	-
15	DI/DO 15 (X521.9)	High	Low	-
16	DI/DO 16 (X522.2)	High	Low	-
17	DI/DO 17 (X522.3)	High	Low	-
18	DI/DO 18 (X522.4)	High	Low	-
19	DI/DO 19 (X522.5)	High	Low	-
20	DI/DO 20 (X522.6)	High	Low	-
21	DI/DO 21 (X522.7)	High	Low	-
22	DI/DO 22 (X522.8)	High	Low	-
23	DI/DO 23 (X522.9)	High	Low	-

Notice: The raw data of the digital inputs is directly displayed (e.g. without any debounce).

Note: Should only used for internal Siemens purposes (alternative r4022, r4023).

p4095 S120M digital inputs simulation mode / S120M DI sim_mode

SERVO (Dig IO)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Sets the simulation mode for digital inputs of the S120M.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI/DO 0 distributed (X3.2)	Simulation	Terminal eval	-
01	DI/DO 1 distributed (X3.4)	Simulation	Terminal eval	-

Dependency: The setpoint for the input signals is specified using p4096.

Refer to: p4096

Note: This parameter is not saved when data is backed-up (p0971, p0977).

DI: Digital Input

p4095 TM15DI/DO digital inputs simulation mode / TM15D DI sim_mode

TM15DI_DO

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9400, 9401, 9402
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 0000 0000 0000 0000 bin

Description: Sets the simulation mode for the digital inputs of Terminal Module 15 (TM15).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI/DO 0 (X520.2)	Simulation	Terminal eval	-
01	DI/DO 1 (X520.3)	Simulation	Terminal eval	-
02	DI/DO 2 (X520.4)	Simulation	Terminal eval	-
03	DI/DO 3 (X520.5)	Simulation	Terminal eval	-
04	DI/DO 4 (X520.6)	Simulation	Terminal eval	-
05	DI/DO 5 (X520.7)	Simulation	Terminal eval	-
06	DI/DO 6 (X520.8)	Simulation	Terminal eval	-
07	DI/DO 7 (X520.9)	Simulation	Terminal eval	-
08	DI/DO 8 (X521.2)	Simulation	Terminal eval	-
09	DI/DO 9 (X521.3)	Simulation	Terminal eval	-
10	DI/DO 10 (X521.4)	Simulation	Terminal eval	-
11	DI/DO 11 (X521.5)	Simulation	Terminal eval	-
12	DI/DO 12 (X521.6)	Simulation	Terminal eval	-
13	DI/DO 13 (X521.7)	Simulation	Terminal eval	-
14	DI/DO 14 (X521.8)	Simulation	Terminal eval	-
15	DI/DO 15 (X521.9)	Simulation	Terminal eval	-
16	DI/DO 16 (X522.2)	Simulation	Terminal eval	-
17	DI/DO 17 (X522.3)	Simulation	Terminal eval	-
18	DI/DO 18 (X522.4)	Simulation	Terminal eval	-
19	DI/DO 19 (X522.5)	Simulation	Terminal eval	-
20	DI/DO 20 (X522.6)	Simulation	Terminal eval	-
21	DI/DO 21 (X522.7)	Simulation	Terminal eval	-
22	DI/DO 22 (X522.8)	Simulation	Terminal eval	-
23	DI/DO 23 (X522.9)	Simulation	Terminal eval	-

Dependency: The setpoint for the input signals is specified using p4096.

Refer to: p4096

Warning: A drive that is moved by simulating the inputs of a Terminal Module is brought to a standstill while the Terminal Module is being activated or deactivated.

Note: This parameter is not saved when data is backed-up (p0971, p0977).

DI/DO: Bidirectional Digital Input/Output

p4095 TM31 digital inputs simulation mode / TM31 DI sim_mode

TM31

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9549, 9550, 9552, 9560, 9562
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 bin

Description: Sets the simulation mode for the digital inputs of Terminal Module 31 (TM31).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI 0 (X520.1)	Simulation	Terminal eval	-
01	DI 1 (X520.2)	Simulation	Terminal eval	-
02	DI 2 (X520.3)	Simulation	Terminal eval	-
03	DI 3 (X520.4)	Simulation	Terminal eval	-
04	DI 4 (X530.1)	Simulation	Terminal eval	-
05	DI 5 (X530.2)	Simulation	Terminal eval	-

06	DI 6 (X530.3)	Simulation	Terminal eval	-
07	DI 7 (X530.4)	Simulation	Terminal eval	-
08	DI/DO 8 (X541.2)	Simulation	Terminal eval	-
09	DI/DO 9 (X541.3)	Simulation	Terminal eval	-
10	DI/DO 10 (X541.4)	Simulation	Terminal eval	-
11	DI/DO 11 (X541.5)	Simulation	Terminal eval	-

Dependency: The setpoint for the input signals is specified using p4096.

Refer to: p4096

Warning: A drive that is moved by simulating the inputs of a Terminal Module is brought to a standstill while the Terminal Module is being activated or deactivated.

Note: This parameter is not saved when data is backed-up (p0971, p0977).

DI: Digital Input

DI/DO: Bidirectional Digital Input/Output

p4095 TM41 digital inputs simulation mode / TM41 DI sim_mode

TM41

Can be changed: U, T | **Calculated:** - | **Access level:** 2

Data type: Unsigned32 | **Dyn. index:** - | **Func. diagram:** -

P-Group: Terminals | **Unit group:** - | **Unit selection:** -

Not for motor type: - | **Scaling:** - | **Expert list:** 1

Min	Max	Factory setting
-	-	0000 0000 0000 0000 bin

Description: Sets the simulation mode for the digital inputs of Terminal Module 41 (TM41).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI 0 (X522.1)	Simulation	Terminal eval	9660
01	DI 1 (X522.2)	Simulation	Terminal eval	9660
02	DI 2 (X522.3)	Simulation	Terminal eval	9660
03	DI 3 (X522.4)	Simulation	Terminal eval	9660
08	DI/DO 0 (X521.1)	Simulation	Terminal eval	9661
09	DI/DO 1 (X521.2)	Simulation	Terminal eval	9661
10	DI/DO 2 (X521.3)	Simulation	Terminal eval	9662
11	DI/DO 3 (X521.4)	Simulation	Terminal eval	9662

Dependency: The setpoint for the input signals is specified using p4096.

Refer to: p4096

Warning: A drive that is moved by simulating the inputs of a Terminal Module is brought to a standstill while the Terminal Module is being activated or deactivated.

Note: This parameter is not saved when data is backed-up (p0971, p0977).

DI: Digital Input

DI/DO: Bidirectional Digital Input/Output

p4095 TB30 digital inputs simulation mode / TB30 DI sim_mode

TB30

Can be changed: U, T | **Calculated:** - | **Access level:** 2

Data type: Unsigned32 | **Dyn. index:** - | **Func. diagram:** 9099, 9100

P-Group: Commands | **Unit group:** - | **Unit selection:** -

Not for motor type: - | **Scaling:** - | **Expert list:** 1

Min	Max	Factory setting
-	-	0000 bin

Description: Sets the simulation mode for the digital inputs of the Terminal Board 30 (TB30).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI 0 (X481.1)	Simulation	Terminal eval	-
01	DI 1 (X481.2)	Simulation	Terminal eval	-
02	DI 2 (X481.3)	Simulation	Terminal eval	-
03	DI 3 (X481.4)	Simulation	Terminal eval	-

Dependency: The setpoint for the input signals is specified using p4096.

Refer to: p4096

Warning: A drive that is moved by simulating the inputs of a Terminal Board is brought to a standstill while the Terminal Module is being activated or deactivated.

Note: This parameter is not saved when data is backed-up (p0971, p0977).

DI: Digital Input

p4096 S120M digital inputs simulation mode setpoint / S120M DI sim setp

SERVO (Dig IO)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Sets the setpoint for the input signals in the digital input simulation mode of the S120M.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI/DO 0 distributed (X3.2)	High	Low	2201
01	DI/DO 1 distributed (X3.4)	High	Low	2201

Dependency: The simulation of a digital input is selected using p4095.

Refer to: p4095

Note: This parameter is not saved when data is backed-up (p0971, p0977).

DI: Digital Input

p4096 TM15DI/DO digital inputs simulation mode, setpoint / TM15D DI sim setp

TM15DI_DO

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9400, 9401, 9402
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 0000 0000 0000 0000 bin

Description: Sets the setpoint for the input signals in the simulation mode of the digital inputs of Terminal Module 15 (TM15).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI/DO 0 (X520.2)	High	Low	-
01	DI/DO 1 (X520.3)	High	Low	-
02	DI/DO 2 (X520.4)	High	Low	-
03	DI/DO 3 (X520.5)	High	Low	-
04	DI/DO 4 (X520.6)	High	Low	-
05	DI/DO 5 (X520.7)	High	Low	-
06	DI/DO 6 (X520.8)	High	Low	-
07	DI/DO 7 (X520.9)	High	Low	-
08	DI/DO 8 (X521.2)	High	Low	-
09	DI/DO 9 (X521.3)	High	Low	-
10	DI/DO 10 (X521.4)	High	Low	-
11	DI/DO 11 (X521.5)	High	Low	-
12	DI/DO 12 (X521.6)	High	Low	-
13	DI/DO 13 (X521.7)	High	Low	-
14	DI/DO 14 (X521.8)	High	Low	-
15	DI/DO 15 (X521.9)	High	Low	-
16	DI/DO 16 (X522.2)	High	Low	-
17	DI/DO 17 (X522.3)	High	Low	-
18	DI/DO 18 (X522.4)	High	Low	-
19	DI/DO 19 (X522.5)	High	Low	-
20	DI/DO 20 (X522.6)	High	Low	-
21	DI/DO 21 (X522.7)	High	Low	-
22	DI/DO 22 (X522.8)	High	Low	-
23	DI/DO 23 (X522.9)	High	Low	-

Dependency: The simulation of a digital input is selected using p4095.

Refer to: p4095

Note: This parameter is not saved when data is backed-up (p0971, p0977).
DI/DO: Bidirectional Digital Input/Output

p4096 TM31 digital inputs simulation mode setpoint / TM31 DI sim setp

TM31

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9549, 9550, 9552, 9560, 9562
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 bin

Description: Sets the setpoint for the input signals in the simulation mode of the digital inputs of Terminal Module 31 (TM31).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI 0 (X520.1)	High	Low	-
01	DI 1 (X520.2)	High	Low	-
02	DI 2 (X520.3)	High	Low	-
03	DI 3 (X520.4)	High	Low	-
04	DI 4 (X530.1)	High	Low	-
05	DI 5 (X530.2)	High	Low	-
06	DI 6 (X530.3)	High	Low	-
07	DI 7 (X530.4)	High	Low	-
08	DI/DO 8 (X541.2)	High	Low	-
09	DI/DO 9 (X541.3)	High	Low	-
10	DI/DO 10 (X541.4)	High	Low	-
11	DI/DO 11 (X541.5)	High	Low	-

Dependency: The simulation of a digital input is selected using p4095.
Refer to: p4095

Note: This parameter is not saved when data is backed-up (p0971, p0977).
DI: Digital Input
DI/DO: Bidirectional Digital Input/Output

p4096 TM41 digital inputs simulation mode setpoint / TM41 DI sim setp

TM41

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 bin

Description: Sets the setpoint for the input signals in the simulation mode of the digital inputs of Terminal Module 41 (TM41).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI 0 (X522.1)	High	Low	9660
01	DI 1 (X522.2)	High	Low	9660
02	DI 2 (X522.3)	High	Low	9660
03	DI 3 (X522.4)	High	Low	9660
08	DI/DO 0 (X521.1)	High	Low	9661
09	DI/DO 1 (X521.2)	High	Low	9661
10	DI/DO 2 (X521.3)	High	Low	9662
11	DI/DO 3 (X521.4)	High	Low	9662

Dependency: The simulation of a digital input is selected using p4095.
Refer to: p4095

Note: This parameter is not saved when data is backed-up (p0971, p0977).
DI: Digital Input
DI/DO: Bidirectional Digital Input/Output

p4096 TB30 digital inputs simulation mode setpoint / TB30 DI sim setp

TB30

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9099, 9100
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Sets the setpoint for the input signals in the simulation mode of the digital inputs of the Terminal Board 30 (TB30).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI 0 (X481.1)	High	Low	-
01	DI 1 (X481.2)	High	Low	-
02	DI 2 (X481.3)	High	Low	-
03	DI 3 (X481.4)	High	Low	-

Dependency: The simulation of a digital input is selected using p4095.

Refer to: p4095

Note: This parameter is not saved when data is backed-up (p0971, p0977).

DI: Digital Input

p4097[0...1] TM31 analog inputs simulation mode / TM31 AI sim_mode

TM31

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 9566, 9568
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the simulation mode for the analog inputs of Terminal Module 31 (TM31).

Value:
0: Terminal evaluation for analog input x
1: Simulation for analog input x

Index:
[0] = AI 0 (X521.1/X521.2, S5.0)
[1] = AI 1 (X521.3/X521.4, S5.1)

Dependency: The setpoint for the input voltage is specified via p4098.

Refer to: p4098

Note: This parameter is not saved when data is backed-up (p0971, p0977).

AI: Analog Input

p4097[0] TM41 analog input simulation mode / TM41 AI sim_mode

TM41

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 9663
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the simulation mode for the analog input of Terminal Module 41 (TM41).

Value:
0: Terminal evaluation for analog input x
1: Simulation for analog input x

Index: [0] = AI 0 (X523.1/X523.2)

Dependency: The setpoint for the input voltage is specified via p4098.

Refer to: p4098

Note: This parameter is not saved when data is backed-up (p0971, p0977).

AI: Analog Input

p4097[0...1] TB30 analog inputs simulation mode / TB30 AI sim_mode

TB30

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 9104
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the simulation mode for the analog inputs of the Terminal Board 30 (TB30).

Value:
0: Terminal evaluation for analog input x
1: Simulation for analog input x

Index:
[0] = AI 0 (X482.1/X482.2)
[1] = AI 1 (X482.3/X482.4)

Dependency: The setpoint for the input voltage is specified via p4098.

Refer to: p4098

Note: This parameter is not saved when data is backed-up (p0971, p0977).

AI: Analog Input

p4098[0...1] TM31 analog inputs simulation mode setpoint / TM31 AI sim setp

TM31

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9566, 9568
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-20.000	20.000	0.000

Description: Sets the setpoint for the input value in simulation mode of the analog inputs of Terminal Module 31 (TM31).

Index:
[0] = AI 0 (X521.1/X521.2, S5.0)
[1] = AI 1 (X521.3/X521.4, S5.1)

Dependency: The simulation of an analog input is selected using p4097.

If AI x is parameterized as voltage input (p4056), then the setpoint is a voltage in V.

If AI x is parameterized as current input (p4056), then the setpoint is a current in mA.

Refer to: r4056, p4056, p4097

Note: This parameter is not saved when data is backed-up (p0971, p0977).

AI: Analog Input

p4098[0] TM41 analog input simulation mode setpoint / TM41 AI sim setp

TM41

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9663
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-20.000 [V]	20.000 [V]	0.000 [V]

Description: Sets the setpoint for the input value in simulation mode of the analog input of Terminal Module 41 (TM41).

Index: [0] = AI 0 (X523.1/X523.2)

Dependency: The simulation of the analog input is selected using p4097.

If AI x is parameterized as voltage input (p4056), then the setpoint is a voltage in V.

If AI x is parameterized as current input (p4056), then the setpoint is a current in mA.

Refer to: p4097

Note: This parameter is not saved when data is backed-up (p0971, p0977).

AI: Analog Input

p4098[0...1] TB30 analog inputs simulation mode setpoint / TB30 AI sim setp

TB30

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9104
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-11.000 [V]	11.000 [V]	0.000 [V]

Description: Sets the setpoint for the input voltage in the simulation mode of the analog inputs of Terminal Board 30 (TB30).

Index:
[0] = AI 0 (X482.1/X482.2)
[1] = AI 1 (X482.3/X482.4)

Dependency: The simulation of an analog input is selected using p4097.

Refer to: p4097

Note: This parameter is not saved when data is backed-up (p0971, p0977).

AI: Analog Input

p4099 Inputs/outputs sampling time / I/O t_sampl

SERVO (Dig IO)

Can be changed: C1(3)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
125.00 [µs]	5000.00 [µs]	4000.00 [µs]

Description: Sets the sampling time for the inputs and outputs.

Dependency: The parameter can only be modified for p0009 = 3, 29.

The sampling times can only be set as an integer multiple of the SERVO clock cycle (p0115).

Refer to: p0009

Note: The changed sampling time is immediately effective after a completed sub-boot (p0009 -> 0).

p4099 TM15 inputs/outputs sampling time / TM15 I/O t_sample

TM15

Can be changed: C1(3)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9389
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
31.25 [µs]	500.00 [µs]	125.00 [µs]

Description: The sampling time of the Terminal Module 15 (TM15) is determined by the DRIVE-CLiQ clock cycle of the line to which the component is attached.

It is not possible to specify this using p4099.

When switching on, parameter p4099 is correctly set to the resulting sampling time.

p4099 TM15DI/DO inputs/outputs sampling time / TM15D I/O t_sampl

TM15DI_DO			
	Can be changed: C1(3)	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9399, 9400
	P-Group: Commands	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [µs]	5000.00 [µs]	4000.00 [µs]

Description: Sets the sampling time for the inputs and outputs of Terminal Module 15 (TM15).

Dependency: The parameter can only be modified for p0009 = 3, 29.

The following applies for the sampling time:

The sampling times at a DRIVE-CLiQ line must be integral multiples of one another.

The sampling times of this TM must be an integral multiple of a servo or vector drive that exists in the system.

The minimum permissible sampling time is 125 µs.

Refer to: p0009, r0110, r0111

Note: The changed sampling time is immediately effective after a completed sub-boot (p0009 -> 0).

Parameter p4099[0] must never be equal to zero.

p4099 TM17 inputs/outputs sampling time / TM17 I/O t_sample

TM17			
	Can be changed: C1(3)	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9419
	P-Group: Commands	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	31.25 [µs]	500.00 [µs]	125.00 [µs]

Description: The sampling time of the Terminal Module 17 (TM17) is determined by the DRIVE-CLiQ clock cycle of the line to which the component is attached.

It is not possible to specify this using p4099.

When switching on, parameter p4099 is correctly set to the resulting sampling time.

p4099[0...2] TM31 inputs/outputs sampling time / TM31 I/O t_sample

TM31			
	Can be changed: C1(3)	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9549, 9550
	P-Group: Commands	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [µs]	5000.00 [µs]	4000.00 [µs]

Description: Sets the sampling time for the inputs and outputs of Terminal Module 31 (TM31).

Index:
[0] = Digital inputs/outputs (DI/DO)
[1] = Analog inputs (AI)
[2] = Analog outputs (AO)

Dependency: The parameter can only be modified for p0009 = 3, 29.

The following applies for the sampling time:

The sampling times at a DRIVE-CLiQ line must be integral multiples of one another.

The sampling times of this TM must be an integral multiple of a servo or vector drive that exists in the system.

The minimum permissible sampling time is 125 µs.

The sampling times entered in index 0 (digital inputs/outputs) and index 2 (analog outputs) must always be greater than or equal to the sampling time in index 1 (analog inputs).

Refer to: p0009, r0110, r0111

Notice: The sampling times entered in index 0 (digital inputs/outputs) and index 2 (analog outputs) must always be greater than or equal to the sampling time in index 1 (analog inputs).

Note: The changed sampling time is immediately effective after a completed sub-boot (p0009 -> 0).

Parameter p4099[0] must never be equal to zero.

p4099[0...3] TM41 inputs/outputs sampling time / TM41 I/O t_sample

TM41	**Can be changed:** C1(3)	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9659, 9660
	P-Group: Commands	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [µs]	5000.00 [µs]	[0] 4000.00 [µs] [1] 4000.00 [µs] [2] 0.00 [µs] [3] 125.00 [µs]

Description: Sets the sampling time for the inputs and outputs of Terminal Module 41 (TM41).

Index:
[0] = Digital inputs/outputs (DI/DO)
[1] = Analog inputs (AI)
[2] = Not present
[3] = Incremental encoder emulation

Dependency: The parameter can only be modified for p0009 = 3, 29.

The sampling times can only be set as an integer multiple of the DRIVE-CLiQ clock cycle.

The minimum permissible sampling time is 125 µs.

Refer to: p0009, r0110, r0111

Refer to: A35228

Note: The value of the sampling time of the incremental encoder emulation p4099[3] can be pre-set in both operating modes (p4400). The next time that the system boots, the validity of the value is checked. For an invalid value, message F35228 and/or A01223 is output.

The changed sampling time is immediately effective after a completed sub-boot (p0009 -> 0).

The sampling time of a TM41 in the SINAMICS mode (p4400 = 1) must be the same as that of the emulated encoder.

The sampling time of a TM41 in the SIMOTION mode (p4400 = 0) is determined by the topology used

p4099[0...2] TB30 inputs/outputs sampling time / TB30 I/O t_sample

TB30	**Can be changed:** C1(3)	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9099, 9100
	P-Group: Commands	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [µs]	5000.00 [µs]	[0] 4000.00 [µs] [1] 4000.00 [µs] [2] 4000.00 [µs]

Description: Sets the sampling time for the inputs and outputs of Terminal Board 30 (TB30).

Index:
[0] = Digital inputs/outputs (DI/DO)
[1] = Analog inputs (AI)
[2] = Analog outputs (AO)

Dependency: The parameter can only be modified for p0009 = 3, 29.

The sampling times can only be set as an integer multiple of the lowest basic sampling time (r0110[0]).

Refer to: p0009, r0110, r0111

Note: The changed sampling time is immediately effective after a completed sub-boot (p0009 -> 0).

For clock cycle synchronous PROFIBUS operation, the TB30 hardware (e.g. analog/digital converter) is operated with the PROFIBUS clock cycle (r2064[1]). This clock cycle is also kept after the PROFIBUS connection has been exited up to the next time that the Control Unit is switched off. In this case, a faster sampling time than the PROFIBUS clock cycle is not practical in p4099[0...2].

p4100 Spindle supplementary temperature sensor type / Supp_temp sens typ

SERVO (Spin_diag), SERVO_AC (Spin_diag)

Can be changed: T	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	6	0

Description: Sets the sensor type to evaluate the spindle supplementary temperature.

Value:
0: Evaluation disabled
2: KTY84
6: PT1000

Dependency: Refer to: p4102, p4103, r4104, r4105, r4107

p4100[0...3] TM120 temperature evaluation, sensor type / TM120 sensor type

TM120

Can be changed: T	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 9605, 9606
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	6	1

Description: Sets the sensor type for temperature evaluation via Terminal Module 120 (TM120).

This means that the temperature sensor type is selected and the evaluation is switched in.

Value:
0: Evaluation disabled
1: PTC thermistor
2: KTY84
4: Bimetallic NC contact
6: PT1000

Index:
[0] = Temperature channel 0
[1] = Temperature channel 1
[2] = Temperature channel 2
[3] = Temperature channel 3

Notice: For p4102[0...7] = 251 °C, evaluation of the corresponding threshold is deactivated.

For sensor type "PTC thermistor" (p4100[0...3] = 1), the following applies:

To activate the corresponding alarm or fault, p4102[0...7] must be set <= 250 °C.

Note: The temperature sensors are connected to the following terminals:

X521.2(+) and X521.1(-) = channel 0

X521.4(+) and X521.3(-) = channel 1

X521.6(+) and X521.5(-) = channel 2

X521.8(+) and X521.7(-) = channel 3

p4100[0...11] TM150 sensor type / TM150 sensor type

TM150

Can be changed: T	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 9626, 9627
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	6	5

Description: Sets the sensor type for Terminal Module 150 (TM150)

This means that the temperature sensor type is selected and the evaluation is switched in.

Value:
0: Evaluation disabled
1: PTC thermistor
2: KTY84
4: Bimetallic NC contact
5: PT100
6: PT1000

Index: [0] = Temperature channel 0
[1] = Temperature channel 1
[2] = Temperature channel 2
[3] = Temperature channel 3
[4] = Temperature channel 4
[5] = Temperature channel 5
[6] = Temperature channel 6
[7] = Temperature channel 7
[8] = Temperature channel 8
[9] = Temperature channel 9
[10] = Temperature channel 10
[11] = Temperature channel 11

Notice: For p4102[0...23] = 251 °C, evaluation of the corresponding threshold is deactivated.
For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[0...11] = 1, 4), the following applies:
To activate the corresponding alarm or fault, p4102[0...23] must be set <= 250 °C.

Note: The temperature sensors are connected to the following terminals:
X531 = channel 0 (for 2x2 wire evaluation, additionally channel 6)
X532 = channel 1 (for 2x2 wire evaluation, additionally channel 7)
X533 = channel 2 (for 2x2 wire evaluation, additionally channel 8)
X534 = channel 3 (for 2x2 wire evaluation, additionally channel 9)
X535 = channel 4 (for 2x2 wire evaluation, additionally channel 10)
X536 = channel 5 (for 2x2 wire evaluation, additionally channel 11)
Details on the wiring are included in the parameter description for p4108.

p4100 TM31 sensor type / TM31 sensor type

TM31			
	Can be changed: T	**Calculated:** -	**Access level:** 1
	Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 9576
	P-Group: -	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	6	0

Description: Sets the sensor type for Terminal Module 31 (TM31)
This means that the temperature sensor type is selected and the evaluation is switched in.

Value:
0: Evaluation disabled
1: PTC thermistor
2: KTY84
6: PT1000

Notice: For p4102[0...1] = 251 °C, evaluation of the corresponding threshold is deactivated.
For sensor type "PTC thermistor" (p4100 = 1), the following applies:
To activate the corresponding alarm or fault, p4102[0...1] must be set <= 250 °C.

Note: The temperature sensor is connected at terminals X522.7(+) and X522.8(-).

r4101[0...3] TM120 sensor resistance / TM120 R_sensor

TM120			
	Can be changed: -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 9605, 9606
	P-Group: Terminals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [ohm]	- [ohm]	- [ohm]

Description: Displays the actual resistance value of the temperature sensor connected at the Terminal Module.

Index: [0] = Temperature channel 0
[1] = Temperature channel 1
[2] = Temperature channel 2
[3] = Temperature channel 3

Note: The maximum measurable resistance value is approx. 1720 Ohm.

The temperature sensors are connected to the following terminals:

X521.2(+) and X521.1(-) = channel 0

X521.4(+) and X521.3(-) = channel 1

X521.6(+) and X521.5(-) = channel 2

X521.8(+) and X521.7(-) = channel 3

r4101[0...11] TM150 sensor resistance / TM150 R_sensor

TM150			
	Can be changed: -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9626, 9627
	P-Group: Terminals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [ohm]	- [ohm]	- [ohm]

Description: Displays the actual resistance value of the temperature sensor connected at the Terminal Module.

Index:
[0] = Temperature channel 0
[1] = Temperature channel 1
[2] = Temperature channel 2
[3] = Temperature channel 3
[4] = Temperature channel 4
[5] = Temperature channel 5
[6] = Temperature channel 6
[7] = Temperature channel 7
[8] = Temperature channel 8
[9] = Temperature channel 9
[10] = Temperature channel 10
[11] = Temperature channel 11

Note: The maximum measurable resistance value is approx. 2500 Ohm.

For 1x2 and 2x2 wire evaluation:

The actual sensor resistance is displayed in this parameter(i.e. the wire resistance (p4110) is taken into account).

The temperature sensors are connected to the following terminals:

X531 = channel 0 (for 2x2 wire evaluation, additionally channel 6)

X532 = channel 1 (for 2x2 wire evaluation, additionally channel 7)

X533 = channel 2 (for 2x2 wire evaluation, additionally channel 8)

X534 = channel 3 (for 2x2 wire evaluation, additionally channel 9)

X535 = channel 4 (for 2x2 wire evaluation, additionally channel 10)

X536 = channel 5 (for 2x2 wire evaluation, additionally channel 11)

Details on the wiring are included in the parameter description for p4108.

r4101 TM31 sensor resistance / TM31 R_sensor

TM31			
	Can be changed: -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 9576
	P-Group: Terminals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [ohm]	- [ohm]	- [ohm]

Description: Displays the actual resistance value of the temperature sensor connected at the Terminal Module.

Note: The maximum measurable resistance value is approx. 1720 Ohm.

The temperature sensor is connected at terminals X522.7(+) and X522.8(-).

p4102[0...1] Spindle supplementary temperature fault threshold/alarm thresh. / Suppl_temp F/A_thr

SERVO (Spin_diag), SERVO_AC (Spin_diag)

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** 21_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-300.0 [°C]	9999.0 [°C]	[0] 120.0 [°C] [1] 155.0 [°C]

Description: Sets the fault threshold/alarm threshold for the temperature evaluation of the spindle.

Temperature actual value r4105 > p4102[0] --> alarm A07017 is initiated.

Temperature actual value r4105 > p4102[1] --> fault F07018 is initiated.

Index:
[0] = Alarm threshold
[1] = Fault threshold

Dependency: Refer to: p4100, r4104, r4105

Refer to: A07017, F07018

Note: For A07017 the following applies:

- Remains until the temperature actual value (r4105) reaches or falls below the value (p4102[0] - hysteresis).

For F07018 the following applies:

- Remains until the temperature actual value (r4105) reaches or falls below the value (p4102[1] - hysteresis) and the fault has been acknowledged.
- the hysteresis is 2 K and cannot be changed by the user.

p4102[0...7] TM120 fault threshold/alarm threshold / TM120 F/A_thresh

TM120

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 9605, 9606
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-48 [°C]	251 [°C]	251 [°C]

Description: Sets the fault threshold/alarm threshold for Terminal Module 120 (TM120).

A35211 is initiated, if the temperature actual value r4105[0] > p4102[0]

F35207 is initiated if the temperature actual value r4105[0] > p4102[1] or timer p4103[0] has expired

A35212 is initiated, if the temperature actual value r4105[1] > p4102[2]

F35208 is initiated if the temperature actual value r4105[1] > p4102[3] or timer p4103[1] has expired

A35213 is initiated, if the temperature actual value r4105[2] > p4102[4]

F35209 is initiated if the temperature actual value r4105[2] > p4102[5] or timer p4103[2] has expired

A35214 is initiated, if the temperature actual value r4105[3] > p4102[6]

F35210 is initiated if the temperature actual value r4105[3] > p4102[7] or timer p4103[3] has expired

For alarms A35211, A35212, A35213, A35214 the following applies:

- Remains until the temperature actual value (r4105[0...3]) reaches or falls below the value (p4102[0, 2, 4, 6] - hysteresis).

For fault F35207, F35208, F35209, F35210 the following applies:

- Remains until the temperature actual value (r4105[0...3]) reaches or falls below the value (p4102[1, 3, 5, 7] - hysteresis) and the fault has been acknowledged.
- the hysteresis value is 5 K and cannot be changed.

Index:
[0] = Channel 0 alarm threshold (A35211)
[1] = Channel 0 fault threshold (F35207)
[2] = Channel 1 alarm threshold (A35212)
[3] = Channel 1 fault threshold (F35208)
[4] = Channel 2 alarm threshold (A35213)
[5] = Channel 2 fault threshold (F35209)
[6] = Channel 3 alarm threshold (A35214)
[7] = Channel 3 fault threshold (F35210)

Dependency: Refer to: p4103

Notice: Fault F35207 ... F35210 only causes the drive to shut down if there is at least one BICO interconnection between the drive and TM120.

For p4102[0...7] = 251 °C, evaluation of the corresponding threshold is deactivated.

For sensor type "PTC thermistor" (p4100[0...3] = 1), the following applies:

To activate the corresponding alarm or fault, p4102[0...7] must be set <= 250 °C.

Note: The temperature sensor is connected to the following terminals:

X521.2(+) and X521.1(-) = channel 0

X521.4(+) and X521.3(-) = channel 1

X521.6(+) and X521.5(-) = channel 2

X521.8(+) and X521.7(-) = channel 3

p4102[0...23] TM150 fault threshold/alarm threshold / TM150 F/A_thresh

TM150			
	Can be changed: U, T	**Calculated:** -	**Access level:** 1
	Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 9626, 9627
	P-Group: -	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-99 [°C]	251 [°C]	251 [°C]

Description: Sets the fault threshold/alarm threshold for Terminal Module 150 (TM150).

For alarms (even indices [0, 2, 4 ... 22]), the following applies:

- the corresponding alarm is initiated, if the temperature actual value associated with a temperature channel exceeds the associated alarm threshold (r4105[x] > p4102[2x]. In addition, the timer is started (p4103[x]).

- the alarm remains until the temperature actual value (r4105[x]) reaches or falls below the threshold value (p4102[2x]) - hysteresis (p4118[x]).

For faults (uneven indices [1, 3, 5 ... 23]), the following applies:

- the corresponding fault is initiated, if the temperature actual value associated with a temperature channel exceeds the associated fault threshold (r4105[x] > p4102[2x+1] or the associated timer (p4103[x] has expired.

- the fault remains until the temperature actual value (r4105[x]) reaches or falls below the threshold value (p4102[2x+1]) - hysteresis (p4118[x]) and the fault has been acknowledged.

Index:
[0] = Channel 0 alarm threshold (A35211)
[1] = Channel 0 fault threshold (F35207)
[2] = Channel 1 alarm threshold (A35212)
[3] = Channel 1 fault threshold (F35208)
[4] = Channel 2 alarm threshold (A35213)
[5] = Channel 2 fault threshold (F35209)
[6] = Channel 3 alarm threshold (A35214)
[7] = Channel 3 fault threshold (F35210)
[8] = Channel 4 alarm threshold (A35410)
[9] = Channel 4 fault threshold (F35400)
[10] = Channel 5 alarm threshold (A35411)
[11] = Channel 5 fault threshold (F35401)
[12] = Channel 6 alarm threshold (A35412)
[13] = Channel 6 fault threshold (F35402)
[14] = Channel 7 alarm threshold (A35413)
[15] = Channel 7 fault threshold (F35403)
[16] = Channel 8 alarm threshold (A35414)
[17] = Channel 8 fault threshold (F35404)
[18] = Channel 9 alarm threshold (A35415)
[19] = Channel 9 fault threshold (F35405)
[20] = Channel 10 alarm threshold (A35416)
[21] = Channel 10 fault threshold (F35406)
[22] = Channel 11 alarm threshold (A35417)
[23] = Channel 11 fault threshold (F35407)

Dependency: Refer to: p4103, r4104, r4105, p4118

Notice: Faults F35207 ... F35210 and F35400 ... F35407 only cause the drive to be shut down if there is at least one BICO interconnection between the drive and the TM150.

For p4102[0...23] = 251 °C, evaluation of the corresponding threshold is deactivated.

For sensor type "PTC thermistor" (p4100[0...11] = 1), the following applies:

To activate the corresponding alarm or fault, p4102[0...23] must be set <= 250 °C.

Note: The hysteresis can be set in p4118[0...11].

p4102[0...1] TM31 fault threshold/alarm threshold / TM31 F/A_thresh

TM31

Can be changed: U, T	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 9576
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-48 [°C]	251 [°C]	[0] 100 [°C] [1] 120 [°C]

Description: Sets the fault threshold/alarm threshold for Terminal Module 31 (TM31).

A35211 is initiated, if the temperature actual value r4105[0] > p4102[0]

F35207 is initiated if the temperature actual value r4105[0] > p4102[1] or timer p4103[0] has expired

For alarm A35211 the following applies:

- Remains until the temperature actual value (r4105) reaches or falls below the value (p4102[0] - hysteresis).

For fault F35207 the following applies:

- Remains until the temperature actual value (r4105) reaches or falls below the value (p4102[1] - hysteresis) and the fault has been acknowledged.

- the hysteresis value is 5 K and cannot be changed by the user.

Index: [0] = Alarm threshold
[1] = Fault threshold

Dependency: Refer to: r4104

Notice: Fault F35207 only causes the drive to be shut down if there is at least one BICO interconnection between the drive and TM31.

For p4102[0...1] = 251 °C, evaluation of the corresponding threshold is deactivated.

For sensor type "PTC thermistor" (p4100 = 1), the following applies:

To activate the alarm or fault, p4102[0...1] must be set <= 250 °C.

p4103 Spindle supplementary temperature delay time / Suppl_temp t_delay

SERVO (Spin_diag), SERVO_AC (Spin_diag)

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	600.000 [s]	0.000 [s]

Description: Sets the delay time for the output of the fault for the temperature evaluation of the spindle.

The timer is started when the alarm threshold (p4102[0]) is exceeded.

If the delay time has expired and the alarm threshold has, in the meantime, not been fallen below, then fault F07018 is output.

The fault can be acknowledged, if, after the delay time has expired, the alarm threshold is again fallen below.

If the fault threshold (p4102[1]) is exceeded before the delay time has expired, then fault F07018 is immediately output.

Dependency: Refer to: p4100, r4104, r4105

Note: With p4103 = 0, the timer is deactivated and only the fault threshold is effective.

p4103[0...3] TM120 temperature evaluation delay time / TM120 temp t_delay

TM120

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9605, 9606
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [ms]	600000.000 [ms]	0.000 [ms]

Description: Sets the delay time for the output of the fault for the temperature evaluation of Terminal Module 120 (TM120).

The timer is started when the alarm threshold (p4102[0, 2, 4, 6]) is exceeded.

If the delay time has expired and the alarm threshold has, in the meantime, not been fallen below, then fault F35207 ... F53210 is output.

The fault can be acknowledged, if, after the delay time has expired, the alarm threshold is again fallen below.

For sensor type "KTY84" "PT1000" (p4100[0...3] = 2, 6), the following applies:

If the fault threshold (p4102[1, 3, 5, 7]) is exceeded before the delay time has expired, then fault F35207 ... F35210 is immediately output.

For sensor type "PTC thermistor" (p4100[0...3] = 1), the following applies:

- Alarm and fault threshold simultaneously respond. The fault is only issued after the delay time has expired.

Index:
[0] = Temperature channel 0
[1] = Temperature channel 1
[2] = Temperature channel 2
[3] = Temperature channel 3

Dependency: Refer to: r4104

Warning: Fault F35207 ... F35210 only causes the drive to shut down if there is at least one BICO interconnection between the drive and TM120.

Note: With p4103 = 0, the timer is deactivated and only the fault threshold is effective.

p4103[0...11] TM150 delay time / TM150 t_delay

TM150

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9626, 9627
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [s]	600.0 [s]	0.0 [s]

Description: Sets the delay time for the output of the fault for the Terminal Module 150 (TM150).

The timer is started when the alarm threshold (e.g. p4102[0]) is exceeded.

If the delay time has expired and the alarm threshold has, in the meantime, not been fallen below, then the corresponding fault is output.

The fault can be acknowledged, if, after the delay time has expired, the alarm threshold is again fallen below.

For sensor type "KTY84", "PT100", "PT1000" (p4100[0...11] = 2, 5, 6) the following applies:

- if the fault threshold (e.g. p4102[1]) is exceeded before the delay time has expired, then the corresponding fault is immediately output.

For sensor type "PTC thermistor", "Bimetallic NC contact" (p4100[0...11] = 1, 4), the following applies:

- Alarm and fault threshold simultaneously respond. The fault is only issued after the delay time has expired.

Index:
[0] = Temperature channel 0
[1] = Temperature channel 1
[2] = Temperature channel 2
[3] = Temperature channel 3
[4] = Temperature channel 4
[5] = Temperature channel 5
[6] = Temperature channel 6
[7] = Temperature channel 7
[8] = Temperature channel 8
[9] = Temperature channel 9
[10] = Temperature channel 10
[11] = Temperature channel 11

Dependency: Refer to: p4102, r4104, r4105, p4118

Warning: The fault F35207 ... F35210 and F35400 ... 35407 only results in the drive being shut down if at least one BICO interconnection exists between the drive and the TM150.

Note: For p4103 = 0 s and sensor type "KTY84", "PT100", "PT1000" (p4100[0...11] = 2, 5, 6) the following applies:

- the corresponding fault can only be initiated via the fault threshold (output of the timer is always a logical 0).

For p4103 = 0 s and sensor type "PTC thermistor", "Bimetallic NC contact" (p4100[0...11] = 1, 4), the following applies:

- the corresponding alarm and fault are simultaneously output (delay time = 0 s).

p4103 TM31 temperature evaluation delay time / TM31 temp t_delay

TM31

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9576
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [ms]	600000.000 [ms]	0.000 [ms]

Description: Sets the delay time for the output of the fault for the Terminal Module 31 (TM31).

The timer is started when the alarm threshold (p4102[0]) is exceeded.

If the delay time has expired and the alarm threshold has, in the meantime, not been fallen below, then fault F35207 is output.

The fault can be acknowledged, if, after the delay time has expired, the alarm threshold is again fallen below.

For sensor type "KTY84" "PT1000" (p4100 = 2, 6), the following applies:

If the fault threshold (p4102[1]) is exceeded before the delay time has expired, then fault F35207 is immediately output.

For sensor type "PTC thermistor" (p4100 = 1), the following applies:

- Alarm and fault threshold simultaneously respond. The fault is only issued after the delay time has expired.

Dependency: Refer to: r4104

Warning: Fault F35207 only causes the drive to be shut down if there is at least one BICO interconnection between the drive and TM31.

Note: With p4103 = 0, the timer is deactivated and only the fault threshold is effective.

r4104.0...2 BO: Spindle supplementary temperature status / Suppl_temp status

SERVO (Spin_diag), SERVO_AC (Spin_diag)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and binector output for the status when evaluating the supplementary temperature of the spindle.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Temperature alarm threshold exceeded	Yes	No	-
01	Temperature fault threshold exceeded	Yes	No	-
02	Sensor fault (wire breakage, short-circuit, ...)	Yes	No	-

Dependency: Refer to: p4100, p4102, r4105

Refer to: A07017, F07018

r4104.0...7 BO: TM120 temperature evaluation status / TM120 temp status

TM120

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 9605, 9606
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and binector output for the status for the Terminal Module 120 (TM120).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Channel 0 alarm present	Yes	No	9605
01	Channel 0 fault present	Yes	No	9605
02	Channel 1 alarm present	Yes	No	9605
03	Channel 1 fault present	Yes	No	9605
04	Channel 2 alarm present	Yes	No	9606
05	Channel 2 fault present	Yes	No	9606
06	Channel 3 alarm present	Yes	No	9606
07	Channel 3 fault present	Yes	No	9606

Dependency: Refer to: p4102

r4104.0...23 BO: TM150 temperature evaluation status / TM150 temp status

TM150

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9626, 9627
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and binector output for the status for the Terminal Module 150 (TM150).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Channel 0 alarm present	Yes	No	9626
01	Channel 0 fault present	Yes	No	9626
02	Channel 1 alarm present	Yes	No	9626
03	Channel 1 fault present	Yes	No	9626
04	Channel 2 alarm present	Yes	No	9626
05	Channel 2 fault present	Yes	No	9626
06	Channel 3 alarm present	Yes	No	9626
07	Channel 3 fault present	Yes	No	9626
08	Channel 4 alarm present	Yes	No	9626
09	Channel 4 fault present	Yes	No	9626
10	Channel 5 alarm present	Yes	No	9626
11	Channel 5 fault present	Yes	No	9626
12	Channel 6 alarm present	Yes	No	9627
13	Channel 6 fault present	Yes	No	9627
14	Channel 7 alarm present	Yes	No	9627
15	Channel 7 fault present	Yes	No	9627
16	Channel 8 alarm present	Yes	No	9627
17	Channel 8 fault present	Yes	No	9627
18	Channel 9 alarm present	Yes	No	9627
19	Channel 9 fault present	Yes	No	9627
20	Channel 10 alarm present	Yes	No	9627
21	Channel 10 fault present	Yes	No	9627
22	Channel 11 alarm present	Yes	No	9627
23	Channel 11 fault present	Yes	No	9627

Dependency: Refer to: p4102, p4103, r4105, p4118

r4104.0...1 BO: TM31 temperature evaluation status / TM31 temp status

TM31

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 9549, 9576
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and binector output for the status for the Terminal Module 31 (TM31).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Alarm is present	Yes	No	-
01	Fault is present	Yes	No	-

Dependency: Refer to: p4102

r4105 CO: Spindle supplementary temperature actual value / Suppl_temp act val

SERVO (Spin_diag), SERVO_AC (Spin_diag)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°C]	- [°C]	- [°C]

Description: Displays the actual value when evaluating the spindle supplementary temperature.

Dependency: Refer to: p4100, r4104

Note: r4105 = -200 °C is displayed in the following cases:

- the temperature display is not valid (temperature sensor fault, also see r4104.2).
- no sensor selected or sensor not available (p4100 = 0).

r4105[0...3] CO: TM120 temperature actual value / TM120 temp_act val

TM120

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8016, 9605, 9606
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°C]	- [°C]	- [°C]

Description: Displays the temperature actual value for the Terminal Module 120 (TM120)

Index:
[0] = Temperature channel 0
[1] = Temperature channel 1
[2] = Temperature channel 2
[3] = Temperature channel 3

Dependency: For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100 = 1, 4), the following applies:

- below the nominal response temperature, r4105 = -50°C.
- above the nominal response temperature, r4105 = 250 °C.

For sensor type "KTY84" "PT1000" (p4100 = 2, 6), the following applies:

- the displayed value corresponds to the temperature actual value.

Refer to: p4100

Note: r4105[0...3] = -300 °C is displayed in the following cases:

- temperature actual value invalid (F35920 ... F35923 output).
- no sensor selected (p4100[0...3] = 0).

The temperature sensor is connected to the following terminals:

X521.2(+), X521.1(-) = channel 0
X521.4(+), X521.3(-) = channel 1
X521.6(+), X521.5(-) = channel 2
X521.8(+), X521.7(-) = channel 3

r4105[0...11] CO: TM150 temperature actual value / TM150 temp_act val

TM150			
	Can be changed: -	**Calculated:** -	**Access level:** 1
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9626, 9627
	P-Group: Terminals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [°C]	- [°C]	- [°C]

Description: Displays the temperature actual value for the Terminal Module 150 (TM150)

Index:
[0] = Temperature channel 0
[1] = Temperature channel 1
[2] = Temperature channel 2
[3] = Temperature channel 3
[4] = Temperature channel 4
[5] = Temperature channel 5
[6] = Temperature channel 6
[7] = Temperature channel 7
[8] = Temperature channel 8
[9] = Temperature channel 9
[10] = Temperature channel 10
[11] = Temperature channel 11

Dependency: For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[0...11] = 1, 4), the following applies:

- below the nominal response temperature, r4105[0...11] = -50 °C.
- above the nominal response temperature, r4105[0...11] = 250 °C.

For sensor type "KTY84", "PT100", "PT1000" (p4100[0...11] = 2, 5, 6) the following applies:

- the displayed value corresponds to the temperature actual value.

Refer to: p4100, p4111, r4112, r4113, r4114

Note: r4105[0...11] = -300 °C is displayed in the following cases:

- temperature actual value invalid (F35920 ... F35931 output).
- no sensor selected (p4100[0...11] = 0).

The temperature actual values can be grouped using p4111[0...2] and the maximum value, minimum value as well as the average value for each group evaluated (r4112[0...2], r4113[0...2], r4114[0...2]).

r4105 CO: TM31 temperature actual value / TM31 temp_act val

TM31			
	Can be changed: -	**Calculated:** -	**Access level:** 1
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9549, 9576
	P-Group: Terminals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [°C]	- [°C]	- [°C]

Description: Displays the temperature actual value for the Terminal Module 31 (TM31)

Dependency: For sensor type "PTC thermistor" (p4100 = 1), the following applies:

- below the nominal response temperature, r4105 = -50°C.
- above the nominal response temperature, r4105 = 250 °C.

For sensor type "KTY84" "PT1000" (p4100 = 2, 6), the following applies:

- the displayed value corresponds to the temperature actual value.

Refer to: p4100

Note: r4105 = -300 °C is displayed in the following cases:

- temperature actual value invalid (F35920 output).
- no sensor selected (p4100 = 0).

The temperature sensor is connected at terminals X522.7(+) and X522.8(-).

r4107 Spindle supplementary temperature sensor use / Supp_temp_sens_use

SERVO (Spin_diag), SERVO_AC (Spin_diag)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	6	-

Description: Displays the installation location of the sensor to evaluate the spindle supplementary temperature.

Value:
0: None
1: Temperature S6
2: Bearing temperature front
3: Bearing temperature rear
4: Housing temperature front
5: Housing temperature rear
6: Cooling medium temperature intake

Dependency: Refer to: p4100

Note: The installation location of the temperature sensor is specified by the manufacturer.

p4108[0...5] TM150 terminal block measuring method / TM150 meas method

TM150

Can be changed: T	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 9625, 9626, 9627
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	3	1

Description: Sets the measuring method for the terminal block X531 ... X536 for the Terminal Module 150 (TM150).

For p4108[0...5] = 0 (1x2 wire evaluation):

- the temperature sensor is connected at terminals 1(+) and 2(-).

For p4108[0...5] = 1 (2x2 wire evaluation):

- the first temperature sensor is connected at terminals 1(+) and 2(-).
- the second temperature sensor is connected at terminals 3(+) and 4(-).

For p4108[0...5] = 2 (3 wire evaluation):

- the temperature sensor is connected at terminals 3(+) and 4(-).
- the measuring conductor is connected at terminal 1(+).
- terminals 2(-) and 4(-) must be jumpered.

For p4108[0...5] = 3 (4 wire evaluation):

- the temperature sensor is connected at terminals 3(+) and 4(-).
- the measuring conductor is connected at terminals 1(+) and 2(-).

Value:
0: 1x2 wire evaluation
1: 2x2 wire evaluation
2: 3 wire evaluation
3: 4 wire evaluation

Index:
[0] = X531
[1] = X532
[2] = X533
[3] = X534
[4] = X535
[5] = X536

Note: The temperature sensors are connected to the following terminals:

X531 = channel 0 (for 2x2 wire evaluation, additionally channel 6)

X532 = channel 1 (for 2x2 wire evaluation, additionally channel 7)

X533 = channel 2 (for 2x2 wire evaluation, additionally channel 8)

X534 = channel 3 (for 2x2 wire evaluation, additionally channel 9)

X535 = channel 4 (for 2x2 wire evaluation, additionally channel 10)

X536 = channel 5 (for 2x2 wire evaluation, additionally channel 11)

For p4108[0...5] = 0, 2, 3 (1x2, 3, 4 wire evaluation):

The temperature channel belonging to the terminal block with the higher number is automatically deactivated (e.g. for X531 with 3-wire evaluation, channel 6 is deactivated).

p4109[0...11] TM150 wire resistance measurement / TM150 R_wire meas

TM150

Can be changed: T	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 9626, 9627
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Setting to start the measurement of the wire resistance for a channel for the Terminal Module 150 (TM150).

For a 2 wire evaluation, the total wire resistance is measured and saved. During the temperature evaluation, the temperature actual value is automatically calibrated using the measured wire resistance.

Procedure:

1. Select the measuring method (1x2/2x2) for the corresponding terminal block (p4108[0...5] = 0, 1).
2. Set the required sensor type for the corresponding channel (p4100[x] = 1 ... 6, x = 0...5 or 0...11).
3. Jumper the sensor to be connected (short-circuit the sensor cable close to the sensor).
4. Connect the sensor conductors to the appropriate terminals 1(+), 2(-) or 3(+), 4(-).
5. For the corresponding channel, start the measurement of the wire resistance (p4109[x] = 1).
6. After p4109[x] = 0, check the measured resistance value in p4110[x].
7. Remove the jumper across the temperature sensor.

Value:
0: Inactive
1: Start

Index:
[0] = Temperature channel 0
[1] = Temperature channel 1
[2] = Temperature channel 2
[3] = Temperature channel 3
[4] = Temperature channel 4
[5] = Temperature channel 5
[6] = Temperature channel 6
[7] = Temperature channel 7
[8] = Temperature channel 8
[9] = Temperature channel 9
[10] = Temperature channel 10
[11] = Temperature channel 11

Dependency: Refer to: p4100, p4108, p4110

Notice: Wire resistance measurement is only possible for 1x2 or 2x2 wire evaluation (p4108[0...5] = 0, 1).

Note: The wire resistance value can be also directly entered into p4110[0...11].

The automatic conductor calibration for 1x2 and 2x2 wire evaluation is always performed with the value in p4110[0...11].

p4110[0...11] TM150 wire resistance value / TM150 R_wire value

TM150			
	Can be changed: T	**Calculated:** -	**Access level:** 1
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9626, 9627
	P-Group: -	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [ohm]	3000.00 [ohm]	0.00 [ohm]

Description: Sets and displays the wire resistance for Terminal Module 150 (TM150).

The value is used for the automatic conductor calibration.

The value is automatically set by starting the wire resistance measurement (p4109[0...11]) of the corresponding channel.

Index:
[0] = Temperature channel 0
[1] = Temperature channel 1
[2] = Temperature channel 2
[3] = Temperature channel 3
[4] = Temperature channel 4
[5] = Temperature channel 5
[6] = Temperature channel 6
[7] = Temperature channel 7
[8] = Temperature channel 8
[9] = Temperature channel 9
[10] = Temperature channel 10
[11] = Temperature channel 11

Dependency: Refer to: p4109

Notice: Wire resistance measurement is only possible for 1x2 or 2x2 wire evaluation (p4108[0...5] = 0, 1).

Note: Automatic conductor calibration is deactivated using p4110[0...11] = 0.

p4111[0...2] TM150 group channel assignment / TM150 grp channel

TM150			
	Can be changed: T	**Calculated:** -	**Access level:** 1
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 9625
	P-Group: -	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	0000 0000 0000 0000 bin

Description: Assigns the temperature channels to groups for the Terminal Module 150 (TM150)

For each group, the following calculated values are provided from the temperature actual values (r4105[0...11]):

- Maximum value (r4112[0...2])

- Minimum value (r4113[0...2])

- average value (r4114[0...2])

Index:
[0] = Group 0
[1] = Group 1
[2] = Group 2

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Temperature channel 0	Yes	No	-
01	Temperature channel 1	Yes	No	-
02	Temperature channel 2	Yes	No	-
03	Temperature channel 3	Yes	No	-
04	Temperature channel 4	Yes	No	-
05	Temperature channel 5	Yes	No	-
06	Temperature channel 6	Yes	No	-
07	Temperature channel 7	Yes	No	-
08	Temperature channel 8	Yes	No	-
09	Temperature channel 9	Yes	No	-
10	Temperature channel 10	Yes	No	-
11	Temperature channel 11	Yes	No	-

Dependency: Refer to: r4105, r4112, r4113, r4114

Notice: When forming groups, it must be ensured that in one particular group, only temperature channels with the following sensor types are included:

- "KTY84", "PT100", "PT1000" (p4100[0...11] = 2, 5, 6), real temperature actual value

or alternatively

- "PTC thermistor", "bimetallic NC contact" (p4100[0...11] = 1, 4), fictitious temperature actual value (-50 °C, 250 °C)

If these sensor types are combined within one group, then the calculated values for maximum, minimum and average value will be falsified.

Note: Active and inactive temperature channels can be included in one group. However, when calculating the values (r4112, r4113, r4114) only the active temperature channels with valid actual value are taken into account (r4105[0...11] not equal to -300 °C).

r4112[0...2] CO: TM150 group temperature actual value maximum value / TM150 grp temp max

TM150

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9625
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°C]	- [°C]	- [°C]

Description: Display and connector output for the maximum value of each group for the Terminal Module 150 (TM150).

This value is calculated from the actual temperature values (r4105[0...11]) of each group.

Recommendation: The following connector inputs can use these connector outputs for interconnection:

- CI: p0603
- CI: p0608[0...3]
- CI: p0609[0...3]
- CI: p2051

Index: [0] = Group 0
[1] = Group 1
[2] = Group 2

Dependency: Refer to: r4105, p4111, r4113, r4114

r4113[0...2] CO: TM150 group temperature actual value minimum value / TM150 grp temp min

TM150

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9625
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°C]	- [°C]	- [°C]

Description: Display and connector output for the minimum value of each group for the Terminal Module 150 (TM150).

This value is calculated from the actual temperature values (r4105[0...11]) of each group.

Recommendation: The following connector inputs can use these connector outputs for interconnection:

- CI: p0603
- CI: p0608[0...3]
- CI: p0609[0...3]
- CI: p2051

Index: [0] = Group 0
[1] = Group 1
[2] = Group 2

Dependency: Refer to: r4105, p4111, r4112, r4114

r4114[0...2] CO: TM150 group temperature average actual value / TM150 grp temp av

TM150

Can be changed: - | **Calculated:** - | **Access level:** 1
Data type: FloatingPoint32 | **Dyn. index:** - | **Func. diagram:** 9625
P-Group: Terminals | **Unit group:** - | **Unit selection:** -
Not for motor type: - | **Scaling:** p2006 | **Expert list:** 1

Min	Max	Factory setting
- [°C]	- [°C]	- [°C]

Description: Display and connector output for the average value of each group for the Terminal Module 150 (TM150).

This value is calculated from the actual temperature values (r4105[0...11]) of each group.

Recommendation: The following connector inputs can use these connector outputs for interconnection:

- CI: p0603
- CI: p0608[0...3]
- CI: p0609[0...3]
- CI: p2051

Index:
[0] = Group 0
[1] = Group 1
[2] = Group 2

Dependency: Refer to: r4105, p4111, r4112, r4113

Note: If one group is assigned sensor type "PTC" or "bimetal NC contact", then the average value -300 °C is output.

p4117[0...2] TM150 group sensor error effect / TM150 error effect

TM150

Can be changed: U, T | **Calculated:** - | **Access level:** 1
Data type: Integer16 | **Dyn. index:** - | **Func. diagram:** 9625
P-Group: - | **Unit group:** - | **Unit selection:** -
Not for motor type: - | **Scaling:** - | **Expert list:** 1

Min	Max	Factory setting
0	1	0

Description: Sets the effect for an error of a sensor of a group for Terminal Module TM150 (TM150).

For p4117 = 0, the following applies:

The defective temperature sensor assigned to a group is not take into account when forming the group.

For p4117 = 1, the following applies:

For a sensor error, for the maximum value, minimum value and average value of the corresponding group, a value of -300 °C is output.

Value:
0: Skip sensor
1: Output value = -300 °C

Index:
[0] = Group 0
[1] = Group 1
[2] = Group 2

Dependency: Refer to: r4105, p4111, r4112, r4113, r4114

p4118[0...11] TM150 fault threshold/alarm threshold hysteresis / TM150 thresh hyst

TM150

Can be changed: T | **Calculated:** - | **Access level:** 1
Data type: Unsigned16 | **Dyn. index:** - | **Func. diagram:** 9626, 9627
P-Group: - | **Unit group:** - | **Unit selection:** -
Not for motor type: - | **Scaling:** - | **Expert list:** 1

Min	Max	Factory setting
0 [K]	50 [K]	5 [K]

Description: Sets the hysteresis for the fault threshold/alarm threshold (p4102[0...23]) for the Terminal Module 150 (TM150).

Index:
[0] = Temperature channel 0
[1] = Temperature channel 1
[2] = Temperature channel 2
[3] = Temperature channel 3
[4] = Temperature channel 4
[5] = Temperature channel 5

[6] = Temperature channel 6
[7] = Temperature channel 7
[8] = Temperature channel 8
[9] = Temperature channel 9
[10] = Temperature channel 10
[11] = Temperature channel 11

Dependency: Refer to: p4102, p4103, r4104, r4105

Note: The following applies for a corresponding alarm:

- Remains until the temperature actual value (r4105[x]) reaches or falls below the threshold value (p4102[2x]) - hysteresis (p4118[x]).

The following applies for a corresponding fault:

- Remains until the temperature actual value (r4105[x]) reaches or falls below the threshold value (p4102[2x+1]) - hysteresis (p4118[x]) and the fault has been acknowledged.

p4119[0...11] TM150 activate/deactivate smoothing / TM150 smooth act

TM150			
	Can be changed: T	**Calculated:** -	**Access level:** 1
	Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 9626, 9627
	P-Group: -	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	1	0

Description: Setting to activate/deactivate the filter to smooth the temperature signal for the Terminal Module 150 (TM150).

The smoothing is realized with a 1st order lowpass filter

The effective smoothing time constant depends on the number of channels that are simultaneously active and is displayed in r4120.

Value:
0: Filter deactivated
1: Filter activated

Index:
[0] = Temperature channel 0
[1] = Temperature channel 1
[2] = Temperature channel 2
[3] = Temperature channel 3
[4] = Temperature channel 4
[5] = Temperature channel 5
[6] = Temperature channel 6
[7] = Temperature channel 7
[8] = Temperature channel 8
[9] = Temperature channel 9
[10] = Temperature channel 10
[11] = Temperature channel 11

Dependency: Refer to: r4120

r4120[0...11] TM150 actual smoothing time in ms / TM150 actval T ms

TM150			
	Can be changed: -	**Calculated:** -	**Access level:** 1
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 9626, 9627
	P-Group: -	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [ms]	- [ms]	- [ms]

Description: Displays the implemented smoothing time constant for the temperature filter for the Terminal Module 150 (TM150).

Index:
[0] = Temperature channel 0
[1] = Temperature channel 1
[2] = Temperature channel 2
[3] = Temperature channel 3
[4] = Temperature channel 4
[5] = Temperature channel 5
[6] = Temperature channel 6
[7] = Temperature channel 7
[8] = Temperature channel 8

[9] = Temperature channel 9
[10] = Temperature channel 10
[11] = Temperature channel 11

Dependency: Refer to: r4105, p4111, r4112, r4113, p4122

p4121 TM150 filter rated line frequency / TM150 filt f_line

TM150

Can be changed: T	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 9626, 9627
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the rated line frequency for the filter to skip the line frequency for Terminal Module 150 (TM150).

Value:
0: 50 Hz
1: 60 Hz

p4122[0...11] TM150 smoothing time constant / TM150 T

TM150

Can be changed: T	**Calculated:** -	**Access level:** 1
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 9626, 9627
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
100 [ms]	10000 [ms]	100 [ms]

Description: Sets the smoothing time constant for the 1st order lowpass filter of the temperature channels.

The effective smoothing time constant depends on the number of channels that are simultaneously active and is displayed in r4120.

In order that the value becomes effective, p4122 must be set >= 2 *channel sampling time.

The following applies:

Channel sampling time = active number of channels * 50ms

For lower values, a smoothing of 2 * channel sampling time.

Index:
[0] = Temperature channel 0
[1] = Temperature channel 1
[2] = Temperature channel 2
[3] = Temperature channel 3
[4] = Temperature channel 4
[5] = Temperature channel 5
[6] = Temperature channel 6
[7] = Temperature channel 7
[8] = Temperature channel 8
[9] = Temperature channel 9
[10] = Temperature channel 10
[11] = Temperature channel 11

Dependency: Refer to: r4120

r4154 TM41 diagnostics speed setpoint non-filtered / Diag n_set nfilt

TM41

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the unfiltered speed setpoint N_SETPT in revolutions per minute for diagnostic purposes.

In contrast to p1155, this value is updated in each DRIVE-CLiQ basic clock cycle and displayed with sign.

Dependency: Refer to: r4155

Note: The parameter is not effective in the SINAMICS operating mode (p4400 = 1).

r4155 TM41 diagnostics speed setpoint / TM41 Diag n_set

TM41

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9674
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the filtered speed setpoint N_SETPT in revolutions per minute for diagnostic purposes.
In contrast to p1155, this value is updated in each DRIVE-CLiQ basic clock cycle and displayed with sign.

Dependency: Refer to: r4154

Note: The parameter is not effective in the SINAMICS operating mode (p4400 = 1).

r4201 TM15 system time for synchronization / TM15 t_system sync

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Is used to synchronize the timer of Terminal Module 15 (TM15) with the system time of the DP master.
To do this, the sign-of-life of the DP master is transferred in the form of a counter in bits 12 to 15.
At each cycle of the system of the DP master, bit 0 (SYN signal) is set for the duration of a DP master clock cycle.

r4201 TM17 system time for synchronization / TM17 t_system sync

TM17

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Is used to synchronize the timer of Terminal Module 17 (TM17) with the system time of the DP master.
To do this, the sign-of-life of the DP master is transferred in the form of a counter in bits 12 to 15.
At each cycle of the system of the DP master, bit 0 (SYN signal) is set for the duration of a DP master clock cycle.

r4204 TM15 control digital output 0 ... 15 / TM15 ctrl DO 0-15

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Used to control digital output 0 ... 15 of Terminal Module 15 (TM15).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI/DO 0 (X520.2)	ON	OFF	-
01	DI/DO 1 (X520.3)	ON	OFF	-
02	DI/DO 2 (X520.4)	ON	OFF	-
03	DI/DO 3 (X520.5)	ON	OFF	-
04	DI/DO 4 (X520.6)	ON	OFF	-
05	DI/DO 5 (X520.7)	ON	OFF	-
06	DI/DO 6 (X520.8)	ON	OFF	-
07	DI/DO 7 (X520.9)	ON	OFF	-
08	DI/DO 8 (X521.2)	ON	OFF	-
09	DI/DO 9 (X521.3)	ON	OFF	-
10	DI/DO 10 (X522.4)	ON	OFF	-

11	DI/DO 11 (X521.5)	ON	OFF	-
12	DI/DO 12 (X521.6)	ON	OFF	-
13	DI/DO 13 (X521.7)	ON	OFF	-
14	DI/DO 14 (X521.8)	ON	OFF	-
15	DI/DO 15 (X521.9)	ON	OFF	-

Note: DI/DO: Bidirectional Digital Input/Output

r4204 TM17 control digital output 0 ... 15 / TM17 ctrl DO 0-15

TM17

Can be changed: - | **Calculated:** - | **Access level:** 3
Data type: Unsigned16 | **Dyn. index:** - | **Func. diagram:** -
P-Group: Commands | **Unit group:** - | **Unit selection:** -
Not for motor type: - | **Scaling:** - | **Expert list:** 1

Min	Max	Factory setting
-	-	-

Description: Used to control digital output 0 ... 15 of Terminal Module 17 (TM17).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI/DO 0 (X520.2)	ON	OFF	-
01	DI/DO 1 (X520.3)	ON	OFF	-
02	DI/DO 2 (X520.5)	ON	OFF	-
03	DI/DO 3 (X520.6)	ON	OFF	-
04	DI/DO 4 (X520.8)	ON	OFF	-
05	DI/DO 5 (X520.9)	ON	OFF	-
06	DI/DO 6 (X521.2)	ON	OFF	-
07	DI/DO 7 (X521.3)	ON	OFF	-
08	DI/DO 8 (X521.8)	ON	OFF	-
09	DI/DO 9 (X521.9)	ON	OFF	-
10	DI/DO 10 (X522.2)	ON	OFF	-
11	DI/DO 11 (X522.3)	ON	OFF	-
12	DI/DO 12 (X522.5)	ON	OFF	-
13	DI/DO 13 (X522.6)	ON	OFF	-
14	DI/DO 14 (X522.8)	ON	OFF	-
15	DI/DO 15 (X522.9)	ON	OFF	-

Note: DI/DO: Bidirectional Digital Input/Output

r4205 TM15 control digital output 16 ... 23 / TM15 ctrl DO 16-23

TM15

Can be changed: - | **Calculated:** - | **Access level:** 3
Data type: Unsigned16 | **Dyn. index:** - | **Func. diagram:** -
P-Group: Commands | **Unit group:** - | **Unit selection:** -
Not for motor type: - | **Scaling:** - | **Expert list:** 1

Min	Max	Factory setting
-	-	-

Description: Used to control digital output 16 ... 23 of Terminal Module 15 (TM15).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI/DO 16 (X522.2)	ON	OFF	-
01	DI/DO 17 (X522.3)	ON	OFF	-
02	DI/DO 18 (X522.4)	ON	OFF	-
03	DI/DO 19 (X522.5)	ON	OFF	-
04	DI/DO 20 (X522.6)	ON	OFF	-
05	DI/DO 21 (X522.7)	ON	OFF	-
06	DI/DO 22 (X522.8)	ON	OFF	-
07	DI/DO 23 (X522.9)	ON	OFF	-

Note: DI/DO: Bidirectional Digital Input/Output

r4211 TM15 edge mode digital input 0 ... 7 / TM15 EdgMd DI0-7

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the edge mode for digital input 0 ... 7 of Terminal Module 15 (TM15).
Assignment of the digital inputs to the bits:
DI 0: r4211.1 ... 0
DI 1: r4211.3 ... 2
DI 2: r4211.5 ... 4
DI 3: r4211.7 ... 6
DI 4: r4211.9 ... 8
DI 5: r4211.11 ... 10
DI 6: r4211.13 ... 12
DI 7: r4211.15 ... 14
Possible edge modes:
Bit x, y = 0, 0 --> no edge detection
Bit x, y = 0, 1 --> rising - rising edge
Bit x, y = 1, 0 --> falling - falling edge
Bit x, y = 1, 1 --> rising - falling edge or falling - rising edge

Note: DI: Digital Input

r4211 TM17 edge mode digital input 0 ... 7 / TM17 EdgMd DI 0-7

TM17

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the edge mode for digital input 0 ... 7 of Terminal Module 17 (TM17).
Assignment of the digital inputs to the bits:
DI 0: r4211.1 ... 0
DI 1: r4211.3 ... 2
DI 2: r4211.5 ... 4
DI 3: r4211.7 ... 6
DI 4: r4211.9 ... 8
DI 5: r4211.11 ... 10
DI 6: r4211.13 ... 12
DI 7: r4211.15 ... 14
Possible edge modes:
Bit x, y = 0, 0 --> no edge detection
Bit x, y = 0, 1 --> rising - rising edge
Bit x, y = 1, 0 --> falling - falling edge
Bit x, y = 1, 1 --> rising - falling edge or falling - rising edge

Note: DI: Digital Input

r4212 TM15 edge mode digital input 8 ... 15 / TM15 EdgMd DI8-15

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the edge mode for digital input 8 ... 15 of Terminal Module 15 (TM15).
Assignment of the digital inputs to the bits:
DI 8: r4212.1 ... 0
DI 9: r4212.3 ... 2
DI 10: r4212.5 ... 4
DI 11: r4212.7 ... 6
DI 12: r4212.9 ... 8
DI 13: r4212.11 ... 10
DI 14: r4212.13 ... 12
DI 15: r4212.15 ... 14
Possible edge modes:
Bit x, y = 0, 0 --> no edge detection
Bit x, y = 0, 1 --> rising - rising edge
Bit x, y = 1, 0 --> falling - falling edge
Bit x, y = 1, 1 --> rising - falling edge or falling - rising edge

Note: DI: Digital Input

r4212 TM17 edge mode digital input 8 ... 15 / TM17 EdgMd DI 8-15

TM17

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the edge mode for digital input 8 ... 15 of Terminal Module 17 (TM17).
Assignment of the digital inputs to the bits:
DI 8: r4212.1 ... 0
DI 9: r4212.3 ... 2
DI 10: r4212.5 ... 4
DI 11: r4212.7 ... 6
DI 12: r4212.9 ... 8
DI 13: r4212.11 ... 10
DI 14: r4212.13 ... 12
DI 15: r4212.15 ... 14
Possible edge modes:
Bit x, y = 0, 0 --> no edge detection
Bit x, y = 0, 1 --> rising - rising edge
Bit x, y = 1, 0 --> falling - falling edge
Bit x, y = 1, 1 --> rising - falling edge or falling - rising edge

Note: DI: Digital Input

r4213 TM15 edge mode digital input 16 ... 23 / TM15 EdgMd DI16-23

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the edge mode for digital input 16 ... 23 of Terminal Module 15 (TM15).

Assignment of the digital inputs to the bits:

DI 16: r4213.1 ... 0
DI 17: r4213.3 ... 2
DI 18: r4213.5 ... 4
DI 19: r4213.7 ... 6
DI 20: r4213.9 ... 8
DI 21: r4213.11 ... 10
DI 22: r4213.13 ... 12
DI 23: r4213.15 ... 14

Possible edge modes:

Bit x, y = 0, 0 --> no edge detection
Bit x, y = 0, 1 --> rising - rising edge
Bit x, y = 1, 0 --> falling - falling edge
Bit x, y = 1, 1 --> rising - falling edge or falling - rising edge

Note: DI: Digital Input

p4220 TM17 enable DI/DO 0 ... 5 / TM17 enable 0-5

TM17

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 bin

Description: Sets the enable signal with bits 0 ... 5 for DI/DO 0 ... 5 of Terminal Module 17 (TM17).

Sets the triggering of the enable signal with bits 8 ... 13.

The following assignment applies:

Enable signal for DI/DO 0, 1, 2, 3, 4 or 5 via DI/DO 10, 11, 12, 13, 14 or 15.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI/DO 0 (X520.2)	With enable	Without enable	-
01	DI/DO 1 (X520.3)	With enable	Without enable	-
02	DI/DO 2 (X520.5)	With enable	Without enable	-
03	DI/DO 3 (X520.6)	With enable	Without enable	-
04	DI/DO 4 (X520.8)	With enable	Without enable	-
05	DI/DO 5 (X520.9)	With enable	Without enable	-
08	DI/DO 10 (X522.2)	Level-triggered	Edge-triggered	-
09	DI/DO 11 (X522.3)	Level-triggered	Edge-triggered	-
10	DI/DO 12 (X522.5)	Level-triggered	Edge-triggered	-
11	DI/DO 13 (X522.6)	Level-triggered	Edge-triggered	-
12	DI/DO 14 (X522.8)	Level-triggered	Edge-triggered	-
13	DI/DO 15 (X522.9)	Level-triggered	Edge-triggered	-

Note: DI/DO: Bidirectional Digital Input/Output

p4221 TM17 smoothing time constant digital input 0 ... 15 / TM17 T_sm DI 0-15

TM17

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 bin

Description: Sets the smoothing time constant for digital input 0 ... 15 of Terminal Module 17 (TM17).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI/DO 0 (X520.2)	Smoothing 1 µs	Smoothing 125 µs	-
01	DI/DO 1 (X520.3)	Smoothing 1 µs	Smoothing 125 µs	-
02	DI/DO 2 (X520.5)	Smoothing 1 µs	Smoothing 125 µs	-
03	DI/DO 3 (X520.6)	Smoothing 1 µs	Smoothing 125 µs	-
04	DI/DO 4 (X520.8)	Smoothing 1 µs	Smoothing 125 µs	-
05	DI/DO 5 (X520.9)	Smoothing 1 µs	Smoothing 125 µs	-
06	DI/DO 6 (X521.2)	Smoothing 1 µs	Smoothing 125 µs	-
07	DI/DO 7 (X521.3)	Smoothing 1 µs	Smoothing 125 µs	-
08	DI/DO 8 (X521.8)	Smoothing 1 µs	Smoothing 125 µs	-
09	DI/DO 9 (X521.9)	Smoothing 1 µs	Smoothing 125 µs	-
10	DI/DO 10 (X522.2)	Smoothing 1 µs	Smoothing 125 µs	-
11	DI/DO 11 (X522.3)	Smoothing 1 µs	Smoothing 125 µs	-
12	DI/DO 12 (X522.5)	Smoothing 1 µs	Smoothing 125 µs	-
13	DI/DO 13 (X522.6)	Smoothing 1 µs	Smoothing 125 µs	-
14	DI/DO 14 (X522.8)	Smoothing 1 µs	Smoothing 125 µs	-
15	DI/DO 15 (X522.9)	Smoothing 1 µs	Smoothing 125 µs	-

Note: DI: Digital Input

DI/DO: Bidirectional Digital Input/Output

p4222 TM17 time absolute/relative digital output 0 ... 15 / TM17 abs/rel 0-15

TM17

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 bin

Description: Sets as absolute or relative timing with bit 0 ... 15 for digital output 0 ... 15 of Terminal Module 17 (TM17).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI/DO 0 (X520.2)	Relative time	Absolute time	-
01	DI/DO 1 (X520.3)	Relative time	Absolute time	-
02	DI/DO 2 (X520.5)	Relative time	Absolute time	-
03	DI/DO 3 (X520.6)	Relative time	Absolute time	-
04	DI/DO 4 (X520.8)	Relative time	Absolute time	-
05	DI/DO 5 (X520.9)	Relative time	Absolute time	-
06	DI/DO 6 (X521.2)	Relative time	Absolute time	-
07	DI/DO 7 (X521.3)	Relative time	Absolute time	-
08	DI/DO 8 (X521.8)	Relative time	Absolute time	-
09	DI/DO 9 (X521.9)	Relative time	Absolute time	-
10	DI/DO 10 (X522.2)	Relative time	Absolute time	-
11	DI/DO 11 (X522.3)	Relative time	Absolute time	-
12	DI/DO 12 (X522.5)	Relative time	Absolute time	-
13	DI/DO 13 (X522.6)	Relative time	Absolute time	-
14	DI/DO 14 (X522.8)	Relative time	Absolute time	-
15	DI/DO 15 (X522.9)	Relative time	Absolute time	-

Note: DO: Digital Output

DI/DO: Bidirectional Digital Input/Output

r4250 TM15 set/reset time digital output 0 / TM15 t_set DO 0

TM15	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Commands	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the time to set and reset for digital output 0 of Terminal Module 15 (TM15).

The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DO: Digital Output

r4250 TM17 set/reset time digital output 0 / TM17 t_set DO 0

TM17	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Commands	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the time to set and reset for digital output 0 of Terminal Module 17 (TM17).

The two times are specified as 16 bit values with a resolution of 0.25 µs.

Note: DO: Digital Output

r4251 TM15 set/reset time digital output 1 / TM15 t_set DO 1

TM15	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Commands	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the time to set and reset for digital output 1 of Terminal Module 15 (TM15).

The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DO: Digital Output

r4251 TM17 set/reset time digital output 1 / TM17 t_set DO 1

TM17	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Commands	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the time to set and reset for digital output 1 of Terminal Module 17 (TM17).

The two times are specified as 16 bit values with a resolution of 0.25 µs.

Note: DO: Digital Output

r4252 TM15 set/reset time digital output 2 / TM15 t_set DO 2

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time to set and reset for digital output 2 of Terminal Module 15 (TM15).
The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DO: Digital Output

r4252 TM17 set/reset time digital output 2 / TM17 t_set DO 2

TM17

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time to set and reset for digital output 2 of Terminal Module 17 (TM17).
The two times are specified as 16 bit values with a resolution of 0.25 µs.

Note: DO: Digital Output

r4253 TM15 set/reset time digital output 3 / TM15 t_set DO 3

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time to set and reset for digital output 3 of Terminal Module 15 (TM15).
The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DO: Digital Output

r4253 TM17 set/reset time digital output 3 / TM17 t_set DO 3

TM17

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time to set and reset for digital output 3 of Terminal Module 17 (TM17).
The two times are specified as 16 bit values with a resolution of 0.25 µs.

Note: DO: Digital Output

r4254 TM15 set/reset time digital output 4 / TM15 t_set DO 4

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time to set and reset for digital output 4 of Terminal Module 15 (TM15).
The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DO: Digital Output

r4254 TM17 set/reset time digital output 4 / TM17 t_set DO 4

TM17

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time to set and reset for digital output 4 of Terminal Module 17 (TM17).
The two times are specified as 16 bit values with a resolution of 0.25 µs.

Note: DO: Digital Output

r4255 TM15 set/reset time digital output 5 / TM15 t_set DO 5

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time to set and reset for digital output 5 of Terminal Module 15 (TM15).
The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DO: Digital Output

r4255 TM17 set/reset time digital output 5 / TM17 t_set DO 5

TM17

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time to set and reset for digital output 5 of Terminal Module 17 (TM17).
The two times are specified as 16 bit values with a resolution of 0.25 µs.

Note: DO: Digital Output

r4256 TM15 set/reset time digital output 6 / TM15 t_set DO 6

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time to set and reset for digital output 6 of Terminal Module 15 (TM15).
The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DO: Digital Output

r4256 TM17 set/reset time digital output 6 / TM17 t_set DO 6

TM17

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time to set and reset for digital output 6 of Terminal Module 17 (TM17).
The two times are specified as 16 bit values with a resolution of 0.25 µs.

Note: DO: Digital Output

r4257 TM15 set/reset time digital output 7 / TM15 t_set DO 7

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time to set and reset for digital output 7 of Terminal Module 15 (TM15).
The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DO: Digital Output

r4257 TM17 set/reset time digital output 7 / TM17 t_set DO 7

TM17

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time to set and reset for digital output 7 of Terminal Module 17 (TM17).
The two times are specified as 16 bit values with a resolution of 0.25 µs.

Note: DO: Digital Output

r4258	**TM15 set/reset time digital output 8 / TM15 t_set DO 8**		
TM15	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Commands	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the time to set and reset for digital output 8 of Terminal Module 15 (TM15).
The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DO: Digital Output

r4258	**TM17 set/reset time digital output 8 / TM17 t_set DO 8**		
TM17	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Commands	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the time to set and reset for digital output 8 of Terminal Module 17 (TM17).
The two times are specified as 16 bit values with a resolution of 0.25 µs.

Note: DO: Digital Output

r4259	**TM15 set/reset time digital output 9 / TM15 t_set DO 9**		
TM15	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Commands	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the time to set and reset for digital output 9 of Terminal Module 15 (TM15).
The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DO: Digital Output

r4259	**TM17 set/reset time digital output 9 / TM17 t_set DO 9**		
TM17	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Commands	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the time to set and reset for digital output 9 of Terminal Module 17 (TM17).
The two times are specified as 16 bit values with a resolution of 0.25 µs.

Note: DO: Digital Output

r4260 TM15 set/reset time digital output 10 / TM15 t_set DO 10

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time to set and reset for digital output 10 of Terminal Module 15 (TM15).
The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DO: Digital Output

r4260 TM17 set/reset time digital output 10 / TM17 t_set DO 10

TM17

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time to set and reset for digital output 10 of Terminal Module 17 (TM17).
The two times are specified as 16 bit values with a resolution of 0.25 µs.

Note: DO: Digital Output

r4261 TM15 set/reset time digital output 11 / TM15 t_set DO 11

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time to set and reset for digital output 11 of Terminal Module 15 (TM15).
The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DO: Digital Output

r4261 TM17 set/reset time digital output 11 / TM17 t_set DO 11

TM17

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time to set and reset for digital output 11 of Terminal Module 17 (TM17).
The two times are specified as 16 bit values with a resolution of 0.25 µs.

Note: DO: Digital Output

r4262 TM15 set/reset time digital output 12 / TM15 t_set DO 12

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time to set and reset for digital output 12 of Terminal Module 15 (TM15).
The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DO: Digital Output

r4262 TM17 set/reset time digital output 12 / TM17 t_set DO 12

TM17

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time to set and reset for digital output 12 of Terminal Module 17 (TM17).
The two times are specified as 16 bit values with a resolution of 0.25 µs.

Note: DO: Digital Output

r4263 TM15 set/reset time digital output 13 / TM15 t_set DO 13

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time to set and reset for digital output 13 of Terminal Module 15 (TM15).
The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DO: Digital Output

r4263 TM17 set/reset time digital output 13 / TM17 t_set DO 13

TM17

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time to set and reset for digital output 13 of Terminal Module 17 (TM17).
The two times are specified as 16 bit values with a resolution of 0.25 µs.

Note: DO: Digital Output

r4264 TM15 set/reset time digital output 14 / TM15 t_set DO 14

TM15			
	Can be changed: -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Commands	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the time to set and reset for digital output 14 of Terminal Module 15 (TM15).
The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DO: Digital Output

r4264 TM17 set/reset time digital output 14 / TM17 t_set DO 14

TM17			
	Can be changed: -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Commands	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the time to set and reset for digital output 14 of Terminal Module 17 (TM17).
The two times are specified as 16 bit values with a resolution of 0.25 µs.

Note: DO: Digital Output

r4265 TM15 set/reset time digital output 15 / TM15 t_set DO 15

TM15			
	Can be changed: -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Commands	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the time to set and reset for digital output 15 of Terminal Module 15 (TM15).
The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DO: Digital Output

r4265 TM17 set/reset time digital output 15 / TM17 t_set DO 15

TM17			
	Can be changed: -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Commands	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the time to set and reset for digital output 15 of Terminal Module 17 (TM17).
The two times are specified as 16 bit values with a resolution of 0.25 µs.

Note: DO: Digital Output

r4266 TM15 set/reset time digital output 16 / TM15 t_set DO 16

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time to set and reset for digital output 16 of Terminal Module 15 (TM15).
The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DO: Digital Output

r4267 TM15 set/reset time digital output 17 / TM15 t_set DO 17

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time to set and reset for digital output 17 of Terminal Module 15 (TM15).
The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DO: Digital Output

r4268 TM15 set/reset time digital output 18 / TM15 t_set DO 18

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time to set and reset for digital output 18 of Terminal Module 15 (TM15).
The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DO: Digital Output

r4269 TM15 set/reset time digital output 19 / TM15 t_set DO 19

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time to set and reset for digital output 19 of Terminal Module 15 (TM15).
The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DO: Digital Output

r4270 TM15 set/reset time digital output 20 / TM15 t_set DO 20

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time to set and reset for digital output 20 of Terminal Module 15 (TM15).
The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DO: Digital Output

r4271 TM15 set/reset time digital output 21 / TM15 t_set DO 21

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time to set and reset for digital output 21 of Terminal Module 15 (TM15).
The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DO: Digital Output

r4272 TM15 set/reset time digital output 22 / TM15 t_set DO 22

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time to set and reset for digital output 22 of Terminal Module 15 (TM15).
The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DO: Digital Output

r4273 TM15 set/reset time digital output 23 / TM15 t_set DO 23

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time to set and reset for digital output 23 of Terminal Module 15 (TM15).
The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DO: Digital Output

r4301 TM15 module synchronization / TM15 module sync

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Is used to synchronize the timer of Terminal Module 15 (TM15) with the system time of the DP master.
Bit 12 ... 15:
After synchronization with the DP master, the module sends its sign-of-life in the form of a counter.
Bit 0:
This SYNC signal is set if the module has aligned its time to the system time of the DP master.
Bit 9:
This bit is set if a fault has occurred on the module (r0945).

r4301 TM17 module synchronization / TM17 module sync

TM17

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Is used to synchronize the timer of Terminal Module 17 (TM17) with the system time of the DP master.
Bit 12 ... 15:
After synchronization with the DP master, the module sends its sign-of-life in the form of a counter.
Bit 0:
This SYNC signal is set if the module has aligned its time to the system time of the DP master.
Bit 9:
This bit is set if a fault has occurred on the module (r0945).

r4304 TM15 status digital input 0 ... 15 / TM15 St DI 0-15

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays status for digital input 0 ... 15 of Terminal Module 15 (TM15).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI/DO 0 (X520.2)	ON	OFF	-
01	DI/DO 1 (X520.3)	ON	OFF	-
02	DI/DO 2 (X520.4)	ON	OFF	-
03	DI/DO 3 (X520.5)	ON	OFF	-
04	DI/DO 4 (X520.6)	ON	OFF	-
05	DI/DO 5 (X520.7)	ON	OFF	-
06	DI/DO 6 (X520.8)	ON	OFF	-
07	DI/DO 7 (X520.9)	ON	OFF	-
08	DI/DO 8 (X521.2)	ON	OFF	-
09	DI/DO 9 (X521.3)	ON	OFF	-
10	DI/DO 10 (X522.4)	ON	OFF	-
11	DI/DO 11 (X521.5)	ON	OFF	-
12	DI/DO 12 (X521.6)	ON	OFF	-

13	DI/DO 13 (X521.7)	ON	OFF	-
14	DI/DO 14 (X521.8)	ON	OFF	-
15	DI/DO 15 (X521.9)	ON	OFF	-

Note: DI/DO: Bidirectional Digital Input/Output

r4304 TM17 status digital input 0 ... 15 / TM17 St DI 0-15

TM17

Can be changed: - | **Calculated:** - | **Access level:** 3
Data type: Unsigned16 | **Dyn. index:** - | **Func. diagram:** -
P-Group: Commands | **Unit group:** - | **Unit selection:** -
Not for motor type: - | **Scaling:** - | **Expert list:** 1

Min	Max	Factory setting
-	-	-

Description: Displays status for digital input 0 ... 15 of Terminal Module 17 (TM17).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI/DO 0 (X520.2)	ON	OFF	-
01	DI/DO 1 (X520.3)	ON	OFF	-
02	DI/DO 2 (X520.5)	ON	OFF	-
03	DI/DO 3 (X520.6)	ON	OFF	-
04	DI/DO 4 (X520.8)	ON	OFF	-
05	DI/DO 5 (X520.9)	ON	OFF	-
06	DI/DO 6 (X521.2)	ON	OFF	-
07	DI/DO 7 (X521.3)	ON	OFF	-
08	DI/DO 8 (X521.8)	ON	OFF	-
09	DI/DO 9 (X521.9)	ON	OFF	-
10	DI/DO 10 (X522.2)	ON	OFF	-
11	DI/DO 11 (X522.3)	ON	OFF	-
12	DI/DO 12 (X522.5)	ON	OFF	-
13	DI/DO 13 (X522.6)	ON	OFF	-
14	DI/DO 14 (X522.8)	ON	OFF	-
15	DI/DO 15 (X522.9)	ON	OFF	-

Note: DI/DO: Bidirectional Digital Input/Output

r4305 TM15 status digital input 16 ... 23 / TM15 St DI 16-23

TM15

Can be changed: - | **Calculated:** - | **Access level:** 3
Data type: Unsigned16 | **Dyn. index:** - | **Func. diagram:** -
P-Group: Commands | **Unit group:** - | **Unit selection:** -
Not for motor type: - | **Scaling:** - | **Expert list:** 1

Min	Max	Factory setting
-	-	-

Description: Displays status for digital input 16 ... 23 of Terminal Module 15 (TM15).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI/DO 16 (X522.2)	ON	OFF	-
01	DI/DO 17 (X522.3)	ON	OFF	-
02	DI/DO 18 (X522.4)	ON	OFF	-
03	DI/DO 19 (X522.5)	ON	OFF	-
04	DI/DO 20 (X522.6)	ON	OFF	-
05	DI/DO 21 (X522.7)	ON	OFF	-
06	DI/DO 22 (X522.8)	ON	OFF	-
07	DI/DO 23 (X522.9)	ON	OFF	-

Note: DI/DO: Bidirectional Digital Input/Output

r4311 TM15 edge status digital input 0 ... 7 / TM15 EdgSt DI 0-7

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the edge status for digital input 0 ... 7 of Terminal Module 15 (TM15).
Assignment of the digital inputs to the bits:
DI 0: r4311.1 ... 0
DI 1: r4311.3 ... 2
DI 2: r4311.5 ... 4
DI 3: r4311.7 ... 6
DI 4: r4311.9 ... 8
DI 5: r4311.11 ... 10
DI 6: r4311.13 ... 12
DI 7: r4311.15 ... 14
Possible edge states:
Bit x, y = 0, 0 --> no edge detection
Bit x, y = 0, 1 --> 1st edge detected
Bit x, y = 1, 0 --> 2nd edge detected
Bit x, y = 1, 1 --> both edges detected

Note: DI: Digital Input

r4311 TM17 edge status digital input 0 ... 7 / TM17 EdgSt DI 0-7

TM17

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the edge status for digital input 0 ... 7 of Terminal Module 17 (TM17).
Assignment of the digital inputs to the bits:
DI 0: r4311.1 ... 0
DI 1: r4311.3 ... 2
DI 2: r4311.5 ... 4
DI 3: r4311.7 ... 6
DI 4: r4311.9 ... 8
DI 5: r4311.11 ... 10
DI 6: r4311.13 ... 12
DI 7: r4311.15 ... 14
Possible edge states:
Bit x, y = 0, 0 --> no edge detection
Bit x, y = 0, 1 --> 1st edge detected
Bit x, y = 1, 0 --> 2nd edge detected
Bit x, y = 1, 1 --> both edges detected

Note: DI: Digital Input

r4312 TM15 edge status digital input 8 ... 15 / TM15 EdgSt DI 8-15

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the edge status for digital input 8 ... 15 of Terminal Module 15 (TM15).
Assignment of the digital inputs to the bits:
DI 8: r4312.1 ... 0
DI 9: r4312.3 ... 2
DI 10: r4312.5 ... 4
DI 11: r4312.7 ... 6
DI 12: r4312.9 ... 8
DI 13: r4312.11 ... 10
DI 14: r4312.13 ... 12
DI 15: r4312.15 ... 14
Possible edge states:
Bit x, y = 0, 0 --> no edge detection
Bit x, y = 0, 1 --> 1st edge detected
Bit x, y = 1, 0 --> 2nd edge detected
Bit x, y = 1, 1 --> both edges detected

Note: DI: Digital Input

r4312 TM17 edge status digital input 8 ... 15 / TM17 EdgSt DI 8-15

TM17

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the edge status for digital input 8 ... 15 of Terminal Module 17 (TM17).
Assignment of the digital inputs to the bits:
DI 8: r4312.1 ... 0
DI 9: r4312.3 ... 2
DI 10: r4312.5 ... 4
DI 11: r4312.7 ... 6
DI 12: r4312.9 ... 8
DI 13: r4312.11 ... 10
DI 14: r4312.13 ... 12
DI 15: r4312.15 ... 14
Possible edge states:
Bit x, y = 0, 0 --> no edge detection
Bit x, y = 0, 1 --> 1st edge detected
Bit x, y = 1, 0 --> 2nd edge detected
Bit x, y = 1, 1 --> both edges detected

Note: DI: Digital Input

r4313 TM15 edge status digital input 16 ... 23 / TM15 EdgSt DI16-23

TM15			
	Can be changed: -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Commands	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the edge status for digital input 16 ... 23 of Terminal Module 15 (TM15).
Assignment of the digital inputs to the bits:
DI 16: r4313.1 ... 0
DI 17: r4313.3 ... 2
DI 18: r4313.5 ... 4
DI 19: r4313.7 ... 6
DI 20: r4313.9 ... 8
DI 21: r4313.11 ... 10
DI 22: r4313.13 ... 12
DI 23: r4313.15 ... 14
Possible edge states:
Bit x, y = 0, 0 --> no edge detection
Bit x, y = 0, 1 --> 1st edge detected
Bit x, y = 1, 0 --> 2nd edge detected
Bit x, y = 1, 1 --> both edges detected

Note: DI: Digital Input

r4350 TM15 edge times digital input 0 / TM15 edge_t DI 0

TM15			
	Can be changed: -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Commands	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the time when detecting the 1st and 2nd edges for digital input 0 of Terminal Module 15 (TM15).
The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DI: Digital Input

r4350 TM17 edge times digital input 0 / TM17 edge_t DI 0

TM17			
	Can be changed: -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Commands	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the time when detecting the 1st and 2nd edges for digital input 0 of Terminal Module 17 (TM17).
The two times are specified as 16 bit values with a resolution of 0.25 µs.

Note: DI: Digital Input

r4351 TM15 edge times digital input 1 / TM15 edge_t DI 1

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time when detecting the 1st and 2nd edges for digital input 1 of Terminal Module 15 (TM15).
The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DI: Digital Input

r4351 TM17 edge times digital input 1 / TM17 edge_t DI 1

TM17

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time when detecting the 1st and 2nd edges for digital input 1 of Terminal Module 17 (TM17).
The two times are specified as 16 bit values with a resolution of 0.25 µs.

Note: DI: Digital Input

r4352 TM15 edge times digital input 2 / TM15 edge_t DI 2

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time when detecting the 1st and 2nd edges for digital input 2 of Terminal Module 15 (TM15).
The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DI: Digital Input

r4352 TM17 edge times digital input 2 / TM17 edge_t DI 2

TM17

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time when detecting the 1st and 2nd edges for digital input 2 of Terminal Module 17 (TM17).
The two times are specified as 16 bit values with a resolution of 0.25 µs.

Note: DI: Digital Input

r4353 TM15 edge times digital input 3 / TM15 edge_t DI 3

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time when detecting the 1st and 2nd edges for digital input 3 of Terminal Module 15 (TM15).
The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DI: Digital Input

r4353 TM17 edge times digital input 3 / TM17 edge_t DI 3

TM17

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time when detecting the 1st and 2nd edges for digital input 3 of Terminal Module 17 (TM17).
The two times are specified as 16 bit values with a resolution of 0.25 µs.

Note: DI: Digital Input

r4354 TM15 edge times digital input 4 / TM15 edge_t DI 4

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time when detecting the 1st and 2nd edges for digital input 4 of Terminal Module 15 (TM15).
The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DI: Digital Input

r4354 TM17 edge times digital input 4 / TM17 edge_t DI 4

TM17

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time when detecting the 1st and 2nd edges for digital input 4 of Terminal Module 17 (TM17).
The two times are specified as 16 bit values with a resolution of 0.25 µs.

Note: DI: Digital Input

r4355 TM15 edge times digital input 5 / TM15 edge_t DI 5

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time when detecting the 1st and 2nd edges for digital input 5 of Terminal Module 15 (TM15).
The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DI: Digital Input

r4355 TM17 edge times digital input 5 / TM17 edge_t DI 5

TM17

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time when detecting the 1st and 2nd edges for digital input 5 of Terminal Module 17 (TM17).
The two times are specified as 16 bit values with a resolution of 0.25 µs.

Note: DI: Digital Input

r4356 TM15 edge times digital input 6 / TM15 edge_t DI 6

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time when detecting the 1st and 2nd edges for digital input 6 of Terminal Module 15 (TM15).
The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DI: Digital Input

r4356 TM17 edge times digital input 6 / TM17 edge_t DI 6

TM17

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time when detecting the 1st and 2nd edges for digital input 6 of Terminal Module 17 (TM17).
The two times are specified as 16 bit values with a resolution of 0.25 µs.

Note: DI: Digital Input

r4357 TM15 edge times digital input 7 / TM15 edge_t DI 7

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time when detecting the 1st and 2nd edges for digital input 7 of Terminal Module 15 (TM15).
The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DI: Digital Input

r4357 TM17 edge times digital input 7 / TM17 edge_t DI 7

TM17

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time when detecting the 1st and 2nd edges for digital input 7 of Terminal Module 17 (TM17).
The two times are specified as 16 bit values with a resolution of 0.25 µs.

Note: DI: Digital Input

r4358 TM15 edge times digital input 8 / TM15 edge_t DI 8

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time when detecting the 1st and 2nd edges for digital input 8 of Terminal Module 15 (TM15).
The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DI: Digital Input

r4358 TM17 edge times digital input 8 / TM17 edge_t DI 8

TM17

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time when detecting the 1st and 2nd edges for digital input 8 of Terminal Module 17 (TM17).
The two times are specified as 16 bit values with a resolution of 0.25 µs.

Note: DI: Digital Input

r4359	TM15 edge times digital input 9 / TM15 edge_t DI 9		
TM15	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Commands	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the time when detecting the 1st and 2nd edges for digital input 9 of Terminal Module 15 (TM15).
The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DI: Digital Input

r4359	TM17 edge times digital input 9 / TM17 edge_t DI 9		
TM17	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Commands	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the time when detecting the 1st and 2nd edges for digital input 9 of Terminal Module 17 (TM17).
The two times are specified as 16 bit values with a resolution of 0.25 µs.

Note: DI: Digital Input

r4360	TM15 edge times digital input 10 / TM15 edge_t DI 10		
TM15	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Commands	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the time when detecting the 1st and 2nd edges for digital input 10 of Terminal Module 15 (TM15).
The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DI: Digital Input

r4360	TM17 edge times digital input 10 / TM17 edge_t DI 10		
TM17	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Commands	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the time when detecting the 1st and 2nd edges for digital input 10 of Terminal Module 17 (TM17).
The two times are specified as 16 bit values with a resolution of 0.25 µs.

Note: DI: Digital Input

r4361 TM15 edge times digital input 11 / TM15 edge_t DI 11

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time when detecting the 1st and 2nd edges for digital input 11 of Terminal Module 15 (TM15).
The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DI: Digital Input

r4361 TM17 edge times digital input 11 / TM17 edge_t DI 11

TM17

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time when detecting the 1st and 2nd edges for digital input 11 of Terminal Module 17 (TM17).
The two times are specified as 16 bit values with a resolution of 0.25 µs.

Note: DI: Digital Input

r4362 TM15 edge times digital input 12 / TM15 edge_t DI 12

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time when detecting the 1st and 2nd edges for digital input 12 of Terminal Module 15 (TM15).
The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DI: Digital Input

r4362 TM17 edge times digital input 12 / TM17 edge_t DI 12

TM17

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time when detecting the 1st and 2nd edges for digital input 12 of Terminal Module 17 (TM17).
The two times are specified as 16 bit values with a resolution of 0.25 µs.

Note: DI: Digital Input

r4363 TM15 edge times digital input 13 / TM15 edge_t DI 13

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time when detecting the 1st and 2nd edges for digital input 13 of Terminal Module 15 (TM15).
The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DI: Digital Input

r4363 TM17 edge times digital input 13 / TM17 edge_t DI 13

TM17

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time when detecting the 1st and 2nd edges for digital input 13 of Terminal Module 17 (TM17).
The two times are specified as 16 bit values with a resolution of 0.25 µs.

Note: DI: Digital Input

r4364 TM15 edge times digital input 14 / TM15 edge_t DI 14

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time when detecting the 1st and 2nd edges for digital input 14 of Terminal Module 15 (TM15).
The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DI: Digital Input

r4364 TM17 edge times digital input 14 / TM17 edge_t DI 14

TM17

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time when detecting the 1st and 2nd edges for digital input 14 of Terminal Module 17 (TM17).
The two times are specified as 16 bit values with a resolution of 0.25 µs.

Note: DI: Digital Input

r4365 TM15 edge times digital input 15 / TM15 edge_t DI 15

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time when detecting the 1st and 2nd edges for digital input 15 of Terminal Module 15 (TM15).
The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DI: Digital Input

r4365 TM17 edge times digital input 15 / TM17 edge_t DI 15

TM17

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time when detecting the 1st and 2nd edges for digital input 15 of Terminal Module 17 (TM17).
The two times are specified as 16 bit values with a resolution of 0.25 µs.

Note: DI: Digital Input

r4366 TM15 edge times digital input 16 / TM15 edge_t DI 16

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time when detecting the 1st and 2nd edges for digital input 16 of Terminal Module 15 (TM15).
The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DI: Digital Input

r4367 TM15 edge times digital input 17 / TM15 edge_t DI 17

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time when detecting the 1st and 2nd edges for digital input 17 of Terminal Module 15 (TM15).
The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DI: Digital Input

r4368 TM15 edge times digital input 18 / TM15 edge_t DI 18

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time when detecting the 1st and 2nd edges for digital input 18 of Terminal Module 15 (TM15).
The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DI: Digital Input

r4369 TM15 edge times digital input 19 / TM15 edge_t DI 19

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time when detecting the 1st and 2nd edges for digital input 19 of Terminal Module 15 (TM15).
The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DI: Digital Input

r4370 TM15 edge times digital input 20 / TM15 edge_t DI 20

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time when detecting the 1st and 2nd edges for digital input 20 of Terminal Module 15 (TM15).
The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DI: Digital Input

r4371 TM15 edge times digital input 21 / TM15 edge_t DI 21

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time when detecting the 1st and 2nd edges for digital input 21 of Terminal Module 15 (TM15).
The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DI: Digital Input

r4372 TM15 edge times digital input 22 / TM15 edge_t DI 22

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time when detecting the 1st and 2nd edges for digital input 22 of Terminal Module 15 (TM15).
The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DI: Digital Input

r4373 TM15 edge times digital input 23 / TM15 edge_t DI 23

TM15

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the time when detecting the 1st and 2nd edges for digital input 23 of Terminal Module 15 (TM15).
The two times are specified as 8 bit values with a resolution of 64 µs.

Note: DI: Digital Input

p4400 TM41 encoder emulation operating mode / Enc_emulat mode

TM41

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 9674, 9676
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the operating mode for the incremental encoder emulation.

Value:
0: SIMOTION
1: SINAMICS

Note: A change only becomes effective after the next boot.
If value = 0:
Incremental encoder emulation using speed setpoint (p1155).
If value = 1:
Incremental encoder emulation using encoder position setpoint (p4420).

p4401 TM41 encoder emulation mode / Enc_emulat mode

TM41

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 9674, 9676
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1111 0011 bin

Description: Sets the mode for the incremental encoder emulation.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Zero mark enable	Yes	No	9674
01	Zero marks synchronized with zero position of absolute encoders	Yes	No	9674
04	Activate higher actual value resolution	Yes	No	-
05	Activate higher setpoint resolution	Yes	No	-

06	Deactivate residual value handling in the setpoint channel	Yes	No	-
07	Activate output frequencies greater than 750 kHz	Yes	No	-

Note: For bit 00, 01:

This bit is used to configure the zero mark via X520.

When the TM41 is operated in the SINAMICS mode (p4400 = 1), the following applies:

A new zero mark search is initiated by switching in the zero mark at the TM41 (p4401.0 = 1). The zero mark is output at the TM41 as soon as it was synchronized with the zero position/zero mark of the leading encoder.

For p4401.1 = 1, the following applies:

The zero pulse is only output via X520 when the absolute encoder passes the zero position of the absolute position (modulo converted).

For p4401.1 = 0, the following applies:

The zero pulse is output via X520 compatible with previous firmware versions (< V4.3). The zero pulse is output when the TM41 (modulo converted) passes the position it was in when the 24 V supply was switched on.

For bit 07:

For hardware versions A and B, this bit has no significance (output frequency = 512 kHz).

For p4401.7 = 0, the following applies:

The maximum output frequency is 750 kHz (from hardware version C).

For p4401.7 = 1, the following applies:

The maximum output frequency is 1024 kHz (from hardware version C).

r4402.0...2 CO/BO: TM41 encoder emulation status / Enc_emulat status

TM41

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 9674, 9676
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status of the incremental encoder emulation on Terminal Module 41 (TM41).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Zero mark enabled	Yes	No	-
01	Tracks A/B enabled	Yes	No	-
02	Interface encoder emulation enabled	Yes	No	-

r4403 TM41 encoder emulation operating mode active / Enc_emul mode act

TM41

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 9674, 9676
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the actual operating mode of Terminal Module 41 (TM41).

Dependency: Refer to: p4400

p4404 TM41 encoder emulation controller options / Enc_emul ctrl_opt

TM41

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0001 bin

Description: Sets the controller option for incremental encoder emulation on Terminal Module 41 (TM41).

p4404.0 = 1:

Control with minimum following error (precontrol active) for synchronous position and synchronous zero-mark emulation

p4404.1 = 1:

In the case of TTL encoders, the control response improves at slow velocities.

p4404.0 = p4404.1 = 0

Control with fixed following error.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Precontrol	Active	Inactive	-
01	Precontrol with adaptation for TTL encoder	Active	Inactive	-

Note: The parameter is only effective in the "SINAMICS" operating mode (p4400 = 1).

p4408 TM41 encoder emulation pulse number leading encoder / TM41 enc puls no.

TM41

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9674, 9676
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	16384	0

Description: Parameters p4408 and p4418 define the position setpoint format for the TM41 (CI: p4420).

The two parameters p4408 and p4418 of the TM41 must be set the same as parameters p0408 and p0418 of the encoder interconnected at connector input p4420. The zero mark is only correctly output if this condition is maintained.

For p4408 = 0, the following applies:

Parameters p0408 and p0418 in addition assume the function of p4408 and p4418.

p4418 TM41 encoder emulation fine resolution leading encoder / TM41 fine res

TM41

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** 9676
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
2	18	11

Description: Parameters p4408 and p4418 define the position setpoint format for the TM41 (CI: p4420).

The two parameters p4408 and p4418 of the TM41 must be set the same as parameters p0408 and p0418 of the encoder interconnected at connector input p4420. The zero mark is only correctly output if this condition is maintained.

For p4408 = 0, the following applies:

Parameters p0408 and p0418 in addition assume the function of p4408 and p4418.

r4419 TM41 encoder emulation diagnostics position setpoint / TM41 Diag s_set

TM41

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 9676
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the position setpoint after taking into account the step up / step down.

The format of this parameter is defined by p0408/p0418.

p4420 CI: TM41 encoder emulation position setpoint / Enc_emul s_setp

TM41

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Integer32	**Dyn. index:** -	**Func. diagram:** 9676
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the incremental encoder emulation position setpoint.

Recommendation: The position actual value of the leading encoder in the current controller clock cycle is available in r0479.

This is the reason that the following BICO interconnection should be preferably set:

CI: p4420 (TM41) = r0479 (e.g. SERVO)

Dependency: Refer to: p4400, r4403

Notice: General conditions for incremental encoder emulation can be found in the following literature:

SINAMICS S120 Function Manual Drive Functions

Note: The parameter is not effective in the SIMOTION operating mode (p4400 = 0).

An encoder actual value (r0479) can only be interconnected once on a TM41.

For p4401.0 = 1(enable zero mark), the following applies:

In this case, p4420 must be interconnected with r0479 of the leading encoder.

After successful internal, automatic synchronization, the zero mark of the incremental encoder emulation is output in synchronism to the zero position/zero mark of the leading encoder.

The zero position of the leading encoder depends on the encoder type and the selected referencing technique (p0493, p0494, p0495).

p4421 TM41 encoder emulation deadtime compensation / Enc_emul t_dead

TM41

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 9676
P-Group: Setpoints	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-10.00	10.00	0.00

Description: Sets the deadtime compensation for incremental encoder emulation.

This factor defines the multiplier in which the encoder position setpoint of the incremental encoder emulation is shifted depending on the velocity.

Dependency: For p4421 = 0, the deadtime compensation for the position setpoint is switched out.

For p4421 <> 0, the deadtime compensation is taken into account as follows:

Setpoint new = setpoint via CI: p4420 + delta s * p4421

delta s: Position change per sampling time (p4099[3]), internally smoothed

Refer to: p4400

Note: The parameter is not effective in the SIMOTION operating mode (p4400 = 0).

p4422 TM41 encoder emulation position setpoint inversion / Enc_emul s_set inv

TM41

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 9676
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Setting to invert the position setpoint for Terminal Module 41 (TM41).

0 -> Position setpoint (CI: p4420) is evaluated as normal.

1 -> Position setpoint (CI: p4420) is processed inverted.

Dependency: Refer to: p4420

p4423 TM41 encoder emulation standstill adaptation / Enc standst_adapt

TM41

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 9676
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	2000	4

Description: Sets standstill adaptation on Terminal Module 41 (TM41).

p4423 is used to specify the number of clock cycles (one clock cycle = p4099[3]) used for encoder standstill detection. Once this time has elapsed, any potential deviation is compensated when adaptation is active.

Parameter value = 0: adaptation inactive

Parameter value > 0: adaptation active

Dependency: Refer to: r4403, p4404, p4420

Danger: The option p4404.1 = 1 is only effective if TM41 DAC is being used.

If the possibility of a TM41 DAC (new) being replaced by a TM41 SAC (old) cannot be excluded, this option should not be set.

TM41 SAC: Article No. = 6SL3055-0AA00-3PA0

TM41 DAC: Article No. = 6SL3055-0AA00-3PA1

Note: The parameter is only effective in the SINAMICS operating mode (p4400 = 1).

The parameter value must be assigned a value of 4 or more to ensure that the system functions properly.

This parameter is only relevant in the following cases:

- TTL encoder is available
- the controller option "Precontrol with adaptation for TTL encoder" has been activated (p4404.1 = 1)

p4426 TM41 encoder emulation pulses for zero mark / Enc_emul pulses ZM

TM41

Can be changed: C2(4), U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9674, 9676
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	16384	0

Description: Sets pulse number to output the zero mark for the incremental encoder simulation/emulation.

Example:

p0408 = 2048 (encoder pulses)

p4426 = 512 (pulses for the zero mark)

--> Position direction: The zero mark is output after 512 pulses.

--> Negative direction: The zero mark is output after 1536 pulses.

Dependency: Refer to: p0408

Note: The pulses for the zero mark (p4426) must be less than the encoder pulse number (p0408).

r4427 TM41 encoder emulation zero mark position / TM41 NM_position

TM41

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the position of the next zero mark in a positive traversing direction.

The format of this parameter is defined by p0408/p0418 (the same as the position actual value Xact1).

p4600[0...n] Motor temperature sensor 1 sensor type / Temp_sens 1 type

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** EDS, p0140	**Func. diagram:** 8016
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	60	0

Description: Sets the sensor type of the first temperature sensor for the motor temperature monitoring.

Value:
0: No sensor
10: PTC fault
11: PTC alarm
12: PTC alarm & timer
20: KTY84
30: Bimetallic NC contact fault
31: Bimetallic NC contact alarm
32: Bimetallic NC contact alarm & timer
60: PT1000

Dependency: Refer to: r0458, p0600, p0601

Note: This parameter is effective only when p0601 = 10.

PTC thermistor: Tripping resistance = 1650 Ohm

Information on using temperature sensors is provided in the following literature:

- hardware description of the appropriate components
- SINAMICS S120 Commissioning Manual

p4601[0...n] Motor temperature sensor 2 sensor type / Temp_sens 2 type

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** EDS, p0140	**Func. diagram:** 8016
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	60	0

Description: Sets the sensor type of the second temperature sensor for the motor temperature monitoring.

Value:
0: No sensor
10: PTC fault
11: PTC alarm
12: PTC alarm & timer
20: KTY84
30: Bimetallic NC contact fault
31: Bimetallic NC contact alarm
32: Bimetallic NC contact alarm & timer
60: PT1000

Dependency: Refer to: r0458, p0600, p0601

Note: This parameter is effective only when p0601 = 10.

Terminals for KTY84/PT1000: X200.1, X200.2

PTC thermistor: Tripping resistance = 1650 Ohm

Information on using temperature sensors is provided in the following literature:

- hardware description of the appropriate components
- SINAMICS S120 Commissioning Manual

p4602[0...n] Motor temperature sensor 3 sensor type / Temp_sens 3 type

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** EDS, p0140	**Func. diagram:** 8016
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	60	0

Description: Sets the sensor type of the third temperature sensor for the motor temperature monitoring.

Value:
0: No sensor
10: PTC fault
11: PTC alarm
12: PTC alarm & timer
20: KTY84
30: Bimetallic NC contact fault
31: Bimetallic NC contact alarm
32: Bimetallic NC contact alarm & timer
60: PT1000

Dependency: Refer to: r0458, p0600, p0601

Note: This parameter is effective only when p0601 = 10.

Terminals for PTC triplet and bimetallic: X200.3, X200.4

PTC thermistor: Tripping resistance = 1650 Ohm

Information on using temperature sensors is provided in the following literature:

- hardware description of the appropriate components
- SINAMICS S120 Commissioning Manual

p4603[0...n] Motor temperature sensor 4 sensor type / Temp_sens 4 type

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** EDS, p0140	**Func. diagram:** 8016
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	60	0

Description: Sets the sensor type of the fourth temperature sensor for the motor temperature monitoring.

Value:
0: No sensor
10: PTC fault
11: PTC alarm
12: PTC alarm & timer
20: KTY84
30: Bimetallic NC contact fault
31: Bimetallic NC contact alarm
32: Bimetallic NC contact alarm & timer
60: PT1000

Dependency: Refer to: r0458, p0600, p0601

Note: This parameter is effective only when p0601 = 10.

Terminals for PTC triplet: X200.5, X200.6

PTC thermistor: Tripping resistance = 1650 Ohm

Information on using temperature sensors is provided in the following literature:

- hardware description of the appropriate components
- SINAMICS S120 Commissioning Manual

p4610[0...n] Motor temperature sensor 1 sensor type MDS / Temp sens1 typ MDS

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** MDS, p0130	**Func. diagram:** 8016
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	32	10

Description: Sets the sensor type of the first temperature sensor for the motor temperature monitoring.

Value:
0: No sensor
10: PTC fault
11: PTC alarm
12: PTC alarm & timer
20: KTY84, PT100, PT1000
30: Bimetallic NC contact fault
31: Bimetallic NC contact alarm
32: Bimetallic NC contact alarm & timer

Dependency: Refer to: r0458, p0600, p0601

Note: This parameter is effective only when p0601 = 11.

PTC thermistor: Tripping resistance = 1650 Ohm

Information on using temperature sensors is provided in the following literature:

- hardware description of the appropriate components
- SINAMICS S120 Commissioning Manual

p4611[0...n] Motor temperature sensor 2 sensor type MDS / Temp sens2 typ MDS

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** MDS, p0130	**Func. diagram:** 8016
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	32	10

Description: Sets the sensor type of the second temperature sensor for the motor temperature monitoring.

Value:
0: No sensor
10: PTC fault
11: PTC alarm
12: PTC alarm & timer
20: KTY84, PT100, PT1000
30: Bimetallic NC contact fault
31: Bimetallic NC contact alarm
32: Bimetallic NC contact alarm & timer

Dependency: Refer to: r0458, p0600, p0601

Note: This parameter is effective only when p0601 = 11.

PTC thermistor: Tripping resistance = 1650 Ohm

Information on using temperature sensors is provided in the following literature:

- hardware description of the appropriate components
- SINAMICS S120 Commissioning Manual

p4612[0...n] Motor temperature sensor 3 sensor type MDS / Temp sens3 typ MDS

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** MDS, p0130	**Func. diagram:** 8016
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	32	10

Description: Sets the sensor type of the third temperature sensor for the motor temperature monitoring.

Value:
0: No sensor
10: PTC fault
11: PTC alarm
12: PTC alarm & timer
20: KTY84, PT100, PT1000
30: Bimetallic NC contact fault
31: Bimetallic NC contact alarm
32: Bimetallic NC contact alarm & timer

Dependency: Refer to: r0458, p0600, p0601

Note: This parameter is effective only when p0601 = 11.

PTC thermistor: Tripping resistance = 1650 Ohm

Information on using temperature sensors is provided in the following literature:

- hardware description of the appropriate components
- SINAMICS S120 Commissioning Manual

p4613[0...n] Motor temperature sensor 4 sensor type MDS / Temp sens4 typ MDS

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** MDS, p0130	**Func. diagram:** 8016
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	32	10

Description: Sets the sensor type of the fourth temperature sensor for the motor temperature monitoring.

Value:
0: No sensor
10: PTC fault
11: PTC alarm
12: PTC alarm & timer
20: KTY84, PT100, PT1000
30: Bimetallic NC contact fault
31: Bimetallic NC contact alarm
32: Bimetallic NC contact alarm & timer

Dependency: Refer to: r0458, p0600, p0601

Note: This parameter is effective only when p0601 = 11.

PTC thermistor: Tripping resistance = 1650 Ohm

Information on using temperature sensors is provided in the following literature:

- hardware description of the appropriate components
- SINAMICS S120 Commissioning Manual

r4620[0...3] Motor temperature measured / Mot_temp meas

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8016
P-Group: Displays, signals	**Unit group:** 21_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°C]	- [°C]	- [°C]

Description: Displays the actual temperature in the motor measured through temperature channels 1 ... 4.

Index:
[0] = Temperature channel 1
[1] = Temperature channel 2
[2] = Temperature channel 3
[3] = Temperature channel 4

Note: For a value not equal to -200.0 °C, the following applies:

- this temperature display is valid.
- a KTY/PT1000 temperature sensor is connected.

For a value equal to -200.0 °C, the following applies:

- this temperature display is not valid (temperature sensor error).
- a PTC sensor or bimetallic NC contact is connected.
- the temperature sensor evaluation is deactivated (p0600 = 0 or p0601 = 0).
- the sensor channel is deactivated (p460x = 0 or p461x = 0).

p4630[0...n] Absolute encoder linear measuring step factor / Abs_enc meas fact

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	4294967295	1

Description: Sets the resolution of the absolute position for a linear absolute encoder as factor from p0407.

Note: The serial protocol of an absolute encoder provides the position with a certain resolution (e.g. 100 nm).

The resolution is calculated from p0407/p4630.

p4631[0...n] Cylinder distance per encoder revolution / x_cyl per rev

HLA

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [µm]	4294967295 [µm]	0 [µm]

Description: Setting to convert rotary motion into linear motion for hydraulic drives.

The value corresponds to the distance in µm for one encoder revolution.

Note: For a linear drive (r0108.12 = 1) with rotary encoder (p0404.0 = 0) this factor defines the conversion of the encoder information for the linear motion of the velocity control.

r4640[0...95] Encoder diagnostics state machine / Enc diag stat_ma

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the encoder diagnostics for the PROFIdrive interface.

p4641[0...2] OEM encoder diagnostic signal selection / OEM enc diag sel

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(4), U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	65535	0

Description: Sets the trace functionality for OEM encoder manufacturers.

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

p4642 Encoder fault test function / Encoder fault test

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(4), U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Test function to initiate an encoder fault

p4642 = 0/1 signal:

The currently used motor encoder issues an encoder fault.

p4642 = 1/0 signal:

The encoder fault that was issued is cleared after acknowledgment.

Notice: It is not permissible that a data set is switched over between an encoder fault being issued and its deletion.

p4643[0...n] DRIVE-CLiQ encoder repeat telegram / DQ enc repeat

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: C1(3), C2(4)	**Calculated:** -	**Access level:** 4
Data type: Unsigned16	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0001 0000 0001 bin

Description: Sets the telegram repeats for the DRIVE-CLiQ encoder telegram.

For bits 02, 01, 00 or 10, 09, 08:

Sets the number of maximum tolerated transfer errors in the particular direction before a fault is output.

The higher set value between p4643 and p9915 or p9916 is effective.

0 0 0 = 0

0 0 1 = 1

0 1 0 = 2

...

1 1 1 = 7

For bits 04, 12:

When the bit is set, the telegrams are sent twice in the particular direction. This therefore reduces the probability of telegram failure.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Actual value direction data transfer error number bit 0	Yes	No	-
01	Actual value direction data transfer error number bit 1	Yes	No	-
02	Actual value direction data transfer error number bit 2	Yes	No	-
04	Actual value direction activate repeat telegram	Yes	No	-
08	Setpoint direction data transfer error number bit 0	Yes	No	-
09	Setpoint direction data transfer error number bit 1	Yes	No	-
10	Setpoint direction data transfer error number bit 2	Yes	No	-
12	Setpoint direction activate telegram repeat	Yes	No	-

p4649[0...n] Encoder function reserve amplitude limit incremental signals / Enc fct amp inc

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	500	0

Description: Amplitude threshold of the incremental signals for the function reserve.

If the set amplitude threshold on the incremental signals is fallen below, then alarm A3x407 "Encoder x; function limit reached " is output.

Note: An amplitude threshold of 230 mV can be used as default value.

p4650 Encoder functional reserve component number / Enc fct_res num

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	399	0

Description: Sets the component number (p0141) of the encoder whose functional reserve is to be displayed (r4651).

Dependency: Refer to: r4651

r4651[0...3] Encoder functional reserve / Enc fct_reserve

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the functional reserve of the encoder selected via p4650.

0 ... 25 %:

The function limit has been reached. A service is recommended.

26 ... 100 %:

The encoder is working in the specified range.

Index:
[0] = Function reserve 1
[1] = Function reserve 2
[2] = Function reserve 3
[3] = Function reserve 4

Dependency: Refer to: p4650

Note: Value = 999 means:

- the component specified in p4650 is not connected
- the encoder does not support the display of the functional reserve

p4652[0...2] XIST1_ERW reset mode / XIST1_ERW res mode

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C1(3)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 4750
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	3	0

Description: Sets the mode to reset the actual value in XIST_ERW (CO: r4653).

Value:
0: Inactive
1: Reset with zero mark
2: Reset with BICO
3: Reset with selected zero mark

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Dependency: Refer to: r4653, r4654, p4655

Note: The absolute value is only valid after passing the zero mark.

If value = 1:

The value in XIST1_ERW is reset when passing every zero mark.

If value = 2:

The value in XIST1_ERW is reset with a 0/1 edge via binector input p4655.

If value = 3:

The value in XIST1_ERW is reset after a 0/1 edge via binector input p4655 when passing the next zero mark.

p4652 XIST1_ERW reset mode / XIST1_ERW res mode

ENC

Can be changed: C1(3)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 4750
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	3	0

Description: Sets the mode to reset the actual value in XIST_ERW (CO: r4653).

Value:
0: Inactive
1: Reset with zero mark
2: Reset with BICO
3: Reset with selected zero mark

Dependency: Refer to: r4653, r4654, p4655

Note: The absolute value is only valid after passing the zero mark.

If value = 1:

The value in XIST1_ERW is reset when passing every zero mark.

If value = 2:

The value in XIST1_ERW is reset with a 0/1 edge via binector input p4655.

If value = 3:

The value in XIST1_ERW is reset after a 0/1 edge via binector input p4655 when passing the next zero mark.

r4653[0...2] CO: XIST1_ERW actual value / XIST1_ERW actval

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 4750
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output for the actual value XIST1_ERW.

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Dependency: Refer to: p4652, r4654, p4655

r4653 CO: XIST1_ERW actual value / XIST1_ERW actval

ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 4750
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output for the actual value XIST1_ERW.

Dependency: Refer to: p4652, r4654, p4655

r4654.0...16 — CO/BO: XIST1_ERW status / XIST1_ERW stat

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 4750
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output to reset XIST1_ERW.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Encoder 1 XIST1_ERW reset	High	Low	-
08	Encoder 2 XIST1_ERW reset	High	Low	-
16	Encoder 3 XIST1_ERW reset	High	Low	-

Dependency: Refer to: p4652, r4653, p4655

Note: The reset of XIST1_ERW is initiated via binector input p4655.

Binector output r4654 is reset with a 0 signal from binector input p4655.

r4654.0 — CO/BO: XIST1_ERW status / XIST1_ERW stat

ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 4750
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output to reset XIST1_ERW.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	XIST1_ERW reset	High	Low	-

Dependency: Refer to: p4652, r4653, p4655

Note: The reset of XIST1_ERW is initiated via binector input p4655.

Binector output r4654 is reset with a 0 signal from binector input p4655.

p4655[0...2] — BI: XIST1_ERW reset signal source / XIST1_ERW resS_src

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(4), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 4750
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to reset XIST1_ERW (CO: r4653).

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Dependency: Refer to: p4652, r4653, r4654

Note: The reset of XIST1_ERW depends on the selected mode (p4652).

p4655 BI: XIST1_ERW reset signal source / XIST1_ERW resS_src

ENC

Can be changed: C2(4), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 4750
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to reset XIST1_ERW (CO: r4653).

Dependency: Refer to: p4652, r4653, r4654

Note: The reset of XIST1_ERW depends on the selected mode (p4652).

p4660[0...2] Sensor Module filter bandwidth / SM Filt_bandw

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [kHz]	20000.00 [kHz]	0.00 [kHz]

Description: Sets the filter bandwidth for Sensor Module SMx10 (resolver) and SMx20 (sin/cos).

The value set on the Sensor Module is displayed in r4661.

Currently, the Sensor Module hardware only supports the following values:

- 0: The Sensor Module's default setting is used.
- 50 kHz
- 170 kHz
- 500 kHz
- Unlimited: Only the bandwidth of the operational amplifier is effective.

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Dependency: Refer to: r4661

Note: A value of zero is displayed if an encoder is not present.

p4660 Sensor Module filter bandwidth / SM Filt_bandw

ENC

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [kHz]	20000.00 [kHz]	0.00 [kHz]

Description: Sets the filter bandwidth for Sensor Module SMx10 (resolver) and SMx20 (sin/cos).

The value set on the Sensor Module is displayed in r4661.

Currently, the Sensor Module hardware only supports the following values:

- 0: The Sensor Module's default setting is used.
- 50 kHz
- 170 kHz
- 500 kHz
- Unlimited: Only the bandwidth of the operational amplifier is effective.

Dependency: Refer to: r4661

Note: A value of zero is displayed if an encoder is not present.

r4661[0...2] Sensor Module filter bandwidth display / SM Filt_bandw disp

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [kHz]	- [kHz]	- [kHz]

Description: Displays the effective filter bandwidth for Sensor Module SMx10 (resolver) and SMx20 (sin/cos).

The bandwidth of the filter is set using p4660.

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Dependency: Refer to: p4660

Note: A value of zero is displayed if an encoder is not present.

r4661 Sensor Module filter bandwidth display / SM Filt_bandw disp

ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [kHz]	- [kHz]	- [kHz]

Description: Displays the effective filter bandwidth for Sensor Module SMx10 (resolver) and SMx20 (sin/cos).

The bandwidth of the filter is set using p4660.

Dependency: Refer to: p4660

Note: A value of zero is displayed if an encoder is not present.

p4662[0...n] Encoder characteristic type / Enc char_type

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: C2(4)	**Calculated:** -	**Access level:** 4
Data type: Integer16	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the characteristic type.

For non-linear sensors, the interrelationship between the signal voltage and the position can be defined using a third degree polynomial.

Value:
0: Characteristic inactive
1: Characteristic polynomial third degree

Dependency: Refer to: p4663, p4664, p4665, p4666

Note: If value = 1:

A third degree polynomial is defined as follows:

F(x) = K3 * x^3 + K2 * x^2 + K1 * x + K0

Coefficients K0 ... K3 should be defined and entered into p4663 ... p4666.

The sensor range is emulated to x = -0.5 ... +0.5.

p4663[0...n] Encoder characteristic K0 / Enc char K0

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Setting for coefficient K0 to calculate the characteristic (p4662).

Dependency: Refer to: p4662, p4664, p4665, p4666

p4664[0...n] Encoder characteristic K1 / Enc char K1

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Setting for coefficient K1 to calculate the characteristic (p4662).

Dependency: Refer to: p4662, p4663, p4665, p4666

p4665[0...n] Encoder characteristic K2 / Enc char K2

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Setting for coefficient K2 to calculate the characteristic (p4662).

Dependency: Refer to: p4662, p4663, p4664, p4666

p4666[0...n] Encoder characteristic K3 / Enc char K3

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Setting for coefficient K3 to calculate the characteristic (p4662).

Dependency: Refer to: p4662, p4663, p4664, p4665

p4670[0...n] Analog sensor configuration / Ana_sens config

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 0000 0000 0000 0000 bin

Description: Sets the configuration for evaluation on the analog sensor.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
06	Set velocity to 0	Yes	No	-
08	Position value range	0.0 / 1.0 pulse	-0.5 / +0.5 pulse	-
09	Fault/alarm messages	Alarm	Fault	-
10	Channel B act	Yes	No	-
11	Channel A act	Yes	No	-
13	Commutation angle constant	Yes	No	-
14	Suppress faults	Yes	No	-
31	Extrapolation	ON	OFF	-

Notice: For bit 06:

Setting the bit sets the velocity actual value (r0061) permanently to 0.

For bit 13:

Setting the bit sets the commutation angle permanently to the commutation angle offset (p0431).

Note: For bit 09:

A setting of bit = 0 will trigger a fault for the relevant channel if the actual value is invalid.

A setting of bit = 1 will trigger an alarm for the relevant channel if the actual value is invalid.

For bits 10, 11:

If both channels are activated, the actual value is generated from the mean value of both channels. If a channel fails (actual value invalid), it is not included when the mean value is generated.

For bit 14:

The bit is only evaluated for encoder 1. Otherwise no effect.

p4671[0...n] Analog sensor input / Ana_sens inp

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: C2(4)	**Calculated:** -	**Access level:** 4
Data type: Integer16	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	3	0

Description: Sets the input circuit for the analog sensor.

Value:
0: Differential
1: Single-ended A, B
2: Single-ended A*, B*
3: Single-ended A, B sensitive

Note: p4671 = 0:

The two signals on a track are evaluated differentially.

p4671 = 1:

Only the non-inverted signal on a track is evaluated.

p4671 = 2:

Only the inverted signal on a track is evaluated.

p4671 = 3:

Only the non-inverted signal on a track (high resolution) is evaluated.

p4672[0...n] Analog sensor channel A voltage at actual value zero / Ana_sens A U at 0

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-10.0000 [V]	10.0000 [V]	0.0000 [V]

Description: Sets the voltage when the connected sensor is at actual value zero.

At this voltage channel A supplies an actual value of zero.

p4673[0...n] Analog sensor channel A voltage per encoder period / Ana_sens A U/per

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-10.0000 [V]	10.0000 [V]	6.0000 [V]

Description: Sets the output voltage range to be mapped for the connected analog sensor.

The voltage range is determined by the following parameters:

- p4672 (voltage at actual value 0)
- p4673 (voltage per encoder period)

Note: The minimum actual value which can be mapped is equal to p4672 - p4673/2.

The maximum actual value which can be mapped is equal to p4672 + p4673/2.

p4674[0...n] Analog sensor channel B voltage at actual value zero / Ana_sens B U at 0

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-10.0000 [V]	10.0000 [V]	0.0000 [V]

Description: Sets the voltage when the connected sensor is at actual value zero.

At this voltage channel B supplies an actual value of zero.

p4675[0...n] Analog sensor channel B voltage per encoder period / Ana_sens B U/per

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-10.0000 [V]	10.0000 [V]	6.0000 [V]

Description: Sets the output voltage range to be mapped for the connected analog sensor.

The voltage range is determined by the following parameters:

- p4674 (voltage at actual value 0)
- p4675 (voltage per encoder period)

Note: The minimum actual value which can be mapped is equal to p4674 - p4675/2.

The maximum actual value which can be mapped is equal to p4674 + p4675/2.

p4676[0...n] Analog sensor range limit threshold / Ana_sens lim thr

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	100.0 [%]	100.0 [%]

Description: Sets the threshold for limit monitoring of the absolute actual value on the analog sensor.

If this threshold is overshot by the actual value of a channel, a corresponding fault/alarm (p4670.9) is output.

Dependency: Refer to: p4673, p4675

p4677[0...n] Analog sensor LVDT configuration / Ana_sens LVDT conf

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: C2(4)	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Sets the configuration for LVDT mode on the analog sensor.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	LVDT ON	Yes	No	-
01	Track B excitation	Yes	No	-
02	Fixed value amplitude	Yes	No	-
03	Fixed value amplitude and phase	Yes	No	-

p4678[0...n] Analog sensor LVDT ratio / An_sens LVDT ratio

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: C2(4)	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	200.00 [%]	50.00 [%]

Description: Sets the ratio for the LVDT sensor.

p4679[0...n] Analog sensor LVDT phase / An_sens LVDT ph

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: C2(4), T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-360.00 [°]	360.00 [°]	0.00 [°]

Description: Sets the phase for the LVDT sensor.

p4680[0...n] Zero mark monitoring tolerance permissible / ZM_monit tol perm

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC	**Can be changed:** C2(4)	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** EDS, p0140	**Func. diagram:** -
	P-Group: Encoder	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	1000	4

Description: Sets the permissible tolerance in encoder pulses for the zero mark distance in the context of zero mark monitoring.

Causes fault F3x100 to appear less frequently.

Dependency: Refer to: F31100

p4681[0...n] Zero mark monitoring tolerance window limit 1 positive / ZM tol lim 1 pos

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC	**Can be changed:** C2(4)	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** EDS, p0140	**Func. diagram:** -
	P-Group: Encoder	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	1000	2

Description: Sets the positive tolerance window in encoder pulses for limit 1 for the zero mark monitoring.

The pulse number is corrected if the deviation is less than this limit. If it is higher than this limit, fault F3x131 is triggered.

If fault F3x131 is re-parameterized to an alarm (A) or no message (N), then the encoder pulses that are not corrected are transferred to the accumulator (p4688). The accumulator can be deactivated using p0437.7.

Dependency: Refer to: p0437, p4688

Refer to: F31131

Note: This monitoring is activated by setting p0437.2 = 1 (position actual value correction).

The positive limit describes additional pulses due to EMC.

p4682[0...n] Zero mark monitoring tolerance window limit 1 negative / ZM tol lim 1 neg

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC	**Can be changed:** C2(4)	**Calculated:** -	**Access level:** 3
	Data type: Integer32	**Dyn. index:** EDS, p0140	**Func. diagram:** -
	P-Group: Encoder	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-1001	0	-1001

Description: Sets the negative tolerance window in encoder pulses for limit 1 for the zero mark monitoring.

The pulse number is corrected if the deviation is less than this limit. If it is higher than this limit, fault F3x131 is triggered.

If fault F3x131 is re-parameterized to an alarm (A) or no message (N), then the encoder pulses that are not corrected are transferred to the accumulator (p4688). The accumulator can be deactivated using p0437.7.

Dependency: Refer to: p0437, p4681, p4688

Refer to: F31131

Note: This monitoring is activated by setting p0437.2 = 1 (position actual value correction).

For a set value = -1001, the negated value of p4681 becomes active.

The negative limit describes the pulses lost due to a covered glass panel in the incremental encoder.

p4683[0...n] Zero mark monitoring tolerance window alarm threshold positive / ZM tol A_thr pos

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	100000	0

Description: Sets the positive tolerance window in encoder pulses for limit 2 for the zero mark monitoring.
Accumulator (p4688) is compared with this parameter, and where relevant, alarm A3x422 is output for 5 seconds.

Dependency: Refer to: p0437, p4681, p4682, p4688
Refer to: F31131, A31422

Note: Zero mark monitoring is activated by setting p0437.2 = 1 (position actual value correction).

p4684[0...n] Zero mark monitoring tolerance window alarm threshold negative / ZM tol A_thr neg

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: Integer32	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-100001	0	-100001

Description: Sets the negative tolerance window in encoder pulses for limit 2 for the zero mark monitoring.
Accumulator (p4688) is compared with this parameter, and where relevant, alarm A3x422 is output for 5 seconds.

Dependency: Refer to: p0437, p4683, p4688
Refer to: F31131, A31422

Note: Zero mark monitoring is activated by setting p0437.2 = 1 (position actual value correction).
For a set value = -100001, the negated value of p4683 is effective.

p4685[0...n] Speed actual value mean value generation / n_act mean val

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	20	0

Description: Sets the number of current controller sampling times for mean value generation of the speed actual value.

Note: Value = 0, 1: No mean value generation.
Higher values also mean higher dead times for the speed actual value.

p4686[0...n] Zero mark minimum length / ZM min length

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: C2(4)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** EDS, p0140	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	10	1

Description: Sets the minimum length for the zero mark in 1/4 encoder pulses.

Dependency: Refer to: p0425, p0437

Note: The minimum length of the zero mark must be less than the zero mark distance (p4686 < p0425).
The parameter is activated using p0437.1 = 1 (zero mark edge detection).

p4688[0...2] CO: Zero mark monitoring differential pulse count / ZM diff_pulse qty

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-2147483648	2147483647	0

Description: Display and connector output for the identified incorrect pulses in lines.

Also see p0437.7 (do not accumulate number of incorrect pulses).

Index: [0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Dependency: Refer to: p0437, p4681, p4682, p4683, p4684

Note: The display can only be reset to zero.

p4688 CO: Zero mark monitoring differential pulse count / ZM diff_pulse qty

ENC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-2147483648	2147483647	0

Description: Display and connector output for the identified incorrect pulses in lines.

Also see p0437.7 (do not accumulate number of incorrect pulses).

Dependency: Refer to: p0437, p4681, p4682, p4683, p4684

Note: The display can only be reset to zero.

r4689[0...2] CO: Squarewave encoder diagnostics / Sq-wave enc diag

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the encoder status according to PROFIdrive for a squarewave encoder.

Index: [0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Dependency: Refer to: A31422

Note: After alarm A3x422 is output, this parameter is set for 100 ms.

r4689 CO: Squarewave encoder diagnostics / Sq-wave enc diag

ENC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Encoder	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the encoder status according to PROFIdrive for a squarewave encoder.

Dependency: Refer to: A31422

Note: After alarm A3x422 is output, this parameter is set for 100 ms.

p4690 SMI spare part component number / SMI comp_no

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: T	**Calculated:** -	**Access level:** 1
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	399	0

Description: Sets the component number for the SMI/DQI for which motor and/or encoder data should be saved, deleted or downloaded.

Dependency: Refer to: p4691, p4692, p4693

Note: DQI: DRIVE-CLiQ Sensor Integrated

SMI: SINAMICS Sensor Module Integrated

p4691 SMI spare part save/download data / Save/DL SMI data

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: T	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	39	0

Description: Setting for the saving/downloading/deletion of motor and/or encoder data for the component specified in p4690 (SMI/DQI).

A backup of this data can be saved to non-volatile memory. The backup procedure is performed automatically as part of the function for saving to non-volatile memory (p0977 = 1 or "Copy RAM to ROM"). If a part is replaced, the saved data can be reloaded.

Procedure:

p4690 = set component number

p4691 = 1, 2, 30: Set the required procedure (save/download/delete).

p4691 = 9, 10, 36: Feedback signal on successful completion of the procedure.

p4691 = 11... 22, 37, 38: Error values if the procedure could not be executed successfully.

Value:
0: Inactive
1: Save SMI data
2: Download SMI data
9: SMI data downloaded and POWER ON required for component
10: SMI data backup complete
11: SMI data backup for selected component not found
12: Selected component not available or not connected
13: Insufficient memory space for backup
14: Format of saved data is incompatible
15: Transfer fault during data download
16: Transfer fault during data backup
17: Data backup does not match parameterized encoder/motor
18: Data backup directory not permissible
19: Component already contains data
20: Component does not contain any data
21: Component is not an SMI or a DQI
22: SMI data cannot be downloaded for component
30: Delete SMI data
35: Confirmation of SMI data delete required
36: SMI data deleted and POWER ON required for component
37: Access level not sufficient for delete
38: Delete SMI data not permitted for component
39: SMI data for component cannot be deleted

Dependency: Refer to: p4690, p4692, p4693

Notice: Once SMI/DQI data has been deleted or downloaded successfully, the component has to be switched on (POWER ON).

Note: SMI: SINAMICS Sensor Module Integrated
DQI: DRIVE-CLiQ Sensor Integrated
Help for error value = 11:
- Save the data for the original SMI on the memory card.
- Use an SMI with a suitable hardware version.
Help for error value = 12:
- set the correct component number or connect the component.
Help for error value = 13:
- Use a memory card with more memory space.
Help for error value = 14:
- Create a data backup on the memory card corresponding to the SMI type.
Help for error value = 15:
- check the DRIVE-CLiQ wiring for the component.
Remedy for fault value = 16:
- check the DRIVE-CLiQ wiring for the component.
Help for error value = 17:
- Save the data for the original SMI on the memory card.
Remedy for fault value = 18:
- set parameter p4693 to an appropriate value.
Remedy for fault value = 19:
- Perform an SMI delete or use a blank SMI.
Remedy for fault value = 20:
- Use an SMI that is not blank.
Remedy for fault value = 21:
- set the correct component number (p4690).
Note for error value = 22:
- Data cannot be downloaded for component.
Remedy for fault value = 35:
- Reset parameter p4691 to 30.
Remedy for fault value = 37:
- set the access level to Expert or higher.
Help for error value = 38:
- insert the SMI/DQI into the actual topology as an additional component (component number >= 200).
- set the component number from the actual topology (p4690 >= 200).
- set the correct component number (p4690 >= 200).
Note for error value = 39:
- SMI already deleted or too old. Delete not possible.

p4692 SMI spare part save data of all SMIs / Save SMI data

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: T	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	29	0

Description: Setting to back up the data of all SMIs and DQIs featured in the target topology.

Value:
0: Inactive
1: Save data of all SMIs and DQIs
10: Save all data successful
13: Insufficient memory space for backup
16: Transfer fault during data backup
20: Component does not contain any data
29: Not all components from target topology saved

Note: SMI: SINAMICS Sensor Module Integrated

p4692 = 10: Automatic on successful completion of backup procedure.

p4692 = 13, 16, 20, 29: Error values if the procedure could not be executed successfully.

The procedure must be repeated if the data save operation was interrupted (e.g. if the power supply voltage failed).

Help for error value = 13:

- Use a memory card with more memory space.

Remedy for fault value = 16:

- check the DRIVE-CLiQ wiring.

Remedy for fault value = 20:

- Use an SMI that is not blank.

Help for error value = 29:

- check and correct the target and actual topologies for the SMIs.

- Repeat the save procedure.

p4693[0...1] SMI spare part data backup directory / SMI dat_bkup dir

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	399	0

Description: Sets the directory for downloading and saving data.

Example:

The SMI has the component number 5 and the SMI data (motor/encoder data) is to be stored in subdirectory C205.

--> p4690 = 5, p4693[0] = 205, p4691 = 1

Index: [0] = Subdirectory selection
[1] = Reserved

Dependency: Refer to: p4691, r4694

Notice: If p4693[0] is not equal to 0 and p4693[0] is not equal to p4690, the following applies:

- Only a number >= 200 may be selected for the subdirectory when saving.

- in the case of downloads, a selection for the subdirectory may only be made for an SMI/DQI with a component number >= 200 (preliminary component number) (p4690 >= 200).

Note: DQI: DRIVE-CLiQ Sensor Integrated

SMI: SINAMICS Sensor Module Integrated

For index [0]:

This index is used to select the subdirectory for saving and downloading data. The motor article number (MLFB) of the corresponding data backup is displayed in r4694.

For p4693[0] = 0, the following applies:

The directory is determined by the setting of p4690.

r4694[0...19] SMI spare part data backup motor article number / SMI dat_bkup MLFB

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the motor article number (MLFB) of the data backup selected with p4693.

Dependency: Refer to: p4691, p4692

Caution: If the selected subdirectory contains a number of data sets, "More Datasets" is displayed in r4694[0...19].

If there is no SMI data (motor/encoder data) in the selected subdirectory or if the selected subdirectory does not exist, the following applies:

- the number of the next subdirectory located is displayed.
- this subdirectory is not checked for valid SMI data.
- if another subdirectory cannot be located, nothing is displayed in r4694[0...19].

Note: SMI: SINAMICS Sensor Module Integrated

p4700[0...1] Trace control / Trace control

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
0	1	0

Description: Setting to control the trace function.

Value:
0: Stop trace
1: Start trace

Index:
[0] = Trace 0
[1] = Trace 1

p4701 Measuring function control / Meas fct ctrl

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
0	3	0

Description: Setting to control the measurement function.

Value:
0: Stop measuring function
1: Start measuring function
2: Measuring function check parameterization
3: Start measuring function without enable signals

p4703[0...1] Trace options / Trace options

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Sets the options for the trace.

Index:
[0] = Trace 0
[1] = Trace 1

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Automatically start trace with time slices	Yes	No	-

Dependency: Refer to: p4700

Note: For bit 00:

0: The trace starts with p4700 as before.

1: When powering up, the trace starts immediately with the saved parameter settings with the start of the time slices.

r4705[0...1] Trace status / Trace status

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
0	6	-

Description: Displays the actual status of the trace.

Value:
0: Trace inactive
1: Trace is recording presamples
2: Trace is waiting for trigger event
3: Trace is recording
4: Recording (trace) ended
5: Trace inactive with permissible configuration data
6: Trace inactive with inadmissible configuration data

Index:
[0] = Trace 0
[1] = Trace 1

r4706 Measuring function status / Meas fct status

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
0	5	-

Description: Displays the actual status of the measuring function.

Value:
0: Measurement function inactive
1: Measuring function parameterization checked
2: Measuring function waits for stabilizing time
3: Measuring function recording (tracing)
4: Measuring function trace ended with error
5: Measuring function trace successfully completed

p4707 Measurement function configuration / Meas fct config

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
0	1	0

Description: Setting to configure the measurement function.

Value:
0: Standard
1: Free measurement function

Dependency: The parameter cannot be changed when the measurement function has been started (r4706 = 2, 3).

Note: This parameter involves free measurement functions, and is only active for p4810 = 6.

For value = 0:

The free measuring function is parameterized with master control.

For value = 1:

The free measuring function is parameterized without master control.

r4708[0...1] Trace memory space required / Trace mem required

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the required memory in bytes for the actual parameterization.

Index:
[0] = Trace 0
[1] = Trace 1

Dependency: Refer to: r4799

r4709[0...1] Trace memory space required for measuring functions / Trace mem required

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the required memory in bytes for the actual parameterization.
This applies, if the trace for the measurement functions is used.

Index:
[0] = Trace 0
[1] = Trace 1

Dependency: Refer to: r4799

p4710[0...1] Trace trigger condition / Trace Trig_cond

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
1	8	2

Description: Sets the trigger condition for the trace.

Value:
1: Immediate trace start
2: Positive edge
3: Negative edge
4: Entry to hysteresis band
5: Leaving hysteresis band
6: Trigger at bit mask
7: Start with function generator
8: Trigger at bit mask with edge

Index:
[0] = Trace 0
[1] = Trace 1

p4711[0...5] Trace trigger signal / Trace trig_signal

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	0

Description: Selects the trigger signal for the trace.

Index:
[0] = Trace 0 parameter in BICO format
[1] = Trace 1 parameter in BICO format
[2] = Trace 0 PINx with DO Id and chart Id
[3] = Trace 0 PINx with block Id and PIN Id
[4] = Trace 1 PINy with DO Id and chart Id
[5] = Trace 1 PINy with block Id and PIN Id

Dependency: Only effective when p4710 does not equal 1.

Note: It only makes sense to trace the PINs using the commissioning tool.

For index 2(4) and 3(5) equal to zero, index 0(1) can only be written and vice versa.

For index [0...1]:

Here, the trigger signal for trace 0 or 1 is entered as parameter in the BICO format.

For trace with a physical address (p4789), the data type of the trigger signal is set here.

For index [2...3]:

The triggering PIN for trace 0 is entered here.

Index 2 bit 31 ... 16: Number of the Drive Object (DO), bit 15 ... 0: Number of the chart

Index 3 bit 31 ... 16: Number of the block, bit 15 ... 0: Number of the PIN

For index [4...5]:

The triggering PIN for trace 1 is entered here.

Index 4 bit 31 ... 16: Number of the Drive Object (DO), bit 15 ... 0: Number of the chart

Index 5 bit 31 ... 16: Number of the block, bit 15 ... 0: Number of the PIN

p4712[0...1] Trace trigger threshold / Trace trig_thresh

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-340.28235E36	340.28235E36	0.00

Description: Sets the trigger threshold for the trace.

Index:
[0] = Trace 0
[1] = Trace 1

Dependency: Only effective when p4710 = 2, 3.

p4713[0...1] Trace tolerance band trigger threshold 1 / Trace trig thr 1

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-340.28235E36	340.28235E36	0.00

Description: Sets the first trigger threshold for trigger via tolerance band.

Index:
[0] = Trace 0
[1] = Trace 1

Dependency: Only effective when p4710 = 4, 5.

p4714[0...1] Trace tolerance band trigger threshold 2 / Trace trig thr 2

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-340.28235E36	340.28235E36	0.00

Description: Sets the second trigger threshold for trigger via tolerance band

Index: [0] = Trace 0
[1] = Trace 1

Dependency: Only effective when p4710 = 4, 5.

p4715[0...1] Trace bit mask trigger, bit mask / Trace trig mask

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
0	4294967295	0

Description: Sets the bit mask for the bit mask trigger.

Index: [0] = Trace 0
[1] = Trace 1

Dependency: Only effective when p4710 = 6 or p4710 = 8.

p4716[0...1] Trace bit mask trigger trigger condition / Trace Trig_cond

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
0	4294967295	0

Description: Sets the trigger condition for bit mask trigger.

Index: [0] = Trace 0
[1] = Trace 1

Dependency: Only effective when p4710 = 6.

p4717 Measuring function number of averaging operations / Meas fct avg qty

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the number of averaging operations for the measuring function.

p4718 Measuring function number of stabilizing periods / MeasFct StabPerQty

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the number of stabilizing periods for the measuring function.

r4719[0...1] Trace trigger index / Trace Trig_index

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the trigger index in the trace buffer.
The trigger event occurred at this point.

Index: [0] = Trace 0
[1] = Trace 1

Dependency: Only valid when p4705 = 4.

p4720[0...1] Trace recording cycle / Trace record_cyc

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
0.000 [ms]	60000.000 [ms]	1.000 [ms]

Description: Sets the recording cycle for the trace.

Index: [0] = Trace 0
[1] = Trace 1

p4721[0...1] Trace recording time / Trace record_time

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
0.000 [ms]	340.28235E36 [ms]	1000.000 [ms]

Description: Sets the recording time for the trace.

Index: [0] = Trace 0
[1] = Trace 1

p4722[0...1] Trace trigger delay / Trace trig_delay

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-340.28235E36 [ms]	340.28235E36 [ms]	0.000 [ms]

Description: Sets the trigger delay for the trace.

Trigger delay < 0:

Pretrigger: Tracing (recording) starts the selected time before the trigger event actually occurs.

Trigger delay > 0:

Post trigger: Tracing does not start until the set time after the trigger event.

Index: [0] = Trace 0
[1] = Trace 1

p4723[0...1] Trace time slice cycle / Trace cycle

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
0.03125 [ms]	4.00000 [ms]	0.12500 [ms]

Description: Sets the time slice cycle in which the trace is called.

Index: [0] = Trace 0
[1] = Trace 1

p4724[0...1] Trace average in the time range / Trace average

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
0000 bin	0001 bin	0000 bin

Description: Sets the averaging in the time range for the trace.

Index: [0] = Trace 0
[1] = Trace 1

r4725[0...1] Trace data type 1 traced / Trace rec type 1

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the recorded data type 1 for the trace.

Index: [0] = Trace 0
[1] = Trace 1

r4726[0...1] Trace data type 2 traced / Trace rec type 2

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the recorded data type 2 for the trace.

Index:
[0] = Trace 0
[1] = Trace 1

r4727[0...1] Trace data type 3 traced / Trace rec type 3

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the recorded data type 3 for the trace.

Index:
[0] = Trace 0
[1] = Trace 1

r4728[0...1] Trace data type 4 traced / Trace rec type 4

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the recorded data type 4 for the trace.

Index:
[0] = Trace 0
[1] = Trace 1

r4729[0...1] Trace number of recorded values / Trace rec values

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the number of traced values for each signal.

Index:
[0] = Trace 0
[1] = Trace 1

Dependency: Only valid when p4705 = 4.

p4730[0...5] Trace record signal 0 / Trace record sig 0

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	0

Description: Selects the first signal to be traced.

Index:
[0] = Trace 0 parameter in BICO format
[1] = Trace 1 parameter in BICO format
[2] = Trace 0 PINx with DO Id and chart Id
[3] = Trace 0 PINx with block Id and PIN Id
[4] = Trace 1 PINy with DO Id and chart Id
[5] = Trace 1 PINy with block Id and PIN Id

p4731[0...5] Trace record signal 1 / Trace record sig 1

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	0

Description: Selects the second signal to be traced.

Index:
[0] = Trace 0 parameter in BICO format
[1] = Trace 1 parameter in BICO format
[2] = Trace 0 PINx with DO Id and chart Id
[3] = Trace 0 PINx with block Id and PIN Id
[4] = Trace 1 PINy with DO Id and chart Id
[5] = Trace 1 PINy with block Id and PIN Id

p4732[0...5] Trace record signal 2 / Trace record sig 2

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	0

Description: Selects the third signal to be traced.

Index:
[0] = Trace 0 parameter in BICO format
[1] = Trace 1 parameter in BICO format
[2] = Trace 0 PINx with DO Id and chart Id
[3] = Trace 0 PINx with block Id and PIN Id
[4] = Trace 1 PINy with DO Id and chart Id
[5] = Trace 1 PINy with block Id and PIN Id

p4733[0...5] Trace record signal 3 / Trace record sig 3

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	0

Description: Selects the fourth signal to be traced.

Index:
[0] = Trace 0 parameter in BICO format
[1] = Trace 1 parameter in BICO format
[2] = Trace 0 PINx with DO Id and chart Id
[3] = Trace 0 PINx with block Id and PIN Id
[4] = Trace 1 PINy with DO Id and chart Id
[5] = Trace 1 PINy with block Id and PIN Id

p4734[0...5] Trace record signal 4 / Trace record sig 4

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	0

Description: Selects the fifth signal to be traced.

Index:
[0] = Trace 0 parameter in BICO format
[1] = Trace 1 parameter in BICO format
[2] = Trace 0 PINx with DO Id and chart Id
[3] = Trace 0 PINx with block Id and PIN Id
[4] = Trace 1 PINy with DO Id and chart Id
[5] = Trace 1 PINy with block Id and PIN Id

p4735[0...5] Trace record signal 5 / Trace record sig 5

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	0

Description: Selects the sixth signal to be traced.

Index:
[0] = Trace 0 parameter in BICO format
[1] = Trace 1 parameter in BICO format
[2] = Trace 0 PINx with DO Id and chart Id
[3] = Trace 0 PINx with block Id and PIN Id
[4] = Trace 1 PINy with DO Id and chart Id
[5] = Trace 1 PINy with block Id and PIN Id

p4736[0...5] Trace record signal 6 / Trace record sig 6

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	0

Description: Selects the seventh signal to be traced.

Index:
[0] = Trace 0 parameter in BICO format
[1] = Trace 1 parameter in BICO format
[2] = Trace 0 PINx with DO Id and chart Id
[3] = Trace 0 PINx with block Id and PIN Id
[4] = Trace 1 PINy with DO Id and chart Id
[5] = Trace 1 PINy with block Id and PIN Id

p4737[0...5] Trace record signal 7 / Trace record sig 7

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	0

Description: Selects the eighth signal to be traced.

Index:
[0] = Trace 0 parameter in BICO format
[1] = Trace 1 parameter in BICO format
[2] = Trace 0 PINx with DO Id and chart Id
[3] = Trace 0 PINx with block Id and PIN Id
[4] = Trace 1 PINy with DO Id and chart Id
[5] = Trace 1 PINy with block Id and PIN Id

r4740[0...16383] Trace 0 trace buffer signal 0 floating point / Trace 0 rec sig 0

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the trace buffer (record buffer) for trace 0 and signal 0.

The trace (record) buffer is sub-divided into memory banks, each containing 16384 values. Parameter p4795 can be used to toggle between the individual banks.

Example A:

The first 16384 values of signal 0, trace 0 are to be read out.

In this case, memory bank 0 is set with p4795 = 0. The first 16384 values can now be read out using r4740[0] to r4740[16383].

Example B:

The values 16385 to 32768 from signal 0, trace 0 are to be read out.

In this case, memory bank 1 is set with p4795 = 1. The values can now be read out in r4740[0] to r4740[16383].

Dependency: Refer to: p4795

r4741[0...16383] Trace 0 trace buffer signal 1 floating point / Trace 0 rec sig 1

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the trace buffer (record buffer) for trace 0 and signal 1.

Dependency: Refer to: r4740, p4795

r4742[0...16383] Trace 0 trace buffer signal 2 floating point / Trace 0 rec sig 2

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the trace buffer (record buffer) for trace 0 and signal 2.

Dependency: Refer to: r4740, p4795

r4743[0...16383] Trace 0 trace buffer signal 3 floating point / Trace 0 rec sig 3

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the trace buffer (record buffer) for trace 0 and signal 3.

Dependency: Refer to: r4740, p4795

r4744[0...16383] Trace 0 trace buffer signal 4 floating point / Trace 0 rec sig 4

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the trace buffer (record buffer) for trace 0 and signal 4.

Dependency: Refer to: r4740, p4795

r4745[0...16383] Trace 0 trace buffer signal 5 floating point / Trace 0 rec sig 5

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the trace buffer (record buffer) for trace 0 and signal 5.

Dependency: Refer to: r4740, p4795

r4746[0...16383] Trace 0 trace buffer signal 6 floating point / Trace 0 rec sig 6

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the trace buffer (record buffer) for trace 0 and signal 6.

Dependency: Refer to: r4740, p4795

r4747[0...16383] Trace 0 trace buffer signal 7 floating point / Trace 0 rec sig 7

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the trace buffer (record buffer) for trace 0 and signal 7.

Dependency: Refer to: r4740, p4795

r4750[0...16383] Trace 1 trace buffer signal 0 floating point / Trace 1 rec sig 0

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the trace buffer (record buffer) for trace 1 and signal 0.

Dependency: Refer to: r4740, p4795

r4751[0...16383] Trace 1 trace buffer signal 1 floating point / Trace 1 rec sig 1

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the trace buffer (record buffer) for trace 1 and signal 1.

Dependency: Refer to: r4740, p4795

r4752[0...16383] Trace 1 trace buffer signal 2 floating point / Trace 1 rec sig 2

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the trace buffer (record buffer) for trace 1 and signal 2.

Dependency: Refer to: r4740, p4795

r4753[0...16383] Trace 1 trace buffer signal 3 floating point / Trace 1 rec sig 3

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the trace buffer (record buffer) for trace 1 and signal 3.

Dependency: Refer to: r4740, p4795

r4754[0...16383] Trace 1 trace buffer signal 4 floating point / Trace 1 rec sig 4

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the trace buffer (record buffer) for trace 1 and signal 4.

Dependency: Refer to: r4740, p4795

r4755[0...16383] Trace 1 trace buffer signal 5 floating point / Trace 1 rec sig 5

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the trace buffer (record buffer) for trace 1 and signal 5.

Dependency: Refer to: r4740, p4795

r4756[0...16383] Trace 1 trace buffer signal 6 floating point / Trace 1 rec sig 6

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the trace buffer (record buffer) for trace 1 and signal 6.

Dependency: Refer to: r4740, p4795

r4757[0...16383] Trace 1 trace buffer signal 7 floating point / Trace 1 rec sig 7

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the trace buffer (record buffer) for trace 1 and signal 7.

Dependency: Refer to: r4740, p4795

r4760[0...16383] Trace 0 trace buffer signal 0 / Trace 0 rec sig 0

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the trace buffer (record buffer) for trace 0 and signal 0 as integer number.

Note: For signals, data type I32 or U32, the trace buffer is assigned as follows:

r4760[0] = value 0

r4760[1] = value 1

...

r4760[8191] = value 8191

For signals, data type I16 or U16, the trace buffer is assigned as follows:

r4760[0] = value 1 (bit 31 ... 16) and value 0 (bit 15 ... 0)

r4760[1] = value 3 (bit 31 ... 16) and value 2 (bit 15 ... 0)

...

r4760[8191] = value 16383 (bit 31 ... 16) and value 16382 (bit 15 ... 0)

For signals, data type I8 or U8, the trace buffer is assigned as follows:

r4760[0] = value 3 (bit 31 ... 24) value 2 (bit 23 ... 16) value 1 (bit 15 ... 8) value 0 (bit 7 ... 0)

r4760[1] = value 7 (bit 31 ... 24) value 6 (bit 23 ... 16) value 5 (bit 15 ... 8) value 4 (bit 7 ... 0)

...

r4760[8191] = value 32767 (bit 31 ... 24) value 32766 (bit 23 ... 16) value 32765 (bit 15 ... 8) value 32764 (bit 7 ... 0)

r4761[0...16383] Trace 0 trace buffer signal 1 / Trace 0 rec sig 1

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the trace buffer (record buffer) for trace 0 and signal 1.

Dependency: Refer to: r4760

r4762[0...16383] Trace 0 trace buffer signal 2 / Trace 0 rec sig 2

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the trace buffer (record buffer) for trace 0 and signal 2.

Dependency: Refer to: r4760

r4763[0...16383] Trace 0 trace buffer signal 3 / Trace 0 rec sig 3

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 0
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the trace buffer (record buffer) for trace 0 and signal 3.

Dependency: Refer to: r4760

r4764[0...16383] Trace 0 trace buffer signal 4 / Trace 0 rec sig 4

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 0
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the trace buffer (record buffer) for trace 0 and signal 4.

Dependency: Refer to: r4760

r4765[0...16383] Trace 0 trace buffer signal 5 / Trace 0 rec sig 5

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 0
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the trace buffer (record buffer) for trace 0 and signal 5.

Dependency: Refer to: r4760

r4766[0...16383] Trace 0 trace buffer signal 6 / Trace 0 rec sig 6

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 0
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the trace buffer (record buffer) for trace 0 and signal 6.

Dependency: Refer to: r4760

r4767[0...16383] Trace 0 trace buffer signal 7 / Trace 0 rec sig 7

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 0
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the trace buffer (record buffer) for trace 0 and signal 7.

Dependency: Refer to: r4760

r4770[0...16383] Trace 1 trace buffer signal 0 / Trace 1 rec sig 0

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410			
	Can be changed: -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 0
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the trace buffer (record buffer) for trace 1 and signal 0.

Dependency: Refer to: r4760

r4771[0...16383] Trace 1 trace buffer signal 1 / Trace 1 rec sig 1

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410			
	Can be changed: -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 0
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the trace buffer (record buffer) for trace 1 and signal 1.

Dependency: Refer to: r4760

r4772[0...16383] Trace 1 trace buffer signal 2 / Trace 1 rec sig 2

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410			
	Can be changed: -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 0
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the trace buffer (record buffer) for trace 1 and signal 2.

Dependency: Refer to: r4760

r4773[0...16383] Trace 1 trace buffer signal 3 / Trace 1 rec sig 3

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410			
	Can be changed: -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 0
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the trace buffer (record buffer) for trace 1 and signal 3.

Dependency: Refer to: r4760

r4774[0...16383] Trace 1 trace buffer signal 4 / Trace 1 rec sig 4

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410			
	Can be changed: -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 0
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the trace buffer (record buffer) for trace 1 and signal 4.

Dependency: Refer to: r4760

r4775[0...16383] Trace 1 trace buffer signal 5 / Trace 1 rec sig 5

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the trace buffer (record buffer) for trace 1 and signal 5.

Dependency: Refer to: r4760

r4776[0...16383] Trace 1 trace buffer signal 6 / Trace 1 rec sig 6

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the trace buffer (record buffer) for trace 1 and signal 6.

Dependency: Refer to: r4760

r4777[0...16383] Trace 1 trace buffer signal 7 / Trace 1 rec sig 7

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the trace buffer (record buffer) for trace 1 and signal 7.

Dependency: Refer to: r4760

p4780[0...1] Trace physical address signal 0 / Trace PhyAddr Sig0

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
0000 bin	1111 1111 1111 1111 1111 1111 1111 1111 bin	0000 bin

Description: Sets the physical address for the first signal to be traced.

The data type is defined using p4730.

Index:
[0] = Trace 0
[1] = Trace 1

p4781[0...1]	**Trace physical address signal 1 / Trace PhyAddr Sig1**		
CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 0
	Min	**Max**	**Factory setting**
	0000 bin	1111 1111 1111 1111 1111 1111 1111 1111 bin	0000 bin

Description: Sets the physical address for the second signal to be traced.

The data type is defined using p4731.

Index:
[0] = Trace 0
[1] = Trace 1

p4782[0...1]	**Trace physical address signal 2 / Trace PhyAddr Sig2**		
CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 0
	Min	**Max**	**Factory setting**
	0000 bin	1111 1111 1111 1111 1111 1111 1111 1111 bin	0000 bin

Description: Sets the physical address for the third signal to be traced.

The data type is defined using p4732.

Index:
[0] = Trace 0
[1] = Trace 1

p4783[0...1]	**Trace physical address signal 3 / Trace PhyAddr Sig3**		
CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 0
	Min	**Max**	**Factory setting**
	0000 bin	1111 1111 1111 1111 1111 1111 1111 1111 bin	0000 bin

Description: Sets the physical address for the fourth signal to be traced.

The data type is defined using p4733.

Index:
[0] = Trace 0
[1] = Trace 1

p4784[0...1]	**Trace physical address signal 4 / Trace PhyAddr Sig4**		
CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 0
	Min	**Max**	**Factory setting**
	0000 bin	1111 1111 1111 1111 1111 1111 1111 1111 bin	0000 bin

Description: Sets the physical address for the fifth signal to be traced.

The data type is defined using p4734.

Index:
[0] = Trace 0
[1] = Trace 1

p4785[0...1] Trace physical address signal 5 / Trace PhyAddr Sig5

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
0000 bin	1111 1111 1111 1111 1111 1111 1111 1111 bin	0000 bin

Description: Sets the physical address for the sixth signal to be traced.

The data type is defined using p4735.

Index: [0] = Trace 0
[1] = Trace 1

p4786[0...1] Trace physical address signal 6 / Trace PhyAddr Sig6

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
0000 bin	1111 1111 1111 1111 1111 1111 1111 1111 bin	0000 bin

Description: Sets the physical address for the seventh signal to be traced.

The data type is defined using p4736.

Index: [0] = Trace 0
[1] = Trace 1

p4787[0...1] Trace physical address signal 7 / Trace PhyAddr Sig7

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
0000 bin	1111 1111 1111 1111 1111 1111 1111 1111 bin	0000 bin

Description: Sets the physical address for the eighth signal to be traced.

The data type is defined using p4737.

Index: [0] = Trace 0
[1] = Trace 1

p4789[0...1] Trace physical address trigger signal / Trace PhyAddr Trig

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the physical address for the trigger signal.

The data type is defined by making the appropriate selection in p4711.

Index: [0] = Trace 0
[1] = Trace 1

r4790[0...1] Trace data type 5 traced / Trace rec type 5

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 0
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the recorded data type 5 for the trace.

Index:
[0] = Trace 0
[1] = Trace 1

r4791[0...1] Trace data type 6 traced / Trace rec type 6

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 0
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the recorded data type 6 for the trace.

Index:
[0] = Trace 0
[1] = Trace 1

r4792[0...1] Trace data type 7 traced / Trace rec type 7

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 0
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the recorded data type 7 for the trace.

Index:
[0] = Trace 0
[1] = Trace 1

r4793[0...1] Trace data type 8 traced / Trace rec type 8

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 0
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the recorded data type 8 for the trace.

Index:
[0] = Trace 0
[1] = Trace 1

p4795 Trace memory bank changeover / Trace mem changeov

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
0	500	0

Description: Changes over the memory bank to read out the contents of the trace buffer.

Dependency: Refer to: r4740, r4741, r4742, r4743, r4750, r4751, r4752, r4753

r4797[0...1] Trace 0 trigger instant / Trace 0 t_trigger

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the instant in time for fulfilling the trigger condition for trace recorder 0.

The time comprises milliseconds (index 0) and days (index 1).

Index: [0] = Milliseconds
[1] = Days

Dependency: Refer to: r2114, r3102, r4719

Notice: The accuracy of the trigger instant depends on the accuracy of the underlying basis time.

For clarification:

The trigger instant is calculated with a µs accuracy. If the underlying basis time is only available with ms accuracy, then as a result of rounding effects, an inaccuracy of 1 ms can occur.

When referred to r4719, the trigger instant can therefore deviate somewhat.

Note: If the time calculation of the drive can be synchronized with a higher-level control, then this time can be taken from the actual UTC time (r3102). Otherwise, the time is based on the system runtime (r2114).

r4798[0...1] Trace 1 trigger instant / Trace 1 t_trigger

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the instant in time for fulfilling the trigger condition for trace recorder 1.

The time comprises milliseconds (index 0) and days (index 1).

Index: [0] = Milliseconds
[1] = Days

Dependency: Refer to: r2114, r3102, r4719

Notice: The accuracy of the trigger instant depends on the accuracy of the underlying basis time.

For clarification:

The trigger instant is calculated with a µs accuracy. If the underlying basis time is only available with ms accuracy, then as a result of rounding effects, an inaccuracy of 1 ms can occur.

When referred to r4719, the trigger instant can therefore deviate somewhat.

Note: If the time calculation of the drive can be synchronized with a higher-level control, then this time can be taken from the actual UTC time (r3102). Otherwise, the time is based on the system runtime (r2114).

r4799 Trace memory location free / Trace mem free

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the free memory for the trace in bytes.

Dependency: Refer to: r4708

p4800 Function generator control / FG control

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
0	3	0

Description: The function generator is started with p4800 = 1.

The signal is only generated for a 1 signal of binector input p4819.

Value:
0: Stop function generator
1: Start function generator
2: Check function generator parameterization
3: Start function generator without enable signals

Dependency: Refer to: p4819

r4805 Function generator status / FG status

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
0	6	-

Description: Displays the actual status of the function generator.

Value:
0: Inactive
1: Generate accelerating ramp to offset
2: Generate parameterized signal shape
3: Generate brake ramp
4: Function generator stopped due to missing enable signals
5: Function generator waits for BI: p4819
6: Function generator parameterization has been checked

Dependency: Refer to: p4800, p4819

r4806.0 BO: Function generator status signal / FG status signal

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status of the function generator.

0 signal: Function generator inactive

1 signal: Function generator running

Bit field:	Bit	Signal name	1 signal	0 signal	FP
	00	Bit 0	ON	OFF	-

p4810 Function generator mode / FG operating mode

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
0	99	0

Description: Sets the operating mode of the function generator.

Value:
0: Connection at connector output r4818
1: Connection at current setpoint after filter and r4818
2: Connection as disturbing torque and r4818
3: Connection at speed setpoint after filter and r4818
4: Connection at current setpoint before filter and r4818
5: Connection at speed setpoint before filter and r4818
6: Connection for free measurement function r4818 and r4834
99: Connection at physical address and r4818

p4812 Function generator physical address / FG phys address

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
0	4294967295	0

Description: Sets the physical address where the function generator is to be connected.

Dependency: Only effective when p4810 = 99.

p4813 Function generator physical address reference value / FG phys addr ref

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
1.00	1000000.00	1.00

Description: Sets the reference value for 100 % for referred inputs.

Dependency: Only effective when p4810 = 99.

p4815[0...2] Function generator drive number / FG drive number

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
0	65535	0

Description: Selects the required drive where the function generator is to be connected.

Index:
[0] = First drive for connection
[1] = Second drive for connection
[2] = Third drive for connection

Dependency: Only effective when p4810 = 1, 2, 3, 4 or 5.

Note: For the function generator, only type SERVO, VECTOR or DC_CTRL type drives can be used.

p4816 Function generator output signal integer number scaling / FG outp integ scal

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-2147483648	2147483647	0

Description: Sets the scaling for the integer number of the output signal for the function generator.

Dependency: Refer to: r4805, r4817

Note: The parameter can only be changed in the following operating states:

r4805 = 0, 4, 6

r4817 CO: Function generator output signal integer number / FG outp integ no.

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output for the integer number of the output signal for the function generator.

Dependency: Refer to: p4816

Note: The value is output independent of the function generator operating mode.

r4818 CO: Function generator output signal / FG outp_sig

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 0
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the output signal for the function generator.

Dependency: Refer to: p4810

Note: The value is displayed independently of the function generator mode.

p4819 BI: Function generator control / FG control

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source to control the function generator.

When the function generator is running, signal generation is stopped with binector p4819 = 0 signal and p4800 is set = 0.

Dependency: Refer to: p4800

p4820 Function generator signal shape / FG signal shape

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
1	5	1

Description: Sets the signal to be generated for the function generator.

Value:
1: Square-wave
2: Staircase
3: Delta
4: Binary noise - PRBS (Pseudo Random Binary Signal)
5: Sine-wave

p4821 Function generator period / FG period duration

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
0.00 [ms]	60000.00 [ms]	1000.00 [ms]

Description: Sets the period of the signal to be generated for the function generator.

Dependency: Ineffective when p4820 = 4 (PRBS).

p4822 Function generator pulse width / FG pulse width

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
0.00 [ms]	60000.00 [ms]	500.00 [ms]

Description: Sets the pulse width for the signal to be generated for the function generator.

Dependency: Only effective when p4820 = 1 (square-wave).

p4823 Function generator bandwidth / FG bandwidth

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
0.0025 [Hz]	16000.0000 [Hz]	4000.0000 [Hz]

Description: Sets the bandwidth for the signal to be generated for the function generator.

Dependency: Only effective when p4820 = 4 (PRBS).

Refer to: p4830

Refer to: A02041

p4824 Function generator amplitude / FG amplitude

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-1600.00 [%]	1600.00 [%]	5.00 [%]

Description: Sets the amplitude for the signal to be generated for the function generator.

Dependency: Units are dependent on p4810.

If p4810 = 1, 2, 4: The amplitude is referred to p2002 (reference current).

If p4810 = 3, 5: The amplitude is referred to p2000 (reference speed).

p4825 Function generator 2nd amplitude / FG 2nd amplitude

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-1600.00 [%]	1600.00 [%]	7.00 [%]

Description: Sets the second amplitude for the signal to be generated for the function generator.

Dependency: Only effective for p4820 = 2 (staircase).

Units are dependent on p4810.

If p4810 = 1, 2, 4: The amplitude is referred to p2002 (reference current).

If p4810 = 3, 5: The amplitude is referred to p2000 (reference speed).

p4826 Function generator offset / FG offset

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-1600.00 [%]	1600.00 [%]	0.00 [%]

Description: Sets the offset (DC component) of the signal to be generated for the function generator.

Dependency: Units are dependent on p4810.

If p4810 = 1, 2, 4: The offset is referred to p2002 (reference current).

If p4810 = 3, 5: The offset is referred to p2000 (reference speed).

If p4810 = 2: In order to avoid the undesirable effects of play (backlash), the offset does not act on the current setpoint, but instead on the speed setpoint.

p4827 Function generator ramp-up time to offset / FG ramp-up offset

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
0.00 [ms]	100000.00 [ms]	32.00 [ms]

Description: Sets the ramp-up time to the offset for the function generator.

p4828 Function generator lower limit / FG lower limit

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-10000.00 [%]	0.00 [%]	-100.00 [%]

Description: Sets the lower limit for the function generator.

Dependency: For p4810 = 2 the limit only applies to the current setpoint, but not the speed setpoint (offset).

p4829 Function generator upper limit / FG upper limit

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
0.00 [%]	10000.00 [%]	100.00 [%]

Description: Sets the upper limit for the function generator.

Dependency: For p4810 = 2 the limit only applies to the current setpoint, but not the speed setpoint (offset).

p4830 Function generator time slice cycle / FG time slice

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
0.03125 [ms]	2.00000 [ms]	0.12500 [ms]

Description: Sets the time slice cycle in which the function generator is called.

p4831 Function generator amplitude scaling / FG amplitude scal

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
0.00000 [%]	200.00000 [%]	100.00000 [%]

Description: Sets the scaling for the amplitude of the signal waveforms for all output channels.
The value can be changed while the function generator is running.

p4832[0...2] Function generator amplitude scaling / FG amplitude scal

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-340.28235E36 [%]	340.28235E36 [%]	100.00000 [%]

Description: Sets the scaling for the amplitude of the signal waveforms separately for each output channel.
The value cannot be changed while the function generator is running.

Index:	[0] = First drive for connection [1] = Second drive for connection [2] = Third drive for connection

p4833[0...2] Function generator offset scaling / FG offset scal

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-340.28235E36 [%]	340.28235E36 [%]	100.00000 [%]

Description: Sets the scaling for the offset of the signal waveforms separately for each output channel.

The value cannot be changed while the function generator is running.

Index:
[0] = First drive for connection
[1] = Second drive for connection
[2] = Third drive for connection

r4834[0...4] CO: Function generator free measurement output signal / FG fr MeasFct outp

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 0
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the output signal for the free measurement function.

Index:
[0] = Signal 1
[1] = Signal 2
[2] = Signal 3
[3] = Signal 4
[4] = Signal 5

Dependency: Refer to: p4810

Note: The signals are only output in the "free measurement function" operating mode (p4810 = 6)

p4835[0...4] Function generator free measurement function scaling / FG fr MeasFct scal

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-200.00000 [%]	200.00000 [%]	100.00000 [%]

Description: Sets the scaling of the output signals for the free measurement function.

Index:
[0] = Signal 1
[1] = Signal 2
[2] = Signal 3
[3] = Signal 4
[4] = Signal 5

Note: The parameter cannot be changed when the measurement function has been started (r4706 = 2, 3).

p4840[0...1] MTrace cycle number setting / Cycle number

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
0	4294967295	0

Description: Sets the number of cycles of a multiple trace.

The multiple trace is deactivated with a value = 0.

The multiple trace is permanently activated for a value >= 100000.

Index: [0] = Trace 0
[1] = Trace 1

Dependency: Refer to: r4841, p4844

Refer to: A02097, A02098

Notice: A multiple trace can have a negative impact on the total system performance.

From their inherent principle of operation, flash memory cards are subject to wear as a result of write operations. As a consequence, the lifetime of flash memory cards is reduced when using the multiple trace functionality.

r4841[0...1] MTrace cycle actual display / Cycle act display

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the currently running cycle (including deadtime) of the multiple trace.

Index: [0] = Trace 0
[1] = Trace 1

Dependency: Refer to: p4840, p4844

p4844[0...1] MTrace ring buffer files number / Ring buff file qty

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Trace and function generator	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
10	10	10

Description: Sets the number of ring buffer files for the measurement results of the multiple trace.

Index: [0] = Trace 0
[1] = Trace 1

Dependency: Refer to: p4840, r4841

r4899 Status word sequence control / ZSW seq_ctrl

TM41

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status word of the sequence control from Terminal Module 41 (TM41).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Ready for switching on	Yes	No	-
01	Ready	Yes	No	-
02	Operation enabled	Yes	No	-
03	Fault present	Yes	No	-
04	Coast down active	No	Yes	-
05	Quick Stop active	No	Yes	-
06	Switching on inhibited	Yes	No	-
07	Alarm present	Yes	No	-
09	Control request	Yes	No	-
14	Motor rotates forwards	Yes	No	-

r4950 TEC DO-specific number / TEC DO qty

All objects

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: OEM range	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	32	-

Description: Number of Technology Extensions installed on this drive object.

Dependency: Refer to: r4951, r4952, r4955, p4956, r4957, r4958, r4959, r4960

Note: DO: Drive Object

TEC: Technology Extension

r4951 TEC DO-specific identifier total length / TEC DO ident tot_l

All objects

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: OEM range	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	288	-

Description: Displays the total length of the identifier of the Technology Extension installed on this drive object.

Dependency: Refer to: r4950, r4952, r4955, p4956, r4957, r4958, r4959, r4960

Note: The identifier of a Technology Extension comprises a maximum of 8 characters plus separator.

TEC: Technology Extension

r4952 TEC DO-specific GUID total length / TEC DO GUID length

All objects

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: OEM range	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	576	-

Description: Displays the total length of the GUIDs of the Technology Extensions installed on this drive object.

Dependency: Refer to: r4950, r4951, r4955, p4956, r4957, r4958, r4959, r4960

Note: The GUID of a Technology Extension comprises 16 characters plus 1 character major information plus 1 character, minor information.
GUID: Globally Unique IDentifier
TEC: Technology Extension

r4955[0...n] TEC DO-specific identifier / TEC DO ident

All objects

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned8	**Dyn. index:** r4951	**Func. diagram:** -
P-Group: OEM range	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the identifier of the Technology Extensions installed on this drive object.
r4955[0...8]: Identifier of Technology Extension 1
r4955[9...17]: Identifier of Technology Extension 2, ...

Dependency: Refer to: r4950, r4951, r4952, p4956, r4957, r4958, r4959, r4960

Notice: This parameter is only indexed if at least one drive object-specific Technology Extension exists (p4950 > 0).

Note: TEC: Technology Extension

p4956[0...n] TEC DO-specific activation / TEC DO act

All objects

Can be changed: C1, T	**Calculated:** -	**Access level:** 4
Data type: Integer16	**Dyn. index:** r4950	**Func. diagram:** -
P-Group: OEM range	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Setting to activate the Technology Extensions installed on this drive object.
r4956[0]: Activation of Technology Extension 1
r4956[1]: Activation of Technology Extension 2, ...

Value:
0: Technology Extension inactive
1: Technology Extension active

Dependency: Refer to: r4950, r4951, r4952, r4955, r4957, r4958, r4959, r4960

Notice: This parameter is only indexed if at least one drive object-specific Technology Extension exists (p4950 > 0).

Note: TEC: Technology Extension

r4957[0...n] TEC DO-specific version / TEC DO Version

All objects

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** r4950	**Func. diagram:** -
P-Group: OEM range	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	4294967295	-

Description: Displays the version of the Technology Extensions installed on this drive object.
r4957[0]: Version of Technology Extension 1
r4957[1]: Version of Technology Extension 2, ...

Dependency: Refer to: r4950, r4951, r4952, r4955, p4956, r4958, r4959, r4960

Notice: This parameter is only indexed if at least one drive object-specific Technology Extension exists (p4950 > 0).

Note: TEC: Technology Extension
Example:
The value 1010100 should be interpreted as V01.01.01.00.

r4958[0...n] TEC DO-specific interface version / TEC DO interf_vers

All objects	**Can be changed:** -	**Calculated:** -	**Access level:** 4
	Data type: Unsigned32	**Dyn. index:** r4950	**Func. diagram:** -
	P-Group: OEM range	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the interface version of Technology Extensions installed on this drive object.
r4958[0]: Interface version of Technology Extension 1
r4958[1]: Interface version of Technology Extension 2, ...

Dependency: Refer to: r4950, r4951, r4952, r4955, p4956, r4957, r4959, r4960

Notice: This parameter is only indexed if at least one drive object-specific Technology Extension exists (p4950 > 0).

Note: TEC: Technology Extension
Example:
The value 1010100 should be interpreted as V01.01.01.00.

r4959[0...n] TEC DO-specific GUID / TEC DO GUID

All objects	**Can be changed:** -	**Calculated:** -	**Access level:** 4
	Data type: Unsigned8	**Dyn. index:** r4952	**Func. diagram:** -
	P-Group: OEM range	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the GUIDs of the Technology Extensions installed on this drive object.
r4959[0...15]: GUID of Technology Extension 1
r4959[16]: Major information of Technology Extension 1
r4959[17]: Minor information of Technology Extension 1
r4959[18...33]: GUID of Technology Extension 2
r4959[34]: Major information of Technology Extension 2
r4959[35]: Minor information of Technology Extension 2, ...

Dependency: Refer to: r4950, r4951, r4952, r4955, p4956, r4957, r4958, r4960

Notice: This parameter is only indexed if at least one drive object-specific Technology Extension exists (p4950 > 0).

Note: TEC: Technology Extension

r4960[0...n] TEC DO-specific GUID drive object / TEC DO GUID DO

All objects	**Can be changed:** -	**Calculated:** -	**Access level:** 4
	Data type: Unsigned8	**Dyn. index:** r4952	**Func. diagram:** -
	P-Group: OEM range	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the GUIDs of this drive object of the Technology Extensions installed on the memory card/device memory.
r4960[0...15]: GUID of this drive object of Technology Extension 1
r4960[16]: Major information of this drive object of Technology Extension 1
r4960[17]: Minor information of this drive object of Technology Extension 1
r4960[18...33]: GUID of this drive object of Technology Extension 2
r4960[34]: Major information of this drive object of Technology Extension 2
r4960[35]: Minor information of this drive object of Technology Extension 2, ...

Dependency: Refer to: r4950, r4951, r4952, r4955, p4956, r4957, r4958, r4959

Notice: This parameter is only indexed if at least one drive object-specific Technology Extension exists (p4950 > 0).

Note: TEC: Technology Extension

p4961[0...n] TEC DO-specific logbook module selection / TEC DO log module

All objects	**Can be changed:** T	**Calculated:** -	**Access level:** 4
	Data type: Unsigned32	**Dyn. index:** r4950	**Func. diagram:** -
	P-Group: OEM range	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0000 hex	FFFF FFFF hex	0000 hex

Description: Only for service purposes.

Note: TEC: Technology Extension

r4975 TEC invalid number / TEC inval qty

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410	**Can be changed:** -	**Calculated:** -	**Access level:** 4
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: OEM range	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the number of invalid Technology Extensions installed on the memory card/device memory.

Dependency: Refer to: r4976, r4978, r4979

Note: TEC: Technology Extension

r4976 TEC invalid identifier total length / TEC inval ID tot_l

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410	**Can be changed:** -	**Calculated:** -	**Access level:** 4
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: OEM range	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the total length of the IDs of all the invalid Technology Extensions installed on the memory card/device memory.

Dependency: Refer to: r4975, r4978, r4979

Note: TEC: Technology Extension

The identifier of an invalid Technology Extension comprises a maximum of 8 characters plus separator.

r4978[0...n] TEC invalid identifier / TEC inval ID

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410	**Can be changed:** -	**Calculated:** -	**Access level:** 4
	Data type: Unsigned8	**Dyn. index:** r4976	**Func. diagram:** -
	P-Group: OEM range	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the IDs of all the invalid Technology Extensions installed on the memory card/device memory.

r4978[0...8]: Identifier of invalid Technology Extension 1

r4978[9...17]: Identifier of invalid Technology Extension 2, ...

Dependency: Refer to: r4975, r4976, r4979

Notice: This parameter is only indexed if at least one invalid Technology Extension exists (p4975 > 0).

Note: TEC: Technology Extension

r4979[0...n] TEC invalid error code / TEC inv error code

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** r4975	**Func. diagram:** -
P-Group: OEM range	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the error code of the invalid Technology Extensions installed on the memory card/device memory.

r4979[0]: error code from Technology Extension 1

r4979[1]: error code from Technology Extension 2, ...

Dependency: Refer to: r4975, r4976, r4978

Notice: This parameter is only indexed if at least one invalid Technology Extension exists (p4975 > 0).

Note: TEC: Technology Extension

The value in the error code must be interpreted in binary form. The bits have the following meaning:

Bit 00: Incompatible version of the TEC interface.

Bit 01: Technology Extension could not be loaded.

Bit 02: Incorrect description files.

Bit 03: Technology Extension does not define a CPU type.

Bit 04: Technology Extension for this device not available (incorrect CPU type).

Bit 05: Technology Extension for this device not available (incorrect type ID).

Bit 06: Incorrect description files (Const/Startup incompatible).

Bit 07: Number range of the Technology Extension overlaps with the number range of another Technology Extension

Bit 08: No compatible custom interface was found.

Bit 09: The custom interface defined by the Technology Extension already exists.

Bit 10: The version of the System Technology Extension differs from the SINAMICS firmware version.

r4985 TEC number / TEC qty

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: OEM range	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	32	-

Description: Displays the number of Technology Extensions installed on the memory card/device memory.

Dependency: Refer to: r4986, r4987, r4988, r4989, r4990, r4991, r4992, r4993, r4994

Note: TEC: Technology Extension

r4986 TEC identifier total length / TEC ident tot_l

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: OEM range	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	288	-

Description: Displays the total length of the IDs of all the Technology Extensions installed on the memory card/device memory.

Dependency: Refer to: r4985, r4987, r4988, r4989, r4990, r4991, r4992, r4993, r4994

Note: TEC: Technology Extension

The identifier of a Technology Extension comprises a maximum of 8 characters plus separator.

r4987 TEC GUID total length / TEC GUID tot_lgth

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: OEM range	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	576	-

Description: Displays the total length of the GUIDs of all the Technology Extensions installed on the memory card/device memory.

Dependency: Refer to: r4985, r4986, r4988, r4989, r4990, r4991, r4992, r4993, r4994

Note: The GUID of a Technology Extension comprises 16 characters plus 1 character major information plus 1 character, minor information.

GUID: Globally Unique IDentifier

TEC: Technology Extension

r4988[0...n] TEC identifier / TEC ident

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned8	**Dyn. index:** r4986	**Func. diagram:** -
P-Group: OEM range	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the IDs of all the Technology Extensions installed on the memory card/device memory.

r4988[0...8]: Identifier of Technology Extension 1

r4988[9...17]: Identifier of Technology Extension 2, ...

Dependency: Refer to: r4985, r4986, r4987, r4989, r4990, r4991, r4992, r4993, r4994

Notice: This parameter is only indexed if at least one Technology Extension exists (p4985 > 0).

Note: TEC: Technology Extension

r4989[0...n] TEC version / TEC version

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** r4985	**Func. diagram:** -
P-Group: OEM range	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the version of all the Technology Extensions installed on the memory card/device memory.

r4989[0]: Version of Technology Extension 1

r4989[1]: Version of Technology Extension 2, ...

Dependency: Refer to: r4985, r4986, r4987, r4988, r4990, r4991, r4992, r4993, r4994

Notice: This parameter is only indexed if at least one Technology Extension exists (p4985 > 0).

Note: TEC: Technology Extension

Example:

The value 1010100 should be interpreted as V01.01.01.00.

r4990[0...n] TEC interface version / TEC interf_vers

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** r4985	**Func. diagram:** -
P-Group: OEM range	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the interface version of all the Technology Extensions installed on the memory card/device memory.

r4990[0]: Interface version of Technology Extension 1

r4990[1]: Interface version of Technology Extension 2, ...

Dependency: Refer to: r4985, r4986, r4987, r4988, r4989, r4991, r4992, r4993, r4994

Notice: This parameter is only indexed if at least one Technology Extension exists (p4985 > 0).

Note: TEC: Technology Extension

Example:

The value 1010100 should be interpreted as V01.01.01.00.

r4991[0...n] TEC GUID / TEC GUID

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned8	**Dyn. index:** r4987	**Func. diagram:** -
P-Group: OEM range	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the GUIDs of all the Technology Extensions installed on the memory card/device memory.

r4991[0...15]: GUID of Technology Extension 1

r4991[16]: Major information of Technology Extension 1

r4991[17]: Minor information of Technology Extension 1

r4991[18...33]: GUID of Technology Extension 2

r4991[34]: Major information of Technology Extension 2

r4991[35]: Minor information of Technology Extension 2, ...

Dependency: Refer to: r4985, r4986, r4987, r4988, r4989, r4990, r4992, r4993, r4994

Notice: This parameter is only indexed if at least one Technology Extension exists (p4985 > 0).

Note: TEC: Technology Extension

r4992[0...n] TEC GUID ES / TEC GUID ES

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned8	**Dyn. index:** r4987	**Func. diagram:** -
P-Group: OEM range	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the GUIDs of all the Technology Extensions installed on the memory card/device memory.

r4992[0...15]: GUID of Technology Extension 1

r4992[16]: Major information of Technology Extension 1

r4992[17]: Minor information of Technology Extension 1

r4992[18...33]: GUID of Technology Extension 2

r4992[34]: Major information of Technology Extension 2

r4992[35]: Minor information of Technology Extension 2, ...

Dependency: Refer to: r4985, r4986, r4987, r4988, r4989, r4990, r4991, r4993, r4994

Notice: This parameter is only indexed if at least one Technology Extension exists (p4985 > 0).

Note: TEC: Technology Extension

r4993[0...n] TEC activation status / TEC act stat

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Integer16	**Dyn. index:** r4985	**Func. diagram:** -
P-Group: OEM range	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	-

Description: Displays the activation status of the Technology Extensions installed on the memory card/device memory.

r4993[0]: Activation of Technology Extension 1

r4993[1]: Activation of Technology Extension 2, ...

Value:
0: Technology Extension inactive
1: Technology Extension active

Dependency: Refer to: r4985, r4986, r4987, r4988, r4989, r4990, r4991, r4992, r4994

Notice: This parameter is only indexed if at least one Technology Extension exists (p4985 > 0).

Note: TEC: Technology Extension

r4994[0...n] TEC properties / TEC property

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** r4985	**Func. diagram:** -
P-Group: OEM range	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the properties of all the Technology Extensions installed on the memory card/device memory.

r4994[0]: Property of Technology Extension 1

r4994[1]: Property of Technology Extension 2, ...

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Properties diagnostics bit 0	Yes	No	-
01	Properties diagnostics bit 1	Yes	No	-
02	Properties diagnostics bit 2	Yes	No	-
03	OEM	No	Yes	-
04	Properties diagnostics bit 4	Yes	No	-
05	Properties diagnostics bit 5	Yes	No	-
06	Properties diagnostics bit 6	Yes	No	-

Dependency: Refer to: r4985, r4986, r4987, r4988, r4989, r4990, r4991, r4992, r4993

Notice: This parameter is only indexed if at least one Technology Extension exists (p4985 > 0).

Note: TEC: Technology Extension

The parameter is only for internal Siemens diagnostics.

r4995[0...n] TEC external version / TEC ext version

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** r4985	**Func. diagram:** -
P-Group: OEM range	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the external version of all the Technology Extensions installed on the memory card/device memory.

r4995[0]: External version of Technology Extension 1

r4995[1]: External version of Technology Extension 2, ...

Dependency: Refer to: r4985, r4986, r4987, r4988, r4990, r4991, r4992, r4993, r4994

Notice: This parameter is only indexed if at least one Technology Extension exists (p4985 > 0).

Note: Example:
The value 1010100 should be interpreted as V01.01.01.00.

r5000 CO: Spindle properties/status / Prop/status

SERVO (Spin_diag), SERVO_AC (Spin_diag)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the properties supported by the spindle hardware and status.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Spindle functionality available	Yes	No	-
01	Sensor S1 available	Yes	No	-
04	Sensor S4 available	Yes	No	-
05	Sensor S5 available	Yes	No	-
06	Sensor S6 available	Yes	No	-
10	State machine enabled	Yes	No	-
11	Parameter p5043 changed	State 2	State 1	-

Note: This display value is contained in the manufacturer-specific telegram 139 (SP_CONFIG).
For bit 11:
After each change in p5043[0...6] the signal level of this bit is changed.

r5001 CO: Spindle clamp state / Clamp state

SERVO (Spin_diag), SERVO_AC (Spin_diag)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	11	-

Description: Display and connector output for the clamped state.
Message A3x940 is output in states 2 and 11.
The voltage threshold values for the states can be set using parameter p5041. The hysteresis is adapted using parameter p5040.
The transition from state 4 to states 7, 8 or 10 can be influenced by the wait time p5042[0].
A transition is made into state 10 if the analog value in p5002 falls below the voltage threshold value in p5041[4]. However, if the analog value p5002 lies below the voltage threshold value in p5041[2] and the wait time in p5042[0] has expired, then a transition is made into state 7 or 8 - otherwise state 4 is kept.

Value:
0: System being initialized
1: State being initialized
2: Released with message
3: Released without message
4: Clamping
5: Releasing
6: Releasing without tool
7: Clamped with tool (S4 inactive)
8: Clamped with tool (S4 active)
9: Clamping without tool
10: Clamped without tool
11: Clamped with message

Dependency: Refer to: r5002, r5003, p5040, p5041, p5042

Note: This display value is contained in the manufacturer-specific telegram 139 (SP_ZSW).

r5002 CO: Spindle analog sensor S1 measured value / Ana_sensS1 MeasVal

SERVO (Spin_diag), SERVO_AC (Spin_diag)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output for the measured value from analog sensor S1 (1 increment = 1 mV).

Note: This display value is contained in the manufacturer-specific telegram 139 (SP_XIST_A).

r5003 CO: Spindle digital sensors status / Dig_sens status

SERVO (Spin_diag), SERVO_AC (Spin_diag)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output for the status of the digital sensors.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
04	Sensor S4 piston end position reached	Yes	No	-
05	Sensor S5 axis position OK	Yes	No	-
06	Sensor S6 reserved	-	-	-

Note: This display value is contained in the manufacturer-specific telegram 139 (SP_XIST_D).

r5004 CO: Spindle supplementary value / Spindle suppl_val

SERVO (Spin_diag), SERVO_AC (Spin_diag)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output for the measured value from sensor S5 (1 increment = 1 mV).

Note: This display value is contained in the manufacturer-specific telegram 139.

r5005 Spindle file system status / File sys stat

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status for the file system on the non-volatile memory.

The individual result data and characteristic data are summarized in a corresponding file.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
01	Result data clamping cycle thresholds available	Yes	No	-
02	Result data clamping cycle counter available	Yes	No	-
03	Result data operating hours counter available	Yes	No	-
04	Result data temperature diagnostics available	Yes	No	-
05	Result data real time clock synchronization available	Yes	No	-

Bit	Signal name	1 signal	0 signal	FP
06	Result data speed/torque matrix available	Yes	No	-
10	Result data collision detection available	Yes	No	-
11	Result data system detection available	Yes	No	-
16	Characteristic data spindle available	Yes	No	-
17	Characteristic data clamping cycle counter available	Yes	No	-
19	Characteristic data operating hours counter available	Yes	No	-
20	Characteristic data temperature diagnostics available	Yes	No	-
22	Characteristic data speed/torque matrix available	Yes	No	-
30	Characteristic data sensor description available	Yes	No	-
31	Characteristic data sensor calibration data available	Yes	No	-

Note: This parameter can only be used in conjunction with a Sensor Module Integrated 24 (SMI24).

p5007 Spindle file system selection / File sys select

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 0000 0000 0000 0000 bin

Description: Sets the files to adapt the file system.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
01	Result data clamping cycle thresholds selected	Yes	No	-
02	Result data clamping cycle counter selected	Yes	No	-
03	Result data operating hours counter selected	Yes	No	-
04	Result data temperature diagnostics selected	Yes	No	-
05	Result data real time clock synchronization selected	Yes	No	-
06	Result data speed/torque matrix selected	Yes	No	-
10	Result data collision detection selected	Yes	No	-
11	Result data system detection selected	Yes	No	-
17	Characteristic data clamping cycle counter selected	Yes	No	-
19	Characteristic data operating hours counter selected	Yes	No	-
20	Characteristic data temperature diagnostics selected	Yes	No	-
22	Characteristic data speed/torque matrix selected	Yes	No	-

Note: This parameter can only be used in conjunction with a Sensor Module Integrated 24 (SMI24).

The action to adapt the selected files is selected in p5009.

For bit 01:

The action selected in p5009 only becomes immediately effective for this bit.

For bit 02 ... 22:

Only for internal Siemens use.

For these bits, after setting p5009 a hardware reset is required.

p5009 Adapt spindle file system / Adapt file sys

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	53	0

Description: Setting to adapt the file system on the non-volatile memory.

Example:

The result data "clamping cycle thresholds" are available (r5005.1 = 1) and should be reset.

--> set p5007.1 = 1: select result data "clamping cycle thresholds".

--> set p5009 = 1: initiate "reset" function for the file selected in p5007.

--> p5009 = 40: feedback signal during "operation running".

--> p5009 = 20: feedback signal for a successfully completed operation.

--> p5009 = 51 ... 53: fault values if the operation was not able to be successfully completed.

--> carry out a POWER ON (switch-off/switch-on).

Value:

0: No function
1: Reset
2: Set invalid
3: Reserved
5: Set valid
20: Operation successfully completed.
40: Operation running
51: Function not supported
52: File access unsuccessful
53: Operation unsuccessful

Note: This parameter can only be used in conjunction with a Sensor Module Integrated 24 (SMI24).

Help for fault value = 51 ... 53:

- repeat the operation.

r5012 Spindle Sensor Module properties / SM properties

SERVO (Spin_diag), SERVO_AC (Spin_diag)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the Sensor Module Integrated 24 (SMI24) properties.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Display diagnostics stamp in UTC	Yes	No	-
01	Clamping state counter extended	Yes	No	-
02	Release times display available	Yes	No	-
03	Release times available	Yes	No	-

p5016 Enable spindle commissioning / Enable comm

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: All groups	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Setting to enable/inhibit spindle commissioning.

Enabling spindle commissioning results in the spindle parameters being reset after commissioning has been initiated (e.g. via p0340 > 0 or p3900 > 0).

Depending on the spindle configuration, the following parameters are reset:

p0353, p0410, p0431, p0922, p1231, p1300, p1980, p1981, p1982

Value:
0: Spindle commissioning enabled
1: Spindle commissioning inhibited

Dependency: Refer to: p0340, p3900

Note: This parameter can only be used in conjunction with a Sensor Module Integrated 24 (SMI24).

The parameter is automatically set to a value of 1 after exiting commissioning (p0009 = 0).

p5019 Spindle password / Password

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Sets the password for the spindle diagnostics write parameters.

Number range for spindle diagnostics:

5000 ... 5169

Note: This parameter can only be used in conjunction with a Sensor Module Integrated 24 (SMI24).

r5020 Spindle manufacturer / Manufacturer

SERVO (Spin_diag), SERVO_AC (Spin_diag)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	48	-

Description: Displays the spindle manufacturer.

Value:
0: Unknown
1: Siemens AG Automation and Drives
32: Reserved
33: Reserved
48: WEISS Spindeltechnologie GmbH

r5021[0...18] Spindle article number / Article No.

SERVO (Spin_diag), SERVO_AC (Spin_diag)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the article number (MFLB) or drawing number of the spindle.

Notice: An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.

r5022[0...15] Spindle serial number / Serial No.

SERVO (Spin_diag), SERVO_AC (Spin_diag)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the spindle serial number.

Notice: An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.

r5023 Spindle production date / Prod_date

SERVO (Spin_diag), SERVO_AC (Spin_diag)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the production date of the spindle.

Note: Format: yyyymmdd

r5032 Maximum spindle speed / n_max

SERVO (Lin, Spin_diag), SERVO_AC (Lin, Spin_diag), SERVO_I_AC (Lin, Spin_diag)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Displays the maximum spindle speed.

Note: The highest possible (maximum) speed is set using p1082 (p1082 <= r5032).

r5032 Maximum spindle speed / n_max

SERVO (Spin_diag), SERVO_AC (Spin_diag), SERVO_I_AC (Spin_diag)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the maximum spindle speed.

Note: The highest possible (maximum) speed is set using p1082 (p1082 <= r5032).

r5033 Spindle angular commutation offset / Commut_ang_off

SERVO (Spin_diag), SERVO_AC (Spin_diag)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°]	- [°]	- [°]

Description: Displays the angular commutation offset for the spindle encoder.

Note: When exiting commissioning, the value is transferred into p0431.

r5034 Spindle current controller sampling time maximum / I_ctrl t_samp max

SERVO (Spin_diag), SERVO_AC (Spin_diag)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [µs]	- [µs]	- [µs]

Description: Displays the maximum recommended sampling time for the spindle current controller.
The current controller sampling time must be set greater than the value in p0112 or p0115[0].
For r5034 < p0115[0], alarm A07140 is output.

Dependency: Refer to: A07140

p5040 Spindle voltage threshold values tolerance / U_thresh tol

SERVO (Spin_diag), SERVO_AC (Spin_diag)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [mV]	1000.0 [mV]	0.0 [mV]

Description: Sets the voltage tolerance for the voltage threshold values.
The tolerance acts symmetrically around the individual voltage threshold values (p5041[0...5]).

Dependency: Refer to: r5001, r5002, p5041

p5041[0...5] Spindle voltage threshold values / U_thresh

SERVO (Spin_diag), SERVO_AC (Spin_diag)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [mV]	340.28235E36 [mV]	0.0 [mV]

Description: Sets the voltage threshold values for the spindle.

Index:
[0] = Released (upper limit)
[1] = Released (lower limit)
[2] = Clamped with tool (upper limit)
[3] = Clamped with tool (lower limit)
[4] = Clamped without tool (upper limit)
[5] = Clamped without tool (lower limit)

Dependency: Refer to: r5001, r5002, p5040

Note: Only values can be entered, which do not overlap, taking into consideration the set tolerance (p5040).

p5042[0...1]	Spindle transition times / t_transition		
SERVO (Spin_diag), SERVO_AC (Spin_diag)	**Can be changed:** T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: -	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.0 [µs]	340.28235E36 [µs]	0.0 [µs]

Description: Sets the transition times for the clamping state machine of the spindle.

For index [0]:

Sets the maximum time for staying in the state r5001 = 4, before a transition is made to state r5001 = 10 or 7/8.

A higher value can force a direct transition from state r5001 = 4 to 10 without passing through the states r5001 = 7/8 and 9.

For index [1]:

Sets the maximum time for clamping without tool (see clamping operations inside and outside the tolerance in p5045).

Index: [0] = Stabilization time for "clamped with tool"
[1] = Maximum time to clamp

Dependency: Refer to: r5001, r5002

Note: The input is limited to a maximum value of 20 seconds.

p5043[0...6]	Spindle speed limits / n_limits		
SERVO (Lin, Spin_diag), SERVO_AC (Lin, Spin_diag), SERVO_I_AC (Lin, Spin_diag)	**Can be changed:** T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: -	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.0 [m/min]	65535.0 [m/min]	0.0 [m/min]

Description: Sets the speed limits for the clamping state machine of the spindle.

For index [0]:

Valid for state r5001 = 3.

For index [1]:

Valid for state r5001 = 4.

For index [2]:

Valid for state r5001 = 5.

For index [3]:

Valid for state r5001 = 6.

For index [4]:

Valid for state r5001 = 7/8.

For index [5]:

Valid for state r5001 = 9.

For index [6]:

Valid for state r5001 = 10.

Index: [0] = Released
[1] = Clamping
[2] = Releasing from the state "clamped with tool"
[3] = Releasing from the state "clamped without tool"
[4] = Clamped with tool
[5] = Clamping without tool
[6] = Clamped without tool

Dependency: Refer to: r5001

Note: For state r5001 = 0, 1, 2 or 11, the fixed speed limit 0 applies.

p5043[0...6] Spindle speed limits / n_limits

SERVO (Spin_diag), SERVO_AC (Spin_diag), SERVO_I_AC (Spin_diag)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [rpm]	65535.0 [rpm]	0.0 [rpm]

Description: Sets the speed limits for the clamping state machine of the spindle.

For index [0]:

Valid for state r5001 = 3.

For index [1]:

Valid for state r5001 = 4.

For index [2]:

Valid for state r5001 = 5.

For index [3]:

Valid for state r5001 = 6.

For index [4]:

Valid for state r5001 = 7/8.

For index [5]:

Valid for state r5001 = 9.

For index [6]:

Valid for state r5001 = 10.

Index:
[0] = Released
[1] = Clamping
[2] = Releasing from the state "clamped with tool"
[3] = Releasing from the state "clamped without tool"
[4] = Clamped with tool
[5] = Clamping without tool
[6] = Clamped without tool

Dependency: Refer to: r5001

Note: For state r5001 = 0, 1, 2 or 11, the fixed speed limit 0 applies.

r5044 Maximum permissible spindle velocity limit / Spin v_lim MaxPerm

SERVO (Lin, Spin_diag), SERVO_AC (Lin, Spin_diag), SERVO_I_AC (Lin, Spin_diag)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Displays the maximum permissible velocity limit.

Dependency: Refer to: r5001, p5043

Note: Currently, the velocity limit is only displayed for the state "clamped without tool".

The velocity limit set in p5043[6] is effective.

Value = 65535: velocity limit not active.

r5044 Maximum permissible spindle speed limit / Spin n_lim MaxPerm

SERVO (Spin_diag), SERVO_AC (Spin_diag), SERVO_I_AC (Spin_diag)

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the maximum permissible speed limit.

Dependency: Refer to: r5001, p5043

Note: Currently, the speed limit is only displayed for the state "clamped without tool".

The speed limit set in p5043[6] is effective.

Value = 65535: speed limit not active.

r5170[0...5] HF phase current actual values / HF I_ph act val

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 6_5	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [A]	- [A]	- [A]

Description: Displays the measured phase currents as peak value.

Index:
[0] = Phase U motor current
[1] = Phase V motor current
[2] = Phase W motor current
[3] = Phase U capacitor current
[4] = Phase V capacitor current
[5] = Phase W capacitor current

Dependency: Refer to: r0069

Note: HF: High Frequency Drive

For index [0...2]:

The 3 motor phase currents are displayed.

For index [3...5]:

The currents in the filter capacitors of the 3 phases are displayed.

r5171 CO: HF damping voltage actual value / HF U_damp act val

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 5_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the actual value of the damping voltage.

Dependency: Refer to: F37002

Note: HF: High Frequency Drive

r5172[0...3] CO: HF temperatures / HF temp

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 21_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°C]	- [°C]	- [°C]

Description: Displays the temperatures in the HF Choke Module and HF Damping Module.

Index:
[0] = HF Choke Module heat sink
[1] = HF Damping Module heat sink
[2] = HF Damping Module assembly
[3] = HF Damping Module depletion layer

Note: The value of -200 indicates that there is no measuring signal.

HF Choke Module (reactor module)

HF Damping Module

HF: High Frequency Drive

r5173 CO: HF Damping Module I2t overload / HF DM overl I2t

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the overload of the filter capacitors of the HF Damping Module determined using an I2t calculation.

Note: HF Damping Module

p5174 HF control word / HF control word

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: T	**Calculated:** CALC_MOD_REG	**Access level:** 4
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Setting the HF control word.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Supplementary capacitor active	Yes	No	-
01	Activate damping	Continuously	For pulse enable	-

Note: For bit 00:

This bit can be used to compensate the filter resonance frequency shift for low motor inductances.

For bit 01:

Is used for diagnostic purposes.

r5175[0...1] HF diagnostics / HF diag

SERVO, SERVO_AC, SERVO_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status and control word for the HF Damping Module.

Index:
[0] = HF Damping Module status word
[1] = HF Damping Module control word

Note: HF Damping Module

p5200[0...n] Current setpoint filter 5 ... 10 activation / I_setp_filt act

SERVO (Ext I_setp_filt), SERVO_AC (Ext I_setp_filt), SERVO_I_AC (Ext I_setp_filt)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** 5711
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 bin

Description: Setting for activating/deactivating the current setpoint filter.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Filter 5	Active	Inactive	-
01	Filter 6	Active	Inactive	-
02	Filter 7	Active	Inactive	-
03	Filter 8	Active	Inactive	-
04	Filter 9	Active	Inactive	-
05	Filter 10	Active	Inactive	-

Dependency: The individual current setpoint filters are parameterized from p5201 and higher.

Note: If not all of the filters are required, then the filters should be used consecutively starting from filter 1.

p5200 Signal filter activation / I_act_filt act

A_INF (Suppl cl-loop ctrl), R_INF (Suppl cl-loop ctrl)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Setting for activating/deactivating the signal filter.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Filter 5	Active	Inactive	-
02	Filter 7	Active	Inactive	-

Dependency: The signal filters are parameterized from p5201 and higher.

p5201[0...n] Current setpoint filter 5 type / I_set_filt 5 type

SERVO (Ext I_setp_filt), SERVO_AC (Ext I_setp_filt), SERVO_I_AC (Ext I_setp_filt)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 5711
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	2	1

Description: Sets current setpoint filter 5 as lowpass filter (PT2) or general 2nd order filter.

Value:
1: PT2 low pass
2: General 2nd order filter

Dependency: Current setpoint filter 5 is activated via p5200.0 and parameterized via p5202 ... p5205.

Note: For a general 2nd order filter, by inserting the same natural frequency in both the numerator and in the denominator, i.e. bandstop frequency, a bandstop filter is implemented. If the numerator damping of zero is selected, the bandstop frequency is completely suppressed.

The denominator damping can be determined from the equation for the 3 dB bandwidth:

f_3dB bandwidth = 2 * D_denominator * f_bandstop frequency

p5201 Output voltage setpoint filter 5 type / U_set_filt 5 type

A_INF (Suppl cl-loop ctrl), R_INF (Suppl cl-loop ctrl)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	2	2

Description: Sets the output voltage setpoint filter 5 as low pass (PT2) or as extended general 2nd order filter.

Value:
1: PT2 low pass
2: General 2nd order filter

Dependency: Filter 5 is activated via p5200.0 and parameterized via p5202 ... p5205.

Note: For a general 2nd order filter, by inserting the same natural frequency in both the numerator and in the denominator, i.e. bandstop frequency, a bandstop filter is implemented. If the numerator damping of zero is selected, the bandstop frequency is completely suppressed.

The denominator damping can be determined from the equation for the 3 dB bandwidth:

f_3dB bandwidth = 2 * D_denominator * f_bandstop frequency

p5202[0...n] Current setpoint filter 5 denominator natural frequency / I_set_filt5 fn_den

SERVO (Ext I_setp_filt), SERVO_AC (Ext I_setp_filt), SERVO_I_AC (Ext I_setp_filt)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5711
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	1999.0 [Hz]

Description: Sets the denominator natural frequency for current setpoint filter 5 (PT2, general filter).

Dependency: Current setpoint filter 5 is activated via p5200.0 and parameterized via p5202 ... p5205.

p5202 Output voltage setpoint filter 5 denominator natural frequency / U_set_filt5 fn_den

A_INF (Suppl cl-loop ctrl), R_INF (Suppl cl-loop ctrl)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	1000.0 [Hz]

Description: Sets the denominator natural frequency for output voltage setpoint filter 5 (PT2, general filter).

Dependency: Filter 5 is activated via p5200.0 and parameterized via p5202 ... p5205.

p5203[0...n] Current setpoint filter 5 denominator damping / I_set_filt 5 D_den

SERVO (Ext I_setp_filt), SERVO_AC (Ext I_setp_filt), SERVO_I_AC (Ext I_setp_filt)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5711
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.001	10.000	0.700

Description: Sets the denominator damping for current setpoint filter 5 (PT2, general filter).

Dependency: Current setpoint filter 5 is activated via p5200.0 and parameterized via p5202 ... p5205.

p5203 Output voltage setpoint filter 5 denominator damping / U_set_filt 5 D_den

A_INF (Suppl cl-loop ctrl), R_INF (Suppl cl-loop ctrl)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.001	10.000	0.700

Description: Sets the denominator damping for output voltage setpoint filter 5.

Dependency: Filter 5 is activated via p5200.0 and parameterized via p5202 ... p5205.

p5204[0...n] Current setpoint filter 5 numerator natural frequency / I_set_filt5 fn_num

SERVO (Ext I_setp_filt), SERVO_AC (Ext I_setp_filt), SERVO_I_AC (Ext I_setp_filt)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5711
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	1999.0 [Hz]

Description: Sets the numerator natural frequency for current setpoint filter 5 (general filter).

Dependency: Current setpoint filter 5 is activated via p5200.0 and parameterized via p5202 ... p5205.

p5204 Output voltage setpoint filter 5 numerator natural frequency / U_set_filt5 fn_num

A_INF (Suppl cl-loop ctrl), R_INF (Suppl cl-loop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	1000.0 [Hz]

Description: Sets the numerator natural frequency for output voltage setpoint filter 5 (general filter).

Dependency: Filter 5 is activated via p5200.0 and parameterized via p5202 ... p5205.

p5205[0...n] Current setpoint filter 5 numerator damping / I_set_filt 5 D_num

SERVO (Ext I_setp_filt), SERVO_AC (Ext I_setp_filt), SERVO_I_AC (Ext I_setp_filt)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5711
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	10.000	0.700

Description: Sets the numerator damping for current setpoint filter 5 (general filter).

Dependency: Current setpoint filter 5 is activated via p5200.0 and parameterized via p5202 ... p5205.

p5205 Output voltage setpoint filter 5 numerator damping / U_set_filt 5 D_num

A_INF (Suppl cl-loop ctrl), R_INF (Suppl cl-loop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	10.000	0.010

Description: Sets the numerator damping for output voltage setpoint filter 5.

Dependency: Filter 5 is activated via p5200.0 and parameterized via p5202 ... p5205.

p5206[0...n] Current setpoint filter 6 type / I_set_filt 6 type

SERVO (Ext I_setp_filt), SERVO_AC (Ext I_setp_filt), SERVO_I_AC (Ext I_setp_filt)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 5711
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	2	1

Description: Sets current setpoint filter 6 as lowpass filter (PT2) or general 2nd order filter.

Value:
1: PT2 low pass
2: General 2nd order filter

Dependency: Current setpoint filter 6 is activated via p5200.1 and parameterized via p5207 ... p5210.

Note: For a general 2nd order filter, by inserting the same natural frequency in both the numerator and in the denominator, i.e. bandstop frequency, a bandstop filter is implemented. If the numerator damping of zero is selected, the bandstop frequency is completely suppressed.

The denominator damping can be determined from the equation for the 3 dB bandwidth:

f_3dB bandwidth = 2 * D_denominator * f_bandstop frequency

p5207[0...n] Current setpoint filter 6 denominator natural frequency / I_set_filt6 fn_den

SERVO (Ext I_setp_filt), SERVO_AC (Ext I_setp_filt), SERVO_I_AC (Ext I_setp_filt)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5711
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	1999.0 [Hz]

Description: Sets the denominator natural frequency for current setpoint filter 6 (PT2, general filter).

Dependency: Current setpoint filter 6 is activated via p5200.1 and parameterized via p5207 ... p5210.

p5208[0...n] Current setpoint filter 6 denominator damping / I_set_filt 6 D_den

SERVO (Ext I_setp_filt), SERVO_AC (Ext I_setp_filt), SERVO_I_AC (Ext I_setp_filt)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5711
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.001	10.000	0.700

Description: Sets the denominator damping for current setpoint filter 6 (PT2, general filter).

Dependency: Current setpoint filter 6 is activated via p5200.1 and parameterized via p5207 ... p5210.

p5209[0...n] Current setpoint filter 6 numerator natural frequency / I_set_filt6 fn_num

SERVO (Ext I_setp_filt), SERVO_AC (Ext I_setp_filt), SERVO_I_AC (Ext I_setp_filt)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5711
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	1999.0 [Hz]

Description: Sets the numerator natural frequency for current setpoint filter 6 (general filter).

Dependency: Current setpoint filter 6 is activated via p5200.1 and parameterized via p5207 ... p5210.

p5210[0...n] Current setpoint filter 6 numerator damping / I_set_filt 6 D_num

SERVO (Ext I_setp_filt), SERVO_AC (Ext I_setp_filt), SERVO_I_AC (Ext I_setp_filt)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5711
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	10.000	0.700

Description: Sets the numerator damping for current setpoint filter 6 (general filter).

Dependency: Current setpoint filter 6 is activated via p5200.1 and parameterized via p5207 ... p5210.

p5211[0...n] Current setpoint filter 7 type / I_set_filt 7 type

SERVO (Ext I_setp_filt), SERVO_AC (Ext I_setp_filt), SERVO_I_AC (Ext I_setp_filt)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 5711
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	2	1

Description: Sets current setpoint filter 7 as lowpass filter (PT2) or general 2nd order filter.

Value:
1: PT2 low pass
2: General 2nd order filter

Dependency: Current setpoint filter 7 is activated via p5200.2 and parameterized via p5212 ... p5215.

Note: For a general 2nd order filter, by inserting the same natural frequency in both the numerator and in the denominator, i.e. bandstop frequency, a bandstop filter is implemented. If the numerator damping of zero is selected, the bandstop frequency is completely suppressed.

The denominator damping can be determined from the equation for the 3 dB bandwidth:

f_3dB bandwidth = 2 * D_denominator * f_bandstop frequency

p5211 Current actual value filter 7 type / I_act_filt 7 type

A_INF (Suppl cl-loop ctrl), R_INF (Suppl cl-loop ctrl)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	2	2

Description: Sets the current actual value filter 7 as low pass (PT2) or as extended general 2nd-order filter.

Value:
1: PT2 low pass
2: General 2nd order filter

Dependency: The current actual value filter 7 is activated via p5200.2 and parameterized via p5212 ... p5215.

Note: For a general 2nd order filter, by inserting the same natural frequency in both the numerator and in the denominator, i.e. bandstop frequency, a bandstop filter is implemented. If the numerator damping of zero is selected, the bandstop frequency is completely suppressed.

The denominator damping can be determined from the equation for the 3 dB bandwidth:

f_3dB bandwidth = 2 * D_denominator * f_bandstop frequency

p5212[0...n] Current setpoint filter 7 denominator natural frequency / I_set_filt7 fn_den

SERVO (Ext I_setp_filt), SERVO_AC (Ext I_setp_filt), SERVO_I_AC (Ext I_setp_filt)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5711
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	1999.0 [Hz]

Description: Sets the denominator natural frequency for current setpoint filter 7 (PT2, general filter).

Dependency: Current setpoint filter 7 is activated via p5200.2 and parameterized via p5212 ... p5215.

p5212 Current actual value filter 7 denominator natural frequency / I_act_filt7 fn_den

A_INF (Suppl cl-loop ctrl), R_INF (Suppl cl-loop ctrl)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	1000.0 [Hz]

Description: Sets the denominator natural frequency for current actual value filter 7 (PT2, general filter).

Dependency: The current actual value filter 7 is activated via p5200.2 and parameterized via p5212 ... p5215.

p5213[0...n] Current setpoint filter 7 denominator damping / I_set_filt 7 D_den

SERVO (Ext I_setp_filt), SERVO_AC (Ext I_setp_filt), SERVO_I_AC (Ext I_setp_filt)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5711
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.001	10.000	0.700

Description: Sets the denominator damping for current setpoint filter 7 (PT2, general filter).

Dependency: Current setpoint filter 7 is activated via p5200.2 and parameterized via p5212 ... p5215.

p5213 Current actual value filter 7 denominator damping / I_act_filt 7 D_den

A_INF (Suppl cl-loop ctrl), R_INF (Suppl cl-loop ctrl)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.001	10.000	0.700

Description: Sets the denominator damping for current actual value filter 7.

Dependency: The current actual value filter 7 is activated via p5200.2 and parameterized via p5212 ... p5215.

p5214[0...n] Current setpoint filter 7 numerator natural frequency / I_set_filt7 fn_num

SERVO (Ext I_setp_filt), SERVO_AC (Ext I_setp_filt), SERVO_I_AC (Ext I_setp_filt)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5711
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	1999.0 [Hz]

Description: Sets the numerator natural frequency for current setpoint filter 7 (general filter).

Dependency: Current setpoint filter 7 is activated via p5200.2 and parameterized via p5212 ... p5215.

p5214 Current actual value filter 7 numerator natural frequency / I_act_filt7 fn_num

A_INF (Suppl cl-loop ctrl), R_INF (Suppl cl-loop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	1000.0 [Hz]

Description: Sets the numerator natural frequency for current actual value filter 7 (general filter).

Dependency: The current actual value filter 7 is activated via p5200.2 and parameterized via p5212 ... p5215.

p5215[0...n] Current setpoint filter 7 numerator damping / I_set_filt 7 D_num

SERVO (Ext I_setp_filt), SERVO_AC (Ext I_setp_filt), SERVO_I_AC (Ext I_setp_filt)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5711
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	10.000	0.700

Description: Sets the numerator damping for current setpoint filter 7 (general filter).

Dependency: Current setpoint filter 7 is activated via p5200.2 and parameterized via p5212 ... p5215.

p5215 Current actual value filter 7 numerator damping / I_act_filt 7 D_num

A_INF (Suppl cl-loop ctrl), R_INF (Suppl cl-loop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	10.000	0.010

Description: Sets the numerator damping for current actual value filter 7.

Dependency: The current actual value filter 7 is activated via p5200.2 and parameterized via p5212 ... p5215.

p5216[0...n] Current setpoint filter 8 type / I_set_filt 8 type

SERVO (Ext I_setp_filt), SERVO_AC (Ext I_setp_filt), SERVO_I_AC (Ext I_setp_filt)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 5711
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	2	1

Description: Sets current setpoint filter 8 as lowpass filter (PT2) or general 2nd order filter.

Value:
1: PT2 low pass
2: General 2nd order filter

Dependency: Current setpoint filter 8 is activated via p5200.3 and parameterized via p5217 ... p5220.

Note: For a general 2nd order filter, by inserting the same natural frequency in both the numerator and in the denominator, i.e. bandstop frequency, a bandstop filter is implemented. If the numerator damping of zero is selected, the bandstop frequency is completely suppressed.

The denominator damping can be determined from the equation for the 3 dB bandwidth:

f_3dB bandwidth = 2 * D_denominator * f_bandstop frequency

p5217[0...n] Current setpoint filter 8 denominator natural frequency / I_set_filt8 fn_den

SERVO (Ext I_setp_filt), SERVO_AC (Ext I_setp_filt), SERVO_I_AC (Ext I_setp_filt)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5711
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	1999.0 [Hz]

Description: Sets the denominator natural frequency for current setpoint filter 8 (PT2, general filter).

Dependency: Current setpoint filter 8 is activated via p5200.3 and parameterized via p5217 ... p5220.

p5218[0...n] Current setpoint filter 8 denominator damping / I_set_filt 8 D_den

SERVO (Ext I_setp_filt), SERVO_AC (Ext I_setp_filt), SERVO_I_AC (Ext I_setp_filt)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5711
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.001	10.000	0.700

Description: Sets the denominator damping for current setpoint filter 8 (PT2, general filter).

Dependency: Current setpoint filter 8 is activated via p5200.3 and parameterized via p5217 ... p5220.

p5219[0...n] Current setpoint filter 8 numerator natural frequency / I_set_filt8 fn_num

SERVO (Ext I_setp_filt), SERVO_AC (Ext I_setp_filt), SERVO_I_AC (Ext I_setp_filt)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5711
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	1999.0 [Hz]

Description: Sets the numerator natural frequency for current setpoint filter 8 (general filter).

Dependency: Current setpoint filter 8 is activated via p5200.3 and parameterized via p5217 ... p5220.

p5220[0...n] Current setpoint filter 8 numerator damping / I_set_filt 8 D_num

SERVO (Ext I_setp_filt), SERVO_AC (Ext I_setp_filt), SERVO_I_AC (Ext I_setp_filt)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5711
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	10.000	0.700

Description: Sets the numerator damping for current setpoint filter 8 (general filter).

Dependency: Current setpoint filter 8 is activated via p5200.3 and parameterized via p5217 ... p5220.

p5221[0...n] Current setpoint filter 9 type / I_set_filt 9 type

SERVO (Ext I_setp_filt), SERVO_AC (Ext I_setp_filt), SERVO_I_AC (Ext I_setp_filt)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 5711
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	2	1

Description: Sets current setpoint filter 9 as lowpass filter (PT2) or general 2nd order filter.

Value:
1: PT2 low pass
2: General 2nd order filter

Dependency: Current setpoint filter 9 is activated via p5200.4 and parameterized via p5222 ... p5225.

Note: For a general 2nd order filter, by inserting the same natural frequency in both the numerator and in the denominator, i.e. bandstop frequency, a bandstop filter is implemented. If the numerator damping of zero is selected, the bandstop frequency is completely suppressed.

The denominator damping can be determined from the equation for the 3 dB bandwidth:

f_3dB bandwidth = 2 * D_denominator * f_bandstop frequency

p5222[0...n] Current setpoint filter 9 denominator natural frequency / I_set_filt9 fn_den

SERVO (Ext I_setp_filt), SERVO_AC (Ext I_setp_filt), SERVO_I_AC (Ext I_setp_filt)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5711
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	1999.0 [Hz]

Description: Sets the denominator natural frequency for current setpoint filter 9 (PT2, general filter).

Dependency: Current setpoint filter 9 is activated via p5200.4 and parameterized via p5222 ... p5225.

p5223[0...n] Current setpoint filter 9 denominator damping / I_set_filt 9 D_den

SERVO (Ext I_setp_filt), SERVO_AC (Ext I_setp_filt), SERVO_I_AC (Ext I_setp_filt)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5711
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.001	10.000	0.700

Description: Sets the denominator damping for current setpoint filter 9 (PT2, general filter).

Dependency: Current setpoint filter 9 is activated via p5200.4 and parameterized via p5222 ... p5225.

p5224[0...n] Current setpoint filter 9 numerator natural frequency / I_set_filt9 fn_num

SERVO (Ext I_setp_filt), SERVO_AC (Ext I_setp_filt), SERVO_I_AC (Ext I_setp_filt)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5711
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	1999.0 [Hz]

Description: Sets the numerator natural frequency for current setpoint filter 9 (general filter).

Dependency: Current setpoint filter 9 is activated via p5200.4 and parameterized via p5222 ... p5225.

p5225[0...n] Current setpoint filter 9 numerator damping / I_set_filt 9 D_num

SERVO (Ext I_setp_filt), SERVO_AC (Ext I_setp_filt), SERVO_I_AC (Ext I_setp_filt)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5711
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	10.000	0.700

Description: Sets the numerator damping for current setpoint filter 9 (general filter).

Dependency: Current setpoint filter 9 is activated via p5200.4 and parameterized via p5222 ... p5225.

p5226[0...n] Current setpoint filter 10 type / I_set_filt 10 type

SERVO (Ext I_setp_filt), SERVO_AC (Ext I_setp_filt), SERVO_I_AC (Ext I_setp_filt)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** 5711
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	2	1

Description: Sets current setpoint filter 10 as lowpass filter (PT2) or general 2nd order filter.

Value:
1: PT2 low pass
2: General 2nd order filter

Dependency: Current setpoint filter 10 is activated via p5200.5 and parameterized via p5227 ... p5230.

Note: For a general 2nd order filter, by inserting the same natural frequency in both the numerator and in the denominator, i.e. bandstop frequency, a bandstop filter is implemented. If the numerator damping of zero is selected, the bandstop frequency is completely suppressed.

The denominator damping can be determined from the equation for the 3 dB bandwidth:

f_3dB bandwidth = 2 * D_denominator * f_bandstop frequency

p5227[0...n] Current setpoint filter 10 denominator natural frequency / I_set_filt1 fn_den

SERVO (Ext I_setp_filt), SERVO_AC (Ext I_setp_filt), SERVO_I_AC (Ext I_setp_filt)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5711
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	1999.0 [Hz]

Description: Sets the denominator natural frequency for current setpoint filter 10 (PT2, general filter).

Dependency: Current setpoint filter 10 is activated via p5200.5 and parameterized via p5227 ... p5230.

p5228[0...n] Current setpoint filter 10 denominator damping / I_set_filt10 D_den

SERVO (Ext I_setp_filt), SERVO_AC (Ext I_setp_filt), SERVO_I_AC (Ext I_setp_filt)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5711
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.001	10.000	0.700

Description: Sets the denominator damping for current setpoint filter 10 (PT2, general filter).

Dependency: Current setpoint filter 10 is activated via p5200.5 and parameterized via p5227 ... p5230.

p5229[0...n] Current setpoint filter 10 numerator natural frequency / I_set_filt 10 fn

SERVO (Ext I_setp_filt), SERVO_AC (Ext I_setp_filt), SERVO_I_AC (Ext I_setp_filt)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5711
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.5 [Hz]	16000.0 [Hz]	1999.0 [Hz]

Description: Sets the numerator natural frequency for current setpoint filter 10 (general filter).

Dependency: Current setpoint filter 10 is activated via p5200.5 and parameterized via p5227 ... p5230.

p5230[0...n] Current setpoint filter 10 numerator damping / I_set_filt10 D_num

SERVO (Ext I_setp_filt), SERVO_AC (Ext I_setp_filt), SERVO_I_AC (Ext I_setp_filt)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5711
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000	10.000	0.700

Description: Sets the numerator damping for current setpoint filter 10 (general filter).

Dependency: Current setpoint filter 10 is activated via p5200.5 and parameterized via p5227 ... p5230.

p5250[0...n] Compensation configuration / Comp config

SERVO (Cog_M_comp), SERVO_AC (Cog_M_comp), SERVO_I_AC (Cog_M_comp)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Sets the configuration of the cogging torque compensation.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Activate cogging torque compensation	Yes	No	-
01	Cogging torque compensation correction-dependent	Yes	No	-
02	Compensate periodic position error	Yes	No	-

Dependency: Refer to: p5252, p5253, r5254, r5255, p5256, p5260, p5261

Notice: After replacing the encoder and/or motor, the torque table of the cogging torque compensation must be learned again.

Note: For bit 01:

When the bit is set, a separate table is used for each direction of motion (p5260, p5261). Both directions must be learned.

When the bit is not set, one table is used for both directions of motion (p5260). Learning is only required in one direction.

p5251 Activate learn cogging torque compensation / Cog_M_comp_learn

SERVO (Cog_M_comp), SERVO_AC (Cog_M_comp), SERVO_I_AC (Cog_M_comp)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 bin

Description: Setting for activating/deactivating learning for cogging torque compensation.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Reactivate slow learning	Yes	No	-
01	Activate slow learning as supplement	Yes	No	-
02	Remove average value	Yes	No	-
04	Generate cogging torque table from frequency values	Yes	No	-

Dependency: Refer to: p5252, p5253, r5254, r5255, p5260

Notice: After replacing the encoder and/or motor, the torque table of the cogging torque compensation must be learned again.

p5252 Cogging torque compensation table length / Cog_M_comp length

SERVO (Cog_M_comp), SERVO_AC (Cog_M_comp), SERVO_I_AC (Cog_M_comp)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
6	12	10

Description: Sets the table length in bits for cogging torque compensation.

10 corresponds to 2^10 = 1024 values.

Dependency: Refer to: p5250, p5253, r5254, r5255, p5260

p5253 Cogging torque compensation periodicity factor / Cog_M_comp_period

SERVO (Cog_M_comp), SERVO_AC (Cog_M_comp), SERVO_I_AC (Cog_M_comp)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00000	32768.00000	1.00000

Description: Sets the factor for the periodicity for the cogging torque compensation.

For rotating motors, the reference value is one mechanical revolution, for linear motors, the pole pair width.

Dependency: Refer to: p5250, p5252, r5254, r5255, p5260

Note: For values < 1, several table periods are passed through for each mechanical revolution or pole pair width, for values > 1 several revolutions or pole pair widths are required for one table period.

The following must apply for endlessly rotating machines:

p0408 and p0408 * p5253 * 2^p0418 must have a power of two less than 2^24.

r5254[0...3] Cogging torque compensation diagnostics / Cog_M_comp diag

SERVO (Cog_M_comp), SERVO_AC (Cog_M_comp), SERVO_I_AC (Cog_M_comp)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays diagnostics data for the cogging torque compensation.

Index:
[0] = Average values for slowly learning
[1] = Actual table index
[2] = Table index when starting learning
[3] = Table index when ending learning

Dependency: Refer to: p5250, p5252, p5253, r5255, p5260

Note: For index [0]:

Average values for slowly learning the cogging torque compensation. During learning, the average value is incremented by 1 for each table period passed.

For index [1]:

Currently used table index.

For index [2]:

Table index when starting slow learning.

For index [3]:

Table index when ending slow learning.

For index [2, 3]:

If the actual index when learning is decremented, then the table index at start and end is interchanged.

r5255[0...1] CO: Cogging torque compensation input/output / Cog_M_comp I/O

SERVO (Cog_M_comp, Lin), SERVO_AC (Cog_M_comp, Lin), SERVO_I_AC (Cog_M_comp, Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [N]	- [N]	- [N]

Description: Display and connector output for input and output of the cogging torque compensation.

Index:
[0] = Input
[1] = Output

Dependency: Refer to: p5250, p5251, p5252, p5253, r5254, p5256, p5260, p5261

r5255[0...1] CO: Cogging torque compensation input/output / Cog_M_comp I/O

SERVO (Cog_M_comp), SERVO_AC (Cog_M_comp), SERVO_I_AC (Cog_M_comp)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2003	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Display and connector output for input and output of the cogging torque compensation.

Index: [0] = Input
[1] = Output

Dependency: Refer to: p5250, p5251, p5252, p5253, r5254, p5256, p5260, p5261

p5256[0...n] Cogging torque compensation direction reversal hysteresis / Cog_M_comp hyst

SERVO (Cog_M_comp, Lin), SERVO_AC (Cog_M_comp, Lin), SERVO_I_AC (Cog_M_comp, Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [m/min]	100.00 [m/min]	0.40 [m/min]

Description: Sets the hysteresis for the direction-dependent switchover of the cogging torque tables.

Dependency: Refer to: p5250, p5251, p5252, p5253, r5254, r5255, p5260, p5261

Note: This setting is only active for p5250.1 = 1.

p5256[0...n] Cogging torque compensation direction reversal hysteresis / Cog_M_comp hyst

SERVO (Cog_M_comp), SERVO_AC (Cog_M_comp), SERVO_I_AC (Cog_M_comp)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	100.00 [rpm]	20.00 [rpm]

Description: Sets the hysteresis for the direction-dependent switchover of the cogging torque tables.

Dependency: Refer to: p5250, p5251, p5252, p5253, r5254, r5255, p5260, p5261

Note: This setting is only active for p5250.1 = 1.

p5257[0...19] Cogging torque compensation frequency range real part / Cog_M_comp f real

SERVO (Cog_M_comp, Lin), SERVO_AC (Cog_M_comp, Lin), SERVO_I_AC (Cog_M_comp, Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000000.000000 [N]	1000000.000000 [N]	0.000000 [N]

Description: Display or setting of the real part of the multiple of the table for the cogging torque compensation (FFT from p5260).

After learning (p5251), this table is automatically populated from the values in p5260 or p5261. With p5251.4 = 1, they can also be used to generate a cogging torque compensation table for p5260.

Parameters p5257, p5258 and p5259 of the same index describe one frequency point.

Only 20 values with the highest absolute value are displayed.

Dependency: Refer to: p5250, p5251, p5252, p5253, r5254, r5255, p5256, p5258, p5259, p5260, p5261

p5257[0...19] Cogging torque compensation frequency range real part / Cog_M_comp f real

SERVO (Cog_M_comp), SERVO_AC (Cog_M_comp), SERVO_I_AC (Cog_M_comp)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000000.000000 [Nm]	1000000.000000 [Nm]	0.000000 [Nm]

Description: Display or setting of the real part of the multiple of the table for the cogging torque compensation (FFT from p5260).

After learning (p5251), this table is automatically populated from the values in p5260 or p5261. With p5251.4 = 1, they can also be used to generate a cogging torque compensation table for p5260.

Parameters p5257, p5258 and p5259 of the same index describe one frequency point.

Only 20 values with the highest absolute value are displayed.

Dependency: Refer to: p5250, p5251, p5252, p5253, r5254, r5255, p5256, p5258, p5259, p5260, p5261

p5258[0...19] Cogging torque compensation frequency range imaginary part / Cog_M_comp f Imag

SERVO (Cog_M_comp, Lin), SERVO_AC (Cog_M_comp, Lin), SERVO_I_AC (Cog_M_comp, Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000000.000000 [N]	1000000.000000 [N]	0.000000 [N]

Description: Display or setting of the imaginary part of the multiple of the table for the cogging torque compensation (FFT from p5260).

Dependency: Refer to: p5250, p5251, p5252, p5253, r5254, r5255, p5256, p5257, p5259, p5260, p5261

p5258[0...19] Cogging torque compensation frequency range imaginary part / Cog_M_comp f Imag

SERVO (Cog_M_comp), SERVO_AC (Cog_M_comp), SERVO_I_AC (Cog_M_comp)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000000.000000 [Nm]	1000000.000000 [Nm]	0.000000 [Nm]

Description: Display or setting of the imaginary part of the multiple of the table for the cogging torque compensation (FFT from p5260).

Dependency: Refer to: p5250, p5251, p5252, p5253, r5254, r5255, p5256, p5257, p5259, p5260, p5261

p5259[0...19] Cogging torque compensation frequency range multiplicity / Cog_M_comp f multi

SERVO (Cog_M_comp), SERVO_AC (Cog_M_comp), SERVO_I_AC (Cog_M_comp)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	2048	0

Description: Display or setting of the multiple of the table for the cogging torque compensation (index of FFT from p5260).

Dependency: Refer to: p5250, p5251, p5252, p5253, r5254, r5255, p5256, p5257, p5258, p5260, p5261

p5260[0...4095] Cogging torque compensation table / Cog_M_comp table

SERVO (Cog_M_comp, Lin), SERVO_AC (Cog_M_comp, Lin), SERVO_I_AC (Cog_M_comp, Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** 8_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000000.000000 [N]	1000000.000000 [N]	0.000000 [N]

Description: Display or setting of the compensation values for the cogging torque compensation
For p5250.1 = 1, the following applies:
The table contains compensation values for the positive direction.
For p5250.1 = 0, the following applies:
The table contains compensation values for the both directions.

Dependency: Refer to: p5250, p5251, p5252, p5253, r5254, r5255, p5256, p5261

Note: The table length used is set using p5252.

p5260[0...4095] Cogging torque compensation table / Cog_M_comp table

SERVO (Cog_M_comp), SERVO_AC (Cog_M_comp), SERVO_I_AC (Cog_M_comp)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** 7_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000000.000000 [Nm]	1000000.000000 [Nm]	0.000000 [Nm]

Description: Display or setting of the compensation values for the cogging torque compensation
For p5250.1 = 1, the following applies:
The table contains compensation values for the positive direction.
For p5250.1 = 0, the following applies:
The table contains compensation values for the both directions.

Dependency: Refer to: p5250, p5251, p5252, p5253, r5254, r5255, p5256, p5261

Note: The table length used is set using p5252.

p5261[0...4095] Cogging torque compensation table negative direction / Cog_M_cmp tab neg

SERVO (Cog_M_comp, Lin), SERVO_AC (Cog_M_comp, Lin), SERVO_I_AC (Cog_M_comp, Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000000.000000 [N]	1000000.000000 [N]	0.000000 [N]

Description: Display or setting of the compensation values for the negative direction of the cogging torque compensation.

Dependency: Refer to: p5250, p5251, p5252, p5253, r5254, r5255, p5256, p5260

Note: The table length used is set using p5252.
This setting is only active for p5250.1 = 1.

p5261[0...4095] Cogging torque compensation table negative direction / Cog_M_cmp tab neg

SERVO (Cog_M_comp), SERVO_AC (Cog_M_comp), SERVO_I_AC (Cog_M_comp)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000000.000000 [Nm]	1000000.000000 [Nm]	0.000000 [Nm]

Description: Display or setting of the compensation values for the negative direction of the cogging torque compensation.

Dependency: Refer to: p5250, p5251, p5252, p5253, r5254, r5255, p5256, p5260

Note: The table length used is set using p5252.
This setting is only active for p5250.1 = 1.

p5265[0...n] Periodic position error compensation amplitude 1 / Pos err comp ampl1

SERVO (Cog_M_comp), SERVO_AC (Cog_M_comp), SERVO_I_AC (Cog_M_comp)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0	20000.0	0.0

Description: Amplitude to compensate periodic position errors in fine pulses for the error with one sinusoidal period per mechanical revolution.

The value is determined with the motor data identification routine (p1960).

Dependency: Refer to: p5250, p5266

Note: Prerequisites:

- "Cogging torque compensation" function module activated (r0108.22 = 1).
- motor data identification carried out with transfer (p1959.0 = 1, p1960 = 1).
- compensation periodic position errors activated (p5250.2 = 1).
- encoder with absolute position information (unique zero mark, distance-coded zero marks, absolute encoder, 1-pole resolver, p5263.10).

p5266[0...n] Periodic position error compensation angle 1 / Pos err comp ang 1

SERVO (Cog_M_comp), SERVO_AC (Cog_M_comp), SERVO_I_AC (Cog_M_comp)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-180.00 [°]	180.00 [°]	0.00 [°]

Description: Angle to compensate periodic position errors for the error with one sinusoidal period per mechanical revolution.

The value is determined with the motor data identification routine (p1960).

Dependency: Refer to: p5250, p5265

Note: Prerequisites:

- "Cogging torque compensation" function module activated (r0108.22 = 1).
- motor data identification carried out with transfer (p1959.0 = 1, p1960 = 1).
- compensation periodic position errors activated (p5250.2 = 1).
- encoder with absolute position information (unique zero mark, distance-coded zero marks, absolute encoder, 1-pole resolver, p5263.10).

p5267[0...n] Periodic position error compensation amplitude 2 / Pos err comp ampl2

SERVO (Cog_M_comp), SERVO_AC (Cog_M_comp), SERVO_I_AC (Cog_M_comp)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0	20000.0	0.0

Description: Amplitude to compensate periodic position errors in fine pulses for the error with two sinusoidal periods per mechanical revolution.

The value is determined with the motor data identification routine (p1960).

Dependency: Refer to: p5250, p5268

Note: Prerequisites:

- "Cogging torque compensation" function module activated (r0108.22 = 1).
- motor data identification carried out with transfer (p1959.0 = 1, p1960 = 1).
- compensation periodic position errors activated (p5250.2 = 1).
- encoder with absolute position information (unique zero mark, distance-coded zero marks, absolute encoder, 1-pole resolver, p5263.10).

p5268[0...n] Periodic position error compensation angle 2 / Pos err comp ang 2

SERVO (Cog_M_comp), SERVO_AC (Cog_M_comp), SERVO_I_AC (Cog_M_comp)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-180.00 [°]	180.00 [°]	0.00 [°]

Description: Angle to compensate periodic position errors for the error with two sinusoidal periods per mechanical revolution.

The value is determined with the motor data identification routine (p1960).

Dependency: Refer to: p5250, p5267

Note: Prerequisites:

- "Cogging torque compensation" function module activated (r0108.22 = 1).
- motor data identification carried out with transfer (p1959.0 = 1, p1960 = 1).
- compensation periodic position errors activated (p5250.2 = 1).
- encoder with absolute position information (unique zero mark, distance-coded zero marks, absolute encoder, 1-pole resolver, p5263.10).

p5271[0...n] Online / One Button Tuning configuration / Ot OBT config

SERVO (J_estimator, Lin), SERVO_AC (J_estimator, Lin), SERVO_I_AC (J_estimator, Lin)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 1100 bin

Description: Sets the configuration for online tuning / One Button Tuning.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	PD controller for large load moments of inertia	Yes	No	-
01	Reduce gain at low speeds	Yes	No	-
02	Load adaptation Kp	Yes	No	5045
03	Speed precontrol	Yes	No	5045
04	Torque precontrol	Yes	No	5045
05	Set maximum acceleration limiting	Yes	No	5045
06	Do not change Kp	Yes	No	-
07	Voltage feedforward control	Yes	No	-

Dependency: Refer to: p5272, p5273, r5274, p5275

Note: For bit 00:

For significant differences between the motor mass and load mass, or for low dynamic performance of the controller, then the P controller becomes a PD controller in the position control loop. As a consequence, the dynamic performance of the position controller is increased.

This function should only be set when the velocity precontrol (bit 3 = 1) or the force precontrol (bit 4 = 1) is active.

For bit 01:

At low velocities, the controller gain factors are automatically reduced in order to avoid noise and oscillation at standstill.

For bit 02:

The estimated load mass is taken into account for the velocity controller gain (see p5273).

For bit 03:

Activates the velocity precontrol for the basic positioner (EPOS).

For bit 04:

Activates the force precontrol for the basic positioner (EPOS).

For bit 05:

The maximum setpoint acceleration for the basic positioner (EPOS) is determined based on the estimated mass. This is only realized once by setting the bit.

Prerequisite:

The drive pulses are inhibited and the mass was previously determined.

For bit 06:

The velocity controller gain set in p1460 is not changed when calculating the controller data.

For bit 07:

Activation of the voltage precontrol.

p5271[0...n] Online / One Button Tuning configuration / Ot OBT config

SERVO (J_estimator), SERVO_AC (J_estimator), SERVO_I_AC (J_estimator)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 1100 bin

Description: Sets the configuration for online tuning / One Button Tuning.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	PD controller for large load moments of inertia	Yes	No	-
01	Reduce gain at low speeds	Yes	No	-
02	Load adaptation Kp	Yes	No	5045
03	Speed precontrol	Yes	No	5045
04	Torque precontrol	Yes	No	5045
05	Set maximum acceleration limiting	Yes	No	5045
06	Do not change Kp	Yes	No	-
07	Voltage feedforward control	Yes	No	-

Dependency: Refer to: p5272, p5273, r5274, p5275

Note: For bit 00:

For significant differences between the motor moment of inertia and load moment of inertia - or for a low controller dynamic response - the P controller in the position control loop is transformed into a PD controller. As a consequence, the dynamic performance of the position controller is increased.

This function should only be set when the speed precontrol (bit 3 = 1) or the torque precontrol (bit 4 = 1) is active.

For bit 01:

At low speeds, the controller gain factors are automatically reduced in order to avoid noise and oscillation at standstill.

For bit 02:

The estimated load moment of inertia is taken into account for the speed controller gain (see p5273).

For bit 03:

Activates the speed precontrol for the basic positioner (EPOS).

For bit 04:

Activation of the torque precontrol for the basic positioner (EPOS), if this is not active, then the internal drive speed/torque precontrol is parameterized.

For bit 05:

The maximum setpoint acceleration for the basic positioner (EPOS) is determined based on the estimated moment of inertia. This is only realized once by setting the bit.

Prerequisite:

The drive pulses are inhibited and the moment of inertia was previously determined.

For bit 06:

The speed controller gain set in p1460 is not changed when calculating the controller data.

For bit 07:

Activation of the voltage precontrol.

p5271[0...n] Online / One Button Tuning configuration / Ot OBT config

VECTOR (J_estimator), VECTOR_AC (J_estimator), VECTOR_I_AC (J_estimator)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 bin

Description: Sets the configuration for online tuning / One Button Tuning.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
02	Load adaptation Kp	Yes	No	5045
06	Do not change Kp	Yes	No	-

Dependency: Refer to: p5272, p5273, r5274, p5275

Note: For bit 02:

The estimated load moment of inertia is taken into account for the speed controller gain (see p5273).

For bit 06:

The speed controller gain set in p1460 is not changed when calculating the controller data.

p5272[0...n] Online tuning dynamic factor / Ot dyn_factor

SERVO (J_estimator, Lin), SERVO_AC (J_estimator, Lin), SERVO_I_AC (J_estimator, Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
5.0 [%]	1000.0 [%]	100.0 [%]

Description: Sets the dynamic factor for the proportional gain of the velocity controller for online tuning.

Dependency: Refer to: p5271, p5273, r5274, p5275

Notice: The velocity control can become unstable for excessively high values.

Note: The stiffer the mechanical load coupling, the higher the dynamic factor can be set.

p5272[0...n] Online tuning dynamic factor / Ot dyn_factor

SERVO (J_estimator), SERVO_AC (J_estimator), SERVO_I_AC (J_estimator)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
5.0 [%]	1000.0 [%]	100.0 [%]

Description: Sets the dynamic factor for the proportional gain of the speed controller for online tuning.

Dependency: Refer to: p5271, p5273, r5274, p5275

Notice: The speed control can become unstable for excessively high values.

Note: The stiffer the mechanical load coupling, the higher the dynamic factor can be set.

p5273[0...n] Online tuning dynamic factor load / Ot dyn_factor load

SERVO (J_estimator, Lin), SERVO_AC (J_estimator, Lin), SERVO_I_AC (J_estimator, Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5045
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	100.0 [%]	30.0 [%]

Description: Sets the dynamic factor for the proportional gain of the velocity controller for online tuning.

The value specifies which component of the estimated load mass is taken into account when adapting the velocity controller.

Dependency: Refer to: p5271, p5272, r5274, p5275

Notice: The velocity control can become unstable for excessively high values.

p5273[0...n] Online tuning dynamic factor load / Ot dyn_factor load

SERVO (J_estimator), SERVO_AC (J_estimator), SERVO_I_AC (J_estimator)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5045
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	100.0 [%]	30.0 [%]

Description: Sets the dynamic factor for the proportional gain of the speed controller for online tuning.

The value specifies which component of the estimated load moment of inertia is taken into account when adapting the speed controller.

Dependency: Refer to: p5271, p5272, r5274, p5275

Notice: The speed control can become unstable for excessively high values.

r5274 CO: Online / One Button Tuning dynamic response estimated / Ot dyn estimate

SERVO (J_estimator, Lin), SERVO_AC (J_estimator, Lin), SERVO_I_AC (J_estimator, Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5045
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [ms]	- [ms]	- [ms]

Description: Display and connector output for the estimated dynamic response of the velocity control loop as PT1 time constant for online tuning.

Dependency: Refer to: p5271, p5272, p5273, p5275

r5274 CO: Online / One Button Tuning dynamic response estimated / Ot dyn estimate

SERVO (J_estimator), SERVO_AC (J_estimator), SERVO_I_AC (J_estimator)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 5045
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [ms]	- [ms]	- [ms]

Description: Display and connector output for the estimated dynamic response of the speed control loop as PT1 time constant for online tuning/One Button Tuning.

This position controller setting is required if the closed-loop position control is in an external control system.

Dependency: Refer to: p5271, p5272, p5273, p5275

p5275[0...n] Online / One Button Tuning dynamic response time constant / Ot dyn T

SERVO (J_estimator), SERVO_AC (J_estimator), SERVO_I_AC (J_estimator)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [ms]	60.0 [ms]	7.5 [ms]

Description: Sets the time constant for the precontrol symmetrization for online tuning / One Button Tuning.

As a consequence, the drive is allocated a defined, dynamic response via its precontrol.

For axes, which must interpolate with one another, the same value must be entered.

Examples:

0 ms = travel without following error (Kv factor is infinity)

5 ms = settling behavior as for PT1 with 5 ms (Kv factor = 12 [1000/min])

Dependency: Refer to: p5271, p5272, p5273, r5274

Note: This time constant is only effective if p5302.7 is set = 1.

Otherwise, the precontrol symmetrization is adapted to the estimated dynamic response, therefore setting positioning without any overshoot.

r5276[0...n] Online / One Button Tuning maximum Kv factor estimated / Ot Kv estimated

SERVO (J_estimator), SERVO_AC (J_estimator), SERVO_I_AC (J_estimator)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [1000 rpm]	100000.00 [1000 rpm]	- [1000 rpm]

Description: Displays the estimated maximum position controller gain for online tuning/One Button Tuning.

Dependency: Refer to: p5271, p5272, p5273, p5275

Warning: The calculation assumes that the DSC is activated in the drive and is controlled on the motor measuring system.

If this is not the case, then excessively high values are displayed.

The value that is displayed does not take into account low-frequency resonance effects in the drive train. If necessary, the value must be significantly reduced.

Note: The value for the closed-loop position control is required by a higher-level control system.

r5277[0...n] Online/One Button Tuning precontrol symmetrizing time estimated / Ot FFW estim

SERVO (J_estimator), SERVO_AC (J_estimator), SERVO_I_AC (J_estimator)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** 5045
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	100000.00 [ms]	- [ms]

Description: Displays the estimated time constant for symmetrization of the speed precontrol.

This is required to symmetrize the position controller for online tuning / One Button Tuning if the position control is realized in an external control system.

Dependency: Refer to: p5271, p5272, p5273, p5275

Warning: The calculation assumes that the DSC is activated in the drive and is controlled on the motor measuring system.

If this is not the case, then the time is not correctly calculated.

p5280[0...n] Current setpoint filter adaptation configuration / Filt adapt config

SERVO (J_estimator), SERVO_AC (J_estimator), SERVO_I_AC (J_estimator)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1	1	0

Description: Sets the configuration for the adaptive current setpoint filter.

The adaptation acts on the filter set using p5281.

Value:
-1: Inactive and filter deactivated
0: Inactive
1: Active

Dependency: The prerequisite for the adaptation of the current setpoint filter is that the "Moment of inertia estimator" function module is activated (r0108.10).

Refer to: p5281, p5282, p5283, p5284, r5285

Notice: If, when activating adaptation (p5280 = 1), the filter assigned via p5281 is still not active, then it is automatically activated.

Note: If p5280 = -1:

The adaptation is deactivated and the assigned filter deactivated.

If p5280 = 0:

The adaptation is inactive. The actual setting of the filter parameters is kept in a volatile memory. To permanently save the values that have been determined, the parameters must be saved in a non-volatile memory (p0977 = 1).

If p5280 = 1:

The adaptation is active. When a mechanical resonant frequency is excited, the filter frequency is adapted. Adaptation is temporarily inactive while the function generator generates a noise signal (p4820 = 4).

p5281[0...n] Current setpoint filter adaptation assignment / Filt adapt assign

SERVO (J_estimator), SERVO_AC (J_estimator), SERVO_I_AC (J_estimator)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	10	0

Description: Sets the current setpoint filter that is to be adapted.

Value = 0: No assignment

Value = 1: Current setpoint filter 1 assigned (basic system)

...

Value = 4: Current setpoint filter 4 assigned (basic system)

Value = 5: Current setpoint filter 5 assigned (function module, r0108.21)

...

Value = 10: Current setpoint filter 10 assigned (function module, r0108.21)

Dependency: Refer to: p5280, p5282, p5283, p5284, r5285

Refer to: F07419

Notice: Fault F07419 is output if this setting is changed when adaptation is active.

Note: If, when activating adaptation (p5280 = 1), the selected filter is still not active, then it is automatically activated.

p5282[0...n] Current setpoint filter adaptation limit frequency lower / Filt adapt f lower

SERVO (J_estimator), SERVO_AC (J_estimator), SERVO_I_AC (J_estimator)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
50 [Hz]	5000 [Hz]	250 [Hz]

Description: Sets the lower limit frequency for the current setpoint filter adaptation.

If the actual frequency of the adapted filter falls below the lower limit frequency, then the frequency of the adapted filter is set to the lower limit frequency. This limit is only effective when adaptation is active (p5280 = 1). If adaptation is not active, then this limit only becomes effective at the time of the next activation.

Dependency: Refer to: p5280, p5281, p5283, p5284, r5285

Note: If a value is entered which exceeds the upper limit frequency (p5283), then the value is rejected.

p5283[0...n] Current setpoint filter adaptation limit frequency upper / Filt adapt f upper

SERVO (J_estimator), SERVO_AC (J_estimator), SERVO_I_AC (J_estimator)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
200 [Hz]	10000 [Hz]	1500 [Hz]

Description: Sets the upper limit frequency for the current setpoint filter adaptation.

If the actual frequency of the adapted filter exceeds the upper limit frequency, then the frequency of the adapted filter is set to the upper limit frequency. This limit is only effective when adaptation is active (p5280 = 1). If adaptation is not active, then this limit only becomes effective at the time of the next activation.

There is an internal maximum value for the upper limit frequency; this depends on the damping (attenuation) of the adapted filter and the current controller sampling time.

If the parameterized value exceeds the internal maximum value, then the following applies:

- this parameter is immediately limited to the internal maximum value if adaptation is active.
- this parameter is limited to the internal maximum value the next time that adaptation is activated (p5280).

Dependency: Refer to: p5280, p5281, p5282, p5284, r5285

Note: If a value is entered which falls below the lower limit frequency (p5282), then the value is rejected.

p5284[0...n] Current setpoint filter adaptation activation threshold / Filt adapt thresh

SERVO (J_estimator), SERVO_AC (J_estimator), SERVO_I_AC (J_estimator)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [%]	10000 [%]	100 [%]

Description: Sets the activation threshold for the current setpoint filter adaptation.

Dependency: Refer to: p5280, p5281, p5282, p5283, r5285

Note: The value should be increased if, in operation, the filter frequency continuously changes significantly although the resonance frequency does not change.

The value should be reduced if the filter frequency adaptation cannot be set so that mechanical resonance is suppressed.

r5285[0...n] Current setpoint filter adaptation actual frequency / Filt adapt act f

SERVO (J_estimator), SERVO_AC (J_estimator), SERVO_I_AC (J_estimator)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Hz]	- [Hz]	- [Hz]

Description: Displays the actual frequency of the adapted current setpoint filter.

Dependency: Refer to: p5280, p5281, p5282, p5283, p5284

p5291 FFT tuning configuration / FFT tun config

SERVO (J_estimator, Lin), SERVO_AC (J_estimator, Lin), SERVO_I_AC (J_estimator, Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0011 1001 bin

Description: Sets the configuration for the "FFT tuning" function.

This function is used for One Button Tuning (p5300 = 1).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Noise excitation after pulse enable	Yes	No	-
01	Set current setpoint filter (HF)	Yes	No	-
02	Set speed controller gain (HF)	Yes	No	-
03	Length of FFT window bit 0 (LF, HF)	Yes	No	-
04	Length of FFT window bit 1 (LF, HF)	Yes	No	-
05	Windowing the time signals using a Hamming window (LF, HF)	Yes	No	-
06	Measure current controller	Yes	No	-
07	Bandwidth bit 0 (LF)	Yes	No	-
08	Bandwidth bit 1 (LF)	Yes	No	-
09	Bandwidth bit 2 (LF)	Yes	No	-
10	Measuring periods bit 0	Yes	No	-
11	Measuring periods bit 1	Yes	No	-
12	Inject noise onto speed setpoint	Yes	No	-
13	Do not reduce Kp for measurement	Yes	No	-
14	Current setpoint filter that inverts the control loop	Yes	No	-

Dependency: Refer to: r5293, r5294, r5295, p5296, p5297

Note: HF: high frequency

LF: low frequency

For bit 00:

A PRBS signal (pseudo random binary signal) is superimposed on the current setpoint to be able to better identify the mechanical controlled system.

For bit 01:

The identified mechanical resonance points are suppressed using current setpoint filters.

For bit 02:

The maximum velocity controller gain is determined from the identified mechanical controlled system.

For bits 03, 04:

The measured value buffer length is set using these bits:

Bit 04 = 0 and bit 03 = 0 -> buffer length = 256

Bit 04 = 0 and bit 03 = 1 -> buffer length = 512

Bit 04 = 1 and bit 03 = 0 -> buffer length = 1024

Bit 04 = 1 and bit 03 = 1 -> buffer length = 2048

For bit 05:

A Hamming window is used to filter the measured time signals.

For bit 06:

The measurement checks the current controller frequency characteristic. For high amplitudes in p5298, it is possible that the check is unsuccessful, as the converter reaches its voltage limit.

For bits 07, 08:

An aliasing filter is used for the measured values.

Bit 08 = 0 and bit 07 = 0 -> filter frequency = 50 Hz

Bit 08 = 0 and bit 07 = 1 -> filter frequency = 100 Hz

Bit 08 = 1 and bit 07 = 0 -> filter frequency = 200 Hz

Bit 08 = 1 and bit 07 = 1 -> filter frequency = 400 Hz

For bit 09:

Evaluation can be switched over from correlation to differential filter.

For bits 10, 11:

Number of measuring periods.

Bit 11 = 0 and bit 10 = 0 -> number of measurements = 1

Bit 11 = 0 and bit 10 = 1 -> number of measurements = 2

Bit 11 = 1 and bit 10 = 0 -> number of measurements = 4

Bit 11 = 1 and bit 10 = 1 -> number of measurements = 8

For bit 12:

The PRBS signal is switched to the velocity setpoint (in front of the filter).

For bit 13:

The input signal for the force actual value is taken from in front of the current setpoints filters.

p5291 FFT tuning configuration / FFT tun config

SERVO (J_estimator), SERVO_AC (J_estimator), SERVO_I_AC (J_estimator)	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: -	**Unit group:** -	**Unit selection:** -
	Not for motor type: REL	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	0000 0000 0011 1001 bin

Description: Sets the configuration for the "FFT tuning" function.

This function is used for One Button Tuning (p5300 = 1).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Noise excitation after pulse enable	Yes	No	-
01	Set current setpoint filter (HF)	Yes	No	-
02	Set speed controller gain (HF)	Yes	No	-
03	Length of FFT window bit 0 (LF, HF)	Yes	No	-
04	Length of FFT window bit 1 (LF, HF)	Yes	No	-
05	Windowing the time signals using a Hamming window (LF, HF)	Yes	No	-
06	Measure current controller	Yes	No	-
07	Bandwidth bit 0 (LF)	Yes	No	-
08	Bandwidth bit 1 (LF)	Yes	No	-
09	Bandwidth bit 2 (LF)	Yes	No	-
10	Measuring periods bit 0	Yes	No	-
11	Measuring periods bit 1	Yes	No	-
12	Inject noise onto speed setpoint	Yes	No	-
13	Do not reduce Kp for measurement	Yes	No	-
14	Current setpoint filter that inverts the control loop	Yes	No	-

Dependency: Refer to: r5293, r5294, r5295, p5296, p5297

Note: HF: high frequency

LF: low frequency

For bit 00:

A PRBS signal (pseudo random binary signal) is superimposed on the current setpoint to be able to better identify the mechanical controlled system.

For bit 01:

The identified mechanical resonance points are suppressed using current setpoint filters.

For bit 02:

The maximum speed controller gain is determined from the identified mechanical controlled system.

For bits 03, 04:

The measured value buffer length is set using these bits:

Bit 04 = 0 and bit 03 = 0 -> buffer length = 256

Bit 04 = 0 and bit 03 = 1 -> buffer length = 512

Bit 04 = 1 and bit 03 = 0 -> buffer length = 1024

Bit 04 = 1 and bit 03 = 1 -> buffer length = 2048

For bit 05:

A Hamming window is used to filter the measured time signals.

For bit 06:

The current controller frequency response is determined when making the measurement and is taken into account for the speed controller loop. For high amplitudes in p5298, it is possible that the measurement is unsuccessful, as the converter reaches its voltage limit.

For bits 07, 08, 09:

The measurement bandwidth is set using these bits:

Bit 09 = 0, bit 08 = 0, bit 07 = 0 -> bandwidth = 50 Hz

Bit 09 = 0, bit 08 = 0, bit 07 = 1 -> bandwidth = 100 Hz

Bit 09 = 0, bit 08 = 1, bit 07 = 0 -> bandwidth = 200 Hz

Bit 09 = 0, bit 08 = 1, bit 07 = 1 -> bandwidth = 400 Hz

Bit 09 = 1, bit 08 = 0, bit 07 = 0 -> bandwidth = 800 Hz

Bit 09 = 1, bit 08 = 0, bit 07 = 1 -> bandwidth = 1600 Hz

For bits 10, 11:
Number of measuring periods.
Bit 11 = 0 and bit 10 = 0 -> number of measurements = 1
Bit 11 = 0 and bit 10 = 1 -> number of measurements = 2
Bit 11 = 1 and bit 10 = 0 -> number of measurements = 4
Bit 11 = 1 and bit 10 = 1 -> number of measurements = 8
For bit 12:
The PRBS signal is switched to the speed setpoint (in front of the filter).
For bit 13:
The input signal for the torque actual value is taken from in front of the current setpoints filters.

p5292 FFT tuning dynamic factor / FFT tun dyn_factor

SERVO (J_estimator, Lin), SERVO_AC (J_estimator, Lin), SERVO_I_AC (J_estimator, Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
25.0 [%]	125.0 [%]	80.0 [%]

Description: Sets the dynamic factor for the proportional gain of the velocity controller for FFT tuning.

Dependency: Refer to: p5291

Notice: The velocity control can become unstable for excessively high values.

p5292 FFT tuning dynamic factor / FFT tun dyn_factor

SERVO (J_estimator), SERVO_AC (J_estimator), SERVO_I_AC (J_estimator)

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
25.0 [%]	125.0 [%]	80.0 [%]

Description: Sets the dynamic factor for the proportional gain of the speed controller for FFT tuning.
This function is used for One Button Tuning (p5300 = 1).

Dependency: Refer to: p5291

r5293 Velocity controller gain identified / FFT tun Kp ident

SERVO (J_estimator, Lin), SERVO_AC (J_estimator, Lin), SERVO_I_AC (J_estimator, Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** 24_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Ns/m]	- [Ns/m]	- [Ns/m]

Description: Displays the maximum possible Kp gain of the velocity controller iterated from the FFT measurement.

Dependency: Refer to: p5291

r5293 FFT tuning speed controller P gain identified / FFT tun Kp ident

SERVO (J_estimator), SERVO_AC (J_estimator), SERVO_I_AC (J_estimator)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** 17_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Nms/rad]	- [Nms/rad]	- [Nms/rad]

Description: Displays the determined proportional gain Kp of the speed controller before FFT tuning.
This function is used for One Button Tuning (p5300 = 1).

Dependency: Refer to: p5291

r5294[0...5] FFT tuning zero position identified / FFT tun zero ident

SERVO (J_estimator), SERVO_AC (J_estimator), SERVO_I_AC (J_estimator)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** 2_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Hz]	- [Hz]	- [Hz]

Description: Displays the identified mechanical zero points.

One Button Tuning must be carried out beforehand (p5300 = 1).

Dependency: Refer to: p5291

Note: For r5294[0...2]:

Displays the zero positions for the "Load oscillation detection" function (p5301.4 = 1) or "Suppress detected load oscillation" (p5301.5 = 1).

For r5294[3...5]:

Displays the zero positions for the "Set proportional gain Kp" function (p5301.0 = 1) or "Set current setpoint filter" (p5301.1 = 1).

r5295[0...5] FFT tuning pole position identified / FFT tun pole ident

SERVO (J_estimator), SERVO_AC (J_estimator), SERVO_I_AC (J_estimator)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** 2_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Hz]	- [Hz]	- [Hz]

Description: Displays the identified mechanical pole positions.

One Button Tuning must be carried out beforehand (p5300 = 1).

Dependency: Refer to: p5291

Note: For r5295[0...2]:

Displays the pole positions for the "Load oscillation detection" function (p5301.4 = 1) or "Suppress detected load oscillation" (p5301.5 = 1).

For r5295[3...5]:

Displays the pole positions for the "Set proportional gain Kp" function (p5301.0 = 1) or "Set current setpoint filter" (p5301.1 = 1).

p5296[0...2] FFT tuning PRBS amplitude / FFT tun PRBS ampl

SERVO (J_estimator, Lin), SERVO_AC (J_estimator, Lin), SERVO_I_AC (J_estimator, Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1.0 [%]	300.0 [%]	[0] 10.0 [%] [1] 30.0 [%] [2] 5.0 [%]

Description: Sets the amplitude of the PRBS signal.

The value refers to the rated motor voltage (r0333) and to the motor standstill force (r0319).

Dependency: Refer to: p5291

p5296[0...2] FFT tuning PRBS amplitude / FFT tun PRBS ampl

SERVO (J_estimator), SERVO_AC (J_estimator), SERVO_I_AC (J_estimator)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1.0 [%]	300.0 [%]	[0] 10.0 [%] [1] 30.0 [%] [2] 5.0 [%]

Description: Sets the amplitude of the PRBS signal.

The value refers to the motor rated torque (r0333) and to the motor standstill torque (r0319).

This function is used for One Button Tuning (p5300 = 1).

Dependency: Refer to: p5291

p5297[0...2] FFT tuning PRBS offset / FFT tun PRBS offs

SERVO (J_estimator, Lin), SERVO_AC (J_estimator, Lin), SERVO_I_AC (J_estimator, Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-210000.0000 [m/min]	210000.0000 [m/min]	0.0000 [m/min]

Description: Setting the motor velocity offset.

The offset is intended to prevent non-linear effects, such as backlash or stiction from influencing the measured values

Recommendation: If the "Identify high frequencies" function (p5290 = 1) is used together with a TTL/HTL encoder, then the following applies to the offset velocity (p5297):

p5297 > 15 / motor encoder pulse number / velocity controller sampling time

p5297 = 15 / p0408 / p0115[2]

Dependency: Refer to: p5291

p5297[0...2] FFT tuning PRBS offset / FFT tun PRBS offs

SERVO (J_estimator), SERVO_AC (J_estimator), SERVO_I_AC (J_estimator)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-210000.0000 [rpm]	210000.0000 [rpm]	0.0000 [rpm]

Description: Sets the speed offset for the motor.

The offset is intended to prevent non-linear effects, such as backlash or stiction from influencing the measured values

This function is used for One Button Tuning (p5300 = 1).

Recommendation: If the "Identify high frequencies" function (p5290 = 1) is used together with a TTL/HTL encoder, then the following applies to the offset speed (p5297):

p5297 > 15 / motor encoder pulse number / speed controller sampling time

p5297 = 15 / p0408 / p0115[1]

Dependency: Refer to: p5291

r5298 FFT tuning amplitude response / FFT tun ampl_resp

SERVO (J_estimator), SERVO_AC (J_estimator), SERVO_I_AC (J_estimator)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Amplitude response of the speed control loop in dB (units rpm/Nm or m/min/N).

During the One Button Tuning function, 1024 measured values are generated, and are then output in the speed controller sampling time.

For p5301.0 = 1 or p5301.1 = 1, in the representation, a measured value corresponds to (1/p0115[1])/2048 in [Hz].

For p5301.4 = 1 or p5301.5 = 1 in the representation, a measured value corresponds to 250/2048 in [Hz].

A trigger condition is required to trace the measured values (e.g. amplitude response r5298 <> 0).

r5299 FFT tuning phase response / FFT tun ph_resp

SERVO (J_estimator), SERVO_AC (J_estimator), SERVO_I_AC (J_estimator)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Phase response of the speed control loop in degrees.

During the One Button Tuning function, 1024 measured values are generated, and are then output in the speed controller sampling time.

For p5301.0 = 1 or p5301.1 = 1, in the representation, a measured value corresponds to (1/p0115[1])/2048 in [Hz].

For p5301.4 = 1 or p5301.5 = 1 in the representation, a measured value corresponds to 250/2048 in [Hz].

A trigger condition is required to trace the measured values (e.g. amplitude response r5298 <> 0).

p5300[0...n] Autotuning selection / Autotuning select

SERVO (J_estimator, Lin), SERVO_AC (J_estimator, Lin), SERVO_I_AC (J_estimator, Lin)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1	2	0

Description: Sets activation/deactivation of the "auto tuning" function.

If p5300 = 1:

The "One button tuning" function is configured using p5301.

If p5300 = 2:

The "Online tuning" function is configured using p5302.

The following parameters are written to for the two functions:

p0430, p1160, p1400, p1413 - p1426, p1428, p1429, p1433 - p1435, p1441, p1460 - p1465, p1498, p1513, p1656 - p1676, p2533 - p2539, p2567, p2572, p2573, p5280

Value:
-1: Reset controller parameters
0: Inactive
1: One Button Tuning
2: Online tuning

Dependency: The prerequisite for the "auto tuning" function is that the "Moment of inertia estimator" function module is activated (r0108.10).

The "Autotuning" function can only be selected for "Servo" control mode with position encoder.

The motor must have already been commissioned so that autotuning functions error-free. A motor identification may be necessary beforehand (p1900 and following).

One Button Tuning:

p5301 configures the "One Button Tuning" function.

p5292 if the required dynamic response of the control loops is set.

p5308 is used to parameterize the traversing distance for the test signal.

Other relevant parameters: p5309, p5296, p5297, p5275, r5274, r5393, r5394, r5395

Online tuning:

p5302 configures the "Online tuning" function.

p5272 if the required dynamic response of the control loops is set.

Other relevant parameters: p5271, p5275, r5274

Refer to: p5271, p5272, p5273, r5274, p5275, p5292, r5293, r5294, r5295, p5296, p5297, p5301, p5302, p5308, p5309

Warning: Only the motor measuring system is taken into account when optimizing the position controller. If an external measuring system is used for the position control, then this can result in an unstable controller setting.

The "One Button Tuning" function does not support different sampling times for current and velocity controllers. For p0112 =2, in some instances different stability criteria are obtained. It is recommended that "One Button Tuning" is not used for this configuration.

Caution: For some drive trains, the "online tuning" function can result in unstable settings (motor makes a whistling sound). This is especially the case for large load masses that are connected to the motor through a low-frequency coupling/connection. In this case, parameter p5272 or p5273 must be reduced.

Note: If p5300 = -1:

Autotuning is deactivated, and p5300 is automatically set to 0. In addition, the default setting values for the velocity and position controller are restored.

If p5300 = 0:

Online tuning is inactive.

To permanently back up the values determined for the velocity controller and position controller, the parameters must be saved in a non-volatile fashion (p0977 = 1 or "Copy RAM to ROM").

The results of the moment of inertia estimator can be reset using p5300 = 0. After p5300 > 0, the parameters for moment of inertia and tuning must be determined again.

If p5300 = 1:

One Button Tuning is active.

The mass is determined once using a test signal. The controller parameters and current setpoint filters are additionally determined once using a noise signal as excitation source.

If p5300 = 2:

Online tuning is active.

The mass is estimated. The controller parameters are recalculated if the mass noticeably changes.

p5300[0...n] Autotuning selection / Autotuning select

SERVO (J_estimator), SERVO_AC (J_estimator), SERVO_I_AC (J_estimator)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1	2	0

Description: Sets activation/deactivation of the "auto tuning" function.

If p5300 = 1:

The "One button tuning" function is configured using p5301.

If p5300 = 2:

The "Online tuning" function is configured using p5302.

The following parameters are written to for the two functions:

p0430, p1160, p1400, p1413 - p1426, p1428, p1429, p1433 - p1435, p1441, p1460 - p1465, p1498, p1513, p1656 - p1676, p2533 - p2539, p2567, p2572, p2573, p5280

Value:
-1: Reset controller parameters
0: Inactive
1: One Button Tuning
2: Online tuning

Recommendation: If p5300 = 1 "One Button Tuning" is used together with an TTL/HTL encoder, then the following applies:

Offset speed (p5297) > 15 / motor encoder pulse number / speed controller sampling time

p5297 > 15 / p0408 / p0115[2]

Dependency: The prerequisite for the "auto tuning" function is that the "Moment of inertia estimator" function module is activated (r0108.10).

The "Autotuning" function can only be selected for "Servo" control mode with position encoder.

The motor must have already been commissioned so that autotuning functions error-free. A motor identification may be necessary beforehand (p1900 and following).

One Button Tuning:

p5301 configures the "One Button Tuning" function.

p5292 if the required dynamic response of the control loops is set.

p5308 is used to parameterize the traversing distance for the test signal.

Other relevant parameters: p5309, p5296, p5297, p5275, r5274, r5393, r5394, r5395

Online tuning:

p5302 configures the "Online tuning" function.

p5272 if the required dynamic response of the control loops is set.

Other relevant parameters: p5271, p5275, r5274

Refer to: p5271, p5272, p5273, r5274, p5275, p5292, r5293, r5294, r5295, p5296, p5297, p5301, p5302, p5308, p5309

Warning: Only the motor measuring system is taken into account when optimizing the position controller. If an external measuring system is used for the position control, then this can result in an unstable controller setting.

The "One Button Tuning" function does not support different sampling times for current and speed controllers. For p0112 =2, in some instances different stability criteria are obtained. It is recommended that "One Button Tuning" is not used for this configuration.

Caution: For some drive trains, the "online tuning" function can result in unstable settings (motor makes a whistling sound). This is especially the case for high load moments of inertia, which are coupled to the motor through a low-frequency connection/coupling. In this case, the values in parameter p5272 or p5273 must be reduced.

Note: If p5300 = -1:

Autotuning is deactivated, and p5300 is automatically set to 0. In addition, the default setting values for the speed and position controller are restored.

If p5300 = 0:

Online tuning is inactive.

To permanently save the values determined for the speed and position controllers, the parameters must be saved in a non-volatile manner (p0977 = 1 or "copy RAM to ROM").

If p5300 = 1:

One Button Tuning is active.

The moment of inertia is determined once using a test signal. The controller parameters and current setpoint filters are additionally determined once using a noise signal as excitation source. The steps to be executed can be configured using p5301.

If p5300 = 2:

Online tuning is active.

The moment of inertia is estimated. The controller parameters are recalculated if the moment of inertia noticeably changes. The steps to be executed can be configured using p5302.

p5301[0...n] One Button Tuning configuration / OBT config

SERVO (J_estimator, Lin), SERVO_AC (J_estimator, Lin), SERVO_I_AC (J_estimator, Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0111 bin

Description: Setting the functions for One Button Tuning (p5300 = 1).

A test signal is required for some functions. Here, parameters p5307 to p5309 must be a taken into consideration.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Setting the proportional gain Kp	Yes	No	-
01	Setting current setpoint filter	Yes	No	-
02	Activating the moment of inertia estimator	Yes	No	-
04	Load oscillation detection	Yes	No	-
05	Suppress detected load oscillation	Yes	No	-
07	Activating synchronized axes	Yes	No	-
08	Moment of inertia determination from frequency response	Yes	No	-

Dependency: It is only possible to change the configuration if autotuning is not active (p5300 = 0).

Refer to: p5292, r5293, r5294, r5295, p5296, p5297, p5300, p5308, p5309

Note: For bit 00:

The velocity controller gain is determined and set using a noise signal.

For bit 01:

Possibly required current setpoint filters are determined and set using a noise signal.

As a consequence, a higher dynamic performance can be achieved in the velocity control loop.

For bit 02:

Using this bit, the mass is determined using a test signal. If this bit is not set, then the load mass must be manually set using parameter p1498. The test signal must have been previously set using parameters p5308 and p5309.

For bit 07:

With this function, these axes are adapted to the dynamic response set in p5275. This is necessary for interpolating axes. The time in p5275 should be set according to the axis with the lowest dynamic response.

p5301[0...n] One Button Tuning configuration / OBT config

SERVO (J_estimator), SERVO_AC (J_estimator), SERVO_I_AC (J_estimator)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0111 bin

Description: Setting the functions for One Button Tuning (p5300 = 1).

A test signal is required for some functions. Here, parameters p5307 to p5309 must be a taken into consideration.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Setting the proportional gain Kp	Yes	No	-
01	Setting current setpoint filter	Yes	No	-
02	Activating the moment of inertia estimator	Yes	No	-
04	Load oscillation detection	Yes	No	-
05	Suppress detected load oscillation	Yes	No	-
07	Activating synchronized axes	Yes	No	-
08	Moment of inertia determination from frequency response	Yes	No	-

Dependency: It is only possible to change the configuration if autotuning is not active (p5300 = 0).

Refer to: p5292, r5293, r5294, r5295, p5296, p5297, p5300, p5308, p5309

Note: For bit 00:

The speed controller gain is determined and set using a noise signal.

For bit 01:

Possibly required current setpoint filters are determined and set using a noise signal.

As a consequence, a higher dynamic performance can be achieved in the speed control loop.

For bit 02:

Using this bit, the moment of inertia is determined using a test signal. If this bit is not set, then the load moment of inertia must be manually set using parameter p1498. The test signal must have been previously set using parameters p5308 and p5309.

For bit 04:

Using this bit, load oscillation detection is determined using a test signal. The traversing path must first be set using parameter p5308.

For bit 05:

Using this bit, load oscillation detection is determined using a test signal, and transferred to p3752. The precondition is function module "APC" (r0108.7 = 1) and p3700.2 = 1. After executing the function, APC must be activated via p3700.0 = 1. The traversing path must first be set using parameter p5308.

For bit 07:

With this function, these axes are adapted to the dynamic response set in p5275. This is necessary for interpolating axes. The time in p5275 should be set according to the axis with the lowest dynamic response.

For bit 08:

Using this bit, the moment of inertia is determined from the frequency characteristic using a test signal, and is transferred to p1498. The traversing path must first be set using parameter p5308.

p5302[0...n] Online tuning configuration / Ot config

SERVO (J_estimator, Lin), SERVO_AC (J_estimator, Lin), SERVO_I_AC (J_estimator, Lin)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 1100 bin

Description: Setting the functions for online tuning (p5300 = 2).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
02	Activating the moment of inertia estimator	Yes	No	-
03	Configuring the moment of inertia estimator	Cyclic	Once	-
06	Activating the current setpoint filter adaptation	Yes	No	-
07	Activating synchronized axes	Yes	No	-
08	Moment of inertia determination from frequency response	Yes	No	-

Dependency: It is only possible to change the configuration if autotuning is not active (p5300 = 0).

Refer to: p5271, p5272, p5273, r5274, p5275, p5300

Caution: Please note the general conditions for the moment of inertia estimator, online tuning as well as adaptive resonance filter in the following reference:

SINAMICS S120 Function Manual Drive Functions

Note: For bit 02:

When the bit is set, the mass is determined while traversing (moment of inertia estimator). If this bit is not set, then the load mass must be manually set using parameter p1498.

For bit 03:

If p5302.3 = 0, "Once" applies:

After having successfully determined the load mass (p1498), the moment of inertia estimator is deactivated.

If p5302.3 = 1, "Cyclic" applies:

The mass is continually determined and the controller parameters adapted. After the mass has been successfully determined (r1407.26 = 1), we recommend that the parameters are saved in a non-volatile fashion. As a consequence, the controllers do not have to restabilize after the next switch on.

For bit 06:

The adaptation of a current setpoint filter can be set here (see p5280 - p5285).

This adaptation may be necessary if a mechanical resonance frequency changes in operation. It can also be used to dampen a fixed resonance frequency. Once the control loop has stabilized, this bit should be deactivated and the determined parameters saved in a non-volatile fashion.

For bit 07:

When the function is activated, these axes are adapted to the dynamic response set in p5275. This is necessary for interpolating axes. The time in p5275 should be set according to the axis with the lowest dynamic response.

p5302[0...n] Online tuning configuration / Ot config

SERVO (J_estimator), SERVO_AC (J_estimator), SERVO_I_AC (J_estimator)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 1100 bin

Description: Setting the functions for online tuning (p5300 = 2).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
02	Activating the moment of inertia estimator	Yes	No	-
03	Configuring the moment of inertia estimator	Cyclic	Once	-
06	Activating the current setpoint filter adaptation	Yes	No	-
07	Activating synchronized axes	Yes	No	-
08	Moment of inertia determination from frequency response	Yes	No	-

Dependency: It is only possible to change the configuration if autotuning is not active (p5300 = 0).

Refer to: p5271, p5272, p5273, r5274, p5275, p5300

Caution: Please note the general conditions for the moment of inertia estimator, online tuning as well as adaptive resonance filter in the following reference:

SINAMICS S120 Function Manual Drive Functions

Note: For bit 02:

When the bit is set, the moment of inertia is determined while traversing (moment of inertia estimator). If this bit is not set, then the load moment of inertia must be manually set using parameter p1498.

For bit 03:

If p5302.3 = 0, "Once" applies:

After having successfully determined the moment of inertia (p1498), the moment of inertia estimator is deactivated.

If p5302.3 = 1, "Cyclic" applies:

The moment of inertia is continually determined and the control parameters adapted. After the moment of inertia has been successfully determined (r1407.26 = 1), we recommend that the parameters are saved in a non-volatile fashion. As a consequence, the controllers do not have to restabilize after the next switch on.

For bit 06:

The adaptation of a current setpoint filter can be set here (see p5280 - p5285).

This adaptation may be necessary if a mechanical resonance frequency changes in operation. It can also be used to dampen a fixed resonance frequency. Once the control loop has stabilized, this bit should be deactivated and the determined parameters saved in a non-volatile fashion.

For bit 07:

When the function is activated, these axes are adapted to the dynamic response set in p5275. This is necessary for interpolating axes. The time in p5275 should be set according to the axis with the lowest dynamic response.

r5306[0...n] Autotuning status / Autotuning stat

SERVO (J_estimator), SERVO_AC (J_estimator), SERVO_I_AC (J_estimator)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status of the auto tuning functions performed - "Online tuning" and "One Button Tuning".

The functions can be activated via p5300.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Proportional gain Kp set	Yes	No	-
01	Current setpoint filter set	Yes	No	-
02	Moment of inertia estimation carried out	Yes	No	-
04	Load vibration detection performed	Yes	No	-
05	Detected load oscillation set	Yes	No	-
06	Current setpoint filter adaptation active	Yes	No	-
12	Online tuning active	Yes	No	-
13	One Button Tuning successfully completed	Yes	No	-
14	Controller parameters reset due to fault	Yes	No	-

Dependency: Refer to: p5300, p5301, p5302

Note: For bit 00 = 1: The speed controller gain was set using One Button Tuning.

For bit 01 = 1: The current setpoint filter was set using One Button Tuning

For bit 02 = 1: The moment of inertia was determined.

For bit 04 = 1: Load oscillation detection was performed using One Button Tuning

For bit 05 = 1: Detected load oscillation suppression was set using One Button Tuning.

For bit 06 = 1: Adaptive resonance filters of the online tuning are active.

For bit 12 = 1: Online tuning is active and modifies the controller.

p5307[0...n] Activate One Button Tuning test signal / Act OBT test sig

SERVO (J_estimator, Lin), SERVO_AC (J_estimator, Lin), SERVO_I_AC (J_estimator, Lin)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Setting to activate the test signal.

For bit 01:

As setpoint velocity, the rated motor velocity is entered, alternating in the positive and negative directions.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
01	Triangular test signal	ON	OFF	-

Dependency: Refer to: p5308, p5309

Note: For bit 01:

This test signal can only be activated for p5308 > 0 and p5309 > 0.

Speed control with encoder is required to activate the test signal.

p5307[0...n] Activate One Button Tuning test signal / Act OBT test sig

SERVO (J_estimator), SERVO_AC (J_estimator), SERVO_I_AC (J_estimator)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Setting to activate the test signal.

For bit 01:

As setpoint speed, a triangular signal is entered, alternating in the positive and negative directions. Distance p5308 and duration p5309 are kept.

This function is used for One Button Tuning p5300 = 1.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
01	Triangular test signal	ON	OFF	-

Dependency: Refer to: p5308, p5309

Note: For bit 01:

This test signal can only be activated for p5308 > 0 and p5309 > 0.

Speed control with encoder is required to activate the test signal.

p5308[0...n] One Button Tuning test signal distance limiting / OBT test sig lim

SERVO (J_estimator, Lin), SERVO_AC (J_estimator, Lin), SERVO_I_AC (J_estimator, Lin)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-30000 [mm]	30000 [mm]	0 [mm]

Description: Sets the distance limiting for the "Square wave with a rated velocity" test signal (p5307.1).

After activating the test signal (p5307.1), the traversing range is limited in the positive and negative directions to the set distance limit in mm.

Dependency: Refer to: p5307

Note: The position before the pulse enable is used as zero point.

p5308[0...n] One Button Tuning test signal distance limiting / OBT test sig lim

SERVO (J_estimator), SERVO_AC (J_estimator), SERVO_I_AC (J_estimator)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-30000 [°]	30000 [°]	0 [°]

Description: Sets the distance limiting for the "Triangular test signal" (p5307.1).

After activating the test signal (p5307.1), the traversing range is limited in the positive and negative directions to the set distance limit (p5308).

This function is used for One Button Tuning p5300 = 1 to identify the total moment of inertia of the drive train.

Dependency: Refer to: p5307

Note: A value of 360 degrees corresponds to one motor revolution.

The position before the pulse enable is used as zero point.

p5309[0...n] One Button Tuning test signal duration / OBT test sig dur

SERVO (J_estimator), SERVO_AC (J_estimator), SERVO_I_AC (J_estimator)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	5000 [ms]	2000 [ms]

Description: Sets the test signal sequence duration (several acceleration operations).

This function is used for One Button Tuning p5300=1 to identify the total moment of inertia of the drive train.

Dependency: Refer to: p5307

Refer to: F07093

p5310[0...n] Moment of inertia precontrol configuration / J_est config

VECTOR (J_estimator), VECTOR_AC (J_estimator), VECTOR_I_AC (J_estimator)

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Configuration of the moment of inertia precontrol when the moment of inertia estimator is active.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Activating calculations	Yes	No	-
01	Activating the moment of inertia precontrol	Yes	No	-

Dependency: The function module "Moment of inertia estimator" (r0108.10) must be activated for the "Moment of inertia precontrol" function.

Refer to: r5311, p5312, p5313, p5314, p5315

Note: Possible bit combinations:

Bit 1, 0

= 0, 0 --> function not active

= 0, 1 --> cyclic calculation of the coefficients without moment of inertia precontrol (commissioning)

= 1, 0 --> moment of inertia precontrol activated (without cyclic calculation of the coefficients)

= 1, 1 --> moment of inertia precontrol activated (with cyclic calculation of the coefficients)

For bit 00:

Calculation for the constant and linear coefficients of the moment of inertia precontrol is activated. The results are written to parameters (p5312, p5313, p5314, p5315).

For bit 01:

The moment of inertia precontrol is activated.

The moment of inertia is calculated from the currently measured load torque and the saved coefficients (p5312, p5313, p5314, p5315).

r5311[0...n] Moment of inertia precontrol status word / J_prectrl ZSW

VECTOR (J_estimator), VECTOR_AC (J_estimator), VECTOR_I_AC (J_estimator)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status word for the moment of inertia precontrol.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	New measuring points are available	Yes	No	-
01	New parameters being calculated	Yes	No	-
02	Moment of inertia precontrol active	Yes	No	-
03	Calculation of positive coefficients completed	Yes	No	-
04	Calculation of negative coefficients completed	Yes	No	-
05	Results are being written to parameter	Yes	No	-

Dependency: The function module "Moment of inertia estimator" (r0108.10) must be activated for the "Moment of inertia precontrol" function.

Refer to: p5310, p5312, p5313, p5314, p5315

p5312[0...n] Moment of inertia precontrol linear positive / J_est lin pos

VECTOR (J_estimator), VECTOR_AC (J_estimator), VECTOR_I_AC (J_estimator)

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-340.28235E36 [s^2]	340.28235E36 [s^2]	0.000000 [s^2]

Description: Sets the linear coefficients for moment of inertia precontrol in the positive direction when the moment of inertia estimator is active.

The estimated moment of inertia is obtained according to the following formula:

Moment of inertia (J) = linear coefficient (p5312) * load torque + constant coefficient (p5313)

Dependency: The function module "Moment of inertia estimator" (r0108.10) must be activated for the "Moment of inertia precontrol" function.

Refer to: p5310, r5311, p5313, p5314, p5315

p5313[0...n] Moment of inertia precontrol constant positive / J_est const pos

VECTOR (J_estimator), VECTOR_AC (J_estimator), VECTOR_I_AC (J_estimator)

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Motor	**Unit group:** 25_1	**Unit selection:** p0100
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-340.28235E36 [kgm²]	340.28235E36 [kgm²]	0.000000 [kgm²]

Description: Sets of the constant coefficients for moment of inertia precontrol in the positive direction when the moment of inertia estimator is active.

The estimated moment of inertia is obtained according to the following formula:

Moment of inertia (J) = linear coefficient (p5312) * load torque + constant coefficient (p5313)

Dependency: The function module "Moment of inertia estimator" (r0108.10) must be activated for the "Moment of inertia precontrol" function.

Refer to: p5310, r5311, p5312, p5314, p5315

p5314[0...n] Moment of inertia precontrol linear negative / J_est lin neg

VECTOR (J_estimator), VECTOR_AC (J_estimator), VECTOR_I_AC (J_estimator)

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-340.28235E36 [s²]	340.28235E36 [s²]	0.000000 [s²]

Description: Sets the linear coefficients for moment of inertia precontrol in the negative direction when the moment of inertia estimator is active.

The estimated moment of inertia is obtained according to the following formula:

Moment of inertia (J) = linear coefficient (p5314) * load torque + constant coefficient (p5315)

Dependency: The function module "Moment of inertia estimator" (r0108.10) must be activated for the "Moment of inertia precontrol" function.

Refer to: p5310, r5311, p5312, p5313, p5315

p5315[0...n] Moment of inertia precontrol constant negative / J_est const neg

VECTOR (J_estimator), VECTOR_AC (J_estimator), VECTOR_I_AC (J_estimator)

Can be changed: C2(3), U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Motor	**Unit group:** 25_1	**Unit selection:** p0100
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-340.28235E36 [kgm²]	340.28235E36 [kgm²]	0.000000 [kgm²]

Description: Sets the constant coefficients for moment of inertia precontrol in the negative direction when the moment of inertia estimator is active.

The estimated moment of inertia is obtained according to the following formula:

Moment of inertia (J) = linear coefficient (p5314) * load torque + constant coefficient (p5315)

Dependency: The function module "Moment of inertia estimator" (r0108.10) must be activated for the "Moment of inertia precontrol" function.

Refer to: p5310, r5311, p5312, p5313, p5314

p5316[0...n] Inertia precontrol change time inertia / J_precontrl t_ch J

SERVO (J_estimator, Lin), SERVO_AC (J_estimator, Lin), SERVO_I_AC (J_estimator, Lin)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
10.00 [ms]	5000.00 [ms]	500.00 [ms]

Description: Sets the change time for the inertia for the inertia precontrol.

Lower values mean that faster changes are possible.

For a higher value, this estimated value is smoothed more significantly.

Dependency: Refer to: p1400, p1560, p1562

p5316[0...n] Moment of inertia precontrol change time moment of inertia / J_precontrl t_ch J

SERVO (J_estimator), VECTOR (J_estimator), SERVO_AC (J_estimator), VECTOR_AC (J_estimator), SERVO_I_AC (J_estimator), VECTOR_I_AC (J_estimator)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
10.00 [ms]	5000.00 [ms]	500.00 [ms]

Description: Sets the change time for the moment of inertia for the moment of inertia precontrol.

Lower values mean that faster changes are possible.

For a higher value, this estimated value is smoothed more significantly.

Dependency: Refer to: p1400, p1560, p1562

p5320 Select moment of inertia determination / Sel mom_inert_det

SERVO (J_estimator), SERVO_AC (J_estimator), SERVO_I_AC (J_estimator)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: A noise signal is injected into the drive to determine the moment of inertia.

Activation of the moment of inertia determination

For p5320 = 1:

The moment of inertia determination is started.

Value:
0: Inactive
1: Start moment of inertia measurement

Dependency: The prerequisite for the "Moment of inertia determination" function is that the "Moment of inertia estimator" function module is activated (r0108.10).

The "Moment of inertia determination" function can only be selected for the "Servo" control mode with motor encoder.

The motor must have already been commissioned so that "moment of inertia determination" functions error-free. A motor identification may be necessary beforehand (p1900 and following).

r5321 Moment of inertia determination status word / J_determine ZSW

SERVO (J_estimator), SERVO_AC (J_estimator), SERVO_I_AC (J_estimator)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status word for the "Moment of inertia determination" function.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Measurement selected	Yes	No	-
01	Measurement has started	Yes	No	-
02	Measurement completed	Yes	No	-
03	Evaluation has started	Yes	No	-
04	Evaluation completed with higher accuracy	Yes	No	-
05	Evaluation completed with lower accuracy	Yes	No	-
06	Evaluation completed without result	Yes	No	-

p5322[0...n] Moment of inertia determination configuration / J_determine config

SERVO (J_estimator), SERVO_AC (J_estimator), SERVO_I_AC (J_estimator)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0001 bin

Description: Sets the configuration for the "Moment of inertia determination" function (p5320 = 1).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Measurement while the drive is traversing	Yes	No	-
01	Do not reduce Kp for measurement	Yes	No	-

Dependency: The precondition for the "Moment of inertia measurement" function is that the "Moment of inertia estimator" function module is activated (r0108.10).

The "Moment of inertia measurement" function can only be selected for servo control with motor encoder.

The motor must have already been commissioned so that "moment of inertia measurement " functions error-free. A motor identification may be necessary beforehand (p1900 and following).

Refer to: p5320

p5323[0...n] Moment of inertia determination lower frequency limit / J_determ f_lim low

SERVO (J_estimator), SERVO_AC (J_estimator), SERVO_I_AC (J_estimator)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [Hz]	1000.0 [Hz]	0.0 [Hz]

Description: Evaluation of the moment of inertia from the set frequency.

Dependency: The precondition for the "Moment of inertia measurement" function is that the "Moment of inertia estimator" function module is activated (r0108.10).

The "Moment of inertia measurement" function can only be selected for servo control with motor encoder.

The motor must have already been commissioned so that "moment of inertia measurement " functions error-free. A motor identification may be necessary beforehand (p1900 and following).

p5324[0...n] Moment of inertia determination upper frequency limit / J_determ f_lim up

SERVO (J_estimator), SERVO_AC (J_estimator), SERVO_I_AC (J_estimator)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [Hz]	1000.0 [Hz]	0.0 [Hz]

Description: Evaluation of the moment of inertia up to the set frequency.

Dependency: The precondition for the "Moment of inertia measurement" function is that the "Moment of inertia estimator" function module is activated (r0108.10).

The "Moment of inertia measurement" function can only be selected for servo control with motor encoder.

The motor must have already been commissioned so that "moment of inertia measurement " functions error-free. A motor identification may be necessary beforehand (p1900 and following).

r5325 High load inertia identified / High load inert id

SERVO (J_estimator, Lin), SERVO_AC (J_estimator, Lin), SERVO_I_AC (J_estimator, Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** 27_1	**Unit selection:** p0100
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [kg]	- [kg]	- [kg]

Description: Displays the identified high load inertia.

Dependency: IEC drives (p0100 = 0): unit kg

NEMA drives (p0100 = 1): unit lb

Refer to: p5320, r5321, p5322, p5323, p5324

r5325 Moment of inertia identified / M_inertia ident

SERVO (J_estimator), SERVO_AC (J_estimator), SERVO_I_AC (J_estimator)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Motor identification	**Unit group:** 25_1	**Unit selection:** p0100
Not for motor type: REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [kgm²]	- [kgm²]	- [kgm²]

Description: Displays the identified moment of inertia.

Dependency: IEC drives (p0100 = 0): unit kg m^2

NEMA drives (p0100 = 1): unit lb ft^2

Refer to: p5320, r5321, p5322, p5323, p5324

p5350[0...n] Mot_temp_mod 1/3 boost factor at standstill / Standst boost_fact

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 8017
P-Group: Motor	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1.0000	2.0000	2.0000

Description: Sets the boost factor for the copper losses at standstill for motor temperature models 1 and 3.

The entered factor is active for speed n = 0 [rpm].

This factor is linearly reduced down to 1 between speeds n = 0 ... 1 [rpm].

The following values are required to calculate the boost factor:

- stall current (I_0, p0318, catalog value)
- thermal stall current (I_th0, catalog value)

The boost factor is calculated as follows:

- p5350 = (I_0 / I_th0)^2

Dependency: Refer to: p0318, p0351, p0612, p5390, p5391

Refer to: F07011, A07012, F07013, A07014

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: Temperature model 1 (I2t):

The following applies for firmware version < 4.7 SP6 or p0612.8 = 0:

- parameter p5350 is not active. Internally, a fixed boost factor of 1.333 is used as basis for the calculation.

The following applies from firmware version 4.7 SP6 and p0612.8 = 1:

- parameter p5350 becomes active as described above.

r5389.0...8 CO/BO: Mot_temp status word faults/alarms / Mot_temp ZSW F/A

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 8016
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for faults and alarms of the motor temperature monitoring.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Motor temperature measurement fault active	Yes	No	-
01	Motor temperature model fault active	Yes	No	-
02	Encoder temperature measurement fault active	Yes	No	-
04	Motor temperature measurement alarm active	Yes	No	-
05	Motor temperature measurement alarm active	Yes	No	-
08	Current reduction active	Yes	No	-

Dependency: Refer to: r0034, p0612, r0632

Refer to: F07011, A07012, A07910

Note: For bit 00, 04:

The motor temperature is measured using a temperature sensor (p0600, p0601). When the bit is set, a high temperature is identified, and a corresponding signal is additionally output.

For bit 01, 05:

The motor temperature is monitored based on a temperature model (p0612). When the bit is set, a high temperature is identified, and a corresponding signal is additionally output.

For bit 02:

The encoder temperature is measured using a temperature sensor. When the bit is set, a high temperature is identified, and a corresponding signal is additionally output.

For bit 08:

When reaching the motor temperature alarm threshold, reduction of the maximum current is set as response (p0610 = 1). When the bit is set, reduction of the maximum current is active.

p5390[0...n] Mot_temp_mod 1/3 alarm threshold / A thresh

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 8017
P-Group: Motor	**Unit group:** 21_1	**Unit selection:** p0505
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [°C]	200.0 [°C]	110.0 [°C]

Description: Sets the alarm threshold for monitoring the motor temperature for motor temperature models 1 and 3.

The stator winding temperature (r0632) is used to initiate the signal.

The following applies for temperature model 1 (I2t):

- only effective from firmware version 4.7 SP6 and p0612.8 = 1.
- Alarm A07012 is output after the alarm threshold is exceeded.
- when commissioning a catalog motor for the first time, the threshold value is copied from p0605 to p5390.

The following applies for temperature model 3:

- after the alarm threshold is exceeded, alarm A07012 is output and a calculated delay time (t = p5371/p5381) is started.
- if the delay time has expired and the alarm threshold has, in the meantime, not been fallen below, then fault F07011 is output.

Dependency: Refer to: r0034, p0605, p0612, r0632, p5391

Refer to: F07011, A07012, F07013, A07014

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: The hysteresis is 2 K.

p5391[0...n] Mot_temp_mod 1/3 fault threshold / F thresh

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(3), U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 8017
P-Group: Motor	**Unit group:** 21_1	**Unit selection:** p0505
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [°C]	200.0 [°C]	120.0 [°C]

Description: Sets the fault threshold for monitoring the motor temperature for motor temperature models 1 and 3.

Fault F07011 is output after the fault threshold is exceeded.

The stator winding temperature (r0632) is used to initiate the signal.

The following applies for temperature model 1 (I2t):

- only effective from firmware version 4.7 SP6 and p0612.8 = 1.
- when commissioning a catalog motor for the first time, the threshold value is copied from p0615 to p5391.

Dependency: Refer to: r0034, p0612, p0615, r0632, p5390

Refer to: F07011, F07013, A07014

Notice: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: The hysteresis is 2 K.

r5397 Mot_temp_mod 1/3 ambient temperature image p0613 / AmbTmp image p613

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8019
P-Group: Displays, signals	**Unit group:** 21_1	**Unit selection:** p0505
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°C]	- [°C]	- [°C]

Description: Displays the ambient temperature for motor temperature models 1 and 3.
This value is used to calculate the utilization display (p0034).
The parameter value is an image of p0613.

Dependency: Refer to: r0034

Note: The following applies for firmware version < 4.7 SP6:
Users cannot see parameter p0613 (only Siemens internal).

r5398[0...n] Mot_temp_mod 1/3 alarm threshold image p5390 / A thr image p5390

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 8019
P-Group: Displays, signals	**Unit group:** 21_1	**Unit selection:** p0505
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°C]	- [°C]	- [°C]

Description: Displays the alarm threshold for monitoring the motor temperature for motor temperature models 1 and 3.
This value is used to calculate the utilization display (p0034).
The parameter value is an image of p5390.

Dependency: Refer to: p5390
Refer to: F07011, A07012, F07013, A07014

Note: The following applies for firmware version < 4.7 SP6:
Users cannot see parameter p5390 (only Siemens internal).

r5399[0...n] Mot_temp_mod 1/3 fault threshold image p5391 / F thr image p5391

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** MDS, p0130	**Func. diagram:** 8019
P-Group: Displays, signals	**Unit group:** 21_1	**Unit selection:** p0505
Not for motor type: ASM, SESM, REL	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°C]	- [°C]	- [°C]

Description: Sets the fault threshold for monitoring the motor temperature for motor temperature models 1 and 3.
Fault F07011 is output after the fault threshold is exceeded.
The parameter value is an image of p5391.

Dependency: Refer to: p5391
Refer to: F07011, A07012, F07013, A07014

Note: The following applies for firmware version < 4.7 SP6:
Users cannot see parameter p5391 (only Siemens internal).

p5400 Grid droop control configuration / Grid droop ctr cfg

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: T	**Calculated:** -	**Access level:** 4
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Sets the configuration for the line droop control.

Recommendation: We recommend that the factory setting setting is kept.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Q-U droop	Yes	No	-
01	dq transformation with grid droop angle	Yes	No	-

Dependency: Refer to: r5412, r5421, r5422, r5449

Note: For bit 00:

For p5400.0 = 0, the reactive current (r5421) is used as input variable for the voltage droop (r5420).

Using this reactive current voltage droop, also in the case of line/grid voltage dips, a stable operating point for common operation with additional power generators in the island grid is obtained. This is also true if these generating units employ a reactive power voltage droop.

For p5400.0 = 1, the reactive power (r5422) is used as input variable for the voltage droop (r5420), therefore implementing a reactive power-voltage droop functionality.

For bit 01:

For p5400.1 = 0, the line angle from the transformer model and PLL (r0094) are used to calculate the active current and reactive current (r5421, r5449).

For p5400.1 = 1, the grid supply angle from the grid supply droop (r5412) is used to calculate the active and reactive current (r5421, r5449).

p5401[0...1] BI: Line droop control activation / Line drp act

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 7982
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	[0] 0 [1] 1

Description: For index [0]:

Sets the signal source to activate line droop control for the infeed.

BI: p5401[0] = 1 signal:

Activation of line droop control and deactivation of closed-loop DC link voltage control/closed-loop current control.

BI: p5401[0] = 0 signal:

Activation of closed-loop DC link voltage control/closed-loop current control and deactivation of line droop control.

For index [1]:

Setting the signal source to activate the line droop setpoints (p5405, p5406, p5415, p5416).

BI: p5401[1] = 1 signal:

Activates the setpoints.

BI: p5401[1] = 0 signal:

Deactivates the setpoints.

Index: [0] = Line regulation
[1] = Droop setpoints

Dependency: For p5401[0], the following applies:

The Smart Mode must be deactivated (p3400.0 = 0) to set a signal source.

Refer to: r5402

Notice: Line droop control can only be activated if the power units have a gating unit with current limitation control (r0192.19 = 1 or r0192.30 = 1).

We urgently recommend at least one measure to dampen power oscillations (p5413, p5476) if, in an island grid, several generating sources are simultaneously active – and power is exchanged via the frequency droop (p5405).

Note: For index [0]:

So that closed-loop DC link voltage control is activated by the VECTOR drive object's technology controller (due to closed-loop DC link voltage control for the infeed being deactivated) the following BICO interconnection must be set:

BI: p3513 (VECTOR) = r5402.0 (A_INF)

For index [1]:

When the setpoints are deactivated, the smoothed actual values of these variables are used for the no-load values of frequency and voltage. As a consequence, the average power is controlled so that it approaches zero. However, when the line frequency or line voltage changes, brief peak powers can occur according to the current limits that have been set (r5479).

As the power is controlled to zero, in island grids continuous operation is only possible with p5401[1] = 0 if the grid is supplied by other generating units. Otherwise, line frequency and line voltage decreases to the shutdown limits. However, brief exceptions with the appropriate low frequency and amplitude deviations are possible and make sense (e.g. for switchover transitions in hot standby applications).

r5402.0...6 CO/BO: Line droop control status word / Line drp ZSW

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status word of the grid droop control of the infeed unit.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Line droop control not active	Yes	No	-
01	Line droop control active	Yes	No	-
02	Line droop control in single mode	Yes	No	-
03	Current limitation control active	Yes	No	7986
04	Operating state line short circuit active	Yes	No	-
05	Wobbulation modulation type active	Yes	No	-
06	Line droop f-U setpoints active	Yes	No	-

Note: For bit 00, 01:

The line droop control is activated via binector input p5401[0].

The grid and DC link parameter identification must be deselected (p3410 = 0) in order to do this.

For bit 02:

The operating mode of the current hysteresis controller is specified via binector input p5451.

For bit 04:

The status word of the sequence control is displayed in r5452.

For bit 05:

The pulse frequency wobbulation is activated via p1810.2 = 1, and the wobbulation amplitude p1811 is enabled via p5456[0...2].4 = 0.

For bit 06:

The no-load setpoints for frequency and voltage are activated using binector input p5401[1].

p5403[0...1] CI: Line droop control current signal source / Line drp I s_src

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7982
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	[0] 3467[0] [1] 3467[1]

Description: Sets the signal source for the current to be regulated in alpha/beta coordinates.

Index: [0] = Alpha
[1] = Beta

Dependency: Refer to: p5404

Note: The following BICO interconnections are recommended:

- Droop control for current/voltage at the line filter: BI: p5403 = r3467 (BI: p5404 = r3468 must be set)
- Droop control for current/voltage at the line transformer: BI: p5403 = r5497 (BI: p5404 = r5488 or r5498 must be set)

p5404[0...1] CI: Line droop control voltage signal source / Line drp U s_src

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7982
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	[0] 3468[0] [1] 3468[1]

Description: Sets the signal source for the voltage to be regulated in alpha/beta coordinates.

Index: [0] = Alpha
[1] = Beta

Note: The following BICO interconnections are recommended:

- Droop control for current/voltage at the line filter: BI: p5404 = r3468 (BI: p5403 = r3467 must be set)
- Droop control for current/voltage at the line transformer: BI: p5404 = r5488 or r5498 (BI: p5403 = r5497 must be set)

p5405 Line droop control frequency droop no-load frequency / Line drp f_no-ld

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7982
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
30.00 [%]	300.00 [%]	100.00 [%]

Description: Sets the no-load frequency (as a % of p0211) for the line droop control active power frequency droop.

Droop formula (without smoothing):

r5410 = (p5405 + p5406 + p5407 x r5411[0] / r0206) x p0211

Dependency: Refer to: p5409

Caution: We urgently recommended that at least one measure is activated to dampen power oscillations (p5413, p5476).

Note: The droop characteristic input variable is the active power r5411[0] at the selected connection point (p5403, p5404).

The output frequency calculated using the above formula is filtered in accordance with the parameterized smoothing time (p5409).

The smoothed output frequency is displayed in r5410.

p5406[0...1] CI: Line droop control frequency droop supplementary setpoint / L drp f_suppl_setp

A_INF (Line droop ctrl, Line transf), R_INF (Line droop ctrl, Line transf)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7982
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	[0] 0 [1] 5582[0]

Description: Sets the signal source for the frequency droop supplementary setpoint (as a % of p0211).

Index: [0] = Supplementary setpoint is smoothed
[1] = Supplementary setpoint direct

Dependency: Refer to: p5405

Notice: For index [1]:

Setpoint steps without smoothing can result in significant equalization operations in the line supply and the overload of the inverter and the line components.

Note: For index [0]:

The setpoint signals are smoothed using a PT1 filter (p5409).

For index [1]:

If the signals for the unsmoothed setpoints are precisely reset to 0 (e.g. for p5483[3] = 1), then by internally adapting the smoothed setpoint state, an undesirable step-like frequency change is avoided. The signal for the smoothed setpoint should be adapted using a corresponding frequency change, if the frequency is to be kept constant.

p5407 Line droop control frequency droop gradient / Line drp f grad

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7982
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	100.00 [%]	5.00 [%]

Description: Sets the gradient of the frequency droop (as a % of the rated frequency p0211 at the rated power r0206).

Dependency: Refer to: p5405

p5408 CI: Line droop control frequency droop gradient dynamic / Line drp f grad dy

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the additional gradient of the frequency characteristic.

p5409 Line droop control frequency droop smoothing time / Line drp f t_sm

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7982
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	10000.00 [ms]	150.00 [ms]

Description: Sets the smoothing time for the output frequency of the active power frequency droop (r5410).

Dependency: Refer to: p5405

Note: When the load changes, mechanical energy generation units induce a delayed change in frequency on account of their inertia. The converter tries to emulate this response with the assistance of the smoothing time.

For the line to remain stable, all the energy generation units in a separate network have to respond in a similar manner during operation.

r5410 CO: Line droop control frequency droop output / Line drp f outp

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7982
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Hz]	- [Hz]	- [Hz]

Description: Displays the smoothed output frequency of the active power frequency droop.

Droop formula (without smoothing):

r5410 = (p5405 + p5406 + p5407 * r5411[0] / r0206) * p0211

Dependency: Refer to: p5405

r5411[0...1] CO: Line droop control frequency droop active power / Line drp f P_act

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7982
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** r2004	**Expert list:** 1
Min	**Max**	**Factory setting**
- [kW]	- [kW]	- [kW]

Description: Displays the input active power of the active power frequency droop.

The active power is calculated for the currents and voltages defined with connector inputs p5403 and p5404.

Index: [0] = Unsmoothed
[1] = Smoothed

Dependency: Refer to: p5409

Note: For index [1]:

The value is smoothed using a PT1 filter (smoothing time: p0045).

r5412 CO: Line droop control line angle / Line drp angle

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7982
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2005	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°]	- [°]	- [°]

Description: Displays the actual line angle for line droop control.

The value is calculated by integrating the output frequency of the active power frequency droop (r5410).

p5413 Line droop control additional frequency droop gradient / Line droop add-f

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7982
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	10000.0 [%]	0.0 [%]

Description: Sets the gradient for the additional, fast frequency droop.

The reference quantity is the gradient for the regular frequency droop (p5407).

The settings for the regular frequency droop (p5405 onwards) apply to the other droop parameters.

As a result of the short smoothing time, the supplementary frequency droop acts similar to a D component – and therefore as damping factor for the closed-loop line control.

Recommendation: Typical setting values lie between 50 % and 100 %.

Dependency: Refer to: p5414, p5476

Note: For example, a strong frequency dip can be generated when the load is connected with the additional frequency droop, and this can be used to emulate the behavior of a diesel generator.

The frequency is initially changed with the smoothing time p5414 in accordance with the additional droop, reaching the stationary end value in accordance with the time constant p5409 for the regular frequency droop.

The additional droop is deactivated with p5413 = 0.

p5414 Line droop control additional frequency droop smoothing time / Line droop add-t

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7982
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	100.0 [%]	10.0 [%]

Description: Sets the smoothing time for the additional, fast frequency droop.

The reference quantity is the smoothing time for the regular frequency droop (p5409).

Recommendation: Typical setting values lie between 10 % and 20 %.

Dependency: Refer to: p5413

Note: The smoothing time for the additional, fast frequency droop is less than or equal to the time constant for the regular frequency droop.

p5415 Line droop control voltage droop no-load voltage / Line drp U_no-ld

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7982
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
30.00 [%]	300.00 [%]	100.00 [%]

Description: Sets the no-load voltage for the voltage droop and grid droop control.

This value is entered as a % referred to the device supply voltage (p0210)

Using the voltage droop, the currently required output voltage can be calculated for stable grid operation.

The no-load voltage is defined as the setpoint output voltage for the case that the reactive current or the reactive power at the selected connection point (p5403, p5404) assumes a value of 0.

Dependency: Refer to: p5419

Note: For the reactive current voltage droop (p5400.0 = 0), the following applies:

The droop characteristic input variable is the reactive power r5421[0] at the selected connection point (p5403, p5404).

The following droop formula applies without taking into account smoothing:

r5420 = (p5415 + p5416 + p5417 * r5421[0] / r0207) * p0210

The voltage calculated according to this formula, after smoothing (p5419) is effective as output voltage and is indicated in r5420.

For the reactive power voltage droop (p5400.0 = 1), the following applies:

The input variable of the droop characteristic is the reactive power (r5422[0]) at the selected connection point (p5403, p5404).

The following droop formula applies without taking into account smoothing:

p5420 = (p5415 + p5416 - p5417 * r5422[0] / (1.732 * r0207 * p0210)) * p0210

The voltage calculated according to this formula, after smoothing (p5419) is effective as output voltage and is indicated in r5420.

p5416[0...1] CI: Line droop control voltage droop supplementary setpoint / L drp V_suppl_setp

A_INF (Line droop ctrl, Line transf), R_INF (Line droop ctrl, Line transf)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7982
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	[0] 0 [1] 5582[1]

Description: Sets the signal source for the voltage droop supplementary setpoint (as a % of p0210).

Index: [0] = Supplementary setpoint is smoothed
[1] = Supplementary setpoint direct

Dependency: Refer to: p5415

Notice: For index [1]:

Setpoint steps without smoothing can result in significant equalization operations in the line supply and the overload of the inverter and the line components.

Note: For index [0]:

The setpoint signals are PT1-filtered with the time constant p5419.

For index [1]:

If the signals for the unsmoothed setpoints are precisely reset to 0 (e.g. for p5483[3] = 1), then by internally adapting the smoothed setpoint state, an undesirable step-like voltage change is avoided. The signal for the smoothed setpoint should be adapted using a corresponding voltage change, if the output voltage is to be kept constant.

p5417 Line droop control voltage droop gradient / Line drp U grad

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7982
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	100.00 [%]	5.00 [%]

Description: Sets the voltage droop gradient.

This value is entered as a % referred to the device supply voltage (p0210)

Dependency: Refer to: p5415

Note: For the reactive current voltage droop (p5400.0 = 0), the following applies:

The gradient is the required voltage change for a reactive current having the same magnitude as the rated current (r0207).

For the reactive power voltage droop (p5400.0 = 1), the following applies:

The gradient is the required voltage change for the reactive power, which is obtained at rated voltage and rated current (1.732 * p0210 * r0207).

p5418 CI: Line droop control voltage droop gradient dynamic / Line drp U grad dy

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the additional gradient of the voltage characteristic.

p5419 Line droop control voltage droop smoothing time / Line drp U t_sm

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7982
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	10000.00 [ms]	150.00 [ms]

Description: Sets the smoothing time for the reactive current actual value (r5421[1]).

The smoothed reactive current is the input quantity for the reactive current voltage droop.

Dependency: Refer to: p5415

Note: When the load changes, mechanical energy generation units induce a delayed change in voltage on account of their electrical properties. The converter tries to emulate this response with the assistance of the smoothing time.

For the line to remain stable, all the energy generation units in a separate network have to respond in a similar manner during operation.

r5420 CO: Line droop control voltage droop output / Line drp U outp

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7982
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Display and connector output for the smoothed output voltage of the reactive current voltage droop.

Dependency: Refer to: p5415

r5421[0...1] CO: Line droop control voltage droop reactive current / Line drp U I_reac

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7982
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [A]	- [A]	- [A]

Description: Display and connector output for the input reactive current of the reactive current voltage droop.

The reactive current is calculated for the currents and voltages defined with connector inputs p5403 and p5404.

Index:
[0] = Unsmoothed
[1] = Smoothed

Dependency: Refer to: p5419

Note: For index [1]:

The value is smoothed using a PT1 filter (smoothing time: p5419).

r5422[0...1] CO: Line droop control voltage droop reactive power / Line drp U Q_reac

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 14_12	**Unit selection:** p0505
Not for motor type: -	**Scaling:** r2004	**Expert list:** 1
Min	**Max**	**Factory setting**
- [kvar]	- [kvar]	- [kvar]

Description: Display and connector output for the input reactive power of the reactive current voltage droop.

The reactive power is calculated for the currents and voltages defined with connector inputs p5403 and p5404.

Index:
[0] = Unsmoothed
[1] = Smoothed

Dependency: Refer to: p5419

Note: For index [1]:
The value is smoothed using a PT1 filter (smoothing time: p0045).

p5423 Line droop control supplementary inductance / Line drp L_suppl

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7983
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-10.000 [mH]	10.000 [mH]	0.000 [mH]

Description: Sets an imaginary supplementary inductance for the infeed.
The supplementary inductance supplements the effect of the voltage droop, in particular for transient operations.

Dependency: Refer to: p5424

Warning: Unsuitable supplementary inductance and smoothing time settings will make line droop control unstable.

Note: The supplementary inductance is deactivated with p5423 = 0.
The converter's output voltage is calculated so that the converter behaves like a supplementary inductance and as such achieves an effect similar to a line reactor with higher/lower inductance.
The supplementary inductance can be used for damping in the event of resonance phenomena on the line.
This parameter can only be set to 0.

p5424 Line droop control supplementary inductance smoothing time / L drp L_suppl t_sm

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7983
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	100.00 [ms]	0.00 [ms]

Description: Sets the smoothing time for the effect of the supplementary inductance (p5423).

Dependency: Refer to: p5423

Note: The supplementary inductance causes current change to be fed back to the converter's output voltage.
This parameter can only be set to 0.

p5425[0...1] CI: Line droop control voltage control signal source / L drp U_ctrl s_sc

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7982
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	[0] 3468[0] [1] 3468[1]

Description: Sets the signal source for the voltage to be regulated at the connection point in alpha/beta coordinates.

Index: [0] = Alpha
[1] = Beta

Dependency: Refer to: p5427

Note: The following BICO interconnections are recommended:
- Compensation of the internal voltage drop for connection point at line filter: BI: p5425 = r3468
- Compensation of the internal voltage drop for connection point at line transformer: BI: p5425 = r5488 or r5498

p5426 Line droop control voltage control P gain / Line drp U_ctrl Kp

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7982
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	100.0 [%]	0.0 [%]

Description: Sets the proportional gain for the controller for voltage control at the connection point.

The controller compensates internal voltage drops under load conditions and as such precisely converts the droop characteristic at the connection point (defined in p5425).

Dependency: Refer to: p5427

Note: The proportional component of the controller is deactivated with p5426 = 0.

p5427 Line droop control voltage control integration time / Line drp U_ctrl Ti

A_INF (Line droop ctrl, Line transf), R_INF (Line droop ctrl, Line transf)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7982
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [ms]	10000.0 [ms]	500.0 [ms]

Description: Sets the integration time for the controller for voltage control at the connection point.

The controller compensates internal voltage drops under load conditions and as such precisely converts the droop characteristic at the connection point (defined in p5425).

Dependency: Refer to: p5426

Note: The integral component of the controller is deactivated with p5427 = 0.

p5428[0...3] Line droop control voltage control short circuit / Line drp U_ctrl sh

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	100.00 [%]	[0] 20.00 [%] [1] 0.00 [%] [2] 90.00 [%] [3] 2.00 [%]

Description: Sets the parameters for rapid precontrol of the output voltage in the event of a voltage dip.

The values relate to the voltage setpoint from the voltage droop (r5420).

The voltage output by the converter is formed from the product of the voltage setpoint and the adaptation factor, which is calculated in rapid precontrol.

Index:
[0] = Adaptation factor lower limit
[1] = Adaptation factor increment current limit
[2] = Adaptation factor increment voltage difference
[3] = Adaptation factor increment increase

Dependency: Refer to: r5452

Note: Rapid adaptation of the voltage setpoint to a reduced line voltage (e.g. in the event of a line short circuit) reduces the number of additional switching operations completed by the lower-level rapid current hysteresis controller.

For index [0]:

Minimum value for the adaptation factor, must be complied with for the calculation of the reduced output voltage. The factory setting is appropriate if the inductance of the commutating reactor (p0223) has the value p3421 - p3424.

Higher values for p5428[0] result in higher rms values of the currents in the case of a short circuit. However, current limiting also intervenes more – and more harmonics are generated.

For excessively low values in p5428[0], the short-circuit displayed in r5479[1] is no longer reached.

The function is deactivated with p5428[0] = 100 %.

For index [1]:

When the current limit is reached, the adaptation factor is weighted with this factor in each sampling cycle. A value of 0 means that the adaptation factor will jump to the minimum value (p5428[0]) if the current limit is reached. The function is deactivated for a value of 100%.

For index [2]:

If the voltage across the line reactor exceeds the minimum value (p5428[0]) for at least 2 current controller sampling times, the adaptation factor will be weighted with this factor (p5428[2]) in every sampling cycle.

For index [3]:

If none of the above criteria for reducing the adaptation factor is met, the adaptation factor is increased by the percentage value p5428[3] in each current controller sampling time (the increase is additive). If the adaptation factor reaches the maximum value of 100%, the effect of precontrol by means of multiplication by the droop setpoint r5420 is cancelled out.

r5429 — CO: Line droop control voltage control output / L drp U_ctrl outp

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7982
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Displays the controller output for voltage control at the connection point.

Dependency: Refer to: p5426, p5427

p5430[0...1] — Modulation depth controller setting / ModDpth_ctrl set

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
50.0 [%]	110.0 [%]	[0] 94.0 [%] [1] 110.0 [%]

Description: For index [0]:

Sets the setpoint for the maximum stationary modulation depth.

For index [1]:

Sets the maximum modulation depth.

With p5430[1] = 110 %, the modulation depth limiting is deactivated.

Index: [0] = Setpoint
[1] = Maximum value

p5431 — Modulation depth controller dynamic response / Mod_ctrl dyn

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [ms]	10000.0 [ms]	10.0 [ms]

Description: Sets the dynamic response for the modulation depth controller.

Note: The modulation depth controller is deactivated with p5431 < p0115[0].

p5432[0...1]	Modulation depth controller output voltage limits / Mod_ctrl lim U		
A_INF (Line droop ctrl), R_INF (Line droop ctrl)	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-200.0 [V]	200.0 [V]	[0] 100.0 [V] [1] -100.0 [V]

Description: Sets the limits for the output voltage on the modulation depth controller.

Index:
[0] = Maximum value
[1] = Minimum value

r5433	CO: Modulation depth controller output / Mod_ctrl outp		
A_INF (Line droop ctrl), R_INF (Line droop ctrl)	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [V]	- [V]	- [V]

Description: Display and connector output for the modulation depth controller output.

p5434	Direct component controller low pass limit frequency / I_dc_reg PT2 f		
A_INF (Line droop ctrl), R_INF (Line droop ctrl)	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.000 [Hz]	1.000 [Hz]	0.500 [Hz]

Description: Sets the limit frequency for the 2nd order low-pass filter to suppress the direct component in the converter current.

Dependency: Refer to: p5435

p5435	Direct component controller low pass damping / I_dc_reg PT2 D		
A_INF (Line droop ctrl), R_INF (Line droop ctrl)	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.001	10.000	1.000

Description: Sets the damping for the 2nd order low-pass filter to suppress the direct component in the converter current.

Dependency: Refer to: p5434

p5436	Direct component controller P gain / I_dc_reg Kp		
A_INF (Line droop ctrl), R_INF (Line droop ctrl)	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.0000 [ohm]	10.0000 [ohm]	0.0200 [ohm]

Description: Sets the proportional gain for the PI controller to suppress the direct component in the converter current.

Dependency: Refer to: p5437

Note: Recommended setting: p5436 = total resistance of reactor and transformer.

The parameter is preset when selecting the power unit (p201). In so doing, as approximation, a transformer with the same rating and a total power loss of 1.5 % is assumed:

p5436 = 1.5 % * r0206[0] / (3 * r0207[0] * r0207[0])

p5437 Direct component controller integration time / I_dc_reg Ti

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	100.000 [s]	3.500 [s]

Description: Sets the integration time for the PI controller to suppress the direct component in the converter current.

Dependency: Refer to: p5436

Note: The parameter is preset when selecting the power unit (p201):

p5437 = p5492 / p5436

p5438 Direct component controller limiting / I_dc_ctrl limit

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	10.0 [%]	2.0 [%]

Description: Sets the controller output voltage limiting for the direct component controller.

This value is entered as a percentage of the rated voltage (p0210).

p5440 Harmonics controller bandpass filter activation / Harmonic bandp act

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Setting to activate the bandpass filter for the harmonics controller.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Filter 0	ON	OFF	-
01	Filter 1	ON	OFF	-
02	Filter 2	ON	OFF	-
03	Filter 3	ON	OFF	-

Dependency: Refer to: p5441, p5442, p5443

Note: Only filters 0 and 1 can be activated.

p5441[0...3] Harmonics controller bandpass filter gain / Bandpass gain

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00	10000.00	120.00

Description: Sets the gain for the bandpass filter for the harmonics controller.

Index:
[0] = Filter 0
[1] = Filter 1
[2] = Filter 2
[3] = Filter 3

Dependency: Refer to: p5440, p5442

p5442[0...3] Harmonics controller bandpass filter mid-frequency / Bandpass f_mid

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Hz]	1000.00 [Hz]	300.00 [Hz]

Description: Sets the mid-frequency for the bandpass filter for the harmonics controller.

Index:
[0] = Filter 0
[1] = Filter 1
[2] = Filter 2
[3] = Filter 3

Dependency: Refer to: p5440, p5441, p5443

Note: The parameter should be set to a value which is greater than or equal to the fundamental frequency.

p5443 Harmonics controller bandpass filter gain total / Bandpass gain tot

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00	100.00	1.00

Description: Sets the total gain for all bandpass filters for the harmonics controller.

Dependency: Refer to: p5440, p5441, p5442

r5444[0...1] CO: Line droop control line voltage absolute value / U_line abs val

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the absolute value of the line voltage.

r5444 = sqrt (r5445[0]^2 + r5445[1]^2)

Index:
[0] = Droop (p5404)
[1] = Voltage correction (p5425)

Dependency: Refer to: r5445

r5445[0...11] Line droop control voltage alpha/beta component / U A/B comp

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the alpha/beta component of the voltages.

Index:
[0] = Line voltage alpha
[1] = Line voltage beta
[2] = Converter output voltage alpha
[3] = Converter output voltage beta
[4] = Line droop output voltage alpha
[5] = Line droop output voltage beta
[6] = DC controller output voltage alpha
[7] = DC controller output voltage beta
[8] = Harmonic controller voltage alpha
[9] = Harmonic controller voltage beta
[10] = Additional inductance voltage alpha
[11] = Additional inductance voltage beta

Dependency: Refer to: r5444

r5446[0...1] CO: Line droop control line voltage active/reactive component / U_line P/Q comp

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the active/reactive component of the line voltage.

Index:
[0] = Active
[1] = Reactive

r5447 CO: Line droop control line voltage absolute value / I_line abs val

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the line current absolute value at the connection point (p5403, p5404).

Dependency: Refer to: r5448

Note: The following applies:

r5447 = sqrt(r5448[0]^2 + r5448[1]^2)

r5448[0...3] Line droop control line current alpha/beta component / I_line A/B comp

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7982, 7983
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [A]	- [A]	- [A]

Description: Displays the alpha/beta components of the current.

Index:
[0] = Alpha
[1] = Beta
[2] = Alpha
[3] = Beta

Dependency: Refer to: r5447

Note: For index [0, 1]:
Displays the line current.
For index [2, 3]:
Displays the DC component of the power unit current for the DC component controller.

r5449[0...1] CO: Line droop control line current active/reactive component / I_line P/Q comp

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [A]	- [A]	- [A]

Description: Displays the active/reactive component of the line current.

Index:
[0] = Active
[1] = Reactive

r5450[0...5] CO: Line droop setpoint active / Line drp setp act

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Display and connector output for the effective setpoints of the line droop.

Index:
[0] = Voltage droop no-load operation
[1] = Voltage droop gradient
[2] = Frequency droop no-load operation
[3] = Frequency droop gradient
[4] = Voltage supplementary setpoint direct
[5] = Frequency supplementary setpoint direct

p5451 BI: Current hysteresis controller operating mode / I_hyst_ctrl mode

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for setting the operating mode on the current hysteresis controller.

BI: p5451 = 1 signal:

Combined operation (main generator and auxiliary generator on the line).

BI: p5451 = 0 signal:

Isolated operation (main generator only on the line).

r5452.0...3 CO/BO: Current hysteresis controller sequence control status word / I_hyst_ctrl seqZSW

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the sequence control status word on the current hysteresis controller.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Initialization	Yes	No	-
01	No load	Yes	No	-
02	Normal	Yes	No	-
03	Short circuit	Yes	No	-

Dependency: Refer to: p5457, p5458, p5459

Refer to: F06850

p5453[0...5] Current hysteresis controller overcurrent limit / I_hyst_ctrl I lim

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
45.0 [%]	130.0 [%]	[0...4] 85.0 [%] [5] 115.0 [%]

Description: Sets the permissible maximum current in the event of an overload and short circuit for the modulator to intervene and apply limiting.

The effective current limits are calculated from the parameterized overcurrent (p5453) and the hysteresis width (p5454).

Index:
[0] = No-load operation (p5451 = 1 signal)
[1] = Normal operation (p5451 = 1 signal)
[2] = Short-circuit operation (p5451 = 1 signal)
[3] = No-load operation (p5451 = 0 signal)
[4] = Normal operation (p5451 = 0 signal)
[5] = Short-circuit operation (p5451 = 0 signal)

Dependency: The overcurrent limit (p5453) cannot be set less than or equal to the hysteresis width (p5454).

Refer to: p5454, p5455, p5478

Notice: The setting values are automatically set.

This manual setting is only possible for the case that p5478[0, 1] = 50 %, and it is critical that expert knowledge is available.

For devices with r0192.19 = 0 (e.g. Active Line Module Booksize), the maximum current limit can be set to p5453[5] = 105 %.

Note: The value is referred to the internal reference current.

p5454[0...5] Current hysteresis controller overcurrent hysteresis width / I_hyst_ctrl I hyst

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
15.0 [%]	50.0 [%]	20.0 [%]

Description: Sets the permissible current hysteresis in the event of an overload and short circuit for the modulator to intervene and apply limiting.

The effective current limits are calculated from the parameterized overcurrent (p5453) and the hysteresis width (p5454).

Index:
[0] = No-load operation (p5451 = 1 signal)
[1] = Normal operation (p5451 = 1 signal)
[2] = Short-circuit operation (p5451 = 1 signal)
[3] = No-load operation (p5451 = 0 signal)
[4] = Normal operation (p5451 = 0 signal)
[5] = Short-circuit operation (p5451 = 0 signal)

Dependency: The hysteresis width (p5454) cannot be set greater than or equal to the overcurrent limit (p5453).

Refer to: p5453, p5478

Notice: The setting values are automatically set. This manual setting is only possible for the case that p5478[0, 1] = 50 %, and it is critical that expert knowledge is available.

Note: The value is referred to the internal reference current.

p5455[0...5] Current hysteresis controller overcurrent tolerance range / I_hyst_ctrl I tol

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
10.0 [%]	100.0 [%]	20.0 [%]

Description: Sets the permissible tolerance range in the event of an overload and short circuit for the modulator to intervene and apply limiting.

The effective current limit is calculated from the overcurrent limit (p5453) plus the overcurrent tolerance range (p5455).

Index:
[0] = No-load operation (p5451 = 1 signal)
[1] = Normal operation (p5451 = 1 signal)
[2] = Short-circuit operation (p5451 = 1 signal)
[3] = No-load operation (p5451 = 0 signal)
[4] = Normal operation (p5451 = 0 signal)
[5] = Short-circuit operation (p5451 = 0 signal)

Dependency: Refer to: p5453, p5478

Notice: The setting values are automatically set. This manual setting is only possible for the case that p5478[0, 1] = 50 %, and it is critical that expert knowledge is available.

Note: The value is referred to the internal reference current.

p5456[0...2] Current hysteresis controller configuration / I_hyst_ctrl config

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	[0] 1000 0000 0010 0000 bin [1] 1000 0000 0010 0000 bin [2] 1000 0000 0011 0000 bin

Description: Sets the configuration for the current hysteresis controller.

Index:
[0] = No load
[1] = Normal operation
[2] = Short-circuit operation

Bit field:

Bit	Signal name	1 signal	0 signal	FP
04	Disable wobbulation amplitude	Yes	No	-
05	Activate extended current limitation control	Yes	No	-
06	Activate isochronous current limitation	Yes	No	-
10	Activate pulse-locking/pulse-dropping function	Pulse-Dropping	Pulse-Locking	-
15	Activate flat-top modulation	Yes	No	-

Note: For bit 04 = 0:

The pulse frequency wobbulation amplitude (p1811) is enabled. Only applies if p1810.2 = 1.

For bit 04 = 1:

The pulse frequency wobbulation amplitude (p1811) is disabled. Only applies if p1810.2 = 1.

For bit 10:

The setting according to p1810.10 applies.

p5457[0...2] Current hysteresis controller pulse frequency changeover / I_hyst_ctrl f_puls

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
50.0 [%]	200.0 [%]	100.0 [%]

Description: Sets the pulse frequency for the operating states of the current hysteresis controller.

Index:
[0] = No load
[1] = Normal operation
[2] = Short-circuit operation

Note: The value refers to p1800.

Only factors of the pulse frequency in p1800 are permitted.

p5458[0...1] Current hysteresis controller minimum time operating state / I_hyst_ctrl t mode

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	3.000 [s]	[0] 1.000 [s] [1] 1.000 [s]

Description: Sets the minimum times for the operating states of the current hysteresis controller.

Index:
[0] = Normal operation
[1] = Short-circuit operation

Dependency: Refer to: F06850

Note: For p5458[0]:
Minimum time for operating state "Rated operation" for change to "No-load operation".
For p5458[1]:
Permissible short-circuit duration. If the short circuit is not cleared within this time, the main generator will shut down with fault F06850.

p5459[0...3] Current hysteresis controller sequence control state change / I_hyst_ctrl seq

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	200.0 [%]	[0] 10.0 [%] [1] 5.0 [%] [2] 70.0 [%] [3] 75.0 [%]

Description: Sets the limits for state change in the sequence control on the current hysteresis controller.

Index:
[0] = Lower current limit no-load/normal operation
[1] = Upper current limit normal/no-load operation
[2] = Lower voltage limit short-circuit operation
[3] = Upper voltage limit short-circuit/normal operation

Dependency: Refer to: r5452

Note: The current value refers to r0209.
The voltage value refers to p0210.

p5460[0...n] VSM2 input line supply voltage, voltage scaler / VSM2 inp U_scaler

A_INF (Line transf), R_INF (Line transf)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** p0150	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	100000.00 [%]	0.00 [%]

Description: Sets a voltage scaler for Voltage Sensing Module 2 (VSM2).

Note: When the 690 V input is used (X522) without voltage scaler, 0 % should be entered.
When the 100 V input (X521) is used with voltage scaler to measure medium voltages, the dividing (scaling) factor multiplied by 100% should be entered.
Example:
1000 V line supply voltage, voltage scaling, 10:1
--> voltage at the VSM input is 100 V
--> p5460 = 10 * 100 % = 1000 %

r5461[0...n] CO: VSM2 input line supply voltage u1 - u2 / VSM2 inp u1-u2

A_INF (Line transf), R_INF (Line transf)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** p0150	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** 5_3	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the voltage between phases L1 and L2.

Note: X521.1 or X522.1: Connection of L1
X521.2 or X522.2: Connection of L2

r5462[0...n] CO: VSM2 input line supply voltage u2 - u3 / VSM2 inp u2-u3

A_INF (Line transf), R_INF (Line transf)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** p0150	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** 5_3	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the voltage between phases L2 and L3.

Note: X521.2 or X522.2: Connection of L2

X521.3 or X522.3: Connection of L3

r5464[0...n] CO: VSM2 temperature evaluation status / VSM2 temp status

A_INF (Line transf), R_INF (Line transf)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** p0150	**Func. diagram:** -
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status of the temperature evaluation of Voltage Sensing Module 2 (VSM2).

This displays whether the temperature actual value has exceeded the fault/alarm threshold.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Alarm is present	Yes	No	-
01	Fault is present	Yes	No	-

p5465[0...n] VSM2 temperature evaluation sensor type / VSM2 temp sens_typ

A_INF (Line transf), R_INF (Line transf)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** p0150	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	6	0

Description: Sets the temperature sensor for Voltage Sensing Module 2 (VSM2).

The temperature sensor is connected to terminals X520.5 and X520.6 on the VSM2.

Value:

0: No sensor
1: PTC
2: KTY84
6: PT1000

r5466[0...n] CO: VSM2 temperature actual value / VSM2 Temp_ActVal

A_INF (Line transf), R_INF (Line transf)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** p0150	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** 21_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°C]	- [°C]	- [°C]

Description: Displays the temperature actual value of a temperature sensor connected to Voltage Sensing Module 2 (VSM2).

Prerequisite:

A KTY/PT1000 temperature sensor is connected, and p5465 is set = 2, 6.

Dependency: Refer to: p5465

Note: For sensor type PTC (p5465 = 1), the following applies:

- Below the nominal response temperature, r5466 = -50 °C.
- Above the nominal response temperature, r5466 = 250 °C.

p5467[0...n] VSM2 overtemperature alarm threshold / VSM2 temp A_thresh

A_INF (Line transf), R_INF (Line transf)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** p0150	**Func. diagram:** -
P-Group: -	**Unit group:** 21_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
Min	**Max**	**Factory setting**
-100.00 [°C]	301.00 [°C]	150.00 [°C]

Description: Sets the alarm threshold for the temperature sensor on Voltage Sensing Module 2 (VSM2).
Prerequisite:
A KTY/PT1000 temperature sensor is connected, and p5465 is set = 2, 6.

Dependency: Refer to: p5465
Refer to: F06255, A34211

Note: For sensor type KTY (p5465[0...1] = 2) or PT1000 (p5465[0...1] = 6) values 181 ... 300 °C result in fault F06255.
Monitoring is deactivated for p5467[0...1] = 301.

p5468[0...n] VSM2 overtemperature shutdown threshold / VSM2 temp F_thresh

A_INF (Line transf), R_INF (Line transf)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** p0150	**Func. diagram:** -
P-Group: -	**Unit group:** 21_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
Min	**Max**	**Factory setting**
-100.00 [°C]	301.00 [°C]	180.00 [°C]

Description: Sets the shutdown threshold for the temperature sensor of the VSM2 to monitor a temperature.
Prerequisite:
A KTY/PT1000 temperature sensor is connected, and p5465 is set = 2, 6.

Dependency: Refer to: p5467
Refer to: F34207

p5469[0...n] VSM2 overtemperature hysteresis / VSM2 temp hyst

A_INF (Line transf), R_INF (Line transf)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** p0150	**Func. diagram:** -
P-Group: -	**Unit group:** 21_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
Min	**Max**	**Factory setting**
1.00 [K]	50.00 [K]	3.00 [K]

Description: Sets the hysteresis for the alarm threshold of the VSM2 to monitor a temperature.

Dependency: Refer to: p5467

p5470[0...n] VSM2 10 V input CT gain / VSM2 CT_gain

A_INF (Line transf), R_INF (Line transf)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** p0150	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [A]	1000.000 [A]	1.000 [A]

Description: Sets the CT gain of the CT connected at the 10 V input of Voltage Sensing Module 2 (VSM2).
The parameter specifies the current magnitude in [A] referred to the input voltage at VSM2 in [V].
Example:
CT with 1 V per 200 A.
--> p5470 = 200

Note: The CT for phase 1 is connected at terminals X520.1 and X520.2 of VSM2.
The CT for phase 2 is connected at terminals X520.3 and X520.4 of VSM2.

r5471[0...n] CO: VSM2 10 V input CT 1 actual value / VSM2 CT1 I_act

A_INF (Line transf), R_INF (Line transf)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** p0150	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [A]	- [A]	- [A]

Description: Displays the current actual value from current transducer (CT) 1 at the 10 V input of Voltage Sensing Module 2 (VSM2).

Dependency: Refer to: p5470

Note: The CT for phase 1 is connected at terminals X520.1 and X520.2 of VSM2.

r5472[0...n] CO: VSM2 10 V input CT 2 actual value / VSM2 CT2 I_act

A_INF (Line transf), R_INF (Line transf)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** p0150	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [A]	- [A]	- [A]

Description: Displays the current actual value from current transducer (CT) 2 at the 10 V input of Voltage Sensing Module 2 (VSM2).

Dependency: Refer to: p5470

Note: The CT for phase 2 is connected at terminals X520.3 and X520.4 of VSM2.

r5473[0...n] CO: VSM2 10 V input 1 actual value / VSM2 inp 1 U_act

A_INF (Line transf), R_INF (Line transf)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** p0150	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the actual value of the voltage measured at the 10 V input 1 of Voltage Sensing Modules 2 (VSM2).

Dependency: Refer to: p5470

Note: 10 V input 1: Terminals X520.1 and X520.2

r5474[0...n] CO: VSM2 10 V input 2 actual value / VSM2 inp 2 U_act

A_INF (Line transf), R_INF (Line transf)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** p0150	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the actual value of the voltage measured at the 10 V input 2 of Voltage Sensing Modules 2 (VSM2).

Dependency: Refer to: p5470

Note: 10 V input 2: Terminals X520.3 and X520.4

p5476 Line droop control damping gain / Line droop damp k

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7982
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	1000.0 [%]	0.0 [%]

Description: Sets the gain for the DT1 element of the frequency droop.

In addition or alternatively to fast droop (p5413, p5414), with this D component power oscillations in the island line can be dampened.

The reference quantity is the gain of the regular frequency droop (p5407).

Recommendation: Typical setting values lie between 50 % and 100 %.

Dependency: Refer to: p5477

Note: With p5476 = 100 %, a frequency change from the power-frequency droop, unscaled for the integration of the line angle becomes effective.

With p5476 = 0, damping of the line control via the DT1 element is deactivated.

p5477 Line droop control damping smoothing time / Line droop damp T

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7982
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
5.0 [%]	2000.0 [%]	200.0 [%]

Description: Sets the smoothing time for the DT1 element of the frequency droop.

The reference quantity is the smoothing time for the regular frequency droop (p5409).

Recommendation: Typical setting values lie between 100 % and 200 %.

Dependency: Refer to: p5476

Note: With a lower smoothing time, the corner frequency of the high pass filter formed by the DT1 element increases. To dampen resonance in the line, the corner frequency must lie below the resonant frequency, and the setting value for the smoothing time must be selected to be correspondingly high.

p5478[0...1] Line droop control current limits / Line droop I_lim

A_INF (Line droop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
50.0 [%]	123.0 [%]	[0] 90.0 [%] [1] 123.0 [%]

Description: Setting for the permissible maximum current in the event of an overload and short circuit with active line droop control (p5401[0] = 1 signal).

Index: [0] = Normal operation
[1] = Short-circuit operation

Notice: For devices with r0192.19 = 0 (e.g. Active Line Module Booksize), the maximum short-circuit current limit can be set to p5478[1] = 100 %.

Note: The value is referred to r5479[5].

The current limits p5453, p5454 and p5455 for the gating unit are automatically set.

In the case of p5478[0] = 50 % and p5478[1] = 50 %, the current limits can be set manually (p5453, p5454, p5455).

The current limits resulting from the setting values are displayed in r5479[0, 1].

For index [0]:

Current limit for normal operation and for line short circuit in combined operation with a generator. Maximum value is 100 %.

For index [1]:

Current limit for short circuit with a main generator in isolated operation in the line.

p5478[0...1] Line droop control current limits / Line droop I_lim

R_INF (Line droop ctrl)	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	50.0 [%]	123.0 [%]	[0] 67.0 [%] [1] 67.0 [%]

Description: Setting for the permissible maximum current in the event of an overload and short circuit with active line droop control (p5401[0] = 1 signal).

Index:
[0] = Normal operation
[1] = Short-circuit operation

Notice: For devices with r0192.19 = 0 (e.g. Active Line Module Booksize), the maximum short-circuit current limit can be set to p5478[1] = 100 %.

The value range is restricted as follows without license option S02:

51 % <= p5478[0, 1] <= 67 %

Note: The value is referred to r5479[5].

The current limits p5453, p5454 and p5455 for the gating unit are automatically set.

In the case of p5478[0] = 50 % and p5478[1] = 50 %, the current limits can be set manually (p5453, p5454, p5455).

The current limits resulting from the setting values are displayed in r5479[0, 1].

For index [0]:

Current limit for normal operation and for line short circuit in combined operation with a generator. Maximum value is 100 %.

For index [1]:

Current limit for short circuit with a main generator in isolated operation in the line.

r5479[0...5] Line droop control current permissible / Line droop I perm

A_INF (Line droop ctrl), R_INF (Line droop ctrl)	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [Arms]	- [Arms]	- [Arms]

Description: Displays the permissible converter line current with active line droop control (p5401[0] = 1 signal).

Index:
[0] = Overload current limiting
[1] = Short-circuit current limiting
[2] = Continuous current permissible at an ambient 40 °C
[3] = Continuous current permissible at an ambient 45 °C
[4] = Continuous current permissible at an ambient 50 °C
[5] = Reference current

Note: For index [0]:

Permissible overload current and permissible current during a line short circuit in combined operation (p5451). The converter current is limited to this current value.

For index [1]:

Permissible current during a line short circuit in isolated operation (p5451). The converter current is limited to this current value.

For index [2, 3, 4]:

Continuously permissible line current at cos phi = 1 for I2t monitoring. The I2t numerator (r0036) is incremented above this current value with active line droop control (r5402.1 = 1).

The current limit is dependent on the ambient temperature.

Derating should be observed for cos phi < 1 in order to avoid overtemperatures.

For index [5]:

Reference value for setting the current limits with p5478[0, 1].

The value lies above the maximum current (r0209) of the power unit.

p5480 Transformer magnetization mode / Transf mag mode

A_INF (Line transf), R_INF (Line transf)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 7990
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	102	0

Description: Sets the mode for the transformer magnetization.

Using this function, a transformer is magnetized using a voltage that is in synchronism with the external line supply; this means that no inrush currents flow when this transformer is connected to the line supply.

If value = 11:

Automatic determination of the magnetizing inductance.

The magnetizing inductance determined in r5491 must be transferred to p5492 in order to take effect.

Observe notes regarding r5491.

If value = 12:

Automatic determination of the transformer phase shift and the gain correction.

The transformer phase shift determined in r6440 must be transferred to p6420 in order to take effect.

The gain correction determined in r6441 must be transferred to p6421 in order to take effect.

If value = 13:

Determination of the total leakage inductance of the transformer during line data identification. p3410 = 1 is set automatically and the inductance is measured on the next switch-on. Once the measurement has been completed the converter shuts down automatically and p3410 is set = 0 and p5480 is set = 1.

The total leakage inductance of the transformer determined in r5489 must be transferred to p5490 in order to take effect.

If value = 101:

The infeed goes into line droop control, however the main switch/circuit breaker is not closed, and the transformer magnetization remains in the state r5482 = 4.

Test operation requires the "Line droop control" function module to be activated (r0108.12 = 1).

If value = 102:

As for test operation 1.

However, synchronization with the line is not realized (VSM2 measured data r5460 and following is not used); instead, the output voltage is generated corresponding to the rated data p0210, p0211, p5486.

Value:
0: Deactivated
1: Normal operation
11: Identification transformer magnetizing inductance
12: Identification transformer phase shift/gain correction
13: Identification total transformer leakage inductance
101: Test operation 1 (without activation of circuit breaker)
102: Test oper. 2 (w/o activation of circuit breaker, without VSM2)

Dependency: Refer to: r5482, p5486, r5493, p5494, r5499, p5580

Notice: The feedback signal contact of the circuit breaker between the Active Interface Module and the island grid must be connected in parallel via binector input p0860.

For an active black start (p5580 > 0), a separate transformer magnetization is not performed.

Note: The transformer magnetizing function is used in order to magnetize a line transformer to which the Active Line Module (ALM) is connected.

The precondition is that the transformer can be isolated from the line supply on the primary side using a circuit breaker and that the DC link of the ALM is supplied from a separate power source before the circuit breaker is closed (e.g. with a separate precharging transformer or for photovoltaic applications).

The circuit breaker between the Active Interface Module and the island grid is controlled via binector output r0863.1

The status of the transformer magnetization, black start and island grid synchronization is displayed in r5499.

The status of the sequence control for transformer magnetization, black start and island grid synchronization is displayed in r5482.

If value = 13:

For weak line supplies, it is recommended to reduce the excitation current p3415 for identifying the inductance (e.g. p3415[0] = p3415[1] = 5 %).

p5481[0...2] Transformer magnetization times / Transf mag t

A_INF (Line transf), R_INF (Line transf)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.04 [s]	100.00 [s]	[0] 2.00 [s] [1] 1.00 [s] [2] 1.00 [s]

Description: Sets the time values for the transformer magnetization.

Index:
[0] = Voltage ramp ramp-up time
[1] = Circuit breaker bounce time
[2] = Line synchronization timeout

Note: For index [0]:

Sets the ramp duration for the transformer voltage.

For index [1]:

Sets the bounce time for the circuit breaker at the line side of the line transformer.

An interruption-free connection between the line supply and the transformer is only guaranteed after the bounce time has expired.

The feedback signal contact of the circuit breaker between the Active Interface Module and the island grid must be connected in parallel via binector input p0860.

The wait state until the debounce time has expired is canceled if the following conditions are fulfilled:

- feedback signal p0860 = 1.
- current rise or DC link voltage change identified.

For index [2]:

Sets the permissible maximum time.

If the maximum time elapses without the line being synchronized, alarm A06502 is output.

The minimum duration of line synchronization is 25 % of this maximum time, however, as a minimum 40 ms.

r5482 CO: Line synchronization status / Line synch. status

A_INF (Line transf), R_INF (Line transf)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	207	-

Description: Sets the state of the sequence control for transformer magnetization, black start and island grid synchronization.

Value:
0: Initialization
1: Procedure inactive
2: Transformer magnetization with voltage ramp running
3: Transformer magnetization line synchronization in progress
4: Transformer magnetization wait for LSS enable
5: Transformer magnetiz. wait for bounce time for circuit breaker

6: Transformer magnetiz. transition to operation running (r3402=9)
7: Transformer magnetization completed
8: Identification of magnetizing inductance
9: Identification transformer phase shift/gain correction
100: Black start line check
101: Black start wait for line PLL
102: Black start demagnetization ramp running
103: Black start wait for voltage threshold p5586[0]
104: Black start wait for LSS enable (p5483 = 1 signal)
105: Black start wait LLS debounce time
106: Black start wait for line droop active
107: Black start magnetization ramp
108: Black start final line check
109: Black start completed
200: Island grid synchronization line test
201: Island grid synchronization U/F ramp
202: Island grid synchronization angle ramp
203: Island grid synchronization control
204: Island grid synchronization waiting for LSS feedback signal
205: Island grid synchronization waiting LSS bounce time
206: Island grid synchronization waiting for line droop inactive
207: Island grid synchronization cancellation running

Dependency: Refer to: p5480, p5580, p5583

p5483 BI: Line circuit breaker enable / Line LSS enab

A_INF (Line transf), R_INF (Line transf)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 7988, 7990, 7994
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to enable the circuit breaker.

The line-side circuit breaker upstream of the supply transformer is required for the functions "Transformer magnetization" (p5480 > 0) and "Island grid black start" (p5580 > 0).

Caution: The circuit breaker enable is queried during the state r5482 = 4 and r5482 = 104. If, at a later point in time, a black start/transformer magnetization is canceled, or the converter is disconnected from the grid, then this must be requested using an OFF1.

p5484[0...2] Magnetization transformer controller dynamics / Mag transf ctr_dyn

A_INF (Line transf), R_INF (Line transf)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7993
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	1000.00 [ms]	[0] 50.00 [ms] [1] 50.00 [ms] [2] 100.00 [ms]

Description: Sets the time constants for the transformer magnetization closed-loop controls.

Index:
[0] = Angle controller integration time
[1] = Voltage controller integration time
[2] = Control deviation smoothing time

p5485[0...1] Transformer magnetization voltage thresholds / Transf mag U_thr

A_INF (Line transf), R_INF (Line transf)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7990, 7993
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [V]	300.0 [V]	[0] 35.0 [V] [1] 3.5 [V]

Description: Sets the permissible voltage difference for closing the circuit breaker after transformer magnetization.

Index: [0] = Unsmoothed
[1] = Smoothed

Dependency: Refer to: p5484

Note: For index [0]:

Sets the permissible absolute value of the instantaneous difference between the secondary voltages at the line transformer (r5498[0, 1]) and the transformed primary voltage (r5488[0, 1]).

This condition must be met to reach the state r5482 = 4.

For index [1]:

Sets the permissible absolute value of the averaged difference between the secondary voltages at the line transformer (r5498[0, 1]) and the transformed primary voltage (r5488[0, 1]).

This condition must be met to reach the state r5482 = 4.

p5486[0...1] Transformer rated voltage primary / Transf U_rated pri

A_INF (Line transf), R_INF (Line transf)

Can be changed: C2(1, 2)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [Vrms]	63000.00 [Vrms]	400.00 [Vrms]

Description: Sets the primary rated voltage of the transformer.

Index: [0] = Supply transformer
[1] = Island grid transformer

Note: For index [0]:

Setting the rated primary voltage of the line transformer, at whose secondary the AIM and the ALM are connected.

If there is a circuit breaker at the transformer primary side, then the transformer can be magnetized before closing this circuit breaker in order to avoid high inrush currents.

The setting of this primary voltage and setting the device supply voltage (p0210) defines the transformer ratio.

To magnetize the transformer, the voltage has to be measured at the line side of the circuit breaker. To do this, an additional VSM must be connected and parameterized using p0150[0] and following. The voltage actual values of this VSM are displayed in r5461[0] and r5462[0]. The voltages converted over to the transformer secondary side are displayed in r5488[0, 1, 2].

For index [1]:

Setting the rated primary voltage of the line transformer; an island grid with ALM in the grid droop mode (p5401) is connected to the secondary of this transformer. Typically, the transformer primary is connected to the grid or to another island grid through a circuit breaker.

The setting of this primary voltage and setting the device supply voltage (p0210) defines the island grid transformer ratio.

To synchronize the island grid voltage with the external grid, the external grid voltage must be measured. To do this, an additional VSM must be connected and parameterized using p0150[1] and following. The voltage actual values of this VSM are displayed in r5461[1] and r5462[1]. The voltages converted over to the transformer secondary side can be displayed in r5488[3, 4, 5]. To do this, the following BICO interconnections are acquired: p5487[2] = r5461[1], p5487[3] = r5462[1].

p5487[0...3] CI: Transformer primary voltage signal source / Trans U_prim s_src

A_INF (Line transf), R_INF (Line transf)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	[0] 5461[0] [1] 5462[0] [2] 0 [3] 0

Description: Sets the signal sources for the measured phase voltages (u12, u23) on the primary side of the transformer.

Using these measured values, the transformer voltages on the secondary side are calculated and displayed (r5488).

Index:
[0] = Supply transformer u12
[1] = Supply transformer u23
[2] = Island grid transformer u12
[3] = Island grid transformer u23

Dependency: Refer to: p5486

Notice: To transform the measured primary voltages to the transformer secondary side (ALM connection point), in addition to specifying the ratio (p0210, p5487), the phase angle (p6420) of the transformer must also be parameterized.

Before commissioning it is absolutely necessary that this phase angle is roughly set!

Using the transformer test mode (p5480 = 12), for the supply transformer, this angle and a gain error can be finely set.

Note: The rated voltage for the transformer primary side is set using p5486.

r5488[0...5] CO: Transformer secondary voltage transformed / Transf U_sec trans

A_INF (Line transf), R_INF (Line transf)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7990
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Display and connector output for alpha/beta components and amplitude of the calculated transformer secondary voltage.

Index:
[0] = Supply transformer U alpha
[1] = Supply transformer U beta
[2] = Supply transformer U amplitude
[3] = Island grid transformer U alpha
[4] = Island grid transformer U beta
[5] = Island grid transformer U amplitude

Dependency: Refer to: p5487

Note: For index [0, 1, 2]:

The signals from p5487[0, 1] are transformed for the transformer calculation.

To do this, the ratio (p5486[0] / p0210), the phase angle of the transformer (p6420[0]) as well as a correction factor for the voltage ratio (p6421[0]) are taken into account.

For index [3, 4, 5]:

The signals from p5487[2, 3] are transformed for the transformer calculation.

To do this, the ratio (p5486[1] / p0210), the phase angle of the transformer (p6420[1]) as well as a correction factor for the voltage ratio (p6421[1]) are taken into account.

r5489 Transformer leakage inductance identified / Transf L_l ident

A_INF (Line transf), R_INF (Line transf)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [mH]	- [mH]	- [mH]

Description: Displays the total leakage inductance of the supply transformer determined using the identification (p5480 = 13).

The result of the identification must be entered into p5490.

Dependency: Refer to: p5480, p5490

Notice: During identification, the value previously entered in p5490 is not effective.

Note: The display value is reset to 0 at POWER ON.

p5490 Transformer leakage inductance / Transf L_leak

A_INF (Line transf), R_INF (Line transf)

Can be changed: C2(1, 2), T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.001 [mH]	1000.000 [mH]	0.100 [mH]

Description: Sets the total leakage inductance of the supply transformer.

r5491 Transformer magnetizing inductance identified / Transf L_H ident

A_INF (Line transf), R_INF (Line transf)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [mH]	- [mH]	- [mH]

Description: Displays the magnetizing inductance of the supply transformer determined using the identification (p5480 = 11).

The result of the identification must be entered into p5492.

Dependency: Refer to: p5480, p5492

Notice: Overmodulation (r0074 > 97 %) during the measurement as a result of an excessively low DC link voltage, can have a significant influence on the measurement result. A countermeasure, for example, can be to reduce the output voltage using p5494.

The measurement result depends very strongly on precisely specifying the filter capacitance (p0221).

When filter monitoring is active (p3678 > 0), the current measured values of the VSM (r3671, r3672) are used to identify the magnetizing inductance. Incorrect VSM measured values result in excessively high deviations when determining the magnetizing inductance.

Note: During identification, the value previously entered in p5492 is not effective.

The display value is reset to 0 at POWER ON.

VSM: Voltage Sensing Module

p5492 Transformer magnetizing inductance / Transf L_H

A_INF (Line transf), R_INF (Line transf)

Can be changed: C2(1, 2), T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.10 [mH]	10000.00 [mH]	250.00 [mH]

Description: Sets the magnetizing inductance of the supply transformer.

Dependency: Refer to: r5491

Notice: If possible, p5492 should be set based on the data on the transformer rating plate.

If the magnetizing inductance is not specified, then an estimate can be made using the formula specified below (instead of r0206, the transformer rated power is used).

The magnetizing inductance should be used as basis for setting the DC component controller (p5437).

Note: The parameter is preset when selecting the power unit (p0201). In so doing, a transformer is assumed with the same power and with 2 % magnetizing current:

p5492 = r0206[0] / (3 * r0207[0] * r0207[0] * 2 % * 2pi * p0211)

r5493.0...1 CO/BO: Line circuit breaker control signals / LSS control sig

A_INF (Line transf), R_INF (Line transf)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 7990
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output to control the circuit breaker for transformer magnetization and island grid synchronization.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	External precharging bypass contactor	Yes	No	-
01	Island grid circuit breaker	Yes	No	-

Dependency: Refer to: r0863, r3402

Caution: For bit 01:

Without any additional control logic, the signal is not suitable to control the island grid circuit breaker.

The signal only represents an enable signal to close the circuit breaker during the actual synchronization (r5499.5 = 1). For r5499.5 = 0, generally the following applies r5493.1 = 0.

Note: For bit 00:

The signal is used to control the external bridging contactor in the precharging circuit.

The external bridging contactor is closed if precharging is complete (r3402 > 5) and the circuit breaker has not been activated (r0863.1 = 0).

For bit 01:

The signal is used to control the circuit breaker between the island grid and the external grid.

The signal is set to 1, if the island grid was successfully synchronized. In this case, the conditions for synchronization (frequency, amplitude, phase angle, p5586) are maintained.

p5494[0...1] Transformer magnetization scaling values / Traf mag scale

A_INF (Line transf), R_INF (Line transf)

Can be changed: C2(2), T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
10.0 [%]	150.0 [%]	[0] 100.0 [%] [1] 40.0 [%]

Description: Sets the scaling values for the transformer magnetization.

Index: [0] = Voltage setpoint (90 - 100 %)
[1] = Current limit (150 % deactivated)

Dependency: Refer to: F06505

Note: For index [0]:

If the precharging circuit of an application only creates a low DC link voltage, which is not sufficient to fully magnetize the transformer (modulation depth r0074 limited), then the target value for the magnetization can be reduced (p5494[0]).

When closing the line contactor, the residual magnetization required only causes a relatively low recharging current surge that is generally within permissible limits.

For index [1]:

If, during transformer magnetization, the current limit is exceeded (r0068 > p5494[1] * r0207), then fault F06505 is output.

p5495 Transformer operating mode configuration / Transf op config

A_INF (Line transf), R_INF (Line transf)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Sets the operating mode for the grid PLL in conjunction with the grid transformer function module (r0108.4 = 1).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Line PLL with transformer voltage	Yes	No	-

Note: VSM: Voltage Sensing Module

For bit 00:

When the bit is set, voltages (r5488[0, 1]) from the transformer model are used as input variable for the grid PLL (r3452 and following), which otherwise operates with the measured values of VSM1 (r3661, r3662).

This means, for example if the transformer properties are not known, a higher accuracy of the PLL can be achieved, and in turn the controller stability improved.

For booksize drive units, the following applies:

Before and during PLL synchronization (r3402 <= 7), p5495.0 is only effective if operation with VSM is activated (p3400.5 = 1).

r5497[0...1] CO: Transformer secondary current / Transf I_second

A_INF (Line transf), R_INF (Line transf)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [A]	- [A]	- [A]

Description: Displays the components for the transformer's calculated secondary current.

Index:
[0] = Alpha
[1] = Beta

r5498[0...2] CO: Transformer secondary voltage / Transf U_second

A_INF (Line transf), R_INF (Line transf)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7990
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the components for the calculated secondary voltage of the supply transformer.

Contrary to r5488, the calculation is based on the measured filter voltages (r3468) and currents (r3467) using line filter and transformer models.

Index:
[0] = Alpha
[1] = Beta
[2] = Amplitude

Dependency: Refer to: r3467, r3468, p5490, p5492

r5499.0...6 CO/BO: Line synchronization status word / Sync status word

A_INF (Line transf), R_INF (Line transf)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output for the status word of line synchronization.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Line synchronization wait for switch on	Yes	No	-
01	Transformer magnetization running	Yes	No	-
02	Transformer magnetization completed	Yes	No	-
03	Grid black start running	Yes	No	-
04	Grid black start completed	Yes	No	-
05	Island grid synchronization running	Yes	No	-
06	Island grid synchronization completed	Yes	No	-

p5500 Dynamic grid support configuration / Dyn grid config

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: T	**Calculated:** -	**Access level:** 4
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 7996, 7997
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 1000 1000 bin

Description: Sets the configuration for the dynamic grid support.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Deactivate characteristic	Yes	No	-
01	Line voltage alpha/beta amplitudes	No	Yes	-
02	Grid support mode in the event of asymmetry	No	Yes	-
03	Grid support negative phase-sequence system calculation	Yes	No	-
04	Grid support neg sequence tolerance threshold characteristic	No	Yes	-
05	Deactivating grid support characteristic limiting	Yes	No	-
06	Grid support limit apparent current short time average value	Yes	No	-
07	Grid support dynamic current limits per phase	Yes	No	-
08	Grid support Q mode while FRT	Yes	No	-
09	Grid support Z mode while FRT	Yes	No	-
10	Permit active power during non-symmetrical FRT	Yes	No	-

Dependency: Refer to: p5507, r5510, p5520

Note: For bit 00:

If p5500.0 = 0 the output value of the grid support characteristic is added to the control's reactive current setpoint.

r0075 = p3610 + p3611 + r3471 + r5510[0]

If p5500.0 = 1 the dynamic reactive current setpoint p3611 is subtracted if dynamic grid support is active (p5502.1 = 1).

In this case, the following applies:

r0075 = p3610 + r3471 + r5510[0]

For bit 01:

Only active for p5500.3 = 0.

If p5500.1 = 0 the alpha and beta amplitudes of the line voltage, which were smoothed with p5507[2], are determined. The absolute value of the line voltage, calculated from these amplitudes, is used as input value for the characteristic for grid support. In the event of an asymmetrical line disturbance, oscillation of the reactive current setpoint (r5510) is prevented.

If p5500.1 = 1, the smoothed absolute value of the measured line voltage is used as the input value for the grid support characteristic. Smoothing is set with p5507[3].

For bit 02:

Only effective if p5500.1 = 0 and p5500.3 = 0.

If p5500.2 = 0, the maximum value from the alpha and beta line voltage amplitudes is used as the input value for the grid support characteristic. The reactive current setpoint (r5510) will, therefore, remain virtually constant even in the event of asymmetrical line disturbance. Power fluctuations in the DC link are reduced.

If p5500.2 = 1, the mean value from the alpha and beta line voltage amplitudes is used as the input value for the grid support characteristic.

For bit 03:

For p5500.3 = 0, no negative phase-sequence system current setpoint according to the characteristic is calculated. This means that the setpoints for the negative phase-sequence system current controller are also equal to 0 if the line supply is not symmetrical.

For p5500.3 = 1, for an asymmetrical line supply voltage, a negative phase-sequence system current setpoint is calculated, which counteracts the voltage asymmetry and therefore supports the grid.

The negative phase-sequence system current is impressed using the negative phase-sequence system controller (p3636 and following).

The negative phase-sequence system controller is automatically activated and deactivated (the following applies, p3640.0 = p5500.3).

For bit 04:

Only active for p5500.3 = 1.

For p5500.4 = 0, a negative phase-sequence system current setpoint according to characteristic p5505/p5506 is generated if the difference between two line phase voltage amplitudes is greater than p5509[9] - and the amplitude of at least one line phase voltage exceeds the line tolerance range according to the characteristic.

For p5500.4 = 1, an already supporting negative phase-sequence system current is impressed according to the characteristic, if only the difference between two line phase voltage amplitudes is greater than p5509[9].

For bit 05:

For p5500.5 = 1, the limiting of the support reactive current is not active according to the characteristic p5505/p5506. Instead, the current limits p5506[1] and p5506[3] are effective after adding the supplementary reactive current setpoints p3610 and p3611.

For bit 06:

For p5500.6 = 1, the apparent current is limited to the smoothed apparent current (r0027) effective at the start of an FRT. During this line fault, this value of the apparent current limit is continually effective.

For bit 07:

Only effective for p5526.7 = 1 and p192.19 = 1

For p5500.7 = 1, for each phase, a tolerance band is generated around the current setpoint, which the current actual value does not leave.

For p5500.7 = 0, a tolerance band is generated based on the current setpoint amplitude. The current actual value for each phase can be within this tolerance band.

For bit 08:

Only active for p5500.3 = 1.

For p5500.8 = 1, during a line short-circuit (r5502.4 = 1) the active line infeed current is reduced to zero.

For p5500.8 = 0, during a line short circuit (r5502.4 = 1) the active line infeed current is increased within the effective current limits in order to achieve the highest possible active power. To support the line supply, the reactive current has priority over the active current.

For bit 09:

Only active for p5500.3 = 1.

For p5500.9 = 1, during a line short-circuit (r5502.4 = 1) the active line infeed current and the supporting reactive current are reduced to zero.

For p5500.9 = 0, the standard response of dynamic line support applies corresponding to p5500.8 = 0.

For bit 10:

Only active for p5500.3 = 1.

For p5500.10 = 1, during an asymmetrical line short circuit (r5502.2 = 1) the active line infeed current is increased within the effective current limits in order to achieve the highest possible active power. To support the line supply, the reactive current has priority over the active current.

For p5500.10 = 0, during an asymmetrical line short-circuit (r5502.2 = 1) the active line infeed current is reduced to zero.

p5501 BI: Dynamic grid support activation / Dyn grid act

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to activate dynamic grid support.

BI: p5501 = 1 signal:

Activates dynamic grid support.

BI: p5501 = 0 signal:

Deactivates dynamic grid support.

Recommendation: The smoothing time for the line PLL (p3458[1]) should be set to values higher than 20 ms so as to ensure stable operation even with significant dips in supply voltage.

Dependency: For p5501[0], the following applies:

The Smart Mode must be deactivated (p3400.0 = 0) to set a signal source.

Notice: Dynamic grid support can only be activated if the power units have a gating unit with current limitation control (r0192.19 = 1 or r0192.30 = 1).

Note: If grid support has been activated:

Line disturbance will trigger grid support in accordance with the set characteristic (p5505, p5506).

If grid support is deactivated:

Line disturbance will generate the standard response to phase failures on the part of the infeed for drive applications (see A06205).

r5502.0...4 CO/BO: Dynamic grid support status word / Dyn grid ZSW

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status word for dynamic grid support.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Line voltage within the permissible tolerance range	Yes	No	-
01	Line voltage outside the permissible tolerance range	Yes	No	-
02	Line asymmetry outside the permissible tolerance range	Yes	No	-
03	Current limitation control active	Yes	No	-
04	Operating state line short circuit active	Yes	No	-

Note: For bit 02:

The tolerance range is set using p5509[8, 9].

For bit 04:

The status word of the sequence control is displayed in r5522.

p5503[0...1] CI: Dynamic grid support current signal source / Dyn grid I sig_src

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	[0] 3467[0] [1] 3467[1]

Description: Sets the signal source for the line current in alpha/beta coordinates.

Index: [0] = Alpha
[1] = Beta

Dependency: Refer to: p5504

p5504[0...1] CI: Dynamic grid control voltage signal source / Dyn grid U sig_src

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7996, 7999
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	[0] 3468[0] [1] 3468[1]

Description: Sets the signal source for the line voltage in alpha/beta coordinates.

The signals are used as input values for the characteristic for dynamic grid support (p5505, p5506) and for the extended grid monitoring (p5540 and following).

Index: [0] = Alpha
[1] = Beta

Dependency: Refer to: r0072, r3468, r5488, r5498, p5505, p5506

Note: Possible signal sources include for example r3468, r5488, r5498.

Associated frequency and phase angle of the line voltage are parameterized in separate connector inputs (p5518, p5519).

If p5504[0] = 0 or p5504[1] = 0:

The model value of the voltage source calculated in the line PLL is used (r3468[4, 5]).

p5505[0...3] Dynamic grid support characteristic voltage values / Dyn grid char U

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7996
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	100.0 [%]	[0] 10.0 [%] [1] 50.0 [%] [2] 10.0 [%] [3] 50.0 [%]

Description: Sets the voltage values for the characteristic for dynamic grid support.

The characteristic points for positive and negative voltage deviation are set separately.

The positive and the negative characteristic are each defined based on their starting and finishing points.

Positive voltage deviation:

- Starting point: p5505[0], p5506[0]
- Finishing point: p5505[1], p5506[1]

Negative voltage deviation:

- Starting point: p5505[2], p5506[2]
- Finishing point: p5505[3], p5506[3]

Index: [0] = Characteristic positive starting point
[1] = Characteristic positive finishing point
[2] = Characteristic negative starting point
[3] = Characteristic negative finishing point

Dependency: Refer to: p5506

Note: The voltage values refer to p0210.

Dynamic grid support is not applied in the event of voltage deviations between the starting points of the positive and the negative characteristic (p5505[0], p5505[2]).

For p5500.5 = 1, the following applies:

The reactive current setpoint is limited according to the set characteristic.

For p5500.5 = 0, the following applies:

In the event of voltage deviations above the finishing points of the positive or the negative characteristic (p5505[1], p5505[3]), grid support is limited to the reactive current setpoint of the corresponding finishing point (p5506[1], p5506[3]).

p5506[0...3] Dynamic grid support characteristic reactive current setpoint / Dyn grid char I

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7996
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	500.0 [%]	[0] 20.0 [%] [1] 100.0 [%] [2] 20.0 [%] [3] 100.0 [%]

Description: Sets the reactive current setpoints for the characteristic for dynamic grid support.

For more information, see p5505.

Index: [0] = Characteristic positive starting point
[1] = Characteristic positive finishing point
[2] = Characteristic negative starting point
[3] = Characteristic negative finishing point

Dependency: Refer to: p5505, p5509

Notice: If the grid is not symmetrical (r5502.2 = 1), then the reactive current setpoint is multiplied by factor p5509[12].

Note: The values are referred to r0207.

p5507[0...4] Dynamic grid support times / Dyn grid times

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7996, 7998, 7999
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	10000.00 [ms]	[0] 500.00 [ms] [1] 2.00 [ms] [2] 20.00 [ms] [3] 4.00 [ms] [4] 8.00 [ms]

Description: Sets the time values for dynamic grid support.

Recommendation: For index [0]:

For the run-on time p5507[0], the current limits parameterized for the dynamic grid support remain valid (e.g. p5509[11]). If a grid standard specifies that the active power is re-established faster, then we recommend that the run-on time is reduced (e.g. p5507[0] = 20 ms).

Index: [0] = Minimum time dynamic grid support
[1] = Minimum time line disturbance
[2] = Smoothing time alpha/beta
[3] = Smoothing time instantaneous value
[4] = Minimum time non-symmetrical grid fault

Dependency: Refer to: p5500, p5509, p5529

Note: For index [0]:

Minimum time for continuing grid support in accordance with the characteristic once the line voltage has returned to the permissible tolerance range between the two starting points (p5505[0], p5505[2]).

For index [1]:

Minimum time for line disturbance for the start of grid support in accordance with the characteristic.

If the tolerance band between the two characteristic starting points is violated for at least this period of time, voltage control in accordance with characteristic will start up.

For index [2]:

Smoothing time for the calculation of the alpha amplitude and the beta amplitude of the line voltage if p5500.1 = 0.

An estimated value for the actual line voltage absolute value is calculated from the alpha and beta amplitudes and serves as the input value for the grid support characteristic.

A smoothing time of less than a line period makes no sense.

If the estimated absolute value deviates from the smoothed measured voltage absolute value by more than 25%, the smoothed measured value is used. This corresponds to a temporary automatic changeover from p5500.1 = 0 to p5500.1 = 1.

For index [3]:

Smoothing time for the measured absolute value of the line voltage if p5500.1 = 1.

The smoothed absolute value of the line voltage is used as the input value for the grid support characteristic.

Setting p5507[3] = 0 deactivates smoothing.

For index [4]:

Minimum time for a non-symmetrical line disturbance for the start of grid support in accordance with the characteristic p5506 and scaling factor p5509[12].

If the tolerance band between the two characteristic starting points is violated for at least this period of time, voltage control in accordance with characteristic will start up.

p5508[0...1] Dynamic grid support Vdc thresholds / Dyn grid Vdc thr

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: C2(2), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7997
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-200 [V]	0 [V]	[0] -50 [V] [1] 0 [V]

Description: Sets the thresholds for the DC link voltage (Vdc) to reduce the reactive current setpoint from dynamic grid support.

A value of 0 deactivates the particular intervention.

For index [0]:

The value represents an offset to the maximum DC link voltage.

For the intervention threshold, the following applies: r0297 + p5508[0]

For index [1]:

The value represents an offset to the setpoint of the DC link voltage.

The following applies to the intervention threshold: p3510 + p3511 + p5508[1]

Index: [0] = Offset overvoltage
[1] = Offset setpoint voltage

Dependency: Refer to: r0297

Note: To avoid imminent shutdown due to a DC link overvoltage, the reactive current setpoint is reduced for dynamic grid support. Instead of this, the available converter current is used as the active current to reduce the DC link voltage.

p5509[0...13] Dynamic grid support scaling values / Dyn grid scal

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7996, 7997, 7998
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.10 [%]	200.00 [%]	[0] 40.00 [%] [1] 40.00 [%] [2] 4.00 [%] [3] 1.00 [%] [4] 100.00 [%] [5] 100.00 [%] [6] 1.00 [%] [7] 0.10 [%] [8] 0.10 [%] [9] 10.00 [%] [10] 5.00 [%] [11] 100.00 [%] [12] 100.00 [%] [13] 3.00 [%]

Description: Sets the scaling values for dynamic grid support.

Recommendation: For index [0]:

If the reactive current setpoint increases to rapidly, at the start of a grid fault, this can result in DC link overvoltages. If possible, we then recommend p5509[0] = 5 ... 10 %.

For index [1]:

In order to guarantee that the support reactive current is kept, even when the Vdc thresholds p5508 are reached, we recommend p5509[1] = 0.1 %.

For index [7]:

If a support reactive current is also required for a non-symmetrical grid faults, then correspondingly p5509[7] must be set > 0.1 % (typically = 100 %).

For index [8]:

If a support reactive current is also required for non-symmetrical grid faults, then we recommend p5509[8] > 20 % in order to reduce Vdc oscillation.

For index [11]:

A value p5509[11] > 30 % can help avoid DC link overvoltages during grid faults.

Index:
[0] = Ramp reactive current at the beginning/end of grid support
[1] = Ramp reactive current when Vdc threshold is overshot
[2] = Ramp reactive current when Vdc threshold is undershot
[3] = Hysteresis line voltage to exit grid support
[4] = Reference voltage scaling
[5] = Current limitation scaling
[6] = Line voltage change for fast negative sequence calculation
[7] = Line asymmetry current limit positive phase-sequence system
[8] = Line asymmetry current limit negative phase-sequence system
[9] = Line asymmetry minimum value for start of grid support
[10] = Line asymmetry maximum value for end of grid support
[11] = Active current limitation scaling
[12] = Grid asymmetry grid support charac. reactive current scaling
[13] = Grid voltage change for fast precontrol adaptation

Dependency: Refer to: p5505, p5506, p5508

Notice: For index [5]:

For devices with r0192.19 = 0 (e.g., Active Line Module Booksize), the maximum apparent current limit can be set to p5509[5] = 80 %.

Note: For index [0]:

Change in the reactive current setpoint (% per ms) at the beginning and end of dynamic grid support.

This avoids sudden changes in the reactive current if the starting points for the line voltage (p5505[0], p5505[2]) are overshot.

For index [1]:

Change in the reactive current setpoint (% per ms) when the maximum Vdc threshold (p5508) is overshot.

To avoid beat phenomena, the following must apply: p5509[1] > p5509[2].

The reactive current ramp is deactivated with p5509[1] = 0.1 %. The reactive current required for dynamic support is also kept, even when the Vdc threshold is reached.

For index [2]:

Change in the reactive current setpoint (% per ms) when the maximum Vdc threshold (p5508) is undershot.

To avoid beat phenomena, the following must apply: p5509[1] > p5509[2].

For index [3]:

Sets the hysteresis for the line voltage to exit grid support (as a percentage of the supply voltage p0210).

To exit grid support, the line voltage must be in the interval reduced by the hysteresis width (the interval is defined with the starting points p5505[0] and p5505[2] and the hysteresis width p5509[3]).

For index [4]:

Sets the scaling factor for the reference voltage for dynamic grid support (as a percentage of the supply voltage p0210).

As a result, the product of p0210 x p5509[4] is applied as the voltage zero.

For index [5]:

Sets the scaling factor for the permissible maximum converter current absolute value for dynamic grid support (as a percentage of the converter maximum current r0209).

Values higher than 100% will not be applied.

Values greater than 80 % can only be set, if the duration that can be set is less than or equal to 3 seconds for the short-circuit state p5528.

For Active Line Module Booksize, the setting value is limited to 80 %.

This value (independent of the grid voltage) is active if the "Dynamic grid support" function is active (p5501 = 1 signal)

For index [6]:

Only active for p5500.3 = 1.

Sets the percentage voltage change (as a percentage of p0210) from which value the calculated positive phase-sequence system and negative phase-sequence system amplitudes are quickly adapted. As a consequence, the grid is quickly supported when step-type faults occur.

For index [7]:

Only active for p5500.3 = 1.

Sets the maximum positive phase-sequence system reactive current absolute value to support the grid in the case of line asymmetry (r5502.2 = 1) as a percentage of r0207.

If a symmetrical support reactive current (positive phase-sequence system current), is also specified for non-symmetrical grid faults, then generally, p5509[7] should be set to = 100 %.

For index [8]:

Only active for p5500.3 = 1.

Sets the maximum negative phase-sequence system absolute current to support the grid in the case of line asymmetry (r5502.2 = 1) as a percentage of r0207.

For the case p5509[7] = 100 %, we recommend setting p5509[8] > 20 %.

For index [9]:

Only active for p5500.3 = 1.

Sets the minimum value of the voltage asymmetry to impress a negative phase-sequence system current for asymmetrical grid support.

For p5500.4 = 1, a negative phase-sequence system current is already impressed, if the voltage asymmetry exceeds the set value.

For p5500.4 = 0, in addition, for at least one of the phase voltages, the tolerance condition from the characteristic p5505 / p5506 must be exceeded.

For index [10]:

Only active for p5500.3 = 1.

Sets the maximum value of the voltage asymmetry to end asymmetrical grid support.

This means that parameters p5509[9] and p5509[10] define a hysteresis range.

For index [11]:

Only active for p5500.3 = 1.

Sets the scaling factor for the permissible negative active current value for dynamic grid support (as a percentage of the converter maximum current r0209).

For index [12]:

Only active for p5500.3 = 1.

Sets the scaling factor for dynamic grid support for 2-phase grid dips. The gradient of the support characteristic p5505/p5506 is scaled using this factor if asymmetry (r5502.2=1) is present. The setting of p5509[0] is applicable for the transition ramp

For index [13]:

Only active for p5500.3 = 1.

If the grid voltage dips by this voltage with respect to the value of p0210, then the voltage precontrol is quickly adapted based on the calculated positive phase-sequence system and negative phase-sequence system amplitudes.

r5510[0...8] CO: Dynamic grid support output / Dyn grid outp

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7987, 7997
P-Group: Displays, signals	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Display and connector output for the reactive current setpoint.

The value is calculated according to the characteristic for dynamic grid support (p5505, p5506).

Index:
[0] = Reactive current setpoint not limited
[1] = Reactive current setpoint Vdc threshold
[2] = Reactive current setpoint ramp
[3] = Reactive current setpoint characteristic
[4] = Negative phase-sequence system active current setpoint unlimited
[5] = Neg phase-sequence system active current setpoint characteristic
[6] = Neg phase-sequence system reactive current setpoint unlimited
[7] = Negative phase-sequence reactive current setpoint characteristic
[8] = Dynamic limiting current setpoint

Dependency: Refer to: p5505, p5506

Notice: For index [0]:

During the ramp-up for the reactive current (r3402 = 8) the signal is not valid.

Note: For index [0]:

Output of characteristic following addition of reactive current setpoints prior to current limitation. The reactive current setpoint applied for current control including dynamic grid support is displayed in r0075.

For index [1]:

Output of characteristic following correction on the basis of the Vdc threshold (p5508).

For index [2]:

Output of characteristic after ramp function.

For index [3]:

Output of characteristic for dynamic grid support.

For index [4]:

Setpoint for the active current in the negative phase-sequence system before current limiting.

For index [5]:

Output of the characteristic for the active current in the negative phase-sequence system.

For index [6]:

Setpoint for the reactive current in the negative phase-sequence system before current limiting.

For index [7]:

Output of the characteristic for the reactive current in the negative phase-sequence system.

For index [8]:

Displays the dynamic current setpoint limiting.

r5511[0...1] CO: Dynamic grid support line voltage amplitude / Dyn grid U ampl

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7996
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Display and connector output for the calculated alpha and beta amplitudes for the line voltage.

The amplitudes are calculated from the alpha and beta coordinates of the actual voltage measured values (p5504).

Index: [0] = Alpha
[1] = Beta

Dependency: Refer to: p5500, p5504

Note: The alpha and beta amplitudes calculated are used to calculate grid support dependent upon the selected configuration (p5500).

Line asymmetry cannot be identified just as a result of unequal alpha and beta amplitudes.

r5512[0...1] CO: Dynamic grid support line voltage absolute value / Dyn grid U abs val

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7996, 7999
P-Group: -	**Unit group:** 5_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Display and connector output for the voltage absolute value calculated from the alpha/beta input voltages (p5504).

Index: [0] = Line voltage characteristic absolute value input
[1] = Line voltage absolute value smoothed

Dependency: Refer to: p5505, p5506

Note: For index [0]:

Displays the effective voltage absolute value for the input of the characteristic for dynamic grid support.

For index [1]:

Displays the voltage absolute value following smoothing of the actual value according to p5507[3].

If p5500.1 = 1, this value is used as the input value for the characteristic.

For p5500.1 = 0, the alpha/beta amplitudes are used to calculate the voltage absolute value (r5511).

r5513[0...3] CO: Dynamic grid support line voltage pos/neg phase-sequence system / Dyn grid U pos/neg

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7996
P-Group: -	**Unit group:** 5_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Display and connector output for the positive phase-sequence system component and negative phase-sequence system component of the line voltage (p5504).

Index: [0] = Positive phase-sequence system active component
[1] = Positive phase-sequence system reactive component
[2] = Negative phase-sequence system active component
[3] = Negative phase-sequence system reactive component

Dependency: Refer to: p5500, p5504

Note: The determined active and reactive voltages of the positive phase-sequence and negative phase-sequence systems are used to calculate grid support dependent upon the selected configuration (p5500.3).

r5514[0...1] CO: Dynamic grid support current setpoint alpha/beta / Dyn grid I a/b

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7997
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [A]	- [A]	- [A]

Description: Display and connector output for the line current setpoint at the input terminals of the power unit in alpha/beta components.

Index:
[0] = Alpha
[1] = Beta

r5515[0...1] CO: Dynamic grid support active power display / Dyn grid P displ

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** r2004	**Expert list:** 1
Min	**Max**	**Factory setting**
- [kW]	- [kW]	- [kW]

Description: Display and connector output for the active power at the defined line connection point via p5503 and p5504.

Index:
[0] = Unsmoothed
[1] = Smoothed

Note: For index [1]:
The value is smoothed using a PT1 filter (smoothing time: p0045).

r5516[0...1] CO: Dynamic grid support reactive power display / Dyn grid Q disp

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 14_12	**Unit selection:** p0505
Not for motor type: -	**Scaling:** r2004	**Expert list:** 1
Min	**Max**	**Factory setting**
- [kvar]	- [kvar]	- [kvar]

Description: Display and connector output for the reactive power at the defined line connection point via p5503 and p5504.

Index:
[0] = Unsmoothed
[1] = Smoothed

Note: For index [1]:
The value is smoothed using a PT1 filter (smoothing time: p0045).

p5518 CI: Dynamic grid support line phase angle signal source / Dyn grid ang S_src

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: T	**Calculated:** -	**Access level:** 4
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2005	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the line phase angle associated with the voltage signal p5504.

Note: For p5518 = 0, the following applies:
The line voltage angle of the voltage source calculated from the line PLL is used (r0094).

p5519 CI: Dynamic grid support line frequency signal source / Line freq S_src

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: T	**Calculated:** -	**Access level:** 4
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the line frequency associated with the voltage signal p5504.

Note: For p5519 = 0, the following applies:

The smoothed line frequency calculated by the line PLL is used (r0066).

p5520 CI: Dynamic grid support FRT current limit signal source / FRT curr lim s_src

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7997
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for the dynamic limiting of the apparent current during FRT (r5502.1 = 1).

The effective current limit is obtained from p5520 * r0209.

Limiting is deactivated with the default setting p5520 = 1.

With p5500.6 = 1, the internal value of the smoothed absolute current (corresponds to r0027), valid at the FRT start, is effective over the complete duration of FRT.

Dependency: Refer to: r0027, p5500, r5502, p5509

Refer to: F06850

r5522.0...3 CO/BO: Dynamic grid support sequence control status word / Dyn grid seq ZSW

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the sequence control status word on the current hysteresis controller.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Initialization	Yes	No	-
01	No load	Yes	No	-
02	Normal	Yes	No	-
03	Short circuit	Yes	No	-

Dependency: Refer to: p5527, p5528, p5529

Refer to: F06850

p5523[0...2] Dynamic grid support overcurrent limit / Dyn grid I lim

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
50.0 [%]	130.0 [%]	[0] 120.0 [%] [1] 120.0 [%] [2] 120.0 [%]

Description: Sets the maximum current for the current limiting of the modulator in the case of an overload or line short-circuit.

Limiting is exited as soon as the absolute current value again falls below the hysteresis threshold (p5523 - p5524).

As a consequence, the resulting maximum basic fundamental amplitude of the current depends on p5523 and p5524.

Only for internal Siemens use.

Index:
[0] = Line parallel operation: No-load operation
[1] = Line parallel operation: Normal operation
[2] = Line parallel operation: Short-circuit operation

Dependency: Refer to: p5524, p5525

Note: The value refers to r0209.

The overcurrent limit (p5523) cannot be set less than or equal to the hysteresis width (p5524).

For p5500.7 = 1, the following applies: A hysteresis band is generated around the setpoint current, which has a width of (p5523 - 100 %) * r0209. Internally, the width of this band is limited to 10%.

p5524[0...2] Dynamic grid support hysteresis width / Dyn grid hyst

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
15.0 [%]	50.0 [%]	20.0 [%]

Description: Sets the hysteresis width for the current limiting intervention of the modulator.

Only for internal Siemens use.

Index:
[0] = Line parallel operation: No-load operation
[1] = Line parallel operation: Normal operation
[2] = Line parallel operation: Short-circuit operation

Dependency: Refer to: p5523

Note: The value refers to r0209.

The hysteresis width (p5524) cannot be set greater than or equal to the overcurrent limit (p5523).

p5525[0...2] Dynamic grid support overcurrent tolerance range / Dyn grid I tol

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
10.0 [%]	100.0 [%]	20.0 [%]

Description: Sets the tolerance range for the second stage of the current limiting.

Only for internal Siemens use.

Index:
[0] = Line parallel operation: No-load operation
[1] = Line parallel operation: Normal operation
[2] = Line parallel operation: Short-circuit operation

Dependency: Refer to: p5523

Note: The value refers to r0209.

If the current absolute value of a phase exceeds the tolerance threshold (p5523 + p5525), then the pulses in all of the line phases are inhibited for one cycle.

If the current actual value increases in spite of this second current limiting stage, then the system fault trips (F30001).

p5526[0...2] Dynamic grid support overcurrent modulator configuration / Dyn grid I config

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	[0] 1000 0000 1010 0000 bin [1] 1000 0000 1010 0000 bin [2] 1000 0000 1011 0000 bin

Description: Sets the configuration for the current hysteresis controller.

Index:
[0] = No-load state
[1] = State normal operation
[2] = Short-circuit operation state

Bit field:

Bit	Signal name	1 signal	0 signal	FP
04	Disable wobbulation amplitude	Yes	No	-
05	Activate extended current limitation control	Yes	No	-
06	Activate isochronous current limitation	Yes	No	-
07	Activate voltage impression with dynamic current limits	Yes	No	-
10	Activate pulse-locking/pulse-dropping function	Pulse-Dropping	Pulse-Locking	-
15	Activate flat-top modulation	Yes	No	-

Note: For bit 04 = 0:

The pulse frequency wobbulation amplitude (p1811) is enabled (only applies if p1810.2 = 1).

For bit 04 = 1:

The pulse frequency wobbulation amplitude (p1811) is disabled (only applies if p1810.2 = 1).

For bit 10:

The setting according to p1810.10 applies.

p5527[0...2] Dynamic grid support changeover pulse frequency / Dyn grid chg f_pul

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
50.0 [%]	200.0 [%]	[0] 100.0 [%] [1] 100.0 [%] [2] 100.0 [%]

Description: Sets the pulse frequency for the operating states of the current hysteresis controller.

Index:
[0] = Pulse frequency in no-load state
[1] = Pulse frequency in normal state
[2] = Pulse frequency in short circuit state

Note: The value refers to p1800.

Only factors of the pulse frequency in p1800 are permitted.

p5528[0...4] Dynamic grid control operating state times / Dyn grid t state

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [s]	10.000 [s]	[0] 1.000 [s] [1] 2.000 [s] [2] 3.000 [s] [3] 0.050 [s] [4] 0.050 [s]

Description: Sets the times for the operating states of the dynamic grid support.

Index:
[0] = Minimum time in normal state
[1] = Maximum time in short circuit state
[2] = Maximum time PLL inhibit
[3] = Wait time fast grid return
[4] = Calibration time fast grid recovery

Dependency: Refer to: p5529

Refer to: A06849, F06850

Note: For index [0]:

Minimum time for operating state "Rated operation" for change to "No-load operation".

For index [1]:

Permissible short-circuit duration.

If the short circuit is not cleared within this time, then the system shuts down with fault F06850.

Values greater than 3 s can only be set if the maximum device current when a short-circuit occurs p5509[5] is limited to 80 %.

For index [2]:

During a grid short-circuit, the grid PLL is inhibited for a maximum of this time in order to prevent loss of orientation to the grid.

For index [3]:

Sets a wait time for the decay of transient processes at the start of a short-circuit (r5502.4 = 1).

After this time expires, a function to quickly identify grid recovery is activated (p5529[7]).

For index [4]:

Sets the calibration time for the function to quickly identify line recovery.

During this time (after wait time p5529[3] expires), automatically all of the actual current and voltage thresholds for the detection function are determined (see p5529[4, 5]).

p5529[0...7] Dynamic grid support sequence control scaling values / Dyn grid seq scal

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	200.0 [%]	[0] 10.0 [%] [1] 5.0 [%] [2] 65.0 [%] [3] 70.0 [%] [4] 15.0 [%] [5] 15.0 [%] [6] 100.0 [%] [7] 105.0 [%]

Description: Sets the scaling values for the transformer magnetization.

Index:
[0] = Minimum current for change from no-load to rated operation
[1] = Maximum current for change from rated to no-load operation
[2] = Minimum voltage for state change to short circuit
[3] = Maximum voltage for change from short circuit to rated operation
[4] = Minimum voltage change to identify grid return
[5] = Minimum current change to identify grid return
[6] = Grid return ruggedness factor
[7] = Grid return fast precontrol voltage

Dependency: Refer to: r5522

Note: For index [0...3]:

Sets the limits for the state change of the current hysteresis controller.

The current value refers to r0209.

The voltage value refers to p0210.

For index [4]:

Sets the voltage change that defines the "Grid return" event (as a percentage of p0210).

For index [5]:

Sets the current change that defines the "Grid return" event (as a percentage of p0207).

For index [6]:

Sets a scaling factor to identify grid return to increase the degree of ruggedness.

For index [7]:

Sets the precontrol value for the step-like (fast) adaptation of the output voltage when identifying a fast grid recovery (as a percentage of von p0210).

p5540 Line monitoring configuration / Line monit config

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: T	**Calculated:** -	**Access level:** 4
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 7999
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0110 0000 0011 bin

Description: Sets the configuration for line monitoring.

Line monitoring is activated using binector input p5541 = 1 signal.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Voltage and frequency monitoring	Yes	No	-
01	AISL frequency shift technique	Yes	No	-
04	FRT voltage time characteristic	Yes	No	7999
05	FRT shutdown delayed	Yes	No	7999
07	FRT frequency-time characteristic	Yes	No	7999
09	Line synchronization voltage/frequency check	Yes	No	-
10	FRT time characteristic separate initiation	Yes	No	-

Dependency: Refer to: p5541

Refer to: F06851

Notice: For bit 00:

Fault F06851 is additionally displayed if, as a result of a line voltage fault, the current control was inhibited (alarm A06205, r03405.2 = 1) - and the inhibit is continuously active while the wait time is elapsing (p5545[0]). To make reference to the temporarily active alarm A06205, fault F06200 is subsequently output.

Note: AISL: Anti Islanding

FRT: Fault Ride Through (riding through a grid fault)

HFRT: High Frequency Ride Through (riding through frequency increases)

HVRT: High Voltage Ride Through (riding through voltage increases)

LFRT: Low Frequency Ride Through (riding through frequency dips)

LVRT: Low Voltage Ride Through (riding through voltage dips)

For bit 00:

The monitoring thresholds of the voltage and frequency criterion are defined using p5543 and p5544. If these thresholds are violated, then this is flagged in status word r5542 bits 6 to 9. If the violation remains during wait time p5545[0], then fault F06851 is output.

For bit 01:

The frequency shift technique actively changes the frequency that is fed in. For islanding formation this results in the permissible frequency bandwidth being violated. Shut down is realized via fault F06851.

For bit 04:

It is only possible to activate the FRT voltage-time characteristic (HVRT, LVRT) when the voltage and frequency monitoring are activated (p5540.0 = 1). The monitoring thresholds p5543 are deactivated. The voltage-time monitoring to be set using p5550 to p5554 applies (display in r5542 bits 10 and 11).

For bit 05:

Sets the response after a voltage dip (LVRT).

0 = immediate shutdown.

1 = shutdown only after the time in p5545[2] has expired.

For bit 07:

It is only possible to activate the FRT frequency-time characteristic (HFRT, LFRT) when the voltage and frequency monitoring are activated (p5540.0 = 1). The monitoring thresholds p5544 are deactivated. The frequency-time monitoring to be set using p5555 to p5559 applies (display in r5542 bits 12 and 13).

For bit 09:

The additional voltage and frequency check is activated when switching on. To do this, before operation is enabled, a check is made against the limits p5543[2, 3] and p5544[2, 3], and the system waits until these limits are maintained (r3402 = 7 or r3402 = 12 when transformer magnetization is active (p5480 > 0)).

If the voltage and frequency limits are violated, then this is indicated in status word r5542 bits 6 to 9.

For bit 10 (only effective for p5540.4 = 1 or p5540.7 = 1):

0 = when the overvoltage or undervoltage limit is violated (p5550[0, 1]), both curves (overvoltage and undervoltage curve) always start at the same time. Correspondingly applies for the frequency-time characteristics.

1 = activation of separate initiation of FRT voltage-time characteristics for an overvoltage or undervoltage event. Correspondingly applies for the frequency-time characteristics.

p5541 BI: Line monitoring activation / Line monit act

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 7999
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to activate line monitoring.

BI: p5541 = 1 signal:

Activating line monitoring.

BI: p5541 = 0 signal:

Deactivating line monitoring.

Dependency: Refer to: p5540

Note: The techniques and monitoring functions selected in the configuration parameter (p5540) are activated.

r5542.0...14 CO/BO: Line monitoring status word / Line monit ZSW

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 7999
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status word of line monitoring.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Line monitoring activated	Yes	No	-
01	Voltage and frequency monitoring active	Yes	No	-
02	AISL frequency shift technique active	Yes	No	-
04	FRT voltage time characteristic active	Yes	No	-
05	FRT frequency time characteristic active	Yes	No	-
06	Voltage monitoring lower threshold violated	Yes	No	-
07	Voltage monitoring upper threshold violated	Yes	No	-
08	Frequency monitoring lower threshold violated	Yes	No	-
09	Frequency monitoring upper threshold violated	Yes	No	-
10	HVRT line fault	Yes	No	-
11	LVRT line fault	Yes	No	-
12	HFRT line fault	Yes	No	-
13	LFRT line fault	Yes	No	-
14	Voltage and frequency monitoring for line synchronization active	Yes	No	-

Note: AISL: Anti Islanding

FRT: Fault Ride Through (riding through a line fault)

For bits 06, 07:

These bits are set if the voltage limits are violated (p5543).

When these limits are no longer violated, then these bits are reset after the wait time in p5545[3] has expired.

For bits 08, 09:

These bits are set if the frequency limits are violated (p5544).

When these limits are no longer violated, then these bits are reset after the wait time in p5545[4] has expired.

For bits 10, 11:

These bits are set if the voltage characteristic thresholds (p5550) are violated.

If, taking into account hysteresis, the limits are no longer violated, then these bits are reset.

For bits 12, 13:

These bits are set if the frequency characteristic thresholds (p5555) are violated.

If, taking into account hysteresis, the limits are no longer violated, then these bits are reset.

p5543[0...3] Line monitoring voltage threshold / Line mon U_thresh

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7999
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
50.0 [%]	150.0 [%]	[0] 110.0 [%] [1] 88.0 [%] [2] 100.0 [%] [3] 100.0 [%]

Description: Sets the voltage thresholds for line monitoring.

The setting is a percentage of p0210.

Index:
[0] = Operation upper
[1] = Operation lower
[2] = Synchronization upper
[3] = Synchronization lower

Dependency: Refer to: F06851

Note: The active thresholds of the voltage criteria are obtained as follows:

Threshold, upper = p0210 x p5543[0]

Threshold, lower = p0210 x p5543[1]

For index [0, 1]:

Effective monitoring limits in operation. Only effective if p5540.4 = 0.

For index [2, 3]:

Effective monitoring limits for line synchronization and for automatic restart.

For a setting of 100 %, the separate limit values are deactivated, and the monitoring limits for regular operation apply (indices 0, 1 independent of p5540.4).

p5544[0...3] Line monitoring frequency threshold / Line mon_f thresh

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7999
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [Hz]	5.0 [Hz]	[0] 0.5 [Hz] [1] 0.7 [Hz] [2] 0.0 [Hz] [3] 0.0 [Hz]

Description: Sets the relative frequency thresholds for line monitoring.

The setting is realized as a deviation from p0211.

Index:
[0] = Operation upper
[1] = Operation lower
[2] = Synchronization upper
[3] = Synchronization lower

Dependency: Refer to: F06851

Note: The active thresholds of the frequency criteria are obtained as follows:

Threshold, upper = p0211 + p5544[0]

Threshold, lower = p0211 - p5544[1]

For index [0, 1]:

Effective monitoring limits in operation. Only effective if p5540.7 = 0.

For index [2, 3]:

Effective monitoring limits for line synchronization and for automatic restart.

With the setting 0 Hz, the separate limit values are deactivated and the monitoring limits for regular operation apply (index 0, 1, independent of p5540.7).

p5545[0...7]	Line monitoring times / Line monit times		
A_INF (Dyn. grid support), R_INF (Dyn. grid support)	**Can be changed:** U, T	**Calculated:** -	**Access level:** 4
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7999
	P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.00 [ms]	300000.00 [ms]	[0] 150.00 [ms] [1] 50.00 [ms] [2] 3000.00 [ms] [3] 0.00 [ms] [4] 0.00 [ms] [5] 2000.00 [ms] [6] 100.00 [ms] [7] 60000.00 [ms]

Description: Sets the time values for line monitoring.

Index:
[0] = Voltage/frequency monitoring wait time
[1] = AISL input angular frequency smoothing time
[2] = FRT LVRT shutdown time
[3] = FRT voltage return wait time
[4] = FRT frequency return wait time
[5] = Reserved
[6] = Line synchronization switch on test duration
[7] = Line synchronization restart test duration

Dependency: Refer to: p5540

Note: AISL: Anti Islanding

FRT: Fault Ride Through (riding through a grid fault)

LVRT: Low Voltage Ride Through (riding through voltage dips)

For index [0]:

Wait time, after which, for continuous violation of the voltage/frequency thresholds, fault F06851 is output (see p5540.0).

For index [1]:

PT1 smoothing time constant for the input angular frequency of the island grid detection (AISL).

For index [2]:

Time, after which for a LVRT (voltage decrease), the system is shutdown. Only valid for p5540.4 = 1 and p5540.5 = 1.

For index [3]:

Wait time, during which the voltage must again lie within the thresholds of the voltage characteristic p5550 (r5542.10=0 and r5542.11 = 0), so that the FRT can be considered to have been completed.

For the value p5545[3] = 0, the following applies: the monitoring characteristic is always completely evaluated, an FRT first ends at instant in time p5551[9] or. p5553[9].

For index [4]:

Wait time, during which the frequency must again lie within the thresholds of the frequency characteristic p5555 (r5542.12=0 and 5542.13 = 0), so that the FRT can be considered to have been completed.

For the value p5545[4] = 0, the following applies: the monitoring characteristic is always completely evaluated, an FRT first ends at instant in time p5556[9] or. p5558[9].

For index [6]:

Duration of the frequency and voltage check (p5543, p5544) of the line supply for a regular switching-on operation.

For index [7]:

Duration of the frequency and voltage check (p5543, p5544) of the line supply for an automatic restart (p1207 and following).

p5547[0] Line monitoring frequencies / Line monit f

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7999
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.01 [Hz]	1.00 [Hz]	0.10 [Hz]

Description: Sets the frequency for line monitoring.

Index: [0] = AISL frequency shift excitation frequency

Note: AISL: Anti Islanding

For index [0]:

For frequency changes below the set excitation frequency, a normal line frequency change is assumed. For frequency changes above the setpoint excitation frequency, the algorithm of anti-islanding is triggered.

p5548[0] Line monitoring gains / Line monit gains

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7999
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-10.00	10.00	0.10

Description: Sets the gains for line monitoring.

Index: [0] = AISL frequency shift frequency deviation

Note: AISL: Anti Islanding

For index [0]:

Sets the gain factor for the frequency deviation for the frequency shift technique.

p5550[0...2] Line monitoring line fault thresholds voltage characteristic / Line mon U_thresh

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7999
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	150.0 [%]	[0] 120.0 [%] [1] 80.0 [%] [2] 5.0 [%]

Description: Sets the voltage activation threshold, which when violated indicates a line fault for the FRT line monitoring.

The setting is a percentage of p0210.

Index:
[0] = HVRT voltage
[1] = LVRT voltage
[2] = Hysteresis voltage

Dependency: This parameter is only effective for p5540.4 = 1.

Note: FRT: Fault Ride Through (riding through a line fault)

HVRT: High Voltage Ride Through

LVRT: Low Voltage Ride Through

The effective voltage activation thresholds are obtained as follows:

Threshold HVRT = p0210 x p5550[0]

Threshold LVRT = p0210 x p5550[1]

When these thresholds are violated, status bit r5542.10 is set = 1 or r5542.11 is set = 1.

If, taking into account hysteresis, the limits are no longer violated, then these bits are reset.

p5551[0...9] Line monitoring HVRT time values / Line monit HVRT t

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7999
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [s]	1000.00 [s]	[0] 0.00 [s] [1] 0.15 [s] [2] 0.70 [s] [3] 1.50 [s] [4] 3.00 [s] [5] 25.00 [s] [6] 50.00 [s] [7] 100.00 [s] [8] 200.00 [s] [9] 300.00 [s]

Description: Sets the time values of the HVRT voltage characteristic.

Index:
[0] = Value 0
[1] = Value 1
[2] = Value 2
[3] = Value 3
[4] = Value 4
[5] = Value 5
[6] = Value 6
[7] = Value 7
[8] = Value 8
[9] = Value 9

Dependency: This parameter is only effective for p5540.4 = 1.

Note: If the voltage does not return to the monitoring range (p5551[9]) within the permissible tolerance range (p5550[0, 2]) then the system is shut down with fault F06851.

p5552[0...9] Line monitoring HVRT voltage values / Line monit HVRT U

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7999
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
101.0 [%]	150.0 [%]	110.0 [%]

Description: Sets the voltage values of the HVRT voltage characteristic.

The setting is a percentage of p0210.

Index:
[0] = Value 0
[1] = Value 1
[2] = Value 2
[3] = Value 3
[4] = Value 4
[5] = Value 5
[6] = Value 6
[7] = Value 7
[8] = Value 8
[9] = Value 9

Dependency: This parameter is only effective for p5540.4 = 1.

Note: The effective thresholds are obtained as follows:

Threshold[index] = p0210 x p5552[index]

p5553[0...9] Line monitoring LVRT time values / Line monit LVRT t

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7999
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [s]	300.00 [s]	[0] 0.00 [s] [1] 0.15 [s] [2] 0.70 [s] [3] 1.50 [s] [4] 3.00 [s] [5] 25.00 [s] [6] 50.00 [s] [7] 100.00 [s] [8] 200.00 [s] [9] 300.00 [s]

Description: Sets the time values of the LVRT voltage characteristic.

Index:
[0] = Value 0
[1] = Value 1
[2] = Value 2
[3] = Value 3
[4] = Value 4
[5] = Value 5
[6] = Value 6
[7] = Value 7
[8] = Value 8
[9] = Value 9

Dependency: This parameter is only effective for p5540.4 = 1.

Note: If the voltage does not return to the monitoring range (p5553[9]) within the permissible tolerance range (p5550[1, 2]) then the system is shut down with fault F06851.

p5554[0...9] Line monitoring LVRT voltage values / Line monit LVRT U

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7999
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	99.0 [%]	90.0 [%]

Description: Sets the voltage values of the LVRT voltage characteristic.

The setting is a percentage of p0210.

Index:
[0] = Value 0
[1] = Value 1
[2] = Value 2
[3] = Value 3
[4] = Value 4
[5] = Value 5
[6] = Value 6
[7] = Value 7
[8] = Value 8
[9] = Value 9

Dependency: This parameter is only effective for p5540.4 = 1.

Note: The effective thresholds are obtained as follows:

Threshold[index] = p0210 x p5554[index]

p5555[0...2] Line monitoring line fault thresholds frequency characteristic / Line mon thresh f

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7999
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-20.0 [Hz]	20.0 [Hz]	[0] 0.5 [Hz] [1] -0.7 [Hz] [2] 0.2 [Hz]

Description: Sets the frequency activation threshold for a line fault for the FRT line monitoring.

The setting is realized as a difference to the rated frequency p0211.

Index:
[0] = HFRT frequency
[1] = LFRT frequency
[2] = Hysteresis frequency

Dependency: This parameter is only effective for p5540.7 = 1.

Note: FRT: Fault Ride Through (riding through a line fault)

HFRT: High Frequency Ride Through

LFRT: Low Frequency Ride Through

For index [0, 1]:

The effective frequency thresholds, which when violated indicate a line fault, are obtained as follows:

Threshold HFRT = p0211 + p5555[0]

Threshold LFRT = p0211 - p5555[1]

When these thresholds are violated, status bit r5542.12 is set = 1 or r5542.13 is set = 1.

If, taking into account hysteresis, the limits are no longer violated, then these bits are reset.

For index [2]:

Only positive values are permitted when setting the hysteresis.

p5556[0...9] Line monitoring HFRT time values / Line monit HFRT t

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7999
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [s]	1000.00 [s]	[0] 0.00 [s] [1] 0.15 [s] [2] 0.70 [s] [3] 1.50 [s] [4] 3.00 [s] [5] 25.00 [s] [6] 50.00 [s] [7] 100.00 [s] [8] 200.00 [s] [9] 300.00 [s]

Description: Setting the time values of the HFRT frequency characteristic.

Index:
[0] = Value 0
[1] = Value 1
[2] = Value 2
[3] = Value 3
[4] = Value 4
[5] = Value 5
[6] = Value 6
[7] = Value 7
[8] = Value 8
[9] = Value 9

Dependency: This parameter is only effective for p5540.7 = 1.

Note: If the frequency does not return to the monitoring range (p5556[9]) within the permissible tolerance range (p5555[0, 2]) then the system is shut down with fault F06851.

p5557[0...9] Line monitoring HFRT frequency values / Line monit HFRT f

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7999
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [Hz]	20.0 [Hz]	1.5 [Hz]

Description: Setting the frequency values of the HFRT frequency characteristic.

The setting is realized as a difference to the rated frequency p0211.

Index:
[0] = Value 0
[1] = Value 1
[2] = Value 2
[3] = Value 3
[4] = Value 4
[5] = Value 5
[6] = Value 6
[7] = Value 7
[8] = Value 8
[9] = Value 9

Dependency: This parameter is only effective for p5540.7 = 1.

p5558[0...9] Line monitoring LFRT time values / Line monit LFRT t

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7999
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [s]	300.00 [s]	[0] 0.00 [s] [1] 0.15 [s] [2] 0.70 [s] [3] 1.50 [s] [4] 3.00 [s] [5] 25.00 [s] [6] 50.00 [s] [7] 100.00 [s] [8] 200.00 [s] [9] 300.00 [s]

Description: Setting the time values of the LFRT frequency characteristic.

Index:
[0] = Value 0
[1] = Value 1
[2] = Value 2
[3] = Value 3
[4] = Value 4
[5] = Value 5
[6] = Value 6
[7] = Value 7
[8] = Value 8
[9] = Value 9

Dependency: This parameter is only effective for p5540.7 = 1.

Note: If the frequency does not return to the monitoring range (p5558[9]) within the permissible tolerance range (p5555[1, 2]) then the system is shut down with fault F06851.

p5559[0...9] Line monitoring LFRT frequency values / Line monit LFRT f

A_INF (Dyn. grid support), R_INF (Dyn. grid support)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7999
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-20.0 [Hz]	0.0 [Hz]	-2.5 [Hz]

Description: Setting the frequency values of the LFRT frequency characteristic.

The setting is realized as a difference to the rated frequency p0211.

Index:
[0] = Value 0
[1] = Value 1
[2] = Value 2
[3] = Value 3
[4] = Value 4
[5] = Value 5
[6] = Value 6
[7] = Value 7
[8] = Value 8
[9] = Value 9

Dependency: This parameter is only effective for p5540.7 = 1.

p5571 BI: Line PLL2 activation signal source / LinePLL2 act s_src

A_INF (Line transf), R_INF (Line transf)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	5499.5

Description: Sets the signal source to activate the PLL2 to determine the frequency, phase angle and amplitude of an external line.

An island grid (p5493[0]) is synchronized to the output signals of PLL2 (r6311[1], r6313, r6314).

BI: p5501 = 1 signal:

Activation of the PLL2.

BI: p5501 = 0 signal:

Deactivation of the PLL2.

Dependency: Refer to: r5572, p5574, r6311, r6313, r6314, r6316

Note: The BiCo interconnections of the PLL2 are preset for an application involving island grid synchronization. However, the PLL2 can be generally used for sinusoidal voltage characteristics.

r5572.0...3 CO/BO: Line PLL2 status word / Line PLL2 status

A_INF (Line transf), R_INF (Line transf)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output for the status word of PLL2.

The value 0 signals is valid values for frequency and voltage within the parameterized tolerance limits.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	PLL deactivated	Yes	No	-
01	PLL not stabilized	Yes	No	-
02	PLL line frequency out of tolerance	Yes	No	-
03	PLL line voltage out of tolerance	Yes	No	-

Dependency: Refer to: p0281, p0282, p0284, p0285, r6311, r6313, r6314, r6316

Note: For bit 00:

It is recommended that the PLL2 should be deactivated if invalid voltage values are present (e.g. when the power supply is shutdown).

After activation initially a PLL synchronization is carried out. An excessively low voltage prevents synchronization from starting and this is displayed using r5572.3...0 = 1011.

For bit 01:

After PLL synchronization starts (r5572.0 = 0) and the settling time has expired, the actual values are valid for phase angle, frequency and amplitude (r5572.1 = 0).

In operation, r5572.1 is set = 1 if the absolute value of the PLL angular error - smoothed over 50 ms - exceeds a value of 7.5 °. The PLL actual values are then no longer valid.

For bit 02:

The tolerance limits are set using p0284 and p0285.

For bit 03:

The tolerance limits are set using p0281 and p0282.

p5574[0...1] CI: Line PLL2 voltage signal source / Line PLL2 U s_src

A_INF (Line transf), R_INF (Line transf)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	[0] 0 [1] 0

Description: Sets the signal source for the voltage to be measured in alpha/beta coordinates.

Index: [0] = Alpha
[1] = Beta

Note: PLL2 is deactivated with input signal 0.

The following interconnection is practical for synchronizing an island grid to another grid (typically: public grid):

- the voltage of the island grid is measured using a VSM (r5461[0] and r5462[0]), which is connected in front of the circuit breaker between the island grid and the ALM.

- the voltage of the external grid is measured using another VSM (r5461[1] and r5462[1]), which is connected in front of the circuit breaker between the external grid and the island grid. The voltages (r5488[3, 4]) transformed to the ALM supply voltage are used as input variables for the PLL2.

p5580 Island grid black start mode / Black start mode

A_INF (Line transf), R_INF (Line transf)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	3	0

Description: Sets the mode for the black start.

An island grid, which at the start has no voltage, can be established using this function. In this case, the ALM acts as the grid voltage source or as grid generator for the connected island grid.

Prerequisite:

Activating function module "Line droop control" (r0108.12 = 1) and line droop operation (p5401).

If value = 0:

The black start is deactivated.

If value = 2:

At the next switch on, a black start is carried out. Here, the precondition is that the line voltage is close to zero (less than p5586[0]). Using the grid droop control, the grid voltage is increased up to the rated value using a ramp function.

If value = 3:

At the next switch on, a black start is carried out if the grid voltage is less than p5586[0]. If on the other hand, a grid is connected within the regular tolerances (p0281, p0282), then a regular switching-on operation is carried out with synchronization to the existing grid voltage.

If, in so doing, transformer magnetization is activated (p5480 = 1), then this is performed.

Value:
0: Deactivated
2: Grid black start completed
3: Grid black start automatic

Notice: A black start is only possible when the grid droop control (p5401) is activated.

A black start is only possible when the transformer test operation mode is deactivated (p5480 <= 1).

The use of feedback signal contacts from the circuit breaker between the Active Interface Module and the island grid is urgently recommended (p0860).

Note: Precondition for establishing a voltage in an island grid is that adequate power is supplied into the ALM DC link (e.g. generator, photovoltaic) as well as control of the DC link voltage using this power generation system. The power requirement of the Island grid must not exceed the power of the generating system - even briefly.

In order to avoid the high inrush currents,when the grid is being established, the voltage is ramped up to the rated value. At the end of the voltage ramp, the system changes over into regular grid droop operation. The ALM then operates as grid-generating voltage source using active and reactive power droop, also with other sources of power in the island grid, in a stable fashion. The other power units can then act as a current source to support the grid or as a voltage source to form a grid. As grid forming unit, then the other power units must also have a grid droop function.

The circuit breaker between the Active Interface Module and the island grid is controlled via binector output r0863.1 Before closing this switch, it is checked as to whether the island grid is in a non-voltage condition. A possibly existing residual voltage in the Active Interface Module is automatically controlled down to zero.

p5581[0...8] Island grid times / Island grid t

A_INF (Line transf), R_INF (Line transf)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.10 [s]	100.00 [s]	[0] 2.00 [s] [1] 1.00 [s] [2] 60.00 [s] [3] 1.00 [s] [4] 0.10 [s] [5] 1.00 [s] [6] 60.00 [s] [7] 1.00 [s] [8] 0.10 [s]

Description: Sets the time parameters for transformer magnetization, black start and island grid synchronization.

Index:
[0] = Black start voltage ramp duration
[1] = Black start circuit breaker bounce time
[2] = Black start maximum time
[3] = Black start checking time
[4] = Black start ramp smoothing time
[5] = Synchronization circuit breaker bounce time
[6] = Synchronization maximum time
[7] = Synchronization check time
[8] = Synchronization ramp smoothing time

Note: For index [0]:

Sets the ramp time for the grid voltage.

The ramp state r5482 = 107 is extended by the settling time, whose duration is obtained according to 3 * (p5427 + p5581[4]).

For index [1]:

Sets the bounce time for the circuit breaker at the line side of the line transformer.

An interruption-free connection between the line supply and the transformer is only guaranteed after the bounce time has expired.

For index [2]:

Sets the permissible maximum time.

If the maximum time elapses without the line being synchronized, fault F06503 is output.

For index [3]:

Sets the test of time for the line voltage before closing the circuit breaker.

The line voltage must be less than the threshold specified in p5586[0].

For index [4]:

Sets the smoothing time constant for an additional PT1 filtering of the voltage ramp.

For index [5]:

Sets the bounce time for the circuit breaker at the line side of the line transformer.

An interruption-free connection between the line supply and the transformer is only guaranteed after the bounce time has expired.

For index [6]:

Sets the permissible maximum time.

If the maximum time elapses without the line being synchronized, fault F06504 is output.

For index [7]:

Sets of the test time for the outer line supply, to which the system should be synchronized (voltage signals r5488[3, 4]). This line supply must maintain the regular tolerance for voltage and frequency (see p0281 ... p0285). The test is realized before synchronizing starts.

For index [8]:

Sets the smoothing time constant for an additional PT1 filtering of the voltage and frequency ramp.

r5582[0...1] CO: Island grid synchronization setpoint control / Island sync setp.

A_INF (Line transf), R_INF (Line transf)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7995
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Display and connector output of the supplementary setpoints for the frequency and voltage control during island grid synchronization.

Index:
[0] = Setpoint ramp frequency
[1] = Setpoint ramp voltage

Notice: In order to avoid equalization operations, after island synchronization has been completed, it is not permissible that supplementary setpoints for frequency and voltage are suddenly set to zero (as step function). This is the reason that after ending synchronization, the setpoints are held constant and reset with the trigger signal p5583[2] = 1.

In the same controller cycle, the signals for smoothed frequency (p5406[0]) and voltage (p5416[0]) are corrected by the corresponding absolute values!

The supplementary setpoints (r5582) are automatically reset when synchronization is canceled and when the grid droop (p5401) is deactivated with a change into regular closed-loop current control operation (with adaptation to the grid frequency).

Note: In the default setting, the setpoints are connected with the unfiltered setpoint inputs (no-load frequency p5406[1], no-load voltage p5416[1]) of the grid droop. While synchronizing the island grid to an external grid, the amplitude, phase angle as well as the frequency of the island grid are adapted in this fashion.

The setpoints for synchronizing can also be used for synchronous voltage and frequency adaptation of additional power generating systems in the island grid.

p5583[0...2] BI: Island grid synchronization signal sources / Island sync s_src

A_INF (Line transf), R_INF (Line transf)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 7989
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	[0] 0 [1] 0 [2] 0

Description: Sets the signal sources for island grid synchronization.

Using the island grid synchronization function, an island grid can be synchronized with an external grid regarding frequency, phase angle and voltage amplitude.

After synchronization has been performed, a circuit breaker between the two grids can be closed (r5493.1).

Index:
[0] = Start
[1] = Circuit breaker feedback signal
[2] = Reset setpoints

Notice: For index [1]:

The feedback signal contact of the circuit breaker between the external grid and the island grid (in front of the grid transformer) must be connected in parallel via binector input p5583[1].

The feedback signal is required for a state change in the synchronization sequence control. This signal is not used to completely monitor the contactor (p0860 and following).

Note: In order to synchronize an island grid with an external grid, frequency, phase position and amplitude of the island grid must be changed in operation!

This assumes that the components of the island grid are suitable for these parameter changes and that the ALM is the only grid generator in the island grid.

For index [0]:

Signal source for the start command to synchronize the island grid with an external grid.

The target values for the synchronization, are the output values of the PLL2 (r6311[1], r6313, r6314).

The PLL2 must be activated at the latest when synchronization starts (p5571, p5574).

For index [1]:

Signal source for the feedback signal of the circuit breaker between the island grid and the external grid.

For index [2]:

Signal source to reset the supplementary setpoints for voltage and frequency(r5582[0, 1]) after island grid synchronization has been completed.

At the same time as the reset command, the external cyclic supplementary setpoints (p5406[0], p5416[0]) must be appropriately adapted.

p5584[0...2] Island grid synchronization controller dynamics / Island synch dyn

A_INF (Line transf), R_INF (Line transf)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7995
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	1000.00 [ms]	[0] 100.00 [ms] [1] 100.00 [ms] [2] 100.00 [ms]

Description: Sets the time constants for the closed-loop control for the island grid synchronization.

Index:
[0] = Angle controller integration time
[1] = Voltage controller integration time
[2] = Control deviation smoothing time

p5585[0...1] Island grid synchronization voltage thresholds / Island sync U_thr

A_INF (Line transf), R_INF (Line transf)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7995
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [V]	300.0 [V]	[0] 35.0 [V] [1] 3.5 [V]

Description: Sets the permissible voltage difference between the space vectors of the line voltage and the Active Line Module (ALM).

Index:
[0] = Unsmoothed
[1] = Smoothed

Dependency: Refer to: p5484

Note: For index [0]:

Sets the permissible absolute value of the instantaneous difference between the voltage in the island grid (r3468[4, 5]) and the voltage of the external grid (r5488[3, 4]). This condition must be met to reach the state r5482 = 204.

For index [1]:

Sets the permissible absolute value of the averaged difference between the voltage in the island grid (r3468[4, 5]) and the voltage of the external grid (r5488[3, 4]). This condition must be met to reach the state r5482 = 204.

p5586[0...6] Island grid scaling values / Island scal_val

A_INF (Line transf), R_INF (Line transf)

Can be changed: C2(2), T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 7995
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.1 [%]	200.0 [%]	[0] 3.0 [%] [1] 0.5 [%] [2] 1.0 [%] [3] 1.0 [%] [4] 4.0 [%] [5] 0.4 [%] [6] 2.0 [%]

Description: Sets the scaling values for black start and island grid synchronization.

Index:
[0] = Black start voltage limit
[1] = Synchronization line angle ramp
[2] = Synchronization frequency ramp
[3] = Synchronization voltage ramp
[4] = Synchronization maximum angular deviation
[5] = Synchronization maximum frequency deviation
[6] = Synchronization maximum voltage deviation

Note: For index [0]:

Sets the limit for the line voltage amplitude (percentage of p0210), below which a black start is performed (for a grid that had no voltage, a grid is established).

Maximum value: 10 %

For index [1]:

Setting the maximum permissible frequency deviation (as a percentage of the rated frequency p0211) for aligning the line phase angle for island grid synchronization.

For index [2]:

Setting the ramp speed for aligning the line frequency for island grid synchronization (as a percentage of the rated frequency p0211 per second).

For index [3]:

Setting the ramp speed for aligning the line voltage for island grid synchronization (as a percentage of the rated voltage p0210 per second).

For index [4]:

Setting the maximum permissible angular deviation (percentage of 360°) between the island grid and external grid for ending the phase angle ramp for island grid synchronization (condition for transitioning into the state r5482 = 203).

For index [5]:

Setting the maximum permissible frequency deviation (percentage of p0211) between the island grid and external grid for ending the frequency ramp for island grid synchronization (condition for transitioning into the state r5482 = 202).

For index [6]:

Setting the maximum permissible voltage deviation (percentage of p0210) between the island grid and external grid for ending the voltage ramp for island grid synchronization (condition for transitioning into the state r5482 = 202).

p5588[0...2] Grid droop control asymmetry times / Grid droop asym T

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [ms]	1000000.0 [ms]	0.0 [ms]

Description: Sets the time values to control an asymmetrical voltage output.

Index:
[0] = Asymmetry duration
[1] = Duration of the start ramp
[2] = Duration of the end ramp

Dependency: Refer to: p5589, p5590, p5591

Notice: The set time values cannot be precisely implemented, but only rounded off to interval limits corresponding to the current controller sampling time (p0115[0]).

Note: For index [0]:

Sets the duration of the asymmetrical voltage output. After reaching the set duration, the asymmetry is exited and the regular symmetrical grid voltage droop becomes active again. To start an additional voltage asymmetry, a 0/1 edge of the activation signal p5591 is first required.

With p5588[0] = 0, the asymmetry set with p5590 is active without any time limit (up until it is deactivated with p5591 = 0).

For index [1]:

Sets the duration of an initial ramp at the start of the asymmetrical voltage output.

When required, with a ramp, overvoltages in systems that are capable of oscillation can be prevented.

The ramp starts as soon as the trigger condition according to p5589 is fulfilled.

During the ramp, the voltage output is changed step-by-step from the regular symmetrical rotating voltage vector into the asymmetry set using p5590.

The ramp is part of the duration of the asymmetrical voltage output set using p5588[0].

With p5588[1] = 0, the ramp is deactivated and the voltage is immediately changed (step function) to the set asymmetry (p5590).

For index [2]:

Sets the duration of an end ramp at the completion of the asymmetrical voltage output.

When required, with a ramp, overvoltages in systems that are capable of oscillation can be prevented.

The ramp starts as soon as the time for the asymmetrical voltage output has expired. As a consequence, the end ramp is not part of the duration set using p5588[0].

During the ramp, the voltage output is changed step-by-step from the asymmetry set using p5590 to the regular symmetrical rotating voltage vector.

With p5588[2] = 0, the ramp is deactivated and the voltage is immediately changed (step function) to the set asymmetry (p5590).

p5589 Grid droop control asymmetry angle / Grid droop asym A

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1.0 [°]	360.0 [°]	-1.0 [°]

Description: Sets the trigger angle for the asymmetrical voltage output.

Dependency: Refer to: p5590, p5591

Notice: The set angular values cannot be precisely implemented, but only rounded off to interval limits corresponding to the current controller sampling time (p0115[0]).

Example:

With p0115[0] = 0.25 ms and a 50 Hz line frequency, an angular resolution of 0.25 ms * 50 Hz * 360 ° = 4.5 ° is obtained.

Note: The function is activated using binector input p5591 = 0/1 signal.

After this function is activated, the start of asymmetry is delayed until the phase angle (r5412) reaches the value of p5589. This means that asymmetrical voltage changes can be implemented, which can be synchronized with the basic fundamental of the grid voltage - and that are reproducible.

With p5589 < 0 °, asymmetry starts immediately with the 0/1 edge, and is therefore not synchronized with the grid voltage.

p5590[0...8] **CI: Grid droop control asymmetry setpoint signal sources / Gr_dr_asym s_src**

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	[0] 5594[0] [1] 5594[1] [2] 5594[2] [3] 5594[3] [4] 5594[4] [5] 5594[5] [6] 5594[6] [7] 5594[7] [8] 5594[8]

Description: Sets the signal sources for scaling the individual phase and line voltages.

This therefore allows asymmetrical voltage sources to be implemented (negative phase-sequence system voltage not equal to 0).

The scaling of phase and line voltages can be freely combined.

As a result of the 3-conductor connection, using the power unit, a zero system cannot be implemented as a result of the inherent operating principle. As a consequence, the sum of the output voltages is always 0.

We recommend that p5594 is used for simple handling based on fixed values.

Index:
[0] = Differential voltage factor RS
[1] = Differential voltage factor ST
[2] = Differential voltage factor TR
[3] = Phase voltage factor R
[4] = Phase voltage factor S
[5] = Phase voltage factor T
[6] = Zero system voltage factor R0
[7] = Zero system voltage factor S0
[8] = Zero system voltage factor T0

Dependency: Refer to: p5415, p5416, p5594

Danger: By scaling the phase voltages, phase short-circuits as well as overcontrol of the phase voltages (with overvoltages and high harmonic components) can be realized.

This means that special care must be taken when using this function.

The complete system with all of the connected components must be designed for the resulting current and voltage levels in order to rule out injury and material damage.

Notice: The voltage control of the grid droop (p5429) uses the symmetrical basic fundamental amplitude (positive phase-sequence system voltage) as control variable. Changing an individual phase voltage therefore results in an undesirable subsequent control of the positive phase sequences system voltage.

In the case of an asymmetrical setpoint voltage due to p5590, we therefore recommend that p5426 = p5427 are set = 0.

For the same reason, generally the modulation depth controller (r5433) must be deactivated.

The setting value of indices 6, 7 and 8 together must add up to 300% in order to ensure that the zero system is completely subdivided. Otherwise, a remaining zero system is automatically distributed internally and symmetrically across all 3 phases.

Note: Using the grid droop function (p5415, p5416), depending on the reactive current actual value, a voltage amplitude is calculated for all 3 grid phases (positive phase-sequence system voltage, r5429). The amplitude of the individual grid phases is obtained by multiplying this positive phase-sequence system voltage by the associated scaling factors p5590[...]. The DC component control (p5436), the harmonic control (p5440) and the interventions when reaching the current limits (p5478) remain active, also for asymmetrical setpoint voltages.

The setting p5590[...] = 1 deactivates the corresponding scaling (as a consequence, internally a value of 100% is active).

For index [0, 1, 2]:

Virtual three-phase voltage source in a delta connection.

Internally, the values are limited to the range 0 ... 100%.

Setpoint voltage amplitude phase RS: U_RS = r5429 * root(2) * p5590[0]

Setpoint voltage amplitude phase ST: U_ST = r5429 * root(2) * p5590[1]

Setpoint voltage amplitude phase TR: U_TR = r5429 * root(2) * p5590[2]

The instantaneous voltages are internally adapted using a transformation matrix so that a zero system-free three-phase voltage system is obtained. For example, a short circuit between phases R and S can be directly emulated using p5590[0].

For index [3, 4, 5]:

Virtual three-phase voltage source in a star connection.

Internally, the values are limited to the range 0 ... 150%.

Setpoint voltage amplitude phase R: U_R = r5429 * root(2/3) * p5590[3]

Setpoint voltage amplitude phase S: U_S = r5429 * root(2/3) * p5590[4]

Setpoint voltage amplitude phase T: U_T = r5429 * root(2/3) * p5590[5]

As the sum of the 3 sinusoidal voltages must be 0 at any particular instant in time, the average value of the instantaneous voltages are subtracted in each phase (i.e. the zero system components are evenly distributed across the 3 branches). For example, this is the reason that p5590[3] = 0% does not result in a DC voltage of 0 in phase R.

For index [6, 7, 8]:

Zero system distribution of the virtual three-phase voltage source in a star connection.

Internally, the values are limited to the range -300 ... 300 %.

Using these factors, it is defined with which component an existing zero system (instantaneous value u0 = (u_R + u_S + u_T)/3) should be subtracted in the individual phases.

Zero system correction phase R: u1_R = u_R - u0 * p5590[6]

Zero system correction phase S: u1_S = u_S - u0 * p5590[7]

Zero system correction phase T: u1_T = u_T - u0 * p5590[8]

In order to obtain a zero system-free U1 system, p5590[6] + p5590[7] + p5590[8] must = 300%. If this condition is violated, then the remaining zero system component is evenly distributed across all 3 branches.

Example:

The combination of p5590[3] = 0% and p5590[6] = 0% results in a voltage 0 in phase R. The phase voltage U_ST keeps its rated value, the sinusoidal curves of the two other differential voltages lie one above the other.

p5591 BI: Grid droop control asymmetry activation / Gr_droop asym act

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to activate asymmetrical phase voltages in the grid droop mode.

BI: p5591 = change, from a 0 signal to a 1 signal:

Activates asymmetry.

BI: p5591 = 0 signal:

Deactivates asymmetry.

Danger: By scaling the phase voltages (p5590), phase short-circuits as well as overcontrol of the phase voltages (with overvoltages and high harmonic components) can be realized. This means that special care must be taken when using this function.

The complete system with all of the connected components must be designed for the resulting current and voltage levels in order to rule out injury and material damage.

Notice: The function is activated with a 0/1 edge.

A fixed value saved in the ROM p5591 = 1 is therefore not sufficient to activate (for instance, after a POWER ON).

Note: The precondition to output asymmetrical voltages is that the grid droop control is activated (p5401 = 1 signal).

Duration and start of the asymmetry can be set with p5588 or p5589.

r5592.0...5 CO/BO: Grid droop control asymmetry status word / Gr_droop asym ZSW

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status word of the asymmetrical grid droop.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Asymmetry deactivated	Yes	No	-
01	Wait for trigger	Yes	No	-
02	Starting ramp active	Yes	No	-
03	Asymmetry active	Yes	No	-
04	End ramp active	Yes	No	-
05	Asymmetry exited	Yes	No	-

Note: For bit 00:

The asymmetrical voltage output is activated via binector input p5591.

The precondition is active grid droop control (r5401.1 = 1).

For bit 05:

Final state after completion of the time-limited asymmetry. To create additional an voltage asymmetry, a new activation edge is required (p5591).

p5594[0...8] CO: Grid droop control asymmetry fixed setpoints / Gr_droop_asym fix

A_INF (Line droop ctrl), R_INF (Line droop ctrl)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	300.00 [%]	100.00 [%]

Description: Setting and connector output of steady state percentage values for the asymmetry (p5590).

Index:
[0] = Differential voltage factor RS
[1] = Differential voltage factor ST
[2] = Differential voltage factor TR
[3] = Phase voltage factor R
[4] = Phase voltage factor S
[5] = Phase voltage factor T
[6] = Zero system voltage factor R0
[7] = Zero system voltage factor S0
[8] = Zero system voltage factor T0

Dependency: Refer to: p5590

r5600 Pe energy-saving mode ID / Pe mode ID

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 2381, 2382
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	-

Description: Displays the PROFIenergy mode ID of the effective energy-saving mode.

Value:
0: POWER OFF
2: Energy-saving mode
240: Operation
255: Ready

Note: Pe: PROFIenergy profiles

For value = 0: This value is displayed in the "First commissioning" state.

p5602[0...1] Pe energy-saving mode pause time minimal / Pe mod t_pause min

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2381
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
300000 [ms]	4294967295 [ms]	[0] 300000 [ms] [1] 480000 [ms]

Description: Sets the minimum possible pause time for the energy-saving mode.

The value is the sum of the following times:

- Energy-saving mode transition time
- Operating state transition time regular
- Energy-saving mode, time of minimum stay

Index:
[0] = Reserved
[1] = Mode 2

Note: It is not permissible that the value is less than the sum of the "energy-saving mode transition time" and the "operating state transition time" (system properties).

Pe: PROFIenergy profiles

p5606[0...1] Pe energy-saving mode time of maximum stay / Pe t_max_stay

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2381
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	4294967295 [ms]	4294967295 [ms]

Description: Sets the time of maximum stay for the energy-saving mode.

Index:
[0] = Reserved
[1] = Mode 2

Note: Pe: PROFIenergy profiles

p5611 Pe energy-saving properties general / Pe properties gen

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2381, 2382
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Sets the general properties for energy-saving.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Inhibit PROFIenergy control commands	Yes	No	-

Note: Pe: PROFIenergy profiles

r5613.0...1 CO/BO: Pe energy-saving active/inactive / Pe save act/inact

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** 2382
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and binector output for the state display PROFIenergy energy saving active or inactive.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Pe active	Yes	No	-
01	Pe inactive	Yes	No	-

Note: Bit 0 and bit 1 are inverse of one another.

Pe: PROFIenergy profiles

p6277[0...n] Reverse field excitation speed setpoint rotat field inversion / RFE n_set revers

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-20000.00 [rpm]	20000.00 [rpm]	0.00 [rpm]

Description: Sets the speed setpoint for rotating field inversion of the stator current in the reverse field exciter.

Dependency: Refer to: p6278

p6278[0...n] Reverse field excit speed setp rotat field inversion hysteresis / n_inverse IE Hyst

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Setpoints	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
-20000.00 [rpm]	20000.00 [rpm]	10.00 [rpm]

Description: Sets the hysteresis of the speed setpoint for rotating field inversion of the stator current in the reverse field exciter.

Dependency: Refer to: p1821, p6277

Caution: When changing the direction of rotation of the main machine using p1821, it must be checked as to whether the phase sequence of the exciter converter must also be changed.

Note: The amount of the value entered in the parameter is dynamically limited to the rated speed of the motor.

The value 0 is not permissible.

The sign of the hysteresis defines the rotating field of the stator current for the reverse field exciter depending on the mechanical direction of rotation.

The hysteresis is symmetrical around the value in parameter p6277.

The direction of rotation reversal using the sign of p6278 is not taken into account when calculating the slip.

r6311[0...1] CO: Line PLL2 frequency / Line PLL2 f

A_INF (Line transf), R_INF (Line transf)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p0514	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Hz]	- [Hz]	- [Hz]

Description: Display and connector output for the line frequency determined with PLL2 for the voltage signals specified in p5574.

Index: [0] = Unsmoothed
[1] = Smoothed

Note: A positive sign of the frequency is obtained when the line supply phases U, V and W are connected with the correct phase sequence.

A negative sign of the frequency is obtained when the 3 line phases are interchanged therefore designating a negative direction of the rotating field of the 3-phase line supply voltage.

For index [0]:

Displays the instantaneous value.

The following applies for the dynamic time constant of the PLL2: p3458[1] * p6423

For index [1]:

Displays the values additionally smoothed with a time constant of 50 ms (suitable for monitoring the frequency).

r6313 CO: Line PLL2 smoothed voltage / Line PLL2 U smth

A_INF (Line transf), R_INF (Line transf)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 6799, 8026
P-Group: Displays, signals	**Unit group:** 5_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Display the rms value calculated with PLL2 for the voltage signals specified in p5574.

Dependency: Refer to: p3472

Note: The following applies to the smoothing time: p3458[1] * p6425

r6314 CO: Line PLL2 phase angle / Line PLL2 ph_angle

A_INF (Line transf), R_INF (Line transf)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2005	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°]	- [°]	- [°]

Description: Display the phase angle calculated with PLL2 for the voltage signals specified in p5574.

r6316 CO: Line PLL2 line supply angle measured / Line PLL2 ang meas

A_INF (Line transf), R_INF (Line transf)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2005	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°]	- [°]	- [°]

Description: Displays the actual value for the phase angle of the voltage signals (p5574) for the PLL2.

p6397 Motor Module phase shift second system / MM ph_sh 2nd sys

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: C2(2), T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	8	0

Description: Sets the phase shift of the second system with respect to the first system for the Motor Module for a 12-pulse gating unit.

Value:
0: Shift by +30 °
1: Shift by -30 °
2: Shift by 0 °
3: Shift by +90 °
4: Shift by -90 °
5: Shift by +120 °
6: Shift by -120 °
7: Shift by +150 °
8: Shift by -150 °

Dependency: Refer to: p7003

Notice: The parameter is only evaluated if p7003 = 2.

Note: For p6397 = 0 the following applies: The second systems leads for a positive direction of rotation.

For p6397 = 1 the following applies: The second systems lags for a positive direction of rotation.

p6420[0...1] Phase shift input voltage VSM to the drive converter / INF U VSM/conv

A_INF (Line transf), R_INF (Line transf)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: All groups	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-180.00 [°]	179.90 [°]	0.00 [°]

Description: Sets the phase shift between the synchronizing voltage measured by the Voltage Sensing Module (VSM) and the actual drive converter input voltage.

Index:
[0] = Supply transformer
[1] = Island grid transformer

Warning: Switching-in with a significantly incorrectly parameterized offset angle (> 5 °) can cause a peak current intervention and / or triggering the crowbar thyristor.

Caution: If this parameter is changed in the "ready for operation" state and if a synchronizing voltage is already available at the VSM, under certain circumstances, a line supply fault can be signaled. When this occurs for the first time after changing the parameter, the fault can be ignored and acknowledged.

Note: This phase shift must be determined when commissioning the system.

Example:

If the converter input voltage (= secondary side voltage of the power transformer) lags the synchronizing voltage measured by the VSM by 30 °, then p6420 should be set to -30°.

p6421[0...1] Line supply voltage sensing gain adaptation / U_line gain

A_INF (Line transf), R_INF (Line transf)

Can be changed: C2(2), T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
50.000 [%]	200.000 [%]	100.000 [%]

Description: Sets the gain factor identified in p6441 to finely calibrate the line voltage detection.

Index:
[0] = Supply transformer
[1] = Island grid transformer

Dependency: Refer to: r6441

p6422 Line supply voltage rotating field direction / U_line field dir

A_INF (Line transf), R_INF (Line transf)

Can be changed: C2(2), T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Setting to reverse the rotating field direction of the synchronizing voltage system measured by the Voltage Sensing Module (VSM).

Value:
0: Rotating field direction positive
1: Rotating field negative

Warning: Only use in an emergency if it is not possible to correct the wiring. Extreme caution must be applied in this case when measuring the phase shift (p6420).

Note: Allows the rotating field direction to be adapted if there is inconsistency in the wiring.

p6423 PLL dynamic / PLL dynamic

A_INF (Line transf), R_INF (Line transf)

Can be changed: C2(2), T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
2.000 [%]	500.000 [%]	20.000 [%]

Description: Sets the dynamic response for the line supply voltage PLL.

Note: Higher values increase the dynamic response but also the tendency of the PLL to oscillate (instability).

p6425 Line voltage active/react. power comp. smoothing time constant / U_line p/q t_smth

A_INF (Line transf), R_INF (Line transf)

Can be changed: C2(2), T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1.000 [ms]	5000.000 [ms]	100.000 [ms]

Description: Sets the smoothing time constant for the active and reactive component of the line supply voltage.

Dependency: Refer to: r6313

r6440 Transf phase offset identified / Tr ph_shift ident

A_INF (Line transf), R_INF (Line transf)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: All groups	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°]	- [°]	- [°]

Description: Displays the phase shift between the primary and secondary voltages of the line transformer identified by automatic transformer identification (p5480 = 12).

Dependency: Refer to: p5480, p6420

Note: The phase shift relates to the primary side of the transformer, which is connected to the line. The secondary side is connected to the infeed.

The display value is reset to 0 at POWER ON.

Example:

A Dy5n transformer has a phase shift of -5 x 30 ° = -150 °.

This means that the secondary voltage is shifted from the primary voltage by -150 °, the primary voltage leads by 150 °.

The result should be entered into p6420. During identification, the value previously entered in p6420 is not effective.

r6441 Transformer gain adaptation identified / Transf gain ident

A_INF (Line transf), R_INF (Line transf)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the gain factor correction identified (p5480 = 12) for fine calibration of the line transformer transformation ratio.

Dependency: Refer to: p6421

Note: The result should be entered in parameter p6421. During identification, the value previously entered in p6421 is not effective.

The display value is reset to 0 at POWER ON.

p6577[0...29] BI: Circuit monitoring functions signal source / I_cct_monit S_src

CU_I

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 8032
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal sources for the current monitoring functions.

BI: p6577[x] = 0 signal

Protective breaker tripped.

BI: p6577[x] = 1 signal

Protective breaker not tripped.

Index:
[0] = Protective breaker trip main circuit
[1] = Protective breaker trip, main circuit 1
[2] = Protective breaker trip, main circuit 2
[3] = Protective breaker trip internal 24 V circuit
[4] = Protective breaker trip internal 24 V circuit 1
[5] = Protective breaker trip internal 24 V circuit 2
[6] = Protective breaker trip external 24 V circuit
[7] = Protective breaker trip external 24 V circuit 1
[8] = Protective breaker trip external 24 V circuit 2
[9] = Protective breaker trip PU supply 24 V circuit
[10] = Protective breaker trip PU supply 24 V circuit 1
[11] = Protective breaker trip PU supply 24 V circuit 2
[12] = Protective breaker trip PLC 24 V circuit
[13] = Protective breaker trip synchronizing voltage
[14] = Protective breaker trip fan circuit
[15] = Protective breaker trip synchronizing voltage 1
[16] = Protective breaker trip synchronizing voltage 2
[17] = Protective breaker trip excitation 230 V AC circuit
[18] = Protective breaker trip output cooling unit 230 V AC circuit
[19] = Protective breaker trip door solenoids 24 V circuit
[20] = Prot. breaker trip lighting supply/socket outlets 230V AC cct
[21] = Protective breaker trip SITOP 24 V circuit
[22] = Protective breaker trip 22

[23] = Protective breaker trip 23
[24] = Protective breaker trip 24
[25] = UPS not ready
[26] = UPS battery operation
[27] = UPS battery discharged
[28] = Protective breaker trip PU supply 400 V circuit
[29] = Protective breaker trip anti-condensation heating

Dependency: Refer to: A49920, A49921, A49922, A49923, A49924, A49926, A49927, A49933, A49934, A49935, A49936, A49937, A49938, A49939

r6587.0...31 CO/BO: Circuit monitoring functions status / I_cct monit stat

CU_I			
	Can be changed: -	**Calculated:** -	**Access level:** 1
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 8032
	P-Group: -	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 0
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the status of the circuit monitoring functions.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Protective breaker trip 0	Yes	No	-
01	Protective breaker trip 1	Yes	No	-
02	Protective breaker trip 2	Yes	No	-
03	Protective breaker trip 3	Yes	No	-
04	Protective breaker trip 4	Yes	No	-
05	Protective breaker trip 5	Yes	No	-
06	Protective breaker trip 6	Yes	No	-
07	Protective breaker trip 7	Yes	No	-
08	Protective breaker trip 8	Yes	No	-
09	Protective breaker trip 9	Yes	No	-
10	Protective breaker trip 10	Yes	No	-
11	Protective breaker trip 11	Yes	No	-
12	Protective breaker trip 12	Yes	No	-
13	Protective breaker trip 13	Yes	No	-
14	Protective breaker trip 14	Yes	No	-
15	Protective breaker trip 15	Yes	No	-
16	Protective breaker trip 16	Yes	No	-
17	Protective breaker trip 17	Yes	No	-
18	Protective breaker trip 18	Yes	No	-
19	Protective breaker trip 19	Yes	No	-
20	Protective breaker trip 20	Yes	No	-
21	Protective breaker trip 21	Yes	No	-
22	Protective breaker trip 22	Yes	No	-
23	Protective breaker trip 23	Yes	No	-
24	Protective breaker trip 24	Yes	No	-
25	Protective breaker trip 25	Yes	No	-
26	Protective breaker trip 26	Yes	No	-
27	Protective breaker trip 27	Yes	No	-
28	Protective breaker trip 28	Yes	No	-
29	Protective breaker trip 29	Yes	No	-
30	Protective breaker subsystem 1 tripped	Yes	No	-
31	Protective breaker subsystem 2 tripped	Yes	No	-

Dependency: Refer to: p6577

p6700[0...n] Voltage model angle smoothing / U_mod ang smooth

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: ASM, PMSM, REL, RESM	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	100 [ms]	0 [ms]

Description: Sets the smoothing of the flux orientation of the voltage model for a separately excited synchronous motor.

p6870[0...n] VSM offset voltage u1 - u2 / VSM offset u1 - u2

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** p0150	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-100.000 [V]	100.000 [V]	0.000 [V]

Description: Offset voltage between phases L1 and L2 for the Voltage Sensing Module (VSM). The value is automatically determined with the drive switched-off and stationary when the offset calculation is enabled. The last determined value is saved if the offset calculation is inhibited. If the offset calculation is inhibited, then a fixed value can also be entered here.

Dependency: Refer to: p6903

Note: Offset calibration is only automatically activated if the resulting motor voltage is less than 1% of the rated voltage.

p6871[0...n] VSM offset voltage u2 - u3 / VSM offset u2 - u3

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** p0150	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-100.000 [V]	100.000 [V]	0.000 [V]

Description: Offset voltage between phases L2 and L3 for the Voltage Sensing Module (VSM).

The value is automatically determined with the drive switched-off and stationary when the offset calculation is enabled. The last determined value is saved if the offset calculation is inhibited. If the offset calculation is inhibited, then a fixed value can also be entered here.

Dependency: Refer to: p6903

Note: Offset calibration is only automatically activated if the resulting motor voltage is less than 1% of the rated voltage.

p6903[0...n] Voltage actual values offset mode / U_ActVal offs mode

VECTOR (n/M), VECTOR_AC (n/M), VECTOR_I_AC (n/M)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** p0150	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	1

Description: Sets the offset mode for voltage actual value sensing.

When the mode is enabled (p6903 = 0), for a pulse inhibit for stator and excitation and zero speed, the offset calibration is automatically started.

Offset calibration is inhibited when the mode is inhibited (p6903 = 1). The values last determined in p6870 and p6871 are saved. However, they can also be overwritten by a fixed value.

Value:
0: Offset calculation enabled
1: Offset calculation inhibited

Dependency: Refer to: p6870, p6871

Note: Offset mode can only be set for actual value sensing functions that are available in the hardware.

r6991[0...4] Recorder settings display / Rec setting displ

SERVO (Rec), VECTOR (Rec), SERVO_AC (Rec), VECTOR_AC (Rec), SERVO_I_AC (Rec), VECTOR_I_AC (Rec), A_INF (Rec), S_INF (Rec), R_INF (Rec), B_INF (Rec)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 8144
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the values calculated for the recorder

Index:
[0] = Actual trace number
[1] = Actual recording time
[2] = Actual pretrigger time
[3] = Actual post trigger time
[4] = Actual number of signals

Dependency: Refer to: p6999

r6992.0...15 CO/BO: Recorder status word / Rec ZSW

SERVO (Rec), VECTOR (Rec), SERVO_AC (Rec), VECTOR_AC (Rec), SERVO_I_AC (Rec), VECTOR_I_AC (Rec), A_INF (Rec), S_INF (Rec), R_INF (Rec), B_INF (Rec)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 8144, 8145
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status word of the recorder.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Internal activation	Set	Not set	-
01	External activation	Set	Not set	-
02	Internal trigger	Set	Not set	-
03	External trigger 1.1	Set	Not set	-
04	External trigger 1.2	Set	Not set	-
05	External trigger 1.3	Set	Not set	-
06	External trigger 1.4	Set	Not set	-
07	External trigger 2.1	Set	Not set	-
08	External trigger 2.2	Set	Not set	-
09	External trigger 2.3	Set	Not set	-
10	Hardware trigger	Set	Not set	-
11	Data buffering running	Yes	No	-
12	Post trigger time running	Yes	No	-
13	Data being stored	Yes	No	-
14	Data buffer full	Yes	No	-
15	Trigger group signal	Set	Not set	-

Dependency: Refer to: p6993, p6994, r6997, p6998, p6999

Refer to: A49998

p6993[0...2] Recorder trigger 2 bit mask / Rec trig 2 mask

SERVO (Rec), VECTOR (Rec), SERVO_AC (Rec), VECTOR_AC (Rec), SERVO_I_AC (Rec), VECTOR_I_AC (Rec), A_INF (Rec), S_INF (Rec), R_INF (Rec), B_INF (Rec)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 8144
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0001 hex

Description: Sets the bit mask for trigger signal 2 (p6994) of the recorder.

Trigger 2.1 is formed by ANDing the signal source in p6994[0] and the bit mask in p6993[0].

Trigger 2.2 is formed by ANDing the signal source in p6994[1] and the bit mask in p6993[1].

Trigger 2.3 is formed by ANDing the signal source in p6994[2] and the bit mask in p6993[2].

Index:
[0] = Trigger 2.1
[1] = Trigger 2.2
[2] = Trigger 2.3

Dependency: Refer to: p6994

p6994[0...2] CI: Recorder trigger 2 signal source / Rec trig 2 S_src

SERVO (Rec), VECTOR (Rec), SERVO_AC (Rec), VECTOR_AC (Rec), SERVO_I_AC (Rec), VECTOR_I_AC (Rec), A_INF (Rec), S_INF (Rec), R_INF (Rec), B_INF (Rec)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: Unsigned32 / Integer32	**Dyn. index:** -	**Func. diagram:** 8144
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for trigger 2 of the recorder.

Trigger 2.1 is formed by ANDing the signal source in p6994[0] and the bit mask in p6993[0].

Trigger 2.2 is formed by ANDing the signal source in p6994[1] and the bit mask in p6993[1].

Trigger 2.3 is formed by ANDing the signal source in p6994[2] and the bit mask in p6993[2].

Index:
[0] = Trigger 2.1
[1] = Trigger 2.2
[2] = Trigger 2.3

Dependency: Refer to: p6993

p6996[0...63] Recorder signals / Rec sig

SERVO (Rec), VECTOR (Rec), SERVO_AC (Rec), VECTOR_AC (Rec), SERVO_I_AC (Rec), VECTOR_I_AC (Rec)	**Can be changed:** U, T	**Calculated:** -	**Access level:** 4
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 8144
	P-Group: Commands	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	996553699	[0] 3600 [1] 3700 [2] 3701 [3] 3703 [4] 3705 [5] 3706 [6] 3707 [7] 3708 [8] 3709 [9] 3710 [10] 3711 [11] 3712 [12] 3713 [13] 3714 [14] 3715 [15] 3716 [16] 3717 [17] 3718 [18] 5600 [19] 6000 [20] 6100 [21] 6300 [22] 6600 [23] 6800 [24] 6900 [25] 6901 [26] 6902 [27] 6906 [28] 7000 [29] 7200 [30] 7300 [31] 7400 [32] 7500 [33] 7600 [34] 7700 [35] 7800 [36] 8000 [37] 8200 [38] 8300 [39] 8400 […] …

Description: Setting to parameterize the signals for the recorder.

p6996[0...63]	Recorder signals / Rec sig		
A_INF (Rec), R_INF (Rec)	**Can be changed:** U, T	**Calculated:** -	**Access level:** 4
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 8144
	P-Group: Commands	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	996553699	[0] 3600 [1] 3700 [2] 3701 [3] 3703 [4] 3705 [5] 3706 [6] 3707 [7] 3708 [8] 3709 [9] 3710 [10] 3713 [11] 3714 [12] 3715 [13] 3716 [14] 3717 [15] 3718 [16] 6600 [17] 6900 [18] 6901 [19] 6902 [20] 6906 [21] 6800 [22] 7000 [23] 7400 [24] 7500 [25] 7600 [26] 7700 [27] 7800 [28] 8200 [29] 8800 [30] 9400 [31] 89800 [32] 89900 [33] 7201 [34] 340200 [35] 355400 [36] 366100 [37] 366200 [38] 183800 [39] 183900 […] …

Description: Setting to parameterize the signals for the recorder.

p6996[0...63] Recorder signals / Rec sig

B_INF (Rec)	**Can be changed:** U, T	**Calculated:** -	**Access level:** 4
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 8144
	P-Group: Commands	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	996553699	[0] 3600 [1] 3700 [2] 3701 [3] 3703 [4] 3711 [5] 3712 [6] 6600 [7] 6800 [8] 7000 [9] 8200 [10] 9400 [11] 89800 [12] 89900 [13] 7200 [14] 183800 [15] 183900 [16] 723000 [17] 723001 [18] 703100 [19...63] 0

Description: Setting to parameterize the signals for the recorder.

p6996[0...63] Recorder signals / Rec sig

S_INF (Rec)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 8144
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	996553699	[0] 3600 [1] 3700 [2] 3701 [3] 3703 [4] 3705 [5] 3706 [6] 3707 [7] 3708 [8] 3709 [9] 3710 [10] 3711 [11] 3712 [12] 3713 [13] 3714 [14] 3715 [15] 3716 [16] 3717 [17] 3718 [18] 6600 [19] 6900 [20] 6901 [21] 6902 [22] 6906 [23] 6800 [24] 7000 [25] 7600 [26] 7700 [27] 7800 [28] 9400 [29] 89800 [30] 89900 [31] 7200 [32] 183800 [33] 183900 [34] 340500 [35] 345200 [36] 344501 [37] 344602 [38] 344700 [39] 366100 […] …

Description: Setting to parameterize the signals for the recorder.

r6997 CO: Recorder sequencer state / Rec state

SERVO (Rec), VECTOR (Rec), SERVO_AC (Rec), VECTOR_AC (Rec), SERVO_I_AC (Rec), VECTOR_I_AC (Rec), A_INF (Rec), S_INF (Rec), R_INF (Rec), B_INF (Rec)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 8145
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	60	-

Description: Display and connector output of the state of the sequencer for the recorder.

Value:
0: Not active
10: Active
20: Post trigger time running
30: Prepare data save operation
40: Start data save
50: End data save
60: Configuration

p6998[0...4] BI: Recorder trigger 1 signal sources / Rec trig 1 S_src

SERVO (Rec), VECTOR (Rec), SERVO_AC (Rec), VECTOR_AC (Rec), SERVO_I_AC (Rec), VECTOR_I_AC (Rec), A_INF (Rec), S_INF (Rec), R_INF (Rec), B_INF (Rec)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 8144
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	[0] 1 [1...4] 0

Description: Sets the signal sources to activate and trigger the recorder.

Index:
[0] = Activating
[1] = Trigger 1.1
[2] = Trigger 1.2
[3] = Trigger 1.3
[4] = Trigger 1.4

p6999[0...4] Recorder parameterization / Rec par

SERVO (Rec), VECTOR (Rec), SERVO_AC (Rec), VECTOR_AC (Rec), SERVO_I_AC (Rec), VECTOR_I_AC (Rec), A_INF (Rec), S_INF (Rec), R_INF (Rec), B_INF (Rec)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 8144, 8145
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	2000	[0] 1 [1] 1000 [2] 900 [3] 0 [4] 0

Description: Setting to parameterize the recorder.

The recorder supplies up to 64 internal variables (depending on the parameterization). The maximum recording time is 2000 ms. The variables are acquired in the current controller sampling time – and a pretrigger can be set. The values can then be acyclically written to the memory card.

The development and system test departments have the software necessary to decode the content.

Index:
[0] = Enable
[1] = Recording time
[2] = Pre-trigger time
[3] = Output message
[4] = Recording factor

Dependency: Refer to: A49998

Note: For index [0]:

Enables or disables the function.

p6999[0] = 0

Inhibits the function.

p6999[0] = 1

Enables the function.

For index [1]:

Sets the recording time, [ms].

A maximum of 8000 measuring points can be recorded across all drive objects. 1 measuring point is created in one current controller sampling time.

Example:

The "Recorder" function module is activated on 4 drive objects. The current controller sampling time (p0115[0]) is 250 µs.

--> every drive object can record a maximum of 8000/4 = 2000 measuring points.

--> the recording time that can be realized is 2000 * 0.250 ms = 500 ms.

Note:

- the recording time that can be realized is displayed in r6991[1].
- if the recording time is set too long, then it is automatically reduced to what can be realized.

For index [2]:

Sets the pretrigger time, [ms].

This time is included in the recording time and cannot be longer than the recording time p6999[1].

Note:

- when the recording time is automatically reduced, the pretrigger time is correspondingly reduced as well.
- the pretrigger time that can be realized is displayed in r6991[2].

For index [3]:

Enables or disables the output of message A49998 when the trigger event is triggered.

For index [4]:

p6999[4] = n, n = 0 ... 4

Recording with the factor, which extends the record time p6999[1] and the pre-trigger time p6999[2] 2^n times, and reduces the number of signals 2^n times.

Example:

Number of drive objects = 1, p0115[0] = 250 µs, p6999[1] = 2000, p6999[2] = 1000, p6999[4] = 4

--> recording time: 2000 ms * 2^4 = 32 s, pre-trigger time:1000 ms * 2^4 = 16 s, number of signals 64/16 = 4.

When setting p6999[4] to 0, the results are as follows:

--> recording time: 2000 ms, pre-trigger time: 1000 ms, number of signals: 64

r7000 CO: Par_circuit No. of active power units / Qty active PU

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel), B_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the active power units for a parallel circuit configuration.

Dependency: Refer to: p7001

p7001[0...n] Par_circuit power units enable / PU enable

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel), B_INF (Parallel)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	1

Description: Setting to enable the power units for a parallel connection.

Value:
0: Deactivated
1: Activated

Dependency: Refer to: r7000

Caution: For a parallel connection, the following applies:

When deactivating individual power units using this parameter, it is not permissible that the power units of the parallel connection involved are connected. Infeed units should be disconnected from the line supply (for example, using a contactor). Motor feeder cables should be disconnected. In addition, defective power units should be disconnected from the DC link.

Note: For motors with separate winding systems (p7003 = 1) it is not possible to inhibit an individual power unit.

p7001 is automatically reset if a power unit is deactivated via p0125 or p0895.

r7002[0...n] CO: Par_circuit status power units / Status PU

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel), B_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	-

Description: Display and connector output for the status of the power units in a parallel connection.

Value:
0: Pulses inhibited
1: Pulses enabled

Dependency: Refer to: r7000, p7001

p7003 Par_circuit winding system / Wind_sys

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel)

Can be changed: C2(2)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	2	0

Description: Specifies the motor winding system when power units are connected in parallel.

Value:
0: One-winding system
1: Several separate winding systems or motors
2: Two separate offset winding systems

Dependency: For p7003 = 2:

In order to permit separate, offset winding systems, wobbulation must first be deactivated (p1810.2 = 0). The magnitude and direction of the offset is parameterized in p6397.

When exiting commissioning, the circulating current control is automatically deactivated (p7035 = 0), and the compensation of the valve interlocking times is replaced by the appropriate stator resistance adaptation (p1780.7 = 1).

Refer to: p1802, p6397

Note: For p7003 = 0:

- the motor data identification routine (p1910) determines the stator resistance and the cable resistance. The cable resistance of an individual Motor Module is entered into p0352.
- the current symmetrizing is activated as standard after the motor data identification routine (p7035 = 1).
- individual Motor Modules can be activated and deactivated (p7001).

For p7003 = 1, 2:

- the motor data identification routine (p1910) determines the total (overall) resistance. The cable resistance is not measured, but instead, entered as a component of the total resistance (refer to p0352).
- all Motor Modules are activated. It is not possible to deactivate a Motor Module.

p7010 Par_circuit current asymmetry alarm threshold / i_asym A thresh

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
2 [%]	100 [%]	20 [%]

Description: Sets the alarm threshold to detect current asymmetry in the parallel circuit configuration.

The deviation between the measured values and average value is evaluated.

The specified value is referred to the rated power unit current (p7251[0]).

Dependency: Refer to: r7251

Refer to: A05052

p7011 Par_circuit DC link voltage asymmetry alarm threshold / Vdc_dissym A thrsh

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel), B_INF (Parallel)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
2 [%]	100 [%]	10 [%]

Description: Sets the alarm threshold to detect asymmetry of the DC link voltages in the parallel circuit configuration.

The deviation between the measured values and average value is evaluated.

The specified value is referred to the rated link voltage.

Dependency: Refer to: A05053

p7015 Par_circuit holding brake power unit data set / Brake PDS

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel)

Can be changed: C2(2), T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 2701, 2814
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	99	99

Description: Sets the power unit data set for a parallel connection via which the holding brake is controlled.

Value:

0: Power unit data set 0
1: Power unit data set 1
2: Power unit data set 2
3: Power unit data set 3
4: Power unit data set 4
5: Power unit data set 5
6: Power unit data set 6
7: Power unit data set 7
99: No holding brake connected

Dependency: Refer to: p0120, p0121

Note: PDS: Power unit Data Set

Example:

3 power units are connected in parallel and the holding brake is connected to power unit 1.

p0120 = 3

p0121[0] = component number of power unit 0

p0121[1] = component number of power unit 1 (with holding brake)

p0121[2] = component number of power unit 2

--> p7015 = 1

r7020[0...n] CO: Par_circuit deviation current in phase U / Phase U curr dev

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 6_5	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [A]	- [A]	- [A]

Description: Displays the deviation between the measured current actual value of phase U and the average value as peak value.

The maximum deviation from the average value is displayed in r7025.

Dependency: Refer to: r7021, r7022, r7025

r7021[0...n] CO: Par_circuit deviation current in phase V / Phase V curr dev

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 6_5	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [A]	- [A]	- [A]

Description: Displays the deviation between the measured current actual value of phase V and the average value as peak value.

The maximum deviation from the average value is displayed in r7026.

Dependency: Refer to: r7020, r7022, r7026

r7022[0...n] CO: Par_circuit deviation current in phase W / Phase W curr dev

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 6_5	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [A]	- [A]	- [A]

Description: Displays the deviation between the measured current actual value of phase W and the average value as peak value.

The maximum deviation from the average value is displayed in r7027.

Dependency: Refer to: r7020, r7021, r7027

r7025 CO: Par_circuit max. deviation currents phase U / Phase U Max i_dev

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 6_5	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [A]	- [A]	- [A]

Description: Displays the maximum absolute deviation of the measured current actual values of phase U from the average value as peak value.

The deviation of the individual currents from the average value is displayed in r7020.

Dependency: Refer to: r7020, r7026, r7027

Refer to: A05052

r7026 CO: Par_circuit max. deviation currents phase V / Phase V Max i_dev

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 6_5	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [A]	- [A]	- [A]

Description: Displays the maximum absolute deviation of the measured current actual values of phase V from the average value as peak value.

The deviation of the individual currents from the average value is displayed in r7021.

Dependency: Refer to: r7021, r7025, r7027

Refer to: A05052

r7027 CO: Par_circuit max. deviation currents phase W / Phase W Max i_dev

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 6_5	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [A]	- [A]	- [A]

Description: Displays the maximum absolute deviation of the measured current actual values of phase W from the average value as peak value.

The deviation of the individual currents from the average value is displayed in r7022.

Dependency: Refer to: r7022, r7025, r7026

Refer to: A05052

r7030[0...n] CO: Par_circuit DC link voltage deviation / Vdc deviation

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel), B_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the deviation of the measured DC link voltage from the average value.

The maximum deviation from the average value is displayed in r7031.

Dependency: Refer to: r7031

r7031 — CO: Par_circuit DC link voltage maximum deviation / Vdc deviation max.

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel), B_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the maximum absolute deviation of the measured DC link voltage from the average value.
The deviation of the individual voltages from the average value is displayed in r7030.

Dependency: Refer to: r7030
Refer to: A05053

p7035[0...n] — Par_circuit circulating current control operating mode / I_cct_ctrl mode

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	1

Description: Sets the operating mode of the circulating current control.
The circulating current control ensures symmetrical distribution of the total currents to the individual converters.

Value:
0: Circulating current control deactivated
1: Circulating current control activated

Dependency: Circulating current control is not possible for separate, offset motor winding systems (p7003 = 2).

p7035 — Infeed par_circuit circulating current control operating mode / I_cct_ctrl mode

A_INF (Parallel), S_INF (Parallel), R_INF (Parallel)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	1

Description: Sets the operating mode of the circulating current control.
The circulating current control ensures symmetrical distribution of the total currents to the individual converters.

Value:
0: Circulating current control deactivated
1: Circulating current control activated

p7036[0...n] — Par_circuit circulating current control proportional gain / Circ_I Kp

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00000 [ohm]	200.00000 [ohm]	0.00000 [ohm]

Description: Sets the proportional gain for the circulating current controller.
The parameter is pre-set to the cable resistance.

p7036 Infeed par_cct circulating current controller proportional gain / Circ_I Kp

A_INF (Parallel), S_INF (Parallel), R_INF (Parallel)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00000 [%]	1000.00000 [%]	100.00000 [%]

Description: Sets the scaled proportional gain for the circulating current controller.

Note: A value of 100 % corresponds to the basic setting derived from loop control parameters (p3421, p3622).

p7037[0...n] Par_circuit circulating current control integral time / I_circ Tn

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel)

Can be changed: U, T	**Calculated:** CALC_MOD_CON	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
2.0	1000.0	4.0

Description: Sets the integral time of the circulating current controller.

The parameter is referred to the current controller sampling time (p0115[0]).

Dependency: Refer to: p0115

Note: Using p7037 = 1000, the integral component is deactivated (held in operation). This is the preferred setting for operation with separate motor winding system.

p7037 Infeed par_cct circulating current control integral time / I_circ Tn

A_INF (Parallel), S_INF (Parallel), R_INF (Parallel)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0 [%]	100000.0 [%]	100.0 [%]

Description: Sets the scaled integral time of the circulating current controller.

Note: A value of 100 % corresponds to the basic setting derived from the current controller sampling time p0115[0].

The integral component of the controller is deactivated with p7037 = 0.

p7038[0...n] Par_circuit circulating current control limit / I_circ limit

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel)

Can be changed: U, T	**Calculated:** CALC_MOD_ALL	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** DDS, p0180	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1 [%]	100 [%]	50 [%]

Description: Sets the limit of the circulating current controller output values.

The parameter is, depending on the phase, referred to the valve lockout times (p1828, p1829, p1830).

p7038 Infeed par_circuit circulating current control limit / I_circ limit

A_INF (Parallel), S_INF (Parallel), R_INF (Parallel)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1 [%]	100 [%]	100 [%]

Description: Sets the limit of the circulating current controller output values.

The parameter is, depending on the phase, referred to the valve lockout times (p1828, p1829, p1830).

p7040[0...n] Par_circuit correction valve lockout time phase U / Comp t_lockout U

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000000.00 [µs]	1000000.00 [µs]	0.00 [µs]

Description: For the particular Motor Module, the correction time must be added to the valve lockout time to be compensated for phase U (p1828).

The corrective value is used to compensate variations/spread in the valve lockout times of Motor Modules for a parallel circuit configuration.

Dependency: Refer to: p1828

p7042[0...n] Par_circuit correction valve lockout time phase V / Comp t_lockout V

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000000.00 [µs]	1000000.00 [µs]	0.00 [µs]

Description: For the particular Motor Module, the correction time must be added to the valve lockout time to be compensated for phase V (p1829).

The corrective value is used to compensate variations/spread in the valve lockout times of Motor Modules for a parallel circuit configuration.

Dependency: Refer to: p1829

p7044[0...n] Par_circuit correction valve lockout time phase W / Comp t_lockout W

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel)

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Modulation	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1000000.00 [µs]	1000000.00 [µs]	0.00 [µs]

Description: For the particular Motor Module, the correction time must be added to the valve lockout time to be compensated for phase W (p1830).

The corrective value is used to compensate variations/spread in the valve lockout times of Motor Modules for a parallel circuit configuration.

Dependency: Refer to: p1830

r7050[0...n] Par_circuit circulating current phase U / Circ_I_phase U

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 6_5	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [A]	- [A]	- [A]

Description: Displays the circulating current of phase U as peak value.

r7051[0...n] Par_circuit circulating current phase V / Circ_I_phase V

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 6_5	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [A]	- [A]	- [A]

Description: Displays the circulating current of phase V as peak value.

r7052[0...n] Par_circuit circulating current phase W / Circ_I_phase W

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 6_5	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [A]	- [A]	- [A]

Description: Displays the circulating current of phase W as peak value.

r7100[0...99] Par_circuit ring buffer fault/alarm code / Fault/alarm code

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel), B_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Ring buffer for faults and alarms that have occurred from power units connected in parallel (Motor Module, Active Line Infeed, Voltage Sensing Module).

Displays the fault/alarm code.

Dependency: Refer to: r7101, r7102, r7103

Note: The last fault case that occurred is documented in index 0.

The parameter is reset to 0 at POWER ON.

r7101[0...99] Par_circuit ring buffer data set number / Ring buffer Ds_no

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel), B_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Ring buffer for faults and alarms that have occurred from power units connected in parallel (Motor Module, Active Line Infeed, Voltage Sensing Module).

p7101 < 100:

Displays the Power unit Data Set number (PDS).

p7101 >= 100:

Displays the Voltage Sensing Module Data Set number (VSMDS)

Dependency: Refer to: r7100, r7102, r7103

Note: The last fault case that occurred is documented in index 0.

The parameter is reset to 0 at POWER ON.

r7102[0...99] Par_circuit ring buffer fault/alarm received / F/A received

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel), B_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Ring buffer for faults and alarms that have occurred from power units connected in parallel (Motor Module, Active Line Infeed, Voltage Sensing Module).

Displays the relative system runtime when the fault or alarm occurred.

Dependency: Refer to: r7100, r7101, r7103

Note: The last fault case that occurred is documented in index 0.

The parameter is reset to 0 at POWER ON.

r7103[0...99] Par_circuit ring buffer fault/alarm gone / F/A gone

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel), B_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Ring buffer for faults and alarms that have occurred from power units connected in parallel (Motor Module, Active Line Infeed, Voltage Sensing Module).

Displays the relative system runtime when the fault or alarm was withdrawn.

Dependency: Refer to: r7100, r7101, r7102

Note: The last fault case that occurred is documented in index 0.

The parameter is reset to 0 at POWER ON.

r7199[0...n]	**Par_circuit power unit temperatures capacitor air discharge / PU temp capacitor**		
VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel), B_INF (Parallel)	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
	P-Group: Displays, signals	**Unit group:** 21_1	**Unit selection:** p0505
	Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [°C]	- [°C]	- [°C]

Description: Displays the air discharge temperature of the DC link capacitors in the power unit for a parallel connection.
The maximum value of all power units is displayed in r0037[20].

r7200[0...n]	**Par_circuit power unit overload I2t / PU overload I2t**		
VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel)	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
	P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [%]	- [%]	- [%]

Description: Displays the overload of the particular power unit in a parallel circuit configuration calculated using the I2t function.
The maximum value of all power units is displayed in r0036.

r7201[0...n]	**CO: Par_circuit power unit temperatures max. inverter / PU temp max inv**		
VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel), B_INF (Parallel)	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
	P-Group: Displays, signals	**Unit group:** 21_1	**Unit selection:** p0505
	Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [°C]	- [°C]	- [°C]

Description: Displays the maximum inverter temperature in the power unit for a parallel circuit configuration.
The maximum value of all power units is displayed in r0037[0].

r7202[0...n]	**Par_circuit power unit temperatures max. depletion layer / PU TempMaxDepLayer**		
VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel), B_INF (Parallel)	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
	P-Group: Displays, signals	**Unit group:** 21_1	**Unit selection:** p0505
	Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [°C]	- [°C]	- [°C]

Description: Displays the maximum depletion layer temperature in the power unit for a parallel circuit configuration.
The maximum value of all power units is displayed in r0037[1].

r7203[0...n] CO: Par_circuit power unit temperatures max. rectifier / PU temp max rect

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel), B_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 21_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°C]	- [°C]	- [°C]

Description: Displays the maximum rectifier temperature in the power unit for a parallel circuit configuration.
The maximum value of all power units is displayed in r0037[2].

r7204[0...n] CO: Par_circuit power unit temperatures air intake / PU temp air intake

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel), B_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 21_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°C]	- [°C]	- [°C]

Description: Displays the air intake temperature in the power unit for a parallel circuit configuration.
The maximum value of all power units is displayed in r0037[3].

r7205[0...n] Par_circuit power unit temperatures electronics / PU temp electr

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel), B_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 21_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°C]	- [°C]	- [°C]

Description: Displays the temperature of the electronics module in the power unit for a parallel circuit configuration.
The maximum value of all power units is displayed in r0037[4].

r7206[0...n] Par_circuit power unit temperatures inverter 1 / PU temp inv 1

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel), B_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 21_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°C]	- [°C]	- [°C]

Description: Displays the inverter temperature 1 in the power unit for a parallel circuit configuration.
The maximum value of all power units is displayed in r0037[5].

r7207[0...n] Par_circuit power unit temperatures inverter 2 / PU temp inv 2

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel), B_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 21_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°C]	- [°C]	- [°C]

Description: Displays the inverter temperature 2 in the power unit for a parallel circuit configuration.
The maximum value of all power units is displayed in r0037[6].

r7208[0...n] Par_circuit power unit temperatures inverter 3 / PU temp inv 3

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel), B_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 21_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°C]	- [°C]	- [°C]

Description: Displays the inverter temperature 3 in the power unit for a parallel circuit configuration.
The maximum value of all power units is displayed in r0037[7].

r7209[0...n] Par_circuit power unit temperatures inverter 4 / PU temp inv 4

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel), B_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 21_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°C]	- [°C]	- [°C]

Description: Displays the inverter temperature 4 in the power unit for a parallel circuit configuration.
The maximum value of all power units is displayed in r0037[8].

r7210[0...n] Par_circuit power unit temperatures inverter 5 / PU temp inv 5

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel), B_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 21_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°C]	- [°C]	- [°C]

Description: Displays the inverter temperature 5 in the power unit for a parallel circuit configuration.
The maximum value of all power units is displayed in r0037[9].

r7211[0...n] Par_circuit power unit temperatures inverter 6 / PU temp inv 6

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel), B_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 21_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°C]	- [°C]	- [°C]

Description: Displays the inverter temperature 6 in the power unit for a parallel circuit configuration.
The maximum value of all power units is displayed in r0037[10].

r7212[0...n] Par_circuit power unit temperatures inverter 1 / PU temp rect 1

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel), B_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 21_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°C]	- [°C]	- [°C]

Description: Displays rectifier temperature 1 in the power unit for a parallel circuit configuration.
The maximum value of all power units is displayed in r0037[11].

r7213[0...n] Par_circuit power unit temperatures inverter 2 / PU temp rect 2

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel), B_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 21_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°C]	- [°C]	- [°C]

Description: Displays rectifier temperature 2 in the power unit for a parallel circuit configuration.
The maximum value of all power units is displayed in r0037[12].

r7214[0...n] Par_circuit power unit temperatures depletion layer 1 / PU temp DepLayer 1

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel), B_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 21_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°C]	- [°C]	- [°C]

Description: Displays depletion layer temperature 1 in the power unit for a parallel circuit configuration.
The maximum value of all power units is displayed in r0037[13].

r7215[0...n]	Par_circuit power unit temperatures depletion layer 2 / PU temp DepLayer 2		
VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel), B_INF (Parallel)	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
	P-Group: Displays, signals	**Unit group:** 21_1	**Unit selection:** p0505
	Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [°C]	- [°C]	- [°C]

Description: Displays depletion layer temperature 2 in the power unit for a parallel circuit configuration.
The maximum value of all power units is displayed in r0037[14].

r7216[0...n]	Par_circuit power unit temperatures depletion layer 3 / PU temp DepLayer 3		
VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel), B_INF (Parallel)	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
	P-Group: Displays, signals	**Unit group:** 21_1	**Unit selection:** p0505
	Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [°C]	- [°C]	- [°C]

Description: Displays depletion layer temperature 3 in the power unit for a parallel circuit configuration.
The maximum value of all power units is displayed in r0037[15].

r7217[0...n]	Par_circuit power unit temperatures depletion layer 4 / PU temp DepLayer 4		
VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel), B_INF (Parallel)	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
	P-Group: Displays, signals	**Unit group:** 21_1	**Unit selection:** p0505
	Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [°C]	- [°C]	- [°C]

Description: Displays depletion layer temperature 4 in the power unit for a parallel circuit configuration.
The maximum value of all power units is displayed in r0037[16].

r7218[0...n]	Par_circuit power unit temperatures depletion layer 5 / PU temp DepLayer 5		
VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel), B_INF (Parallel)	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
	P-Group: Displays, signals	**Unit group:** 21_1	**Unit selection:** p0505
	Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [°C]	- [°C]	- [°C]

Description: Displays depletion layer temperature 5 in the power unit for a parallel circuit configuration.
The maximum value of all power units is displayed in r0037[17].

r7219[0...n] Par_circuit power unit temperatures depletion layer 6 / PU temp DepLayer 6

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel), B_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 21_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°C]	- [°C]	- [°C]

Description: Displays depletion layer temperature 6 in the power unit for a parallel circuit configuration.
The maximum value of all power units is displayed in r0037[18].

r7220[0...n] CO: Par_circuit drive output current maximum / Drv I_outp max

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the maximum output current of the power unit.
The minimum value of all power units multiplied by the number of Motor Modules is displayed in r0067.

r7220[0...n] Infeed par_circuit absolute current value motoring permissible / INF I_abs mot perm

A_INF (Parallel), S_INF (Parallel), R_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the currently permissible line-side absolute current when motoring.
The minimum value of all power units multiplied by the number of Motor Modules is displayed in r0067[0].

r7221[0...n] Infeed par_circuit absolute current regenerating permissible / INF I_absRegenPerm

A_INF (Parallel), S_INF (Parallel), R_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the currently permissible line-side absolute regenerative current.
The minimum value of all power units multiplied by the number of Motor Modules is displayed in r0067[1].

r7222[0...n] CO: Par_circuit absolute current actual value / I_act abs val

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 6_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays actual absolute current.
The summed value of all power units is displayed in r0068.

r7223[0...n] CO: Par_circuit phase current actual value phase U / I_phase U act val

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 6_5	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [A]	- [A]	- [A]

Description: Displays the measured actual value of phase U as peak value.
The summed value of all power units is displayed in r0069[0].

r7224[0...n] CO: Par_circuit phase current actual value phase V / I_phase V act val

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 6_5	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [A]	- [A]	- [A]

Description: Displays the measured actual value of phase V as peak value.
The summed value of all power units is displayed in r0069[1].

r7225[0...n] CO: Par_circuit phase current actual value phase W / I_phase W act val

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 6_5	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [A]	- [A]	- [A]

Description: Displays the measured actual value of phase W as peak value.
The summed value of all power units is displayed in r0069[2].

r7226[0...n] CO: Par_circuit phase current actual value phase U offset / I_phase U offset

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 6_5	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [A]	- [A]	- [A]

Description: Displays the measured offset of phase U as peak value.
The summed value of all power units is displayed in r0069[3].

r7227[0...n] CO: Par_circuit phase current actual value phase V offset / I_phase V offset

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 6_5	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [A]	- [A]	- [A]

Description: Displays the measured offset of phase V as peak value.
The summed value of all power units is displayed in r0069[4].

r7228[0...n] CO: Par_circuit phase current actual value phase W offset / I_phase W offset

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 6_5	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [A]	- [A]	- [A]

Description: Displays the measured offset of phase W as peak value.
The summed value of all power units is displayed in r0069[5].

r7229[0...n] CO: Par_circuit phase current actual value sum U, V, W / I_phase sum UVW

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 6_5	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [A]	- [A]	- [A]

Description: Display and connector output for the measured sum of the currents in phases U, V and W as instantaneous value.
The summed value of all power units is displayed in r0069[6].

r7230[0...n] CO: Par_circuit DC link voltage actual value / Vdc_act

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel), B_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 5_2	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the measured actual value of the DC link voltage.
The average value of all power units is displayed in r0070.

r7231[0...n] CO: Par_circuit phase voltage actual value phase U / U_phase U act val

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), S_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 5_3	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the actual voltage, phase U.
The average value of all power units is displayed in r0089[0].

r7231[0...n] CO: Par_circuit phase voltage actual value phase U / U_phase U act val

A_INF (Parallel), R_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 5_3	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the actual voltage, phase U.

r7232[0...n] CO: Par_circuit phase voltage actual value phase V / U_phase V act val

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), S_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 5_3	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the actual voltage, phase V.

The average value of all power units is displayed in r0089[1].

r7232[0...n] CO: Par_circuit phase voltage actual value phase V / U_phase V act val

A_INF (Parallel), R_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 5_3	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the actual voltage, phase V.

r7233[0...n] CO: Par_circuit phase voltage actual value phase W / U_phase W act val

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), S_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 5_3	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the actual voltage, phase W.

The average value of all power units is displayed in r0089[2].

r7233[0...n] CO: Par_circuit phase voltage actual value phase W / U_phase W act val

A_INF (Parallel), R_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** 5_3	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the actual voltage, phase W.

r7240[0...n] Par_circuit gating unit status word 1 / Gating unit ZSW1

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned16	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Displays, signals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays status word 1 of the power unit.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Fault time-critical	ON	OFF	-
01	Gating unit mode bit 0	ON	OFF	-
02	Pulse enable	ON	OFF	-
03	Upper switch-off signal path	Inactive	Active	-
04	Lower switch-off signal path	Inactive	Active	-

05	Gating unit mode bit 1	ON	OFF	-
06	Gating unit mode bit 2	ON	OFF	-
07	Brake state	ON	OFF	-
08	Brake diagnostics	ON	OFF	-
09	Armature short-circuit braking	Active	Not active	-
10	Gating unit state bit 0	ON	OFF	-
11	Gating unit state bit 1	ON	OFF	-
12	Gating unit state bit 2	ON	OFF	-
13	Alarm status bit 0	ON	OFF	-
14	Alarm status bit 1	ON	OFF	-
15	Diagnostics 24 V	ON	OFF	-

r7250[0...4] Par_circuit power unit rated power / PU P_rated

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel), B_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** 14_6	**Unit selection:** p0100
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [kW]	- [kW]	- [kW]

Description: Displays the rated power of the individual power units connected in parallel for various load duty cycles.

The sum of the rated powers of all power units connected in parallel is displayed in r0206.

Index:
[0] = Rated value
[1] = Load duty cycle with low overload
[2] = Load duty cycle with high overload
[3] = S1 cont duty cyc
[4] = S6 load duty cycle

Dependency: The value is displayed in [kW] or [hp].

Refer to: p0100, p0205

r7251[0...4] Par_circuit power unit rated current / PU PI_rated

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel), B_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the rated current of the individual power units connected in parallel for various load duty cycles.

The sum of the rated currents of all power units connected in parallel is displayed in r0207.

Index:
[0] = Rated value
[1] = Load duty cycle with low overload
[2] = Load duty cycle with high overload
[3] = S1 cont duty cyc
[4] = S6 load duty cycle

Dependency: Refer to: p0205

r7252[0...4] Par_circuit maximum power unit current / PU I_max

VECTOR (Parallel), VECTOR_AC (Parallel), VECTOR_I_AC (Parallel), A_INF (Parallel), S_INF (Parallel), R_INF (Parallel), B_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the maximum output current of the individual power units connected in parallel.

The sum of the maximum currents of all power units connected in parallel is displayed in r0209.

Index:
[0] = Rated value
[1] = Load duty cycle with low overload
[2] = Load duty cycle with high overload
[3] = S1 cont duty cyc
[4] = S6 load duty cycle

Dependency: Refer to: p0205

r7300[0...n] CO: Par_circuit VSM input line voltage u1 - u2 / VSM inp u1-u2

A_INF (Parallel), S_INF (Parallel), R_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** p0140	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the voltage between phases L1 and L2 of the particular Voltage Sensing Module (VSM) for a parallel circuit configuration.

The average value of all VSMs is displayed in r3661.

Dependency: Refer to: p3660

Note: X521.1 or X522.1: Connection of L1

X521.2 or X522.2: Connection of L2

r7301[0...n] CO: Par_circuit VSM input line voltage u2 - u3 / VSM inp u2-u3

A_INF (Parallel), S_INF (Parallel), R_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** p0140	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the voltage between phases L2 and L3 of the particular Voltage Sensing Module (VSM) for a parallel circuit configuration.

The average value of all VSMs is displayed in r3662.

Dependency: Refer to: p3660

Note: X521.2 or X522.2: Connection of L2

X521.3 or X522.3: Connection of L3

r7305[0...n] Par_circuit VSM temperature evaluation status / VSM temp status

A_INF (Parallel), S_INF (Parallel), R_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** p0140	**Func. diagram:** -
P-Group: Terminals	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status of the temperature evaluation of the particular Voltage Sensing Module (VSM) for a parallel circuit configuration.

This displays whether the temperature actual value has exceeded the fault/alarm threshold.

The overall status of the temperature evaluation of all VSMs is displayed in r3664.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Alarm is present	Yes	No	-
01	Fault is present	Yes	No	-

Dependency: Refer to: p3665, r3666, p3667, p3668

r7306[0...n] CO: Par_connect VSM temperature actual value / VSM Temp_ActVal

A_INF (Parallel), S_INF (Parallel), R_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** p0140	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** 21_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2006	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°C]	- [°C]	- [°C]

Description: Displays the temperature actual value of a temperature sensor connected to the Voltage Sensing Module (VSM) for a parallel connection.

The maximum value is displayed in r3666.

Prerequisite:

A KTY/PT1000 temperature sensor is connected, and p3665 is set = 2, 6.

Dependency: Refer to: p3665

r7310[0...n] CO: Par_circuit VSM 10 V input CT1 actual value / VSM CT 1 I_act

A_INF (Parallel), S_INF (Parallel), R_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** p0140	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [A]	- [A]	- [A]

Description: Displays the current actual value from current transducer (CT) 1 at the 10 V input of the particular Voltage Sensing Module (VSM) for a parallel circuit configuration.

The average value of all VSMs is displayed in r3671.

Dependency: Refer to: p3670

Note: The CT for phase 1 is connected at terminals X520.1 and X520.2 of the VSM.

r7311[0...n] CO: Par_circuit VSM 10 V input CT2 actual value / VSM CT 2 I_act

A_INF (Parallel), S_INF (Parallel), R_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** p0140	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2002	**Expert list:** 1
Min	**Max**	**Factory setting**
- [A]	- [A]	- [A]

Description: Displays the current actual value from current transducer (CT) 2 at the 10 V input of the particular Voltage Sensing Module (VSM) for a parallel circuit configuration.

The average value of all VSMs is displayed in r3672.

Dependency: Refer to: p3670

Note: The CT for phase 2 is connected at terminals X520.3 and X520.4 of the VSM.

r7315[0...n] CO: Par_circuit VSM 10 V input 1 actual value / VSM inp 1 U_act

A_INF (Parallel), S_INF (Parallel), R_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** p0140	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the actual value of the voltage measured at the 10 V input 1 of the Voltage Sensing Modules (VSM).
The average value of all VSM is displayed in r3673.

Dependency: Refer to: p3670

Note: 10 V input 1: Terminals X520.1 and X520.2

r7316[0...n] CO: Par_circuit VSM 10 V input 2 actual value / VSM inp 2 U_act

A_INF (Parallel), S_INF (Parallel), R_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** p0140	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** p2001	**Expert list:** 1
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the actual value of the voltage measured at the 10 V input 2 of the Voltage Sensing Modules (VSM).
The average value of all VSMs is displayed in r3674.

Dependency: Refer to: p3670

Note: 10 V input 2: Terminals X520.3 and X520.4

r7320[0...n] Par_circuit VSM line filter capacitance phase U / VSM filt C phase U

A_INF (Parallel), S_INF (Parallel), R_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** p0140	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [µF]	- [µF]	- [µF]

Description: Displays the capacitance of the line filter, phase U of the particular Voltage Sensing Module (VSM).
The average value of all VSMs is displayed in r3677[0].

Dependency: Refer to: p3676

Note: Prerequisites:
The monitoring of the filter capacitance is activated.

r7321[0...n] Par_circuit VSM line filter capacitance phase V / VSM filt C phase V

A_INF (Parallel), S_INF (Parallel), R_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** p0140	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [µF]	- [µF]	- [µF]

Description: Displays the capacitance of the line filter, phase V of the particular Voltage Sensing Module (VSM).
The average value of all VSMs is displayed in r3677[1].

Dependency: Refer to: p3676

Note: Prerequisites:
The monitoring of the filter capacitance is activated.

r7322[0...n] Par_circuit VSM line filter capacitance phase W / VSM filt C phase W

A_INF (Parallel), S_INF (Parallel), R_INF (Parallel)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** p0140	**Func. diagram:** -
P-Group: Closed-loop control	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [µF]	- [µF]	- [µF]

Description: Displays the capacitance of the line filter, phase W of the particular Voltage Sensing Module (VSM).

The average value of all VSMs is displayed in r3677[2].

Dependency: Refer to: p3676

Note: Prerequisites:

The monitoring of the filter capacitance is activated.

r7758[0...19] KHP Control Unit serial number / KHP CU ser_no

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the actual serial number of the Control Unit.

The individual characters of the serial number are displayed in the ASCII code in the indices.

For the commissioning tool, the ASCII characters are displayed uncoded.

Dependency: Refer to: p7765, p7766, p7767, p7768

Notice: An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.

Note: KHP: Know-How Protection

p7759[0...19] KHP Control Unit reference serial number / KHP CU ref ser_no

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Sets the reference serial number for the Control Unit.

Using this parameter, if a Control Unit and/or a memory card is replaced at the end customer, the OEM can again adapt the project to the modified hardware.

Dependency: Refer to: p7765, p7766, p7767, p7768

Note: KHP: Know-How Protection

- the OEM may only change this parameter for the use case "Sending encrypted SINAMICS data".

- SINAMICS only evaluates this parameter when powering up from the encrypted "Load into file system..." output or when powering up from the encrypted PS files. The evaluation is only made when know-how protection and memory card copy protection have been activated.

r7760.0...12 CO/BO: Write protection/know-how protection status / Wr_prot/KHP stat

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status for the write protection and know-how protection.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Write protection active	Yes	No	-
01	Know-how protection active	Yes	No	-
02	Know-how protection temporarily withdrawn	Yes	No	-
03	Know-how protection cannot be deactivated	Yes	No	-
04	Extended copy protection is active	Yes	No	-
05	Basic copy protection is active	Yes	No	-
06	Trace and measuring functions for diagnostic purposes active	Yes	No	-
12	Reserved, Siemens-internal	Yes	No	-

Dependency: Refer to: p7761, p7765, p7766, p7767, p7768

Note: KHP: Know-How Protection

For bit 00:

Write protection can be activated/deactivated via p7761 on the Control Unit.

For bit 01:

The know-how protection can be activated by entering a password (p7766 ... p7768).

For bit 02:

If it has already been activated, know-how protection can be temporarily deactivated by entering the valid password in p7766. In this case, bit 1 = 0 and bit 2 = 1 offset.

For bit 03:

Know-how protection cannot be deactivated, as p7766 is not entered in the OEM exception list (only the factory setting is possible). This bit is only set if know-how protection is active (bit 1 = 1) and p7766 has not been entered in the OEM exception list.

For bit 04:

When know-how protection has been activated, the contents of the memory card (parameter and DCC data) can be additionally protected against being used with other memory cards/Control Units. This bit is only set if know-how protection is active and in p7765.0 is set = 1.

For bit 05:

When know-how protection has been activated, the contents of the memory card (parameter and DCC data) can be additionally protected against being used with other memory cards. This bit is only set if know-how protection is active and p7765.1 is set = 1 and p7765.0 is set = 0.

For bit 06:

When know-how protection is activated, the drive data can be traced using the device trace function. This bit is only set if know-how protection is active and p7765.2 is set = 1.

For bit 12:

Together with p7755, the bit is used to monitor write protection.

Bit = 1, if p7755 is not equal to 0 and write protection is active (r7760.0 = 1).

Bit = 0, if write protection was deactivated. p7755 is set to 0, and when write protection is activated again, bit 12 remains at 0.

r7760 Write protection/know-how protection status / Wr_prot/KHP stat

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM17, TM15, TM15DI_DO, TM120, TM150, TB30, TM54F_MA, TM54F_SL, ENC, HUB, CU_LINK

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status for the write protection and know-how protection.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Write protection active	Yes	No	-
01	Know-how protection active	Yes	No	-
02	Know-how protection temporarily withdrawn	Yes	No	-
03	Know-how protection cannot be deactivated	Yes	No	-
04	Extended copy protection is active	Yes	No	-
05	Basic copy protection is active	Yes	No	-
06	Trace and measuring functions for diagnostic purposes active	Yes	No	-
12	Reserved, Siemens-internal	Yes	No	-

Dependency: Refer to: p7761, p7765, p7766, p7767, p7768

Note: KHP: Know-How Protection

For bit 00:

Write protection can be activated/deactivated via p7761 on the Control Unit.

For bit 01:

The know-how protection can be activated by entering a password (p7766 ... p7768).

For bit 02:

If it has already been activated, know-how protection can be temporarily deactivated by entering the valid password in p7766. In this case, bit 1 = 0 and bit 2 = 1 offset.

For bit 03:

Know-how protection cannot be deactivated, as p7766 is not entered in the OEM exception list (only the factory setting is possible). This bit is only set if know-how protection is active (bit 1 = 1) and p7766 has not been entered in the OEM exception list.

For bit 04:

When know-how protection has been activated, the contents of the memory card (parameter and DCC data) can be additionally protected against being used with other memory cards/Control Units. This bit is only set if know-how protection is active and in p7765.0 is set = 1.

For bit 05:

When know-how protection has been activated, the contents of the memory card (parameter and DCC data) can be additionally protected against being used with other memory cards. This bit is only set if know-how protection is active and p7765.1 is set = 1 and p7765.0 is set = 0.

For bit 06:

When know-how protection is activated, the drive data can be traced using the device trace function. This bit is only set if know-how protection is active and p7765.2 is set = 1.

For bit 12:

Together with p7755, the bit is used to monitor write protection.

Bit = 1, if p7755 is not equal to 0 and write protection is active (r7760.0 = 1).

Bit = 0, if write protection was deactivated. p7755 is set to 0, and when write protection is activated again, bit 12 remains at 0.

p7761 Write protection / Write protection

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Setting for activating/deactivating the write protection for adjustable parameters.

Value:
0: Deactivate write protection
1: Activate write protection

Dependency: Refer to: r7760

Notice: While write protection is active, a download is prevented; however, it is still possible to restore the factory settings.

Note: Parameters with the "WRITE_NO_LOCK" attributes are excluded from the write protection.
A product-specific list of these parameters is also available in the corresponding List Manual.

p7762 Write protection multi-master fieldbus system access behavior / Fieldbus acc_behav

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the behavior for write protection when accessing via multi-master fieldbus systems (e.g. CAN, BACnet).

Value:
0: Write access independent of p7761
1: Write access dependent on p7761

Dependency: Refer to: r7760, p7761

p7763 KHP OEM exception list number of indices for p7764 / KHP OEM qty p7764

All objects

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	500	1

Description: Sets the number of parameters for the OEM exception list (p7764[0...n]).
p7764[0...n], with n = p7763 - 1

Dependency: Refer to: p7764

Note: KHP: Know-How Protection
Even if know-how protection is set, parameters in this list can be read and written to.

p7764[0...n] KHP OEM exception list / KHP OEM excep list

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** p7763	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	65535	[0] 7766 [1...499] 0

Description: OEM exception list (p7764[0...n] for setting parameters that should be excluded from know-how protection.
p7764[0...n], with n = p7763 - 1

Dependency: The number of indices depends on p7763.

Refer to: p7763

Note: KHP: Know-How Protection

Even if know-how protection is set, parameters in this list can be read and written to.

p7764[0...n] KHP OEM exception list / KHP OEM excep list

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM17, TM15, TM15DI_DO, TM120, TM150, TB30, TM54F_MA, TM54F_SL, ENC, HUB, CU_LINK

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** p7763	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	65535	0

Description: OEM exception list (p7764[0...n] for setting parameters that should be excluded from know-how protection.

p7764[0...n], with n = p7763 - 1

Dependency: The number of indices depends on p7763.

Refer to: p7763

Note: KHP: Know-How Protection

Even if know-how protection is set, parameters in this list can be read and written to.

p7765 KHP configuration / KHP config

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Configuration settings for know-how protection.

For bit 00, 01:

When KHP is activated, this means that the OEM can define whether the parameters and DCC data encrypted on the memory card should be protected before using on other memory cards/Control Units.

For bit 02:

This means that the OEM can define whether it is possible or not to trace the drive data using the device trace function although KHP is activated.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Extended copy protection - linked to the memory card and CU	Yes	No	-
01	Basic copy protection - linked to the memory card	Yes	No	-
02	Permit trace and measuring functions for diagnostic purposes	Yes	No	-

Dependency: Refer to: p7766, p7767, p7768

Note: KHP: Know-How Protection

For copy protection, the serial numbers of the memory card and/or Control Unit are checked.

The memory card copy protection and preventing data to be traced are only effective when the know-how protection has been activated.

For bit 00, 01:

If both bits are inadvertently set to 1 (e.g. at the BOP), then the setting of bit 0 applies.

There is no copy protection if both bits are set to 0.

p7766[0...29] KHP password input / KHP passw input

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Sets the password for know-how protection.

Example of a password:

123aBc = 49 50 51 97 66 99 dec (ASCII characters)

[0] = character 1 (e.g. 49 dec)

[1] = character 2 (e.g. 50 dec)

...

[5] = character 6 (e.g. 99 dec)

[29] = 0 dec (completes the entry)

Dependency: Refer to: p7767, p7768

Notice: An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.

When using the STARTER commissioning tool, the password should be entered using the associated dialogs.

The following rules apply when entering the password:

- password entry must start with p7766[0].
- no gaps are permissible in the password.
- entering a password is completed when writing to p7766[29] (p7766[29] = 0 for passwords less than 30 characters).

Note: KHP: Know-How Protection

When reading, p7766[0...29] = 42 dec (ASCII character = "*") is displayed.

Parameters with the "KHP_WRITE_NO_LOCK" attribute are not involved in the know-how protection.

Parameters with the "KHP_ACTIVE_READ" attribute can be read even when know-how protection is activated.

A product-specific list of these parameters is also available in the corresponding List Manual.

p7767[0...29] KHP password new / KHP passw new

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Sets the new password for know-how protection.

Dependency: Refer to: p7766, p7768

Note: KHP: Know-How Protection

When reading, p7767[0...29] = 42 dec (ASCII character = "*") is displayed.

p7768[0...29] KHP password confirmation / KHP passw confirm

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Confirms the new password for know-how protection.

Dependency: Refer to: p7766, p7767

Note: KHP: Know-How Protection

When reading, p7768[0...29] = 42 dec (ASCII character = "*") is displayed.

p7769[0...20] KHP memory card reference serial number / KHP mem ref ser_no

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Sets the reference serial number for the memory card.

Using this parameter, if a Control Unit and/or a memory card is replaced at the end customer, the OEM can again adapt the project to the modified hardware.

Dependency: Refer to: p7765, p7766, p7767, p7768

Note: KHP: Know-How Protection

- the OEM may only change this parameter for the use case "Sending encrypted SINAMICS data".
- SINAMICS only evaluates this parameter when powering up from the encrypted "Load into file system..." output or when powering up from the encrypted PS files. The evaluation is only made when know-how protection and memory card copy protection have been activated.

p7770 NVRAM action / NVRAM action

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM17, TM15, TM15DI_DO, TM120, TM150, TB30, TM54F_MA, TM54F_SL, ENC, HUB

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	3	0

Description: Sets the action to be executed for NVRAM data.

At the end of the action the value is automatically set to 0.

Value:
0: Inactive
1: Load NVRAM data to parameters
2: Load parameters to NVRAM
3: Reset

Notice: After action p7770 = 1 no more pulses may be enabled.

After action p7770 = 2, it is essential that parameters are backed up (p0977 = 1) and that a warm restart is then performed (p0009 = 30, p0976 = 2, 3). This will apply the values written.

Note: If value = 1:

This action loads the NVRAM data to the parameters.

If value = 2:

This action loads the parameters to the NVRAM.

If value = 3:

This action sets parameters p7771 ... p7774 to the factory setting.

It is recommended to avoid placing unnecessary load on the subsequent upload/download operation.

p7775 NVRAM data backup/import/delete / NVRAM backup

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: C1, U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: All groups	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	17	0

Description: Setting to backup/import/delete NVRAM data.

NVRAM data are non-volatile data in the device (e.g. fault buffer).

For NVRAM data actions, the following data are excluded:

- crash diagnostics
- CU operating hours counter
- CU temperature
- safety logbook

Value:

0: Inactive
1: NVRAM data backup to memory card
2: Import NVRAM data from the memory card
3: Delete NVRAM data in the device
10: Error when clearing
11: Error when backing up, memory card not available
12: Error when backing up, insufficient memory space
13: Error when backing up
14: Error when importing, memory card not available
15: Error when importing, checksum error
16: Error when importing, no NVRAM data available
17: Error when importing

Notice: For value = 2, 3:

These actions are only possible when pulses are inhibited.

Note: After the action has been successfully completed, the parameter is automatically set to zero.

The actions importing and deleting NVRAM data immediately initiate a warm restart.

If the procedure was not successfully completed, then an appropriate fault value is displayed (p7775 >= 10).

p7786[0...n] Service report / Service report

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, B_INF

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: Unsigned16	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 bin

Description: Service parameter to internally document repairs.

After a component has been replaced, this must be confirmed using p7786[PDS].x = 0/1. The "Generate report" function is then automatically executed.

After the procedure has been completed, p7786[PDS] is automatically set = 0.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Control Interface Module (CIM) replaced	Yes	No	-
01	Valve 1 replaced	Yes	No	-
02	Valve 2 replaced	Yes	No	-
03	Valve 3 replaced	Yes	No	-
04	Valve 4 replaced	Yes	No	-
05	Valve 5 replaced	Yes	No	-
06	Valve 6 replaced	Yes	No	-
15	Generate report	Yes	No	-

Notice: The write process can take several minutes (p7786[PDS].x = 1). It is not permissible that the device is switched off during the procedure (only when p7786 = 0).

Note: The power unit involved can be assigned the correct P index using p0124 (power unit detection via LED).

p7788 Power unit sign-of-life monitoring tolerance window / PU SoL monit tol

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: C2(2), U, T	**Calculated:** -	**Access level:** 4
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	1000	10

Description: Sets the tolerance window for the sign of life monitoring for communication to the power unit.

Dependency: Refer to: A30853

Note: An active window is generated by means of DRIVE-CLiQ telegrams.

If more than one sign-of-life error appears in the window, then A30853 is output.

The lower the value in p7788, the greater the monitoring tolerance.

p7789 Power unit sign-of-life monitoring fault threshold / PU SoL monit F_thr

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: C2(2), U, T	**Calculated:** -	**Access level:** 4
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1000	1

Description: Sets the number of consecutive sign-of-life errors that are tolerated for communication to the power unit.

Dependency: Refer to: F30008

Note: F30008 is output in the case of a fault.

The higher the value in the parameter, the higher the monitoring tolerance.

p7790[0...15] Component trace signal / Comp trace sig

SERVO, VECTOR, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF (Parallel), B_INF

Can be changed: C2(2), U, T	**Calculated:** -	**Access level:** 4
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	9	[0] 2 [1] 3 [2] 4 [3] 7 [4] 8 [5] 9 [6] 5 [7] 0 [8] 6 [9] 1 [10...15] 0

Description: Sets the individual signals for the component trace.

For p7790[0...15] = 0, the component trace is deactivated.

For index [0...7]:

The signals are set in p7790[0...7], whose characteristic is to be recorded over time.

If "No signal" is set for a trace channel, then the recording duration of the other time characteristics is increased.

For index [8...15]:

The signals are set in p7790[8...15], whose instantaneous value is to be recorded.

Value:
0: No signal
1: Pulse frequency
2: Phase current U
3: Phase current V
4: Phase current W
5: IGBT chip temperature
6: Heat sink temperature
7: DC link voltage
8: Modulat_depth
9: Angle

Index:
[0] = Trace channel 0
[1] = Trace channel 1
[2] = Trace channel 2
[3] = Trace channel 3
[4] = Trace channel 4
[5] = Trace channel 5
[6] = Trace channel 6
[7] = Trace channel 7
[8] = Trace channel 8
[9] = Trace channel 9
[10] = Trace channel 10
[11] = Trace channel 11
[12] = Trace channel 12
[13] = Trace channel 13
[14] = Trace channel 14
[15] = Trace channel 15

Dependency: Refer to: p7791, p7792

Refer to: A01302

Note: In the operation state, when a trigger event occurs, the trace data of the signals are saved in the component. The oldest trace data is overwritten after more than 5 trigger events.

The trigger event can be set in p7791.

By activating p7792, the trace data of the component is written to files on the non-volatile storage medium (memory card). Experts can then evaluate this data.

p7791 Component trace trigger / Comp trace trigger

SERVO, VECTOR, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF (Parallel), B_INF

Can be changed: C2(2), U, T	**Calculated:** -	**Access level:** 4
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	2	0

Description: Sets the trigger event for the component trace.

Value:
0: Overcurrent, overvoltage, ground fault, Uce
1: Time-critical message
2: Uce

Dependency: Refer to: p7790, p7792

Note: F30001 is output if the power unit detects an overcurrent condition.

F30002 is output if the power unit detects an overvoltage condition in the DC link.

F30021 is output if the power unit detects a ground fault.

F30022 is output if the power unit detects an Uce fault.

p7792 Upload component trace data / Upload comp trace

SERVO, VECTOR, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF (Parallel), B_INF

Can be changed: C2(2), U, T	**Calculated:** -	**Access level:** 4
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Converter	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Setting to upload and save the trace data of the component trace.

Experts can then evaluate this data.

For p7792 = 1, the trace data of the component is written to files on the memory card in a non-volatile fashion.

The parameter is then automatically set to zero.

Value:
0: Inactive
1: Upload and save active

Dependency: Refer to: p7790, p7791

Notice: Trace files of this component already available on the non-volatile storage medium are overwritten after backup has been activated.

p7820 DRIVE-CLiQ component component number / DQ compo_no

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	65535	0

Description: Sets the component number of the DRIVE-CLiQ component whose parameters are to be accessed.

Dependency: Refer to: p7821, p7822, r7823

p7821 DRIVE-CLiQ component parameter number / DQ para_no

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	65535	0

Description: Sets the parameter number to access a parameter of a DRIVE-CLiQ component.

Dependency: Refer to: p7820, p7822, r7823

p7822[0...1] DRIVE-CLiQ component parameter index/number / DQ para_index/qty

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	65535	[0] 0 [1] 1

Description: Sets the parameter index and the number of indices.

For index [0]:

Sets the parameter index to access a parameter of a DRIVE-CLiQ component.

For index [1]:

Number of indices that should be written to.

Write:

If several indices are to be written using a DRIVE-CLiQ task, then the values must be transferred to the CU via p7837.

The DRIVE-CLiQ task is executed if the number n, set using 7822[1], is written to p7837 [n].

Dependency: Refer to: p7820, p7821, r7823

r7823[0...254] DRIVE-CLiQ component read parameter value / Read DQ value

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the parameter value read from the DRIVE-CLiQ component.

Dependency: Refer to: p7820, p7821, p7822

r7825[0...6] DRIVE-CLiQ component versions / DQ comp version

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the firmware and EEPROM versions of the DRIVE-CLiQ component selected using p7828[1].

Index:
[0] = Reference firmware version
[1] = Actual firmware version
[2] = EEPROM0 version
[3] = EEPROM1 version
[4] = EEPROM2 version
[5] = EEPROM3 version
[6] = EEPROM4 version

Dependency: Refer to: p7828

Note: For index [0]:

Firmware version on the memory card/device memory.

For index [1]:

Actual firmware version of the DRIVE-CLiQ component.

For index [2...6]:

Actual EEPROM version of the DRIVE-CLiQ component.

p7826 Firmware update automatic / FW update auto

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	2	1

Description: Sets the behavior for the automatic firmware update of the DRIVE-CLiQ components.

Value:
0: Deactivated
1: Upgrade and downgrade
2: Upgrade

Notice: If this parameter is changed, it only becomes effective the next time that the drive system boots.

Note: The firmware is automatically updated when the system boots. The boot can take several minutes.

After the update has been completed, it is necessary to carry out a new POWER ON (switch-off/switch-on) for the components involved.

The firmware update procedure is displayed as follows:

Control Unit (LED RDY):

Flashes yellow with 0.5 Hz --> firmware is being updated.

Flashing yellow with 2 Hz --> POWER ON is required for the components involved.

Components involved:

Flashing red/green with 0.5 Hz --> firmware is being updated.

Flashing red/green with 2 Hz --> POWER ON of the components is required.

Only components from firmware version 2.5 support the red/green flashing at 2 Hz.

r7827 Firmware update progress display / FW update progress

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the progress when updating the firmware of the DRIVE-CLiQ components.

p7828[0...1] Firmware download component number / FW downl comp_no

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	399	0

Description: Sets the component number for the required DRIVE-CLiQ component.

Index 0:

Component number of the DRIVE-CLiQ component for which a firmware download is to be made.

Index 1:

Component number of the DRIVE-CLiQ component for which the reference firmware version, saved in r7825 on the memory card/device memory, is to be displayed.

Index:
[0] = Firmware download
[1] = Reference firmware version

Dependency: Refer to: p0121, p0141, p0151, p7829

Note: For p7828[0] = 399, the firmware for all of the existing components is downloaded.

The firmware download is started with p7829 = 1.

p7829 Activate firmware download / FW download act

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1	999	0

Description: Activating the firmware download for the DRIVE-CLiQ components specified in p7828.

1: Activate download.

-1: activate the download and carry out a reset.

0: Download successfully completed.

> 1: Fault code

011: DRIVE-CLiQ component has detected a checksum error.

015: The selected DRIVE-CLiQ components did not accept the contents of the firmware file.

018: Firmware version is too old and is not accepted by the component.

019: Firmware version is not suitable for the hardware release of the component.

101: After several communication attempts, no response from the DRIVE-CLiQ component.

140: Firmware file for the DRIVE-CLiQ component not available on the memory card/device memory.

143: Component has not changed to the mode for firmware download. It was not possible to delete the existing firmware.

144: When checking the firmware that was downloaded (checksum), the component detected a fault. It is possible that the file on the memory card/device memory is defective.

145: Checking the loaded firmware (checksum) was not completed by the component in the appropriate time.

156: Component with the specified component number is not available.

Additional values:

Only for internal Siemens troubleshooting.

Dependency: Refer to: p7828

Note: p7829 is automatically set to 0 after the firmware has been successfully downloaded.

The new firmware only becomes active at the next system run-up.

p7830 Telegram diagnostics selection / Telegr diag sel

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: T	**Calculated:** -	**Access level:** 4
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	3	0

Description: Selects a telegram whose contents should be shown in r7831 ... r7836.

Value:
0: Reserved
1: First cyclic receive telegram sensor 1
2: First cyclic receive telegram sensor 2
3: First cyclic receive telegram sensor 3

Dependency: Refer to: r7831, r7832, r7833, r7834, r7835, r7836

r7831[0...23] Telegram diagnostics signals / Telegr diag sig

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC	**Can be changed:** -	**Calculated:** -	**Access level:** 4
	Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: -	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	15157	-

Description: Displays the signals contained in the selected telegram (p7830).

Value:
0: UNUSED
1: UNKNOWN
102: SAPAR_ID_DSA_ALARM
110: SAPAR_ALARMBITS_FLOAT_0
111: SAPAR_ALARMBITS_FLOAT_1
112: SAPAR_ALARMBITS_FLOAT_2
113: SAPAR_ALARMBITS_FLOAT_3
114: SAPAR_ALARMBITS_FLOAT_4
115: SAPAR_ALARMBITS_FLOAT_5
10500: ENC_ID_TIME_PRETRIGGER
10501: ENC_ID_TIME_SEND_TELEG_1
10502: ENC_ID_TIME_CYCLE_FINISHED
10503: ENC_ID_TIME_DELTA_FUNMAN
10504: ENC_ID_SUBTRACE_CALCTIMES
10505: ENC_ID_SYNO_PERIOD
10515: ENC_ID_AB_SQUARE_SUM
10516: ENC_ID_ADC_TRACK_A
10517: ENC_ID_ADC_TRACK_B
10518: ENC_ID_ADC_TRACK_C
10519: ENC_ID_ADC_TRACK_D
10520: ENC_ID_ADC_TRACK_A_SAFETY
10521: ENC_ID_ADC_TRACK_B_SAFETY
10523: ENC_ID_ADC_TEMP_1
10524: ENC_ID_SUBTRACE_TRACK_A
10525: ENC_ID_SUBTRACE_TRACK_B
10526: ENC_ID_ADC_TRACK_R
10532: ENC_ID_TRACK_AB_X
10533: ENC_ID_TRACK_AB_Y
10534: ENC_ID_OFFSET_CORR_AB_X
10535: ENC_ID_OFFSET_CORR_AB_Y
10536: ENC_ID_AB_ABS_VALUE
10537: ENC_ID_TRACK_CD_X
10538: ENC_ID_TRACK_CD_Y
10539: ENC_ID_TRACK_CD_ABS
10542: ENC_ID_AB_RAND_X
10543: ENC_ID_AB_RAND_Y
10544: ENC_ID_AB_RAND_ABS_VALUE
10545: ENC_ID_SUBTRACE_ABS_ARRAY
10546: ENC_ID_PROC_OFFSET_0
10547: ENC_ID_PROC_OFFSET_4
10550: ENC_ID_SUBTRACE_AMPL
10563: ENC_ID_ENCODER_TEMP
10564: ENC_SELFTEMP_ACT
10565: ENC_ID_MOTOR_TEMP_TOP
10566: ENC_ID_MOTOR_TEMP_1
10567: ENC_ID_MOTOR_TEMP_1_COD
10569: ENC_ID_MOTOR_TEMP_2_COD
10571: ENC_ID_MOTOR_TEMP_3_COD
10580: ENC_ID_RESISTANCE_1
10590: ENC_ID_ANA_CHAN_A
10591: ENC_ID_ANA_CHAN_B
10592: ENC_ID_ANA_CHAN_X
10593: ENC_ID_ANA_CHAN_Y
10596: ENC_ID_AB_ANGLE

10597: ENC_ID_CD_ANGLE
10598: ENC_ID_MECH_ANGLE_HI
10599: ENC_ID_RM_POS_PHI_COMMU
10600: ENC_ID_PHI_COMMU
10601: ENC_ID_SUBTRACE_ANGLE
10612: ENC_ID_DIFF_CD_INC
10613: ENC_ID_RM_POS_PHI_COMMU_RFG
10628: ENC_ID_MECH_ANGLE
10629: ENC_ID_MECH_RM_POS
10644: ENC_ID_INIT_VECTOR
10645: FEAT_INIT_VECTOR
10660: ENC_ID_SENSOR_STATE
10661: ENC_ID_BASIC_SYSTEM
10662: ENC_ID_REFMARK_STATUS
10663: ENC_ID_DSA_STATUS1_SENSOR
10664: ENC_ID_DSA_RMSTAT_HANDSHAKE
10665: ENC_ID_DSA_CONTROL1_SENSOR
10667: ENC_ID_SAFETY
10669: ENC_ID_SUB_STATE
10676: ENC_ID_COUNTCORR_SAW_VALUE
10677: ENC_ID_COUNTCORR_ABS_VALUE
10678: ENC_ID_SAWTOOTH_CORR
10680: ENC_ID_SM_XIST1_CORRECTED_QUADRANTS
10692: ENC_ID_RESISTANCE_CALIB_INSTANT
10693: ENC_ID_SERPROT_POS
10700: ENC_ID_AB_VIOL_COUNT
10701: ENC_ID_SUBTRACE_TRACK_A_TRIG
10702: ENC_ID_SUBTRACE_TRACK_B_TRIG
10723: ENC_ID_ACT_STATEMACHINE_FUNCTION
10724: ENC_ID_ACT_FUNMAN_FUNCTION
10725: ENC_ID_SAFETY_COUNTER_CRC
10728: ENC_ID_SUBTRACE_AREA
10740: ENC_ID_POS_ABSOLUTE
10741: ENC_ID_POS_REFMARK
10742: ENC_ID_SAWTOOTH
10743: ENC_ID_SAFETY_PULSE_COUNTER
10745: ENC_ID_EIU_ZEROCTRL
10756: ENC_ID_DSA_ACTUAL_SPEED
10757: ENC_ID_SPEED_DEV_ABS
10772: ENC_ID_DSA_POS_XIST1
10788: ENC_ID_AB_CROSS_CORR
10789: ENC_ID_AB_GAIN_Y_CORR
10790: ENC_ID_AB_PEAK_CORR
11825: ENC_ID_RES_TRANSITION_RATIO
11826: ENC_ID_RES_PHASE_SHIFT
12088: ENC_ID_SM_DIFF_PULSE_ACCU
15150: ENC_ID_SPINDLE_S1_RAW
15151: ENC_ID_SPINDLE_S4_RAW
15152: ENC_ID_SPINDLE_S5_RAW
15155: ENC_ID_SPINDLE_S1_CAL
15156: ENC_ID_SPINDLE_S4_CAL
15157: ENC_ID_SPINDLE_S5_CAL

r7832[0...23] Telegram diagnostics numerical format / Telegr diag format

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC	**Can be changed:** -	**Calculated:** -	**Access level:** 4
	Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: -	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-1	14	-

Description: Displays the original numerical format of the signals contained in the telegram.
The associated signal number is represented in the appropriate index of r7831.

Value:
-1: Unknown
0: Boolean
1: Signed 1 byte
2: Signed 2 byte
3: Signed 4 byte
4: Signed 8 byte
5: Unsigned 1 byte
6: Unsigned 2 byte
7: Unsigned 4 byte
8: Unsigned 8 byte
9: Float 4 byte
10: Double 8 byte
11: mm dd yy HH MM SS MS DOW
12: ASCII string
13: SINUMERIK frame type
14: SINUMERIK axis type

Dependency: Refer to: r7831

r7833[0...23] Telegram diagnostics unsigned / Telegr diag unsign

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Parameter to display a DSA signal in the unsigned-integer format.
The associated signal number is represented at the appropriate index in r7831.

r7834[0...23] Telegram diagnostics signed / Telegr diag sign

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Parameter to display a DSA signal in the signed-integer format.
The associated signal number is represented at the appropriate index in r7831.

r7835[0...23] Telegram diagnostics real / Telegr diag real

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Parameter to display a DSA signal in the float format.
The associated signal number is represented at the appropriate index in r7831.

r7836[0...23] Telegram diagnostics unit / Telegr diag unit

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, ENC	**Can be changed:** -	**Calculated:** -	**Access level:** 4
	Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: -	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-1	147	-

Description: Displays the units of a DSA signal.

The associated signal number is represented at the appropriate index in r7831.

Value:
-1: Unknown
0: None
1: Millimeter or degrees
2: Millimeter
3: Degrees
4: mm/min or RPM
5: Millimeter / min
6: Revolutions / min
7: m/sec^2 or U/sec^2
8: m/sec^2
9: U/sec^2
10: m/sec^3 or U/sec^3
11: m/sec^3
12: U/sec^3
13: sec
14: 16.667 / sec
15: mm/revolution
16: ACX_UNIT_COMPENSATION_CORR
18: Newton
19: Kilogram
20: Kilogram meter^2
21: Percent
22: Hertz
23: Volt peak-to-peak
24: Amps peak-to-peak
25: Degrees Celsius
26: Degrees
28: Millimeter or degrees
29: Meters / minute
30: Meters / second
31: ohm
32: Millihenry
33: Newton meter
34: Newton meter/Ampere
35: Volt/Ampere
36: Newton meter second / rad
38: 31.25 microseconds
39: Microseconds
40: Milliseconds
42: Kilowatt
43: Micro amps peak-to-peak
44: Volt seconds
45: Microvolt seconds
46: Micro newton meters
47: Amps / volt seconds
48: Per mille
49: Hertz / second
53: Micrometer or millidegrees
54: Micrometer
55: Millidegrees
59: Nanometer
61: Newton/Amps
62: Volt seconds/meter

63: Newton seconds/meter
64: Micronewton
65: Liters / minute
66: Bar
67: Cubic centimeters
68: Millimeter / volt minute
69: Newton/Volt
80: Millivolts peak-to-peak
81: Volt rms
82: Millivolts rms
83: Amps rms
84: Micro amps rms
85: Micrometers / revolution
90: Tenths of a second
91: Hundredths of a second
92: 10 microseconds
93: Pulses
94: 256 pulses
95: Tenths of a pulse
96: Revolutions
97: 100 revolutions / minute
98: 10 revolutions / minute
99: 0.1 revolutions / minute
100: Thousandth revolution / minute
101: Pulses / second
102: 100 pulses / second
103: 10 revolutions / (minute x seconds)
104: 10000 pulses/second^2
105: 0.1 Hertz
106: 0.01 Hertz
107: 0.1 / seconds
108: Factor 0.1
109: Factor 0.01
110: Factor 0.001
111: Factor 0.0001
112: 0.1 Volt peak-to-peak
113: 0.1 Volt peak-to-peak
114: 0.1 amps peak-to-peak
115: Watt
116: 100 Watt
117: 10 Watt
118: 0.01 percent
119: 1/second^3
120: 0.01 percent/millisecond
121: Pulses / revolution
122: Microfarads
123: Milliohm
124: 0.01 Newton meter
125: Kilogram millimeter^2
126: Rad / (seconds newton meter)
127: Henry
128: Kelvin
129: Hours
130: Kilohertz
131: Milliamperes peak-to-peak
132: Millifarads
133: Meter
135: Kilowatt hours
136: Percent
137: Amps / Volt
138: Volt
139: Millivolts
140: Microvolts
141: Amps
142: Milliamperes
143: Micro amps

144: Milliamperes rms
145: Millimeter
146: Nanometer
147: Joules

r7843[0...20] Memory card serial number / Mem_card ser.no

CU_I, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the actual serial number of the memory card.

The individual characters of the serial number are displayed in the ASCII code in the indices.

Dependency: Refer to: p9920, p9921

Notice: An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.

Note: Example: displaying the serial number for a memory card:

r7843[0] = 49 dec --> ASCII characters = "1" --> serial number, character 1

r7843[1] = 49 dec --> ASCII characters = "1" --> serial number, character 2

r7843[2] = 49 dec --> ASCII characters = "1" --> serial number, character 3

r7843[3] = 57 dec --> ASCII characters = "9" --> serial number, character 4

r7843[4] = 50 dec --> ASCII characters = "2" --> serial number, character 5

r7843[5] = 51 dec --> ASCII characters = "3" --> serial number, character 6

r7843[6] = 69 dec --> ASCII characters = "E" --> serial number, character 7

r7843[7] = 0 dec --> ASCII characters = " " --> serial number, character 8

...

r7843[19] = 0 dec --> ASCII characters = " " --> serial number, character 20

r7843[20] = 0 dec

Serial number = 111923E

r7844[0...2] Memory card/device memory firmware version / Mem_crd/dev_mem FW

CU_I, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the version of the firmware stored on the memory medium of the drive device.

Depending on the drive device being used, the memory medium is a memory card, or an internal non-volatile device memory.

Index:
[0] = Internal
[1] = External
[2] = Parameter backup

Note: For index [0]:

Displays the internal firmware version (e.g. 04402315).

This firmware version is the version of the memory card/device memory and not the CU firmware (r0018), however, normally they have the same versions.

For index [1]:

Displays the external firmware version (e.g. 04040000 -> 4.4).

For automation systems with SINAMICS Integrated this is the runtime version of the automation system.

For index [2]:

Displays the internal firmware version of the parameter backup.

With this CU firmware version, the parameter backup was saved, which was used when powering up.

r7850[0...n] Drive object operational/not operational / DO ready for oper

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-32786	32767	-

Description: Displays whether, for an activated drive object, all activated topology components are available or not (or whether these can be addressed).

0: Drive object not ready for operation

1: Drive object ready for operation

p7852 Number of indices for r7853 / Qty indices r7853

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	200	1

Description: Displays the number of indices for r7853[0...n].

This corresponds to the number of DRIVE-CLiQ components that are in the target topology.

Dependency: Refer to: r7853

Note: The values are valid if all available Control Units adopt the "Initialization finished" state (r3988 = 800) following power up.

r7853[0...n] Component available/not available / Comp present

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned16	**Dyn. index:** p7852	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	FFFF hex	-

Description: Displays the component and whether this component is currently present.

High byte: Component number

Low byte: 0/1 (not available/available)

Dependency: Refer to: p7852

Note: The values are valid if all available Control Units adopt the "Initialization finished" state (r3988 = 800) following power up.

p7857 Sub-boot mode / Sub-boot mode

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM17, TM15, TM15DI_DO, TM120, TM150, TB30, TM54F_MA, TM54F_SL, ENC, HUB, CU_LINK

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	1

Description: Sets the mode for the sub-boot.

Value:
0: Sub-boot manual
1: Sub-boot automatic

Note: For p7857 = 0 (manual sub-boot) the following applies:

The parameter should be set to 1 to start the sub-boot.

p7859[0...199] Component number global / Comp_no global

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-32786	32767	0

Description: Sets the global and unique component number in a drive system with several Control Units.

Each index of the parameter corresponds to a possible local component number on the corresponding Control Unit.

The indices are allocated to the global component numbers as follows:

p7859[0]: Not used

p7859[1]: Sets the global component number for the local component number 1

p7859[2]: Sets the global component number for the local component number 2

...

p7859[199]: Sets the global component number for the local component number 199

Notice: This parameter is preferably set via suitable commissioning tool (e.g. UpdateAgent, STARTER, SCOUT).

Changing the parameter via the AOP (Advanced Operator Panel) or BOP (Basic Operator Panel) can destroy a valid unique setting.

Note: The parameter is not influenced by setting the factory setting.

r7867 Status/configuration changes global / Changes global

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays status and configuration changes of all of the drive objects in the complete unit.

When changing the status or the configuration of the Control Unit or a drive object, the value of this parameter is incremented.

Dependency: Refer to: r7868, r7869, r7870

r7868[0...24] Configuration changes drive object reference / Config_chng DO ref

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Reference to the drive objects whose configuration has changed.

Index 0:

When changing one of the following indices, then the value in this index is increased.

Index 1...n:

The drive object with object number in p0101[n-1] has changed its configuration.

Example:

r7868[3] was incremented since the last time it was read.

--> the configuration of the drive object with object number in p0101[2] was changed.

Index:
[0] = Sum of the following indices
[1] = Object number in p0101[0]
[2] = Object number in p0101[1]
[3] = Object number in p0101[2]
[4] = Object number in p0101[3]
[5] = Object number in p0101[4]
[6] = Object number in p0101[5]
[7] = Object number in p0101[6]
[8] = Object number in p0101[7]
[9] = Object number in p0101[8]
[10] = Object number in p0101[9]
[11] = Object number in p0101[10]
[12] = Object number in p0101[11]
[13] = Object number in p0101[12]
[14] = Object number in p0101[13]
[15] = Object number in p0101[14]
[16] = Object number in p0101[15]
[17] = Object number in p0101[16]
[18] = Object number in p0101[17]
[19] = Object number in p0101[18]
[20] = Object number in p0101[19]
[21] = Object number in p0101[20]
[22] = Object number in p0101[21]
[23] = Object number in p0101[22]
[24] = Object number in p0101[23]

Dependency: Refer to: p0101, r7867, r7871

r7869[0...24] Status changes drive object reference / Status_chng DO ref

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Reference to the drive objects whose status has changed.

Index 0:

When changing one of the following indices, then the value in this index is increased.

Index 1...n:

The drive object with object number in p0101[n-1] has changed its status.

Example:

r7868[3] was incremented since the last time it was read.

--> the status of the drive object with object number in p0101[2] was changed.

Index:
[0] = Sum of the following indices
[1] = Object number in p0101[0]
[2] = Object number in p0101[1]
[3] = Object number in p0101[2]
[4] = Object number in p0101[3]
[5] = Object number in p0101[4]
[6] = Object number in p0101[5]
[7] = Object number in p0101[6]
[8] = Object number in p0101[7]
[9] = Object number in p0101[8]
[10] = Object number in p0101[9]
[11] = Object number in p0101[10]
[12] = Object number in p0101[11]
[13] = Object number in p0101[12]
[14] = Object number in p0101[13]
[15] = Object number in p0101[14]
[16] = Object number in p0101[15]
[17] = Object number in p0101[16]
[18] = Object number in p0101[17]
[19] = Object number in p0101[18]
[20] = Object number in p0101[19]
[21] = Object number in p0101[20]
[22] = Object number in p0101[21]
[23] = Object number in p0101[22]
[24] = Object number in p0101[23]

Dependency: Refer to: p0101, r7867, r7872

r7870[0...8] Configuration changes global / Config_chng global

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the configuration changes of all of the drive objects in the complete unit.

Index:
[0] = Sum of the following indices
[1] = r7871[0] of a drive object
[2] = p0101 or r0102
[3] = PROFIBUS configuration (p0978)
[4] = DRIVE-CLiQ actual topology (r9900 or r9901)
[5] = DRIVE-CLiQ target topology (r9902 or r9903)

[6] = DRIVE-CLiQ sockets (p0109)
[7] = Technology Extensions
[8] = Topology comparison result

Dependency: Refer to: r7867, r7871

Note: For index [0]:

When changing one of the following indices, then the value in this index is incremented.

For index [1]:

Drive object configuration. When changing r7871[0] on a drive object, the value in this index is incremented.

For index [2]:

Drive object, configuration unit. When changing either p0101 or r0102, the value in this index is incremented.

For index [3]:

PROFIBUS configuration unit. When changing p0978, the value in this index is incremented.

For index [4]:

DRIVE-CLiQ actual topology. When changing either r9900 or r9901, the value in this index is incremented.

For index [5]:

DRIVE-CLiQ target topology. When changing either p9902 or p9903, the value in this index is incremented.

For index [6]:

DRIVE-CLiQ sockets. When changing p0109, the value in this index is incremented.

For index [7]:

Technology Extensions When changing Technology Extensions, the value in this index is incremented.

For index [8]:

Topology comparison result. When changing the topology comparison result, the value in this index is incremented.

r7871[0...15] Configuration changes drive object / Config_chng DO

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the configuration changes on the drive object.

Index:
[0] = Sum of the following indices
[1] = p0107, p0108, p0171, p0172 or p0173
[2] = Drive object name (p0199)
[3] = Structure-relevant parameters (e.g. p0180)
[4] = BICO interconnections
[5] = Activate/deactivate drive object
[6] = Data backup required
[7] = Reserved
[8] = Reference or changeover parameters (e.g. p2000)
[9] = Parameter count through Drive Control Chart (DCC)
[10] = p0107, p0108
[11] = Reserved
[12] = Write protection and know-how protection status
[13] = Reserved
[14] = Reserved
[15] = Reserved

Dependency: Refer to: r7868, r7870

Note: For index [0]:

When changing one of the following indices, then the value in this index is incremented.

For index [1]:

Drive object commissioning: When changing p0107, p0108, p0171, p0172 or p0173, the value in this index is incremented.

For index [2]:

Drive object name. When changing p0199, the value in this index is incremented.

For index [3]:

Drive object structure. When changing a parameter that is relevant for the structure (e.g. number of data sets), the value in this index is incremented.

For index [4]:

Drive object BICO interconnections. When changing r3977, the value in this index is incremented.

For index [5]:

Drive object activity: When changing p0105, the value in this index is incremented.

For index [6]:

Drive object, data save.

0: There are no parameter changes to save.

1: There are parameter changes to save.

For index [8]:

Drive object changeover of units. When changing reference or changeover parameters (e.g. p2000, p0304), the value in this index is incremented.

For index [9]:

Drive object parameter count. When changing the number of parameters by loading Drive Control Chart (DCC), the value in this index is incremented.

For index [10]:

Drive object configuration. When changing p0107, p0108, p0171, p0172 or p0173, the value in this index is incremented.

r7871[0...15] Configuration changes drive object / Config_chng DO

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the configuration changes on the drive object.

Index:
[0] = Sum of the following indices
[1] = p0010, p0107, p0108, p0171, p0172 or p0173
[2] = Drive object name (p0199)
[3] = Structure-relevant parameters (e.g. p0180)
[4] = BICO interconnections
[5] = Activate/deactivate drive object
[6] = Data backup required
[7] = Activate/deactivate component
[8] = Reference or changeover parameters (e.g. p2000)
[9] = Parameter count through Drive Control Chart (DCC)
[10] = p0107, p0108, p0171, p0172 or p0173
[11] = p0530 or p0531
[12] = Write protection and know-how protection status
[13] = Reserved
[14] = Reserved
[15] = SERVO or VECTOR (e.g. p0300)

Dependency: Refer to: r7868, r7870

Note: For index [0]:

When changing one of the following indices, then the value in this index is incremented.

For index [1]:

Drive object commissioning: When changing p0010, p0107, p0108, p0171, p0172 or p0173, the value in this index is incremented.

For index [2]:

Drive object name. When changing p0199, the value in this index is incremented.

For index [3]:

Drive object structure. When changing a parameter that is relevant for the structure (e.g. number of data sets), the value in this index is incremented.

For index [4]:

Drive object BICO interconnections. When changing r3977, the value in this index is incremented.

For index [5]:

Drive object activity: When changing p0105, the value in this index is incremented.

For index [6]:

Drive object, data save.

0: There are no parameter changes to save.

1: There are parameter changes to save.

For index [7]:

Drive object component activity: When changing either p0125 or p0145, the value in this index is incremented.

For index [8]:

Drive object changeover of units. When changing reference or changeover parameters (e.g. p2000, p0304), the value in this index is incremented.

For index [9]:

Drive object parameter count. When changing the number of parameters by loading Drive Control Chart (DCC), the value in this index is incremented.

For index [10]:

Drive object configuration. When changing p0107, p0108, p0171, p0172 or p0173, the value in this index is incremented.

For index [11]:

Drive object bearing. When changing p0530 or p0531, the value in this index is incremented.

For index [12]:

Drive object configuration. When activating/deactivating write protection or know-how protection, the value in this index is incremented.

For index [15]:

SERVO/VECTOR configuration. When changing p0300, p0301 or p0400, the value in this index is incremented.

r7871[0...15] Configuration changes drive object / Config_chng DO

A_INF, S_INF, R_INF, B_INF

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the configuration changes on the drive object.

Index:
[0] = Sum of the following indices
[1] = p0010, p0107, p0108
[2] = Drive object name (p0199)
[3] = Structure-relevant parameters (e.g. p0180)
[4] = BICO interconnections
[5] = Activate/deactivate drive object
[6] = Data backup required
[7] = Activate/deactivate component
[8] = Reference or changeover parameters (e.g. p2000)
[9] = Parameter count through Drive Control Chart (DCC)
[10] = p0107, p0108
[11] = Reserved
[12] = Write protection and know-how protection status
[13] = Reserved
[14] = Reserved
[15] = Reserved

Dependency: Refer to: r7868, r7870

Note: For index [0]:

When changing one of the following indices, then the value in this index is incremented.

For index [1]:

Drive object commissioning: When changing p0010, p0107, p0108, p0171, p0172 or p0173, the value in this index is incremented.

For index [2]:

Drive object name. When changing p0199, the value in this index is incremented.

For index [3]:

Drive object structure. When changing a parameter that is relevant for the structure (e.g. number of data sets), the value in this index is incremented.

For index [4]:

Drive object BICO interconnections. When changing r3977, the value in this index is incremented.

For index [5]:

Drive object activity: When changing p0105, the value in this index is incremented.

For index [6]:

Drive object, data save.

0: There are no parameter changes to save.

1: There are parameter changes to save.

For index [7]:

Drive object component activity: When changing either p0125 or p0145, the value in this index is incremented.

For index [8]:

Drive object changeover of units. When changing reference or changeover parameters (e.g. p2000, p0304), the value in this index is incremented.

For index [9]:

Drive object parameter count. When changing the number of parameters by loading Drive Control Chart (DCC), the value in this index is incremented.

For index [10]:

Drive object configuration. When changing p0107, p0108, p0171, p0172 or p0173, the value in this index is incremented.

r7871[0...15] Configuration changes drive object / Config_chng DO

TM31, TM41, TM17, TM15, TM15DI_DO, TM120, TM150, TB30, HUB, CU_LINK

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the configuration changes on the drive object.

Index:
[0] = Sum of the following indices
[1] = p0010, p0107, p0108
[2] = Drive object name (p0199)
[3] = Structure-relevant parameters (e.g. p0180)
[4] = BICO interconnections
[5] = Activate/deactivate drive object
[6] = Data backup required
[7] = Reserved
[8] = Reference or changeover parameters (e.g. p2000)
[9] = Parameter count through Drive Control Chart (DCC)
[10] = p0107, p0108
[11] = Reserved
[12] = Write protection and know-how protection status
[13] = Reserved
[14] = Reserved
[15] = Reserved

Dependency: Refer to: r7868, r7870

Note: For index [0]:

When changing one of the following indices, then the value in this index is incremented.

For index [1]:

Drive object commissioning: When changing p0010, p0107 or p0108, the value in this index is incremented.

For index [2]:

Drive object name. When changing p0199, the value in this index is incremented.

For index [3]:

Drive object structure. When changing a parameter that is relevant for the structure (e.g. number of data sets), the value in this index is incremented.

For index [4]:

Drive object BICO interconnections. When changing r3977, the value in this index is incremented.

For index [5]:

Drive object activity: When changing p0105, the value in this index is incremented.

For index [6]:

Drive object, data save.

0: There are no parameter changes to save.

1: There are parameter changes to save.

For index [8]:

Drive object changeover of units. When changing reference or changeover parameters (e.g. p2000, p0304), the value in this index is incremented.

For index [9]:

Drive object parameter count. When changing the number of parameters by loading Drive Control Chart (DCC), the value in this index is incremented.

For index [10]:

Drive object configuration. When changing either p0107 or p0108, the value in this index is incremented.

For index [12]:

Drive object configuration. When activating/deactivating write protection or know-how protection, the value in this index is incremented.

r7871[0...15] Configuration changes drive object / Config_chng DO

TM54F_MA, TM54F_SL			
	Can be changed: -	**Calculated:** -	**Access level:** 4
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: -	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the configuration changes on the drive object.

Index:
[0] = Sum of the following indices
[1] = p0010, p0107, p0108
[2] = Drive object name (p0199)
[3] = Structure-relevant parameters (e.g. p0180)
[4] = BICO interconnections
[5] = Reserved
[6] = Data backup required
[7] = Reserved
[8] = Reference or changeover parameters (e.g. p2000)
[9] = Parameter count through Drive Control Chart (DCC)
[10] = p0107, p0108
[11] = Reserved
[12] = Write protection and know-how protection status
[13] = Reserved
[14] = Reserved
[15] = Reserved

Dependency: Refer to: r7868, r7870

Note: For index [0]:

When changing one of the following indices, then the value in this index is incremented.

For index [1]:

Drive object commissioning: When changing p0010, p0107, p0108, p0171, p0172 or p0173, the value in this index is incremented.

For index [2]:

Drive object name. When changing p0199, the value in this index is incremented.

For index [3]:

Drive object structure. When changing a parameter that is relevant for the structure (e.g. number of data sets), the value in this index is incremented.

For index [4]:

Drive object BICO interconnections. When changing r3977, the value in this index is incremented.

For index [6]:

Drive object, data save.

0: There are no parameter changes to save.

1: There are parameter changes to save.

For index [8]:

Drive object changeover of units. When changing reference or changeover parameters (e.g. p2000, p0304), the value in this index is incremented.

For index [9]:

Drive object parameter count. When changing the number of parameters by loading Drive Control Chart (DCC), the value in this index is incremented.

For index [10]:

Drive object configuration. When changing p0107, p0108, p0171, p0172 or p0173, the value in this index is incremented.

r7871[0...15] Configuration changes drive object / Config_chng DO

ENC			
	Can be changed: -	**Calculated:** -	**Access level:** 4
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: -	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the configuration changes on the drive object.

Index:
[0] = Sum of the following indices
[1] = p0010, p0107, p0108, p0171, p0172 or p0173
[2] = Drive object name (p0199)
[3] = Structure-relevant parameters (e.g. p0180)
[4] = BICO interconnections
[5] = Activate/deactivate drive object
[6] = Data backup required
[7] = Activate/deactivate component
[8] = Reference or changeover parameters (e.g. p2000)
[9] = Parameter count through Drive Control Chart (DCC)
[10] = p0107, p0108, p0171, p0172 or p0173
[11] = p0530 or p0531
[12] = Write protection and know-how protection status
[13] = Reserved
[14] = Reserved
[15] = Enc type (p0400)

Dependency: Refer to: r7868, r7870

Note: For index [0]:

When changing one of the following indices, then the value in this index is incremented.

For index [1]:

Drive object configuration. When changing p0010, p0107, p0108, p0171, p0172 or p0173, the value in this index is incremented.

For index [2]:

Drive object name. When changing p0199, the value in this index is incremented.

For index [3]:

Drive object structure. When changing a parameter that is relevant for the structure (e.g. number of data sets), the value in this index is incremented.

For index [4]:

Drive object BICO interconnections. When changing r3977, the value in this index is incremented.

For index [6]:

Drive object, data save.

0: There are no parameter changes to save.

1: There are parameter changes to save.

For index [8]:

Drive object changeover of units. When changing reference or changeover parameters (e.g. p2000, p0304 ...), the value in this index is incremented.

For index [9]:

Drive object parameter count. When changing the number of parameters by loading Drive Control Chart (DCC), the value in this index is incremented.

For index [15]:

Encoder configuration. When changing p0400, the value in this index is incremented.

r7872[0...3] Drive object status changes / DO stat_chng

All objects

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status changes on the drive object.

Index:
[0] = Sum of the following indices
[1] = Faults (r0944)
[2] = Alarms (r2121)
[3] = Safety messages (r9744)

Dependency: Refer to: r7869

Note: For index [0]:

When changing one of the following indices, then the value in this index is incremented.

For index [1]:

Drive object faults. When changing r0944, the value in this index is incremented.

For index [2]:

Drive object alarms. When changing r2121, the value in this index is incremented.

For index [3]:

Drive object safety messages. When changing r9744, the value in this index is incremented.

p7900[0...23] Drive objects priority / DO priority

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	65535	0

Description: Sets the priority for processing the existing drive objects in the system.

The parameter enables a free sequence to be set for processing the drive objects. For this purpose all the drive object numbers existing in the system have to be written in the desired sequence into the corresponding indices of the parameter. After re-booting this sequence will be effective without a plausibility check.

With the factory setting the following priorities regarding processing are applicable:

- the drive objects are pre-sorted according to their type as follows: CONTROL UNIT, INFEED, SERVO, VECTOR, TM, HUB, CU_LINK

- if they are of the same type, they are sorted in ascending order according to their drive object number, i.e. the lower the number, the higher the priority for processing.

Index:
[0] = Drive object number Control Unit
[1] = Drive object number object 1
[2] = Drive object number object 2
[3] = Drive object number object 3
[4] = Drive object number object 4
[5] = Drive object number object 5
[6] = Drive object number object 6
[7] = Drive object number object 7
[8] = Drive object number object 8
[9] = Drive object number object 9

[10] = Drive object number object 10
[11] = Drive object number object 11
[12] = Drive object number object 12
[13] = Drive object number object 13
[14] = Drive object number object 14
[15] = Drive object number object 15
[16] = Drive object number object 16
[17] = Drive object number object 17
[18] = Drive object number object 18
[19] = Drive object number object 19
[20] = Drive object number object 20
[21] = Drive object number object 21
[22] = Drive object number object 22
[23] = Drive object number object 23

Notice: This parameter may only be used by qualified service personnel.

Note: If the same drive object numbers are used and if the existing drive object numbers in the system are entered incompletely, the content of this parameter is ignored entirely. The behavior as with factory setting will then become effective.

r7901[0...81] Sampling times / t_sample

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [µs]	- [µs]	- [µs]

Description: Displays the sampling times currently present on the drive unit.

r7901[0...63]: sampling times of hardware time slices.

r7901[64...82]: sampling times of software time slices.

r7901[x] = 0, means the following:

No methods have been registered in the time slice involved.

Note: The basis for the software time slices is T_NRK = p7901[15].

r7903 Hardware sampling times still assignable / HW t_samp free

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the number of hardware sampling times that can still be assigned.

These free sampling times can be used by technology functions such as TEC, DCC or FBLOCKS.

Note: DCC: Drive Control Chart

FBLOCKS: free blocks

TEC: Technology Extension

p8500[0...7] BI: Input signal bit-serially 0 / Input_sig bit 0

CU_I, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2195
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for bit-serial input signals.

The signals are available at binector output r8510.0 ... 7 for interconnection.

Index: [0] = To BO: r8510.0
[1] = To BO: r8510.1
[2] = To BO: r8510.2
[3] = To BO: r8510.3
[4] = To BO: r8510.4
[5] = To BO: r8510.5
[6] = To BO: r8510.6
[7] = To BO: r8510.7

Dependency: Refer to: r8510

p8500[0...7] BI: Send data transfer bit-serially 0 / Send trans bit 0

CU_NX_CX, CU_LINK			
	Can be changed: U, T	**Calculated:** -	**Access level:** 2
	Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2194
	P-Group: -	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source for bitwise data transfer.

These signals are transferred to another Control Unit and are located there in binector output: r8510.0 ... 7 for further interconnection.

Index: [0] = To BO: r8510.0
[1] = To BO: r8510.1
[2] = To BO: r8510.2
[3] = To BO: r8510.3
[4] = To BO: r8510.4
[5] = To BO: r8510.5
[6] = To BO: r8510.6
[7] = To BO: r8510.7

Dependency: Refer to: r8510

Note: Example:

Providing the operating signals calculated on this Control Unit for the infeeds on a different Control Unit.

p8500[0] = r0863.0 (operating signal infeed 1)

p8500[1] = r0863.0 (operating signal infeed 2) etc.

p8501[0...21] BI: Input signal bit-serially 1 / Input_sig bit 1

CU_I, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410			
	Can be changed: U, T	**Calculated:** -	**Access level:** 2
	Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2195
	P-Group: -	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source for bit-serial input signals.

The signals are available at binector output r8511.0 ... 21 for interconnection.

Index: [0] = To BO: r8511.0
[1] = To BO: r8511.1
[2] = To BO: r8511.2
[3] = To BO: r8511.3
[4] = To BO: r8511.4
[5] = To BO: r8511.5
[6] = To BO: r8511.6
[7] = To BO: r8511.7
[8] = To BO: r8511.8
[9] = To BO: r8511.9
[10] = To BO: r8511.10
[11] = To BO: r8511.11
[12] = To BO: r8511.12
[13] = To BO: r8511.13
[14] = To BO: r8511.14
[15] = To BO: r8511.15

[16] = To BO: r8511.16
[17] = To BO: r8511.17
[18] = To BO: r8511.18
[19] = To BO: r8511.19
[20] = To BO: r8511.20
[21] = To BO: r8511.21

Dependency: Refer to: r8511

p8501[0...21] BI: Send data transfer bit-serially 1 / Send trans bit 1

CU_NX_CX

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2194
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	[0] 722.0 [1] 722.1 [2] 722.2 [3] 722.3 [4...7] 0 [8] 722.8 [9] 722.9 [10] 722.10 [11] 722.11 [12...15] 0 [16] 722.16 [17] 722.17 [18...21] 0

Description: Sets the signal source for bitwise data transfer.

These signals are transferred to another Control Unit and are located there in binector output: r8511.0 ... 21 for further interconnection.

Index:
[0] = To BO: r8511.0
[1] = To BO: r8511.1
[2] = To BO: r8511.2
[3] = To BO: r8511.3
[4] = To BO: r8511.4
[5] = To BO: r8511.5
[6] = To BO: r8511.6
[7] = To BO: r8511.7
[8] = To BO: r8511.8
[9] = To BO: r8511.9
[10] = To BO: r8511.10
[11] = To BO: r8511.11
[12] = To BO: r8511.12
[13] = To BO: r8511.13
[14] = To BO: r8511.14
[15] = To BO: r8511.15
[16] = To BO: r8511.16
[17] = To BO: r8511.17
[18] = To BO: r8511.18
[19] = To BO: r8511.19
[20] = To BO: r8511.20
[21] = To BO: r8511.21

Dependency: Refer to: r8511

p8501[0...21] BI: Send data transfer bit-serially 1 / Send trans bit 1

CU_LINK

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2194
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	[0] 722.0 [1] 722.1 [2] 722.2 [3] 722.3 [4] 722.4 [5] 722.5 [6] 722.6 [7] 722.7 [8] 722.8 [9] 722.9 [10] 722.10 [11] 722.11 [12] 722.12 [13] 722.13 [14] 722.14 [15] 722.15 [16] 722.16 [17] 722.17 [18] 0 [19] 0 [20] 722.20 [21] 722.21

Description: Sets the signal source for bitwise data transfer.

These signals are transferred to another Control Unit and are located there in binector output: r8511.0 ... 21 for further interconnection.

Index:
[0] = To BO: r8511.0
[1] = To BO: r8511.1
[2] = To BO: r8511.2
[3] = To BO: r8511.3
[4] = To BO: r8511.4
[5] = To BO: r8511.5
[6] = To BO: r8511.6
[7] = To BO: r8511.7
[8] = To BO: r8511.8
[9] = To BO: r8511.9
[10] = To BO: r8511.10
[11] = To BO: r8511.11
[12] = To BO: r8511.12
[13] = To BO: r8511.13
[14] = To BO: r8511.14
[15] = To BO: r8511.15
[16] = To BO: r8511.16
[17] = To BO: r8511.17
[18] = To BO: r8511.18
[19] = To BO: r8511.19
[20] = To BO: r8511.20
[21] = To BO: r8511.21

Dependency: Refer to: r8511

p8502 CI: Input signal word-serially 0 / Input_sig word 0

CU_I, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / Integer32	**Dyn. index:** -	**Func. diagram:** 2195
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for word-serial input signals.

This signal value is available at connector output r8512 for interconnection.

Dependency: Refer to: r8512

p8502 CI: Send data transfer word-serially 0 / Send trans word 0

CU_NX_CX, CU_LINK

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2194
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the word-serial data transfer (process signal).

This signal value is transferred to another Control Unit and is located at connector output r8512 for further interconnection.

Dependency: Refer to: r8512

p8503 CI: Input signal word-serially 1 / Input_sig word 1

CU_I, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / Integer32	**Dyn. index:** -	**Func. diagram:** 2195
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for word-serial input signals.

This signal value is available in connector output r8513 for further interconnection.

Dependency: Refer to: r8513

p8503 CI: Send data transfer word-serially 1 / Send trans word 1

CU_NX_CX, CU_LINK

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2194
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the word-serial data transfer (process signal).

This signal value is transferred to another Control Unit and is located at connector output r8513 for further interconnection.

Dependency: Refer to: r8513

p8504 CI: Input signal word-serially 2 / Input_sig word 2

CU_I, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / Integer32	**Dyn. index:** -	**Func. diagram:** 2195
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for word-serial input signals.

This signal value is available in connector output r8514 for further interconnection.

Dependency: Refer to: r8514

p8504 CI: Send data transfer word-serially 2 / Send trans word 2

CU_NX_CX, CU_LINK

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2194
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the word-serial data transfer (process signal).

This signal value is transferred to another Control Unit and is located at connector output r8514 for further interconnection.

Dependency: Refer to: r8514

p8505 CI: Input signal word-serially 3 / Input_sig word 3

CU_I, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / Integer32	**Dyn. index:** -	**Func. diagram:** 2195
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for word-serial input signals.

This signal value is available in connector output r8515 for further interconnection.

Dependency: Refer to: r8515

p8505 CI: Send data transfer word-serially 3 / Send trans word 3

CU_NX_CX, CU_LINK

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned32 / FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2194
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the word-serial data transfer (process signal).

This signal value is transferred to another Control Unit and is located at connector output r8515 for further interconnection.

Dependency: Refer to: r8515

r8510.0...7 BO: Output signal bit-serially 0 / Outp_sig bit 0

CU_I, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2195
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and binector output for the signal interconnected via binector input p8500[0...7].

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	From BI: p8500[0]	ON	OFF	-
01	From BI: p8500[1]	ON	OFF	-
02	From BI: p8500[2]	ON	OFF	-
03	From BI: p8500[3]	ON	OFF	-
04	From BI: p8500[4]	ON	OFF	-
05	From BI: p8500[5]	ON	OFF	-
06	From BI: p8500[6]	ON	OFF	-
07	From BI: p8500[7]	ON	OFF	-

Dependency: Refer to: p8500

r8510.0...7 BO: Receive data transfer bit-serially 0 / Recv trans bit 0

CU_NX_CX, CU_LINK

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2194
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and binector output for the bit-serial received data.

These signals were interconnected and transferred to another Control Unit via binector input p8500[0...7].

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	From BI: p8500[0]	ON	OFF	-
01	From BI: p8500[1]	ON	OFF	-
02	From BI: p8500[2]	ON	OFF	-
03	From BI: p8500[3]	ON	OFF	-
04	From BI: p8500[4]	ON	OFF	-
05	From BI: p8500[5]	ON	OFF	-
06	From BI: p8500[6]	ON	OFF	-
07	From BI: p8500[7]	ON	OFF	-

Dependency: Refer to: p8500

r8511.0...21 BO: Output signal bit-serially 1 / Outp_sig bit 1

CU_I, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2195
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and binector output for the signal interconnected via binector input p8501[0...21].

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	From BI: p8501[0]	ON	OFF	-
01	From BI: p8501[1]	ON	OFF	-
02	From BI: p8501[2]	ON	OFF	-
03	From BI: p8501[3]	ON	OFF	-
04	From BI: p8501[4]	ON	OFF	-
05	From BI: p8501[5]	ON	OFF	-
06	From BI: p8501[6]	ON	OFF	-
07	From BI: p8501[7]	ON	OFF	-

08	From BI: p8501[8]	ON	OFF	-
09	From BI: p8501[9]	ON	OFF	-
10	From BI: p8501[10]	ON	OFF	-
11	From BI: p8501[11]	ON	OFF	-
12	From BI: p8501[12]	ON	OFF	-
13	From BI: p8501[13]	ON	OFF	-
14	From BI: p8501[14]	ON	OFF	-
15	From BI: p8501[15]	ON	OFF	-
16	From BI: p8501[16]	ON	OFF	-
17	From BI: p8501[17]	ON	OFF	-
18	From BI: p8501[18]	ON	OFF	-
19	From BI: p8501[19]	ON	OFF	-
20	From BI: p8501[20]	ON	OFF	-
21	From BI: p8501[21]	ON	OFF	-

Dependency: Refer to: p8501

r8511.0...21 BO: Receive data transfer bit-serially 1 / Recv trans bit 1

CU_NX_CX, CU_LINK

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2194
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and binector output for the bit-serial received data.

These signals were interconnected and transferred to another Control Unit via binector input p8501[0...21].

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	From BI: p8501[0]	ON	OFF	-
01	From BI: p8501[1]	ON	OFF	-
02	From BI: p8501[2]	ON	OFF	-
03	From BI: p8501[3]	ON	OFF	-
04	From BI: p8501[4]	ON	OFF	-
05	From BI: p8501[5]	ON	OFF	-
06	From BI: p8501[6]	ON	OFF	-
07	From BI: p8501[7]	ON	OFF	-
08	From BI: p8501[8]	ON	OFF	-
09	From BI: p8501[9]	ON	OFF	-
10	From BI: p8501[10]	ON	OFF	-
11	From BI: p8501[11]	ON	OFF	-
12	From BI: p8501[12]	ON	OFF	-
13	From BI: p8501[13]	ON	OFF	-
14	From BI: p8501[14]	ON	OFF	-
15	From BI: p8501[15]	ON	OFF	-
16	From BI: p8501[16]	ON	OFF	-
17	From BI: p8501[17]	ON	OFF	-
18	From BI: p8501[18]	ON	OFF	-
19	From BI: p8501[19]	ON	OFF	-
20	From BI: p8501[20]	ON	OFF	-
21	From BI: p8501[21]	ON	OFF	-

Dependency: Refer to: p8501

r8512 CO: Output signal word-serially 0 / Outp_sig word 0

CU_I, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2195
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Display and connector output for the signal interconnected via connector input p8502.

Dependency: Refer to: p8502

r8512 CO: Receive data transfer word-serially 0 / Recv trans word 0

CU_NX_CX, CU_LINK

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2194
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output for the word-serially received data (process signal).

This signal value is interconnected and transferred to another Control Unit via connector input p8502.

Dependency: Refer to: p8502

r8513 CO: Output signal word-serially 1 / Outp_sig word 1

CU_I, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2195
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Display and connector output for the signal interconnected via connector input p8503.

Dependency: Refer to: p8503

r8513 CO: Receive data transfer word-serially 1 / Recv trans word 1

CU_NX_CX, CU_LINK

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2194
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output for the word-serially received data (process signal).

This signal value is interconnected and transferred to another Control Unit via connector input p8503.

Dependency: Refer to: p8503

r8514 CO: Output signal word-serially 2 / Outp_sig word 2

CU_I, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2195
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Display and connector output for the signal interconnected via connector input p8504.

Dependency: Refer to: p8504

r8514 CO: Receive data transfer word-serially 2 / Recv trans word 2

CU_NX_CX, CU_LINK

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2194
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output for the word-serially received data (process signal).
This signal value is interconnected and transferred to another Control Unit via connector input p8504.

Dependency: Refer to: p8504

r8515 CO: Output signal word-serially 3 / Outp_sig word 3

CU_I, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2195
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** PERCENT	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Display and connector output for the signal interconnected via connector input p8505.

Dependency: Refer to: p8505

r8515 CO: Receive data transfer word-serially 3 / Recv trans word 3

CU_NX_CX, CU_LINK

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2194
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output for the word-serially received data (process signal).
This signal value is interconnected and transferred to another Control Unit via connector input p8505.

Dependency: Refer to: p8505

p8520[0...3] Data transfer word-serial scaling / Trans word scal

CU_NX_CX, CU_LINK

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2194
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00010	10000.00000	1.00000

Description: Sets the scaling for word-serial data transfer 0 ... 3 (process signals).

Index:
[0] = Signal 0 from CI: p8502
[1] = Signal 1 from CI: p8503
[2] = Signal 2 from CI: p8504
[3] = Signal 3 from CI: p8505

Dependency: Refer to: p8502, p8503, p8504, p8505

p8550 AOP LOCAL/REMOTE / AOP LOCAL/REMOTE

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 1001 bin

Description: Setting for saving the actual configuration of the Advanced Operator Panel (AOP).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	LOCAL save	Yes	No	-
01	Start in LOCAL	Yes	No	-
02	Change in oper	Yes	No	-
03	OFF acts like OFF1	Yes	No	-
04	OFF acts like OFF2	Yes	No	-
05	OFF acts like OFF3	Yes	No	-
06	Reserved	Yes	No	-
07	CW/CCW active	Yes	No	-
08	Jog active	Yes	No	-
09	Save speed setpoint	Yes	No	-
14	Inhibit operation	Yes	No	-
15	Inhibit parameterization	Yes	No	-

p8552 IOP speed unit / IOP speed unit

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	2	2

Description: Sets the unit for displaying and entering speeds.

Value:
1: Hz
2: rpm

r8570[0...39] Macro drive object / Macro DO

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM15DI_DO, TM120, TM150

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the macro file saved in the appropriate directory on the memory card/device memory.

Dependency: Refer to: p0015

Note: For a value = 9999999, the following applies: The read operation is still running.

r8571[0...39] Macro Binector Input (BI) / Macro BI

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM15DI_DO, TB30

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the ACX file saved in the appropriate directory in the non-volatile memory.

Dependency: Refer to: p0700

Note: For a value = 9999999, the following applies: The read operation is still running.

r8572[0...39] Macro Connector Inputs (CI) for speed setpoints / Macro CI n_set

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the ACX file saved in the appropriate directory in the non-volatile memory.

Dependency: Refer to: p1000

Note: For a value = 9999999, the following applies: The read operation is still running.

r8573[0...39] Macro Connector Inputs (CI) for torque setpoints / Macro CI M_set

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the ACX file saved in the appropriate directory in the non-volatile memory.

Dependency: Refer to: p1500

Note: For a value = 9999999, the following applies: The read operation is still running.

r8585 Macro execution actual / Macro executed

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM15DI_DO, TM120, TM150, TB30

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the macro currently being executed on the drive object.

Dependency: Refer to: p0015, p0700, p1000, p1500, r8570, r8571, r8572, r8573

r8600 CAN device type / Device type

CU_S120_PN (CAN), CU_S150_PN (CAN), CU_S120_DP (CAN), CU_S150_DP (CAN)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays all of the devices connected to the CAN bus after run-up.

r8600

= 00000000 hex: No drive recognized.

= FFFF0192 hex: Several drives - 1st drive is an Active Line Module, servo drive or vector drive

= FFFF0191 hex: Several drives - 1st drive is a Terminal Module

= 02010192 hex: 1 Vector drive

= 00020192 hex: 1 Servo drive

= 01000192 hex: 1 Active Line Module

= 00080191 hex: 1 Terminal Module

Note: Corresponds to the CANopen object 1000 hex.

For each detected drive, the device type is displayed in object 67FF hex + 800 hex * x (x: drive number 0 ... 7).

r8601 CAN error register / Error register

CU_S120_PN (CAN), CU_S150_PN (CAN), CU_S120_DP (CAN), CU_S150_DP (CAN)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the error register for CANopen.
Bit 0: Generic error.
0 signal: No error present.
1 signal: Generic error present.
Bit 1 ... 3: Not supported (always a 0 signal).
Bit 4: Communications error.
0 signal: There is no message in the range 8700 ... 8799.
1 signal: There is at least one message (fault or alarm) in the range 8700 ... 8799.
Bit 5 ... 6: Not supported (always a 0 signal).
Bit 7: Fault outside the range 8700 ... 8799.
0 signal: There is no fault outside the range 8700 ... 8799.
1 signal: There is at least one fault outside the range 8700 ... 8799.

Note: Corresponds to the CANopen object 1001 hex.

p8602 CAN SYNC object / SYNC object

CU_S120_PN (CAN), CU_S150_PN (CAN), CU_S120_DP (CAN), CU_S150_DP (CAN)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0080 hex

Description: Sets the SYNC object parameter for the following CANopen objects:
- 1005 hex: COB-ID

Note: SINAMICS operates as SYNC load.
COB-ID: CAN object identification

p8603 CAN COB-ID Emergency Message / COB-ID EMCY Msg

CU_S120_PN (CAN), CU_S150_PN (CAN), CU_S120_DP (CAN), CU_S150_DP (CAN)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the COB-ID for the emergency message (error telegram).
It corresponds to the CANopen objects:
- 1014 hex: COB-ID

Note: If, when downloading, the pre-set value 0 is downloaded, then the CANopen pre-set value 80 hex + Node-ID is automatically set.
Online, the value 0 is rejected as, according to the CANopen Standard, COB-ID 0 is not permitted here.
The changeover of the node ID using the hardware switch at the Control Unit or per software has no effect on the COB-ID EMCY. The saved value remains effective.

p8604[0...1] CAN life guarding / Life guarding

CU_S120_PN (CAN), CU_S150_PN (CAN), CU_S120_DP (CAN), CU_S150_DP (CAN)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	65535	0

Description: Sets the life guarding parameter for the following CANopen objects:

- 100C hex: Guard Time

- 100D hex: Life Time Factor

The life time is derived by multiplying guard time by the life time factor.

Index: [0] = Time interval [ms] for the life time
[1] = Factor for the lifetime

Dependency: Refer to: p8606

Refer to: F08700

Note: For p8604[0] = 0 and/or p8604[1] = 0, the life guarding event service (monitoring the node guarding, fault F08700 with fault value = 2) is deactivated.

The node guarding protocol is active without the life guarding event service, if the heartbeat protocol is deactivated (p8606 = 0).

p8606 CAN Producer Heartbeat Time / Prod Heartb Time

CU_S120_PN (CAN), CU_S150_PN (CAN), CU_S120_DP (CAN), CU_S150_DP (CAN)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	65535 [ms]	0 [ms]

Description: Sets the time [ms] to cyclically send heartbeat telegrams.

The smallest cycle is 100 ms.

For p8606 = 0, heartbeat telegrams are not sent.

Dependency: Refer to: p8604

Note: Corresponds to the CANopen object 1017 hex.

Activating the heartbeat protocol automatically deactivates the node guarding.

r8607[0...3] CAN Identity Object / Identity object

CU_S120_PN (CAN), CU_S150_PN (CAN), CU_S120_DP (CAN), CU_S150_DP (CAN)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: General device information display.

Index: [0] = Vendor ID
[1] = Product code
[2] = Revision number
[3] = Serial number

Note: Corresponds to the CANopen object 1018 hex.

For index [3]:

The SINAMICS serial number comprises 60 bits.

Of these bits, the following are displayed in this index:

Bits 0 ... 19: Consecutive number

Bits 20 ... 23: Production ID

- 0 hex: Development
- 1 hex: P1 unique number
- 2 hex: P2 unique number
- 3 hex: WA unique number
- 9 hex: Pattern
- F hex: All others

Bits 24 ... 27: Month of manufacture (0 means January, B means December)

Bits 28 ... 31: Year of manufacture (0 means 2002)

p8608[0...1] CAN Clear Bus Off Error / Clear bus off err

CU_S120_PN (CAN), CU_S150_PN (CAN), CU_S120_DP (CAN), CU_S150_DP (CAN)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: As a result of a Bus Off error, the CAN controller is set into the initialization state.

For index [0]:

The CAN controller is manually started after resolving the cause of the error with p8608[0] = 1

For index [1]:

The automatic CAN bus start function is activated using p8608[1] = 1.

At 2 second intervals, the CAN controller is automatically restarted until the cause of the error has been resolved and a CAN connection has been established.

Value:
0: Inactive
1: Start CAN controller

Index:
[0] = Manual controller start function
[1] = Activating the automatic controller start function

Note: For index [0]:

This parameter is automatically reset to 0 after start.

p8609[0...1] CAN Error Behavior / Error behavior

CU_S120_PN (CAN), CU_S150_PN (CAN), CU_S120_DP (CAN), CU_S150_DP (CAN)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	2	1

Description: Sets the behavior of the CAN node referred to the communications error or equipment fault.

Value:
0: Pre-operational
1: No change
2: Stopped

Index:
[0] = Behavior for communication errors
[1] = Behavior for device faults

Note: Corresponds to the CANopen object 1029 hex.

r8610[0...1] CAN First Server SDO / First server SDO

CU_S120_PN (CAN), CU_S150_PN (CAN), CU_S120_DP (CAN), CU_S150_DP (CAN)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the identifier (client/server and server/client) of the SDO channel.

Index:
[0] = COB-ID from the client to the server
[1] = COB-ID from the server to the client

Dependency: Refer to: p8612

Note: Corresponds to the CANopen object 1200 hex.

SDO: Service Data Object

p8611[0...82] CAN Pre-defined Error Field / Pre_def err field

CU_S120_PN (CAN), CU_S150_PN (CAN), CU_S120_DP (CAN), CU_S150_DP (CAN)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	FFFF 1000 hex	0000 hex

Description: Displays the Pre-defined Error Field of the CAN node.

It includes the number of all errors that have occurred, the number of errors that have occurred for each drive and the errors according to their history.

The first 16 bits represent the CANopen error code and the second 16 bits the SINAMICS error code.

Index 1 has the same structure - however, the drive object ID is in the second 16 bits instead of the SINAMICS error code.

CANopen error code:

0000 hex: No error present.

8110 hex: Alarm A08751 present.

8120 hex: Alarm A08752 present.

8130 hex: Alarm A08700(F) with alarm value = 2 present.

1000 hex: Generic error 1 present (there is at least one fault outside the range 8700 ... 8799)

1001 hex: Generic error 2 present (there is at least one alarm in the range 8700 ... 8799 with the exception of A08751, A08752, A08700)

All drive objects are acknowledged by writing the value 0 to index 0. As soon as a fault has been acknowledged or an alarm cleared, then it is also cleared from the fault list.

Index:
[0] = Number of all faults in the drive unit
[1] = Actual drive number/fault number
[2] = Number of faults drive 1
[3] = Fault 1/ drive 1
[4] = Fault 2/ drive 1
[5] = Fault 3/ drive 1
[6] = Fault 4/ drive 1
[7] = Fault 5/ drive 1
[8] = Fault 6/ drive 1
[9] = Fault 7/ drive 1
[10] = Fault 8/ drive 1
[11] = Number of faults drive 2
[12] = Fault 1/ drive 2
[13] = Fault 2/ drive 2
[14] = Fault 3/ drive 2
[15] = Fault 4/ drive 2
[16] = Fault 5/ drive 2
[17] = Fault 6/ drive 2
[18] = Fault 7/ drive 2
[19] = Fault 8/ drive 2

[20] = Number of faults drive 3
[21] = Fault 1/ drive 3
[22] = Fault 2/ drive 3
[23] = Fault 3/ drive 3
[24] = Fault 4/ drive 3
[25] = Fault 5/ drive 3
[26] = Fault 6/ drive 3
[27] = Fault 7/ drive 3
[28] = Fault 8/ drive 3
[29] = Number of faults drive 4
[30] = Fault 1/ drive 4
[31] = Fault 2/ drive 4
[32] = Fault 3/ drive 4
[33] = Fault 4/ drive 4
[34] = Fault 5/ drive 4
[35] = Fault 6/ drive 4
[36] = Fault 7/ drive 4
[37] = Fault 8/ drive 4
[38] = Number of faults drive 5
[39] = Fault 1/ drive 5
[40] = Fault 2/ drive 5
[41] = Fault 3/ drive 5
[42] = Fault 4/ drive 5
[43] = Fault 5/ drive 5
[44] = Fault 6/ drive 5
[45] = Fault 7/ drive 5
[46] = Fault 8/ drive 5
[47] = Number of faults drive 6
[48] = Fault 1/ drive 6
[49] = Fault 2/ drive 6
[50] = Fault 3/ drive 6
[51] = Fault 4/ drive 6
[52] = Fault 5/ drive 6
[53] = Fault 6/ drive 6
[54] = Fault 7/ drive 6
[55] = Fault 8/ drive 6
[56] = Number of faults drive 7
[57] = Fault 1/ drive 7
[58] = Fault 2/ drive 7
[59] = Fault 3/ drive 7
[60] = Fault 4/ drive 7
[61] = Fault 5/ drive 7
[62] = Fault 6/ drive 7
[63] = Fault 7/ drive 7
[64] = Fault 8/ drive 7
[65] = Number of faults drive 8
[66] = Fault 1/ drive 8
[67] = Fault 2/ drive 8
[68] = Fault 3/ drive 8
[69] = Fault 4/ drive 8
[70] = Fault 5/ drive 8
[71] = Fault 6/ drive 8
[72] = Fault 7/ drive 8
[73] = Fault 8/ drive 8
[74] = Number of faults Control Unit
[75] = Fault 1/Control Unit
[76] = Fault 2/Control Unit
[77] = Fault 3/Control Unit
[78] = Fault 4/Control Unit
[79] = Fault 5/Control Unit
[80] = Fault 6/Control Unit
[81] = Fault 7/Control Unit
[82] = Fault 8/Control Unit

Dependency: Refer to: r8743

Note: Corresponds to the CANopen object 1003 hex.

The assignment of the drive object (drive object number) to the CANopen Device Module is displayed using parameter r8743.

p8612[0...1] CAN drive object server SDO / DO server SDO

CU_S120_PN (CAN), CU_S150_PN (CAN), CU_S120_DP (CAN), CU_S150_DP (CAN), SERVO (CAN), VECTOR (CAN)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0581 hex	8000 067F hex	8000 0000 hex

Description: Sets the identifier (client/server and server/client) of the additional SDO server.

Using these SDO servers, it is possible to access manufacturer-specific CANopen objects of the supported drive objects.

Index: [0] = COB-ID drive object from the client to the server
[1] = COB-ID drive object from the server to the client

Dependency: Refer to: r8610

Note: SDO: Service Data Object

Regarding the drive object Control Unit:

- Corresponds to the CANopen object 1201 hex

Regarding the drive object with closed-loop control functions:

- Corresponds to the CANopen object 1202 hex + 1 * x (x: Drive number 0 ... 7)

p8620 CAN Node-ID / Node ID

CU_S120_PN (CAN), CU_S150_PN (CAN), CU_S120_DP (CAN), CU_S150_DP (CAN)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	127	126

Description: Display or setting of the CANopen Node ID.

The Node ID can be set as follows:

1) Using the address switch on the Control Unit.

--> p8620 can then only be read and displays the selected Node ID.

--> A change only becomes effective after a POWER ON.

--> CANopen Node ID and PROFIBUS address are identical.

2) Using p8620

--> Only if address 0 is set using the address switch.

--> the Node ID is set as standard to 126.

--> A change only becomes effective after save and POWER ON.

Dependency: Refer to: r8621

Note: Every node ID change only becomes effective after a POWER ON.

The active node ID is displayed in r8621.

The parameter is not influenced by setting the factory setting.

It is only possible to independently set CANopen node ID and the PROFIBUS address using p0918 and p8620 (prerequisite: the address 0 is set for the address switch).

r8621 CAN Node-ID active / Node ID active

CU_S120_PN (CAN), CU_S150_PN (CAN), CU_S120_DP (CAN), CU_S150_DP (CAN)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the active CANopen Node ID.

Dependency: Refer to: p8620

p8622 CAN bit rate / Bit rate

CU_S120_PN (CAN), CU_S150_PN (CAN), CU_S120_DP (CAN), CU_S150_DP (CAN)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	7	6

Description: Setting the bit rate for the CAN bus.

The appropriate bit timings are selected that are defined in p8623 in the associated sub-index.

Example:

Bit rate = 20 kbit/s --> p8622 = 6 --> associated bit timing is in p8623[6].

Value:
0: 1 Mbit/s
1: 800 kbit/s
2: 500 kbit/s
3: 250 kbit/s
4: 125 kbit/s
5: 50 kbit/s
6: 20 kbit/s
7: 10 kbit/s

Dependency: Refer to: p8623

Note: The parameter is not influenced by setting the factory setting.

p8623[0...7]	**CAN Bit Timing selection / Bit timing select**		
CU_S120_PN (CAN), CU_S150_PN (CAN), CU_S120_DP (CAN), CU_S150_DP (CAN)	**Can be changed:** T	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: -	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0000 hex	000F 7FFF hex	[0] 1405 hex [1] 1605 hex [2] 1C05 hex [3] 1C0B hex [4] 1C17 hex [5] 1C3B hex [6] 0002 1C15 hex [7] 0004 1C2B hex

Description: Sets the bit timing for the C_CAN controller to the associated and selected bit rate (p8622).

Bits are distributed to the following parameters of the C_CAN controller in p8623[0...7]:

Bit 0 ... 5: BRP (Baud Rate Prescaler)

Bit 6 ... 7: SJW (Synchronization Jump Width)

Bit 8 ... 11: TSEG1 (Time Segment 1, before the sampling point)

Bit 12 ... 14: TSEG2 (Time Segment 2, after the sampling point)

Bit 15: Reserved

Bit 16 ... 19: BRPE (Baud Rate Prescaler Extension)

Bit 20 ... 31: Reserved

Example:

Bit rate = 20 kbit/s --> p8622 = 6 --> associated bit timing is in p8623[6] --> 0001 2FB6

Recommendation: Use the factory setting when setting the bit timing.

Index:
[0] = 1 Mbit/s
[1] = 800 kbit/s
[2] = 500 kbit/s
[3] = 250 kbit/s
[4] = 125 kbit/s
[5] = 50 kbit/s
[6] = 20 kbit/s
[7] = 10 kbit/s

Dependency: Refer to: p8622

Note: The parameter is not influenced by setting the factory setting.

p8630[0...2] CAN virtual objects / Virtual objects

CU_S120_PN (CAN), CU_S150_PN (CAN), CU_S120_DP (CAN), CU_S150_DP (CAN)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	65535	0

Description: Sets the drive object selection (index 0), the sub-index area (index 1) and the parameter area (index 2) when using virtual objects.

This means that it is possible to access all SINAMICS parameters via CAN.

Index 0 (drive object number):

0: Not possible to access virtual CANopen objects

1: Device

2 ... 65535: drive object number of drive 1 ... 8

Index 1 (sub-index area):

0: 0 ... 255

1: 256 ... 511

2: 512 ... 767

3: 768 ... 1023

Index 2 (parameter area):

0: 1 ... 9999

1: 10000 ... 19999

2: 20000 ... 29999

3: 30000 ... 39999

Index:
[0] = Drive object number
[1] = Sub-index range
[2] = Parameter range

p8641 CAN Abort Connection Option Code / Abort con opt code

SERVO (CAN), VECTOR (CAN)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	3	3

Description: Sets the fault response for a CAN communication error with output of fault F08700.

Corresponds to CANopen object 6007 hex.

Value:
0: No response
1: OFF1
2: OFF2
3: OFF3

Dependency: Refer to: p2100, p2101

Refer to: F08700

Note: When the factory setting is changed, the fault response of fault F08700 is written to p2100 and p2101. In this particular case it is not possible to change the message type using p2118 and p2119.

r8680[0...36] CAN Diagnosis Hardware / Diagnostics HW

CU_S120_PN (CAN), CU_S150_PN (CAN), CU_S120_DP (CAN), CU_S150_DP (CAN)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the register of the CAN controller C_CAN:
Register, Message Interface Register and Message Handler Register - referred to the CAN protocol.

Index:
[0] = Control register
[1] = Status register
[2] = Error counter
[3] = Bit timing register
[4] = Interrupt register
[5] = Test register
[6] = Baud rate prescaler extension register
[7] = Interface 1 command request register
[8] = Interface 1 command mask register
[9] = Interface 1 mask 1 register
[10] = Interface 1 mask 2 register
[11] = Interface 1 arbitration 1 register
[12] = Interface 1 arbitration 2 register
[13] = Interface 1 message control register
[14] = Interface 1 data A1 register
[15] = Interface 1 data A2 register
[16] = Interface 1 data B1 register
[17] = Interface 1 data B2 register
[18] = Interface 2 command request register
[19] = Interface 2 command mask register
[20] = Interface 2 mask 1 register
[21] = Interface 2 mask 2 register
[22] = Interface 2 arbitration 1 register
[23] = Interface 2 arbitration 2 register
[24] = Interface 2 message control register
[25] = Interface 2 data A1 register
[26] = Interface 2 data A2 register
[27] = Interface 2 data B1 register
[28] = Interface 2 data B2 register
[29] = Transmission request 1 register
[30] = Transmission request 2 register
[31] = New data 1 register
[32] = New data 2 register
[33] = Interrupt pending 1 register
[34] = Interrupt pending 2 register
[35] = Message valid 1 register
[36] = Message valid 2 register

Note: A description of the individual registers of the C_CAN controller can be taken from "C_CAN User's Manual".

p8684 CAN NMT state after booting / NMT state aft boot

CU_S120_PN (CAN), CU_S150_PN (CAN), CU_S120_DP (CAN), CU_S150_DP (CAN)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
4	127	127

Description: Sets the CANopen NMT state that is effective after booting.

Value:
4: Stopped
5: Operational
127: Pre-operational

Dependency: Refer to: p8685

Note: Booting in the NMT state pre-operational corresponds to the CANopen standard

p8685 CAN NMT states / NMT states

CU_S120_PN (CAN), CU_S150_PN (CAN), CU_S120_DP (CAN), CU_S150_DP (CAN)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	129	127

Description: Sets and displays the CANopen NMT state.

Value:
0: Initialization
4: Stopped
5: Operational
127: Pre-operational
128: Reset node
129: Reset Communication

Note: The value 0 (initialization) is only displayed and cannot be set.

p8699 CAN: RPDO monitoring time / RPDO t_monit

CU_S120_PN (CAN), CU_S150_PN (CAN), CU_S120_DP (CAN), CU_S150_DP (CAN)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	65535000 [ms]	0 [ms]

Description: Sets the monitoring time for the process data received via the CAN bus.

A value that is not a multiple integer of the CANopen sampling time is rounded-off.

If no process data is received within this time, then fault F08702 is output.

Dependency: Refer to: r8843, p8848

Refer to: F08702

Note: Monitoring is deactivated for setting p8699 = 0.

The activated and started RPDO monitoring is displayed using PROFIdrive PZD status "Fieldbus running" (r8843.2).

RPDO: Receive Process Data Object

p8848: CANopen sampling time

p8700[0...1] CAN Receive PDO 1 / Receive PDO 1

SERVO (CAN), VECTOR (CAN)

Can be changed: C1(3), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9204, 9206
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	8000 06DF hex	[0] 8000 06DF hex [1] 00FE hex

Description: Sets the communication parameters for CANopen Receive Process Data Object 1 (RPDO 1).

Index:
[0] = PDO COB-ID
[1] = PDO transmission type

Dependency: A valid COB-ID can only be set for the available (existing) channel.

Note: Corresponds to the CANopen object 1400 hex + 40 hex * x (x: Drive number 0 ... 7).

Transmission types 0, 1, FE and FF can be set.

PDO: Process Data Object

p8701[0...1] CAN Receive PDO 2 / Receive PDO 2

SERVO (CAN), VECTOR (CAN)

Can be changed: C1(3), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9204, 9206
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	8000 06DF hex	[0] 8000 06DF hex [1] 00FE hex

Description: Sets the communication parameters for CANopen Receive Process Data Object 2 (RPDO 2).

Index: [0] = PDO COB-ID
[1] = PDO transmission type

Dependency: A valid COB-ID can only be set for the available (existing) channel.

Note: Corresponds to the CANopen object 1401 hex + 40 hex * x (x: Drive number 0 ... 7).
Transmission types 0, 1, FE and FF can be set.
PDO: Process Data Object

p8702[0...1] CAN Receive PDO 3 / Receive PDO 3

SERVO (CAN), VECTOR (CAN)

Can be changed: C1(3), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9204, 9206
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	8000 06DF hex	[0] 8000 06DF hex [1] 00FE hex

Description: Sets the communication parameters for CANopen Receive Process Data Object 3 (RPDO 3).

Index: [0] = PDO COB-ID
[1] = PDO transmission type

Dependency: A valid COB-ID can only be set for the available (existing) channel.

Note: Corresponds to the CANopen object 1402 hex + 40 hex * x (x: Drive number 0 ... 7).
Transmission types 0, 1, FE and FF can be set.
PDO: Process Data Object

p8703[0...1] CAN Receive PDO 4 / Receive PDO 4

SERVO (CAN), VECTOR (CAN)

Can be changed: C1(3), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9204, 9206
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	8000 06DF hex	[0] 8000 06DF hex [1] 00FE hex

Description: Sets the communication parameters for CANopen Receive Process Data Object 4 (RPDO 4).

Index: [0] = PDO COB-ID
[1] = PDO transmission type

Dependency: A valid COB-ID can only be set for the available (existing) channel.

Note: Corresponds to the CANopen object 1403 hex + 40 hex * x (x: Drive number 0 ... 7).
Transmission types 0, 1, FE and FF can be set.
PDO: Process Data Object

p8704[0...1] CAN Receive PDO 5 / Receive PDO 5

SERVO (CAN), VECTOR (CAN)

Can be changed: C1(3), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9204
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	8000 06DF hex	[0] 8000 06DF hex [1] 00FE hex

Description: Sets the communication parameters for CANopen Receive Process Data Object 5 (RPDO 5).

Index:
[0] = PDO COB-ID
[1] = PDO transmission type

Dependency: A valid COB-ID can only be set for the available (existing) channel.

Note: Corresponds to the CANopen object 1404 hex + 40 hex * x (x: Drive number 0 ... 7).

Transmission types 0, 1, FE and FF can be set.

PDO: Process Data Object

p8705[0...1] CAN Receive PDO 6 / Receive PDO 6

SERVO (CAN), VECTOR (CAN)

Can be changed: C1(3), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9204
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	8000 06DF hex	[0] 8000 06DF hex [1] 00FE hex

Description: Sets the communication parameters for CANopen Receive Process Data Object 6 (RPDO 6).

Index:
[0] = PDO COB-ID
[1] = PDO transmission type

Dependency: A valid COB-ID can only be set for the available (existing) channel.

Note: Corresponds to the CANopen object 1405 hex + 40 hex * x (x: Drive number 0 ... 7).

Transmission types 0, 1, FE and FF can be set.

PDO: Process Data Object

p8706[0...1] CAN Receive PDO 7 / Receive PDO 7

SERVO (CAN), VECTOR (CAN)

Can be changed: C1(3), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9204
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	8000 06DF hex	[0] 8000 06DF hex [1] 00FE hex

Description: Sets the communication parameters for CANopen Receive Process Data Object 7 (RPDO 7).

Index:
[0] = PDO COB-ID
[1] = PDO transmission type

Dependency: A valid COB-ID can only be set for the available (existing) channel.

Note: Corresponds to the CANopen object 1406 hex + 40 hex * x (x: Drive number 0 ... 7).

Transmission types 0, 1, FE and FF can be set.

PDO: Process Data Object

p8707[0...1] CAN Receive PDO 8 / Receive PDO 8

SERVO (CAN), VECTOR (CAN)

Can be changed: C1(3), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9204
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	8000 06DF hex	[0] 8000 06DF hex [1] 00FE hex

Description: Sets the communication parameters for CANopen Receive Process Data Object 8 (RPDO 8).

Index:
[0] = PDO COB-ID
[1] = PDO transmission type

Dependency: A valid COB-ID can only be set for the available (existing) channel.

Note: Corresponds to the CANopen object 1407 hex + 40 hex * x (x: Drive number 0 ... 7).

Transmission types 0, 1, FE and FF can be set.

PDO: Process Data Object

p8710[0...3] CAN Receive Mapping for RPDO 1 / Mapping RPDO 1

SERVO (CAN), VECTOR (CAN)

Can be changed: C1(3), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9204, 9206
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the mapping parameters for CANopen Receive Process Data Object 1 (RPDO 1).

Index:
[0] = Mapped object 1
[1] = Mapped object 2
[2] = Mapped object 3
[3] = Mapped object 4

Note: Corresponds to the CANopen object 1600 hex + 40 hex * x (x: Drive number 0 ... 7).

Dummy mapping not supported.

The parameter can only be written online when the associated COB ID in p870x is set as invalid.

p8711[0...3] CAN Receive Mapping for RPDO 2 / Mapping RPDO 2

SERVO (CAN), VECTOR (CAN)

Can be changed: C1(3), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9204, 9206
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the mapping parameters for CANopen Receive Process Data Object 2 (RPDO 2).

Index:
[0] = Mapped object 1
[1] = Mapped object 2
[2] = Mapped object 3
[3] = Mapped object 4

Note: Corresponds to the CANopen object 1601 hex + 40 hex * x (x: Drive number 0 ... 7).

Dummy mapping not supported.

The parameter can only be written online when the associated COB ID in p870x is set as invalid.

p8712[0...3] CAN Receive Mapping for RPDO 3 / Mapping RPDO 3

SERVO (CAN), VECTOR (CAN)

Can be changed: C1(3), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9204, 9206
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the mapping parameters for CANopen Receive Process Data Object 3 (RPDO 3).

Index:
[0] = Mapped object 1
[1] = Mapped object 2
[2] = Mapped object 3
[3] = Mapped object 4

Note: Corresponds to the CANopen object 1602 hex + 40 hex * x (x: Drive number 0 ... 7).

Dummy mapping not supported.

The parameter can only be written online when the associated COB ID in p870x is set as invalid.

p8713[0...3] CAN Receive Mapping for RPDO 4 / Mapping RPDO 4

SERVO (CAN), VECTOR (CAN)

Can be changed: C1(3), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9204, 9206
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the mapping parameters for CANopen Receive Process Data Object 4 (RPDO 4).

Index:
[0] = Mapped object 1
[1] = Mapped object 2
[2] = Mapped object 3
[3] = Mapped object 4

Note: Corresponds to the CANopen object 1603 hex + 40 hex * x (x: Drive number 0 ... 7).

Dummy mapping not supported.

The parameter can only be written online when the associated COB ID in p870x is set as invalid.

p8714[0...3] CAN Receive Mapping for RPDO 5 / Mapping RPDO 5

SERVO (CAN), VECTOR (CAN)

Can be changed: C1(3), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9204
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the mapping parameters for CANopen Receive Process Data Object 5 (RPDO 5).

Index:
[0] = Mapped object 1
[1] = Mapped object 2
[2] = Mapped object 3
[3] = Mapped object 4

Note: Corresponds to the CANopen object 1604 hex + 40 hex * x (x: Drive number 0 ... 7).

Dummy mapping not supported.

The parameter can only be written online when the associated COB ID in p870x is set as invalid.

p8715[0...3] CAN Receive Mapping for RPDO 6 / Mapping RPDO 6

SERVO (CAN), VECTOR (CAN)

Can be changed: C1(3), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9204
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the mapping parameters for CANopen Receive Process Data Object 6 (RPDO 6).

Index:
[0] = Mapped object 1
[1] = Mapped object 2
[2] = Mapped object 3
[3] = Mapped object 4

Note: Corresponds to the CANopen object 1605 hex + 40 hex * x (x: Drive number 0 ... 7).

Dummy mapping not supported.

The parameter can only be written online when the associated COB ID in p870x is set as invalid.

p8716[0...3] CAN Receive Mapping for RPDO 7 / Mapping RPDO 7

SERVO (CAN), VECTOR (CAN)

Can be changed: C1(3), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9204
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the mapping parameters for CANopen Receive Process Data Object 7 (RPDO 7).

Index:
[0] = Mapped object 1
[1] = Mapped object 2
[2] = Mapped object 3
[3] = Mapped object 4

Note: Corresponds to the CANopen object 1606 hex + 40 hex * x (x: Drive number 0 ... 7).

Dummy mapping not supported.

The parameter can only be written online when the associated COB ID in p870x is set as invalid.

p8717[0...3] CAN Receive Mapping for RPDO 8 / Mapping RPDO 8

SERVO (CAN), VECTOR (CAN)

Can be changed: C1(3), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9204
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the mapping parameters for CANopen Receive Process Data Object 8 (RPDO 8).

Index:
[0] = Mapped object 1
[1] = Mapped object 2
[2] = Mapped object 3
[3] = Mapped object 4

Note: Corresponds to the CANopen object 1607 hex + 40 hex * x (x: Drive number 0 ... 7).

Dummy mapping not supported.

The parameter can only be written online when the associated COB ID in p870x is set as invalid.

p8720[0...4] CAN Transmit PDO 1 / Transmit PDO 1

SERVO (CAN), VECTOR (CAN)

Can be changed: C1(3), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9208, 9210
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	C000 06DF hex	[0] C000 06DF hex [1] 00FE hex [2] 0000 hex [3] 0000 hex [4] 0000 hex

Description: Sets the communication parameters for CANopen Transmit Process Data Object 1 (TPDO 1).

Index:
[0] = PDO COB-ID
[1] = PDO transmission type
[2] = Inhibit time (in 100 µs)
[3] = Reserved
[4] = Event timer (in ms)

Dependency: A valid COB-ID can only be set for the available (existing) channel.

Notice: For inhibit time and event timer, the following apply:
A value that is not a multiple integer of the CANopen sampling time is rounded-off.

Note: Corresponds to the CANopen object 1800 hex + 40 hex * x (x: Drive number 0 ... 7).
Transmission types 0, 1 ... F0, FE and FF can be set.
p8848: CANopen sampling time
PDO: Process Data Object

p8721[0...4] CAN Transmit PDO 2 / Transmit PDO 2

SERVO (CAN), VECTOR (CAN)

Can be changed: C1(3), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9208, 9210
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	C000 06DF hex	[0] C000 06DF hex [1] 00FE hex [2] 0000 hex [3] 0000 hex [4] 0000 hex

Description: Sets the communication parameters for CANopen Transmit Process Data Object 2 (TPDO 2).

Index:
[0] = PDO COB-ID
[1] = PDO transmission type
[2] = Inhibit time (in 100 µs)
[3] = Reserved
[4] = Event timer (in ms)

Dependency: A valid COB-ID can only be set for the available (existing) channel.

Notice: For inhibit time and event timer, the following apply:
A value that is not a multiple integer of the CANopen sampling time is rounded-off.

Note: Corresponds to the CANopen object 1801 hex + 40 hex * x (x: Drive number 0 ... 7).
Transmission types 0, 1 ... F0, FE and FF can be set.
p8848: CANopen sampling time
PDO: Process Data Object

p8722[0...4] CAN Transmit PDO 3 / Transmit PDO 3

SERVO (CAN), VECTOR (CAN)

Can be changed: C1(3), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9208, 9210
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	C000 06DF hex	[0] C000 06DF hex [1] 00FE hex [2] 0000 hex [3] 0000 hex [4] 0000 hex

Description: Sets the communication parameters for CANopen Transmit Process Data Object 3 (TPDO 3).

Index:
[0] = PDO COB-ID
[1] = PDO transmission type
[2] = Inhibit time (in 100 µs)
[3] = Reserved
[4] = Event timer (in ms)

Dependency: A valid COB-ID can only be set for the available (existing) channel.

Notice: For inhibit time and event timer, the following apply:

A value that is not a multiple integer of the CANopen sampling time is rounded-off.

Note: Corresponds to the CANopen object 1802 hex + 40 hex * x (x: Drive number 0 ... 7).

Transmission types 0, 1 ... F0, FE and FF can be set.

p8848: CANopen sampling time

PDO: Process Data Object

p8723[0...4] CAN Transmit PDO 4 / Transmit PDO 4

SERVO (CAN), VECTOR (CAN)

Can be changed: C1(3), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9208, 9210
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	C000 06DF hex	[0] C000 06DF hex [1] 00FE hex [2] 0000 hex [3] 0000 hex [4] 0000 hex

Description: Sets the communication parameters for CANopen Transmit Process Data Object 4 (TPDO 4).

Index:
[0] = PDO COB-ID
[1] = PDO transmission type
[2] = Inhibit time (in 100 µs)
[3] = Reserved
[4] = Event timer (in ms)

Dependency: A valid COB-ID can only be set for the available (existing) channel.

Notice: For inhibit time and event timer, the following apply:

A value that is not a multiple integer of the CANopen sampling time is rounded-off.

Note: Corresponds to the CANopen object 1803 hex + 40 hex * x (x: Drive number 0 ... 7).

Transmission types 0, 1 ... F0, FE and FF can be set.

p8848: CANopen sampling time

PDO: Process Data Object

p8724[0...4] CAN Transmit PDO 5 / Transmit PDO 5

SERVO (CAN), VECTOR (CAN)

Can be changed: C1(3), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9208
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	C000 06DF hex	[0] C000 06DF hex [1] 00FE hex [2] 0000 hex [3] 0000 hex [4] 0000 hex

Description: Sets the communication parameters for CANopen Transmit Process Data Object 5 (TPDO 5).

Index:
[0] = PDO COB-ID
[1] = PDO transmission type
[2] = Inhibit time (in 100 µs)
[3] = Reserved
[4] = Event timer (in ms)

Dependency: A valid COB-ID can only be set for the available (existing) channel.

Notice: For inhibit time and event timer, the following apply:

A value that is not a multiple integer of the CANopen sampling time is rounded-off.

Note: Corresponds to the CANopen object 1804 hex + 40 hex * x (x: Drive number 0 ... 7).

Transmission types 0, 1 ... F0, FE and FF can be set.

p8848: CANopen sampling time

PDO: Process Data Object

p8725[0...4] CAN Transmit PDO 6 / Transmit PDO 6

SERVO (CAN), VECTOR (CAN)

Can be changed: C1(3), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9208
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	C000 06DF hex	[0] C000 06DF hex [1] 00FE hex [2] 0000 hex [3] 0000 hex [4] 0000 hex

Description: Sets the communication parameters for CANopen Transmit Process Data Object 6 (TPDO 6).

Index:
[0] = PDO COB-ID
[1] = PDO transmission type
[2] = Inhibit time (in 100 µs)
[3] = Reserved
[4] = Event timer (in ms)

Dependency: A valid COB-ID can only be set for the available (existing) channel.

Notice: For inhibit time and event timer, the following apply:

A value that is not a multiple integer of the CANopen sampling time is rounded-off.

Note: Corresponds to the CANopen object 1805 hex + 40 hex * x (x: Drive number 0 ... 7).

Transmission types 0, 1 ... F0, FE and FF can be set.

p8848: CANopen sampling time

PDO: Process Data Object

p8726[0...4] CAN Transmit PDO 7 / Transmit PDO 7

SERVO (CAN), VECTOR (CAN)

Can be changed: C1(3), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9208
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	C000 06DF hex	[0] C000 06DF hex [1] 00FE hex [2] 0000 hex [3] 0000 hex [4] 0000 hex

Description: Sets the communication parameters for CANopen Transmit Process Data Object 7 (TPDO 7).

Index:
[0] = PDO COB-ID
[1] = PDO transmission type
[2] = Inhibit time (in 100 µs)
[3] = Reserved
[4] = Event timer (in ms)

Dependency: A valid COB-ID can only be set for the available (existing) channel.

Notice: For inhibit time and event timer, the following apply:

A value that is not a multiple integer of the CANopen sampling time is rounded-off.

Note: Corresponds to the CANopen object 1806 hex + 40 hex * x (x: Drive number 0 ... 7).

Transmission types 0, 1 ... F0, FE and FF can be set.

p8848: CANopen sampling time

PDO: Process Data Object

p8727[0...4] CAN Transmit PDO 8 / Transmit PDO 8

SERVO (CAN), VECTOR (CAN)

Can be changed: C1(3), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9208
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	C000 06DF hex	[0] C000 06DF hex [1] 00FE hex [2] 0000 hex [3] 0000 hex [4] 0000 hex

Description: Sets the communication parameters for CANopen Transmit Process Data Object 8 (TPDO 8).

Index:
[0] = PDO COB-ID
[1] = PDO transmission type
[2] = Inhibit time (in 100 µs)
[3] = Reserved
[4] = Event timer (in ms)

Dependency: A valid COB-ID can only be set for the available (existing) channel.

Notice: For inhibit time and event timer, the following apply:

A value that is not a multiple integer of the CANopen sampling time is rounded-off.

Note: Corresponds to the CANopen object 1807 hex + 40 hex * x (x: Drive number 0 ... 7).

Transmission types 0, 1 ... F0, FE and FF can be set.

p8848: CANopen sampling time

PDO: Process Data Object

p8730[0...3] CAN Transmit Mapping for TPDO 1 / Mapping TPDO 1

SERVO (CAN), VECTOR (CAN)

Can be changed: C1(3), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9208, 9210
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the mapping parameters for CANopen Transmit Process Data Object 1 (TPDO 1).

Index:
[0] = Mapped object 1
[1] = Mapped object 2
[2] = Mapped object 3
[3] = Mapped object 4

Note: Corresponds to the CANopen object 1A00 hex + 40 hex * x (x: Drive number 0 ... 7).

The parameter can only be written online when the associated COB ID in p872x is set as invalid.

p8731[0...3] CAN Transmit Mapping for TPDO 2 / Mapping TPDO 2

SERVO (CAN), VECTOR (CAN)

Can be changed: C1(3), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9208, 9210
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the mapping parameters for CANopen Transmit Process Data Object 2 (TPDO 2).

Index:
[0] = Mapped object 1
[1] = Mapped object 2
[2] = Mapped object 3
[3] = Mapped object 4

Note: Corresponds to the CANopen object 1A01 hex + 40 hex * x (x: Drive number 0 ... 7).

The parameter can only be written online when the associated COB ID in p872x is set as invalid.

p8732[0...3] CAN Transmit Mapping for TPDO 3 / Mapping TPDO 3

SERVO (CAN), VECTOR (CAN)

Can be changed: C1(3), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9208, 9210
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the mapping parameters for CANopen Transmit Process Data Object 3 (TPDO 3).

Index:
[0] = Mapped object 1
[1] = Mapped object 2
[2] = Mapped object 3
[3] = Mapped object 4

Note: Corresponds to the CANopen object 1A02 hex + 40 hex * x (x: Drive number 0 ... 7).

The parameter can only be written online when the associated COB ID in p872x is set as invalid.

p8733[0...3] CAN Transmit Mapping for TPDO 4 / Mapping TPDO 4

SERVO (CAN), VECTOR (CAN)

Can be changed: C1(3), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9208, 9210
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the mapping parameters for CANopen Transmit Process Data Object 4 (TPDO 4).

Index: [0] = Mapped object 1
[1] = Mapped object 2
[2] = Mapped object 3
[3] = Mapped object 4

Note: Corresponds to the CANopen object 1A03 hex + 40 hex * x (x: Drive number 0 ... 7).
The parameter can only be written online when the associated COB ID in p872x is set as invalid.

p8734[0...3] CAN Transmit Mapping for TPDO 5 / Mapping TPDO 5

SERVO (CAN), VECTOR (CAN)

Can be changed: C1(3), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9208
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the mapping parameters for CANopen Transmit Process Data Object 5 (TPDO 5).

Index: [0] = Mapped object 1
[1] = Mapped object 2
[2] = Mapped object 3
[3] = Mapped object 4

Note: Corresponds to the CANopen object 1A04 hex + 40 hex * x (x: Drive number 0 ... 7).
The parameter can only be written online when the associated COB ID in p872x is set as invalid.

p8735[0...3] CAN Transmit Mapping for TPDO 6 / Mapping TPDO 6

SERVO (CAN), VECTOR (CAN)

Can be changed: C1(3), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9208
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the mapping parameters for CANopen Transmit Process Data Object 6 (TPDO 6).

Index: [0] = Mapped object 1
[1] = Mapped object 2
[2] = Mapped object 3
[3] = Mapped object 4

Note: Corresponds to the CANopen object 1A05 hex + 40 hex * x (x: Drive number 0 ... 7).
The parameter can only be written online when the associated COB ID in p872x is set as invalid.

p8736[0...3] CAN Transmit Mapping for TPDO 7 / Mapping TPDO 7

SERVO (CAN), VECTOR (CAN)

Can be changed: C1(3), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9208
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the mapping parameters for CANopen Transmit Process Data Object 7 (TPDO 7).

Index: [0] = Mapped object 1
[1] = Mapped object 2
[2] = Mapped object 3
[3] = Mapped object 4

Note: Corresponds to the CANopen object 1A06 hex + 40 hex * x (x: Drive number 0 ... 7).
The parameter can only be written online when the associated COB ID in p872x is set as invalid.

p8737[0...3] CAN Transmit Mapping for TPDO 8 / Mapping TPDO 8

SERVO (CAN), VECTOR (CAN)

Can be changed: C1(3), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 9208
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the mapping parameters for CANopen Transmit Process Data Object 8 (TPDO 8).

Index:
[0] = Mapped object 1
[1] = Mapped object 2
[2] = Mapped object 3
[3] = Mapped object 4

Note: Corresponds to the CANopen object 1A07 hex + 40 hex * x (x: Drive number 0 ... 7).

The parameter can only be written online when the associated COB ID in p872x is set as invalid.

r8739 Minimum CAN processing time / t_processing min

CU_S120_PN (CAN), CU_S150_PN (CAN), CU_S120_DP (CAN), CU_S150_DP (CAN)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [µs]	- [µs]	- [µs]

Description: Displays the minimum, internal, cyclic processing time of CAN communication.

The total number of valid TPDO of all CANopen supported drive objects is defined using the following ratio.

CAN sampling time (p8848) / CAN minimum processing time (r8739)

Dependency: Refer to: r8742, p8848

Refer to: A08758

Note: For r8739 = 0.0, the following applies:

The total number of valid TPDO of all CANopen-supported drive objects is not limited.

r8742[0...1] CAN PDO available number / PDO available no.

CU_S120_PN (CAN), CU_S150_PN (CAN), CU_S120_DP (CAN), CU_S150_DP (CAN)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the RPDO or TPDO channels that are still available.

Index:
[0] = RPDO
[1] = TPDO

Dependency: Refer to: A08758

Note: RPDO: Receive Process Data Object

TPDO: Transmit Process Data Object

The total number of valid RPDO of all CANopen supported drive objects is 25 valid RPDO as a result of the hardware.

The total number of valid TPDO of all CANopen supported drive objects is defined using the following ratio.

CAN sampling time (p8848) / CAN minimum processing time (r8739)

r8743[0...7] CAN device module assignment / Device mod assign

CU_S120_PN (CAN), CU_S150_PN (CAN), CU_S120_DP (CAN), CU_S150_DP (CAN)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the assignment of the drive object (drive object number) to the CANopen device module.

Index:
[0] = Drive object number for device module 0
[1] = Drive object number for device module 1
[2] = Drive object number for device module 2
[3] = Drive object number for device module 3
[4] = Drive object number for device module 4
[5] = Drive object number for device module 5
[6] = Drive object number for device module 6
[7] = Drive object number for device module 7

p8744 CAN PDO mapping configuration / PDO Mapping config

SERVO (CAN), VECTOR (CAN)

Can be changed: T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 9204, 9206, 9208, 9210
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	2	2

Description: Selector switch for the PDO mapping.

Value:
1: Predefined Connection Set
2: Free PDO Mapping

r8745[0...15] CO: CAN free PZD receive objects 16 bit / Free PZD recv 16

SERVO (CAN), VECTOR (CAN)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** 4000H	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Access to free PZD receive objects 16 bit using the SDO transfer.

An index can only be used, if the corresponding object has not been mapped in a PDO.

Index:
[0] = PZD object 0
[1] = PZD object 1
[2] = PZD object 2
[3] = PZD object 3
[4] = PZD object 4
[5] = PZD object 5
[6] = PZD object 6
[7] = PZD object 7
[8] = PZD object 8
[9] = PZD object 9
[10] = PZD object 10
[11] = PZD object 11
[12] = PZD object 12
[13] = PZD object 13
[14] = PZD object 14
[15] = PZD object 15

Note: Index 0 corresponds to the CANopen object 5800 hex + 80 hex * x (x: Drive number 0 ... 7).
Index 1 corresponds to the CANopen object 5801 hex + 80 hex * x (x: Drive number 0 ... 7).
Index 2 corresponds to the CANopen object 5802 hex + 80 hex * x (x: Drive number 0 ... 7).
Index 3 corresponds to the CANopen object 5803 hex + 80 hex * x (x: Drive number 0 ... 7).
Index 4 corresponds to the CANopen object 5804 hex + 80 hex * x (x: Drive number 0 ... 7).
Index 5 corresponds to the CANopen object 5805 hex + 80 hex * x (x: Drive number 0 ... 7).
Index 6 corresponds to the CANopen object 5806 hex + 80 hex * x (x: Drive number 0 ... 7).
Index 7 corresponds to the CANopen object 5807 hex + 80 hex * x (x: Drive number 0 ... 7).
Index 8 corresponds to the CANopen object 5808 hex + 80 hex * x (x: Drive number 0 ... 7).
Index 9 corresponds to the CANopen object 5809 hex + 80 hex * x (x: Drive number 0 ... 7).
Index 10 corresponds to the CANopen object 580A hex + 80 hex * x (x: Drive number 0 ... 7).
Index 11 corresponds to the CANopen object 580B hex + 80 hex * x (x: Drive number 0 ... 7).
Index 12 corresponds to the CANopen object 580C hex + 80 hex * x (x: Drive number 0 ... 7).
Index 13 corresponds to the CANopen object 580D hex + 80 hex * x (x: Drive number 0 ... 7).
Index 14 corresponds to the CANopen object 580E hex + 80 hex * x (x: Drive number 0 ... 7).
Index 15 corresponds to the CANopen object 580F hex + 80 hex * x (x: Drive number 0 ... 7).

p8746[0...15] CI: CAN free PZD send objects 16 bit / Free PZD send 16

SERVO (CAN), VECTOR (CAN)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** 4000H	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for free PZD send objects 16 bit for SDO transfer.
An index can only be used, if the corresponding object has not been mapped in a PDO.

Index: [0] = PZD object 0
[1] = PZD object 1
[2] = PZD object 2
[3] = PZD object 3
[4] = PZD object 4
[5] = PZD object 5
[6] = PZD object 6
[7] = PZD object 7
[8] = PZD object 8
[9] = PZD object 9
[10] = PZD object 10
[11] = PZD object 11
[12] = PZD object 12
[13] = PZD object 13
[14] = PZD object 14
[15] = PZD object 15

Note: Index 0 corresponds to the CANopen object 5810 hex + 80 hex * x (x: Drive number 0 ... 7).
Index 1 corresponds to the CANopen object 5811 hex + 80 hex * x (x: Drive number 0 ... 7).
Index 2 corresponds to the CANopen object 5812 hex + 80 hex * x (x: Drive number 0 ... 7).
Index 3 corresponds to the CANopen object 5813 hex + 80 hex * x (x: Drive number 0 ... 7).
Index 4 corresponds to the CANopen object 5814 hex + 80 hex * x (x: Drive number 0 ... 7).
Index 5 corresponds to the CANopen object 5815 hex + 80 hex * x (x: Drive number 0 ... 7).
Index 6 corresponds to the CANopen object 5816 hex + 80 hex * x (x: Drive number 0 ... 7).
Index 7 corresponds to the CANopen object 5817 hex + 80 hex * x (x: Drive number 0 ... 7).
Index 8 corresponds to the CANopen object 5818 hex + 80 hex * x (x: Drive number 0 ... 7).
Index 9 corresponds to the CANopen object 5819 hex + 80 hex * x (x: Drive number 0 ... 7).
Index 10 corresponds to the CANopen object 581A hex + 80 hex * x (x: Drive number 0 ... 7).
Index 11 corresponds to the CANopen object 581B hex + 80 hex * x (x: Drive number 0 ... 7).
Index 12 corresponds to the CANopen object 581C hex + 80 hex * x (x: Drive number 0 ... 7).

Index 13 corresponds to the CANopen object 581D hex + 80 hex * x (x: Drive number 0 ... 7).
Index 14 corresponds to the CANopen object 581E hex + 80 hex * x (x: Drive number 0 ... 7).
Index 15 corresponds to the CANopen object 581F hex + 80 hex * x (x: Drive number 0 ... 7).

r8747[0...7] CO: CAN free PZD receive objects 32 bit / Free PZD recv 32

SERVO (CAN), VECTOR (CAN)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** 4000H	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Access to free PZD receive objects 32 bit using the SDO transfer.
An index can only be used, if the corresponding object has not been mapped in a PDO.

Index:
[0] = PZD object 0
[1] = PZD object 1
[2] = PZD object 2
[3] = PZD object 3
[4] = PZD object 4
[5] = PZD object 5
[6] = PZD object 6
[7] = PZD object 7

Note:
Index 0 corresponds to the CANopen object 5820 hex + 80 hex * x (x: Drive number 0 ... 7).
Index 1 corresponds to the CANopen object 5821 hex + 80 hex * x (x: Drive number 0 ... 7).
Index 2 corresponds to the CANopen object 5822 hex + 80 hex * x (x: Drive number 0 ... 7).
Index 3 corresponds to the CANopen object 5823 hex + 80 hex * x (x: Drive number 0 ... 7).
Index 4 corresponds to the CANopen object 5824 hex + 80 hex * x (x: Drive number 0 ... 7).
Index 5 corresponds to the CANopen object 5825 hex + 80 hex * x (x: Drive number 0 ... 7).
Index 6 corresponds to the CANopen object 5826 hex + 80 hex * x (x: Drive number 0 ... 7).
Index 7 corresponds to the CANopen object 5827 hex + 80 hex * x (x: Drive number 0 ... 7).

p8748[0...7] CI: CAN free PZD send objects 32 bit / Free PZD send 32

SERVO (CAN), VECTOR (CAN)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Integer32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** 4000H	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for free PZD send objects 32 bit for SDO transfer.
An index can only be used, if the corresponding object has not been mapped in a PDO.

Index:
[0] = PZD object 0
[1] = PZD object 1
[2] = PZD object 2
[3] = PZD object 3
[4] = PZD object 4
[5] = PZD object 5
[6] = PZD object 6
[7] = PZD object 7

Note:
Index 0 corresponds to the CANopen object 5830 hex + 80 hex * x (x: Drive number 0 ... 7).
Index 1 corresponds to the CANopen object 5831 hex + 80 hex * x (x: Drive number 0 ... 7).
Index 2 corresponds to the CANopen object 5832 hex + 80 hex * x (x: Drive number 0 ... 7).
Index 3 corresponds to the CANopen object 5833 hex + 80 hex * x (x: Drive number 0 ... 7).
Index 4 corresponds to the CANopen object 5834 hex + 80 hex * x (x: Drive number 0 ... 7).
Index 5 corresponds to the CANopen object 5835 hex + 80 hex * x (x: Drive number 0 ... 7).
Index 6 corresponds to the CANopen object 5836 hex + 80 hex * x (x: Drive number 0 ... 7).
Index 7 corresponds to the CANopen object 5837 hex + 80 hex * x (x: Drive number 0 ... 7).

r8750[0...15] CAN mapped 16-bit receive objects / RPDO 16 mapped

SERVO (CAN), VECTOR (CAN)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the mapped 16-bit receive CANopen objects in the process data buffer.

Example:

For example, if the control word is mapped in an RPDO, then r8750 indicates the position of the control word in the process data buffer.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16

r8751[0...15] CAN mapped 16-bit transmit objects / TPDO 16 mapped

SERVO (CAN), VECTOR (CAN)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays mapped 16-bit transmit CANopen objects in the process data buffer.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16

Dependency: Refer to: r8750

r8760[0...14] CAN mapped 32-bit receive objects / RPDO 32 mapped

SERVO (CAN), VECTOR (CAN)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the mapped 32-bit receive CANopen objects in the process data buffer.

Index:
[0] = PZD 1 + 2
[1] = PZD 2 + 3
[2] = PZD 3 + 4
[3] = PZD 4 + 5
[4] = PZD 5 + 6
[5] = PZD 6 + 7
[6] = PZD 7 + 8
[7] = PZD 8 + 9
[8] = PZD 9 + 10
[9] = PZD 10 + 11
[10] = PZD 11 + 12
[11] = PZD 12 + 13
[12] = PZD 13 + 14
[13] = PZD 14 + 15
[14] = PZD 15 + 16

r8761[0...14] CAN mapped 32-bit transmit objects / TPDO 32 mapped

SERVO (CAN), VECTOR (CAN)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays mapped 32-bit transmit CANopen objects in the process data buffer.

Index:
[0] = PZD 1 + 2
[1] = PZD 2 + 3
[2] = PZD 3 + 4
[3] = PZD 4 + 5
[4] = PZD 5 + 6
[5] = PZD 6 + 7
[6] = PZD 7 + 8
[7] = PZD 8 + 9
[8] = PZD 9 + 10
[9] = PZD 10 + 11
[10] = PZD 11 + 12
[11] = PZD 12 + 13
[12] = PZD 13 + 14
[13] = PZD 14 + 15
[14] = PZD 15 + 16

r8762 CO: CAN operating mode display / Op mode display

SERVO (CAN), VECTOR (CAN)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the currently effective CANopen operating mode.

To send the CANopen object 0x6061 mapped in a TPDO, this parameter can be correspondingly interconnected in the PZD interface.

r8784 CO: CAN status word / Status word

SERVO (CAN), VECTOR (CAN)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 9226
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output for the CANopen status word

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Ready for switching on	Yes	No	-
01	Ready	Yes	No	-
02	Operation enabled	Yes	No	-
03	Fault present	Yes	No	-
04	No coasting active	Yes	No	-
05	No Quick Stop active	Yes	No	-
06	Switching on inhibited active	Yes	No	-
07	Alarm present	Yes	No	-
08	Can be freely interconnected (BI: p8785)	Yes	No	-
09	Control request	Yes	No	-
10	Target reached	Yes	No	-
11	Torque limit reached	Yes	No	-
12	Velocity equal to zero	Yes	No	-
14	Can be freely interconnected (BI: p8786)	Yes	No	-
15	Can be freely interconnected (BI: p8787)	Yes	No	-

Note: Corresponds to the CANopen object 6041 hex + 800 hex * x (x: Drive number 0 ... 7).

For bit 10:

When the ramp-function generator is activated, the interconnection from CI: p2151 = r1119 can be changed, so that to evaluate bit 10, the setpoint can be retrieved (taken) from in front of the ramp-function generator.

For bit 10, 12:

When braking, the two bits must indicate the same state. This is the reason that the following parameters must be set the same:

p2161 (speed threshold value 3, for r2199.0) = p2163 (speed threshold value 4, for r2197.7)

p2150 (hysteresis speed 3, for r2199.0) = p2164 (hysteresis speed 4, for r2197.7)

p8785 BI: CAN status word bit 8 / Status word bit 8

SERVO (CAN), VECTOR (CAN)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9226
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for bit 8 of the CANopen status word.

Dependency: Refer to: r8784

p8786 BI: CAN status word bit 14 / Status word bit 14

SERVO (CAN), VECTOR (CAN)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9226
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for bit 14 of the CANopen status word.

Dependency: Refer to: r8784

p8787 BI: CAN status word bit 15 / Status word bit 15

SERVO (CAN), VECTOR (CAN)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 9226
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for bit 15 of the CANopen status word.

Dependency: Refer to: r8784

p8790 CAN control word - auto interconnection / STW interc auto

SERVO (CAN), VECTOR (CAN)

Can be changed: C1(3), T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the automatic BICO interconnection of the CANopen control word.

Value:
0: No interconnection
1: Interconnection

Dependency: Refer to: r2050, r2090, r2091, r2092, r2093, r8750, r8795, r8850, r8890, r8891, r8892, r8893

Note: The following BICO interconnections are automatically established if the CANopen control word is mapped at one of the locations x = 0 ... 3 in the receive process data buffer.

For SINAMICS S120 with CBC10, the PZD interface IF2 is used:

BI: p0840.0 = r889x.0

BI: p0844.0 = r889x.1

BI: p0848.0 = r889x.2

BI: p0852.0 = r889x.3

BI: p2103.0 = r889x.7

For SINAMICS S110, the PZD interface IF1 is used:

BI: p0840.0 = r209x.0

BI: p0844.0 = r209x.1

BI: p0848.0 = r209x.2

BI: p0852.0 = r209x.3

BI: p2103.0 = r209x.7

The write access is rejected if a CANopen control word is not mapped at one of these locations.

This causes the commissioning tool to interrupt the project download.

p8791 CAN stop option code / Stop opt_code

SERVO (CAN), VECTOR (CAN)

Can be changed: C1(3), T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1	3	-1

Description: Setting for the CANopen control word bit 8 "Stop" (CANopen STW.8).

Value:
-1: No interconnection
1: Interconnection CANopen STW.8 with p1142
3: Interconnection CANopen STW.8 with p1140

Dependency: Refer to: r8750, r8795, r8850

Note: Corresponds to the CANopen object 605D hex + 800 hex * x (x: drive number 0 ... 7).

The BICO interconnection is established, if the CANopen control word is mapped at one of the locations x = 0 ... 3 in the receive process data buffer.

r8792[0] CO: CAN velocity mode I16 setpoint / Vel mod I16 set

SERVO (CAN), VECTOR (CAN)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** 4000H	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output to interconnect standardized I16 setpoint CANopen objects of the velocity mode for SDO transfer.

An index can only be used, if the corresponding object has not been mapped in a PDO.

Index: [0] = VL Target Velocity

Note: For index [0]:

Corresponds to the CANopen object 6042 hex + 800 hex * x (x: Drive number 0 ... 7).

The displayed parameter value is scaled via the reference speed p2000:

4000 hex corresponds to p2000

r8795.0...15 CO/BO: CAN control word / Control word

SERVO (CAN), VECTOR (CAN)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Access to the CANopen control word using SDO transfer.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	ON/OFF1	Yes	No	-
01	Do not activate coast down	Yes	No	-
02	Do not activate a Quick Stop	Yes	No	-
03	Enable operation	Yes	No	-
04	Enable ramp-function generator	Yes	No	-
05	Continue ramp-function generator	Yes	No (freeze)	-
06	Enable speed setpoint	Yes	No	-
07	Acknowledge fault	Yes	No	-
08	Stop	Yes	No	-
11	Freely interconnectable	Yes	No	-
12	Freely interconnectable	Yes	No	-
13	Freely interconnectable	Yes	No	-
14	Freely interconnectable	Yes	No	-
15	Freely interconnectable	Yes	No	-

Dependency: Refer to: p8790

Note: Corresponds to the CANopen object 6040 hex + 800 hex * x (x: Drive number 0 ... 7).

r8796[0] CO: CAN profile velocity mode I32 setpoints / Pr vel mo I32 set

SERVO (CAN), VECTOR (CAN)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** 4000H	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output to interconnect standardized I32 setpoint CANopen objects of the profile velocity mode for SDO transfer.

An index can only be used, if the corresponding object has not been mapped in a PDO.

Index: [0] = Target velocity

Note: For index [0]:
Corresponds to the CANopen object 60FF hex + 800 hex * x (x: Drive number 0 ... 7).
The displayed parameter value is scaled via the reference speed p2000:
4000 0000 hex corresponds to p2000

r8797[0] CO: CAN profile torque mode I16 setpoints / Pr Tq mod I16 set

SERVO (CAN), VECTOR (CAN)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** 4000H	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output to interconnect standardized I16 setpoint CANopen objects of the profile torque mode for SDO transfer.
An index can only be used, if the corresponding object has not been mapped in a PDO.

Index: [0] = Target torque

Note: For index [0]:
Corresponds to the CANopen object 6071 hex + 800 hex * x (x: Drive number 0 ... 7).
The displayed parameter value is scaled via the reference torque p2003:
4000 hex corresponds to p2003

p8798[0...1] CAN speed conversion factor / n_conv_factor

SERVO (CAN), VECTOR (CAN)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	4294967295	1

Description: The factor converts the required velocity units into the internal velocity units (U/s).
With the factory setting, for CANopen, the velocity units are increments/second.
The parameter corresponds to the CANopen object 6094 hex.
The internal velocity is calculated as follows:
n_set_internal = object 6094.1 / object 6094.2 * 1/(p0408 * 2^p0418) * n_set_bus

Index: [0] = Numerator
[1] = Denominator

p8806[0...53] Identification and Maintenance 1 / I&M 1

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	

Description: Parameters for the PROFINET data set "Identification and Maintenance 1" (I&M 1).
This information is known as "System identifier" and "Location identifier".

Dependency: Refer to: p8807, p8808

Notice: Only characters belonging to the standard ASCII character set may be used (32 dec to 126 dec).

Note: An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.
For p8806[0...31]:
System identifier.
For p8806[32...53]:
Location identifier.

p8807[0...15] Identification and Maintenance 2 / I&M 2

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	

Description: Parameters for the PROFINET data set "Identification and Maintenance 2" (I&M 2).
This information is known as "Installation date".

Dependency: Refer to: p8806, p8808

Note: An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.
For p8807[0...15]:
Dates of installation or first commissioning of the device with the following format options (ASCII):
YYYY-MM-DD
or
YYYY-MM-DD hh:mm
- YYYY: year
- MM: month 01 ... 12
- DD: day 01 ... 31
- hh: hours 00 ... 23
- mm: minutes 00 ... 59
The separators between the individual data - i.e. hyphen '-', space ' ' and colon ':' - must be entered.

p8808[0...53] Identification and Maintenance 3 / I&M 3

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	

Description: Parameters for the PROFINET data set "Identification and Maintenance 3" (I&M 3).
This information is known as "Supplementary information".

Dependency: Refer to: p8806, p8807

Notice: Only characters belonging to the standard ASCII character set may be used (32 dec to 126 dec).

Note: An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.
For p8808[0...53]:
Any supplementary information and comments (ASCII).

r8809[0...53] Identification and Maintenance 4 / I&M 4

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Parameters for the PROFINET data set "Identification and Maintenance 4" (I&M 4).
This information is known as "Signature".

Note: Parameter r8809 contains the information described below.

For r8809[0...3]:

Contains the value from r9781[0] "SI change tracking checksum functional".

For r8809[4...7]:

Contains the value from r9782[0] "SI change tracking time stamp checksum functional".

For r8809[8...53]:

Reserved.

p8811 SINAMICS Link project selection / Project sel

CU_S120_PN (PN CBE20), CU_S150_PN (PN CBE20), CU_S120_DP (PN CBE20), CU_S150_DP (PN CBE20)

Can be changed: C1(1)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 2197, 2198
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
8	64	64

Description: Project selection for SINAMICS Link.

Value:
8: Project 8 participants, 32 words
12: Project 12 participants, 24 words
16: Project 16 participants, 16 words
64: Project 64 participants, 16 words

Note: SINAMICS Link requires that the appropriate CBE20 firmware version is selected (p8835 = 3).

The parameter must be set the same for all participants.

A change only becomes effective after a POWER ON.

The parameter is not influenced by setting the factory setting.

p8812[0...1] SINAMICS Link clock cycle settings / Clock cyc set

CU_S120_PN (PN CBE20), CU_S150_PN (PN CBE20), CU_S120_DP (PN CBE20), CU_S150_DP (PN CBE20)

Can be changed: C1(1)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2197, 2198
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	2000	[0] 1 [1] 2000

Description: Sets the clock cycle for SINAMICS Link.

For index [0]:

0 = clock synchronous mode not activated, 1 = clock synchronous mode activated

For index [1]:

Possible values: 500, 1000, 2000 µs

Index:
[0] = Activate isochronous mode
[1] = Bus CC [µs]

Dependency: Refer to: p8811

Note: SINAMICS Link requires that the appropriate CBE20 firmware version is selected (p8835 = 3).

A change only becomes effective after a POWER ON.

The parameter is not influenced by setting the factory setting.

For index [0]:

Is applicable for the synchronization of the application. The SINAMICS Link itself is always synchronous.

For index [1]:

The value must be set the same for all participants.

When newly selecting the project p8811, p8812[1] is set to the factory setting.

For p8811 = 8, 12, 16 the following applies:

Min/max/factory setting: 500/500/500 µs

For p8811 = 64, the following applies:

Min/max/factory setting: 1000/2000/2000 µs

p8815[0...1] IF1/IF2 PZD functionality selection / IF1/IF2 PZD fct

CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: C1(1)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	2	1

Description: Selects the PZD interface for the clock cycle synchronization functionality and PROFIsafe.

Value:
1: Interface 1 (IF1)
2: Interface 2 (IF2)

Index:
[0] = Isochronous mode
[1] = PROFIsafe

Dependency: Refer to: p8839

Note: A change only becomes effective after POWER ON, reset or project download.

Example:

p8815[0] = 1: IF1 supports the isochronous mode.

p8815[1] = 2: IF2 supports PROFIsafe.

p8835 CBE20 firmware selection / CBE20 FW sel

CU_S120_PN (PN CBE20), CU_S150_PN (PN CBE20), CU_S120_DP (PN CBE20), CU_S150_DP (PN CBE20)

Can be changed: C1(1)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 2197, 2198
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	99	1

Description: Selects the firmware version for the CBE20.

Value:
1: PROFINET Device
2: PROFINET gate
3: SINAMICS Link
4: EtherNet/IP
5: Modbus TCP
99: Customer-specific from the OEM directory

Note: A change only becomes effective after a POWER ON.

The parameter is not influenced by setting the factory setting.

CBE20: Communication Board Ethernet 20

p8836 SINAMICS link node address / Node address

CU_S120_PN (PN CBE20), CU_S150_PN (PN CBE20), CU_S120_DP (PN CBE20), CU_S150_DP (PN CBE20)

Can be changed: C1(1)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2198
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	64	0

Description: Selects the node address for the SINAMICS Link on the Communication Board Ethernet 20 (CBE20).

p8836 = 0: SINAMICS Link deactivated

p8836 = 1 ... 64: SINAMICS Link node address

Dependency: Refer to: p8811, p8835

Note: The maximum number of permitted participant addresses is limited by the project selection p8811.

SINAMICS Link requires that the appropriate CBE20 firmware version is selected (p8835 = 3).

A change only becomes effective after a POWER ON.

The parameter is not influenced by setting the factory setting.

p8837 IF2 STW1.10 = 0 mode / IF2 STW1.10=0

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM41, ENC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	2	2

Description: Sets the processing mode for PROFIdrive STW1.10 "master control by PLC".

Generally, control world 1 is received with the first receive word (PZD1) (this is in conformance to the PROFIdrive profile). The behavior of STW1.10 = 0 corresponds to that of the PROFIdrive profile. For other applications that deviate from this, the behavior can be adapted using this particular parameter.

Value:
0: Freeze setpoints and continue to process sign-of-life
1: Freeze setpoints and sign-of-life
2: Do not freeze setpoints

Recommendation: Do not change the setting p2037 = 0.

Note: If the STW1 is not transferred according to the PROFIdrive with PZD1 (with bit 10 "master control by PLC"), then p2037 should be set to 2.

p8839[0...1] PZD interface hardware assignment / PZD IF HW assign

CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: C1(1)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 2197, 2198
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	99	99

Description: Assignment of the hardware for cyclic communications via PZD interface 1 (IF1) and interface 2 (IF2).

Value:
0: Inactive
1: Control Unit onboard
2: COMM BOARD
99: Automatic

Index:
[0] = Interface 1
[1] = Interface 2

Dependency: Refer to: p2030, p8815

Note: For value = 99 (automatic) the following applies:

- if a COMM BOARD is not inserted, then the onboard interface (PROFIBUS/PROFINET/USS) communicates via IF1.

- if a CBE20 is inserted, then the following applies:

-- CU320-2 DP: PROFINET CBE20 communicates via IF1 and PROFIBUS/USS via IF2.

-- CU320-2 PN: PROFINET onboard communicates via IF1 and PROFINET CBE20 via IF2.

- CAN CBC10 always communicates via IF2.

For a value not equal to 99 (automatic) the following applies:

- both indices must be set to a number not equal to 99 (automatic).

A change only becomes effective after POWER ON, reset or download.

p8840 COMM BOARD monitoring time / CB t_monit

CU_S120_PN (COMM BOARD, PN CBE20), CU_S150_PN (COMM BOARD, PN CBE20), CU_S120_DP (COMM BOARD, PN CBE20), CU_S150_DP (COMM BOARD, PN CBE20)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [ms]	65535000 [ms]	20 [ms]

Description: Sets the monitoring time to monitor the process data received via COMM BOARD.

If, during this time, the Control Unit does not receive any process data from the COMM BOARD, then an appropriate message is output.

Dependency: Refer to: p8835

Note: This monitoring function only monitors the connection between the Control Unit and COMM BOARD and not the data traffic on the fieldbus.

For CBE20, the parameter is only active for firmware version "SINAMICS Link" or "EtherNet/IP" (p8835 = 3, 4, 5).

For CBE20 firmware version Modbus TCP (p8835 =5) then the fieldbus data traffic is also monitored.

Value = 0: Monitoring is deactivated.

p8841[0...239] COMM BOARD send configuration data / CB s config_dat

CU_S120_PN (COMM BOARD, PN CBE20), CU_S150_PN (COMM BOARD, PN CBE20), CU_S120_DP (COMM BOARD, PN CBE20), CU_S150_DP (COMM BOARD, PN CBE20)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	65535	0

Description: Sets the send configuration data for the COMM BOARD.

The setting is activated with p8842.

Dependency: Refer to: p8842

Note: The configuration data are specific to the inserted COMM BOARD.

For CBE20, the configuration data are not relevant.

p8842 Activate COMM BOARD send configuration / CB s config act

CU_S120_PN (COMM BOARD, PN CBE20), CU_S150_PN (COMM BOARD, PN CBE20), CU_S120_DP (COMM BOARD, PN CBE20), CU_S150_DP (COMM BOARD, PN CBE20)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2199, 2200
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Activate a modified send configuration for COMM BOARD.

With p8842 = 1, the values in p8841 are transferred to the COMM BOARD and activated. After this, p8842 is automatically set to zero.

Dependency: Refer to: p8841

Note: For CBE20, certain SINAMICS parameters are newly evaluated and activated. An existing, cyclic bus connection is interrupted.

For CBE20, the parameter is only active for firmware selection "SINAMICS Link" (p8835 = 3).

r8843.0...2 BO: IF2 PZD state / IF2 PZD state

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** 2410
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the PROFIdrive PZD state.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Setpoint failure	Yes	No	-
01	Clock cycle synchronous operation active	Yes	No	-
02	Fieldbus operation	Yes	No	-

Dependency: Refer to: p2044

Note: When using the "setpoint failure" signal, the bus can be monitored and an application-specific response triggered when the setpoint fails.

p8844 IF2 fault delay / IF2 F delay

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM41, ENC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2410
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [s]	100 [s]	0 [s]

Description: Sets the delay time to initiate fault F01910 after a setpoint failure.

The time until the fault is initiated can be used by the application. This means that is is possible to respond to the failure while the drive is still operational (e.g. emergency retraction).

Dependency: Refer to: r2043

p8848 IF2 PZD sampling time / IF2 PZD t_sample

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: C1(3)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1.00 [ms]	16.00 [ms]	4.00 [ms]

Description: Sets the sampling time for the cyclic interface 2 (IF2).

Note: The system only permits certain sampling times and after writing to this parameter, displays the value that has actually been set.

For clock cycle synchronous operation, the specified bus cycle time applies (Tdp).

r8849[0...139] COMM BOARD receive configuration data / CB r config_dat

CU_S120_PN (COMM BOARD, PN CBE20), CU_S150_PN (COMM BOARD, PN CBE20), CU_S120_DP (COMM BOARD, PN CBE20), CU_S150_DP (COMM BOARD, PN CBE20)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the receive configuration data for the COMM BOARD.

Note: For CBE20, the parameter is only active for firmware version "SINAMICS Link" or "EtherNet/IP" (p8835 = 3, 4).

r8850[0...19] CO: IF2 PZD receive word / IF2 PZD recv word

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 2491
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** 4000H	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Connector output for interconnecting the PZD (setpoints) received via interface 2 in the word format.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11

[11] = PZD 12
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17
[17] = PZD 18
[18] = PZD 19
[19] = PZD 20

Note: IF2: Interface 2

PZD1 to PZD2 are displayed bit-serially in r8890 to r8891.

r8850[0...19] CO: IF2 PZD receive word / IF2 PZD recv word

SERVO, HLA, SERVO_AC, SERVO_I_AC, TM41

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 2485, 2491, 9204, 9206
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** 4000H	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Connector output for interconnecting the PZD (setpoints) received via interface 2 in the word format.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17
[17] = PZD 18
[18] = PZD 19
[19] = PZD 20

Dependency: Refer to: r8860, r8890, r8891, r8892, r8893

Notice: Where there is a multiple interconnection of a connector output, all the connector inputs must either have Integer or FloatingPoint data types.

A BICO interconnection for a single PZD can only take place either on r8850 or r8860.

Note: IF2: Interface 2

PZD1 to PZD4 are displayed bit-serially in r8890 to r8893.

r8850[0...31] CO: IF2 PZD receive word / IF2 PZD recv word

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 2485, 2491, 9204, 9206
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** 4000H	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Connector output for interconnecting the PZD (setpoints) received via interface 2 in the word format.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17
[17] = PZD 18
[18] = PZD 19
[19] = PZD 20
[20] = PZD 21
[21] = PZD 22
[22] = PZD 23
[23] = PZD 24
[24] = PZD 25
[25] = PZD 26
[26] = PZD 27
[27] = PZD 28
[28] = PZD 29
[29] = PZD 30
[30] = PZD 31
[31] = PZD 32

Dependency: Refer to: r8860, r8890, r8891, r8892, r8893

Notice: Where there is a multiple interconnection of a connector output, all the connector inputs must either have Integer or FloatingPoint data types.

A BICO interconnection for a single PZD can only take place either on r8850 or r8860.

Note: IF2: Interface 2

PZD1 to PZD4 are displayed bit-serially in r8890 to r8893.

r8850[0...9] CO: IF2 PZD receive word / IF2 PZD recv word

A_INF, S_INF, R_INF, B_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 2491
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** 4000H	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Connector output for interconnecting the PZD (setpoints) received via interface 2 in the word format.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10

Note: IF2: Interface 2

PZD1 to PZD2 are displayed bit-serially in r8890 to r8891.

r8850[0...4] CO: IF2 PZD receive word / IF2 PZD recv word

TM31, TM15DI_DO, TM120, TM150, TB30

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 2491
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** 4000H	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Connector output for interconnecting the PZD (setpoints) received via interface 2 in the word format.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5

Note: IF2: Interface 2

PZD1 to PZD2 are displayed bit-serially in r8890 to r8891.

r8850[0...3] CO: IF2 PZD receive word / IF2 PZD recv word

ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 2485, 2491, 9204, 9206
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** 4000H	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Connector output for interconnecting the PZD (setpoints) received via interface 2 in the word format.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4

Dependency: Refer to: r8860, r8890, r8891, r8892, r8893

Notice: Where there is a multiple interconnection of a connector output, all the connector inputs must either have Integer or FloatingPoint data types.

A BICO interconnection for a single PZD can only take place either on r8850 or r8860.

Note: IF2: Interface 2

PZD1 to PZD4 are displayed bit-serially in r8890 to r8893.

p8851[0...24] CI: IF2 PZD send word / IF2 PZD send word

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Integer16	**Dyn. index:** -	**Func. diagram:** 2493, 9210
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** 4000H	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Selects the PZD (actual values) to be sent via interface 2 in the word format.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17
[17] = PZD 18
[18] = PZD 19
[19] = PZD 20
[20] = PZD 21
[21] = PZD 22
[22] = PZD 23
[23] = PZD 24
[24] = PZD 25

Note: IF2: Interface 2

p8851[0...27] CI: IF2 PZD send word / IF2 PZD send word

SERVO, HLA, SERVO_AC, SERVO_I_AC, TM41

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Integer16	**Dyn. index:** -	**Func. diagram:** 2487, 9208
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** 4000H	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Selects the PZD (actual values) to be sent via interface 2 in the word format.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12
[12] = PZD 13
[13] = PZD 14

[14] = PZD 15
[15] = PZD 16
[16] = PZD 17
[17] = PZD 18
[18] = PZD 19
[19] = PZD 20
[20] = PZD 21
[21] = PZD 22
[22] = PZD 23
[23] = PZD 24
[24] = PZD 25
[25] = PZD 26
[26] = PZD 27
[27] = PZD 28

Dependency: Refer to: p8861

Note: IF2: Interface 2

p8851[0...31] CI: IF2 PZD send word / IF2 PZD send word

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Integer16	**Dyn. index:** -	**Func. diagram:** 2487, 9208
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** 4000H	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Selects the PZD (actual values) to be sent via interface 2 in the word format.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17
[17] = PZD 18
[18] = PZD 19
[19] = PZD 20
[20] = PZD 21
[21] = PZD 22
[22] = PZD 23
[23] = PZD 24
[24] = PZD 25
[25] = PZD 26
[26] = PZD 27
[27] = PZD 28
[28] = PZD 29
[29] = PZD 30
[30] = PZD 31
[31] = PZD 32

Dependency: Refer to: p8861

Note: IF2: Interface 2

p8851[0...9] CI: IF2 PZD send word / IF2 PZD send word

A_INF, S_INF, R_INF, B_INF

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Integer16	**Dyn. index:** -	**Func. diagram:** 2493, 9210
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** 4000H	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Selects the PZD (actual values) to be sent via interface 2 in the word format.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10

Note: IF2: Interface 2

p8851[0...4] CI: IF2 PZD send word / IF2 PZD send word

TM31, TM15DI_DO, TM120, TM150, TB30

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Integer16	**Dyn. index:** -	**Func. diagram:** 2493, 9210
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** 4000H	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Selects the PZD (actual values) to be sent via interface 2 in the word format.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5

Note: IF2: Interface 2

p8851[0...11] CI: IF2 PZD send word / IF2 PZD send word

ENC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Integer16	**Dyn. index:** -	**Func. diagram:** 2487, 9208
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** 4000H	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Selects the PZD (actual values) to be sent via interface 2 in the word format.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12

Dependency: Refer to: p8861

Note: IF2: Interface 2

r8853[0...24] IF2 diagnostics PZD send / IF2 diag PZD send

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2493
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the sent PZD (actual values) sent via interface 2.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17
[17] = PZD 18
[18] = PZD 19
[19] = PZD 20
[20] = PZD 21
[21] = PZD 22
[22] = PZD 23
[23] = PZD 24
[24] = PZD 25

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	ON	OFF	-
01	Bit 1	ON	OFF	-
02	Bit 2	ON	OFF	-
03	Bit 3	ON	OFF	-
04	Bit 4	ON	OFF	-
05	Bit 5	ON	OFF	-
06	Bit 6	ON	OFF	-
07	Bit 7	ON	OFF	-
08	Bit 8	ON	OFF	-
09	Bit 9	ON	OFF	-
10	Bit 10	ON	OFF	-
11	Bit 11	ON	OFF	-
12	Bit 12	ON	OFF	-
13	Bit 13	ON	OFF	-
14	Bit 14	ON	OFF	-
15	Bit 15	ON	OFF	-

Note: IF2: Interface 2

r8853[0...27] IF2 diagnostics PZD send / IF2 diag PZD send

SERVO, HLA, SERVO_AC, SERVO_I_AC, TM41

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2487, 9208, 9210
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the sent PZD (actual values) sent via interface 2.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17
[17] = PZD 18
[18] = PZD 19
[19] = PZD 20
[20] = PZD 21
[21] = PZD 22
[22] = PZD 23
[23] = PZD 24
[24] = PZD 25
[25] = PZD 26
[26] = PZD 27
[27] = PZD 28

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	ON	OFF	-
01	Bit 1	ON	OFF	-
02	Bit 2	ON	OFF	-
03	Bit 3	ON	OFF	-
04	Bit 4	ON	OFF	-
05	Bit 5	ON	OFF	-
06	Bit 6	ON	OFF	-
07	Bit 7	ON	OFF	-
08	Bit 8	ON	OFF	-
09	Bit 9	ON	OFF	-
10	Bit 10	ON	OFF	-
11	Bit 11	ON	OFF	-
12	Bit 12	ON	OFF	-
13	Bit 13	ON	OFF	-
14	Bit 14	ON	OFF	-
15	Bit 15	ON	OFF	-

Dependency: Refer to: p8851, p8861

Note: IF2: Interface 2

r8853[0...31] IF2 diagnostics PZD send / IF2 diag PZD send

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2487, 9208, 9210
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the sent PZD (actual values) sent via interface 2.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17
[17] = PZD 18
[18] = PZD 19
[19] = PZD 20
[20] = PZD 21
[21] = PZD 22
[22] = PZD 23
[23] = PZD 24
[24] = PZD 25
[25] = PZD 26
[26] = PZD 27
[27] = PZD 28
[28] = PZD 29
[29] = PZD 30
[30] = PZD 31
[31] = PZD 32

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	ON	OFF	-
01	Bit 1	ON	OFF	-
02	Bit 2	ON	OFF	-
03	Bit 3	ON	OFF	-
04	Bit 4	ON	OFF	-
05	Bit 5	ON	OFF	-
06	Bit 6	ON	OFF	-
07	Bit 7	ON	OFF	-
08	Bit 8	ON	OFF	-
09	Bit 9	ON	OFF	-
10	Bit 10	ON	OFF	-
11	Bit 11	ON	OFF	-
12	Bit 12	ON	OFF	-
13	Bit 13	ON	OFF	-
14	Bit 14	ON	OFF	-
15	Bit 15	ON	OFF	-

Dependency: Refer to: p8851, p8861

Note: IF2: Interface 2

r8853[0...9] IF2 diagnostics PZD send / IF2 diag PZD send

A_INF, S_INF, R_INF, B_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2493
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the sent PZD (actual values) sent via interface 2.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	ON	OFF	-
01	Bit 1	ON	OFF	-
02	Bit 2	ON	OFF	-
03	Bit 3	ON	OFF	-
04	Bit 4	ON	OFF	-
05	Bit 5	ON	OFF	-
06	Bit 6	ON	OFF	-
07	Bit 7	ON	OFF	-
08	Bit 8	ON	OFF	-
09	Bit 9	ON	OFF	-
10	Bit 10	ON	OFF	-
11	Bit 11	ON	OFF	-
12	Bit 12	ON	OFF	-
13	Bit 13	ON	OFF	-
14	Bit 14	ON	OFF	-
15	Bit 15	ON	OFF	-

Note: IF2: Interface 2

r8853[0...4] IF2 diagnostics PZD send / IF2 diag PZD send

TM31, TM15DI_DO, TM120, TM150, TB30

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2493
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the sent PZD (actual values) sent via interface 2.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	ON	OFF	-
01	Bit 1	ON	OFF	-
02	Bit 2	ON	OFF	-
03	Bit 3	ON	OFF	-
04	Bit 4	ON	OFF	-
05	Bit 5	ON	OFF	-
06	Bit 6	ON	OFF	-
07	Bit 7	ON	OFF	-

08	Bit 8	ON	OFF	-
09	Bit 9	ON	OFF	-
10	Bit 10	ON	OFF	-
11	Bit 11	ON	OFF	-
12	Bit 12	ON	OFF	-
13	Bit 13	ON	OFF	-
14	Bit 14	ON	OFF	-
15	Bit 15	ON	OFF	-

Note: IF2: Interface 2

r8853[0...11] IF2 diagnostics PZD send / IF2 diag PZD send

ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2487, 9208, 9210
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the sent PZD (actual values) sent via interface 2.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	ON	OFF	-
01	Bit 1	ON	OFF	-
02	Bit 2	ON	OFF	-
03	Bit 3	ON	OFF	-
04	Bit 4	ON	OFF	-
05	Bit 5	ON	OFF	-
06	Bit 6	ON	OFF	-
07	Bit 7	ON	OFF	-
08	Bit 8	ON	OFF	-
09	Bit 9	ON	OFF	-
10	Bit 10	ON	OFF	-
11	Bit 11	ON	OFF	-
12	Bit 12	ON	OFF	-
13	Bit 13	ON	OFF	-
14	Bit 14	ON	OFF	-
15	Bit 15	ON	OFF	-

Dependency: Refer to: p8851, p8861

Note: IF2: Interface 2

r8854 COMM BOARD state / CB state

CU_S120_PN (COMM BOARD, PN CBE20), CU_S150_PN (COMM BOARD, PN CBE20), CU_S120_DP (COMM BOARD, PN CBE20), CU_S150_DP (COMM BOARD, PN CBE20)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	-

Description: Status display for COMM BOARD.

Value:
0: No initialization
1: Fatal fault
2: Initialization
3: Send configuration
4: Receive configuration
5: Non-cyclic communication
6: Cyclic communications but no setpoints (stop/no clock cycle)
255: Cyclic communication

Note: For CBE20, the parameter is only active for firmware version "SINAMICS Link" (p8835 = 3).

For firmware version "PROFINET Device" or "EtherNet/IP" (p8835 = 1, 4), parameter p8956 should be observed.

r8858[0...39] COMM BOARD read diagnostics channel / CB diag_chan read

CU_S120_PN (COMM BOARD, PN CBE20), CU_S150_PN (COMM BOARD, PN CBE20), CU_S120_DP (COMM BOARD, PN CBE20), CU_S150_DP (COMM BOARD, PN CBE20)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the COMM BOARD diagnostics data.

Note: The display depends on the COMM BOARD being used.

For CBE20, the parameter is only active for firmware version "SINAMICS Link" or "EtherNet/IP" (p8835 = 3, 4).

Example for CBE20:

r8858[0] = 4201 --> Siemens CBE20

r8858[1] = 3 --> firmware version = SINAMICS Link (see p8835)

r8858[2 ... 39] --> only for internal Siemens diagnostics.

r8859[0...7] COMM BOARD identification data / CB ident_data

CU_S120_PN (COMM BOARD, PN CBE20), CU_S150_PN (COMM BOARD, PN CBE20), CU_S120_DP (COMM BOARD, PN CBE20), CU_S150_DP (COMM BOARD, PN CBE20)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	65535	-

Description: Displays the COMM BOARD identification data

Index:
[0] = Version interface structure
[1] = Version interface driver
[2] = Company (Siemens = 42)
[3] = CB type
[4] = Firmware version
[5] = Firmware date (year)
[6] = Firmware date (day/month)
[7] = Firmware patch/hot fix

Note: Example for CBE20:

r8859[0] = 100 --> version of the interface structure V1.00

r8859[1] = 111 --> version of the interface driver V1.11

r8859[2] = 42 --> SIEMENS

r8859[3] = 0 --> CBE20

r8859[4] = 1200 --> first part, firmware version V12.00 (second part, see index 7)

r8859[5] = 2010 --> year 2010

r8859[6] = 2306 --> 23rd June

r8859[7] = 1300 --> second part, firmware version (complete version: V12.00.13.00)

r8860[0...18] CO: IF2 PZD receive double word / IF2 PZD recv DW

SERVO, HLA, SERVO_AC, SERVO_I_AC, TM41	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 2485, 9204, 9206
	P-Group: Communications	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** 4000H	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Connector output for interconnecting the PZD (setpoints) received via interface 2 in the double word format.

Index:
[0] = PZD 1 + 2
[1] = PZD 2 + 3
[2] = PZD 3 + 4
[3] = PZD 4 + 5
[4] = PZD 5 + 6
[5] = PZD 6 + 7
[6] = PZD 7 + 8
[7] = PZD 8 + 9
[8] = PZD 9 + 10
[9] = PZD 10 + 11
[10] = PZD 11 + 12
[11] = PZD 12 + 13
[12] = PZD 13 + 14
[13] = PZD 14 + 15
[14] = PZD 15 + 16
[15] = PZD 16 + 17
[16] = PZD 17 + 18
[17] = PZD 18 + 19
[18] = PZD 19 + 20

Dependency: Refer to: r8850

Notice: Where there is a multiple interconnection of a connector output, all the connector inputs must either have Integer or FloatingPoint data types.

A BICO interconnection for a single PZD can only take place either on r8850 or r8860.

A maximum of 4 indices of the "trace" function can be used.

Note: IF2: Interface 2

r8860[0...30] CO: IF2 PZD receive double word / IF2 PZD recv DW

VECTOR, VECTOR_AC, VECTOR_I_AC	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 2485, 9204, 9206
	P-Group: Communications	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** 4000H	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Connector output for interconnecting the PZD (setpoints) received via interface 2 in the double word format.

Index:
[0] = PZD 1 + 2
[1] = PZD 2 + 3
[2] = PZD 3 + 4
[3] = PZD 4 + 5

[4] = PZD 5 + 6
[5] = PZD 6 + 7
[6] = PZD 7 + 8
[7] = PZD 8 + 9
[8] = PZD 9 + 10
[9] = PZD 10 + 11
[10] = PZD 11 + 12
[11] = PZD 12 + 13
[12] = PZD 13 + 14
[13] = PZD 14 + 15
[14] = PZD 15 + 16
[15] = PZD 16 + 17
[16] = PZD 17 + 18
[17] = PZD 18 + 19
[18] = PZD 19 + 20
[19] = PZD 20 + 21
[20] = PZD 21 + 22
[21] = PZD 22 + 23
[22] = PZD 23 + 24
[23] = PZD 24 + 25
[24] = PZD 25 + 26
[25] = PZD 26 + 27
[26] = PZD 27 + 28
[27] = PZD 28 + 29
[28] = PZD 29 + 30
[29] = PZD 30 + 31
[30] = PZD 31 + 32

Dependency: Refer to: r8850

Notice: Where there is a multiple interconnection of a connector output, all the connector inputs must either have Integer or FloatingPoint data types.

A BICO interconnection for a single PZD can only take place either on r8850 or r8860.

A maximum of 4 indices of the "trace" function can be used.

Note: IF2: Interface 2

r8860[0...2] CO: IF2 PZD receive double word / IF2 PZD recv DW

ENC	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 2485, 9204, 9206
	P-Group: Communications	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** 4000H	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Connector output for interconnecting the PZD (setpoints) received via interface 2 in the double word format.

Index:
[0] = PZD 1 + 2
[1] = PZD 2 + 3
[2] = PZD 3 + 4

Dependency: Refer to: r8850

Notice: Where there is a multiple interconnection of a connector output, all the connector inputs must either have Integer or FloatingPoint data types.

A BICO interconnection for a single PZD can only take place either on r8850 or r8860.

Note: IF2: Interface 2

p8861[0...26] CI: IF2 PZD send double word / IF2 PZD send DW

SERVO, HLA, SERVO_AC, SERVO_I_AC, TM41

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Integer32	**Dyn. index:** -	**Func. diagram:** 2487, 9208, 9210
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** 4000H	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Selects the PZD (actual values) to be sent via interface 2 in the double word format.

Index:
[0] = PZD 1 + 2
[1] = PZD 2 + 3
[2] = PZD 3 + 4
[3] = PZD 4 + 5
[4] = PZD 5 + 6
[5] = PZD 6 + 7
[6] = PZD 7 + 8
[7] = PZD 8 + 9
[8] = PZD 9 + 10
[9] = PZD 10 + 11
[10] = PZD 11 + 12
[11] = PZD 12 + 13
[12] = PZD 13 + 14
[13] = PZD 14 + 15
[14] = PZD 15 + 16
[15] = PZD 16 + 17
[16] = PZD 17 + 18
[17] = PZD 18 + 19
[18] = PZD 19 + 20
[19] = PZD 20 + 21
[20] = PZD 21 + 22
[21] = PZD 22 + 23
[22] = PZD 23 + 24
[23] = PZD 24 + 25
[24] = PZD 25 + 26
[25] = PZD 26 + 27
[26] = PZD 27 + 28

Dependency: Refer to: p8851

Notice: A BICO interconnection for a single PZD can only take place either on p8851 or p8861.

Note: IF2: Interface 2

p8861[0...30] CI: IF2 PZD send double word / IF2 PZD send DW

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Integer32	**Dyn. index:** -	**Func. diagram:** 2487, 9208, 9210
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** 4000H	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Selects the PZD (actual values) to be sent via interface 2 in the double word format.

Index:
[0] = PZD 1 + 2
[1] = PZD 2 + 3
[2] = PZD 3 + 4
[3] = PZD 4 + 5
[4] = PZD 5 + 6
[5] = PZD 6 + 7
[6] = PZD 7 + 8
[7] = PZD 8 + 9
[8] = PZD 9 + 10
[9] = PZD 10 + 11

[10] = PZD 11 + 12
[11] = PZD 12 + 13
[12] = PZD 13 + 14
[13] = PZD 14 + 15
[14] = PZD 15 + 16
[15] = PZD 16 + 17
[16] = PZD 17 + 18
[17] = PZD 18 + 19
[18] = PZD 19 + 20
[19] = PZD 20 + 21
[20] = PZD 21 + 22
[21] = PZD 22 + 23
[22] = PZD 23 + 24
[23] = PZD 24 + 25
[24] = PZD 25 + 26
[25] = PZD 26 + 27
[26] = PZD 27 + 28
[27] = PZD 28 + 29
[28] = PZD 29 + 30
[29] = PZD 30 + 31
[30] = PZD 31 + 32

Dependency: Refer to: p8851

Notice: A BICO interconnection for a single PZD can only take place either on p8851 or p8861.

Note: IF2: Interface 2

p8861[0...10] CI: IF2 PZD send double word / IF2 PZD send DW

ENC			
	Can be changed: U, T	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32 / Integer32	**Dyn. index:** -	**Func. diagram:** 2487, 9208, 9210
	P-Group: Communications	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** 4000H	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	0

Description: Selects the PZD (actual values) to be sent via interface 2 in the double word format.

Index:
[0] = PZD 1 + 2
[1] = PZD 2 + 3
[2] = PZD 3 + 4
[3] = PZD 4 + 5
[4] = PZD 5 + 6
[5] = PZD 6 + 7
[6] = PZD 7 + 8
[7] = PZD 8 + 9
[8] = PZD 9 + 10
[9] = PZD 10 + 11
[10] = PZD 11 + 12

Dependency: Refer to: p8851

Notice: A BICO interconnection for a single PZD can only take place either on p8851 or p8861.

Note: IF2: Interface 2

r8863[0...26] IF2 diagnostics PZD send double word / IF2 diag send DW

SERVO, HLA, SERVO_AC, SERVO_I_AC, TM41

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2487
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the PZD sent via interface 2 (actual values) with double word format.

Index:
[0] = PZD 1 + 2
[1] = PZD 2 + 3
[2] = PZD 3 + 4
[3] = PZD 4 + 5
[4] = PZD 5 + 6
[5] = PZD 6 + 7
[6] = PZD 7 + 8
[7] = PZD 8 + 9
[8] = PZD 9 + 10
[9] = PZD 10 + 11
[10] = PZD 11 + 12
[11] = PZD 12 + 13
[12] = PZD 13 + 14
[13] = PZD 14 + 15
[14] = PZD 15 + 16
[15] = PZD 16 + 17
[16] = PZD 17 + 18
[17] = PZD 18 + 19
[18] = PZD 19 + 20
[19] = PZD 20 + 21
[20] = PZD 21 + 22
[21] = PZD 22 + 23
[22] = PZD 23 + 24
[23] = PZD 24 + 25
[24] = PZD 25 + 26
[25] = PZD 26 + 27
[26] = PZD 27 + 28

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	ON	OFF	-
01	Bit 1	ON	OFF	-
02	Bit 2	ON	OFF	-
03	Bit 3	ON	OFF	-
04	Bit 4	ON	OFF	-
05	Bit 5	ON	OFF	-
06	Bit 6	ON	OFF	-
07	Bit 7	ON	OFF	-
08	Bit 8	ON	OFF	-
09	Bit 9	ON	OFF	-
10	Bit 10	ON	OFF	-
11	Bit 11	ON	OFF	-
12	Bit 12	ON	OFF	-
13	Bit 13	ON	OFF	-
14	Bit 14	ON	OFF	-
15	Bit 15	ON	OFF	-
16	Bit 16	ON	OFF	-
17	Bit 17	ON	OFF	-
18	Bit 18	ON	OFF	-
19	Bit 19	ON	OFF	-
20	Bit 20	ON	OFF	-
21	Bit 21	ON	OFF	-
22	Bit 22	ON	OFF	-
23	Bit 23	ON	OFF	-
24	Bit 24	ON	OFF	-
25	Bit 25	ON	OFF	-

26	Bit 26	ON	OFF	-
27	Bit 27	ON	OFF	-
28	Bit 28	ON	OFF	-
29	Bit 29	ON	OFF	-
30	Bit 30	ON	OFF	-
31	Bit 31	ON	OFF	-

Notice: A maximum of 4 indices of the "trace" function can be used.

Note: IF2: Interface 2

r8863[0...30] IF2 diagnostics PZD send double word / IF2 diag send DW

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2487
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the PZD sent via interface 2 (actual values) with double word format.

Index:
[0] = PZD 1 + 2
[1] = PZD 2 + 3
[2] = PZD 3 + 4
[3] = PZD 4 + 5
[4] = PZD 5 + 6
[5] = PZD 6 + 7
[6] = PZD 7 + 8
[7] = PZD 8 + 9
[8] = PZD 9 + 10
[9] = PZD 10 + 11
[10] = PZD 11 + 12
[11] = PZD 12 + 13
[12] = PZD 13 + 14
[13] = PZD 14 + 15
[14] = PZD 15 + 16
[15] = PZD 16 + 17
[16] = PZD 17 + 18
[17] = PZD 18 + 19
[18] = PZD 19 + 20
[19] = PZD 20 + 21
[20] = PZD 21 + 22
[21] = PZD 22 + 23
[22] = PZD 23 + 24
[23] = PZD 24 + 25
[24] = PZD 25 + 26
[25] = PZD 26 + 27
[26] = PZD 27 + 28
[27] = PZD 28 + 29
[28] = PZD 29 + 30
[29] = PZD 30 + 31
[30] = PZD 31 + 32

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	ON	OFF	-
01	Bit 1	ON	OFF	-
02	Bit 2	ON	OFF	-
03	Bit 3	ON	OFF	-
04	Bit 4	ON	OFF	-
05	Bit 5	ON	OFF	-
06	Bit 6	ON	OFF	-
07	Bit 7	ON	OFF	-
08	Bit 8	ON	OFF	-
09	Bit 9	ON	OFF	-
10	Bit 10	ON	OFF	-
11	Bit 11	ON	OFF	-
12	Bit 12	ON	OFF	-

13	Bit 13	ON	OFF	-
14	Bit 14	ON	OFF	-
15	Bit 15	ON	OFF	-
16	Bit 16	ON	OFF	-
17	Bit 17	ON	OFF	-
18	Bit 18	ON	OFF	-
19	Bit 19	ON	OFF	-
20	Bit 20	ON	OFF	-
21	Bit 21	ON	OFF	-
22	Bit 22	ON	OFF	-
23	Bit 23	ON	OFF	-
24	Bit 24	ON	OFF	-
25	Bit 25	ON	OFF	-
26	Bit 26	ON	OFF	-
27	Bit 27	ON	OFF	-
28	Bit 28	ON	OFF	-
29	Bit 29	ON	OFF	-
30	Bit 30	ON	OFF	-
31	Bit 31	ON	OFF	-

Notice: A maximum of 4 indices of the "trace" function can be used.

Note: IF2: Interface 2

r8863[0...10] IF2 diagnostics PZD send double word / IF2 diag send DW

ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2487
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the PZD sent via interface 2 (actual values) with double word format.

Index:
[0] = PZD 1 + 2
[1] = PZD 2 + 3
[2] = PZD 3 + 4
[3] = PZD 4 + 5
[4] = PZD 5 + 6
[5] = PZD 6 + 7
[6] = PZD 7 + 8
[7] = PZD 8 + 9
[8] = PZD 9 + 10
[9] = PZD 10 + 11
[10] = PZD 11 + 12

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	ON	OFF	-
01	Bit 1	ON	OFF	-
02	Bit 2	ON	OFF	-
03	Bit 3	ON	OFF	-
04	Bit 4	ON	OFF	-
05	Bit 5	ON	OFF	-
06	Bit 6	ON	OFF	-
07	Bit 7	ON	OFF	-
08	Bit 8	ON	OFF	-
09	Bit 9	ON	OFF	-
10	Bit 10	ON	OFF	-
11	Bit 11	ON	OFF	-
12	Bit 12	ON	OFF	-
13	Bit 13	ON	OFF	-
14	Bit 14	ON	OFF	-
15	Bit 15	ON	OFF	-
16	Bit 16	ON	OFF	-
17	Bit 17	ON	OFF	-
18	Bit 18	ON	OFF	-
19	Bit 19	ON	OFF	-

20	Bit 20	ON	OFF	-
21	Bit 21	ON	OFF	-
22	Bit 22	ON	OFF	-
23	Bit 23	ON	OFF	-
24	Bit 24	ON	OFF	-
25	Bit 25	ON	OFF	-
26	Bit 26	ON	OFF	-
27	Bit 27	ON	OFF	-
28	Bit 28	ON	OFF	-
29	Bit 29	ON	OFF	-
30	Bit 30	ON	OFF	-
31	Bit 31	ON	OFF	-

Notice: A maximum of 4 indices of the "trace" function can be used.

Note: IF2: Interface 2

p8864 IF1 PROFIdrive first supplementary telegram selection / IF1 Pd 1. sup_tel

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(1), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2423
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
700	999	999

Description: Sets the first supplementary telegram.

Value:
700: Supplementary telegram 700, PZD-0/3
701: Supplementary telegram 701, PZD-2/5
750: Supplementary telegram 750, PZD-3/1
999: Free telegram configuration with BICO

Dependency: For p0922 equal to p2079 equal to 999, then p8864 is locked.

Refer to: p0922, p2070, p2071, p2079, p8865, p60122

Note: The clearance to the PZD telegram can be increased using p2070/p2071.

After changing p0922/p2079 or p2070/p2071, then p8864 must be set again.

p8865 IF1 PROFIdrive second supplementary telegram selection / IF1 Pd 2. sup_tel

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(1), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2423
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
700	999	999

Description: Sets the second supplementary telegram.

Value:
700: Supplementary telegram 700, PZD-0/3
701: Supplementary telegram 701, PZD-2/5
750: Supplementary telegram 750, PZD-3/1
999: Free telegram configuration with BICO

Dependency: For p8864 equal to 999, then p8865 is locked.

Refer to: p0922, p2079, p8864, p60122

Note: The second supplementary telegram is attached directly to the first supplementary telegram.

After changing p0922/p2079, p2070/p2071 or p8864, then p8865 must be set again.

r8867[0...1]	IF2 PZD maximum interconnected / IF2 PZDmaxIntercon		
CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM15DI_DO, TM120, TM150, TB30, ENC	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Communications	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Display for the maximum interconnected PZD in the receive/send direction
Index 0: receive (r8850, r8860)
Index 1: send (p8851, p8861)

p8870[0...15]	SINAMICS Link PZD receive word / PZD recv word		
CU_S120_PN (PN CBE20), CU_S150_PN (PN CBE20), CU_S120_DP (PN CBE20), CU_S150_DP (PN CBE20), SERVO (PN CBE20), HLA (PN CBE20), A_INF (PN CBE20), S_INF (PN CBE20), R_INF (PN CBE20), B_INF (PN CBE20), TM31 (PN CBE20), TM41 (PN CBE20), TM17 (PN CBE20), TM15 (PN CBE20), TM15DI_DO (PN CBE20), TM120 (PN CBE20), TM150 (PN CBE20), TB30 (PN CBE20), ENC (PN CBE20)	**Can be changed:** T	**Calculated:** -	**Access level:** 3
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2198, 2199
	P-Group: Communications	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	32	0

Description: Assignment of a PZD to a telegram word from a SINAMICS Link receive telegram.
For p8839[0] = 2 (COMM BOARD via interface 1), the following applies:
- PZD p2050[index] is assigned by means of p8870[index], p8872[index].
For p8839[1] = 2 (COMM BOARD via interface 2), the following applies:
- using p8870[index], p8872[index], the PZD is assigned r8850[Index].

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12
[12] = PZD 13

[13] = PZD 14
[14] = PZD 15
[15] = PZD 16

Dependency: Refer to: p8872

Note: Value range:

0: Not used

1 ... 32: telegram word

A pair of values p8870[index], p8872[index] may only be used once in single a device.

A change only becomes effective after POWER ON, reset, project download or p8842 = 1.

p8870[0...31] SINAMICS Link PZD receive word / PZD recv word

VECTOR (PN CBE20)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2198, 2199
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	32	0

Description: Assignment of a PZD to a telegram word from a SINAMICS Link receive telegram.

For p8839[0] = 2 (COMM BOARD via interface 1), the following applies:

- PZD p2050[index] is assigned by means of p8870[index], p8872[index].

For p8839[1] = 2 (COMM BOARD via interface 2), the following applies:

- using p8870[index], p8872[index], the PZD is assigned r8850[Index].

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17
[17] = PZD 18
[18] = PZD 19
[19] = PZD 20
[20] = PZD 21
[21] = PZD 22
[22] = PZD 23
[23] = PZD 24
[24] = PZD 25
[25] = PZD 26
[26] = PZD 27
[27] = PZD 28
[28] = PZD 29
[29] = PZD 30
[30] = PZD 31
[31] = PZD 32

Dependency: Refer to: p8872

Note: Value range:

0: Not used

1 ... 32: telegram word

A pair of values p8870[index], p8872[index] may only be used once in single a device.

A change only becomes effective after POWER ON, reset, project download or p8842 = 1.

p8871[0...15] SINAMICS Link PZD send word / PZD send word

CU_S120_PN (PN CBE20), CU_S150_PN (PN CBE20), CU_S120_DP (PN CBE20), CU_S150_DP (PN CBE20), SERVO (PN CBE20), HLA (PN CBE20), A_INF (PN CBE20), S_INF (PN CBE20), R_INF (PN CBE20), B_INF (PN CBE20), TM31 (PN CBE20), TM41 (PN CBE20), TM17 (PN CBE20), TM15 (PN CBE20), TM15DI_DO (PN CBE20), TM120 (PN CBE20), TM150 (PN CBE20), TB30 (PN CBE20), ENC (PN CBE20)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2198, 2199
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	32	0

Description: Assigns a PZD to a telegram word in the SINAMICS Link send telegram.

For p8839[0] = 2 (COMM BOARD via interface 1), the following applies:

- p8871[index] assigns PZD p2051[index].

For p8839[1] = 2 (COMM BOARD via interface 2), the following applies:

- p8871[index] assigns PZD p8851[index].

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16

Dependency: Refer to: p2051, p8851

Refer to: A50002

Note: Value range:

0: Not used

1 ... 32: send telegram word

A specific telegram word send may only be used once within a single device.

A change only becomes effective after POWER ON, reset, project download or p8842 = 1.

p8871[0...31] SINAMICS Link PZD send word / PZD send word

VECTOR (PN CBE20)	**Can be changed:** T	**Calculated:** -	**Access level:** 3
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2198, 2199
	P-Group: Communications	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	32	0

Description: Assigns a PZD to a telegram word in the SINAMICS Link send telegram.

For p8839[0] = 2 (COMM BOARD via interface 1), the following applies:

- p8871[index] assigns PZD p2051[index].

For p8839[1] = 2 (COMM BOARD via interface 2), the following applies:

- p8871[index] assigns PZD p8851[index].

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17
[17] = PZD 18
[18] = PZD 19
[19] = PZD 20
[20] = PZD 21
[21] = PZD 22
[22] = PZD 23
[23] = PZD 24
[24] = PZD 25
[25] = PZD 26
[26] = PZD 27
[27] = PZD 28
[28] = PZD 29
[29] = PZD 30
[30] = PZD 31
[31] = PZD 32

Dependency: Refer to: p2051, p8851

Refer to: A50002

Note: Value range:

0: Not used

1 ... 32: send telegram word

A specific telegram word send may only be used once within a single device.

A change only becomes effective after POWER ON, reset, project download or p8842 = 1.

p8872[0...15] SINAMICS Link PZD receive address / PZD recv adr.

CU_S120_PN (PN CBE20), CU_S150_PN (PN CBE20), CU_S120_DP (PN CBE20), CU_S150_DP (PN CBE20), SERVO (PN CBE20), HLA (PN CBE20), A_INF (PN CBE20), S_INF (PN CBE20), R_INF (PN CBE20), B_INF (PN CBE20), TM31 (PN CBE20), TM41 (PN CBE20), TM17 (PN CBE20), TM15 (PN CBE20), TM15DI_DO (PN CBE20), TM120 (PN CBE20), TM150 (PN CBE20), TB30 (PN CBE20), ENC (PN CBE20)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2198, 2199
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	64	0

Description: Selects the address of the SINAMICS Link sender from which the process data (PZD) is received.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16

Dependency: Refer to: p8870

Note: Value range:

0: Not used

1 ... 64: address

A change only becomes effective after POWER ON, reset, project download or p8842 = 1.

p8872[0...31] SINAMICS Link PZD receive address / PZD recv adr.

VECTOR (PN CBE20)

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2198, 2199
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	64	0

Description: Selects the address of the SINAMICS Link sender from which the process data (PZD) is received.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5

[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17
[17] = PZD 18
[18] = PZD 19
[19] = PZD 20
[20] = PZD 21
[21] = PZD 22
[22] = PZD 23
[23] = PZD 24
[24] = PZD 25
[25] = PZD 26
[26] = PZD 27
[27] = PZD 28
[28] = PZD 29
[29] = PZD 30
[30] = PZD 31
[31] = PZD 32

Dependency: Refer to: p8870

Note: Value range:

0: Not used

1 ... 64: address

A change only becomes effective after POWER ON, reset, project download or p8842 = 1.

r8874[0...19] IF2 diagnostics bus address PZD receive / IF2 diag addr recv

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the bus address of sender from which the PZD is received.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17
[17] = PZD 18
[18] = PZD 19
[19] = PZD 20

r8874[0...19] IF2 diagnostics bus address PZD receive / IF2 diag addr recv

SERVO, HLA, SERVO_AC, SERVO_I_AC, TM41

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the bus address of sender from which the PZD is received.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17
[17] = PZD 18
[18] = PZD 19
[19] = PZD 20

Note: IF2: Interface 2

Value range:

0 - 125: Bus address of the sender

255: Not assigned

r8874[0...31] IF2 diagnostics bus address PZD receive / IF2 diag addr recv

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the bus address of sender from which the PZD is received.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17
[17] = PZD 18

[18] = PZD 19
[19] = PZD 20
[20] = PZD 21
[21] = PZD 22
[22] = PZD 23
[23] = PZD 24
[24] = PZD 25
[25] = PZD 26
[26] = PZD 27
[27] = PZD 28
[28] = PZD 29
[29] = PZD 30
[30] = PZD 31
[31] = PZD 32

Note: IF2: Interface 2

Value range:

0 - 125: Bus address of the sender

255: Not assigned

r8874[0...9] IF2 diagnostics bus address PZD receive / IF2 diag addr recv

A_INF, S_INF, R_INF, B_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the bus address of sender from which the PZD is received.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10

r8874[0...4] IF2 diagnostics bus address PZD receive / IF2 diag addr recv

TM31, TM15DI_DO, TM120, TM150, TB30

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the bus address of sender from which the PZD is received.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5

r8874[0...3] IF2 diagnostics bus address PZD receive / IF2 diag addr recv

ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the bus address of sender from which the PZD is received.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4

Note: IF2: Interface 2

Value range:

0 - 125: Bus address of the sender

255: Not assigned

r8875[0...19] IF2 diagnostics telegram offset PZD receive / IF diag offs recv

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the byte offset of the PZD in the receive telegram.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17
[17] = PZD 18
[18] = PZD 19
[19] = PZD 20

r8875[0...19] IF2 diagnostics telegram offset PZD receive / IF diag offs recv

SERVO, HLA, SERVO_AC, SERVO_I_AC, TM41

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the byte offset of the PZD in the receive telegram.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17
[17] = PZD 18
[18] = PZD 19
[19] = PZD 20

Note: IF2: Interface 2

Value range:

0 - 242: Byte offset

255: Not assigned

r8875[0...31] IF2 diagnostics telegram offset PZD receive / IF diag offs recv

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the byte offset of the PZD in the receive telegram.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17
[17] = PZD 18

[18] = PZD 19
[19] = PZD 20
[20] = PZD 21
[21] = PZD 22
[22] = PZD 23
[23] = PZD 24
[24] = PZD 25
[25] = PZD 26
[26] = PZD 27
[27] = PZD 28
[28] = PZD 29
[29] = PZD 30
[30] = PZD 31
[31] = PZD 32

Note: IF2: Interface 2

Value range:

0 - 242: Byte offset

255: Not assigned

r8875[0...9] IF2 diagnostics telegram offset PZD receive / IF diag offs recv

A_INF, S_INF, R_INF, B_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the byte offset of the PZD in the receive telegram.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10

r8875[0...4] IF2 diagnostics telegram offset PZD receive / IF diag offs recv

TM31, TM15DI_DO, TM120, TM150, TB30

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the byte offset of the PZD in the receive telegram.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5

r8875[0...3] IF2 diagnostics telegram offset PZD receive / IF diag offs recv

ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the byte offset of the PZD in the receive telegram.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4

Note: IF2: Interface 2

Value range:

0 - 242: Byte offset

255: Not assigned

r8876[0...24] IF2 diagnostics telegram offset PZD send / IF2 diag offs send

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the byte offset of the PZD in the send telegram.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17
[17] = PZD 18
[18] = PZD 19
[19] = PZD 20
[20] = PZD 21
[21] = PZD 22
[22] = PZD 23
[23] = PZD 24
[24] = PZD 25

r8876[0...27] IF2 diagnostics telegram offset PZD send / IF2 diag offs send

SERVO, HLA, SERVO_AC, SERVO_I_AC, TM41

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the byte offset of the PZD in the send telegram.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17
[17] = PZD 18
[18] = PZD 19
[19] = PZD 20
[20] = PZD 21
[21] = PZD 22
[22] = PZD 23
[23] = PZD 24
[24] = PZD 25
[25] = PZD 26
[26] = PZD 27
[27] = PZD 28

Note: IF2: Interface 2

Value range:

0 - 242: Byte offset

255: Not assigned

r8876[0...31] IF2 diagnostics telegram offset PZD send / IF2 diag offs send

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the byte offset of the PZD in the send telegram.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10

[10] = PZD 11
[11] = PZD 12
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17
[17] = PZD 18
[18] = PZD 19
[19] = PZD 20
[20] = PZD 21
[21] = PZD 22
[22] = PZD 23
[23] = PZD 24
[24] = PZD 25
[25] = PZD 26
[26] = PZD 27
[27] = PZD 28
[28] = PZD 29
[29] = PZD 30
[30] = PZD 31
[31] = PZD 32

Note: IF2: Interface 2

Value range:

0 - 242: Byte offset

255: Not assigned

r8876[0...9] IF2 diagnostics telegram offset PZD send / IF2 diag offs send

A_INF, S_INF, R_INF, B_INF

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the byte offset of the PZD in the send telegram.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10

r8876[0...4] IF2 diagnostics telegram offset PZD send / IF2 diag offs send

TM31, TM15DI_DO, TM120, TM150, TB30

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the byte offset of the PZD in the send telegram.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5

r8876[0...11] IF2 diagnostics telegram offset PZD send / IF2 diag offs send

ENC	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Communications	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the byte offset of the PZD in the send telegram.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12

Note: IF2: Interface 2

Value range:

0 - 242: Byte offset

255: Not assigned

p8880[0...15] BI: IF2 binector-connector converter status word 1 / Bin/con ZSW1

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM15DI_DO, TM120, TM150, ENC	**Can be changed:** U, T	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2489
	P-Group: Communications	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	0

Description: Selects bits to be sent via interface 2.

The individual bits are combined to form status word 1.

Index:
[0] = Bit 0
[1] = Bit 1
[2] = Bit 2
[3] = Bit 3
[4] = Bit 4
[5] = Bit 5
[6] = Bit 6
[7] = Bit 7
[8] = Bit 8
[9] = Bit 9
[10] = Bit 10
[11] = Bit 11
[12] = Bit 12
[13] = Bit 13
[14] = Bit 14
[15] = Bit 15

Dependency: Refer to: p8888, r8889

p8881[0...15] BI: IF2 binector-connector converter status word 2 / Bin/con ZSW2

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM15DI_DO, TM120, TM150, ENC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2489
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Selects bits to be sent via interface 2.

The individual bits are combined to form status word 2.

Index:
[0] = Bit 0
[1] = Bit 1
[2] = Bit 2
[3] = Bit 3
[4] = Bit 4
[5] = Bit 5
[6] = Bit 6
[7] = Bit 7
[8] = Bit 8
[9] = Bit 9
[10] = Bit 10
[11] = Bit 11
[12] = Bit 12
[13] = Bit 13
[14] = Bit 14
[15] = Bit 15

Dependency: Refer to: p8888, r8889

p8882[0...15] BI: IF2 binector-connector converter status word 3 / Bin/con ZSW3

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM15DI_DO, TM120, TM150, ENC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2489
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Selects bits to be sent via interface 2.

The individual bits are combined to form free status word 3.

Index:
[0] = Bit 0
[1] = Bit 1
[2] = Bit 2
[3] = Bit 3
[4] = Bit 4
[5] = Bit 5
[6] = Bit 6
[7] = Bit 7

[8] = Bit 8
[9] = Bit 9
[10] = Bit 10
[11] = Bit 11
[12] = Bit 12
[13] = Bit 13
[14] = Bit 14
[15] = Bit 15

Dependency: Refer to: p8888, r8889

p8883[0...15] BI: IF2 binector-connector converter status word 4 / Bin/con ZSW4

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM15DI_DO, TM120, TM150, ENC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2489
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Selects bits to be sent via interface 2.

The individual bits are combined to form free status word 4.

Index:
[0] = Bit 0
[1] = Bit 1
[2] = Bit 2
[3] = Bit 3
[4] = Bit 4
[5] = Bit 5
[6] = Bit 6
[7] = Bit 7
[8] = Bit 8
[9] = Bit 9
[10] = Bit 10
[11] = Bit 11
[12] = Bit 12
[13] = Bit 13
[14] = Bit 14
[15] = Bit 15

Dependency: Refer to: p8888, r8889

p8884[0...15] BI: IF2 binector-connector converter status word 5 / Bin/con ZSW5

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM15DI_DO, TM120, TM150, ENC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2489
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Selects bits to be sent via interface 2.

The individual bits are combined to form free status word 5.

Index:
[0] = Bit 0
[1] = Bit 1
[2] = Bit 2
[3] = Bit 3
[4] = Bit 4
[5] = Bit 5
[6] = Bit 6
[7] = Bit 7
[8] = Bit 8
[9] = Bit 9
[10] = Bit 10
[11] = Bit 11
[12] = Bit 12
[13] = Bit 13
[14] = Bit 14
[15] = Bit 15

Dependency: Refer to: p8888, r8889

p8888[0...4] IF2 invert binector-connector converter status word / Bin/con ZSW inv

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM15DI_DO, TM120, TM150, ENC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2489
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 bin

Description: Setting to invert the individual binector inputs of the binector-connector converter.

Index:
[0] = Status word 1
[1] = Status word 2
[2] = Free status word 3
[3] = Free status word 4
[4] = Free status word 5

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	Inverted	Not inverted	-
01	Bit 1	Inverted	Not inverted	-
02	Bit 2	Inverted	Not inverted	-
03	Bit 3	Inverted	Not inverted	-
04	Bit 4	Inverted	Not inverted	-
05	Bit 5	Inverted	Not inverted	-
06	Bit 6	Inverted	Not inverted	-
07	Bit 7	Inverted	Not inverted	-
08	Bit 8	Inverted	Not inverted	-
09	Bit 9	Inverted	Not inverted	-
10	Bit 10	Inverted	Not inverted	-
11	Bit 11	Inverted	Not inverted	-
12	Bit 12	Inverted	Not inverted	-
13	Bit 13	Inverted	Not inverted	-
14	Bit 14	Inverted	Not inverted	-
15	Bit 15	Inverted	Not inverted	-

Dependency: Refer to: p8880, p8881, p8882, p8883, p8884, r8889

r8889[0...4] CO: IF2 send binector-connector converter status word / Bin/con ZSW send

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM15DI_DO, TM120, TM150, ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Connector output to interconnect the status words to a PZD send word.

Index:
[0] = Status word 1
[1] = Status word 2
[2] = Free status word 3
[3] = Free status word 4
[4] = Free status word 5

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	ON	OFF	-
01	Bit 1	ON	OFF	-
02	Bit 2	ON	OFF	-
03	Bit 3	ON	OFF	-
04	Bit 4	ON	OFF	-
05	Bit 5	ON	OFF	-
06	Bit 6	ON	OFF	-
07	Bit 7	ON	OFF	-
08	Bit 8	ON	OFF	-
09	Bit 9	ON	OFF	-
10	Bit 10	ON	OFF	-
11	Bit 11	ON	OFF	-
12	Bit 12	ON	OFF	-
13	Bit 13	ON	OFF	-
14	Bit 14	ON	OFF	-
15	Bit 15	ON	OFF	-

Dependency: Refer to: p8851, p8880, p8881, p8882, p8883, p8884, p8888

Note: r8889 together with p8880 to p8884 forms five binector-connector converters.

r8890.0...15 BO: IF2 PZD1 receive bit-serial / IF2 PZD1 recv bitw

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM15DI_DO, TM120, TM150, TB30, ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2485, 2491, 9204, 9206
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Binector output for bit-serial interconnection of PZD1 (normally control word 1) received via interface 2.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	ON	OFF	-
01	Bit 1	ON	OFF	-
02	Bit 2	ON	OFF	-
03	Bit 3	ON	OFF	-
04	Bit 4	ON	OFF	-
05	Bit 5	ON	OFF	-
06	Bit 6	ON	OFF	-
07	Bit 7	ON	OFF	-
08	Bit 8	ON	OFF	-
09	Bit 9	ON	OFF	-
10	Bit 10	ON	OFF	-
11	Bit 11	ON	OFF	-
12	Bit 12	ON	OFF	-
13	Bit 13	ON	OFF	-
14	Bit 14	ON	OFF	-
15	Bit 15	ON	OFF	-

Dependency: Refer to: r8850

Note: IF2: Interface 2

r8891.0...15 BO: IF2 PZD2 receive bit-serial / IF2 PZD2 recv bitw

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM15DI_DO, TM120, TM150, TB30, ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2485, 2491, 9204, 9206
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Binector output for bit-serial interconnection of PZD2 received via interface 2.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	ON	OFF	-
01	Bit 1	ON	OFF	-
02	Bit 2	ON	OFF	-
03	Bit 3	ON	OFF	-
04	Bit 4	ON	OFF	-
05	Bit 5	ON	OFF	-
06	Bit 6	ON	OFF	-

07	Bit 7	ON	OFF	-
08	Bit 8	ON	OFF	-
09	Bit 9	ON	OFF	-
10	Bit 10	ON	OFF	-
11	Bit 11	ON	OFF	-
12	Bit 12	ON	OFF	-
13	Bit 13	ON	OFF	-
14	Bit 14	ON	OFF	-
15	Bit 15	ON	OFF	-

Dependency: Refer to: r8850

Note: IF2: Interface 2

r8892.0...15 BO: IF2 PZD3 receive bit-serial / IF2 PZD3 recv bitw

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, TM41, ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2485, 9204, 9206
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Binector output for bit-serial interconnection of PZD3 received via interface 2.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	ON	OFF	-
01	Bit 1	ON	OFF	-
02	Bit 2	ON	OFF	-
03	Bit 3	ON	OFF	-
04	Bit 4	ON	OFF	-
05	Bit 5	ON	OFF	-
06	Bit 6	ON	OFF	-
07	Bit 7	ON	OFF	-
08	Bit 8	ON	OFF	-
09	Bit 9	ON	OFF	-
10	Bit 10	ON	OFF	-
11	Bit 11	ON	OFF	-
12	Bit 12	ON	OFF	-
13	Bit 13	ON	OFF	-
14	Bit 14	ON	OFF	-
15	Bit 15	ON	OFF	-

Dependency: Refer to: r8850

Note: IF2: Interface 2

r8893.0...15 BO: IF2 PZD4 receive bit-serial / IF2 PZD4 recv bitw

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, TM41, ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2485, 9204, 9206
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Binector output for bit-serial interconnection of PZD4 (normally control word 2) received via interface 2.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	ON	OFF	-
01	Bit 1	ON	OFF	-
02	Bit 2	ON	OFF	-
03	Bit 3	ON	OFF	-
04	Bit 4	ON	OFF	-
05	Bit 5	ON	OFF	-
06	Bit 6	ON	OFF	-
07	Bit 7	ON	OFF	-
08	Bit 8	ON	OFF	-
09	Bit 9	ON	OFF	-
10	Bit 10	ON	OFF	-
11	Bit 11	ON	OFF	-
12	Bit 12	ON	OFF	-
13	Bit 13	ON	OFF	-
14	Bit 14	ON	OFF	-
15	Bit 15	ON	OFF	-

Dependency: Refer to: r8850

Note: IF2: Interface 2

r8894.0...15 BO: IF2 connector-binector converter binector output / Con/bin outp

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM15DI_DO, TM120, TM150, ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2485, 2491
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Binector output for bit-serial interconnection of a PZD word received via interface 2.
The PZD is selected via p8899[0].

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	ON	OFF	-
01	Bit 1	ON	OFF	-
02	Bit 2	ON	OFF	-
03	Bit 3	ON	OFF	-
04	Bit 4	ON	OFF	-
05	Bit 5	ON	OFF	-
06	Bit 6	ON	OFF	-
07	Bit 7	ON	OFF	-
08	Bit 8	ON	OFF	-

09	Bit 9	ON	OFF	-
10	Bit 10	ON	OFF	-
11	Bit 11	ON	OFF	-
12	Bit 12	ON	OFF	-
13	Bit 13	ON	OFF	-
14	Bit 14	ON	OFF	-
15	Bit 15	ON	OFF	-

Dependency: Refer to: p8899

r8895.0...15 BO: IF2 connector-binector converter binector output / Con/bin outp

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM15DI_DO, TM120, TM150, ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2485, 2491
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Binector output for bit-serial interconnection of a PZD word received via interface 2.

The PZD is selected via p8899[1].

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	ON	OFF	-
01	Bit 1	ON	OFF	-
02	Bit 2	ON	OFF	-
03	Bit 3	ON	OFF	-
04	Bit 4	ON	OFF	-
05	Bit 5	ON	OFF	-
06	Bit 6	ON	OFF	-
07	Bit 7	ON	OFF	-
08	Bit 8	ON	OFF	-
09	Bit 9	ON	OFF	-
10	Bit 10	ON	OFF	-
11	Bit 11	ON	OFF	-
12	Bit 12	ON	OFF	-
13	Bit 13	ON	OFF	-
14	Bit 14	ON	OFF	-
15	Bit 15	ON	OFF	-

Dependency: Refer to: p8898, p8899

p8898[0...1] IF2 invert connector-binector converter binector output / Con/bin outp inv

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM15DI_DO, TM120, TM150, ENC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2485, 2491
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 bin

Description: Setting to invert the individual binector outputs of the connector-binector converter.

Using p8898[0], the signals of CI: p8899[0] are influenced.

Using p8898[1], the signals of CI: p8899[1] are influenced.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	Inverted	Not inverted	-
01	Bit 1	Inverted	Not inverted	-
02	Bit 2	Inverted	Not inverted	-
03	Bit 3	Inverted	Not inverted	-
04	Bit 4	Inverted	Not inverted	-
05	Bit 5	Inverted	Not inverted	-
06	Bit 6	Inverted	Not inverted	-
07	Bit 7	Inverted	Not inverted	-
08	Bit 8	Inverted	Not inverted	-
09	Bit 9	Inverted	Not inverted	-
10	Bit 10	Inverted	Not inverted	-
11	Bit 11	Inverted	Not inverted	-
12	Bit 12	Inverted	Not inverted	-
13	Bit 13	Inverted	Not inverted	-
14	Bit 14	Inverted	Not inverted	-
15	Bit 15	Inverted	Not inverted	-

Dependency: Refer to: r8894, r8895, p8899

p8899[0...1] CI: IF2 connector-binector converter signal source / Con/bin S_src

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM15DI_DO, TM120, TM150, ENC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Integer16	**Dyn. index:** -	**Func. diagram:** 2485, 2491
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the connector-binector converter.

A PZD receive word can be selected as signal source. The signals are available to be serially passed-on (interconnection).

Dependency: Refer to: r8850, r8894, r8895, p8898

Note: From the signal source set via the connector input, the corresponding lower 16 bits are converted.
p8899[0...1] together with r8894.0...15 and r8895.0...15 forms two connector-binector converters:
Connector input p8899[0] to binector output in r8894.0...15
Connector input p8899[1] to binector output in r8895.0...15

p8900[0...239] IE Name of Station / IE Name Stat

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Sets the station name for the Industrial Ethernet interface (X127) on the Control Unit.
The actual station name is displayed in r8910.

Dependency: Refer to: p8905, r8910

Note: An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.
The interface configuration (p8900 and following) is activated with p8905 = 1.
The parameter is not influenced by setting the factory setting.
IE: Industrial Ethernet

p8901[0...3] IE IP address / IE IP addr

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the IP address for the Industrial Ethernet interface (X127) on the Control Unit.
The actual IP address is displayed in r8911.

Dependency: Refer to: p8905, r8911

Note: The interface configuration (p8900 and following) is activated with p8905 = 1.
The parameter is not influenced by setting the factory setting.

p8902[0...3] IE default gateway / IE Def Gateway

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the default gateway for the Industrial Ethernet interface (X127) on the Control Unit.
The actual default gateway is displayed in r8912.

Dependency: Refer to: p8905, r8912

Note: The setting p8902[0...3] = 0 or p8902 = p8901 (own IP address) means that a standard gateway has not been set.
The interface configuration (p8900 and following) is activated with p8905 = 1.
The parameter is not influenced by setting the factory setting.

p8903[0...3] IE Subnet Mask / IE Subnet Mask

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the subnet mask for the Industrial Ethernet interface (X127) on the Control Unit.

The actual subnet mask is displayed in r8913.

Dependency: Refer to: p8905, r8913

Note: The interface configuration (p8900 and following) is activated with p8905 = 1.

The parameter is not influenced by setting the factory setting.

p8904 IE DHCP mode / IE DHCP mode

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	3	0

Description: Sets the DHCP mode for the Industrial Ethernet interface (X127) on the Control Unit.

The actual DHCP mode is displayed in parameter r8914.

Value:
0: DHCP off
2: DHCP on, identification using MAC address
3: DHCP on, identification via name of station

Dependency: Refer to: p8905, r8914

Note: The interface configuration (p8900 and following) is activated with p8905.

The parameter is not influenced by setting the factory setting.

p8905 Activate IE interface configuration / IE IF config

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	3	0

Description: Setting to activate the interface configuration for the Industrial Ethernet interface (X127) on the Control Unit.

p8905 is automatically set to 0 at the end of an operation.

Value:
0: No function
1: Activate configuration
2: Activate and save configuration
3: Delete configuration

Dependency: Refer to: p8900, p8901, p8902, p8903, p8904

Refer to: A08561

Note: When a project is downloaded, the interface configuration is only activated if, in the offline project, parameter p8905 is set = 1 or 2.

For p8905 = 1:

The interface configuration (p8900 and following) is activated.

For p8905 = 2:

The interface configuration (p8900 and following) is activated and saved to non-volatile memory.

For p8905 = 3:

The interface configuration is reset to the factory setting at all points.

The factory settings for the interface configuration are loaded on activation (p8905 = 1) or at the next POWER ON.

p8908 Activate FTP / Act FTP

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Activation of the FTP server.

Permits the FTP access to the /INSTALL/SINAMICS directory of the memory card.

Value:
0: No
1: Yes

Note: Activation of the FTP server becomes effective immediately.

Deactivation only becomes effective after a POWER ON of the Control Unit.

Before the first commissioning, the FTP server is activated irrespective of the parameter setting.

r8909 PN device ID / PN device ID

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the PROFINET Device ID.

Every SINAMICS device type has its own PROFINET Device ID and its own PROFINET GSD.

Note: List of the SINAMICS Device IDs:

0501 hex: S120/S150

0504 hex: G130/G150

050A hex: DC MASTER

050C hex: MV

050F hex: G120P

0510 hex: G120C

0511 hex: G120 CU240E-2

0512 hex: G120D

0513 hex: G120 CU250S-2 Vector

0514 hex: G110M

051B hex: S210

r8910[0...239] IE Name of Station actual / IE Name Stat act

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the actual station name for the Industrial Ethernet interface (X127) on the Control Unit.

r8911[0...3] IE IP address actual / IE IP addr act

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	-

Description: Displays the actual IP address for the Industrial Ethernet interface (X127) on the Control Unit.

r8912[0...3] IE default gateway actual / IE Def Gateway act

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	-

Description: Displays the actual default gateway for the Industrial Ethernet interface (X127) on the Control Unit.

r8913[0...3] IE Subnet Mask actual / IE Subnet Mask act

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	-

Description: Displays the actual subnet mask for the Industrial Ethernet interface (X127) on the Control Unit.

r8914 IE DHCP mode actual / IE DHCP mode act

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	3	-

Description: Displays the actual DHCP mode for the Industrial Ethernet interface (X127) on the Control Unit.

Value:
0: DHCP off
2: DHCP on, identification using MAC address
3: DHCP on, identification via name of station

r8915[0...5] IE MAC address / IE MAC addr

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	00FF hex	-

Description: Displays the MAC address for the Industrial Ethernet interface (X127) on the Control Unit.

p8920[0...239] PN Name of Station / PN Name Stat

CU_S_AC_PN, CU_S120_PN, CU_S150_PN

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Sets the station name for the onboard PROFINET interface on the Control Unit.
The actual station name is displayed in r8930.

Dependency: Refer to: p8925, r8930

Note: An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.
The interface configuration (p8920 and following) is activated with p8925.
The parameter is not influenced by setting the factory setting.
PN: PROFINET

p8921[0...3] PN IP address / PN IP addr

CU_S_AC_PN, CU_S120_PN, CU_S150_PN

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the IP address for the onboard PROFINET interface on the Control Unit.
The actual IP address is displayed in r8931.

Dependency: Refer to: p8925, r8931

Note: The interface configuration (p8920 and following) is activated with p8925.
The parameter is not influenced by setting the factory setting.

p8922[0...3] PN Default Gateway / PN Def Gateway

CU_S_AC_PN, CU_S120_PN, CU_S150_PN

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the default gateway for the onboard PROFINET interface on the Control Unit.
The actual standard gateway is displayed in r8932.

Dependency: Refer to: p8925, r8932

Note: The setting p8922[0...3] = 0 or p8922 = p8921 (own IP address) means that a standard gateway has not been set.
The interface configuration (p8920 and following) is activated with p8925.
The parameter is not influenced by setting the factory setting.

p8923[0...3] PN Subnet Mask / PN Subnet Mask

CU_S_AC_PN, CU_S120_PN, CU_S150_PN

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the subnet mask for the onboard PROFINET interface on the Control Unit.
The actual subnet mask is displayed in r8933.

Dependency: Refer to: p8925, r8933

Note: The interface configuration (p8920 and following) is activated with p8925.

The parameter is not influenced by setting the factory setting.

p8924 PN DHCP Mode / PN DHCP Mode

CU_S_AC_PN, CU_S120_PN, CU_S150_PN

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	3	0

Description: Sets the DHCP mode for the onboard PROFINET interface on the Control Unit.

The actual DHCP mode is displayed in r8934.

Value:
0: DHCP off
2: DHCP on, identification using MAC address
3: DHCP on, identification via name of station

Dependency: Refer to: p8925, r8934

Notice: When the DHCP mode is active (p8924 not equal to 0), then PROFINET communication via this interface is no longer possible! However, the interface can be used by the STARTER/SCOUT commissioning tool.

Note: The interface configuration (p8920 and following) is activated with p8925.

The active DHCP mode is displayed in parameter r8934.

The parameter is not influenced by setting the factory setting.

p8925 Activate PN interface configuration / PN IF config

CU_S_AC_PN, CU_S120_PN, CU_S150_PN

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	3	0

Description: Setting to activate the interface configuration for the onboard PROFINET interface on the Control Unit.

p8925 is automatically set to 0 at the end of the operation.

Value:
0: No function
1: Activate configuration
2: Activate and save configuration
3: Delete configuration

Dependency: Refer to: p8920, p8921, p8922, p8923, p8924

Refer to: A08563

Notice: When the DHCP mode is active (p8924 > 0), then PROFINET communication via this interface is no longer possible! However, the interface can be used by the STARTER/SCOUT commissioning tool.

Note: When a project is downloaded, the interface configuration is only activated if, in the offline project, parameter p8925 is set = 1 or 2.

For p8925 = 1:

The interface configuration (p8920 and following) is activated.

For p8925 = 2:

The interface configuration (p8920 and following) is activated and saved to non-volatile memory.

For p8925 = 3:

Restores all memory locations for the interface configuration to the factory settings.

The factory settings for the interface configuration are loaded on activation (p8925 = 1) or at the next POWER ON.

r8930[0...239] PN Name of Station actual / PN Name Stat act

CU_S_AC_PN, CU_S120_PN, CU_S150_PN

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the actual station name for the onboard PROFINET interface on the Control Unit.

r8931[0...3] PN IP address actual / PN IP addr act

CU_S_AC_PN, CU_S120_PN, CU_S150_PN

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	-

Description: Displays the actual IP address for the onboard PROFINET interface on the Control Unit.

r8932[0...3] PN Default Gateway actual / PN Def Gateway act

CU_S_AC_PN, CU_S120_PN, CU_S150_PN

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	-

Description: Displays the actual default gateway for the onboard PROFINET interface on the Control Unit.

r8933[0...3] PN Subnet Mask actual / PN Subnet Mask act

CU_S_AC_PN, CU_S120_PN, CU_S150_PN

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	-

Description: Displays the actual subnet mask for the onboard PROFINET interface on the Control Unit.

r8934 PN DHCP Mode actual / PN DHCP Mode act

CU_S_AC_PN, CU_S120_PN, CU_S150_PN

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	3	-

Description: Displays the actual DHCP mode for the onboard PROFINET interface on the Control Unit.

Value:
0: DHCP off
2: DHCP on, identification using MAC address
3: DHCP on, identification via name of station

Notice: When the DHCP mode is active (parameter value not equal to 0), PROFINET communication via this interface is no longer possible! However, the interface can be used for commissioning tool such as STARTER or SCOUT.

r8935[0...5] PN MAC address / PN MAC addr

CU_S_AC_PN, CU_S120_PN, CU_S150_PN

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	00FF hex	-

Description: Displays the MAC address for the onboard PROFINET interface on the Control Unit.

r8936[0...1] Cyclic connection status / Cyc conn status

CU_S_AC_PN, CU_S120_PN, CU_S150_PN

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	13	-

Description: Displays the status of cyclic connections.

Value:
0: Interrupted
1: Not connected
2: Connection starts to be established
3: Module information expected
4: Module information received
5: Module address expected
6: Module address received
7: Parameterization data expected
8: Parameterization data received
9: Evaluate parameterization data
10: Connection being established completion expected
11: Configured controller RUN expected
12: Configured controller STOP
13: Configured controller RUN

Index:
[0] = Controller 1
[1] = Controller 2

Dependency: Refer to: r8961, r8962

Note: The parameter is active when the "PROFINET Device" and "EtherNet/IP" protocols are selected (p2030 = 7, 10).

For PROFINET, the following applies:

For two connections (Shared Device or system redundancy) the display in the index depends on the sequence in which the connections are established.

The IP addresses of controllers 1 and 2 are displayed in r8961 and r8962.

The following states are displayed for system redundancy:

Primary controller: r8936[x] = 13

Backup controller: r8936[x] = 11

If value = 10:

If the connection remains in this state, then when using PROFINET IRT the following can apply:

- topology error (incorrect port assignment).
- synchronization missing.

For EtherNet/IP, the following applies:

Only a cyclic connection is possible for EtherNet/IP. Index 0 indicates the status of the cyclic connection.

r8937[0...5] Cyclic connection diagnostics / Cycl conn diag

CU_S_AC_PN, CU_S120_PN, CU_S150_PN

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display for the cyclic connection diagnostics.

Index:
[0] = Number of cyclic connections
[1] = Number of send subslots of all connections
[2] = Number of send net data (bytes) of all connections
[3] = Number of receive subslots of all connections
[4] = Number of receive net data (bytes) of all connections
[5] = Connection type (RT, IRT)

Note: The parameter is active when the "PROFINET Device" and "EtherNet/IP" protocols are selected (p2030 = 7, 10).

For PROFINET, the following applies:

For index [5]:

Bit 0 = 1: there is at least one RT connection.

Bit 1 = 1: there is an IRT connection.

For EtherNet/IP, the following applies:

For index [1, 3, 5]:

These indices are not relevant.

r8939 PN DAP ID / PN DAP ID

CU_S_AC_PN, CU_S120_PN, CU_S150_PN

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the DAP ID for the onboard PROFINET interface.

The combination of device ID (r8909) and DAP ID uniquely identifies a PROFINET access point.

Note: DAP ID: Device Access Point ID

List of the SINAMICS DAP IDs:

20008 hex: CBE20 V4.6

20009 hex: CBE20 V4.7

2000A hex: CBE20 V4.8

20108 hex: CU310-2 PN V4.6

20109 hex: CU310-2 PN V4.7

2010A hex: CU310-2 PN V4.8

20308 hex: CU320-2 PN V4.6

20309 hex: CU320-2 PN V4.7

2030A hex: CU320-2 PN V4.8

p8940[0...239] CBE2x Name of Station / CBE2x Name Stat

CU_S120_PN (PN CBE20, PN CBE25), CU_S150_PN (PN CBE20, PN CBE25), CU_S120_DP (PN CBE20, PN CBE25), CU_S150_DP (PN CBE20, PN CBE25)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Sets the station name for the Communication Board Ethernet 20/25 (CBE20/CBE25).

Dependency: Refer to: p8945, r8950

Note: An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.
The interface configuration (p8940 and following) is activated with p8945.
The parameter is not influenced by setting the factory setting.

p8941[0...3] CBE2x IP address / CBE2x IP addr

CU_S120_PN (PN CBE20, PN CBE25), CU_S150_PN (PN CBE20, PN CBE25), CU_S120_DP (PN CBE20, PN CBE25), CU_S150_DP (PN CBE20, PN CBE25)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the IP address for the Communication Board Ethernet 20/25 (CBE20/CBE25).

Dependency: Refer to: p8945, r8951

Note: The interface configuration (p8940 and following) is activated with p8945.
The parameter is not influenced by setting the factory setting.

p8942[0...3] CBE2x Default Gateway / CBE2x Def Gateway

CU_S120_PN (PN CBE20, PN CBE25), CU_S150_PN (PN CBE20, PN CBE25), CU_S120_DP (PN CBE20, PN CBE25), CU_S150_DP (PN CBE20, PN CBE25)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the standard gateway for the Communication Board Ethernet 20/25 (CBE20/CBE25).

Dependency: Refer to: p8945, r8952

Note: The setting p8942[0...3] = 0 or p8942 = p8941 (own IP address) means that a standard gateway has not been set.
The interface configuration (p8940 and following) is activated with p8945.
The parameter is not influenced by setting the factory setting.

p8943[0...3] CBE2x Subnet Mask / CBE2x Subnet Mask

CU_S120_PN (PN CBE20, PN CBE25), CU_S150_PN (PN CBE20, PN CBE25), CU_S120_DP (PN CBE20, PN CBE25), CU_S150_DP (PN CBE20, PN CBE25)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the subnet mask for the Communication Board Ethernet 20/25 (CBE20/CBE25).

Dependency: Refer to: p8945, r8953

Note: The interface configuration (p8940 and following) is activated with p8945.
The parameter is not influenced by setting the factory setting.

p8944 CBE2x DHCP Mode / CBE2x DHCP Mode

CU_S120_PN (PN CBE20, PN CBE25), CU_S150_PN (PN CBE20, PN CBE25), CU_S120_DP (PN CBE20, PN CBE25), CU_S150_DP (PN CBE20, PN CBE25)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	3	0

Description: Sets the DHCP mode for the Communication Board Ethernet 20/25 (CBE20/CBE25).

Value:
0: DHCP off
2: DHCP on, identification using MAC address
3: DHCP on, identification via name of station

Dependency: Refer to: p8945, r8954

Notice: When the DHCP mode is active (p8944 not equal to 0), then PROFINET communication via this interface is no longer possible! However, the interface can be used by the STARTER/SCOUT commissioning tool.

Note: The interface configuration (p8940 and following) is activated with p8945.

The parameter is not influenced by setting the factory setting.

p8945 CBE2x activate interface configuration / CBE2x int config

CU_S120_PN (PN CBE20, PN CBE25), CU_S150_PN (PN CBE20, PN CBE25), CU_S120_DP (PN CBE20, PN CBE25), CU_S150_DP (PN CBE20, PN CBE25)

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	3	0

Description: Setting to activate the interface configuration for the Communication Board Ethernet 20/25 (CBE20/CBE25).

p8945 is automatically set to 0 at the end of an operation.

Value:
0: No function
1: Activate configuration
2: Activate and save configuration
3: Delete configuration

Dependency: Refer to: p8940, p8941, p8942, p8943, p8944

Refer to: A08565

Notice: When the DHCP mode is active (p8944 > 0), then PROFINET communication via this interface is no longer possible! However, the interface can be used by the STARTER/SCOUT commissioning tool.

Note: For CBE20, the parameter is only valid for firmware version "PROFINET Device" (p8835 = 1), "EtherNet/IP" (p8835 = 4) or "MODBUS TCP (p8835 = 5). Otherwise, it is locked.

This restriction is not applicable for the CBE25.

When a project is downloaded, the interface configuration is only activated if parameter p8945 is set = 1 or 2 in the offline project.

For p8945 = 1:

The interface configuration (p8940 and following) is activated.

For p8945 = 2:

The interface configuration (p8940 and following) is activated - and is saved in a non-volatile fashion (retentively).

For p8945 = 3:

All storage locations for the interface configuration are restored to the factory setting.

The factory setting of the interface configuration is loaded when activated (p8945 = 1) or with the next POWER ON.

r8950[0...239] CBE2x Name of Station actual / CBE2x Name act

CU_S120_PN (PN CBE20, PN CBE25), CU_S150_PN (PN CBE20, PN CBE25), CU_S120_DP (PN CBE20, PN CBE25), CU_S150_DP (PN CBE20, PN CBE25)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the actual station name for the Communication Board Ethernet 20/25 (CBE20/CBE25).

r8951[0...3] CBE2x IP Address actual / CBE2x IP addr

CU_S120_PN (PN CBE20, PN CBE25), CU_S150_PN (PN CBE20, PN CBE25), CU_S120_DP (PN CBE20, PN CBE25), CU_S150_DP (PN CBE20, PN CBE25)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	-

Description: Displays the actual IP address for the Communication Board Ethernet 20/25 (CBE20/CBE25).

r8952[0...3] CBE2x Default Gateway actual / CBE2x def GW act

CU_S120_PN (PN CBE20, PN CBE25), CU_S150_PN (PN CBE20, PN CBE25), CU_S120_DP (PN CBE20, PN CBE25), CU_S150_DP (PN CBE20, PN CBE25)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	-

Description: Displays the actual standard gateway for the Communication Board Ethernet 20/25 (CBE20/CBE25).

r8953[0...3] CBE2x Subnet Mask actual / CBE2x Sub Mask act

CU_S120_PN (PN CBE20, PN CBE25), CU_S150_PN (PN CBE20, PN CBE25), CU_S120_DP (PN CBE20, PN CBE25), CU_S150_DP (PN CBE20, PN CBE25)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	-

Description: Displays the actual subnet mask for the Communication Board Ethernet 20/25 (CBE20/CBE25).

r8954 CBE2x DHCP Mode actual / CBE2x DHCP act

CU_S120_PN (PN CBE20, PN CBE25), CU_S150_PN (PN CBE20, PN CBE25), CU_S120_DP (PN CBE20, PN CBE25), CU_S150_DP (PN CBE20, PN CBE25)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	3	-

Description: Displays the actual DHCP mode for the Communication Board Ethernet 20/25 (CBE20/CBE25).

Value:
0: DHCP off
2: DHCP on, identification using MAC address
3: DHCP on, identification via name of station

Notice: When the DHCP mode is active (parameter value greater than 0), PROFINET communication via this interface is no longer possible! However, the interface can be used by the STARTER/SCOUT commissioning tool.

r8955[0...5] CBE2x MAC address / CBE2x MAC Addr

CU_S120_PN (PN CBE20, PN CBE25), CU_S150_PN (PN CBE20, PN CBE25), CU_S120_DP (PN CBE20, PN CBE25), CU_S150_DP (PN CBE20, PN CBE25)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	00FF hex	-

Description: Displays the MAC address for the Communication Board Ethernet 20/25 (CBE20/CBE25).

r8956[0...1] CBE2x cyclic connection state / CBE2x cyc conn st

CU_S120_PN (PN CBE20, PN CBE25), CU_S150_PN (PN CBE20, PN CBE25), CU_S120_DP (PN CBE20, PN CBE25), CU_S150_DP (PN CBE20, PN CBE25)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	13	-

Description: Displays the status of the cyclic connections via the Communication Board Ethernet 20/25 (CBE20/CBE25).

Value:
0: Interrupted
1: Not connected
2: Connection starts to be established
3: Module information expected
4: Module information received
5: Module address expected
6: Module address received
7: Parameterization data expected
8: Parameterization data received
9: Evaluate parameterization data
10: Connection being established completion expected
11: Configured controller RUN expected
12: Configured controller STOP
13: Configured controller RUN

Index:
[0] = Controller 1
[1] = Controller 2

Note: For CBE20, the parameter for firmware versions "PROFINET Device" and "EtherNet/IP" (p8835 = 1, 4) is active.

For PROFINET, the following applies:

If value = 10:

If the connection remains in this state, then when using PROFINET IRT the following can apply:

- topology error (incorrect port assignment).

- synchronization missing.

For EtherNet/IP, the following applies:

Only a cyclic connection is possible for EtherNet/IP. Index 0 indicates the status of the cyclic connection.

r8957[0...5] CBE2x cyclic connection diagnostics / CBE2x cyc con diag

CU_S120_PN (PN CBE20, PN CBE25), CU_S150_PN (PN CBE20, PN CBE25), CU_S120_DP (PN CBE20, PN CBE25), CU_S150_DP (PN CBE20, PN CBE25)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: For diagnostics, displays the cyclic connections via the Communication Board Ethernet 20/25 (CBE20/CBE25).

Index:
[0] = Number of cyclic connections
[1] = Number of send subslots of all connections
[2] = Number of send net data (bytes) of all connections
[3] = Number of receive subslots of all connections
[4] = Number of receive net data (bytes) of all connections
[5] = Connection type (RT, IRT)

Note: For CBE20, the parameter for firmware versions "PROFINET Device" and "EtherNet/IP" (p8835 = 1, 4) is active.

For PROFINET, the following applies:

For index [5]:

Bit 0 = 1: there is at least one RT connection.

Bit 1 = 1: there is an IRT connection.

For EtherNet/IP, the following applies:

For index [1, 3, 5]:

These indices are not relevant.

r8959 CBE2x DAP ID / CBE2x DAP ID

CU_S120_PN (PN CBE20, PN CBE25), CU_S150_PN (PN CBE20, PN CBE25), CU_S120_DP (PN CBE20, PN CBE25), CU_S150_DP (PN CBE20, PN CBE25)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	-

Description: Displays the DAP ID for PROFINET via the Communication Board Ethernet 20/25 (CBE20/CBE25).

The combination of device ID (r8909) and DAP ID (r8959) uniquely identifies a PROFINET access point.

Note: DAP ID: Device Access Point ID

DAP ID = 20008 hex: SINAMICS CBE20 V4.6

DAP ID = 20009 hex: SINAMICS CBE20 V4.7

DAP ID = 2000A hex: SINAMICS CBE20 V4.8

DAP ID = 20209 hex: SINAMICS CBE25 V4.7

r8960[0...3] PN subslot controller assignment / PN subslot assign

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM15DI_DO, TM120, TM150, TB30, ENC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	8	-

Description: Displays the controller assignment of a PROFINET subslot on the actual drive object.

The display is only relevant for Shared Device.

Index:
[0] = Subslot 2 PROFIsafe
[1] = Subslot 3 PZD telegram
[2] = Subslot 4 PZD supplementary data
[3] = Subslot 5 PZD supplementary data

Dependency: Refer to: r8961, r8962

Note: Example:

If the parameter contains the value 2 in index [1], then this means that subslot 3 is assigned to controller 2.

r8961[0...3] PN IP Address Remote Controller 1 / IP Addr Rem Ctrl1

CU_S_AC_PN, CU_S120_PN, CU_S150_PN

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	-

Description: Displays the IP address of the first PROFINET controller connected with the device via PN onboard.

r8962[0...3] PN IP Address Remote Controller 2 / IP Addr Rem Ctrl2

CU_S_AC_PN, CU_S120_PN, CU_S150_PN

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	-

Description: Displays the IP address of the second PROFINET controller connected with the device via PN onboard.

The display is only relevant for Shared Device - or system redundancy.

p8969 PROFIsafe wait for clock synchronization / PS wait sync

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Setting for the behavior of a PROFIsafe communication connection depending on another isochronous communication connection.

Value:
0: No
1: Yes

Recommendation: A value of 1 is recommended, if problems are encountered with the PROFIsafe connection when synchronizing.

Note: If value = 1:

A PROFIsafe connection is only accepted if an isochronous connection exists.

Relevant, if PROFIsafe and isochronous operation are configured via various communication connections (e.g. PROFINET Shared Device).

r8970[0...3]	CBE2x subslot controller assignment / CBE2x subslot		
CU_S120_PN (PN CBE20, PN CBE25), CU_S150_PN (PN CBE20, PN CBE25), CU_S120_DP (PN CBE20, PN CBE25), CU_S150_DP (PN CBE20, PN CBE25), SERVO (PN CBE20), VECTOR (PN CBE20), HLA (PN CBE20), SERVO_AC (PN CBE20), VECTOR_AC (PN CBE20), SERVO_I_AC (PN CBE20), VECTOR_I_AC (PN CBE20), A_INF (PN CBE20), S_INF (PN CBE20), R_INF (PN CBE20), B_INF (PN CBE20), TM31 (PN CBE20), TM41 (PN CBE20), TM17 (PN CBE20), TM15 (PN CBE20), TM15DI_DO (PN CBE20), TM120 (PN CBE20), TM150 (PN CBE20), TB30 (PN CBE20), ENC (PN CBE20)	**Can be changed:** - **Data type:** Unsigned8 **P-Group:** - **Not for motor type:** - **Min** 0	**Calculated:** - **Dyn. index:** - **Unit group:** - **Scaling:** - **Max** 8	**Access level:** 3 **Func. diagram:** - **Unit selection:** - **Expert list:** 1 **Factory setting** -

Description: Displays the controller assignment of a PROFINET subslot on the actual drive object.

Index:
[0] = Subslot 2 PROFIsafe
[1] = Subslot 3 PZD telegram
[2] = Subslot 4 PZD supplementary data
[3] = Subslot 5 PZD supplementary data

Dependency: Refer to: r8971, r8972

Note: Example:

If the parameter contains the value 2 in index [1], then this means that subslot 3 is assigned to controller 2.

r8971[0...3]	CBE2x IP Address Remote Controller 1 / CBE2x IP Rem Ctrl1		
CU_S120_PN (PN CBE20, PN CBE25), CU_S150_PN (PN CBE20, PN CBE25), CU_S120_DP (PN CBE20, PN CBE25), CU_S150_DP (PN CBE20, PN CBE25)	**Can be changed:** - **Data type:** Unsigned8 **P-Group:** - **Not for motor type:** - **Min** 0	**Calculated:** - **Dyn. index:** - **Unit group:** - **Scaling:** - **Max** 255	**Access level:** 3 **Func. diagram:** - **Unit selection:** - **Expert list:** 1 **Factory setting** -

Description: Displays the IP address of the first PROFINET controller connected with the device via CBE20/CBE25.

r8972[0...3]	CBE2x IP Address Remote Controller 2 / CBE2x IP Rem Ctrl2		
CU_S120_PN (PN CBE20, PN CBE25), CU_S150_PN (PN CBE20, PN CBE25), CU_S120_DP (PN CBE20, PN CBE25), CU_S150_DP (PN CBE20, PN CBE25)	**Can be changed:** - **Data type:** Unsigned8 **P-Group:** - **Not for motor type:** - **Min** 0	**Calculated:** - **Dyn. index:** - **Unit group:** - **Scaling:** - **Max** 255	**Access level:** 3 **Func. diagram:** - **Unit selection:** - **Expert list:** 1 **Factory setting** -

Description: Displays the IP address of the second PROFINET controller connected with the device via CBE20/CBE25.

p8984[0...1] BI: Web server interface enable signal source / Webserv enab s_src

CU_S_AC_PN, CU_S120_PN, CU_S150_PN

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	[0] 1 [1] 0

Description: Sets the signal source to enable the interface to access the web server.

Index:
[0] = Reserved
[1] = PROFINET X150

Dependency: The web server must be activated using p8986.0 = 1 before it can be used.

Refer to: p8986

Note: BI:p8984[1] = 1 signal:

PROFINET interface X150 is enabled for access to the web server.

BI:p8984[1] = 0 signal:

PROFINET interface X150 is blocked for access to the web server.

p8985[0...1] Web server interface configuration / WebServ interf con

CU_S_AC_PN, CU_S120_PN, CU_S150_PN

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	[0] 0000 bin [1] 0001 bin

Description: Setting to block the interface for the http access to the web server.

Index:
[0] = Reserved
[1] = PROFINET X150

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Inhibit access via https	Yes	No	-

Dependency: p8985[1].0 is only relevant for:

- p8986.0 = 1 (activate web server)
- p8986.1 = 0 (enable http)
- p8984[1] = 1 signal (enable the web server for X150)

Refer to: p8984, p8986

Note: p8985[1].0 = 1:

PROFINET interface X150 is blocked for http access to the web server.

p8985[1].0 = 0:

PROFINET interface X150 is enabled for http access to the web server.

p8986 Web server configuration / Web serv config

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0101 bin

Description: Setting to activate and configure the "Web server" function in the drive.

It is possible to access the web server via the integrated Ethernet and PROFINET interfaces of the drive. The addressing is realized via the set IP address.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Activating	Yes	No	-
01	Only permit access via https	Yes	No	-
02	Enable "SINAMICS" user	Yes	No	-
03	Enable "Administrator" user	Yes	No	-

p8987[0...1] Web server port assignment / WebServ PortAssign

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	32767	[0] 80 [1] 443

Description: Sets the port assignment for the web server.

Index: [0] = Port for standard transfer (http)
[1] = Port for secure transfer (https)

Note: With the exception of values 80 and 443, values greater than or equal to 1024 are permitted.

p8994[0...1] BI: Commissioning tool interface enable signal source / Comm enab s_src

CU_S_AC_PN, CU_S120_PN, CU_S150_PN

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	[0] 1 [1] 1

Description: Sets the signal source to enable the interface to access a commissioning tool.

Index: [0] = Reserved
[1] = PROFINET X150

Note: The parameter influences access operations initiated by STARTER, Startdrive and SIMATIC HMI.

BI: p8994[1] = 1 signal:

PROFINET interface X150 is enabled for access by a commissioning tool.

BI: p8994[1] = 0 signal:

PROFINET interface X150 is blocked for access by a commissioning tool.

p9206[0...2] Topology direct access / Topo access

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Topology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	4294967295	0

Description: Data setting to read topology properties.

The result is displayed depending on the property in r9207 or r9208.

For index [0]:

0: actual topology, 1: target topology

For index [1]:

Sets the component number of the component involved.

For index [2]:

7: Name (r9208)

8: Component type (r9207)

9: Number of DRIVE-CLiQ connections (r9207)

11: Manufacturer (upper byte) and version (lower byte) (r9207)

12: Serial number (r9208)

13: Index (r9207)

15: Comparison level (r9207)

23: Article number (r9207)

24: Hardware serial number (r9208)

25: Envelope article number (r9207)

28: Firmware version (r9207)

29: EEPROM version (r9207)

30: Hardware version (r9207)

1000: Name of DRIVE-CLiQ connection 0 (r9208)

1001: Name of DRIVE-CLiQ connection 1 (r9208)

...

1015: Name of DRIVE-CLiQ connection 15 (r9208)

Index: [0] = Actual topology/target topology
[1] = Component number
[2] = Identifier/property

Dependency: Refer to: r9207, r9208

r9207 Topology direct access integer value / Topo access int

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Topology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the value for the property set in p9206.

A value is only displayed for integer type properties.

Dependency: Refer to: p9206, r9208

r9208[0...50] Topology direct access string / Topo access string

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: Topology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the value for the property set in p9206.
A value is only displayed for string type properties.

Dependency: Refer to: p9206, r9207

Note: An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.

p9210 Flashing component number / Flash comp_no.

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Topology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	499	0

Description: Sets the component number for a component to get its status LED to flash.

Dependency: Refer to: p9211

p9211 Flash function / Flash fct.

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Topology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1	1	-1

Description: Sets the function for the components selected in p9210.
After initiating a function, the parameter is automatically reset again.
Example:
- set the component number (p9210).
- select the "flashing on" function (set p9211 = 1).

Value:
-1: Select function
0: Flashing off
1: Flashing on

Dependency: Refer to: p9210

Notice: If a task cannot be executed (e.g. the component number in p9210 does not exist), the following applies:
- there is no negative feedback signal.
- the value is reset anyway.

r9220 Statistics number of entries / Stat entries qty

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the number of statistic entries in r9222.

Dependency: In p9221, the component Id is set whose statistical entries are to be displayed.

Refer to: p9221

p9221 Statistic components Id / Statistic comp Id

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: T	**Calculated:** -	**Access level:** 4
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	00FF hex	0002 hex

Description: Selects the component Id whose statistics are to be displayed in r9222.

r9222[0...n] Statistic DRIVE-CLiQ acyclic communication / Stat DQ acycl comm

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** r9220	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the statistics for the acyclic DRIVE-CLiQ communication of a component.

The component is preset in p9221.

The entry comprises the following elements:

Index 0: Parameter Id.

Index 1: Number of messages sent.

Index 2: Minimum time of all acyclic tasks referred to parameter Id (index 0).

Index 3: Maximum time of all acyclic requests referred to the parameter Id (index 0).

Index 4: Average of all acyclic requests referred to the parameter Id (index 0).

The time unit is 10 µs.

Dependency: The number of statistic entries is displayed in p9220.

In p9221, the component Id can be set whose statistic is to be displayed.

Refer to: r9220, p9221

Note: As a statistic entry comprises 5 data, when calling the entries via the terminal, a size that represents a multiple of 5 must be specified.

Example:

The 2nd entry should be called:

rdp 1 9222 5 5

or

rdpa 1 9222 5 5

p9300 SI Motion monitoring clock cycle (Motor Module) / SI Mtn clock MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
500.00 [µs]	25000.00 [µs]	12000.00 [µs]

Description: Sets the monitoring clock cycle for safe motion monitoring.

Dependency: Refer to: p9500, p9511

Refer to: F01652

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: The monitoring clock cycle must be a multiple of the actual value sensing clock cycle in p9311 or of the DP clock cycle.

A change only becomes effective after a POWER ON.

p9301 SI Motion enable safety functions (Motor Module) / SI Mtn enable MM

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 0000 0000 0000 0000 bin

Description: Sets the enable signals for the safe motion monitoring.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Enable SOS/SLS	Enable	Inhibit	-
01	Enable SLP	Enable	Inhibit	-
02	Enable absolute position	Enable	Inhibit	-
03	Enable actual value synchronization	Enable	Inhibit	-
16	Enable SSM hysteresis and filtering	Enable	Inhibit	2823
17	Enable SDI	Enable	Inhibit	2824
18	Enable SS2E	Enable	Inhibit	-
20	Enable Safely-Limited Acceleration	Enable	Inhibit	-
23	Enable deactivation SOS/SLS during an external STOP A	Enable	Inhibit	-
24	Enable transfer SLS limit value via PROFIsafe	Enable	Inhibit	-
25	Enable transfer safe position via PROFIsafe	Enable	Inhibit	-
26	Enable safe gearbox switchover	Enable	Inhibit	-
27	Enable referencing via SCC	Enable	Inhibit	-
28	Enable safe cam	Enable	Inhibit	-
29	Enable synchronous transfer safe position via PROFIsafe	Enable	Inhibit	-
30	Enable F-DI in PROFIsafe telegram 900	Enable	Inhibit	-

Dependency: Refer to: p9501

Refer to: F01682, F01683

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: A change only becomes effective after a POWER ON.

SCA: Safe Cam

SDI: Safe Direction (safe motion direction)

SLA: Safely-Limited Acceleration

SLP: Safely-Limited Position

SLS: Safely-Limited Speed

SOS: Safe Operating Stop

SP: Safe Position

SS2E: Safe Stop 2 external (Safe Stop 2 with external stop, external STOP D)

SSM: Safe Speed Monitor (safety-relevant feedback signal from the speed monitoring)

p9301 SI Motion enable safety functions (Motor Module) / SI Mtn enable MM

SERVO, VECTOR, HLA

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 0000 0000 0000 0000 bin

Description: Sets the enable signals for the safe motion monitoring.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Enable SOS/SLS	Enable	Inhibit	-
01	Enable SLP	Enable	Inhibit	-
02	Enable absolute position	Enable	Inhibit	-
03	Enable actual value synchronization	Enable	Inhibit	-
16	Enable SSM hysteresis and filtering	Enable	Inhibit	2823
17	Enable SDI	Enable	Inhibit	2824
18	Enable SS2E	Enable	Inhibit	-
20	Enable Safely-Limited Acceleration	Enable	Inhibit	-
23	Enable deactivation SOS/SLS during an external STOP A	Enable	Inhibit	-
24	Enable transfer SLS limit value via PROFIsafe	Enable	Inhibit	-
25	Enable transfer safe position via PROFIsafe	Enable	Inhibit	-
26	Enable safe gearbox switchover	Enable	Inhibit	-
27	Enable referencing via SCC	Enable	Inhibit	-
28	Enable safe cam	Enable	Inhibit	-
29	Enable synchronous transfer safe position via PROFIsafe	Enable	Inhibit	-

Dependency: Refer to: p9501

Refer to: F01682, F01683

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: A change only becomes effective after a POWER ON.

SCA: Safe Cam

SDI: Safe Direction (safe motion direction)

SLA: Safely-Limited Acceleration

SLP: Safely-Limited Position

SLS: Safely-Limited Speed

SOS: Safe Operating Stop

SP: Safe Position

SS2E: Safe Stop 2 external (Safe Stop 2 with external stop, external STOP D)

SSM: Safe Speed Monitor (safety-relevant feedback signal from the speed monitoring)

p9302 SI Motion axis type (Motor Module) / SI Mtn AxisType MM

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the axis type (linear axis or rotary axis/spindle).

Value:
0: Linear axis
1: Rotary axis/spindle

Dependency: Refer to: p9502

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: For the commissioning tool, after changing over the axis type, the units dependent on the axis type are only updated after a project upload.

A change only becomes effective after a POWER ON.

p9303 SI Motion SCA (SN) enable (MM) / SI Mtn SCA enab MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 0000 0000 0000 0000 bin

Description: Setting to enable the function "Safe Cam" (SCA).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Enable SCA1 (SN1)	Enable	Inhibit	-
01	Enable SCA2 (SN2)	Enable	Inhibit	-
02	Enable SCA3 (SN3)	Enable	Inhibit	-
03	Enable SCA4 (SN4)	Enable	Inhibit	-
04	Enable SCA5 (SN5)	Enable	Inhibit	-
05	Enable SCA6 (SN6)	Enable	Inhibit	-
06	Enable SCA7 (SN7)	Enable	Inhibit	-
07	Enable SCA8 (SN8)	Enable	Inhibit	-
08	Enable SCA9 (SN9)	Enable	Inhibit	-
09	Enable SCA10 (SN10)	Enable	Inhibit	-
10	Enable SCA11 (SN11)	Enable	Inhibit	-
11	Enable SCA12 (SN12)	Enable	Inhibit	-
12	Enable SCA13 (SN13)	Enable	Inhibit	-
13	Enable SCA14 (SN14)	Enable	Inhibit	-
14	Enable SCA15 (SN15)	Enable	Inhibit	-
15	Enable SCA16 (SN16)	Enable	Inhibit	-
16	Enable SCA17 (SN17)	Enable	Inhibit	-
17	Enable SCA18 (SN18)	Enable	Inhibit	-
18	Enable SCA19 (SN19)	Enable	Inhibit	-
19	Enable SCA20 (SN20)	Enable	Inhibit	-
20	Enable SCA21 (SN21)	Enable	Inhibit	-
21	Enable SCA22 (SN22)	Enable	Inhibit	-
22	Enable SCA23 (SN23)	Enable	Inhibit	-
23	Enable SCA24 (SN24)	Enable	Inhibit	-
24	Enable SCA25 (SN25)	Enable	Inhibit	-
25	Enable SCA26 (SN26)	Enable	Inhibit	-
26	Enable SCA27 (SN27)	Enable	Inhibit	-
27	Enable SCA28 (SN28)	Enable	Inhibit	-
28	Enable SCA29 (SN29)	Enable	Inhibit	-
29	Enable SCA30 (SN30)	Enable	Inhibit	-

Dependency: Refer to: p9501

Refer to: F01686

Note: The "Safe Cam" function (SCA) can either be enabled using p9501 or p9503.
SCA: Safe Cam / SN: Safe software cam

p9305 SI Motion SP modulo value (Motor Module) / SI mtn SP mod MM

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [°]	737280 [°]	0 [°]

Description: Sets the modulo value in degrees for rotary axes of the "Safe position" function.

This modulo value is taken into account when safely referencing as well as when transferring the safe position via PROFIsafe when the absolute position is enabled.

The value should be set, so that it is precisely at 2^n revolutions, so that when the range that can be represented (+/-2048) overflows, this does not cause the position actual value to jump.

The modulo function is deactivated for a value = 0.

Dependency: Refer to: F01681

Notice: When the "SLP" function is activated, the modulo function must be deactivated as otherwise fault F30681 will be output.

If the absolute position is not enabled, then the parameterized modulo value is not taken into account.

This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: SLP: Safely-Limited Position
SP: Safe Position

p9306 SI Motion function specification (Motor Module) / SI Mtn fct_spc MM

HLA

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	2	0

Description: Sets the function specification for the safe motion monitoring.

Value:
0: Safety with encoder and accel_monitoring (SAM) / delay time
2: Safety with encoder and brake ramp (SBR)

Dependency: Refer to: C30711

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

p9306 SI Motion function specification (Motor Module) / SI Mtn fct_spc MM

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	3	0

Description: Sets the function specification for the safe motion monitoring.

Value:
0: Safety with encoder and accel_monitoring (SAM) / delay time
1: Safety without encoder and brake ramp (SBR)
2: Safety with encoder and brake ramp (SBR)
3: Safety without encoder with accel_monitoring (SAM) / delay time

Dependency: Refer to: C30711

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

p9307 SI Motion function configuration MM / SI mtn config MM

HLA

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 bin

Description: Sets the function configuration for the safe motion monitoring functions.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Extended message acknowledgment	Yes	No	-
01	Setpoint velocity limit for STOP F	No	Yes	-
03	SS1 with OFF3 (brake response)	SS1E external stop	SS1 with OFF3	-
06	Configuration test stop motion monitoring functions	Test automatic	Test manual	-

Dependency: Refer to: C01711

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: For bit 00:

When the function is activated, a safety-relevant acknowledgment (internal event acknowledge) can be performed by selecting/deselecting STO.

For bit 01:

When the function is activated, the active setpoint velocity limit (CO: r9733) is set to zero when STOP F is active.

For bit 03:

When the bit is activated – when selecting function SS1 or activating a STOP B – an SS1E or a STOP B with stop, which should be externally initiated, is triggered instead of SS1 with a drive-based braking response. As a consequence, brake monitoring (SBR, SAM) is deactivated.

SS1E: Safe Stop 1 external (Safe Stop 1 with external stop)

p9307 SI Motion function configuration MM / SI mtn config MM

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 bin

Description: Sets the function configuration for the safe motion monitoring functions.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Extended message acknowledgment	Yes	No	-
01	Setpoint velocity limit for STOP F	No	Yes	-
02	Actual value sensing encoderless motor type	Synchronous motor	Induction motor	-
03	SS1 with OFF3 (brake response)	SS1E external stop	SS1 with OFF3	-
05	Actual value sensing sensorless edge modulation	Yes	No	-
06	Configuration test stop motion monitoring functions	Test automatic	Test manual	-

Dependency: Refer to: C01711

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: For bit 00:

When the function is activated, a safety-relevant acknowledgment (internal event acknowledge) can be performed by selecting/deselecting STO.

For bit 01:

When the function is activated, the active setpoint velocity limit (CO: r9733) is set to zero when STOP F is active.

For bit 02:

This bit defines the type of motor, which the sensorless actual value sensing evaluates.

For bit = 0, the actual velocity is calculated for an induction motor.

For bit = 1, the actual velocity is calculated for a synchronous motor. This value depends on the setting in p0300.

Bit = 0 should be set if no motor is defined (p0300 = 0).

For bit 03:

When the bit is activated – when selecting function SS1 or activating a STOP B – an SS1E or a STOP B with Stop, which should be externally initiated, is triggered instead of SS1 with a drive-based braking response. As a consequence, brake monitoring (SBR, SAM) is deactivated.

SS1E: Safe Stop 1 external (Safe Stop 1 with external stop)

For bit 05:

This bit defines the type of modulation, which the sensorless actual value sensing evaluates.

For bit = 0, the actual velocity is calculated for space vector modulation.

For bit = 1, the actual velocity is calculated for edge modulation. This value depends on the setting in p1802.

For bit 06:

When the bit is active, the test stop of the Extended Functions and the test stop of the onboard F-DO is carried out. The onboard F-DO can be deactivated via p10146.

p9307 SI Motion function configuration MM / SI mtn config MM

SERVO, VECTOR

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 bin

Description: Sets the function configuration for the safe motion monitoring functions.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Extended message acknowledgment	Yes	No	-
01	Setpoint velocity limit for STOP F	No	Yes	-
02	Actual value sensing encoderless motor type	Synchronous motor	Induction motor	-
03	SS1 with OFF3 (brake response)	SS1E external stop	SS1 with OFF3	-
05	Actual value sensing sensorless edge modulation	Yes	No	-
06	Configuration test stop motion monitoring functions	Test automatic	Test manual	-

Dependency: Refer to: C01711

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: For bit 00:

When the function is activated, a safety-relevant acknowledgment (internal event acknowledge) can be performed by selecting/deselecting STO.

For bit 01:

When the function is activated, the active setpoint velocity limit (CO: r9733) is set to zero when STOP F is active.

For bit 02:

This bit defines the type of motor, which the sensorless actual value sensing evaluates.

For bit = 0, the actual velocity is calculated for an induction motor.

For bit = 1, the actual velocity is calculated for a synchronous motor. This value depends on the setting in p0300.

Bit = 0 should be set if no motor is defined (p0300 = 0).

For bit 03:

When the bit is activated – when selecting function SS1 or activating a STOP B – an SS1E or a STOP B with Stop, which should be externally initiated, is triggered instead of SS1 with a drive-based braking response. As a consequence, brake monitoring (SBR, SAM) is deactivated.

SS1E: Safe Stop 1 external (Safe Stop 1 with external stop)

For bit 05:

This bit defines the type of modulation, which the sensorless actual value sensing evaluates.

For bit = 0, the actual velocity is calculated for space vector modulation.

For bit = 1, the actual velocity is calculated for edge modulation. This value depends on the setting in p1802.

p9309 SI Motion behavior during pulse suppression (Motor Module) / SI Mtn behav IL MM

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 1111 1111 bin

Description: Sets the behavior of safety functions and their feedback during pulse suppression in encoderless operation.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	SSM during pulse suppression and encoderless	Becomes inactive	Remains active	-
08	SDI during pulse suppression and encoderless	Becomes inactive	Remains active	-

Dependency: Refer to: C01711

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

For bit 00:

If the OFF1 or the OFF3 ramp-down time is too low, or there is an insufficient clearance between the SSM limit speed, and the shutdown speed, then it is possible that the "speed under limit value" signal does not change to 1, because no speed actual value below the SSM limit was able to be identified before pulse cancellation. In this case, the OFF1 or the OFF3 ramp-down time or the clearance between the SSM limit speed and shutdown speed must be increased.

Note: SDI: Safe Direction (safe motion direction)

SSM: Safe Speed Monitor (safety-relevant feedback signal from the speed monitoring)

For bit 00:

For bit = 1 and with the SSM safety function activated, the following applies:

- During pulse suppression, monitoring is switched off and the feedback signal has a 0 signal level.

For bit = 0 and with the SSM safety function activated, the following applies:

- Monitoring continues during pulse suppression. The feedback signal last displayed before pulse suppression is kept and the system goes into the STO state.

For bit 08:

For bit = 1 and with the SDI safety function activated, the following applies:

- During pulse suppression, monitoring is switched off and the status signal indicates inactive.

For bit = 0 and with the SDI safety function activated, the following applies:

- Monitoring continues during pulse suppression. The status signal indicates active and the system goes into the STO state.

p9311 SI Motion actual value sensing clock cycle (Motor Module) / SI Mtn act clk MM

HLA

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0000 [µs]	25000.0000 [µs]	0.0000 [µs]

Description: Sets the clock cycle time of the actual value sensing for safe motion monitoring.

Setting criteria if the motion monitoring functions are executed with an encoder.

- a slower clock cycle time reduces the maximum permissible velocity - however, it ensures a lower load of the Control Unit for safe actual value sensing.

- the maximum permissible velocity which, when exceeded, can mean that errors occur during safe actual value sensing, is displayed in r9730.

- the isochronous PROFIBUS clock cycle is used as a clock cycle time for actual value sensing with a setting of 0 ms; the setting is 1 ms if isochronous operation is not being used.

Dependency: Refer to: p0115, p9300, p9511

Refer to: F01652

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: The parameter is only active for drive-based motion monitoring functions (p9801.2 = 1).

The monitoring clock cycle from p9300 must be an integer multiple of this parameter.

In the case of motion monitoring functions with encoder, the clock cycle time for actual value sensing must be an integer multiple of the current controller clock cycle and at least 4 times slower than the current controller clock cycle. A factor of at least 8 is recommended.

The clock cycle time of the actual value sensing should not be set to more than 8 ms.

A change only becomes effective after a POWER ON.

p9311 SI Motion actual value sensing clock cycle (Motor Module) / SI Mtn act clk MM

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0000 [µs]	25000.0000 [µs]	0.0000 [µs]

Description: Sets the clock cycle time of the actual value sensing for safe motion monitoring.

Setting criteria if the motion monitoring functions are executed with an encoder.

- a slower clock cycle time reduces the maximum permissible velocity - however, it ensures a lower load of the Control Unit for safe actual value sensing.

- the maximum permissible velocity which, when exceeded, can mean that errors occur during safe actual value sensing, is displayed in r9730.

- the isochronous PROFIBUS clock cycle is used as a clock cycle time for actual value sensing with a setting of 0 ms; the setting is 1 ms if isochronous operation is not being used.

Setting criteria if the motion monitoring functions are executed without an encoder:

- the actual value sensing clock cycle must be set to the same value as the current controller clock cycle (p0115[0]).

For SINAMICS S120M, the following applies:

Only setting p9311 = 0 or 2 ms is possible (a value of 0 is internally assumed to be 2).

Dependency: Refer to: p0115, p9300, p9511

Refer to: F01652

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: The parameter is only active for drive-based motion monitoring functions (p9801.2 = 1).

The monitoring clock cycle from p9300 must be an integer multiple of this parameter.

In the case of motion monitoring functions with encoder, the clock cycle time for actual value sensing must be an integer multiple of the current controller clock cycle and at least 4 times slower than the current controller clock cycle. A factor of at least 8 is recommended.

The clock cycle time of the actual value sensing should not be set to more than 8 ms.

A change only becomes effective after a POWER ON.

p9312 Select SI Motion safety functions without selection (MM) / SI Mtn w/o sel MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0001 0000 bin

Description: Sets the safety functions without selection.

The safety functions without selection are enabled with p9601.5/p9801.5.

Using this parameter, the individual motion monitoring functions can then be selected (e.g. SLS, SDI positive, SDI negative), which should then be permanently selected.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
04	SLS static (MM)	Static selected	Static deselected	-
12	SDI positive static (MM)	Static selected	Static deselected	-
13	SDI negative static (MM)	Static selected	Static deselected	-

Dependency: Refer to: p9601, p9801

Refer to: F01682, F30682

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: A change becomes immediately effective after exiting the safety commissioning mode.
SDI: Safe Direction (safe motion direction)
SLS: Safely-Limited Speed

p9313 SI Motion non safety-relevant measuring steps POS1 (MM) / nsrPOS1 MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	4294967295	22000

Description: Sets the non safety-relevant measuring steps of position value POS1.
The encoder that is used for the safe motion monitoring functions on processor 2, must be parameterized in this parameter.

Dependency: Refer to: p9513

p9314 SI Motion absolute encoder linear measuring steps (MM) / EncLinMeasStep MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [nm]	4294967295 [nm]	100 [nm]

Description: Sets the resolution of the absolute position for a linear absolute encoder.
The encoder that is used for the safe motion monitoring functions on the Motor Module/Hydraulic Module must be parameterized in this parameter.

Dependency: Refer to: p9514

p9315 SI Motion coarse position value configuration (Motor Module) / SI Mtn s config MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 0000 0000 0000 0000 bin

Description: Sets the encoder configuration for the redundant coarse position value.
The encoder that is used for the safe motion monitoring functions on the Motor Module/Hydraulic Module must be parameterized in this parameter.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Incrementer	Yes	No	-
01	Encoder CRC least significant byte first	Yes	No	-
02	Redundant coarse position val. most significant bit left-aligned	Yes	No	-
04	Binary comparison not possible	Yes	No	-
05	Single-channel encoder	Yes	No	-
16	DRIVE-CLiQ encoder	Yes	No	-
17	EnDat 2.2 converter	Yes	No	-

Dependency: Refer to: r0474, p9515

p9316 SI Motion encoder configuration, safety functions (Motor Module) / SI Mtn enc_cfg MM

HLA

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0001 bin

Description: Sets the configuration for the encoder and position actual value.

The encoder that is used for the safe motion monitoring functions on the Hydraulic Module must be parameterized in this parameter.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Encoder rotating/linear	Linear	Rotating	-
01	Position actual value sign change	Yes	No	-
04	No STOP A after encoder fault for 1 encoder safety	Yes	No	-

Dependency: Refer to: p0404, p0410, p9516

p9316 SI Motion encoder configuration, safety functions (Motor Module) / SI Mtn enc_cfg MM

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 bin

Description: Sets the configuration for the encoder and position actual value.

The encoder that is used for the safe motion monitoring functions on the Motor Module must be parameterized in this parameter.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Encoder rotating/linear	Linear	Rotating	-
01	Position actual value sign change	Yes	No	-
04	No STOP A after encoder fault for 1 encoder safety	Yes	No	-

Dependency: Refer to: p0404, p0410, p9516

p9317 SI Motion linear scale grid division (Motor Module) / SI Mtn grid MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [nm]	250000000.00 [nm]	10000.00 [nm]

Description: Sets the grid division for a linear encoder.

The encoder that is used for the safe motion monitoring functions on the Motor Module/Hydraulic Module must be parameterized in this parameter.

Dependency: Refer to: p0407, p9316

p9318 SI Motion encoder pulses per revolution (Motor Module) / SI Mtn p/rev MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	16777215	2048

Description: Sets the number of encoder pulses per revolution for rotary encoders.

The encoder that is used for the safe motion monitoring functions on the Motor Module/Hydraulic Module must be parameterized in this parameter.

Dependency: Refer to: p0408, p9316

p9319 SI Motion fine resolution G1_XIST1 (Motor Module) / SI Mtn G1_XIST1 MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
2	18	11

Description: Sets the fine resolution for G1_XIST1 in bits.

The encoder that is used for the safe motion monitoring functions on the Motor Module/Hydraulic Module must be parameterized in this parameter.

Dependency: Refer to: p0418

Refer to: F01670, F01671

Note: For safety functions that have not been enabled (p9301 = 0), the following applies: When booting, p9319 is automatically set the same as p0418.

For safety functions that are enabled (p9301 > 0), the following applies: p9319 is checked for agreement with p0418.

G1_XIST1: Encoder 1 position actual value 1 (PROFIdrive)

p9320 SI Motion spindle pitch (Motor Module) / SI Mtn sp_pitch MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.1000 [mm]	8388.0000 [mm]	10.0000 [mm]

Description: Sets the gear ratio between the encoder and load in mm/revolution for a linear axis with rotary encoder.

The encoder that is used for the safe motion monitoring functions on the Motor Module/Hydraulic Module must be parameterized in this parameter.

Dependency: Refer to: p9520

Notice: The fourth decimal point can be rounded-off depending on the size of the entered number (from 3 places before the decimal point).

p9321[0...7] SI Motion gearbox encoder (motor)/load denom (Motor Module) / SI Mtn gearDenomMM

HLA

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	2147000000	1

Description: Sets the denominator for the gearbox between the encoder and load.

The active gearbox stage can be switched over via PROFIsafe.

Index: [0] = Gearbox 1
[1] = Gearbox 2
[2] = Gearbox 3
[3] = Gearbox 4
[4] = Gearbox 5
[5] = Gearbox 6
[6] = Gearbox 7
[7] = Gearbox 8

Dependency: Refer to: p9322

---

p9321[0...7] SI Motion gearbox encoder (motor)/load denom (Motor Module) / SI Mtn gearDenomMM

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	2147000000	1

Description: Sets the denominator for the gearbox between the encoder (or motor in the case of encoderless monitoring functions) and the load.

The active gearbox stage can be switched over via PROFIsafe.

Index: [0] = Gearbox 1
[1] = Gearbox 2
[2] = Gearbox 3
[3] = Gearbox 4
[4] = Gearbox 5
[5] = Gearbox 6
[6] = Gearbox 7
[7] = Gearbox 8

Dependency: Refer to: p9322

---

p9322[0...7] SI Motion gearbox encoder (motor)/load numerator (Motor Module) / SI Mtn gear num MM

HLA

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	2147000000	1

Description: Sets the numerator for the gearbox between the encoder and load.

The active gearbox stage can be switched over via PROFIsafe.

Index: [0] = Gearbox 1
[1] = Gearbox 2
[2] = Gearbox 3
[3] = Gearbox 4
[4] = Gearbox 5
[5] = Gearbox 6
[6] = Gearbox 7
[7] = Gearbox 8

Dependency: Refer to: p9321

Note: In the case of encoderless monitoring functions, the pole pair number must be multiplied by the numerator of the gearbox ratio.

Example:

Gearbox ratio 1:4, pole pair number (r0313) = 2

--> p9321 = 1, p9322 = 8 (4 x 2)

p9322[0...7] SI Motion gearbox encoder (motor)/load numerator (Motor Module) / SI Mtn gear num MM

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	2147000000	1

Description: Sets the numerator for the gearbox between the encoder (or motor in the case of encoderless monitoring functions) and the load.

The active gearbox stage can be switched over via PROFIsafe.

Index:
[0] = Gearbox 1
[1] = Gearbox 2
[2] = Gearbox 3
[3] = Gearbox 4
[4] = Gearbox 5
[5] = Gearbox 6
[6] = Gearbox 7
[7] = Gearbox 8

Dependency: Refer to: p9321

Note: In the case of encoderless monitoring functions, the pole pair number must be multiplied by the numerator of the gearbox ratio.

Example:

Gearbox ratio 1:4, pole pair number (r0313) = 2

--> p9321 = 1, p9322 = 8 (4 x 2)

p9323 SI Motion red. coarse position value valid bits (Motor Module) / Valid bits MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	16	9

Description: Sets the number of valid bits of the redundant coarse position value.

The encoder that is used for the safe motion monitoring functions on the Motor Module/Hydraulic Module must be parameterized in this parameter.

Dependency: Refer to: r0470, p9523

p9324 SI Motion redundant coarse pos. value fine resolution bits (MM) / SI Mtn fine bit MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-16	16	-2

Description: Sets the number of valid bits for the fine resolution of the redundant coarse position value.

The encoder that is used for the safe motion monitoring functions on the Motor Module/Hydraulic Module must be parameterized in this parameter.

Dependency: Refer to: r0471, p9524

p9325 SI Motion redundant coarse pos. value relevant bits (MM) / Relevant bits MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	16	16

Description: Sets the number of relevant bits for the redundant coarse position value.

The encoder that is used for the safe motion monitoring functions on the Motor Module/Hydraulic Module must be parameterized in this parameter.

Dependency: Refer to: p0414, r0472, p9525

p9326 SI Motion encoder assignment (Motor Module) / SI Mtn encoder MM

HLA

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	3	2

Description: Sets the number of the encoder, which is used on the Motor Module for safe motion monitoring functions.

Dependency: For the safe motion monitoring functions, the redundant safety position actual value sensing must be activated in the appropriate encoder data set (p0430.19 = 1).

Refer to: p0187, p0188, p0189, p0430, p9526

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: - for p9526 = 1, the encoder for the closed-loop speed control is used for the second channel of the motion monitoring functions (1-encoder system). This setting is only permissible when using a DQI encoder.

- a change only becomes effective after a POWER ON.

p9326 SI Motion encoder assignment (Motor Module) / SI Mtn encoder MM

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	3	1

Description: Sets the number of the encoder, which is used on the Motor Module for safe motion monitoring functions.

Dependency: For the safe motion monitoring functions, the redundant safety position actual value sensing must be activated in the appropriate encoder data set (p0430.19 = 1).

Refer to: p0187, p0188, p0189, p0430, p9526

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: A change only becomes effective after a POWER ON.

For p9326 = 1, the following applies:

Motor Module uses an encoder for closed-loop speed control, it involves a 1-encoder system.

p9328[0...11] SI Motion Sensor Module Node Identifier (Motor Module) / SI Mtn SM Ident MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	00FF hex	0000 hex

Description: Sets the node identifier of the Sensor Module that is used by the Motor Module/Hydraulic Module for the motion monitoring functions.

Dependency: Refer to: r9881

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

p9329 SI Motion Gx_XIST1 coarse pos safe most significant bit (MM) / Gx_XIST1 MSB MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	31	14

Description: Sets the bit number for the safe most significant bit (MSB) of the Gx_XIST1 coarse position.

The encoder that is used for the safe motion monitoring functions on the Motor Module/Hydraulic Module must be parameterized in this parameter.

Dependency: Refer to: p0415, r0475, p9529

Note: MSB: Most Significant Bit

p9330 SI Motion standstill tolerance (Motor Module) / SI Mtn SOS Tol MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [mm]	100.000 [mm]	1.000 [mm]

Description: Sets the tolerance for the function "Safe Operating Stop" (SOS).

Dependency: Refer to: p9530

Refer to: C01707

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: SOS: Safe Operating Stop

p9330 SI Motion standstill tolerance (Motor Module) / SI Mtn SOS Tol MM

SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [°]	100.000 [°]	1.000 [°]

Description: Sets the tolerance for the function "Safe Operating Stop" (SOS).

Dependency: Refer to: p9530

Refer to: C01707

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: SOS: Safe Operating Stop

p9331[0...3] SI Motion SLS limit values (Motor Module) / SI Mtn SLS lim MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [mm/min]	1000000.00 [mm/min]	2000.00 [mm/min]

Description: Sets the limit values for the function "Safely-Limited Speed" (SLS).

Index:
[0] = Limit value SLS1
[1] = Limit value SLS2
[2] = Limit value SLS3
[3] = Limit value SLS4

Dependency: Refer to: p9363, p9531

Refer to: C01714

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: SLS: Safely-Limited Speed

p9331[0...3] SI Motion SLS limit values (Motor Module) / SI Mtn SLS lim MM

SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	1000000.00 [rpm]	2000.00 [rpm]

Description: Sets the limit values for the function "Safely-Limited Speed" (SLS).

Index:
[0] = Limit value SLS1
[1] = Limit value SLS2
[2] = Limit value SLS3
[3] = Limit value SLS4

Dependency: Refer to: p9363, p9531

Refer to: C01714

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: SLS: Safely-Limited Speed

p9334[0...1] SI Motion SLP upper limit values (Motor Module) / SI Mtn SLP uplimMM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2822
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-2147000.000 [mm]	2147000.000 [mm]	100000.000 [mm]

Description: Sets the upper limit for the function "Safely-Limited Position" (SLP).

Index:
[0] = Limit value SLP1 (SE1)
[1] = Limit value SLP2 (SE2)

Dependency: Refer to: p9501, p9535, p9562

Refer to: C01715

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: The following applies to the setting of these limits:

- p9334[x] > p9335[x]

- p9334[x] must lie in the valid traversing range (-737280 ... 737280).

SLP: Safely-Limited Position / SE: Safe software limit switches

p9334[0...1] SI Motion SLP upper limit values (Motor Module) / SI Mtn SLP uplimMM

SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2822
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-2147000.000 [°]	2147000.000 [°]	100000.000 [°]

Description: Sets the upper limit for the function "Safely-Limited Position" (SLP).

Index:
[0] = Limit value SLP1 (SE1)
[1] = Limit value SLP2 (SE2)

Dependency: Refer to: p9501, p9535, p9562

Refer to: C01715

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: The following applies to the setting of these limits:

- p9334[x] > p9335[x]
- p9334[x] must lie in the valid traversing range (-737280 ... 737280).

SLP: Safely-Limited Position / SE: Safe software limit switches

p9335[0...1] SI Motion SLP lower limit values (Motor Module) / SI Mtn SLPlowLimMM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2822
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-2147000.000 [mm]	2147000.000 [mm]	-100000.000 [mm]

Description: Sets the lower limit for the function "Safely-Limited Position" (SLP).

Index:
[0] = Limit value SLP1 (SE1)
[1] = Limit value SLP2 (SE2)

Dependency: Refer to: p9501, p9534, p9562

Refer to: C01715

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: The following applies to the setting of these limits:

- p9334[x] > p9335[x]
- p9335[x] must lie in the valid traversing range (-737280 ... 737280).

SLP: Safely-Limited Position / SE: Safe software limit switches

p9335[0...1] SI Motion SLP lower limit values (Motor Module) / SI Mtn SLPlowLimMM

SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2822
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-2147000.000 [°]	2147000.000 [°]	-100000.000 [°]

Description: Sets the lower limit for the function "Safely-Limited Position" (SLP).

Index:
[0] = Limit value SLP1 (SE1)
[1] = Limit value SLP2 (SE2)

Dependency: Refer to: p9501, p9534, p9562

Refer to: C01715

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: The following applies to the setting of these limits:
- p9334[x] > p9335[x]
- p9335[x] must lie in the valid traversing range (-737280 ... 737280).
SLP: Safely-Limited Position / SE: Safe software limit switches

p9336[0...29] SI Motion SCA (SN) plus cam position (MM) / SI Mtn SCA+ MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-2147000.000 [mm]	2147000.000 [mm]	10.000 [mm]

Description: Sets the plus cam position for the function "Safe Cam" (SCA).

Index:
[0] = Cam position SCA1 (SN1)
[1] = Cam position SCA2 (SN2)
[2] = Cam position SCA3 (SN3)
[3] = Cam position SCA4 (SN4)
[4] = Cam position SCA5 (SN5)
[5] = Cam position SCA6 (SN6)
[6] = Cam position SCA7 (SN7)
[7] = Cam position SCA8 (SN8)
[8] = Cam position SCA9 (SN9)
[9] = Cam position SCA10 (SN10)
[10] = Cam position SCA11 (SN11)
[11] = Cam position SCA12 (SN12)
[12] = Cam position SCA13 (SN13)
[13] = Cam position SCA14 (SN14)
[14] = Cam position SCA15 (SN15)
[15] = Cam position SCA16 (SN16)
[16] = Cam position SCA17 (SN17)
[17] = Cam position SCA18 (SN18)
[18] = Cam position SCA19 (SN19)
[19] = Cam position SCA20 (SN20)
[20] = Cam position SCA21 (SN21)
[21] = Cam position SCA22 (SN22)
[22] = Cam position SCA23 (SN23)
[23] = Cam position SCA24 (SN24)
[24] = Cam position SCA25 (SN25)
[25] = Cam position SCA26 (SN26)
[26] = Cam position SCA27 (SN27)
[27] = Cam position SCA28 (SN28)
[28] = Cam position SCA29 (SN29)
[29] = Cam position SCA30 (SN30)

Dependency: Refer to: p9501, p9503, p9537

Note: A change only becomes effective after a POWER ON.
SCA: Safe Cam / SN: Safe software cam

p9336[0...29] SI Motion SCA (SN) plus cam position (MM) / SI Mtn SCA+ MM

SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-2147000.000 [°]	2147000.000 [°]	10.000 [°]

Description: Sets the plus cam position for the function "Safe Cam" (SCA).

Index:
[0] = Cam position SCA1 (SN1)
[1] = Cam position SCA2 (SN2)
[2] = Cam position SCA3 (SN3)
[3] = Cam position SCA4 (SN4)
[4] = Cam position SCA5 (SN5)
[5] = Cam position SCA6 (SN6)
[6] = Cam position SCA7 (SN7)
[7] = Cam position SCA8 (SN8)
[8] = Cam position SCA9 (SN9)
[9] = Cam position SCA10 (SN10)
[10] = Cam position SCA11 (SN11)
[11] = Cam position SCA12 (SN12)
[12] = Cam position SCA13 (SN13)
[13] = Cam position SCA14 (SN14)
[14] = Cam position SCA15 (SN15)
[15] = Cam position SCA16 (SN16)
[16] = Cam position SCA17 (SN17)
[17] = Cam position SCA18 (SN18)
[18] = Cam position SCA19 (SN19)
[19] = Cam position SCA20 (SN20)
[20] = Cam position SCA21 (SN21)
[21] = Cam position SCA22 (SN22)
[22] = Cam position SCA23 (SN23)
[23] = Cam position SCA24 (SN24)
[24] = Cam position SCA25 (SN25)
[25] = Cam position SCA26 (SN26)
[26] = Cam position SCA27 (SN27)
[27] = Cam position SCA28 (SN28)
[28] = Cam position SCA29 (SN29)
[29] = Cam position SCA30 (SN30)

Dependency: Refer to: p9501, p9503, p9537

Note: A change only becomes effective after a POWER ON.

SCA: Safe Cam / SN: Safe software cam

p9337[0...29] SI Motion SCA (SN) minus cam position (MM) / SI Mtn SCA- MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-2147000.000 [mm]	2147000.000 [mm]	-10.000 [mm]

Description: Sets the minus cam position for the function "Safe Cam" (SCA).

Index:
[0] = Cam position SCA1 (SN1)
[1] = Cam position SCA2 (SN2)
[2] = Cam position SCA3 (SN3)
[3] = Cam position SCA4 (SN4)
[4] = Cam position SCA5 (SN5)
[5] = Cam position SCA6 (SN6)
[6] = Cam position SCA7 (SN7)
[7] = Cam position SCA8 (SN8)
[8] = Cam position SCA9 (SN9)
[9] = Cam position SCA10 (SN10)
[10] = Cam position SCA11 (SN11)
[11] = Cam position SCA12 (SN12)
[12] = Cam position SCA13 (SN13)
[13] = Cam position SCA14 (SN14)
[14] = Cam position SCA15 (SN15)
[15] = Cam position SCA16 (SN16)
[16] = Cam position SCA17 (SN17)
[17] = Cam position SCA18 (SN18)
[18] = Cam position SCA19 (SN19)
[19] = Cam position SCA20 (SN20)
[20] = Cam position SCA21 (SN21)
[21] = Cam position SCA22 (SN22)
[22] = Cam position SCA23 (SN23)
[23] = Cam position SCA24 (SN24)
[24] = Cam position SCA25 (SN25)
[25] = Cam position SCA26 (SN26)
[26] = Cam position SCA27 (SN27)
[27] = Cam position SCA28 (SN28)
[28] = Cam position SCA29 (SN29)
[29] = Cam position SCA30 (SN30)

Dependency: Refer to: p9501, p9503, p9536

Note: A change only becomes effective after a POWER ON.

SCA: Safe Cam / SN: Safe software cam

p9337[0...29] SI Motion SCA (SN) minus cam position (MM) / SI Mtn SCA- MM

SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-2147000.000 [°]	2147000.000 [°]	-10.000 [°]

Description: Sets the minus cam position for the function "Safe Cam" (SCA).

Index:
[0] = Cam position SCA1 (SN1)
[1] = Cam position SCA2 (SN2)
[2] = Cam position SCA3 (SN3)
[3] = Cam position SCA4 (SN4)
[4] = Cam position SCA5 (SN5)
[5] = Cam position SCA6 (SN6)
[6] = Cam position SCA7 (SN7)
[7] = Cam position SCA8 (SN8)
[8] = Cam position SCA9 (SN9)
[9] = Cam position SCA10 (SN10)
[10] = Cam position SCA11 (SN11)
[11] = Cam position SCA12 (SN12)
[12] = Cam position SCA13 (SN13)
[13] = Cam position SCA14 (SN14)
[14] = Cam position SCA15 (SN15)
[15] = Cam position SCA16 (SN16)
[16] = Cam position SCA17 (SN17)
[17] = Cam position SCA18 (SN18)
[18] = Cam position SCA19 (SN19)
[19] = Cam position SCA20 (SN20)
[20] = Cam position SCA21 (SN21)
[21] = Cam position SCA22 (SN22)
[22] = Cam position SCA23 (SN23)
[23] = Cam position SCA24 (SN24)
[24] = Cam position SCA25 (SN25)
[25] = Cam position SCA26 (SN26)
[26] = Cam position SCA27 (SN27)
[27] = Cam position SCA28 (SN28)
[28] = Cam position SCA29 (SN29)
[29] = Cam position SCA30 (SN30)

Dependency: Refer to: p9501, p9503, p9536

Note: A change only becomes effective after a POWER ON.
SCA: Safe Cam / SN: Safe software cam

p9339[0...7] SI Motion gearbox direction of rotation reversal (Motor Module) / SI Mtn grbx rev MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the direction of rotation reversal for the gearbox.
0: No direction of rotation reversal
1: Direction of rotation reversal
The active gearbox stage can be switched over via PROFIsafe.

Index: [0] = Gearbox 1
[1] = Gearbox 2
[2] = Gearbox 3
[3] = Gearbox 4
[4] = Gearbox 5
[5] = Gearbox 6
[6] = Gearbox 7
[7] = Gearbox 8

Dependency: Refer to: p9321

p9340 SI Motion SCA (SN) tolerance (MM) / SI Mtn SCA tol MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0010 [mm]	10.0000 [mm]	0.1000 [mm]

Description: Sets the tolerance for the function "Safe Cam" (SCA).

Within this tolerance, both monitoring channels may signal different signal states of the same safe cam.

Note: A change only becomes effective after a POWER ON.

p9340 SI Motion SCA (SN) tolerance (MM) / SI Mtn SCA tol MM

SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0010 [°]	10.0000 [°]	0.1000 [°]

Description: Sets the tolerance for the function "Safe Cam" (SCA).

Within this tolerance, both monitoring channels may signal different signal states of the same safe cam.

Note: A change only becomes effective after a POWER ON.

p9341 SI Motion encoder comparison algorithm (Motor Module) / Enc comp algo MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	255

Description: Sets the comparison algorithm for the encoder position monitoring functions.

The encoder that is used for the safe motion monitoring functions on the Motor Module/Hydraulic Module must be parameterized in this parameter.

Value:
0: Reserved
10: Reserved
11: DQL linear non-binary safety algorithm
12: SMC30 safety algorithm
255: Safety algorithm unknown

Dependency: Refer to: p9541

p9342 SI Motion act val comparison tol (cross-check) (Motor Module) / SI Mtn actV tol MM

HLA

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0010 [mm]	360.0000 [mm]	0.1000 [mm]

Description: Sets the tolerance for the data cross-check of the actual position between the two monitoring channels.

Dependency: Refer to: p9542

Refer to: C01711

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: For a linear axis, the tolerance is internally limited to 10 mm.

For a "linear axis with rotating motor" and factory setting of p9320, p9321 and p9322, the factory setting of p9342 corresponds to a position tolerance of 36 ° on the motor side.

p9342 SI Motion act val comparison tol (cross-check) (Motor Module) / SI Mtn actV tol MM

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0010 [mm]	360.0000 [mm]	0.1000 [mm]

Description: Sets the tolerance for the data cross-check of the actual position between the two monitoring channels.

For encoderless motion monitoring functions, the tolerance must be set to a higher value (12 degrees rotary, 1 mm linear).

Dependency: Refer to: p9542

Refer to: C01711

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: For a linear axis, the tolerance is internally limited to 10 mm.

For a "linear axis with rotating motor" and factory setting of p9320, p9321 and p9322, the factory setting of p9342 corresponds to a position tolerance of 36 ° on the motor side.

p9342 SI Motion act val comparison tol (cross-check) (Motor Module) / SI Mtn actV tol MM

SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0010 [°]	360.0000 [°]	0.1000 [°]

Description: Sets the tolerance for the data cross-check of the actual position between the two monitoring channels.

For encoderless motion monitoring functions, the tolerance must be set to a higher value (12 degrees rotary, 1 mm linear).

Dependency: Refer to: p9542

Refer to: C01711

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

p9343 SI Motion gearbox switching position tolerance (MM) / SI Mtn grbx tol MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	1000	1

Description: Sets the factor to increase the tolerance for the data cross-check of the actual position between the two monitoring channels while the gearbox stage is being switched over.

This factor is effective when actual value synchronization is activated and when deactivated.

Depending on the following tolerance, the following is obtained:

- actual value synchronization activated: p9549 * p9543
- actual value synchronization deactivated: p9542 * p9543

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

p9344 SI Motion actual value comparison tolerance (referencing) (MM) / SI mtn ref tol MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0000 [mm]	36.0000 [mm]	0.0100 [mm]

Description: Sets the tolerance for checking the actual values.

For an incremental encoder, the actual values are checked after referencing; for an absolute encoder, when switching on.

Dependency: Refer to: C01711

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: For linear axes, the maximum value is limited to 1 mm.

p9344 SI Motion actual value comparison tolerance (referencing) (MM) / SI mtn ref tol MM

SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0000 [°]	36.0000 [°]	0.0100 [°]

Description: Sets the tolerance for checking the actual values.

For an incremental encoder, the actual values are checked after referencing; for an absolute encoder, when switching on.

Dependency: Refer to: C01711

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: For linear axes, the maximum value is limited to 1 mm.

p9345 SI Motion SSM filter time (Motor Module) / SI Mtn SSM filt MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2823
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [µs]	500000.00 [µs]	0.00 [µs]

Description: Sets the filter time for the SSM feedback signal to detect standstill (n < nx).

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: The filter time is effective only if the function is enabled (p9301.16 = p9501.16 = 1).

The set time is rounded internally to an integer multiple of the monitoring clock cycle.

The parameter is included in the data cross-check of the two monitoring channels.

SSM: Safe Speed Monitor (safety-relevant feedback signal from the speed monitoring)

p9346 SI Motion SSM velocity limit (Motor Module) / SI Mtn SSM v_limMM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2823
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [mm/min]	1000000.00 [mm/min]	20.00 [mm/min]

Description: Sets the velocity limit for the SSM feedback signal to detect standstill (n < nx).

When this limit value is undershot, the signal "SSM feedback signal active" is set.

For p9368 = p9568 = 0, the value in p9346/p9546 is also applicable for SAM/SBR.

Dependency: Refer to: p9546

Caution: The "SAM/SBR" function is deactivated if the selected threshold value is undershot.

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: SAM: Safe Acceleration Monitor (safe acceleration monitoring)

SBR: Safe Brake Ramp (safe brake ramp monitoring)

SSM: Safe Speed Monitor (safety-relevant feedback signal from the speed monitoring)

p9346 SI Motion SSM velocity limit (Motor Module) / SI Mtn SSM v_limMM

SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2823
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	1000000.00 [rpm]	20.00 [rpm]

Description: Sets the velocity limit for the SSM feedback signal to detect standstill (n < nx).

When this limit value is undershot, the signal "SSM feedback signal active" is set.

For p9368 = p9568 = 0, the value in p9346/p9546 is also applicable for SAM/SBR.

Dependency: Refer to: p9546

Caution: The "SAM/SBR" function is deactivated if the selected threshold value is undershot.

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: SAM: Safe Acceleration Monitor (safe acceleration monitoring)

SBR: Safe Brake Ramp (safe brake ramp monitoring)

SSM: Safe Speed Monitor (safety-relevant feedback signal from the speed monitoring)

p9347 SI Motion SSM velocity hysteresis (Motor Module) / SI Mtn SSM Hyst MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2823
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0010 [mm/min]	500.0000 [mm/min]	10.0000 [mm/min]

Description: Sets the velocity hysteresis for the SSM feedback signal to detect standstill (n < nx).

Dependency: Refer to: C01711

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: The velocity hysteresis is effective only if the function is enabled (p9301.16 = p9501.16 = 1).
The parameter is included in the data cross-check of the two monitoring channels.
SSM: Safe Speed Monitor (safety-relevant feedback signal from the speed monitoring)

p9347 SI Motion SSM velocity hysteresis (Motor Module) / SI Mtn SSM Hyst MM

SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2823
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0010 [rpm]	500.0000 [rpm]	10.0000 [rpm]

Description: Sets the velocity hysteresis for the SSM feedback signal to detect standstill (n < nx).

Dependency: Refer to: C01711

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: The velocity hysteresis is effective only if the function is enabled (p9301.16 = p9501.16 = 1).
The parameter is included in the data cross-check of the two monitoring channels.
SSM: Safe Speed Monitor (safety-relevant feedback signal from the speed monitoring)

p9348 SI Motion SAM actual velocity tolerance (Motor Module) / SI Mtn SAM tol MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [mm/min]	120000.00 [mm/min]	300.00 [mm/min]

Description: Sets the velocity tolerance for the "SAM" function.

Dependency: Refer to: p9548
Refer to: C01706

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: SAM: Safe Acceleration Monitor (safe acceleration monitoring)

p9348 SI Motion SAM actual velocity tolerance (Motor Module) / SI Mtn SAM tol MM

SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	120000.00 [rpm]	300.00 [rpm]

Description: Sets the velocity tolerance for the "SAM" function.

Dependency: Refer to: p9548
Refer to: C01706

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: SAM: Safe Acceleration Monitor (safe acceleration monitoring)

p9349 SI Motion slip velocity tolerance (Motor Module) / SI Mtn slip MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [mm/min]	6000.00 [mm/min]	6.00 [mm/min]

Description: Sets the velocity tolerance that is used for a 2-encoder system in cross-check between the two monitoring channels.

Dependency: Refer to: p9301, p9342, p9549

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: If the "actual value synchronization" is not enabled (p9301.3 = 0), then the value parameterized in p9342 is used as tolerance in the data cross-check.

p9349 SI Motion slip velocity tolerance (Motor Module) / SI Mtn slip MM

SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	6000.00 [rpm]	6.00 [rpm]

Description: Sets the velocity tolerance that is used for a 2-encoder system in cross-check between the two monitoring channels.

Dependency: Refer to: p9301, p9342, p9549

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: If the "actual value synchronization" is not enabled (p9301.3 = 0), then the value parameterized in p9342 is used as tolerance in the data cross-check.

p9351 SI Motion SLS(SG) changeover/SOS (SBH) delay time (MM) / SI SLS/SOS t MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2819, 2820
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [µs]	600000000.00 [µs]	100000.00 [µs]

Description: Sets the delay time for the SLS changeover and for the activation of SOS for the functions "Safely-Limited Speed" (SLS) and "Safe Operating Stop" (SOS).

When transitioning from a higher to a lower Safely-Limited Speed level, and when activating Safe Operating Stop (SOS), within this delay time, the "old" speed level remains active.

This delay is also applicable when activating SLS from the state "SOS and SLS inactive" and activating SOS from the state "SOS inactive".

Dependency: Refer to: p9551

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: The set time is rounded internally to an integer multiple of the monitoring clock cycle.

SLS: Safely-Limited Speed

SOS: Safe Operating Stop

p9352 SI Motion transition time STOP C to SOS (Motor Module) / SI Mtn t C->SOS MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2819
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [µs]	600000000.00 [µs]	100000.00 [µs]

Description: Sets the transition time from STOP C to "Safe Operating Stop" (SOS).

Dependency: Refer to: p9552

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: The set time is rounded internally to an integer multiple of the monitoring clock cycle.

SOS: Safe Operating Stop

p9353 SI Motion transition time STOP D to SOS (Motor Module) / SI Mtn t D->SOS MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2819
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [µs]	600000000.00 [µs]	100000.00 [µs]

Description: Sets the transition time from STOP D to "Safe Operating Stop" (SOS).

Dependency: Refer to: p9553

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: The set time is rounded internally to an integer multiple of the monitoring clock cycle.

SOS: Safe Operating Stop

p9354 SI Motion transition time STOP E to SOS (Motor Module) / SI Mtn t E->SOS MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [µs]	600000000.00 [µs]	100000.00 [µs]

Description: Sets the transition time from STOP E to "Safe Operating Stop" (SOS).

Dependency: Refer to: p9554

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: The set time is rounded internally to an integer multiple of the monitoring clock cycle.

SOS: Safe Operating Stop

p9355 SI Motion transition time STOP F to STOP B (Motor Module) / SI Mtn t F->B MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2819
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [µs]	600000000.00 [µs]	0.00 [µs]

Description: Sets the transition time from STOP F to STOP B.

Dependency: Refer to: C01711

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: The set time is rounded internally to an integer multiple of the monitoring clock cycle.

p9356 SI Motion STOP A delay time (Motor Module) / SI Mtn IL t_del MM

HLA

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2819
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [µs]	3600000000.00 [µs]	100000.00 [µs]

Description: Sets the delay time for STOP A after STOP B / SS1.

Dependency: Refer to: p9360, p9556

Refer to: C01701

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: The set time is rounded internally to an integer multiple of the monitoring clock cycle.

SS1: Safe Stop 1

p9356 SI Motion STOP A delay time (Motor Module) / SI Mtn IL t_del MM

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2819
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [µs]	3600000000.00 [µs]	100000.00 [µs]

Description: Sets the delay time for STOP A after STOP B / SS1.

In the case of encoderless motion monitoring functions with safe brake ramp monitoring (p9306 = 1) and the OFF3 ramp enabled at the same time (p9507.3 = 0), the parameter has no effect.

Dependency: Refer to: p9360, p9556

Refer to: C01701

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: The set time is rounded internally to an integer multiple of the monitoring clock cycle.

SS1: Safe Stop 1

p9357 SI Motion STO test time (Motor Module) / SI Mtn IL t MM

HLA

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [µs]	10000000.00 [µs]	500000.00 [µs]

Description: Sets the time after which STO must be active when initiating the test stop.

Dependency: Refer to: p9557

Refer to: C01798

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: The set time is rounded internally to an integer multiple of the monitoring clock cycle.

p9357 SI Motion STO test time (Motor Module) / SI Mtn IL t MM

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [µs]	10000000.00 [µs]	100000.00 [µs]

Description: Sets the time after which STO must be active when initiating the test stop.

Dependency: Refer to: p9557

Refer to: C01798

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: The set time is rounded internally to an integer multiple of the monitoring clock cycle.

p9358 SI Motion acceptance test mode time limit (Motor Module) / SI Mtn acc t MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
5000000.00 [µs]	100000000.00 [µs]	40000000.00 [µs]

Description: Sets the maximum time for the acceptance test mode.

If the acceptance test mode takes longer than the selected time limit, then the mode is automatically terminated.

Dependency: Refer to: p9558

Refer to: C01799

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: The set time is rounded internally to an integer multiple of the monitoring clock cycle.

p9360 SI Motion STO shutdown velocity (Motor Module) / SI Mtn IL v_sh MM

HLA

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [mm/min]	6000.00 [mm/min]	0.00 [mm/min]

Description: Sets the shutdown velocity for activating STO.

Below this velocity "standstill" is assumed and for STOP B / SS1, STO is selected.

Dependency: Refer to: p9356, p9560

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: The shutdown velocity has no effect for a value = 0.

SS1: Safe Stop 1

p9360 SI Motion STO shutdown velocity (Motor Module) / SI Mtn IL v_sh MM

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [mm/min]	6000.00 [mm/min]	0.00 [mm/min]

Description: Sets the shutdown velocity for activating STO.

Below this velocity "standstill" is assumed and for STOP B / SS1, STO is selected.

In the case of encoderless motion monitoring functions, the parameter must be > 0 (recommended value: 10).

Dependency: Refer to: p9356, p9560

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: The shutdown velocity has no effect for a value = 0.

SS1: Safe Stop 1

p9360 SI Motion pulse suppression shutdown speed (Motor Module) / SI Mtn IL n_sh MM

SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	6000.00 [rpm]	0.00 [rpm]

Description: Sets the shutdown speed for the pulse suppression.

Below this speed "standstill" is assumed and for STOP B / SS1, the pulses are suppressed (by changing to STOP A).

Dependency: Refer to: p9356, p9560

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: The shutdown speed has no effect for a value = 0.

SS1: Safe Stop 1

p9362[0...1] SI Motion SLP stop response (Motor Module) / SI mtn SLP stop MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	14	2

Description: Sets the stop response for the function "Safely-Limited Position" (SLP).

Value:
0: STOP A
1: STOP B
2: STOP C
3: STOP D
4: STOP E
10: STOP A with delayed stop response when the bus fails
11: STOP B with delayed stop response when the bus fails
12: STOP C with delayed stop response when the bus fails
13: STOP D with delayed stop response when the bus fails
14: STOP E with delayed stop response when the bus fails

Index:
[0] = Limit value SLP1 (SE1)
[1] = Limit value SLP2 (SE2)

Dependency: Refer to: p9534, p9535

Note: In the extended sense, a bus failure should be seen here as a communication error in the control signals of the safety functions (e.g. via PROFIsafe or TM54F).

SLP: Safely-Limited Position

p9363[0...3] SI Motion SLS stop response (Motor Module) / SI Mtn SLS Stop MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	14	2

Description: Sets the stop response for the function "Safely-Limited Speed" (SLS).

These settings apply to the individual limit values for SLS.

In the case of encoderless motion monitoring (p9506/p9306 = 1, 3), only a value of 0 or 1 is permitted.

Value:
0: STOP A
1: STOP B
2: STOP C
3: STOP D
4: STOP E
10: STOP A with delayed stop response when the bus fails
11: STOP B with delayed stop response when the bus fails
12: STOP C with delayed stop response when the bus fails
13: STOP D with delayed stop response when the bus fails
14: STOP E with delayed stop response when the bus fails

Index:
[0] = Limit value SLS1
[1] = Limit value SLS2
[2] = Limit value SLS3
[3] = Limit value SLS4

Dependency: Refer to: p9331, p9380, p9563

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: In the extended sense, a bus failure should be seen here as a communication error in the control signals of the safety functions (e.g. via PROFIsafe or TM54F).

SLS: Safely-Limited Speed

p9364 SI Motion SDI tolerance (Motor Module) / SI Mtn SDI tol MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2824
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.001 [mm]	360.000 [mm]	12.000 [mm]

Description: Sets the tolerance for the function "Safe motion direction" (SDI).

This motion in the monitored direction is still permissible before safety message C30716 is initiated.

Dependency: Refer to: p9365, p9366

Refer to: C30716

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: SDI: Safe Direction (safe motion direction)

p9364 SI Motion SDI tolerance (Motor Module) / SI Mtn SDI tol MM

SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2824
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.001 [°]	360.000 [°]	12.000 [°]

Description: Sets the tolerance for the function "Safe motion direction" (SDI).

This motion in the monitored direction is still permissible before safety message C30716 is initiated.

Dependency: Refer to: p9365, p9366

Refer to: C30716

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: SDI: Safe Direction (safe motion direction)

p9365 SI Motion SDI delay time (Motor Module) / SI Mtn SDI t MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2824
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [µs]	600000000.00 [µs]	100000.00 [µs]

Description: Sets the delay time for the function "Safe motion direction" (SDI).

After selecting the SDI function, then for a maximum of this time, motion in the monitored direction is permissible. This time can therefore be used for braking any motion.

Dependency: Refer to: p9364, p9366

Refer to: C30716

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: The set time is rounded internally to an integer multiple of the monitoring clock cycle.

SDI: Safe Direction (safe motion direction)

p9366 SI Motion SDI stop response (Motor Module) / SI Mtn SDI Stop MM

HLA

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 2824
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	14	1

Description: Sets the stop response for the function "Safe motion direction" (SDI).

This setting applies to both directions of motion.

Value:

0: STOP A
1: STOP B
2: STOP C
3: STOP D
4: STOP E
10: STOP A with delayed stop response when the bus fails
11: STOP B with delayed stop response when the bus fails
12: STOP C with delayed stop response when the bus fails
13: STOP D with delayed stop response when the bus fails
14: STOP E with delayed stop response when the bus fails

Dependency: Refer to: p9364, p9365

Refer to: C30716

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: In the extended sense, a bus failure should be seen here as a communication error in the control signals of the safety functions (e.g. via PROFIsafe or TM54F).

SDI: Safe Direction (safe motion direction)

p9366 SI Motion SDI stop response (Motor Module) / SI Mtn SDI Stop MM

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 2824
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	14	1

Description: Sets the stop response for the function "Safe motion direction" (SDI).

This setting applies to both directions of motion.

In the case of encoderless motion monitoring (p9306 = 1), only a value of 0 or 1 is permitted.

Value:	0:	STOP A
	1:	STOP B
	2:	STOP C
	3:	STOP D
	4:	STOP E
	10:	STOP A with delayed stop response when the bus fails
	11:	STOP B with delayed stop response when the bus fails
	12:	STOP C with delayed stop response when the bus fails
	13:	STOP D with delayed stop response when the bus fails
	14:	STOP E with delayed stop response when the bus fails

Dependency: Refer to: p9364, p9365

Refer to: C30716

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: In the extended sense, a bus failure should be seen here as a communication error in the control signals of the safety functions (e.g. via PROFIsafe or TM54F).

SDI: Safe Direction (safe motion direction)

p9368 SI Motion SAM/SBR velocity limit (Motor Module) / SI Mtn SAM v_limMM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [mm/min]	1000.00 [mm/min]	0.00 [mm/min]

Description: Sets the velocity limit for the "SAM" and "SBR" functions.

If the drive is being ramped down, but accelerates by the tolerance in p9548/p9348, then the SAM function identifies this and a STOP A is initiated.

The monitoring operates as follows:

- monitoring by SAM is activated for SS1 (or STOP B) and SS2 (or STOP C).
- the SAM limit value is frozen after the velocity limit in p9568/p9368 is undershot.
- SAM monitoring is still executed until the transition time to SOS/STO has expired.

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: SAM: Safe Acceleration Monitor (safe acceleration monitoring)

SBR: Safe Brake Ramp (safe brake ramp monitoring)

SSM: Safe Speed Monitor (safety-relevant feedback signal from the speed monitoring)

For p9568 = p9368 = 0, the following applies:

The value in p9546/p9346 (SSM) is applied as the velocity limit for SAM/SBR.

p9368 SI Motion SAM/SBR velocity limit (Motor Module) / SI Mtn SAM v_limMM

SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	1000.00 [rpm]	0.00 [rpm]

Description: Sets the velocity limit for the "SAM" and "SBR" functions.

If the drive is being ramped down, but accelerates by the tolerance in p9548/p9348, then the SAM function identifies this and a STOP A is initiated.

The monitoring operates as follows:

- monitoring by SAM is activated for SS1 (or STOP B) and SS2 (or STOP C).
- the SAM limit value is frozen after the velocity limit in p9568/p9368 is undershot.
- SAM monitoring is still executed until the transition time to SOS/STO has expired.

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: SAM: Safe Acceleration Monitor (safe acceleration monitoring)

SBR: Safe Brake Ramp (safe brake ramp monitoring)

SSM: Safe Speed Monitor (safety-relevant feedback signal from the speed monitoring)

For p9568 = p9368 = 0, the following applies:

The value in p9546/p9346 (SSM) is applied as the velocity limit for SAM/SBR.

p9370 SI Motion acceptance test mode (Motor Module) / SI Mtn acc_mod MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95), U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	00AC hex	0000 hex

Description: Setting to select and de-select the acceptance test mode.

Value:
0: [00 hex] De-select the acceptance test mode
172: [AC hex] Select the acceptance test mode

Dependency: Refer to: p9358, r9371

Refer to: C01799

Note: The acceptance test mode can only be selected if the motion monitoring functions integrated in the drive are enabled (p9601.2/p9801.2).

r9371 SI Motion acceptance test status (Motor Module) / SI Mtn acc_stat MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	00AC hex	-

Description: Displays the status of the acceptance test mode.

Value:
0: [00 hex] Acc_mode inactive
12: [0C hex] Acc_mode not possible due to POWER ON fault
13: [0D hex] Acc_mode not possible due to incorrect ID in p9370
15: [0F hex] Acc_mode not possible due to expired Acc_timer
172: [AC hex] Acc_mode active

Dependency: Refer to: p9358, p9370

Refer to: C01799

p9374 SI Motion safe position scaling (Motor Module) / SI mtn SP scal MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	100000	1000

Description: Sets the scaling factor to transfer the safe position via PROFIsafe in the 16-bit notation.

Dependency: Refer to: r9713

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: The parameter is only effective when PROFIsafe telegram 901 is selected.

By selecting a suitable scaling of the 32 bit position actual value (r9713[0]), it must be ensured that the scaled position actual value is not greater than 16 bit. The scaling is realized by dividing r9713[0] with this scaling factor.

If, during operation, a position actual value is determined, which cannot be scaled to the 16 bits, then message C30711 with value 7001 is output and safety stop response STOP F.

p9377 SI Motion SLP delay time (Motor Module) / SI mtn SLP t MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [µs]	600000000.00 [µs]	0.00 [µs]

Description: Sets the delay time:

- between selecting and activating the "Safely-Limited Position" (SLP) function.
- when switching over between active SLP ranges, if the new range is not completely contained in the old range.

Dependency: Refer to: p9301, p9334, p9335

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: The set time is rounded internally to an integer multiple of the monitoring clock cycle.

SLP: Safely-Limited Position

p9378 SI Motion SLA acceleration limit (MM) / SI Mtn SLA lim_MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2838
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [m/s²]	1000.00 [m/s²]	1.00 [m/s²]

Description: Sets the acceleration limit for the "Safely-Limited Acceleration" function (SLA).

Dependency: Refer to: p9379

Refer to: C30717

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: The set time is rounded internally to an integer multiple of the monitoring clock cycle.

SLA: Safely-Limited Acceleration

p9378 SI Motion SLA acceleration limit (MM) / SI Mtn SLA lim_MM

SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2838
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rev/s²]	1000.00 [rev/s²]	1.00 [rev/s²]

Description: Sets the acceleration limit for the "Safely-Limited Acceleration" function (SLA).

Dependency: Refer to: p9379

Refer to: C30717

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: The set time is rounded internally to an integer multiple of the monitoring clock cycle.

SLA: Safely-Limited Acceleration

p9379 SI Motion SLA stop response (Motor Module) / SI Mtn SLA stop MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 2838
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	14	1

Description: Sets the stop response for the "Safely-Limited Acceleration" function (SLA).

Value:
0: STOP A
1: STOP B
2: STOP C
3: STOP D
4: STOP E
10: STOP A with delayed stop response when the bus fails
11: STOP B with delayed stop response when the bus fails
12: STOP C with delayed stop response when the bus fails
13: STOP D with delayed stop response when the bus fails
14: STOP E with delayed stop response when the bus fails

Dependency: Refer to: p9378

Refer to: C30717

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: The set time is rounded internally to an integer multiple of the monitoring clock cycle.

SLA: Safely-Limited Acceleration

p9380 SI Motion stop response delay bus failure (Motor Module) / SI Mtn t to IL MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [µs]	800000.00 [µs]	0.00 [µs]

Description: Sets the delay time, after which the stop response parameterized in p9612 for bus failure is executed.

Dependency: Refer to: p9363

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: In the extended sense, a bus failure should be seen here as a communication error in the control signals of the safety functions (e.g. via PROFIsafe or TM54F).

The main use of the wait time is the function "Extended stopping and retraction" (ESR).

The set time is rounded internally to an integer multiple of the monitoring clock cycle.

p9381 SI Motion brake ramp reference value (Motor Module) / SI Mtn ramp ref MM

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
600.0000 [mm/min]	240000.0000 [mm/min]	1500.0000 [mm/min]

Description: Sets the reference value to define the brake ramp.

The rate of rise of the brake ramp depends upon p9381 (reference value) and p9383 (monitoring time).

Dependency: Refer to: p9382, p9383

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

p9381 SI Motion brake ramp reference value (Motor Module) / SI Mtn ramp ref MM

SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
600.0000 [rpm]	240000.0000 [rpm]	1500.0000 [rpm]

Description: Sets the reference value to define the brake ramp.

The rate of rise of the brake ramp depends upon p9381 (reference value) and p9383 (monitoring time).

Dependency: Refer to: p9382, p9383

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

p9382 SI Motion brake ramp delay time (Motor Module) / SI Mtn rp t_del MM

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
10000.00 [µs]	99000000.00 [µs]	250000.00 [µs]

Description: Sets the delay time for monitoring the brake ramp.

Monitoring of the brake ramp starts once the delay time has elapsed.

Dependency: Refer to: p9381, p9383

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: The set time is rounded internally to an integer multiple of the monitoring clock cycle.

Internally, the set time is limited downwards to 2 safety monitoring clock cycles (2 * p9500/p9300).

p9383 SI Motion brake ramp monitoring time (Motor Module) / SI Mtn rp t_mon MM

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
500.00 [ms]	3600000.00 [ms]	10000.00 [ms]

Description: Sets the monitoring time to define the brake ramp.

The rate of rise of the brake ramp depends upon p9381 (reference value) and p9383 (monitoring time).

Dependency: Refer to: p9381, p9382

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: The set time is rounded internally to an integer multiple of the monitoring clock cycle.

p9385 SI Motion actual value sensing sensorless fault tolerance (MM) / ActVal sl tol MM

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1	4	-1

Description: Sets the tolerance of the plausibility monitoring of the current and voltage angle.

A higher value results in a higher degree of ruggedness when reversing at low speeds, as well as in the field weakening range for load steps.

An increase is advantageous, if the current or voltage at the motor become small.

Dependency: Refer to: p9507

Refer to: F30681, C30711

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Reducing this value can have a negative impact on the actual value sensing and the plausibility check.

When the value is increased, this results in a longer evaluation delay and a higher velocity deviation (r9787).

Note: This parameter is only effective for encoderless actual value sensing (p9506/p9306 = 1, 3).

For synchronous motors, the value 4 must be set.

If value = -1:

- for synchronous motors, the calculation is automatically made with the value 4.
- for induction motors, the calculation is automatically made with a value of 0 (if the code number of the power unit p0201[0] < 14000, otherwise with a value of 2).

p9386 SI Motion actual value sensing sensorless delay time (MM) / ActVal sl t_del MM

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
5.00 [ms]	1000.00 [ms]	100.00 [ms]

Description: Sets the delay time to evaluate the encoderless actual value sensing after the pulses have been enabled.

The value must be greater than or equal to the motor magnetizing time (p0346).

Dependency: Refer to: C30711

Caution: The safety functionality is only completely guaranteed after this time has expired.

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

If this value is reduced, this can have a negative impact on the actual value acquisition and plausibility check – and result in Safety message C30711 with the message value 1041 or 1042.

Note: This parameter is only effective for encoderless actual value sensing (p9506/p9306 = 1, 3).

The set time is rounded internally to an integer multiple of the monitoring clock cycle.

p9387 SI Motion actual value sensing sensorless filter time (MM) / Actv sl t_filt MM

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [µs]	100000.00 [µs]	25000.00 [µs]

Description: Sets the filter time for smoothing the actual value with sensorless actual value sensing.

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

A longer filter time results in a longer response time.

Note: This parameter is only effective for encoderless actual value sensing (p9506/p9306 = 1, 3).

The smoothing is realized with a 1st order lowpass filter

For p9387 = minimum value, the filter is deactivated.

The set time is rounded internally to an integer multiple of the monitoring clock cycle.

p9388 SI Motion actual value sensing sensorless minimum current (MM) / ActVal sl I_min MM

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	1000.00 [%]	10.00 [%]

Description: Sets the minimum current for encoderless actual value sensing referred to 1 A (i.e. 1 % = 10 mA).

- the value must be increased if C30711 has occurred with message value 1042.
- the value must be decreased if C30711 has occurred with message value 1041.

For synchronous motors, the following condition must be fulfilled:

|p0305 x p9783| >= p9388 x 1.2

Recommendation: If required, the correct value of the motor minimum current should be determined by making the appropriate measurements.

Dependency: Refer to: r9785

Refer to: C30711

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

If this percentage value is reduced excessively, then this can result in a safety message and an inaccurate actual value.

Note: This parameter is only effective for encoderless actual value sensing (p9506/p9306 = 1, 3).

p9389 SI Motion actual value sensing sensorless accel. limit (MM) / ActVal sl a_lim MM

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
10.00 [%]	3300.00 [%]	100.00 [%]

Description: Sets the acceleration limit to filter velocity fluctuations.

If this percentage value is increased, when accelerating, velocity peaks that do not reflect the real velocity characteristic can occur.

If this value is decreased, and this dampens the velocity peaks when accelerating.

- the value must be increased if C30711 with message value 1043 has occurred.
- the value must be lowered if acceleration procedures have led to an excessive Safety actual velocity.

Recommendation: The setting of this parameter depends on the motor and closed-loop control, and must be newly determined for each configuration.

To do this, a measurement should be performed while the actual value jumps, and the limit in r9785[0] must be set so low using p9389, so that it is exceeded by the value in r9785[1] a maximum of four times per second. The actual value correction filter intervenes at this instant in time. The step is no longer so drastic.

Dependency: Refer to: r9784

Refer to: C30711

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: This parameter is only effective for encoderless actual value sensing (p9506/p9306 = 1, 3).

For p9389 = maximum value, the filter is deactivated.

Diagnostics parameter p9784 must be used to correctly set this parameter.

r9390[0...3] SI Motion version safety motion monitoring (Motor Module) / SI Mtn Version MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the Safety Integrated version for the safe monitoring functions.

Index:
[0] = Safety Version (major release)
[1] = Safety Version (minor release)
[2] = Safety Version (baselevel or patch)
[3] = Safety Version (hotfix)

Dependency: Refer to: r9590, r9770, r9870, r9890

Note: Example:

r9390[0] = 2, r9390[1] = 60, r9390[2] = 1, r9390[3] = 0 --> SI Motion version V02.60.01.00

r9398[0...1] SI Motion actual checksum SI parameters (Motor Module) / SI Mtn act CRC MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the checksum for the checked Safety Integrated parameters of the motion monitoring function (actual checksum) on the Motor Module/Hydraulic Module.

Index:
[0] = Checksum over SI parameters for motion monitoring
[1] = Checksum over SI parameters with hardware reference

Dependency: Refer to: p9399

Note: SI: Safety Integrated

p9399[0...1] SI Motion reference checksum SI parameters (Motor Module) / SI Mtn setp CRC MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the checksum for the checked Safety Integrated parameters of the motion monitoring function (reference checksum) on the Motor Module/Hydraulic Module.

Index:
[0] = Checksum over SI parameters for motion monitoring
[1] = Checksum over SI parameters with hardware reference

Dependency: Refer to: r9398

Note: SI: Safety Integrated

r9406[0...19] PS file parameter number parameter not transferred / PS par_no n transf

All objects

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the parameters that were not able to be transferred when reading the parameter back-up files (PS files) from the non-volatile memory (e.g. memory card).

r9406[0] = 0

--> All of the parameter values were able to be transferred error-free.

r9406[0...x] > 0

--> indicates the parameter number in the following cases:

- parameter, whose value was not able to be completely accepted.
- indexed parameter, where at least 1 index was not able to be accepted. The first index that is not transferred is displayed in r9407.

Dependency: Refer to: r9407, r9408

Note: All indices from r9406 to r9408 designate the same parameter.

r9406[x] parameter number, parameter not accepted

r9407[x] parameter index, parameter not accepted

r9408[x] fault code, parameter not accepted

r9407[0...19] PS file parameter index parameter not transferred / PS parameter index

All objects

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the first index of the parameters that could not be transferred when the parameter backup files (PS files) were read from the non-volatile memory (e.g. memory card).

If, from an indexed parameter, at least one index was not able to be transferred, then the parameter number is displayed in r9406[n] and the first index that was not transferred is displayed in r9407[n].

r9406[0] = 0

--> All of the parameter values were able to be transferred error-free.

r9406[n] > 0

--> Displays r9407[n] the first index of the parameter number r9406[n] that was not transferred.

Dependency: Refer to: r9406, r9408

Note: All indices from r9406 to r9408 designate the same parameter.

r9406[x] parameter number, parameter not accepted

r9407[x] parameter index, parameter not accepted

r9408[x] fault code, parameter not accepted

r9408[0...19] PS file fault code parameter not transferred / PS fault code

All objects

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Only for internal Siemens service purposes.

Dependency: Refer to: r9406, r9407

Note: All indices from r9406 to r9408 designate the same parameter.
r9406[x] parameter number, parameter not accepted
r9407[x] parameter index, parameter not accepted
r9408[x] fault code, parameter not accepted

r9409 Number of parameters to be saved / Qty par to save

All objects

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the number of modified parameters and those that have still not be saved for this drive object.

Dependency: Refer to: p0971, p0977

Notice: Inherent to the system, the list of the parameters to be backed up is empty after the following actions:
- Download
- Warm restart
- Factory setting

In these cases, a new parameter backup must be initiated, which is then the starting point for the list of modified parameters.

Note: The modified parameters that still need to be saved are internally listed in r9410 ... r9419.

r9450[0...29] Reference value change parameter with unsuccessful calculation / Ref_chg par n poss

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM41, ENC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the parameters for which the re-calculation was unsuccessful after an internal system reference value change.

Dependency: Refer to: F07086

r9451[0...29] Units changeover adapted parameters / Unit_chngov par

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM41, ENC

Can be changed: -	**Calculated:** -	**Access level:** 1
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the parameters whose parameter would have to be changed during a units changeover.

Dependency: Refer to: F07088

r9481 Number of BICO interconnections / BICO count

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM17, TM15, TM15DI_DO, TM120, TM150, TB30, TM54F_MA, TM54F_SL, ENC, CU_LINK

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the number of BICO interconnections (signal sinks).

Dependency: Refer to: r9482, r9483

Note: The selected BICO interconnections should be entered into r9482 and r9483.

r9482[0...n] BICO interconnections BI/CI parameters / BICO BI/CI par

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM17, TM15, TM15DI_DO, TM120, TM150, TB30, TM54F_MA, TM54F_SL, ENC, CU_LINK

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** r9481	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the signal sinks (binector/connector inputs, BI/CI parameters).

The number of BICO interconnections is displayed in r9481.

Dependency: Refer to: r9481, r9483

Note: The list is sorted according to signal sources and is structured as follows:

r9842[0]: Interconnection 1 (signal sink, BICO coded), r9843[0]: Interconnection 1 (signal source, BICO coded)

r9842[1]: Interconnection 2 (signal sink, BICO coded), r9843[1]: Interconnection 2 (signal source, BICO coded)

...

r9483[0...n] BICO interconnections BO/CO parameters / BICO BO/CO par

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM17, TM15, TM15DI_DO, TM120, TM150, TB30, TM54F_MA, TM54F_SL, ENC, CU_LINK

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** r9481	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the signal sources (binector/connector outputs, BO/CO parameters).

The number of BICO interconnections is displayed in r9481.

Dependency: Refer to: r9481, r9482

Note: The list is sorted according to signal sources and is structured as follows:

r9842[0]: Interconnection 1 (signal sink, BICO coded), r9843[0]: Interconnection 1 (signal source, BICO coded)

r9842[1]: Interconnection 2 (signal sink, BICO coded), r9843[1]: Interconnection 2 (signal source, BICO coded)

...

p9484 BICO interconnections search signal source / BICO S_src srch

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM17, TM15, TM15DI_DO, TM120, TM150, TB30, TM54F_MA, TM54F_SL, ENC, CU_LINK

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
0	4294967295	0

Description: Sets the signal source (BO/CO parameter, BICO coded) to search in the signal sinks.

The question is answered:

How often is a connection made to a signal source in the drive object and from which index are these interconnections saved (r9482 and r9483)?

Dependency: Refer to: r9481, r9482, r9483, r9485, r9486

r9485 BICO interconnections signal source search count / BICO S_src srchQty

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM17, TM15, TM15DI_DO, TM120, TM150, TB30, TM54F_MA, TM54F_SL, ENC, CU_LINK

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the number of BICO interconnections to the signal sink being searched for.

Dependency: Refer to: r9481, r9482, r9483, p9484, r9486

Note: The signal source to be searched is set in p9484 (BICO-coded).

The search result is contained in r9482 and r9483 and is specified by the count (r9485) and the first index (r9486).

r9486 BICO interconnections signal source search first index / BICO S_src srchIdx

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM17, TM15, TM15DI_DO, TM120, TM150, TB30, TM54F_MA, TM54F_SL, ENC, CU_LINK

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the first index of the signal source being searched for.

Dependency: Refer to: r9481, r9482, r9483, p9484, r9485

Note: The signal source to be searched is set in p9484 (BICO-coded).

The search result is contained in r9482 and r9483 and is specified by the count (r9485) and the first index (r9486).

r9490 Number of BICO interconnections to other drives / Qty BICO to drive

All objects

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the number of signal sources from this drive to other drives/drive objects (Binector Output/Connector Output, BO/CO).

Dependency: Refer to: r9491, r9492, p9493

r9491[0...9] BI/CI of BICO interconnections to other drives / BI/CI to drive

All objects

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the signal receiver list (Binector Input/Connector Input, BI/CI) for the first interconnections between this drive and other drives/drive objects.

Dependency: Refer to: r9490, r9492, p9493

Notice: A drive cannot be deleted if this list is not empty!

Otherwise, another drive would continue to attempt to read a signal from a drive that no longer existed.

Note: All indices of r9491 to p9493 designate the same interconnection.

r9491[x] contains the signal receiver and r9492[x] the matching signal source; p9493[x] can be set to modify the interconnection.

r9492[0...9] BO/CO of BICO interconnections to other drives / BO/CO to drive

All objects

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the signal source list (Binector Output/Connector Output, BO/CO) for the first interconnections between this drive and other drives/drive objects.

Dependency: Refer to: r9490, r9491, p9493

Notice: A drive cannot be deleted if this list is not empty!

Otherwise, another drive would continue to attempt to read a signal from a drive that no longer existed.

Note: All indices of r9491 to p9493 designate the same interconnection.

r9491[x] contains the signal receiver and r9492[x] the matching signal source; p9493[x] can be set to modify the interconnection.

p9493[0...9] Reset BICO interconnections to other drives / Reset BICO to drv

All objects

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	15	15

Description: Setting to reset the BICO interconnections to other drives.

Each interconnection can be individually reset.

Value:
0: Set connection to 0
1: Set connection to 1 (100 %)
2: Set connection to factory setting
15: Finished

Dependency: Refer to: r9490, r9491, r9492

Note: All indices of r9491 to p9493 designate the same interconnection.

r9491[x] contains the signal receiver and r9492[x] the matching signal source; p9493[x] can be set to modify the interconnection.

p9495 BICO behavior for deactivated drive objects / Behav for deact DO

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM17, TM15, TM15DI_DO, TM120, TM150, TB30, ENC, CU_LINK

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	2	0

Description: Sets the behavior for BICO interconnections to drive objects that are either not capable of operation or have been deactivated.

BO/CO parameters are on the drive object that is either not capable of operation or has been deactivated (signal source).

Value:
0: Inactive
1: Save interconnections
2: Save interconnections and establish the factory setting

Dependency: Refer to: p9496, p9497, p9498, p9499

Refer to: A01318, A01507

Note: For p9495 = 0, the following applies:

- the number of interconnections is zero (p9497 = 0).

For p9495 not equal to 0, the following applies:

- the BI/CI parameters involved are listed in p9498[0...29] (signal sink).
- the associated BO/CO parameters are listed in p9499[0...29] (signal source).

p9496 BICO behavior when activating drive objects / Behav when act DO

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM17, TM15, TM15DI_DO, TM120, TM150, TB30, ENC, CU_LINK

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	2	0

Description: Sets the behavior when activating BICO interconnections to drive objects that are either not capable of operation or have been deactivated.

Value:
0: Inactive
1: Restore the interconnections from the list
2: Delete the interconnections from the list

Dependency: Refer to: p9495, p9497, p9498, p9499

Refer to: A01318, A01507

Note: The BI/CI parameters involved are listed in p9498[0...29] (signal sink).

The associated BO/CO parameters are listed in p9499[0...29] (signal source).

After p9496 = 1, 2 the following applies:

- p9497 = 0

- p9496 = 0

p9497 BICO interconnections to deactivated drive objects number / Interconn obj qty

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM17, TM15, TM15DI_DO, TM120, TM150, TB30, ENC, CU_LINK

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	65535	0

Description: Displays the number of saved BICO interconnections to drive objects that are either not capable of operation or have been deactivated.

BO/CO parameters are on the drive object that is either not capable of operation or has been deactivated (signal source).

Dependency: Refer to: p9495, p9496, p9498, p9499

Refer to: A01318, A01507

p9498[0...29] BICO BI/CI parameters to deactivated drive objects / BI/CI to deact obj

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM17, TM15, TM15DI_DO, TM120, TM150, TB30, ENC, CU_LINK

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Displays the saved BI/CI parameters (signal sink), whose source is located on drive objects that are either not capable of operation or have been deactivated.

Dependency: Refer to: p9495, p9496, p9497, p9499

Refer to: A01318, A01507

Note: A BICO interconnection (signal sink, signal source) is displayed in the same index of p9498 and p9499.

p9499[0...29] BICO BO/CO parameters to deactivated drive objects / BO/CO to deact obj

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC, A_INF, S_INF, R_INF, B_INF, TM31, TM41, TM17, TM15, TM15DI_DO, TM120, TM150, TB30, ENC, CU_LINK

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Commands	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Displays the saved BO/CO parameters (signal source), which are located on drive objects that are either not capable of operation or have been deactivated.

Dependency: Refer to: p9495, p9496, p9497, p9498

Refer to: A01318, A01507

Note: A BICO interconnection (signal sink, signal source) is displayed in the same index of p9498 and p9499.

p9500 SI Motion monitoring clock cycle (Control Unit) / SI Mtn clock CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.50000 [ms]	25.00000 [ms]	12.00000 [ms]

Description: Sets the monitoring clock cycle for safe motion monitoring.

Dependency: Refer to: r2064, p9511

Refer to: F01652

Note: A change only becomes effective after a POWER ON.

The monitoring clock cycle must be a multiple of the actual value sensing clock cycle (see the parameter description for p9511).

p9501 SI Motion enable safety functions (Control Unit) / SI Mtn enable CU

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 0000 0000 0000 0000 bin

Description: Sets the enable signals for the safe motion monitoring.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Enable SOS/SLS (SBH/SG)	Enable	Inhibit	-
01	Enable SLP (SE)	Enable	Inhibit	-
02	Enable absolute position	Enable	Inhibit	-
03	Enable actual value synchronization	Enable	Inhibit	-
16	Enable SSM (n < nx) hysteresis and filtering	Enable	Inhibit	2823
17	Enable SDI	Enable	Inhibit	2824
18	Enable SS2E	Enable	Inhibit	-
20	Enable Safely-Limited Acceleration	Enable	Inhibit	-
23	Enable deactivation SOS/SLS during an external STOP A	Enable	Inhibit	-
24	Enable transfer SLS (SG) limit value via PROFIsafe	Enable	Inhibit	-
25	Enable transfer safe position via PROFIsafe	Enable	Inhibit	-
26	Enable safe gearbox switchover	Enable	Inhibit	-
27	Enable referencing via SCC	Enable	Inhibit	-
28	Enable safe cam	Enable	Inhibit	-
29	Enable synchronous transfer safe position via PROFIsafe	Enable	Inhibit	-
30	Enable F-DI in PROFIsafe telegram	Enable	Inhibit	-

Dependency: Refer to: F01682, F01683

Note: For bit 30 = 1, PROFIsafe telegrams 31, 901, 902 must be configured in the F host.

A change only becomes effective after a POWER ON.

SCA: Safe Cam

SDI: Safe Direction (safe motion direction)

SLA: Safely-Limited Acceleration

SLS: Safely-Limited Speed / SG: Safely reduced speed

SOS: Safe Operating Stop / SBH: Safe operating stop

SS2E: Safe Stop 2 external (Safe Stop 2 with external stop, external STOP D)

SSM: Safe Speed Monitor (safety-relevant feedback signal from the speed monitoring)

p9501 SI Motion enable safety functions (Control Unit) / SI Mtn enable CU

SERVO, VECTOR, HLA

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 0000 0000 0000 0000 bin

Description: Sets the enable signals for the safe motion monitoring.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Enable SOS/SLS (SBH/SG)	Enable	Inhibit	-
01	Enable SLP (SE)	Enable	Inhibit	-
02	Enable absolute position	Enable	Inhibit	-
03	Enable actual value synchronization	Enable	Inhibit	-
16	Enable SSM (n < nx) hysteresis and filtering	Enable	Inhibit	2823
17	Enable SDI	Enable	Inhibit	2824
18	Enable SS2E	Enable	Inhibit	-
20	Enable Safely-Limited Acceleration	Enable	Inhibit	-
23	Enable deactivation SOS/SLS during an external STOP A	Enable	Inhibit	-
24	Enable transfer SLS (SG) limit value via PROFIsafe	Enable	Inhibit	-
25	Enable transfer safe position via PROFIsafe	Enable	Inhibit	-
26	Enable safe gearbox switchover	Enable	Inhibit	-
27	Enable referencing via SCC	Enable	Inhibit	-
28	Enable safe cam	Enable	Inhibit	-
29	Enable synchronous transfer safe position via PROFIsafe	Enable	Inhibit	-

Dependency: Refer to: F01682, F01683

Note: A change only becomes effective after a POWER ON.

SCA: Safe Cam / SN: Safe software cam

SDI: Safe Direction (safe motion direction)

SLA: Safely-Limited Acceleration

SLS: Safely-Limited Speed / SG: Safely reduced speed

SOS: Safe Operating Stop / SBH: Safe operating stop

SSM: Safe Speed Monitor (safety-relevant feedback signal from the speed monitoring)

p9502 SI Motion axis type (Control Unit) / SI Mtn ax type CU

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the axis type (linear axis or rotary axis/spindle).

Value:
0: Linear axis
1: Rotary axis/spindle

Note: For the commissioning tool, after changing over the axis type, the units dependent on the axis type are only updated after a project upload.

A change only becomes effective after a POWER ON.

p9503 SI Motion SCA (SN) enable (Control Unit) / SI Mtn SCA enab

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 0000 0000 0000 0000 bin

Description: Setting to enable the function "Safe Cam" (SCA).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Enable SCA1 (SN1)	Enable	Inhibit	-
01	Enable SCA2 (SN2)	Enable	Inhibit	-
02	Enable SCA3 (SN3)	Enable	Inhibit	-
03	Enable SCA4 (SN4)	Enable	Inhibit	-
04	Enable SCA5 (SN5)	Enable	Inhibit	-
05	Enable SCA6 (SN6)	Enable	Inhibit	-
06	Enable SCA7 (SN7)	Enable	Inhibit	-
07	Enable SCA8 (SN8)	Enable	Inhibit	-
08	Enable SCA9 (SN9)	Enable	Inhibit	-
09	Enable SCA10 (SN10)	Enable	Inhibit	-
10	Enable SCA11 (SN11)	Enable	Inhibit	-
11	Enable SCA12 (SN12)	Enable	Inhibit	-
12	Enable SCA13 (SN13)	Enable	Inhibit	-
13	Enable SCA14 (SN14)	Enable	Inhibit	-
14	Enable SCA15 (SN15)	Enable	Inhibit	-
15	Enable SCA16 (SN16)	Enable	Inhibit	-
16	Enable SCA17 (SN17)	Enable	Inhibit	-
17	Enable SCA18 (SN18)	Enable	Inhibit	-
18	Enable SCA19 (SN19)	Enable	Inhibit	-
19	Enable SCA20 (SN20)	Enable	Inhibit	-
20	Enable SCA21 (SN21)	Enable	Inhibit	-
21	Enable SCA22 (SN22)	Enable	Inhibit	-
22	Enable SCA23 (SN23)	Enable	Inhibit	-
23	Enable SCA24 (SN24)	Enable	Inhibit	-
24	Enable SCA25 (SN25)	Enable	Inhibit	-
25	Enable SCA26 (SN26)	Enable	Inhibit	-
26	Enable SCA27 (SN27)	Enable	Inhibit	-
27	Enable SCA28 (SN28)	Enable	Inhibit	-
28	Enable SCA29 (SN29)	Enable	Inhibit	-
29	Enable SCA30 (SN30)	Enable	Inhibit	-

Dependency: Refer to: p9501

Refer to: F01686

Note: SCA: Safe Cam / SN: Safe software cam

p9505 SI Motion SP modulo value (Control Unit) / SI mtn SP mod CU

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [°]	737280 [°]	0 [°]

Description: Sets the modulo value in degrees for rotary axes of the "Safe position" function.

This modulo value is taken into account when safely referencing as well as when transferring the safe position via PROFIsafe when the absolute position is enabled.

The value should be set, so that it is precisely at 2^n revolutions, so that when the range that can be represented (+/-2048) overflows, this does not cause the position actual value to jump.

The modulo function is deactivated for a value = 0.

Dependency: Refer to: p9501

Refer to: F01681

Notice: When the "SLP" function is activated, the modulo function must be deactivated as otherwise fault F01681 will be output.

If the absolute position is not enabled, then the parameterized modulo value is not taken into account.

Note: SLP: Safely-Limited Position

SP: Safe Position

p9506 SI Motion function specification (Control Unit) / SI Mtn fct_spc CU

HLA

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	2	0

Description: Sets the function specification for the safe motion monitoring.

Value:
0: Safety with encoder and accel_monitoring (SAM) / delay time
2: Safety with encoder with brake ramp (SBR)

Dependency: Refer to: C01711

Note: A change only becomes effective after a POWER ON.

p9506 SI Motion function specification (Control Unit) / SI Mtn fct_spc CU

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	3	0

Description: Sets the function specification for the safe motion monitoring.

Value:
0: Safety with encoder and accel_monitoring (SAM) / delay time
1: Safety without encoder with brake ramp (SBR)
2: Safety with encoder with brake ramp (SBR)
3: Safety without encoder with accel_monitoring (SAM) / delay time

Dependency: Refer to: C01711

Note: A change only becomes effective after a POWER ON.

p9507 SI Motion function specification (Control Unit) / SI Mtn config CU

HLA

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 bin

Description: Sets the function configuration for the safe motion monitoring functions.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Extended message acknowledgment	Yes	No	-
01	Setpoint velocity limit for STOP F	No	Yes	-
03	SS1 with OFF3 (brake response)	SS1E external stop	SS1 with OFF3	-
06	Configuration test stop motion monitoring functions	Test automatic	Test manual	-

Dependency: Refer to: C01711

Note: For bit 00:

When the function is activated, a safety-relevant acknowledgment (internal event acknowledge) can be performed by selecting/deselecting STO.

For bit 01:

When the function is activated, the active setpoint velocity limit (CO: r9733) is set to zero when STOP F is active.

For bit 03:

When the bit is activated – when selecting function SS1 or activating a STOP B – an SS1E or a STOP B with Stop, which should be externally initiated, is triggered instead of SS1 with a drive-based braking response. As a consequence, brake monitoring (SBR, SAM) is deactivated.

SS1E: Safe Stop 1 external (Safe Stop 1 with external stop)

For bit 06:

For the automatic test stop, the test stop can still be initiated via binector input p9705.

The automatic test stop is executed after power up, partial power up or a warm restart.

p9507 SI Motion function specification (Control Unit) / SI Mtn config CU

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 bin

Description: Sets the function configuration for the safe motion monitoring functions.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Extended message acknowledgment	Yes	No	-
01	Setpoint velocity limit for STOP F	No	Yes	-
02	Actual value sensing encoderless motor type	Synchronous motor	Induction motor	-
03	SS1 with OFF3 (brake response)	SS1E external stop	SS1 with OFF3	-
05	Actual value sensing sensorless edge modulation	Yes	No	-
06	Configuration test stop motion monitoring functions	Test automatic	Test manual	-

Dependency: Refer to: C01711

Note: For bit 00:

When the function is activated, a safety-relevant acknowledgment (internal event acknowledge) can be performed by selecting/deselecting STO.

For bit 01:

When the function is activated, the active setpoint velocity limit (CO: r9733) is set to zero when STOP F is active.

For bit 02:

This bit defines the type of motor, which the sensorless actual value sensing evaluates.

For bit = 0, the actual velocity is calculated for an induction motor.

For bit = 1, the actual velocity is calculated for a synchronous motor. This value depends on the setting in p0300.

Bit = 0 should be set if no motor is defined (p0300 = 0).

For bit 03:

When the bit is activated – when selecting function SS1 or activating a STOP B – an SS1E or a STOP B with Stop, which should be externally initiated, is triggered instead of SS1 with a drive-based braking response. As a consequence, brake monitoring (SBR, SAM) is deactivated.

SS1E: Safe Stop 1 external (Safe Stop 1 with external stop)

For bit 05:

This bit defines the type of modulation, which the sensorless actual value sensing evaluates.

For bit = 0, the actual velocity is calculated for space vector modulation.

For bit = 1, the actual velocity is calculated for edge modulation. This value depends on the setting in p1802.

For bit 06:

When the bit is active, the test stop of the Extended Functions and the test stop of the onboard F-DO is carried out. The onboard F-DO can be deactivated via p10046.

Also for the automatic test stop, the test stop of the F-DO can be started using binector input p10007. The test stop for Extended Functions can still be started via p9705.

The automatic test stop is executed after power up, partial power up or a warm restart.

p9507 SI Motion function specification (Control Unit) / SI Mtn config CU

SERVO, VECTOR

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 bin

Description: Sets the function configuration for the safe motion monitoring functions.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Extended message acknowledgment	Yes	No	-
01	Setpoint velocity limit for STOP F	No	Yes	-
02	Actual value sensing encoderless motor type	Synchronous motor	Induction motor	-
03	SS1 with OFF3 (brake response)	SS1E external stop	SS1 with OFF3	-
05	Actual value sensing sensorless edge modulation	Yes	No	-
06	Configuration test stop motion monitoring functions	Test automatic	Test manual	-

Dependency: Refer to: C01711

Note: For bit 00:

When the function is activated, a safety-relevant acknowledgment (internal event acknowledge) can be performed by selecting/deselecting STO.

For bit 01:

When the function is activated, the active setpoint velocity limit (CO: r9733) is set to zero when STOP F is active.

For bit 02:

This bit defines the type of motor, which the sensorless actual value sensing evaluates.

For bit = 0, the actual velocity is calculated for an induction motor.

For bit = 1, the actual velocity is calculated for a synchronous motor. This value depends on the setting in p0300.

Bit = 0 should be set if no motor is defined (p0300 = 0).

For bit 03:

When the bit is activated – when selecting function SS1 or activating a STOP B – an SS1E or a STOP B with Stop, which should be externally initiated, is triggered instead of SS1 with a drive-based braking response. As a consequence, brake monitoring (SBR, SAM) is deactivated.

SS1E: Safe Stop 1 external (Safe Stop 1 with external stop)

For bit 05:

This bit defines the type of modulation, which the sensorless actual value sensing evaluates.

For bit = 0, the actual velocity is calculated for space vector modulation.

For bit = 1, the actual velocity is calculated for edge modulation. This value depends on the setting in p1802.

For bit 06:

For the automatic test stop, the test stop can still be initiated via binector input p9705.

The automatic test stop is executed after power up, partial power up or a warm restart.

p9509 SI Motion behavior during pulse suppression (Control Unit) / SI Mtn behav IL CU

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 1111 1111 bin

Description: Sets the behavior of safety functions and their feedback during pulse suppression in encoderless operation.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	SSM during pulse suppression and encoderless	Becomes inactive	Remains active	-
08	SDI during pulse suppression and encoderless	Becomes inactive	Remains active	-

Dependency: Refer to: C01711

Notice: For bit 00:

If the OFF1 or the OFF3 ramp-down time is too low, or there is an insufficient clearance between the SSM limit speed, and the shutdown speed, then it is possible that the "speed under limit value" signal does not change to 1, because no speed actual value below the SSM limit was able to be identified before pulse cancellation. In this case, the OFF1 or the OFF3 ramp-down time or the clearance between the SSM limit speed and shutdown speed must be increased.

Note: SDI: Safe Direction (safe motion direction)

SSM: Safe Speed Monitor (safety-relevant feedback signal from the speed monitoring)

For bit 00:

For bit = 1 and with the SSM safety function activated, the following applies:

- During pulse suppression, monitoring is switched off and the feedback signal has a 0 signal level.

For bit = 0 and with the SSM safety function activated, the following applies:

- Monitoring continues during pulse suppression. The feedback signal last displayed before pulse suppression is kept and the system goes into the STO state.

For bit 08:

For bit = 1 and with the SDI safety function activated, the following applies:

- During pulse suppression, monitoring is switched off and the status signal indicates inactive.

For bit = 0 and with the SDI safety function activated, the following applies:

- Monitoring continues during pulse suppression. The status signal indicates active and the system goes into the STO state.

p9510 SI Motion isochronous PROFIBUS master / SI Mtn sync master

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 4
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Setting for isochronous communication between PROFIdrive controller and Control Unit.

The parameter is only relevant, if the safety-relevant motion monitoring functions integrated in the drive have been enabled (p9601.2 =1).

If a PROFIdrive controller exchanges process data isochronously with the Control Unit, then p9510 must be set to 1. This also applies if the drive itself does not exchange process data isochronously.

Examples for isochronous communication:

- isochronous control for the motion control (e.g. SIMOTION).

- isochronous PROFIsafe master (e.g. SIMATIC S7-400F).

Value:
0: Communication not isochronous
1: Communication isochronous

Dependency: Refer to: C01711, A01796

Notice: As of firmware version 2.6, the parameter has no effect.

p9511 SI Motion actual value sensing cycle clock (Control Unit) / SI Mtn act clk CU

HLA

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00000 [ms]	25.00000 [ms]	0.00000 [ms]

Description: Sets the clock cycle time of the actual value sensing for safe motion monitoring.

Setting criteria if the motion monitoring functions are executed with an encoder.

- a slower clock cycle time reduces the maximum permissible velocity - however, it ensures a lower load of the Control Unit for safe actual value sensing.

- the maximum permissible velocity which, when exceeded, can mean that errors occur during safe actual value sensing, is displayed in r9730.

- the isochronous PROFIBUS clock cycle is used as a clock cycle time for actual value sensing with a setting of 0 ms; the setting is 1 ms if isochronous operation is not being used.

Dependency: Refer to: p0115

Refer to: F01652

Note: The parameter is only active for drive-based motion monitoring functions (p9601.2 = 1).

The monitoring clock cycle from p9500 must be an integer multiple of this parameter.

In the case of motion monitoring functions with encoder, the clock cycle time for actual value sensing must be an integer multiple of the current controller clock cycle and at least 4 times slower than the current controller clock cycle. A factor of at least 8 is recommended.

The clock cycle time of the actual value sensing should not be set to more than 8 ms.

A change only becomes effective after a POWER ON.

p9511 SI Motion actual value sensing cycle clock (Control Unit) / SI Mtn act clk CU

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00000 [ms]	25.00000 [ms]	0.00000 [ms]

Description: Sets the clock cycle time of the actual value sensing for safe motion monitoring.

Setting criteria if the motion monitoring functions are executed with an encoder.

- a slower clock cycle time reduces the maximum permissible velocity - however, it ensures a lower load of the Control Unit for safe actual value sensing.

- the maximum permissible velocity which, when exceeded, can mean that errors occur during safe actual value sensing, is displayed in r9730.

- the isochronous PROFIBUS clock cycle is used as a clock cycle time for actual value sensing with a setting of 0 ms; the setting is 1 ms if isochronous operation is not being used.

Setting criteria if the motion monitoring functions are executed without an encoder:

- the actual value sensing clock cycle must be set to the same value as the current controller clock cycle (p0115[0]).

For SINAMICS S120M, the following applies:

Only setting p9511 = 0 or 2 ms is possible (a value of 0 is internally assumed to be 2).

Dependency: Refer to: p0115

Refer to: F01652

Note: The parameter is only active for drive-based motion monitoring functions (p9601.2 = 1).

The monitoring clock cycle from p9500 must be an integer multiple of this parameter.

In the case of motion monitoring functions with encoder, the clock cycle time for actual value sensing must be an integer multiple of the current controller clock cycle and at least 4 times slower than the current controller clock cycle. A factor of at least 8 is recommended.

The clock cycle time of the actual value sensing should not be set to more than 8 ms.

A change only becomes effective after a POWER ON.

p9512 Select SI Motion safety functions without selection (CU) / SI Mtn w/o sel CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0001 0000 bin

Description: Sets the safety functions without selection.

The safety functions without selection are enabled with p9601.5/p9801.5.

Using this parameter, the individual motion monitoring functions can then be selected (e.g. SLS, SDI positive, SDI negative), which should then be permanently selected.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
04	SLS static (CU)	Static selected	Static deselected	-
12	SDI positive static (CU)	Static selected	Static deselected	-
13	SDI negative static (CU)	Static selected	Static deselected	-

Dependency: Refer to: p9601, p9801

Refer to: F01682

Note: A change becomes immediately effective after exiting the safety commissioning mode.

SDI: Safe Direction (safe motion direction)

SLS: Safely-Limited Speed

p9513 SI Motion non safety-relevant measuring steps POS1 (CU) / nsrPOS1 CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	4294967295	22000

Description: Sets the non safety-relevant measuring steps of position value POS1.

The encoder that is used for the safe motion monitoring functions on the Control Unit must be parameterized in this parameter.

Dependency: Refer to: p0416, r0473, p9313

Refer to: F01670

Note: For safety functions that are not enabled (p9501 = 0), the following applies:

- p9513 is automatically set the same as r0416 when the system boots.

For safety functions that are enabled (p9501 > 0), the following applies:

- p9513 is checked to see that it matches r0416.

p9514 SI Motion absolute encoder linear measuring steps (CU) / EncLinMeasStep CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0 [nm]	4294967295 [nm]	100 [nm]

Description: Sets the resolution of the absolute position for a linear absolute encoder.

The encoder that is used for the safe motion monitoring functions on the Control Unit must be parameterized in this parameter.

Dependency: Refer to: p0422, r0469, p9314

Note: For safety functions that are not enabled (p9501 = 0), the following applies:

- p9514 is automatically set the same as r0422 when the system boots.

For safety functions that are enabled (p9501 > 0), the following applies:

- p9514 is checked to see that it matches r0422.

p9515 SI Motion encoder coarse position value config (Control Unit) / SI Mtn s config CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 0000 0000 0000 0000 bin

Description: Sets the encoder configuration for the redundant coarse position value.

The encoder that is used for the safe motion monitoring functions on the Control Unit must be parameterized in this parameter.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Incrementer	Yes	No	-
01	Encoder CRC least significant byte first	Yes	No	-
02	Redundant coarse position val. most significant bit left-aligned	Yes	No	-
04	Binary comparison not possible	Yes	No	-
05	Single-channel encoder	Yes	No	-
16	DRIVE-CLiQ encoder	Yes	No	-
17	EnDat 2.2 converter	Yes	No	-

Dependency: Refer to: r0474, p9315

Note: - after starting the copy function (p9700 = 57 hex), p9515.0...5 are set the same as r0474.

For safety functions that are not enabled (p9501 = 0), the following applies:

- when the system boots, p9515.16 is automatically set the same as p0404.10, p9515.17 the same as p0404.8 & 11.

For safety functions that are enabled (p9501 > 0), the following applies:

- p9515.16 is checked to identify whether it coincides with p0404.10, p9515.17 with p0404.8 & 11

p9516 SI Motion encoder configuration safety functions (Control Unit) / SI Mtn enc_cfg CU

HLA

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0001 bin

Description: Sets the configuration for the encoder and position actual value.

The encoder that is used for the safe motion monitoring functions on the Control Unit must be parameterized in this parameter.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Encoder rotating/linear	Linear	Rotating	-
01	Position actual value sign change	Yes	No	-
04	No STOP A after encoder fault for 1 encoder safety	Yes	No	-

Dependency: Refer to: p0404, p0410

Refer to: F01671

Note: For safety functions that are not enabled (p9501 = 0), the following applies:

- p9516.0 is automatically set the same as p0404.0 when the system boots.

- p9516.1 is automatically set the same as p0410.1 when the system boots.

For safety functions that are enabled (p9501 > 0), the following applies:

- p9516.0 is checked to identify whether it coincides with p0404.0.

p9516 SI Motion encoder configuration safety functions (Control Unit) / SI Mtn enc_cfg CU

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 bin

Description: Sets the configuration for the motor encoder and position actual value.

The encoder that is used for the safe motion monitoring functions on the Control Unit must be parameterized in this parameter.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Motor encoder rotating/linear	Linear	Rotating	-
01	Position actual value sign change	Yes	No	-
04	No STOP A after encoder fault for 1 encoder safety	Yes	No	-

Dependency: Refer to: p0404, p0410

Refer to: F01671

Note: For safety functions that are not enabled (p9501 = 0), the following applies:

- p9516.0 is automatically set the same as p0404.0 when the system boots.
- p9516.1 is automatically set the same as p0410.1 when the system boots.

For safety functions that are enabled (p9501 > 0), the following applies:

- p9516.0 is checked to identify whether it coincides with p0404.0.

p9517 SI Motion linear encoder grid division (Control Unit) / SI Mtn grid CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [nm]	250000000.00 [nm]	10000.00 [nm]

Description: Sets the grid division for a linear encoder.

The encoder that is used for the safe motion monitoring functions on the Control Unit must be parameterized in this parameter.

Dependency: Refer to: p0407, p9516

Refer to: F01671

Note: For safety functions that have not been enabled (p9501 = 0), the following applies: When booting p9517 is automatically set the same as p0407.

For safety functions that are enabled (p9501 > 0), the following applies: p9517 is checked whether it coincides with p0407.

p9518 SI Motion encoder pulses per revolution (Control Unit) / SI Mtn puls/rev CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	16777215	2048

Description: Sets the number of encoder pulses per revolution for rotary encoders.

The encoder that is used for the safe motion monitoring functions on the Control Unit must be parameterized in this parameter.

Dependency: Refer to: p0408, p9516

Refer to: F01671

Note: For safety functions that have not been enabled (p9501 = 0), the following applies: When booting, p9518 is automatically set the same as p0408.

For safety functions that are enabled (p9501 > 0), the following applies: p9518 is checked whether it coincides with p0408.

p9519 SI Motion fine resolution G1_XIST1 (Control Unit) / SI Mtn G1_XIST1 CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC	**Can be changed:** C2(95)	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	2	18	11

Description: Sets the fine resolution for G1_XIST1 in bits.

The encoder that is used for the safe motion monitoring functions on the Control Unit must be parameterized in this parameter.

Dependency: Refer to: p0418

Refer to: F01671

Note: G1_XIST1: Encoder 1 position actual value 1 (PROFIdrive)

For safety functions that are not enabled (p9501 = 0), the following applies:

- p9519 is automatically set the same as p0418 at run-up.

For safety functions that are enabled (p9501 > 0), the following applies:

- p9519 is checked to see that it matches p0418.

p9520 SI Motion spindle pitch (Control Unit) / SI Mtn Sp_pitch CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC	**Can be changed:** C2(95)	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0.1000 [mm]	8388.0000 [mm]	10.0000 [mm]

Description: Sets the gear ratio between the encoder and load in mm/revolution for a linear axis with rotary encoder.

Notice: The fourth decimal point can be rounded-off depending on the size of the entered number (from 3 places before the decimal point).

p9521[0...7] SI Motion gearbox encoder/load denominator (Control Unit) / SI Mtn gear den CU

HLA	**Can be changed:** C2(95)	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	1	2147000000	1

Description: Sets the denominator for the gearbox between the encoder and load.

The active gearbox stage can be switched over via PROFIsafe.

Index:
[0] = Gearbox 1
[1] = Gearbox 2
[2] = Gearbox 3
[3] = Gearbox 4
[4] = Gearbox 5
[5] = Gearbox 6
[6] = Gearbox 7
[7] = Gearbox 8

Dependency: Refer to: p9522

p9521[0...7]	SI Motion gearbox enc (motor)/load denominator (Control Unit) / SI Mtn gear den CU		
SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC	**Can be changed:** C2(95)	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	1	2147000000	1

Description: Sets the denominator for the gearbox between the encoder (or motor in the case of encoderless monitoring functions) and the load. The active gearbox stage can be switched over via PROFIsafe.

Index:
[0] = Gearbox 1
[1] = Gearbox 2
[2] = Gearbox 3
[3] = Gearbox 4
[4] = Gearbox 5
[5] = Gearbox 6
[6] = Gearbox 7
[7] = Gearbox 8

Dependency: Refer to: p9522

p9522[0...7]	SI Motion gearbox encoder/load numerator (Control Unit) / SI Mtn gear num CU		
HLA	**Can be changed:** C2(95)	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	1	2147000000	1

Description: Sets the numerator for the gearbox between the encoder and load.
The active gearbox stage can be switched over via PROFIsafe.

Index:
[0] = Gearbox 1
[1] = Gearbox 2
[2] = Gearbox 3
[3] = Gearbox 4
[4] = Gearbox 5
[5] = Gearbox 6
[6] = Gearbox 7
[7] = Gearbox 8

Dependency: Refer to: p9521

p9522[0...7]	SI Motion gearbox encoder (motor)/load numerator (Control Unit) / SI Mtn gear num CU		
SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC	**Can be changed:** C2(95)	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	1	2147000000	1

Description: Sets the numerator for the gearbox between the encoder (or motor in the case of encoderless monitoring functions) and the load. The active gearbox stage can be switched over via PROFIsafe.

Index:
[0] = Gearbox 1
[1] = Gearbox 2
[2] = Gearbox 3
[3] = Gearbox 4
[4] = Gearbox 5
[5] = Gearbox 6
[6] = Gearbox 7
[7] = Gearbox 8

Dependency: Refer to: p9521

Note: In the case of encoderless monitoring functions, the pole pair number must be multiplied by the numerator of the gearbox ratio.

Example:

Gearbox ratio 1:4, pole pair number (r0313) = 2

--> p9521 = 1, p9522 = 8 (4 x 2)

p9523 SI Motion redundant coarse pos. value valid bits (Control Unit) / Valid bits CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	16	9

Description: Sets the number of valid bits of the redundant coarse position value.

The encoder that is used for the safe motion monitoring functions on the Control Unit must be parameterized in this parameter.

Dependency: Refer to: r0470, p9323

Note: - after starting the copy function (p9700 = 57 hex), p9523 is set the same as r0470.

p9524 SI Motion Redundant coarse pos. value fine resolution bits (CU) / SI Mtn fine bit CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-16	16	-2

Description: Sets the number of valid bits for the fine resolution of the redundant coarse position value.

The encoder that is used for the safe motion monitoring functions on the Control Unit must be parameterized in this parameter.

Dependency: Refer to: r0471, p9324

Note: - after starting the copy function (p9700 = 57 hex), p9524 is set the same as r0471.

p9525 SI Motion Redundant coarse pos. value relevant bits (CU) / Relevant bits CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	16	16

Description: Sets the number of relevant bits for the redundant coarse position value.

The encoder that is used for the safe motion monitoring functions on the Control Unit must be parameterized in this parameter.

Dependency: Refer to: p0414, r0472, p9325

Note: For safety functions that are not enabled (p9501 = 0), the following applies:

- p9525 is automatically set the same as r0472 when the system boots.

For safety functions that are enabled (p9501 > 0), the following applies:

- p9525 is checked to see that it matches r0472.

p9526 SI Motion encoder assignment second channel / SI Mtn enc chan 2

HLA

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	3	2

Description: Sets the number of the encoder, which is used by the second channel for safe motion monitoring functions.

Dependency: For the safe motion monitoring functions, the redundant safety position actual value sensing must be activated in the appropriate encoder data set (p0430.19 = 1).

Refer to: p0187, p0188, p0189, p0430

Note: - for p9526 = 1, the encoder for the closed-loop speed control is used for the second channel of the motion monitoring functions (1-encoder system). This setting is only permissible when using a DQI encoder.

- a change only becomes effective after a POWER ON.

p9526 SI Motion encoder assignment second channel / SI Mtn enc chan 2

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	3	1

Description: Sets the number of the encoder that the second channel (control, Motor Module) uses for safe motion monitoring functions.

Dependency: For the safe motion monitoring functions, the redundant safety position actual value sensing must be activated in the appropriate encoder data set (p0430.19 = 1).

Refer to: p0187, p0188, p0189, p0430

Note: For p9526 = 1, the encoder for the closed-loop speed control is used for the second channel of the motion monitoring functions (1-encoder system).

A change only becomes effective after a POWER ON.

p9529 SI Motion Gx_XIST1 coarse pos. safe most significant bit (CU) / Gx_XIST1 MSB CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	31	14

Description: Sets the bit number for the safe most significant bit (MSB) of the Gx_XIST1 coarse position.

The encoder that is used for the safe motion monitoring functions on the Control Unit must be parameterized in this parameter.

Dependency: Refer to: p0415, r0475, p9329

Note: For safety functions that are not enabled (p9501 = 0), the following applies:

- p9529 is automatically set the same as r0475 when the system boots.

For safety functions that are enabled (p9501 > 0), the following applies:

- p9529 is checked to see that it matches r0475.

MSB: Most Significant Bit

p9530 SI Motion standstill tolerance (Control Unit) / SI Mtn standst_tol

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [mm]	100.000 [mm]	1.000 [mm]

Description: Sets the tolerance for the function "Safe Operating Stop" (SOS).

Dependency: Refer to: C01707

Note: SOS: Safe Operating Stop / SBH: Safe operating stop

p9530 SI Motion standstill tolerance (Control Unit) / SI Mtn standst_tol

SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [°]	100.000 [°]	1.000 [°]

Description: Sets the tolerance for the function "Safe Operating Stop" (SOS).

Dependency: Refer to: C01707

Note: SOS: Safe Operating Stop / SBH: Safe operating stop

p9531[0...3] SI Motion SLS (SG) limit values (Control Unit) / SI Mtn SLS lim CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [mm/min]	1000000.00 [mm/min]	2000.00 [mm/min]

Description: Sets the limit values for the function "Safely-Limited Speed" (SLS).

Index:
[0] = Limit value SLS1
[1] = Limit value SLS2
[2] = Limit value SLS3
[3] = Limit value SLS4

Dependency: Refer to: p9532, p9561, p9563

Refer to: C01714

Note: SLS: Safely-Limited Speed / SG: Safely reduced speed

p9531[0...3] SI Motion SLS (SG) limit values (Control Unit) / SI Mtn SLS lim CU

SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	1000000.00 [rpm]	2000.00 [rpm]

Description: Sets the limit values for the function "Safely-Limited Speed" (SLS).

Index:
[0] = Limit value SLS1
[1] = Limit value SLS2
[2] = Limit value SLS3
[3] = Limit value SLS4

Dependency: Refer to: p9532, p9561, p9563
Refer to: C01714

Note: SLS: Safely-Limited Speed / SG: Safely reduced speed

p9532[0...15] SI Motion SLS (SG) override factor (Control Unit) / SI Mtn SLS over CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95), U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [%]	100.000 [%]	100.000 [%]

Description: Sets the override factor for the limit value for SLS2 and SLS4 for the function "Safely-Limited Speed" (SLS).

Index:
[0] = SLS (SG) override factor 0
[1] = SLS (SG) override factor 1
[2] = SLS (SG) override factor 2
[3] = SLS (SG) override factor 3
[4] = SLS (SG) override factor 4
[5] = SLS (SG) override factor 5
[6] = SLS (SG) override factor 6
[7] = SLS (SG) override factor 7
[8] = SLS (SG) override factor 8
[9] = SLS (SG) override factor 9
[10] = SLS (SG) override factor 10
[11] = SLS (SG) override factor 11
[12] = SLS (SG) override factor 12
[13] = SLS (SG) override factor 13
[14] = SLS (SG) override factor 14
[15] = SLS (SG) override factor 15

Dependency: Refer to: p9501, p9531

Note: The actual override factor for SLS2 and SLS4 is selected using the safety-relevant inputs (SGE).
SLS: Safely-Limited Speed / SG: Safely reduced speed

p9533 SI Motion SLS setpoint speed limiting (Control Unit) / SI Mtn SLS set_lim

HLA

Can be changed: C2(95), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [%]	100.000 [%]	80.000 [%]

Description: This is an evaluation factor to define the setpoint limit from the selected actual speed limit.
The active SLS limit value is evaluated with this factor and is made available as setpoint limit in r9733.

Dependency: This parameter only has to be parameterized for the motion monitoring functions integrated in the drive (p9601.2 = 1)
r9733[0] = p9531[x] x p9533 (converted from the load side to the actuator side)
r9733[1] = - p9531[x] x p9533 (converted from the load side to the actuator side)
[x] = Selected SLS stage
Conversion factor from the actuator side to the load side:
- actuator type = rotary and axis type = linear: p9522 / (p9521 x p9520)
- otherwise: p9522 / p9521
Refer to: p9501, p9531, p9601

Note: The active actual speed limit is selected via safety-relevant inputs (SGE).
When selecting SOS or a STOP A ... D, setpoint 0 is specified in r9733.
SLS: Safely-Limited Speed

p9533 SI Motion SLS setpoint speed limiting (Control Unit) / SI Mtn SLS set_lim

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.000 [%]	100.000 [%]	80.000 [%]

Description: This is an evaluation factor to define the setpoint limit from the selected actual speed limit.
The active SLS limit value is evaluated with this factor and is made available as setpoint limit in r9733.

Dependency: This parameter only has to be parameterized for the motion monitoring functions integrated in the drive (p9601.2 = 1)
r9733[0] = p9531[x] x p9533 (converted from the load side to the motor side)
r9733[1] = - p9531[x] x p9533 (converted from the load side to the motor side)
[x] = Selected SLS stage
Conversion factor from the motor side to the load side:
- motor type = rotary and axis type = linear: p9522 / (p9521 x p9520)
- otherwise: p9522 / p9521
Refer to: p9501, p9531, p9601

Note: The active actual speed limit is selected via safety-relevant inputs (SGE).
When selecting SOS or a STOP A ... D, setpoint 0 is specified in r9733.
SLS: Safely-Limited Speed

p9534[0...1] SI Motion SLP (SE) upper limit values (Control Unit) / SI Mtn SLP up lim

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2822
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-2147000.000 [mm]	2147000.000 [mm]	100000.000 [mm]

Description: Sets the upper limit for the function "Safely-Limited Position" (SLP).

Index: [0] = Limit value SLP1 (SE1)
[1] = Limit value SLP2 (SE2)

Dependency: Refer to: p9501, p9535, p9562
Refer to: C01715

Note: The following applies to the setting of these limits:
- p9534[x] > p9535[x]
- p9534[x] must lie in the valid traversing range (-737280 ... 737280).
SLP: Safely-Limited Position / SE: Safe software limit switches

p9534[0...1] SI Motion SLP (SE) upper limit values (Control Unit) / SI Mtn SLP up lim

SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2822
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-2147000.000 [°]	2147000.000 [°]	100000.000 [°]

Description: Sets the upper limit for the function "Safely-Limited Position" (SLP).

Index: [0] = Limit value SLP1 (SE1)
[1] = Limit value SLP2 (SE2)

Dependency: Refer to: p9501, p9535, p9562
Refer to: C01715

Note: The following applies to the setting of these limits:
- p9534[x] > p9535[x]
- p9534[x] must lie in the valid traversing range (-737280 ... 737280).

SLP: Safely-Limited Position / SE: Safe software limit switches

p9535[0...1] SI Motion SLP (SE) lower limit values (Control Unit) / SI Mtn SLP low lim

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2822
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-2147000.000 [mm]	2147000.000 [mm]	-100000.000 [mm]

Description: Sets the lower limit for the function "Safely-Limited Position" (SLP).

Index:
[0] = Limit value SLP1 (SE1)
[1] = Limit value SLP2 (SE2)

Dependency: Refer to: p9501, p9534, p9562

Refer to: C01715

Note: The following applies to the setting of these limits:
- p9534[x] > p9535[x]
- p9535[x] must lie in the valid traversing range (-737280 ... 737280).

SLP: Safely-Limited Position / SE: Safe software limit switches

p9535[0...1] SI Motion SLP (SE) lower limit values (Control Unit) / SI Mtn SLP low lim

SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2822
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-2147000.000 [°]	2147000.000 [°]	-100000.000 [°]

Description: Sets the lower limit for the function "Safely-Limited Position" (SLP).

Index:
[0] = Limit value SLP1 (SE1)
[1] = Limit value SLP2 (SE2)

Dependency: Refer to: p9501, p9534, p9562

Refer to: C01715

Note: The following applies to the setting of these limits:
- p9534[x] > p9535[x]
- p9535[x] must lie in the valid traversing range (-737280 ... 737280).

SLP: Safely-Limited Position / SE: Safe software limit switches

p9536[0...29]	SI Motion SCA (SN) plus cam position (Control Unit) / SI Mtn SCA+		
SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC	**Can be changed:** C2(95)	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-2147000.000 [mm]	2147000.000 [mm]	10.000 [mm]

Description: Sets the plus cam position for the function "Safe Cam" (SCA).

Index:
[0] = Cam position SCA1 (SN1)
[1] = Cam position SCA2 (SN2)
[2] = Cam position SCA3 (SN3)
[3] = Cam position SCA4 (SN4)
[4] = Cam position SCA5 (SN5)
[5] = Cam position SCA6 (SN6)
[6] = Cam position SCA7 (SN7)
[7] = Cam position SCA8 (SN8)
[8] = Cam position SCA9 (SN9)
[9] = Cam position SCA10 (SN10)
[10] = Cam position SCA11 (SN11)
[11] = Cam position SCA12 (SN12)
[12] = Cam position SCA13 (SN13)
[13] = Cam position SCA14 (SN14)
[14] = Cam position SCA15 (SN15)
[15] = Cam position SCA16 (SN16)
[16] = Cam position SCA17 (SN17)
[17] = Cam position SCA18 (SN18)
[18] = Cam position SCA19 (SN19)
[19] = Cam position SCA20 (SN20)
[20] = Cam position SCA21 (SN21)
[21] = Cam position SCA22 (SN22)
[22] = Cam position SCA23 (SN23)
[23] = Cam position SCA24 (SN24)
[24] = Cam position SCA25 (SN25)
[25] = Cam position SCA26 (SN26)
[26] = Cam position SCA27 (SN27)
[27] = Cam position SCA28 (SN28)
[28] = Cam position SCA29 (SN29)
[29] = Cam position SCA30 (SN30)

Dependency: Refer to: p9501, p9503, p9537

Note: SCA: Safe Cam / SN: Safe software cam

p9536[0...29]	SI Motion SCA (SN) plus cam position (Control Unit) / SI Mtn SCA+		
SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)	**Can be changed:** C2(95)	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-2147000.000 [°]	2147000.000 [°]	10.000 [°]

Description: Sets the plus cam position for the function "Safe Cam" (SCA).

Index:
[0] = Cam position SCA1 (SN1)
[1] = Cam position SCA2 (SN2)
[2] = Cam position SCA3 (SN3)
[3] = Cam position SCA4 (SN4)
[4] = Cam position SCA5 (SN5)
[5] = Cam position SCA6 (SN6)
[6] = Cam position SCA7 (SN7)
[7] = Cam position SCA8 (SN8)
[8] = Cam position SCA9 (SN9)
[9] = Cam position SCA10 (SN10)

[10] = Cam position SCA11 (SN11)
[11] = Cam position SCA12 (SN12)
[12] = Cam position SCA13 (SN13)
[13] = Cam position SCA14 (SN14)
[14] = Cam position SCA15 (SN15)
[15] = Cam position SCA16 (SN16)
[16] = Cam position SCA17 (SN17)
[17] = Cam position SCA18 (SN18)
[18] = Cam position SCA19 (SN19)
[19] = Cam position SCA20 (SN20)
[20] = Cam position SCA21 (SN21)
[21] = Cam position SCA22 (SN22)
[22] = Cam position SCA23 (SN23)
[23] = Cam position SCA24 (SN24)
[24] = Cam position SCA25 (SN25)
[25] = Cam position SCA26 (SN26)
[26] = Cam position SCA27 (SN27)
[27] = Cam position SCA28 (SN28)
[28] = Cam position SCA29 (SN29)
[29] = Cam position SCA30 (SN30)

Dependency: Refer to: p9501, p9503, p9537

Note: SCA: Safe Cam / SN: Safe software cam

p9537[0...29] SI Motion SCA (SN) minus cam position (Control Unit) / SI Mtn SCA-

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-2147000.000 [mm]	2147000.000 [mm]	-10.000 [mm]

Description: Sets the minus cam position for the function "Safe Cam" (SCA).

Index:
[0] = Cam position SCA1 (SN1)
[1] = Cam position SCA2 (SN2)
[2] = Cam position SCA3 (SN3)
[3] = Cam position SCA4 (SN4)
[4] = Cam position SCA5 (SN5)
[5] = Cam position SCA6 (SN6)
[6] = Cam position SCA7 (SN7)
[7] = Cam position SCA8 (SN8)
[8] = Cam position SCA9 (SN9)
[9] = Cam position SCA10 (SN10)
[10] = Cam position SCA11 (SN11)
[11] = Cam position SCA12 (SN12)
[12] = Cam position SCA13 (SN13)
[13] = Cam position SCA14 (SN14)
[14] = Cam position SCA15 (SN15)
[15] = Cam position SCA16 (SN16)
[16] = Cam position SCA17 (SN17)
[17] = Cam position SCA18 (SN18)
[18] = Cam position SCA19 (SN19)
[19] = Cam position SCA20 (SN20)
[20] = Cam position SCA21 (SN21)
[21] = Cam position SCA22 (SN22)
[22] = Cam position SCA23 (SN23)
[23] = Cam position SCA24 (SN24)
[24] = Cam position SCA25 (SN25)
[25] = Cam position SCA26 (SN26)
[26] = Cam position SCA27 (SN27)
[27] = Cam position SCA28 (SN28)
[28] = Cam position SCA29 (SN29)
[29] = Cam position SCA30 (SN30)

Dependency: Refer to: p9501, p9503, p9536

Note: SCA: Safe Cam / SN: Safe software cam

p9537[0...29] SI Motion SCA (SN) minus cam position (Control Unit) / SI Mtn SCA-

SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-2147000.000 [°]	2147000.000 [°]	-10.000 [°]

Description: Sets the minus cam position for the function "Safe Cam" (SCA).

Index:
[0] = Cam position SCA1 (SN1)
[1] = Cam position SCA2 (SN2)
[2] = Cam position SCA3 (SN3)
[3] = Cam position SCA4 (SN4)
[4] = Cam position SCA5 (SN5)
[5] = Cam position SCA6 (SN6)
[6] = Cam position SCA7 (SN7)
[7] = Cam position SCA8 (SN8)
[8] = Cam position SCA9 (SN9)
[9] = Cam position SCA10 (SN10)
[10] = Cam position SCA11 (SN11)
[11] = Cam position SCA12 (SN12)
[12] = Cam position SCA13 (SN13)
[13] = Cam position SCA14 (SN14)
[14] = Cam position SCA15 (SN15)
[15] = Cam position SCA16 (SN16)
[16] = Cam position SCA17 (SN17)
[17] = Cam position SCA18 (SN18)
[18] = Cam position SCA19 (SN19)
[19] = Cam position SCA20 (SN20)
[20] = Cam position SCA21 (SN21)
[21] = Cam position SCA22 (SN22)
[22] = Cam position SCA23 (SN23)
[23] = Cam position SCA24 (SN24)
[24] = Cam position SCA25 (SN25)
[25] = Cam position SCA26 (SN26)
[26] = Cam position SCA27 (SN27)
[27] = Cam position SCA28 (SN28)
[28] = Cam position SCA29 (SN29)
[29] = Cam position SCA30 (SN30)

Dependency: Refer to: p9501, p9503, p9536

Note: SCA: Safe Cam / SN: Safe software cam

p9538[0...29] SI Motion SCA (SN) cam track assignment (Control Unit) / SI Mtn SCA assign.

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95), U, T	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
100	414	[0] 100 [1] 101 [2] 102 [3] 103 [4] 104 [5] 105 [6] 106 [7] 107 [8] 108 [9] 109 [10] 110 [11] 111 [12] 112 [13] 113 [14] 114 [15] 200 [16] 201 [17] 202 [18] 203 [19] 204 [20] 205 [21] 206 [22] 207 [23] 208 [24] 209 [25] 210 [26] 211 [27] 212 [28] 213 [29] 214

Description: Assigns the individual cams to the maximum of 4 cam tracks and defines the numerical value for the SGA "cam range".

p9538[0...29] = CBA dec

C = Assignment of the cam to the cam track.

Valid values are 1, 2, 3, 4.

BA = Numerical value for the SGA "cam range".

If the position lies in the range of this cam, the value BA is signaled to the safety-relevant logic via the SGA "cam range" of the cam track set using C.

Valid values are 0 ... 14. Each numerical value may only be used once for each cam track.

Examples:

p9538[0] = 207

Cam 1 (index 0) is assigned cam track 2. If the position lies within the range of this cam, a value of 7 is entered in the SGA "cam range" of the second cam track.

p9538[5] = 100

Cam 6 (index 5) is assigned cam track 1. If the position lies within the range of this cam, a value of 0 is entered in the SGA "cam range" of the first cam track.

Index: [0] = Track assignment SCA1
[1] = Track assignment SCA2
[2] = Track assignment SCA3
[3] = Track assignment SCA4
[4] = Track assignment SCA5
[5] = Track assignment SCA6
[6] = Track assignment SCA7
[7] = Track assignment SCA8
[8] = Track assignment SCA9
[9] = Track assignment SCA10
[10] = Track assignment SCA11
[11] = Track assignment SCA12
[12] = Track assignment SCA13
[13] = Track assignment SCA14
[14] = Track assignment SCA15
[15] = Track assignment SCA16
[16] = Track assignment SCA17
[17] = Track assignment SCA18
[18] = Track assignment SCA19
[19] = Track assignment SCA20
[20] = Track assignment SCA21
[21] = Track assignment SCA22
[22] = Track assignment SCA23
[23] = Track assignment SCA24
[24] = Track assignment SCA25
[25] = Track assignment SCA26
[26] = Track assignment SCA27
[27] = Track assignment SCA28
[28] = Track assignment SCA29
[29] = Track assignment SCA30

Dependency: Refer to: p9501, p9503

Refer to: F01681

Note: A change only becomes effective after a POWER ON.

SCA: Safe Cam / SN: Safe software cam

p9539[0...7] SI Motion gearbox direction of rotation reversal (Control Unit) / SI Mtn grbx rev CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the direction of rotation reversal for the gearbox.

0: No direction of rotation reversal

1: Direction of rotation reversal

The active gearbox stage can be switched over via PROFIsafe.

Index: [0] = Gearbox 1
[1] = Gearbox 2
[2] = Gearbox 3
[3] = Gearbox 4
[4] = Gearbox 5
[5] = Gearbox 6
[6] = Gearbox 7
[7] = Gearbox 8

Dependency: Refer to: p9521

p9540 SI Motion SCA (SN) tolerance (Control Unit) / SI Mtn SCA tol CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0010 [mm]	10.0000 [mm]	0.1000 [mm]

Description: Sets the tolerance for the function "Safe Cam" (SCA).

Within this tolerance, both monitoring channels may signal different signal states of the same safe cam.

p9540 SI Motion SCA (SN) tolerance (Control Unit) / SI Mtn SCA tol CU

SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0010 [°]	10.0000 [°]	0.1000 [°]

Description: Sets the tolerance for the function "Safe Cam" (SCA).

Within this tolerance, both monitoring channels may signal different signal states of the same safe cam.

p9541 SI Motion encoder comparison algorithm (CU) / Enc comp algo

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	255

Description: Sets the comparison algorithm for the encoder position monitoring functions.

The encoder that is used for the safe motion monitoring functions on the Control Unit must be parameterized in this parameter.

Value:
0: Reserved
10: Reserved
11: DQL linear non-binary safety algorithm
12: SMC30 safety algorithm
255: Safety algorithm unknown

Dependency: Refer to: p0417, p9341

Note: For safety functions that are not enabled (p9501 = 0), the following applies:

- p9541 is automatically set the same as r0417 when the system boots.

For safety functions that are enabled (p9501 > 0), the following applies:

- p9541 is checked to see that it matches r0417.

p9542 SI Motion act val comparison tol (cross-check) (Control Unit) / SI Mtn act tol CU

HLA

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0010 [mm]	360.0000 [mm]	0.1000 [mm]

Description: Sets the tolerance for the data cross-check of the actual position between the two monitoring channels.

Dependency: Refer to: C01711

Note: For a linear axis, the tolerance is internally limited to 10 mm.

p9542 SI Motion act val comparison tol (cross-check) (Control Unit) / SI Mtn act tol CU

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0010 [mm]	360.0000 [mm]	0.1000 [mm]

Description: Sets the tolerance for the data cross-check of the actual position between the two monitoring channels.

For encoderless motion monitoring functions, the tolerance must be set to a higher value (12 degrees rotary, 1 mm linear).

Dependency: Refer to: C01711

Note: For a linear axis, the tolerance is internally limited to 10 mm.

For a "linear axis with rotating motor" and factory setting of p9520, p9521 and p9522, the factory setting of p9542 corresponds to a position tolerance of 36 ° on the motor side.

p9542 SI Motion act val comparison tol (cross-check) (Control Unit) / SI Mtn act tol CU

SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0010 [°]	360.0000 [°]	0.1000 [°]

Description: Sets the tolerance for the data cross-check of the actual position between the two monitoring channels.

For encoderless motion monitoring functions, the tolerance must be set to a higher value (12 degrees rotary, 1 mm linear).

Dependency: Refer to: C01711

p9543 SI Motion gearbox switching position tolerance factor (CU) / SI Mtn grbx tol CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	1000	1

Description: Sets the factor to increase the tolerance for the data cross-check of the actual position between the two monitoring channels while the gearbox stage is being switched over.

This factor is effective when actual value synchronization is activated and when deactivated.

Depending on the following tolerance, the following is obtained:

- actual value synchronization activated: p9549 * p9543
- actual value synchronization deactivated: p9542 * p9543

p9544 SI Motion actual value comparison tolerance (referencing) (CU) / SI Mtn ref tol

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0000 [mm]	36.0000 [mm]	0.0100 [mm]

Description: Sets the tolerance for checking the actual values.

For an incremental encoder, the actual values are checked after referencing; for an absolute encoder, when switching on.

Dependency: Refer to: C01711

Note: For linear axes, the maximum value is limited to 1 mm.

p9544 SI Motion actual value comparison tolerance (referencing) (CU) / SI Mtn ref tol

SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0000 [°]	36.0000 [°]	0.0100 [°]

Description: Sets the tolerance for checking the actual values.

For an incremental encoder, the actual values are checked after referencing; for an absolute encoder, when switching on.

Dependency: Refer to: C01711

Note: For linear axes, the maximum value is limited to 1 mm.

p9545 SI Motion SSM (SGA n < nx) filter time (Control Unit) / SI Mtn SSM filt CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2823
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	500.00 [ms]	0.00 [ms]

Description: Sets the filter time for the SSM feedback signal to detect standstill (n < nx).

Note: The filter time is effective only if the function is enabled (p9501.16 = 1).

The parameter is included in the data cross-check of the two monitoring channels.

The set time is rounded internally to an integer multiple of the monitoring clock cycle.

SSM: Safe Speed Monitor (safety-relevant feedback signal from the speed monitoring)

p9546 SI Motion SSM (SGA n < nx) speed limit (CU) / SI Mtn SSM v_limCU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2823
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [mm/min]	1000000.00 [mm/min]	20.00 [mm/min]

Description: Sets the velocity limit for the SSM feedback signal to detect standstill (n < nx).

When this limit value is undershot, the signal "SSM feedback signal active" (SGA n < n_x) is set.

For p9568 = 0, the value in p9546 is also applicable for SAM/SBR.

Caution: The following applies for p9506 = 3:

The "SAM/SBR" function is deactivated if the selected threshold value is undershot.

Note: F-DO: Failsafe Digital Output / SGA: Safety-related output

SAM: Safe Acceleration Monitor (safe acceleration monitoring)

SBR: Safe Brake Ramp (safe brake ramp monitoring)

SSM: Safe Speed Monitor (safety-related feedback signal from the speed monitoring) / SGA n < nx: Safety-related output n < nx

p9546 SI Motion SSM (SGA n < nx) speed limit (CU) / SI Mtn SSM v_limCU

SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2823
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	1000000.00 [rpm]	20.00 [rpm]

Description: Sets the velocity limit for the SSM feedback signal to detect standstill (n < nx).

When this limit value is undershot, the signal "SSM feedback signal active" (SGA n < n_x) is set.

For p9568 = 0, the value in p9546 is also applicable for SAM/SBR.

Caution: The following applies for p9506 = 3:

The "SAM/SBR" function is deactivated if the selected threshold value is undershot.

Note: F-DO: Failsafe Digital Output / SGA: Safety-related output

SAM: Safe Acceleration Monitor (safe acceleration monitoring)

SBR: Safe Brake Ramp (safe brake ramp monitoring)

SSM: Safe Speed Monitor (safety-related feedback signal from the speed monitoring) / SGA n < nx: Safety-related output n < nx

p9547 SI Motion SSM (SGA n < nx) velocity hysteresis (CU) / SI Mtn SSM hyst CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2823
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0010 [mm/min]	500.0000 [mm/min]	10.0000 [mm/min]

Description: Sets the velocity hysteresis for the SSM feedback signal to detect standstill (n < nx).

Dependency: Refer to: C01711

Note: The velocity hysteresis is effective only if the function is enabled (p9501.16 = 1).

The parameter is included in the data cross-check of the two monitoring channels.

SSM: Safe Speed Monitor (safety-relevant feedback signal from the speed monitoring)

p9547 SI Motion SSM (SGA n < nx) velocity hysteresis (CU) / SI Mtn SSM hyst CU

SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2823
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.0010 [rpm]	500.0000 [rpm]	10.0000 [rpm]

Description: Sets the velocity hysteresis for the SSM feedback signal to detect standstill (n < nx).

Dependency: Refer to: C01711

Note: The velocity hysteresis is effective only if the function is enabled (p9501.16 = 1).

The parameter is included in the data cross-check of the two monitoring channels.

SSM: Safe Speed Monitor (safety-relevant feedback signal from the speed monitoring)

p9548 SI Motion SAM actual speed tolerance (Control Unit) / SI Mtn SAM tol CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [mm/min]	120000.00 [mm/min]	300.00 [mm/min]

Description: Sets the velocity tolerance for the "SAM" function.

Dependency: Refer to: C01706

Note: SAM: Safe Acceleration Monitor (safe acceleration monitoring)

p9548 SI Motion SAM actual speed tolerance (Control Unit) / SI Mtn SAM tol CU

SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	120000.00 [rpm]	300.00 [rpm]

Description: Sets the velocity tolerance for the "SAM" function.

Dependency: Refer to: C01706

Note: SAM: Safe Acceleration Monitor (safe acceleration monitoring)

p9549 SI Motion slip velocity tolerance (Control Unit) / SI Mtn slip tol

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [mm/min]	6000.00 [mm/min]	6.00 [mm/min]

Description: Sets the velocity tolerance that is used for a 2-encoder system in cross-check between the two monitoring channels.

Dependency: Refer to: p9501, p9542

Note: If the "actual value synchronization" is not enabled (p9501.3 = 0), then the value parameterized in p9542 is used as tolerance in the data cross-check.

p9549 SI Motion slip velocity tolerance (Control Unit) / SI Mtn slip tol

SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	6000.00 [rpm]	6.00 [rpm]

Description: Sets the velocity tolerance that is used for a 2-encoder system in cross-check between the two monitoring channels.

Dependency: Refer to: p9501, p9542

Note: If the "actual value synchronization" is not enabled (p9501.3 = 0), then the value parameterized in p9542 is used as tolerance in the data cross-check.

p9550 SI Motion SGE changeover tolerance time (Control Unit) / SI Mtn SGE chg tol

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95), U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	10000.00 [ms]	500.00 [ms]

Description: Sets the tolerance time for the changeover of the safety-related inputs (SGE).

Note: The set time is rounded internally to an integer multiple of the monitoring clock cycle.

p9551 SI Motion SLS(SG) changeover/SOS (SBH) delay time (CU) / SI SLS/SOS t CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2819, 2820
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	600000.00 [ms]	100.00 [ms]

Description: Sets the delay time for the SLS changeover and for the activation of SOS for the functions "Safely-Limited Speed" (SLS) and "Safe Operating Stop" (SOS).

When transitioning from a higher to a lower Safely-Limited Speed level, and when activating Safe Operating Stop (SOS), within this delay time, the "old" speed level remains active.

This delay is also applicable when activating SLS from the state "SOS and SLS inactive" and activating SOS from the state "SOS inactive".

Note: The set time is rounded internally to an integer multiple of the monitoring clock cycle.

SLS: Safely-Limited Speed / SG: Safely reduced speed

SOS: Safe Operating Stop / SBH: Safe operating stop

p9552 SI Motion transition time STOP C to SOS (SBH) (Control Unit) / SI Mtn t C->SOS CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2819
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	600000.00 [ms]	100.00 [ms]

Description: Sets the transition time from STOP C to "Safe Operating Stop" (SOS).

Note: The set time is rounded internally to an integer multiple of the monitoring clock cycle.

SOS: Safe Operating Stop / SBH: Safe operating stop

p9553 SI Motion transition time STOP D to SOS (SBH) (Control Unit) / SI Mtn t D->SOS CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2819
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	600000.00 [ms]	100.00 [ms]

Description: Sets the transition time from STOP D to "Safe Operating Stop" (SOS).

Note: The set time is rounded internally to an integer multiple of the monitoring clock cycle.

SOS: Safe Operating Stop / SBH: Safe operating stop

p9554 SI Motion transition time STOP E to SOS (SBH) (Control Unit) / SI Mtn t E->SOS CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	600000.00 [ms]	100.00 [ms]

Description: Sets the transition time from STOP E to "Safe Operating Stop" (SOS).

Dependency: Refer to: p9354

Note: The set time is rounded internally to an integer multiple of the monitoring clock cycle.

SOS: Safe Operating Stop / SBH: Safe operating stop

p9555 SI Motion transition time STOP F to STOP B (Control Unit) / SI Mtn t F->B CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2819
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	600000.00 [ms]	0.00 [ms]

Description: Sets the transition time from STOP F to STOP B.

Dependency: Refer to: C01711

Note: The set time is rounded internally to an integer multiple of the monitoring clock cycle.

p9556 SI Motion STOP A delay time (Control Unit) / SI Mtn IL t_del CU

HLA

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2819
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	3600000.00 [ms]	100.00 [ms]

Description: Sets the delay time for STOP A after STOP B.

Dependency: Refer to: p9560

Refer to: C01701

Note: The set time is rounded internally to an integer multiple of the monitoring clock cycle.

p9556 SI Motion STOP A delay time (Control Unit) / SI Mtn IL t_del CU

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2819
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	3600000.00 [ms]	100.00 [ms]

Description: Sets the delay time for STOP A after STOP B.

In the case of encoderless motion monitoring functions with safe brake ramp monitoring (p9506 = 1) and the OFF3 ramp enabled at the same time (p9507.3 = 0), the parameter has no effect.

Dependency: Refer to: p9560

Refer to: C01701

Note: The set time is rounded internally to an integer multiple of the monitoring clock cycle.

p9557 SI Motion STO test time (Control Unit) / SI Mtn STO t_test

HLA

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	10000.00 [ms]	500.00 [ms]

Description: Sets the time after which STO must be active when initiating the test stop.

Dependency: Refer to: C01798

Note: The set time is rounded internally to an integer multiple of the monitoring clock cycle.

STO: Safe Torque Off

p9557 SI Motion STO test time (Control Unit) / SI Mtn STO t_test

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	10000.00 [ms]	100.00 [ms]

Description: Sets the time after which STO must be active when initiating the test stop.

Dependency: Refer to: C01798

Note: The set time is rounded internally to an integer multiple of the monitoring clock cycle.

STO: Safe Torque Off

p9558 SI Motion acceptance test mode time limit (Control Unit) / SI Mtn acc t CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
5000.00 [ms]	100000.00 [ms]	40000.00 [ms]

Description: Sets the maximum time for the acceptance test mode.

If the acceptance test mode takes longer than the selected time limit, then the mode is automatically terminated.

Dependency: Refer to: C01799

Note: The set time is rounded internally to an integer multiple of the monitoring clock cycle.

p9559 SI Motion forced checking procedure timer (Control Unit) / SI Mtn dyn timer

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [h]	9000.00 [h]	8.00 [h]

Description: Sets the time interval for carrying out the forced checking procedure and testing the safety motion monitoring functions integrated in the drives.

Within the parameterized time, the safety functions must have been tested at least once (including de-selection of the "STO" function).

This monitoring time is reset each time the test is carried out.

The signal source to initiate the forced checking procedure is set in p9705.

Dependency: Refer to: p9705

Refer to: A01697, C01798

Note: STO: Safe Torque Off

p9560 SI Motion STO shutdown velocity (Control Unit) / SI Mtn IL v_shutCU

HLA

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [mm/min]	6000.00 [mm/min]	0.00 [mm/min]

Description: Sets the shutdown velocity for activating STO.

Below this velocity "standstill" is assumed and for STOP B / SS1, STO is selected.

Dependency: Refer to: p9556

Note: The shutdown velocity has no effect for a value = 0.

SS1: Safe Stop 1

STO: Safe Torque Off

p9560 SI Motion STO shutdown velocity (Control Unit) / SI Mtn IL v_shutCU

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [mm/min]	6000.00 [mm/min]	0.00 [mm/min]

Description: Sets the shutdown velocity for activating STO.

Below this velocity "standstill" is assumed and for STOP B / SS1, STO is selected.

In the case of encoderless motion monitoring functions, the parameter must be > 0 (recommended value: 10).

Dependency: Refer to: p9556

Note: The shutdown velocity has no effect for a value = 0.

SS1: Safe Stop 1

STO: Safe Torque Off

p9560 SI Motion pulse suppression shutdown speed (Control Unit) / SI Mtn IL n_shutCU

SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	6000.00 [rpm]	0.00 [rpm]

Description: Sets the shutdown speed for the pulse suppression.

Below this speed "standstill" is assumed and for STOP B / SS1, the pulses are suppressed (by changing to STOP A).

Dependency: Refer to: p9556

Note: The shutdown speed has no effect for a value = 0.

SS1: Safe Stop 1

p9561 SI Motion SLS (SG) stop response (Control Unit) / SI Mtn SLS resp

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95), U, T	**Calculated:** -	**Access level:** 4
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	14	5

Description: Sets the stop response for the function "Safely-Limited Speed" (SLS).

This setting applies for all SLS limit values.

An input value of less than 5 signifies personnel protection, from 10 and upwards, machine protection.

This parameter can only be used for SINUMERIK Safety Integrated.

For motion monitoring functions integrated in the drive, only a value of 5 is permissible. Other settings result in the safety message C01711/C30711 with message value 44.

Value:
0: STOP A
1: STOP B
2: STOP C
3: STOP D
4: STOP E
5: Sets the stop response via p9563 (SLS-specific)
10: STOP A with delayed STO when the bus fails
11: STOP B with delayed STO when the bus fails
12: STOP C with delayed STO when the bus fails
13: STOP D with delayed STO when the bus fails
14: STOP E with delayed STO when the bus fails

Dependency: Refer to: p9531, p9563, p9580

Note: SLS: Safely-Limited Speed / SG: Safely reduced speed

p9562[0...1] SI Motion SLP (SE) stop response (Control Unit) / SI Mtn SLP Stop CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	14	2

Description: Sets the stop response for the function "Safely-Limited Position" (SLP).

Value:
0: STOP A
1: STOP B
2: STOP C
3: STOP D
4: STOP E
10: STOP A with delayed stop response when the bus fails
11: STOP B with delayed stop response when the bus fails
12: STOP C with delayed stop response when the bus fails
13: STOP D with delayed stop response when the bus fails
14: STOP E with delayed stop response when the bus fails

Index:
[0] = Limit value SLP1 (SE1)
[1] = Limit value SLP2 (SE2)

Dependency: Refer to: p9534, p9535

Note: In the extended sense, a bus failure should be seen here as a communication error in the control signals of the safety functions (e.g. via PROFIsafe or TM54F).

SLP: Safely-Limited Position / SE: Safe software limit switches

p9563[0...3] SI Motion SLS (SG)-specific stop response (Control Unit) / SI Mtn SLS stop CU

HLA

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	14	2

Description: Sets the SLS-specific stop response for the function "Safely-Limited Speed" (SLS).

These settings apply to the individual limit values for SLS.

An input value of less than 5 signifies personnel protection, from 10 and upwards, machine protection.

Value:
0: STOP A
1: STOP B
2: STOP C
3: STOP D
4: STOP E
10: STOP A with delayed stop response when the bus fails
11: STOP B with delayed stop response when the bus fails
12: STOP C with delayed stop response when the bus fails
13: STOP D with delayed stop response when the bus fails
14: STOP E with delayed stop response when the bus fails

Index:
[0] = Limit value SLS1
[1] = Limit value SLS2
[2] = Limit value SLS3
[3] = Limit value SLS4

Dependency: Refer to: p9531, p9561, p9580

Note: In the extended sense, a bus failure should be seen here as a communication error in the control signals of the safety functions (e.g. via PROFIsafe or TM54F).

SLS: Safely-Limited Speed / SG: Safely reduced speed

p9563[0...3] SI Motion SLS (SG)-specific stop response (Control Unit) / SI Mtn SLS stop CU

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	14	2

Description: Sets the SLS-specific stop response for the function "Safely-Limited Speed" (SLS).

These settings apply to the individual limit values for SLS.

An input value of less than 5 signifies personnel protection, from 10 and upwards, machine protection.

Value:
0: STOP A
1: STOP B
2: STOP C
3: STOP D
4: STOP E
10: STOP A with delayed stop response when the bus fails
11: STOP B with delayed stop response when the bus fails
12: STOP C with delayed stop response when the bus fails
13: STOP D with delayed stop response when the bus fails
14: STOP E with delayed stop response when the bus fails

Index:
[0] = Limit value SLS1
[1] = Limit value SLS2
[2] = Limit value SLS3
[3] = Limit value SLS4

Dependency: Refer to: p9531, p9561, p9580

Notice: In the case of encoderless motion monitoring (p9506/p9306 = 1, 3), only a value of 0 or 1 is permitted.

Note: In the extended sense, a bus failure should be seen here as a communication error in the control signals of the safety functions (e.g. via PROFIsafe or TM54F).

SLS: Safely-Limited Speed / SG: Safely reduced speed

p9564 SI Motion SDI tolerance (Control Unit) / SI Mtn SDI tol CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2824
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.001 [mm]	360.000 [mm]	12.000 [mm]

Description: Sets the tolerance for the function "Safe motion direction" (SDI).

This motion in the monitored direction is still permissible before safety message C01716 is initiated.

Dependency: Refer to: p9565, p9566

Refer to: C01716

Note: SDI: Safe Direction (safe motion direction)

p9564 SI Motion SDI tolerance (Control Unit) / SI Mtn SDI tol CU

SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2824
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.001 [°]	360.000 [°]	12.000 [°]

Description: Sets the tolerance for the function "Safe motion direction" (SDI).

This motion in the monitored direction is still permissible before safety message C01716 is initiated.

Dependency: Refer to: p9565, p9566

Refer to: C01716

Note: SDI: Safe Direction (safe motion direction)

p9565 SI Motion SDI delay time (Control Unit) / SI Mtn SDI t CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2824
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	600000.00 [ms]	100.00 [ms]

Description: Sets the delay time for the function "Safe motion direction" (SDI).

After selecting the SDI function, then for a maximum of this time, motion in the monitored direction is permissible. This time can therefore be used for braking any motion.

Dependency: Refer to: p9564, p9566

Refer to: C01716

Note: The set time is rounded internally to an integer multiple of the monitoring clock cycle.

SDI: Safe Direction (safe motion direction)

p9566 SI Motion SDI stop response (Control Unit) / SI Mtn SDI Stop CU

HLA

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 2824
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	14	1

Description: Sets the stop response for the function "Safe motion direction" (SDI).

This setting applies to both directions of motion.

Value:
0: STOP A
1: STOP B
2: STOP C
3: STOP D
4: STOP E
10: STOP A with delayed stop response when the bus fails
11: STOP B with delayed stop response when the bus fails
12: STOP C with delayed stop response when the bus fails
13: STOP D with delayed stop response when the bus fails
14: STOP E with delayed stop response when the bus fails

Dependency: Refer to: p9564, p9565

Refer to: C01716

Note: In the extended sense, a bus failure should be seen here as a communication error in the control signals of the safety functions (e.g. via PROFIsafe or TM54F).

SDI: Safe Direction (safe motion direction)

p9566 SI Motion SDI stop response (Control Unit) / SI Mtn SDI Stop CU

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 2824
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	14	1

Description: Sets the stop response for the function "Safe motion direction" (SDI).

This setting applies to both directions of motion.

Value:
0: STOP A
1: STOP B
2: STOP C
3: STOP D
4: STOP E
10: STOP A with delayed stop response when the bus fails
11: STOP B with delayed stop response when the bus fails
12: STOP C with delayed stop response when the bus fails
13: STOP D with delayed stop response when the bus fails
14: STOP E with delayed stop response when the bus fails

Dependency: Refer to: p9564, p9565

Refer to: C01716

Notice: In the case of encoderless motion monitoring (p9506 = 1), only a value of 0 or 1 is permitted.

Note: In the extended sense, a bus failure should be seen here as a communication error in the control signals of the safety functions (e.g. via PROFIsafe or TM54F).

SDI: Safe Direction (safe motion direction)

p9567 SI Motion switchover velocity to SOS/SLS level (CU) / SI Mtn v_SOS/SG CU

HLA

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [mm/min]	1000.00 [mm/min]	0.00 [mm/min]

Description: Sets the switchover velocity to SOS/SLS level.

Below this velocity limit, for a transition to SOS/SLS level, standstill (zero velocity) is assumed.

The transition times from STOP C, D, E and the delay time when selecting SOS are canceled if this velocity threshold is fallen below. The wait time from p9569 is started, and after it has expired, SOS is active.

The transition time from a higher to a lower safety-limited velocity level is canceled when this velocity level is fallen below. The wait time from p9569 is started, and after it has expired, the new SLS level becomes active.

For a STOP C, this switchover velocity is the only criterion for prematurely activating an SOS. In the other cases mentioned here, it must first have been signaled that the axis had correctly braked.

Dependency: Refer to: p9501, p9551, p9552, p9553, p9554

Note: With p9567 = 0, reducing the wait time for the transition to SOS/SLS level is deactivated.

SOS: Safe Operating Stop

SLS: Safely-Limited Speed

p9568 SI Motion SAM/SBR velocity limit (Control Unit) / SI Mtn SAM v_limCU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [mm/min]	1000.00 [mm/min]	0.00 [mm/min]

Description: Sets the velocity limit for the "SAM" and "SBR" functions.

If the drive is being ramped down, but accelerates by the tolerance in p9548/p9348, then the SAM function identifies this and a STOP A is initiated.

The monitoring operates as follows:

- monitoring by SAM is activated for SS1 (or STOP B) and SS2 (or STOP C).
- the SAM limit value is frozen after the velocity limit in p9568/p9368 is undershot.
- SAM monitoring is still executed until the transition time to SOS/STO has expired.

Note: SAM: Safe Acceleration Monitor (safe acceleration monitoring)

SBR: Safe Brake Ramp (safe brake ramp monitoring)

SSM: Safe Speed Monitor (safety-relevant feedback signal from the speed monitoring)

For p9568 = p9368 = 0, the following applies:

The value in p9546/p9346 (SSM) is applied as the velocity limit for SAM/SBR.

p9568 SI Motion SAM/SBR velocity limit (Control Unit) / SI Mtn SAM v_limCU

SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rpm]	1000.00 [rpm]	0.00 [rpm]

Description: Sets the velocity limit for the "SAM" and "SBR" functions.

If the drive is being ramped down, but accelerates by the tolerance in p9548/p9348, then the SAM function identifies this and a STOP A is initiated.

The monitoring operates as follows:

- monitoring by SAM is activated for SS1 (or STOP B) and SS2 (or STOP C).
- the SAM limit value is frozen after the velocity limit in p9568/p9368 is undershot.
- SAM monitoring is still executed until the transition time to SOS/STO has expired.

Note: SAM: Safe Acceleration Monitor (safe acceleration monitoring)

SBR: Safe Brake Ramp (safe brake ramp monitoring)

SSM: Safe Speed Monitor (safety-relevant feedback signal from the speed monitoring)

For p9568 = p9368 = 0, the following applies:

The value in p9546/p9346 (SSM) is applied as the velocity limit for SAM/SBR.

p9570 SI Motion acceptance test mode (Control Unit) / SI Mtn Acc_mode

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95), U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	00AC hex	0000 hex

Description: Setting to select and de-select the acceptance test mode.

Value:
0: [00 hex] De-select the acceptance test mode
172: [AC hex] Select the acceptance test mode

Dependency: Refer to: p9558, r9571, p9601

Refer to: C01799

Note: Acceptance test mode can only be selected if the safe motion monitoring functions are enabled.

r9571 SI Motion acceptance test status (Control Unit) / SI Mtn acc_status

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	00AC hex	-

Description: Displays the status of the acceptance test mode.

Value:
0: [00 hex] Acc_mode inactive
12: [0C hex] Acc_mode not possible due to POWER ON fault
13: [0D hex] Acc_mode not possible due to incorrect ID in p9570
15: [0F hex] Acc_mode not possible due to expired Acc_timer
172: [AC hex] Acc_mode active

Dependency: Refer to: p9558, p9570

Refer to: C01799

p9572	**SI Motion reference position (Control Unit) / SI mtn rel_pos**		
HLA	**Can be changed:** C2(95), U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-737280.000 [mm]	737280.000 [mm]	0.000 [mm]

Description: The reference position entered in this parameter, is used as safe absolute position when setting p9573.
If errors are identified when performing the plausibility checks, then message C01711 is output with message value 1003

p9572	**SI Motion reference position (Control Unit) / SI mtn rel_pos**		
SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC	**Can be changed:** C2(95), U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-737280.000 [mm]	737280.000 [mm]	0.000 [mm]

Description: The reference position entered in this parameter, is used as safe absolute position when setting p9573.
If errors are identified when performing the plausibility checks, then message C01711 is output with message value 1003

Note: The unit depends on the selected axis type, linear or rotary axis, in p9502

p9572	**SI Motion reference position (Control Unit) / SI mtn rel_pos**		
SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)	**Can be changed:** C2(95), U, T	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-737280.000 [°]	737280.000 [°]	0.000 [°]

Description: The reference position entered in this parameter, is used as safe absolute position when setting p9573.
If errors are identified when performing the plausibility checks, then message C01711 is output with message value 1003

Note: The unit depends on the selected axis type, linear or rotary axis, in p9502

p9573	**SI Motion accept reference position (Control Unit) / SI mtn ref_pos**		
SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC	**Can be changed:** C2(95), U, T	**Calculated:** -	**Access level:** 3
	Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	263	0

Description: The safe absolute position is rejected or newly set using this parameter.
If errors are identified when performing the plausibility checks, then message C01711 is output with message value 1003

Value:
0: No action
89: Set reference position at standstill
122: Declare reference position invalid
263: Referencing via SCC

Dependency: Refer to: p9572

Note: SCC: Safety Control Channel

p9574 SI Motion safe position scaling (Control Unit) / SI mtn SP scal CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	100000	1000

Description: Sets the scaling factor to transfer the safe position via PROFIsafe in the 16-bit notation.

Dependency: Refer to: r9713

Note: The parameter is only effective when PROFIsafe telegram 901 is selected.

By selecting a suitable scaling of the 32 bit position actual value (r9713[0]), it must be ensured that the scaled position actual value is not greater than 16 bit. The scaling is realized by dividing r9713[0] with this scaling factor.

If, during operation, a position actual value is determined, which cannot be scaled to the 16 bits, then message C0711 with value 7001 is output and safety stop response STOP F.

p9575 SI Motion acceptance test SLP (SE) (Control Unit) / SI Mtn accept SLP

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95), U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	00AC hex	0000 hex

Description: Setting to select and de-select the acceptance test for SLP (SE).

Value:
0: [00 hex] deselect acceptance test SLP (SE)
172: [AC hex] select acceptance test SLP (SE)

Dependency: Refer to: p9358, p9370, p9558, p9570, p9601

Note: Acceptance test SLP (SE) can only be selected, if the safe motion monitoring functions have been enabled, and the acceptance test mode was activated in p9570/p9370.

SLP: Safely-Limited Position / SE: Safe software limit switches

p9577 SI Motion SLP delay time (Control Unit) / SI Mtn SLP t CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	600000.00 [ms]	0.00 [ms]

Description: Sets the delay time:

- between selecting and activating the "Safely-Limited Position" (SLP) function.
- when switching over between active SLP ranges, if the new range is not completely contained in the old range.

Dependency: Refer to: p9501, p9534, p9535

Note: The set time is rounded internally to an integer multiple of the monitoring clock cycle.

SLP: Safely-Limited Position

p9578 SI Motion SLA acceleration limit (CU) / SI Mtn SLA lim_CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [m/s²]	1000.00 [m/s²]	1.00 [m/s²]

Description: Sets the acceleration limit for the "Safely-Limited Acceleration" function (SLA).

Dependency: Refer to: p9579

Refer to: C01717

Note: The set time is rounded internally to an integer multiple of the monitoring clock cycle.

SLA: Safely-Limited Acceleration

p9578 SI Motion SLA acceleration limit (CU) / SI Mtn SLA lim_CU

SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [rev/s²]	1000.00 [rev/s²]	1.00 [rev/s²]

Description: Sets the acceleration limit for the "Safely-Limited Acceleration" function (SLA).

Dependency: Refer to: p9579

Refer to: C01717

Note: The set time is rounded internally to an integer multiple of the monitoring clock cycle.

SLA: Safely-Limited Acceleration

p9579 SI Motion SLA stop response (Control Unit) / SI Mtn SLA stop CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	14	1

Description: Sets the stop response for the "Safely-Limited Acceleration" function (SLA).

Value:
0: STOP A
1: STOP B
2: STOP C
3: STOP D
4: STOP E
10: STOP A with delayed stop response when the bus fails
11: STOP B with delayed stop response when the bus fails
12: STOP C with delayed stop response when the bus fails
13: STOP D with delayed stop response when the bus fails
14: STOP E with delayed stop response when the bus fails

Dependency: Refer to: p9578

Refer to: C01717

Note: The set time is rounded internally to an integer multiple of the monitoring clock cycle.

SLA: Safely-Limited Acceleration

p9580 SI Motion stop response delay bus failure (Control Unit) / SI Mtn t to IL CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	800.00 [ms]	0.00 [ms]

Description: Sets the delay time, after which the stop response parameterized in p9612 for bus failure is executed.

Dependency: Refer to: p9561, p9563

Note: In the extended sense, a bus failure should be seen here as a communication error in the control signals of the safety functions (e.g. via PROFIsafe or TM54F).

The main use of the wait time is the function "Extended stopping and retraction" (ESR).

The set time is rounded internally to an integer multiple of the monitoring clock cycle.

p9581 SI Motion brake ramp reference value (Control Unit) / SI Mtn ramp ref CU

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
600.0000 [mm/min]	240000.0000 [mm/min]	1500.0000 [mm/min]

Description: Sets the reference value to define the brake ramp.

The rate of rise of the brake ramp depends upon p9581 (reference value) and p9583 (monitoring time).

Dependency: Refer to: p9582, p9583

p9581 SI Motion brake ramp reference value (Control Unit) / SI Mtn ramp ref CU

SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
600.0000 [rpm]	240000.0000 [rpm]	1500.0000 [rpm]

Description: Sets the reference value to define the brake ramp.

The rate of rise of the brake ramp depends upon p9581 (reference value) and p9583 (monitoring time).

Dependency: Refer to: p9582, p9583

p9582 SI Motion brake ramp delay time (Control Unit) / SI Mtn rp t_del CU

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
10.00 [ms]	99000.00 [ms]	250.00 [ms]

Description: Sets the delay time for monitoring the brake ramp.

Monitoring of the brake ramp starts once the delay time has elapsed.

Dependency: Refer to: p9581, p9583

Note: The set time is rounded internally to an integer multiple of the monitoring clock cycle.

Internally, the set time is limited downwards to 2 safety monitoring clock cycles (2 * p9500/p9300).

p9583 SI Motion brake ramp monitoring time (Control Unit) / SI Mtn rp t_mon CU

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.50 [s]	3600.00 [s]	10.00 [s]

Description: Sets the monitoring time to define the brake ramp.

The rate of rise of the brake ramp depends upon p9581 (reference value) and p9583 (monitoring time).

Dependency: Refer to: p9581, p9582

Note: The set time is rounded internally to an integer multiple of the monitoring clock cycle.

p9585 SI Motion actual value sensing sensorless fault tolerance (CU) / ActVal sl tol CU

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-1	4	-1

Description: Sets the tolerance of the plausibility monitoring of the current and voltage angle.

A higher value results in a higher degree of ruggedness when reversing at low speeds, as well as in the field weakening range for load steps.

An increase is advantageous, if the current or voltage at the motor become small.

Dependency: Refer to: r9787

Refer to: F01681, C01711

Notice: Reducing this value can have a negative impact on the actual value sensing and the plausibility check.

When the value is increased, this results in a longer evaluation delay and a higher velocity deviation (r9787).

Note: This parameter is only effective for encoderless actual value sensing (p9506/p9306 = 1, 3).

For synchronous motors, the value 4 must be set.

If value = -1:

- for synchronous motors, the calculation is automatically made with the value 4.

- for induction motors, the calculation is automatically made with a value of 0 (if the code number of the power unit p0201[0] < 14000, otherwise with a value of 2).

p9586 SI Motion actual value sensing sensorless delay time (CU) / ActVal sl t_del CU

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
5.00 [ms]	1000.00 [ms]	100.00 [ms]

Description: Sets the delay time to evaluate the encoderless actual value sensing after the pulses have been enabled.

The value must be greater than or equal to the motor magnetizing time (p0346).

Dependency: Refer to: C01711

Caution: The safety functionality is only completely guaranteed after this time has expired.

Notice: If this value is reduced, this can have a negative impact on the actual value acquisition and plausibility check – and result in Safety message C01711 with the message value 1041 or 1042.

Note: This parameter is only effective for encoderless actual value sensing (p9506/p9306 = 1, 3).

The set time is rounded internally to an integer multiple of the monitoring clock cycle.

p9587 SI Motion actual value sensing sensorless filter time (CU) / Actv sl t_filt CU

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	100.00 [ms]	25.00 [ms]

Description: Sets the filter time for smoothing the actual value with sensorless actual value sensing.

Notice: A longer filter time results in a longer response time.

Note: This parameter is only effective for encoderless actual value sensing (p9506/p9306 = 1, 3).

The smoothing is realized with a 1st order lowpass filter

For p9587 = minimum value, the filter is deactivated.

The set time is rounded internally to an integer multiple of the monitoring clock cycle.

p9588 SI Motion actual value sensing sensorless minimum current (CU) / ActVal sl I_min CU

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [%]	1000.00 [%]	10.00 [%]

Description: Sets the minimum current for encoderless actual value sensing referred to 1 A (i.e. 1 % = 10 mA).

- the value must be increased if C01711 has occurred with message value 1042.
- the value must be decreased if C01711 has occurred with message value 1041.

For synchronous motors, the following condition must be fulfilled:

|p0305 x p9783| >= p9588 x 1.2

Recommendation: If required, the correct value of the motor minimum current should be determined by making the appropriate measurements.

Dependency: Refer to: r9785

Refer to: C01711

Notice: If this percentage value is reduced excessively, then this can result in a safety message and an inaccurate actual value.

Note: This parameter is only effective for encoderless actual value sensing (p9506/p9306 = 1, 3).

p9589 SI Motion act. value sensing sensorless acceleration limit (CU) / ActVal sl a_lim CU

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
10.00 [%]	3300.00 [%]	100.00 [%]

Description: Sets the acceleration limit to filter velocity fluctuations.

If this percentage value is increased, when accelerating, velocity peaks that do not reflect the real velocity characteristic can occur.

If this value is decreased, and this dampens the velocity peaks when accelerating.

- the value must be increased if C01711 with message value 1043 has occurred.
- the value must be lowered if acceleration procedures have led to an excessive Safety actual velocity.

Recommendation: The setting of this parameter depends on the motor and closed-loop control, and must be newly determined for each configuration.

To do this, a measurement should be performed while the actual value jumps, and the limit in r9785[0] must be set so low using p9589, so that it is exceeded by the value in r9785[1] a maximum of four times per second. The actual value correction filter intervenes at this instant in time. The step is no longer so drastic.

Dependency: Refer to: r9784

Refer to: C01711

Note: This parameter is only effective for encoderless actual value sensing (p9506/p9306 = 1, 3).

For p9589 = maximum value, the filter is deactivated.

Diagnostics parameter p9784 must be used to correctly set this parameter.

r9590[0...3] SI Motion version safety motion monitoring (Control Unit) / SI Mtn version CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the Safety Integrated version for the safe monitoring functions.

Index:
[0] = Safety Version (major release)
[1] = Safety Version (minor release)
[2] = Safety Version (baselevel or patch)
[3] = Safety Version (hotfix)

Dependency: Refer to: r9770, r9870, r9890

Note: Example:

r9590[0] = 2, r9590[1] = 60, r9590[2] = 1, r9590[3] = 0 --> SI Motion version V02.60.01.00

p9601 SI enable functions integrated in the drive (Control Unit) / SI enable fct CU

HLA

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 bin

Description: Sets the enable signals for the safety functions integrated in the drive and the type of selection on the Control Unit.

The following settings are permitted:

0000 hex:

Safety functions integrated in the drive inhibited (no safety function).

0001 hex:

Basic functions are enabled via onboard terminals (permissible for r9771.0 = 1).

0004 hex:

Extended functions via Terminal Module 54F (TM54F) have been enabled (permissible for r9771.5 = 1).

0005 hex:

Extended functions via Terminal Module 54F (TM54F) and the basic functions via onboard terminals have been enabled (permissible for r9771.5 = 1).

0008 hex:

Basic functions are enabled via PROFIsafe (permissible for r9771.6 = 1).

0009 hex:

Basic functions are enabled via PROFIsafe onboard terminals (permissible for r9771.6 = 1).

000C hex:

Extended functions are enabled via PROFIsafe (permissible for r9771.4 = 1).

000D hex:

Extended functions are enabled via PROFIsafe and basic functions via onboard terminals (permissible for r9771.4 = 1).

0024 hex:

Extended functions without selection are enabled (permissible for r9771.16 = 1).

0025 hex:

Extended functions without selection and basic functions via onboard terminals are enabled (permissible for r9771.16 = 1).

0040 hex:

Basic functions are enabled via TM54F

0041 hex:

Basic functions are enabled via TM54F and onboard terminals.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	STO (SH) via terminals (CU) enable	Enable	Inhibit	2810
02	Enable motion monitoring functions integrated in drive (CU)	Enable	Inhibit	-
03	Enable PROFIsafe (CU)	Enable	Inhibit	-
05	Enab motion monit functions integr in drive w/out selection (CU)	Enable	Inhibit	-
06	Basic functions via TM54F	Enable	Inhibit	-

Dependency: Refer to: r9771, p9801

Note: A change always becomes effective only after a POWER ON. Exception: Changes to p9601.0 become effective immediately.

CU: Control Unit

STO: Safe Torque Off / SH: Safe standstill

SS1: Safe Stop 1 (corresponds to Stop Category 1 acc. to EN60204)

SI: Safety Integrated

SMM: Safe Motion Monitoring

p9601 SI enable functions integrated in the drive (Control Unit) / SI enable fct CU

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 bin

Description: Sets the enable signals for the safety functions integrated in the drive and the type of selection on the Control Unit.

Not all of the settings listed below will be permissible, depending on the Control Unit and Motor Module or Power Module being used:

0000 hex:

Safety functions integrated in the drive inhibited (no safety function).

0001 hex:

Basic functions are enabled via onboard terminals (permissible for r9771.0 = 1).

0004 hex:

Extended functions via Terminal Module 54F (TM54F) have been enabled (permissible for r9771.5 = 1).

0005 hex:

Extended functions via Terminal Module 54F (TM54F) and the basic functions via onboard terminals have been enabled (permissible for r9771.5 = 1).

0008 hex:

Basic functions are enabled via PROFIsafe (permissible for r9771.6 = 1).

0009 hex:

Basic functions are enabled via PROFIsafe onboard terminals (permissible for r9771.6 = 1).

000C hex:

Extended functions are enabled via PROFIsafe (permissible for r9771.4 = 1).

000D hex:

Extended functions are enabled via PROFIsafe and basic functions via onboard terminals (permissible for r9771.4 = 1).

0014 hex:

Extended functions via integrated F-DI/F-DO have been enabled.

0024 hex:

Extended functions without selection are enabled (permissible for r9771.16 = 1).

0025 hex:

Extended functions without selection and basic functions via onboard terminals are enabled (permissible for r9771.16 = 1).

0040 hex:

Basic functions are enabled via TM54F

0041 hex:

Basic functions are enabled via TM54F and onboard terminals.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	STO (SH) via terminals (CU) enable	Enable	Inhibit	2810
02	Enable motion monitoring functions integrated in drive (CU)	Enable	Inhibit	-
03	Enable PROFIsafe (CU)	Enable	Inhibit	-
04	Enable onboard F-DI	Onboard F-DI	F-DI with TM54F	-
05	Enab motion monit functions integr in drive w/out selection (CU)	Enable	Inhibit	-
06	Basic functions via TM54F	Enable	Inhibit	-

Dependency: Refer to: r9771, p9801

Note: A change always becomes effective only after a POWER ON. Exception: Changes to p9601.0 become effective immediately.

In addition to all of the combinations listed above, using bit 7, the "STO via Power Module terminals" function can be enabled (this is permissible for r9771.19 = 1).

CU: Control Unit

STO: Safe Torque Off / SH: Safe standstill

SS1: Safe Stop 1 (corresponds to Stop Category 1 acc. to EN60204)

SI: Safety Integrated

SMM: Safe Motion Monitoring

F-DI: Failsafe Digital Input

F-DO: Failsafe Digital Output

p9601 SI enable functions integrated in the drive (Control Unit) / SI enable fct CU

SERVO, VECTOR

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 bin

Description: Sets the enable signals for the safety functions integrated in the drive and the type of selection on the Control Unit.

Not all of the settings listed below will be permissible, depending on the Control Unit and Motor Module or Power Module being used:

0000 hex:

Safety functions integrated in the drive inhibited (no safety function).

0001 hex:

Basic functions are enabled via onboard terminals (permissible for r9771.0 = 1).

0004 hex:

Extended functions via Terminal Module 54F (TM54F) have been enabled (permissible for r9771.5 = 1).

0005 hex:

Extended functions via Terminal Module 54F (TM54F) and the basic functions via onboard terminals have been enabled (permissible for r9771.5 = 1).

0008 hex:

Basic functions are enabled via PROFIsafe (permissible for r9771.6 = 1).

0009 hex:

Basic functions are enabled via PROFIsafe onboard terminals (permissible for r9771.6 = 1).

000C hex:

Extended functions are enabled via PROFIsafe (permissible for r9771.4 = 1).

000D hex:

Extended functions are enabled via PROFIsafe and basic functions via onboard terminals (permissible for r9771.4 = 1).

0024 hex:

Extended functions without selection are enabled (permissible for r9771.16 = 1).

0025 hex:

Extended functions without selection and basic functions via onboard terminals are enabled (permissible for r9771.16 = 1).

0040 hex:

Basic functions are enabled via TM54F

0041 hex:

Basic functions are enabled via TM54F and onboard terminals.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	STO (SH) via terminals (CU) enable	Enable	Inhibit	2810
02	Enable motion monitoring functions integrated in drive (CU)	Enable	Inhibit	-
03	Enable PROFIsafe (CU)	Enable	Inhibit	-
05	Enab motion monit functions integr in drive w/out selection (CU)	Enable	Inhibit	-
06	Basic functions via TM54F	Enable	Inhibit	-

Dependency: Refer to: r9771, p9801

Note: A change always becomes effective only after a POWER ON. Exception: Changes to p9601.0 and p9601.7 become effective immediately.

In addition to all of the combinations listed above, using bit 7, the "STO via Power Module terminals" function can be enabled (this is permissible for r9771.19 = 1).

CU: Control Unit

STO: Safe Torque Off / SH: Safe standstill

SS1: Safe Stop 1 (corresponds to Stop Category 1 acc. to EN60204)

SI: Safety Integrated

SMM: Safe Motion Monitoring

F-DI: Failsafe Digital Input

F-DO: Failsafe Digital Output

p9602 SI enable Safe Brake Control (Control Unit) / SI enable SBC CU

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 2814
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the enable signal for the function "Safe Brake Control" (SBC) on the Control Unit.

Value:
0: Inhibit SBC
1: Enable SBC

Dependency: Refer to: p9802

Note: The "Safe Brake Control" function is not activated until at least one safety monitoring function has been enabled (i.e. p9501 not equal to 0 and/or p9601 not equal to 0).

It does not make sense to parameterize "no motor holding brake available" and enable "Safe Brake Control" (p1215 = 0, p9602 = p9802 = 1) if there is no motor holding brake.

The parameterization "motor holding brake the same as sequence control, connection via BICO" and "Safe Brake Control" enabled (p1215 = 3, p9602 = 1, p9802 = 1) is not practical.

The parameterization "motor holding brake without feedback signals" and "Safe Brake Control" enabled (p1278 = 1, p9602 = 1, p9802 = 1) is not permissible.

CU: Control Unit

SBC: Safe Brake Control

SI: Safety Integrated

p9610 SI PROFIsafe address (Control Unit) / SI PROFIsafe CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	65534	0

Description: Sets the PROFIsafe address for the Control Unit.

Dependency: Refer to: p9810

Note: A change only becomes effective after a POWER ON.

p9611 SI PROFIsafe telegram selection (Control Unit) / SI Ps telegram CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	998	998

Description: Sets the PROFIsafe telegram number for the Control Unit.

Value:
0: No PROFIsafe telegram selected
30: PROFIsafe standard telegram 30, PZD-1/1
31: PROFIsafe standard telegram 31, PZD-2/2
900: PROFIsafe SIEMENS telegram 900, PZD-2/2
901: PROFIsafe SIEMENS telegram 901, PZD-3/5
902: PROFIsafe SIEMENS telegram 902, PZD-3/6
903: PROFIsafe SIEMENS telegram 903, PZD-3/5
998: Compatibility mode (as for firmware version < 4.5)

Dependency: Refer to: p9811, p60022

Note: A change only becomes effective after a POWER ON.

For p9601.3 = p9801.3 = 1 (PROFIsafe enabled), the following variants exist when parameterizing PROFIsafe telegram 30:

- p9611 = p9811 = 998 and p60022 = 0
- p9611 = p9811 = 998 and p60022 = 30
- p9611 = p9811 = 30 and p60022 = 30

p9612 SI PROFIsafe failure response (Control Unit) / SI Ps fail CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the stop response when PROFIsafe communication fails.

Value:
0: STOP A
1: STOP B

Dependency: Refer to: p9812

Note: For the set stop response STOP B, in order that the OFF3 ramp is actually maintained, when just using Safety Basic Functions, the following must be carefully observed:

- the transition time STOP F to STOP A (p9658, p9858) must be set longer or equal to the SS1 delay time (p9652, p9852).

- if a higher-level control responds to a drive fault by withdrawing the controller enable signals, for faults F01611 and F30611, the message type must be changed to alarm (p2118, p2119).

p9620[0...7]	BI: SI signal source for STO (SH)/SS1 (Control Unit) / SI S_srcSTO/SS1 CU		
HLA	**Can be changed:** C2(95)	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2810
	P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source for the following functions on the Control Unit:
STO: Safe Torque Off / SH: Safe standstill
SS1: Safe Stop 1 (time monitored)

Dependency: Refer to: p9601

Notice: Indices 1 to 8 are reserved, and must retain the factory setting.

Note: The following signal sources are permitted:
- fixed zero (standard setting).
- digital inputs DI 0 ... 7, 16, 17, 20, 21 on the Control Unit 320-2 (CU320-2).
- digital inputs DI 0 ... 3, 16, 17 on the Controller Extensions (CX32-2, NX10.3, NX15.3).

It is not permitted to establish an interconnection to a digital input in the simulation mode.

p9620[0...7]	BI: SI signal source for STO (SH)/SBC/SS1 (Control Unit) / SI S_srcSTO/SS1 CU		
SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC	**Can be changed:** C2(95)	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2810
	P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source for the following functions on the Control Unit:
STO: Safe Torque Off / SH: Safe standstill
SBC: Safe Brake Control
SS1: Safe Stop 1 (time monitored)

Dependency: Refer to: p9601

Note: The following signal sources are permitted:
- fixed zero (standard setting).
- digital inputs DI 0 ... 7, 16, 17, 20, 21 on the Control Unit 320-2 (CU320-2).
- digital inputs DI 0 ... 3, 16, 17 on the Controller Extensions (CX32-2, NX10.3, NX15.3).
- digital inputs DI 0 ... 3, 16 on the Control Unit 310-2 (CU310-2).

It is not permitted to establish an interconnection to a digital input in the simulation mode.
For a parallel circuit configuration of n power units, the following applies:
p9620[0] = Signal source for power unit 1
...
p9620[n-1] = Signal source for power unit n

p9621 BI: SI Safe Brake Adapter signal source (Control Unit) / SI SBA S_src CU

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2814
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for Safe Brake Adapter (SBA).

This defines via which digital input the Safe Brake Adapter feedback signal is read-in (SBA_DIAG).

p9621/p9821 = 0:

There is no Safe Brake Control (SBC) with Safe Brake Adapter (SBA) available.

p9621/p9821 = r0722.x (x = 0, 1 ... 7)

Safe Brake Adapter and Booksize unit (no Communication Interface Module (CIM)).

p9621/p9821 = r9872.3

Safe Brake Adapter and Chassis unit (CIM).

Dependency: Refer to: p9601, p9602, p9821

Note: No difference is tolerated for a data cross-check between p9621 and p9821.

To use the "Safe Brake Adapter" function the following must apply:

p9601 = p9801 <> 0 and p9602 = p9802 = 1

p9622[0...1] SI SBA relay delay times (Control Unit) / SI SBA relay t CU

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2814
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	1000.00 [ms]	[0] 100.00 [ms] [1] 65.00 [ms]

Description: Sets the delay times for activating and deactivating the Safe Brake Adapter relay.

The relay-specific minimum delay times for evaluating the feedback signal contacts have to be set. They differ for the activation and deactivation of one and the same relay.

Index: [0] = Wait time activation
[1] = Wait time deactivation

Dependency: Refer to: p9822

Note: For a data cross-check between p9622 and p9822, a difference of one Safety monitoring clock cycle is tolerated.

The set time is rounded internally to an integer multiple of the monitoring clock cycle.

For index [0]:

Wait time switch on = drop-out time + bounce time NO contact + effect of the free-wheeling diode in the Safe Brake Adapter

For index [1]:

Wait time switch off = response time + bounce time NC contact + effect of the free-wheeling diode in the Safe Brake Adapter

p9625[0...1] SI HLA shutoff valve wait time (CU) / Shutoff valve t CU

HLA

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	2000.00 [ms]	[0] 250.00 [ms] [1] 250.00 [ms]

Description: Sets the delay time for switching on and switching off the shutoff valve.

The valve-specific minimum delay times for evaluating the feedback signal contacts have to be set.

Index: [0] = Activating
[1] = Deactivating

Dependency: Refer to: p9825

Note: The set time is rounded internally to an integer multiple of the monitoring clock cycle.

CU: Control Unit

p9626 SI HLA shutoff valve feedback signal contact configuration (CU) / FS config CU

HLA

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	5	0

Description: Sets the feedback signal contacts of the shutoff valve to be monitored.

The sensors for the feedback signal of the shutoff valves are connected via X281/X282.

Value:
0: NC contact/NO contact (NC/NO)
1: NC contact/NC contact (NC/NC)
2: NO contact/NO contact (NO/NO)
4: NC contact (NC)
5: NO contact (NO)

Dependency: Refer to: p9826

Note: CU: Control Unit

NC: Normally Closed contact

NO: Normally Open contact

p9650 SI SGE changeover discrepancy time (Control Unit) / SI SGE chg t CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2810
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	2000.00 [ms]	500.00 [ms]

Description: Sets the discrepancy time to change over the safety-related inputs (SGE) on the Control Unit.

An SGE changeover is not effective simultaneously due to the different runtimes in the two monitoring channels. After an SGE changeover, dynamic data is not subject to a data cross-check during this discrepancy time.

Dependency: Refer to: p9850

Note: For a data cross-check between p9650 and p9850, a difference of one Safety monitoring clock cycle is tolerated.

The set time is rounded internally to an integer multiple of the monitoring clock cycle.

SGE: Safety-related input (e.g. STO terminals)

p9651 SI STO/SS1 debounce time (Control Unit) / SI STO t_debou CU

HLA

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	100.00 [ms]	0.00 [ms]

Description: Sets the debounce time for the failsafe digital inputs used to control STO/SS1.

Note: The debounce time is rounded to whole milliseconds. It specifies the maximum duration of a fault pulse at the failsafe digital inputs with no reaction/influence on the selection or deselection of the Safety Basic Functions.

Example:

Debounce time = 1 ms: Fault pulses of 1 ms are filtered; only pulses longer than 2 ms are processed.

Debounce time = 3 ms: Fault pulses of 3 ms are filtered; only pulses longer than 4 ms are processed.

The set debounce time impacts the response time of the safety function.

p9651 SI STO/SBC/SS1 debounce time (Control Unit) / SI STO t_debou CU

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	100.00 [ms]	0.00 [ms]

Description: Sets the debounce time for the failsafe digital inputs used to control STO/SBC/SS1.

Notice: To filter noise pulses or test impulses from F-DOs, there is the following dependency on the parameter p0799[0]:

- if p0799[0] is less than 1 ms, then p9651 = 1 ms or a multiple integer of 1 ms.
- if p0799[0] is greater or equal to 1 ms, then p9651 must = p0799[0] - or must be a multiple integer of p0799[0].

Note: The debounce time is rounded to whole milliseconds. It specifies the maximum duration of a fault pulse at the failsafe digital inputs with no reaction/influence on the selection or deselection of the Safety Basic Functions.

Example:

Debounce time = 1 ms: Fault pulses of 1 ms are filtered; only pulses longer than 2 ms are processed.

Debounce time = 3 ms: Fault pulses of 3 ms are filtered; only pulses longer than 4 ms are processed.

The set debounce time impacts the response time of the safety function.

p9652 SI Safe Stop 1 delay time / SI Stop 1 t_del

HLA

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [s]	300.00 [s]	0.00 [s]

Description: Sets the delay time for STO for the function "Safe Stop 1" (SS1) on the Control Unit to brake along the OFF3 down ramp (p1135).

Recommendation: The delay time should be set as follows so that the drive can completely decelerate along the OFF3 ramp before the transition into STO:

Delay time >= p1135 + p1228

Dependency: Refer to: p1135, p9852

Note: Pulse cancellation after failure of PROFIsafe communication is delayed by this time if "STOP B" is set (p9612 = 1).

For a data cross-check between p9652 and p9852, a difference of one Safety monitoring clock cycle is tolerated.

The set time is rounded internally to an integer multiple of the monitoring clock cycle.

SS1: Safe Stop 1 (corresponds to Stop Category 1 acc. to EN60204)

p9652 SI Safe Stop 1 delay time / SI Stop 1 t_del

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [s]	300.00 [s]	0.00 [s]

Description: Sets the delay time of the pulse suppression for the function "Safe Stop 1" (SS1) on the Control Unit to brake along the OFF3 down ramp (p1135).

Recommendation: In order that the drive can completely ramp-down along the OFF3 ramp and a motor holding brake that is possibly available can close, then the delay time should be set as follows:

Motor holding brake parameterized: delay time >= p1135 + p1228 + p1217

Motor holding brake not parameterized: delay time >= p1135 + p1228

Dependency: Refer to: p1135, p9852

Note: Pulse cancellation after failure of PROFIsafe communication is delayed by this time if "STOP B" is set (p9612 = 1).

For a data cross-check between p9652 and p9852, a difference of one Safety monitoring clock cycle is tolerated.

The set time is rounded internally to an integer multiple of the monitoring clock cycle.

SS1: Safe Stop 1 (corresponds to Stop Category 1 acc. to EN60204)

p9653 SI Safe Stop 1 drive-based braking response / SI SS1 drv resp

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the drive-based braking response for the "Safe Stop 1" (SS1) function.

Value:
0: SS1 with OFF3
1: SS1E external stop

Note: SS1: Safe Stop 1 (Safe Stop 1, corresponds to Stop Category 1 acc. to EN60204)

SS1E: Safe Stop 1 external (Safe Stop 1 with external stop)

SS1E requires the externally initiated stop in order to be in conformance with stop Category 1.

With this parameter, a switchover is made from SS1 to SS1E, and the drive-based braking response of function SS1 (time controlled) of the Basic Functions is deactivated.

p9658 SI transition time STOP F to STOP A (Control Unit) / SI STOP F->A CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2802
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	30000.00 [ms]	0.00 [ms]

Description: Sets the transition period from STOP F to STOP A on the Control Unit.

Dependency: Refer to: r9795, p9858

Refer to: F01611

Note: For a data cross-check between p9658 and p9858, a difference of one Safety monitoring clock cycle is tolerated.

The set time is rounded internally to an integer multiple of the monitoring clock cycle.

If a higher-level control responds to a drive fault by withdrawing the controller enable signals, for faults F01611 and F30611, the message type must be changed to alarm (p2118, p2119). As a consequence, the drive can still be braked in a controlled fashion during this delay time.

STOP F: Defect in a monitoring channel (error in the data cross-check)

STOP A: STO as a result of a fault detected by Safety Integrated

p9659 SI forced checking procedure timer / SI FCP Timer

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2810
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [h]	9000.00 [h]	8.00 [h]

Description: Sets the time interval for carrying out the forced checking procedure and testing the Safety switch-off signal paths.

Within the parameterized time, STO must have been de-selected at least once. The monitoring time is reset each time that STO is de-selected.

Dependency: Refer to: A01699

Note: STO: Safe Torque Off / SH: Safe standstill

r9660 SI forced checking procedure remaining time / SI FCP remain

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [h]	- [h]	- [h]

Description: Displays the time remaining before dynamization and testing of the safety switch-off signal paths (forced checking procedure).

Dependency: Refer to: A01699

p9665[0...255] SI Motor Module parameter save / SI MM par save

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95), U, T	**Calculated:** -	**Access level:** 4
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	00FF hex	0000 hex

Description: Save the safety parameters for the basic functions on the Motor Module/Hydraulic Module.

Note: The parameter values are saved in the following indices:

p9801: index 20...23
p9802: index 28...31
p9810: index 36...39
p9811: index 116...119
p9812: indices 148...151
p9821: index 84...87
p9822[0]: index 92...95
p9822[1]: index 100...103
p9825[0]: index 124...127
p9825[1]: index 132...135
p9826: index 140...143
p9850: index 44...47
p9851: index 76...79
p9852: index 52...55
p9858: index 60...63
p9897: index 108...111
p9899: index 68...71

Depending on the existing technology, configuration and firmware version, it is possible that not all of the listed parameters are available.

p9670 SI module identification Control Unit / Module ID CU

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410, SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	4294967295	0

Description: CRC via Node Identifier of the Control Unit.

Note: CU: Control Unit

p9671[0...n] SI module identifier Hydraulic Module / Module ID HM

HLA

Can be changed: C2(95), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	4294967295	0

Description: CRC via the Node Identifier of a Hydraulic Module.

Note: HM: Hydraulic Module.

p9671[0...n] SI module identifier Motor Module / Module ID MM

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** PDS, p0120	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	4294967295	0

Description: CRC via the Node Identifier of a Motor Module.

Note: The CRC is saved indexed when Motor Modules are connected in parallel.

MM: Motor Module

p9672 SI module identifier Power Module / Module ID PM

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	4294967295	0

Description: CRC via the Node Identifier of a Power Module.

Note: PM: Power Module

p9673 SI module identifier Sensor Module channel 1 / Module ID SM 1

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	4294967295	0

Description: CRC via Node Identifier of the Sensor Module, which is used by the first monitoring channel.

Note: SM: Sensor Module

p9674 SI module identifier Sensor Module channel 2 / Module ID SM 2

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	4294967295	0

Description: CRC via Node Identifier of the Sensor Module, which is used by the second monitoring channel.

Note: SM: Sensor Module

p9675 SI module identifier sensor channel 1 / Module ID sensor 1

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	4294967295	0

Description: CRC via the serial number of the encoder, which is used by the first monitoring channel.

Note: When using an encoder without its own serial number, the value of zero is kept.

p9676 SI module identifier sensor channel 2 / Module ID sensor 2

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	4294967295	0

Description: CRC via the serial number of the encoder, which is used by the second monitoring channel.

Note: When using an encoder without its own serial number, the value of zero is kept.

p9677[0...1] SI Motion offset POS1 POS2 encoder / SI Mtn offset sens

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	4294967295	0

Description: Sets the offset between encoder positions POS1 and POS2, which is used once to check (after powering up and unparking).

Index:
[0] = Offset POS1 POS2 encoder CU
[1] = Offset POS1 POS2 encoder MM

p9697 SI Motion bus failure STO/SH delay time (CU) / SI Mtn STO t CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	800.00 [ms]	0.00 [ms]

Description: Sets the delay time for STO after bus failure on the Control Unit (e.g. used for ESR).

Note: The set time is rounded internally to an integer multiple of the monitoring clock cycle.

ESR: Extended Stop and Retract

STO: Safe Torque Off / SH: Safe standstill

p9700 SI Motion copy function / SI Mtn copy fct

HLA

Can be changed: C2(95), U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	00D0 hex	0000 hex

Description: Setting to start the required copy function.

After starting, the appropriate parameters are copied from the Control Unit to the Hydraulic Module.

Once copying is complete, the parameter is automatically reset to zero.

Value:
0: [00 hex] Copy function ended
29: [1D hex] Start copy function node identifier
46: [2E hex] Start copy function encoder parameters
87: [57 hex] Start copy function SI parameters
208: [D0 hex] Start copy function SI basic parameters

Note: For value = 57 hex, 2E hex and D0 hex:

The value can only be set if the safety commissioning mode is set and the Safety Integrated password was entered.

For value = D0 hex:

The following parameters are copied after starting the copy function:

p9601 --> p9801, p9610 --> 9810, p9611 --> 9811, p9625 --> p9825, p9626 --> p9826, p9650 --> p9850, p9651 --> p9851, p9652 --> p9852, p9658 --> p9858, p9697 --> p9897

p9700 SI Motion copy function / SI Mtn copy fct

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95), U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	00D0 hex	0000 hex

Description: Setting to start the required copy function.

After starting, the appropriate parameters are copied from the Control Unit to the Motor Module.

Once copying is complete, the parameter is automatically reset to zero.

Value:
0: [00 hex] Copy function ended
29: [1D hex] Start copy function node identifier
46: [2E hex] Start copy function encoder parameters
87: [57 hex] Start copy function SI parameters
208: [D0 hex] Start copy function SI basic parameters

Note: For value = 57 hex, 2E hex and D0 hex:

The value can only be set if the safety commissioning mode is set and the Safety Integrated password was entered.

For value = D0 hex:

The following parameters are copied after starting the copy function:

p9601 --> p9801, p9602 --> p9802, p9610 --> 9810, p9611 --> 9811, p9621 --> 9821, p9622 --> 9822, p9650 --> p9850, p9651 --> p9851, p9652 --> p9852, p9658 --> p9858, p9697 --> p9897

p9700 SI Motion copy function / SI Mtn copy fct

TM54F_MA

Can be changed: C2(95), U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	00CC hex	0000 hex

Description: Setting to start the required copy function.

After starting, the appropriate parameters are copied from the Control Unit to the Motor Module.

Once copying is complete, the parameter is automatically reset to zero.

Value:
0: [00 hex] Copy function ended
29: [1D hex] Start copy function node identifier
87: [57 hex] Start copy function SI parameters
204: [CC hex] Start copy function TM54F communication clock cycles

Note: For value = 57 hex:

The value can only be set if the safety commissioning mode is set and the Safety Integrated password was entered.

SI: Safety Integrated

p9701 Acknowledge SI motion data change / Ackn SI Mtn dat

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95), U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	00EC hex	0000 hex

Description: Setting to transfer the reference checksums from the associated actual checksums after changes (SI parameters, hardware).

After transferring the reference checksums, parameters are automatically reset to zero.

Value:
0: [00 hex] Data unchanged
172: [AC hex] Acknowledge data change complete
220: [DC hex] Acknowledge SI basic parameter change
236: [EC hex] Acknowledge hardware CRC

Dependency: Refer to: r9398, p9399, r9728, p9729, r9798, p9799, r9898, p9899

Note: For value = AC and DC hex:

These values can only be set if the safety commissioning mode is set and the Safety Integrated password was entered.

p9701 Acknowledge SI motion data change / Ackn SI Mtn dat

TM54F_MA, TM54F_SL

Can be changed: C2(95), U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	00EC hex	0000 hex

Description: Setting to transfer the reference checksums from the associated actual checksums after changes (SI parameters, hardware).

After transferring the reference checksums, parameters are automatically reset to zero.

Value: 0: [00 hex] Data unchanged
172: [AC hex] Acknowledge data change complete
236: [EC hex] Acknowledge hardware CRC

Dependency: Refer to: r9398, p9399, r9728, p9729, r9798, p9799, r9898, p9899

Note: For value = AC hex:

These values can only be set if the safety commissioning mode is set and the Safety Integrated password was entered.

SI: Safety Integrated

p9702 SI Acknowledge component replacement / Comp_replace ackn

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95), U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	29	0

Description: Setting to acknowledge that a component has been replaced.

By writing 29 to this parameter, the unique identifier of a safety-relevant component is transferred into the drive parameterization.

Value: 0: [00 hex] hardware replacement acknowledge ready
29: [1D hex] hardware replacement acknowledgment

Dependency: Refer to: F01640

Notice: It is not permissible that the safety commissioning mode is set in order to write to this parameter.

Note: After successful execution, this parameter is automatically reset to zero.

Data must then be saved in a non-volatile fashion (p0977 = 1 or p0971 = 1 or "copy RAM to ROM").

The parameter cannot be written to using a project download, and cannot be set in an offline project.

r9703.0...31 CO/BO: SI Motion SCA status signal (Control Unit) / SI Mtn SCA stat CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2840, 2905
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status signals of the SCA function in monitoring channel 1.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Position at safe output cam 1	Yes	No	-
01	Position at safe output cam 2	Yes	No	-
02	Position at safe output cam 3	Yes	No	-
03	Position at safe output cam 4	Yes	No	-
04	Position at safe output cam 5	Yes	No	-
05	Position at safe output cam 6	Yes	No	-
06	Position at safe output cam 7	Yes	No	-
07	Position at safe output cam 8	Yes	No	-
08	Position at safe output cam 9	Yes	No	-
09	Position at safe output cam 10	Yes	No	-
10	Position at safe output cam 11	Yes	No	-
11	Position at safe output cam 12	Yes	No	-
12	Position at safe output cam 13	Yes	No	-
13	Position at safe output cam 14	Yes	No	-
14	Position at safe output cam 15	Yes	No	-
15	Position at safe output cam 16	Yes	No	-
16	Position at safe output cam 17	Yes	No	-
17	Position at safe output cam 18	Yes	No	-
18	Position at safe output cam 19	Yes	No	-
19	Position at safe output cam 20	Yes	No	-
20	Position at safe output cam 21	Yes	No	-
21	Position at safe output cam 22	Yes	No	-

22	Position at safe output cam 23	Yes	No	-
23	Position at safe output cam 24	Yes	No	-
24	Position at safe output cam 25	Yes	No	-
25	Position at safe output cam 26	Yes	No	-
26	Position at safe output cam 27	Yes	No	-
27	Position at safe output cam 28	Yes	No	-
28	Position at safe output cam 29	Yes	No	-
29	Position at safe output cam 30	Yes	No	-
30	Function "Safe cam" active	Yes	No	-
31	Function "Safe cam" valid	Yes	No	-

Note: SCA: Safe Cam

This parameter is only supplied with actual values in the case of Safety Integrated Extended Functions. For Safety Integrated Basic Functions (SBC, SS1, STO), the value is equal to zero.

p9705 BI: SI Motion: Test stop signal source / SI Mtn test stop

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2837
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the test stop of the safety-relevant motion monitoring functions.

Notice: Before setting the signal source in p9705 it must be ensured that the signal source is at a logical 0.

If, in the Safety commissioning mode, the signal source in p9705 is set - and it already has a logical 1 - then a test stop is immediately initiated and the messages C01711/C30711 are output with message value 1005.

Note: It is not permissible to use TM54F inputs to start the test stop.

r9707[0...2] CO: SI Motion diagnostics encoder position actual value GX_XIST1 / SI Mtn XIST1

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display:

Index0: of the encoder actual value GX_Xist1,

Index1: of the encoder actual value GX_Xist1 in the clock cycle, from which the subsequently transferred reference position was received.

Index2: the difference between index1 and index0 while waiting for the reference position to be transferred.

Index1 and index2 are only relevant for safety monitoring functions requiring an encoder with absolute reference when the "Referencing via SCC" function is enabled (p9501 Bit27 = 1)

Index: [0] = Encoder actual value XIst1 on CU
[1] = Encoder actual value XIst1 latched for referencing
[2] = XIst1 latched - reference position difference

Note: The parameter is only available for Safety Integrated with encoder

r9708[0...5]	SI Motion diagnostics safe position / SI mtn safe pos		
SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2822, 2836
	P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [mm]	- [mm]	- [mm]

Description: Displays the actual load-side actual values of both monitoring channels and their difference.

Index:
[0] = Load-side actual value on the CU
[1] = Load-side actual value on the second channel
[2] = Load-side actual value difference CU - second channel
[3] = Load-side max. actual value difference CU - second channel
[4] = Load-side actual value as safe position via PROFIsafe
[5] = Load-side additional actual value difference CU - second channel

Dependency: Refer to: r9713

Note: For index [0]:

The display of the load-side position actual value on the Control Unit is updated in the monitoring clock cycle.

For index [1]:

The display of the load-side position actual value on the second channel is updated in the KDV clock cycle (r9724) and delayed by one KDV clock cycle.

For index [2]:

The difference between the load-side position actual value on the Control Unit and load-side position actual value in the second channel is updated in the KDV clock cycle (r9724) and delayed by one KDV clock cycle.

For index [3]:

The maximum difference between the load-side position actual value on the Control Unit and the load-side position actual value on the second channel.

For index [4]:

Displays the load-side position actual value when enabling the function "Safe position via PROFIsafe".

The value is an average value from the values in index 0 and 1.

When the function is not enabled, the content corresponds to the value in index 0.

For index [5]:

The display of the maximum additional difference between the load-side position actual value on the Control Unit, and the load-side position actual value in the second channel, which can occur as a result of the actual value sensing delay in the EnDat 2.2 converter.

Input in p9542: p9708[3] + p9708[5], after performing the measurement for the mechanical tolerance by performing a test run, where, after completion, the maximum tolerance that has occurred is displayed in p9708[3].

KDV: Data cross-check

r9708[0...5]	SI Motion diagnostics safe position / SI mtn safe pos		
SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2822, 2836
	P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [°]	- [°]	- [°]

Description: Displays the actual load-side actual values of both monitoring channels and their difference.

Index:
[0] = Load-side actual value on the CU
[1] = Load-side actual value on the second channel
[2] = Load-side actual value difference CU - second channel
[3] = Load-side max. actual value difference CU - second channel
[4] = Load-side actual value as safe position via PROFIsafe
[5] = Load-side additional actual value difference CU - second channel

Dependency: Refer to: r9713

Note: For index [0]:

The display of the load-side position actual value on the Control Unit is updated in the monitoring clock cycle.

For index [1]:

The display of the load-side position actual value on the second channel is updated in the KDV clock cycle (r9724) and delayed by one KDV clock cycle.

For index [2]:

The difference between the load-side position actual value on the Control Unit and load-side position actual value in the second channel is updated in the KDV clock cycle (r9724) and delayed by one KDV clock cycle.

For index [3]:

The maximum difference between the load-side position actual value on the Control Unit and the load-side position actual value on the second channel.

For index [4]:

Displays the load-side position actual value when enabling the function "Safe position via PROFIsafe".

The value is an average value from the values in index 0 and 1.

When the function is not enabled, the content corresponds to the value in index 0.

For index [5]:

The display of the maximum additional difference between the load-side position actual value on the Control Unit, and the load-side position actual value in the second channel, which can occur as a result of the actual value sensing delay in the EnDat 2.2 converter.

Input in p9542: p9708[3] + p9708[5], after performing the measurement for the mechanical tolerance by performing a test run, where, after completion, the maximum tolerance that has occurred is displayed in p9708[3].

KDV: Data cross-check

r9710[0...1] SI Motion diagnostics result list 1 / SI Mtn res_list 1

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays result list 1 that, for the data cross-check between the monitoring channels, led to the fault.

Index: [0] = Result list second channel
[1] = Result list drive

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Actual value > upper limit SOS	Yes	No	-
01	Actual value > lower limit SOS	Yes	No	-
02	Actual value > upper limit SLP1	Yes	No	-
03	Actual value > lower limit SLP1	Yes	No	-
04	Actual value > upper limit SLP2	Yes	No	-
05	Actual value > lower limit SLP2	Yes	No	-
06	Actual value > upper limit SLS1	Yes	No	-
07	Actual value > lower limit SLS1	Yes	No	-
08	Actual value > upper limit SLS2	Yes	No	-
09	Actual value > lower limit SLS2	Yes	No	-
10	Actual value > upper limit SLS3	Yes	No	-
11	Actual value > lower limit SLS3	Yes	No	-
12	Actual value > upper limit SLS4	Yes	No	-
13	Actual value > lower limit SLS4	Yes	No	-
16	Actual value > upper limit SAM/SBR	Yes	No	-
17	Actual value > lower limit SAM/SBR	Yes	No	-
18	Actual value > upper limit SDI positive	Yes	No	-
19	Actual value > lower limit SDI positive	Yes	No	-
20	Actual value > upper limit SDI negative	Yes	No	-
21	Actual value > lower limit SDI negative	Yes	No	-
22	Actual value > upper limit SLA1	Yes	No	-
23	Actual value > lower limit SLA1	Yes	No	-

Dependency: Refer to: C01711

Note: SBR: Safe Brake Ramp (safe brake ramp monitoring)
SDI: Safe Direction (safe motion direction)
SLA: Safely-Limited Acceleration
SLP: Safely-Limited Position
SLS: Safely-Limited Speed
SOS: Safe Operating Stop

r9711[0...1] SI Motion diagnostics result list 2 / SI Mtn res_list 2

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays result list 2 that, for the data cross-check between the monitoring channels, led to the fault.

Index: [0] = Result list second channel
[1] = Result list drive

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Actual value > upper limit SCA1+	Yes	No	-
01	Actual value > lower limit SCA1+	Yes	No	-
02	Actual value > upper limit SCA1-	Yes	No	-
03	Actual value > lower limit SCA1-	Yes	No	-
04	Actual value > upper limit SCA2+	Yes	No	-
05	Actual value > lower limit SCA2+	Yes	No	-
06	Actual value > upper limit SCA2-	Yes	No	-
07	Actual value > lower limit SCA2-	Yes	No	-
08	Actual value > upper limit SCA3+	Yes	No	-
09	Actual value > lower limit SCA3+	Yes	No	-
10	Actual value > upper limit SCA3-	Yes	No	-
11	Actual value > lower limit SCA3-	Yes	No	-
12	Actual value > upper limit SCA4+	Yes	No	-
13	Actual value > lower limit SCA4+	Yes	No	-
14	Actual value > upper limit SCA4-	Yes	No	-
15	Actual value > lower limit SCA4-	Yes	No	-
16	Actual value > upper limit SSM+	Yes	No	-
17	Actual value > lower limit SSM+	Yes	No	-
18	Actual value > upper limit SSM-	Yes	No	-
19	Actual value > lower limit SSM-	Yes	No	-
20	Actual value > upper limit modulo	Yes	No	-
21	Actual value > lower limit modulo	Yes	No	-

Dependency: Refer to: C01711

Note: SCA: Safe Cam
SSM: Safe Speed Monitor (safety-relevant feedback signal from the speed monitoring)

r9712 CO: SI motion diagnostics position actual value on the actuator side / SI Mtn s_act act

HLA

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output of the current position actual value on the actuator side for the motion monitoring functions on the Control Unit.

Note: The display is updated in the safety monitoring clock cycle.

r9712 CO: SI Motion diagnostics position actual value motor side / SI Mtn s_act mot

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output of the current position actual value on the motor side for the motion monitoring functions on the Control Unit.

Note: The display is updated in the safety monitoring clock cycle.

r9713[0...5] CO: SI Motion diagnostics position actual value load side / SI Mtn s_act load

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output for the actual load-side actual values of both monitoring channels and their difference.

Index:
[0] = Load-side actual value on the CU
[1] = Load-side actual value on the second channel
[2] = Load-side actual value difference CU - second channel
[3] = Load-side max. actual value difference CU - second channel
[4] = Load-side actual value as safe position via PROFIsafe
[5] = Load-side additional actual value difference CU - second channel

Dependency: Refer to: r9708, r9724

Note: Regarding the units, this parameter should be interpreted as follows:

- linear axis: µm
- rotary axis: mdegrees

The value of this parameter is displayed in r9708 with units (mm or degrees).

The display is updated in the safety monitoring clock cycle.

For index [0]:

The display of the load-side position actual value on the Control Unit is updated in the monitoring clock cycle.

For index [1]:

The display of the load-side position actual value on the second channel is updated in the KDV clock cycle (r9724) and delayed by one KDV clock cycle.

For index [2]:

The difference between the load-side position actual value on the Control Unit and load-side position actual value in the second channel is updated in the KDV clock cycle (r9724) and delayed by one KDV clock cycle.

For index [3]:

The maximum difference between the load-side position actual value on the Control Unit and the load-side position actual value on the second channel.

For index [4]:

Displays the load-side position actual value when enabling the function "Safe position via PROFIsafe".

The value is an average value from the values in index 0 and 1.

For a 16-bit notation, the value is influenced using the scaling factor (p9574/p9374).

When the function is not enabled, the content corresponds to the value in index 0.

For index [5]:

The display of the maximum additional difference between the load-side position actual value on the Control Unit, and the load-side position actual value in the second channel, which can occur as a result of the actual value sensing delay in the EnDat 2.2 converter.

Input in p9542: r9713[3] + r9713[5], after performing the measurement for the mechanical tolerance by performing a test run, where, after completion, the maximum tolerance that has occurred is displayed in r9713[3].

KDV: Data cross-check

r9714[0...3]	CO: SI motion diagnostics velocity / SI Mtn diag v		
HLA	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [mm/min]	- [mm/min]	- [mm/min]

Description: Displays the velocity actual values for the motion monitoring functions on the Control Unit.

Index:
[0] = Load-side velocity actual value on the Control Unit
[1] = Actual SAM/SBR speed limit on the Control Unit
[2] = Actual SLS speed limit on the Control Unit
[3] = Actual SLA speed limit on the Control Unit

Dependency: Refer to: r9732

Notice: For index [2]:

This SLS velocity limit can, as a result of conversion into the internal monitoring format, deviate from the specified SLS velocity limit (see r9732).

Note: The display is updated in the safety monitoring clock cycle.

For linear axes, the following unit applies: millimeters per minute

r9714[0...3]	CO: SI motion diagnostics velocity / SI Mtn diag v		
SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [mm/min]	- [mm/min]	- [mm/min]

Description: Displays the velocity actual values for the motion monitoring functions on the Control Unit.

Index:
[0] = Load-side velocity actual value on the Control Unit
[1] = Actual SAM/SBR speed limit on the Control Unit
[2] = Actual SLS speed limit on the Control Unit
[3] = Actual SLA speed limit on the Control Unit

Dependency: Refer to: r9732

Notice: For index [2]:

This SLS velocity limit can, as a result of conversion into the internal monitoring format, deviate from the specified SLS velocity limit (see r9732).

Note: The display is updated in the safety monitoring clock cycle.

For linear axes, the following unit applies: millimeters per minute

For rotary axes, the following unit applies: revolutions per minute

r9714[0...3]	CO: SI motion diagnostics velocity / SI Mtn diag v		
SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [rpm]	- [rpm]	- [rpm]

Description: Displays the velocity actual values for the motion monitoring functions on the Control Unit.

Index:
[0] = Load-side velocity actual value on the Control Unit
[1] = Actual SAM/SBR speed limit on the Control Unit
[2] = Actual SLS speed limit on the Control Unit
[3] = Actual SLA speed limit on the Control Unit

Dependency: Refer to: r9732

Notice: For index [2]:

This SLS velocity limit can, as a result of conversion into the internal monitoring format, deviate from the specified SLS velocity limit (see r9732).

Note: The display is updated in the safety monitoring clock cycle.

For linear axes, the following unit applies: millimeters per minute

For rotary axes, the following unit applies: revolutions per minute

r9718.23 CO/BO: SI Motion control signals 1 / SI Mtn ctrl_sig 1

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Control signal 1 for safety-relevant motion monitoring functions.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
23	Set offset for TfS to the actual torque	Set	Reset	-

Note: TfS: Traverse to fixed stop

r9718.23 CO/BO: SI Motion control signals 1 / SI Mtn ctrl_sig 1

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Control signal 1 for safety-relevant motion monitoring functions.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
23	Set offset for TfS to the actual force	Set	Reset	-

Note: TfS: Traverse to fixed stop

r9719.0...31 CO/BO: SI Motion control signals 2 / SI Mtn ctrl_sig 2

HLA

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Control signal 2 for safety-relevant motion monitoring functions.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	De-select SOS/SLS (SBH/SG)	Yes	No	-
01	De-select SOS (SBH)	Yes	No	-
03	Select SLS (SG) bit 0	Set	Not set	-
04	Select SLS (SG) bit 1	Set	Not set	-
05	Deselect SDI positive	Yes	No	-
06	Deselect SDI negative	Yes	No	-
07	Deselect SLP	Yes	No	-
08	Gearbox selection bit 0	Set	Not set	-
09	Gearbox selection bit 1	Set	Not set	-
10	Gearbox selection bit 2	Set	Not set	-
11	Gear change	Set	Not set	-
12	Select SLP (SE) position range	SLP2 (SE2)	SLP1 (SE1)	-
14	Deselect SCA	Yes	No	-
15	Select test stop	Yes	No	-
16	SGE valid	Yes	No	-
17	Deselect SLA	Yes	No	-

18	De-select external STOP A	Yes	No	-
19	De-select external STOP C	Yes	No	-
20	De-select external STOP D	Yes	No	-
21	De-select external STOP E	Yes	No	-
28	SLS (SG) override bit 0	Set	Not set	-
29	SLS (SG) override bit 1	Set	Not set	-
30	SLS (SG) override bit 2	Set	Not set	-
31	SLS (SG) override bit 3	Set	Not set	-

Note: For r9719.0 and r9719.1:

These two bits must be considered together.

- if SOS/SLS (SBH/SG) is de-selected using bit 0, then assignment of bit 1 is irrelevant.

- if SOS/SLS (SBH/SG) is selected using bit 0, then a changeover is made between SOS (SBH) and SLS (SG) using bit 1.

SCA: Safe Cam

SDI: Safe Direction (safe motion direction)

SLA: Safely-Limited Acceleration

SLP: Safely-Limited Position / SE: Safe software limit switches

SLS: Safely-Limited Speed / SG: Safely reduced speed

SOS: Safe Operating Stop / SBH: Safe operating stop

r9719.0...31 CO/BO: SI Motion control signals 2 / SI Mtn ctrl_sig 2

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Control signal 2 for safety-relevant motion monitoring functions.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	De-select SOS/SLS (SBH/SG)	Yes	No	-
01	De-select SOS (SBH)	Yes	No	-
03	Select SLS (SG) bit 0	Set	Not set	-
04	Select SLS (SG) bit 1	Set	Not set	-
05	Deselect SDI positive	Yes	No	-
06	Deselect SDI negative	Yes	No	-
07	Deselect SLP	Yes	No	-
08	Gearbox selection bit 0	Set	Not set	-
09	Gearbox selection bit 1	Set	Not set	-
10	Gearbox selection bit 2	Set	Not set	-
11	Gear change	Set	Not set	-
12	Select SLP (SE) position range	SLP2 (SE2)	SLP1 (SE1)	-
13	Close brake from control	Yes	No	-
14	Deselect SCA	Yes	No	-
15	Select test stop	Yes	No	-
16	SGE valid	Yes	No	-
17	Deselect SLA	Yes	No	-
18	De-select external STOP A	Yes	No	-
19	De-select external STOP C	Yes	No	-
20	De-select external STOP D	Yes	No	-
21	De-select external STOP E	Yes	No	-
28	SLS (SG) override bit 0	Set	Not set	-
29	SLS (SG) override bit 1	Set	Not set	-
30	SLS (SG) override bit 2	Set	Not set	-
31	SLS (SG) override bit 3	Set	Not set	-

Note: For r9719.0 and r9719.1:

These two bits must be considered together.

- if SOS/SLS (SBH/SG) is de-selected using bit 0, then assignment of bit 1 is irrelevant.

- if SOS/SLS (SBH/SG) is selected using bit 0, then a changeover is made between SOS (SBH) and SLS (SG) using bit 1.

SCA: Safe Cam
SDI: Safe Direction (safe motion direction)
SLA: Safely-Limited Acceleration
SLP: Safely-Limited Position / SE: Safe software limit switches
SLS: Safely-Limited Speed / SG: Safely reduced speed
SOS: Safe Operating Stop / SBH: Safe operating stop

r9720.0...28 CO/BO: SI Motion control signals integrated in the drive / SI Mtn integ STW

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2840, 2905
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Control signals for safety-relevant motion monitoring functions integrated in the drive.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	De-select STO	Yes	No	-
01	De-select SS1	Yes	No	-
02	De-select SS2	Yes	No	-
03	De-select SOS	Yes	No	-
04	De-select SLS	Yes	No	-
06	Deselect SLP	Yes	No	2822
07	Acknowledgment	Signal edge active	No	-
08	Deselect SLA	Yes	No	2838
09	Select SLS bit 0	Set	Not set	-
10	Select SLS bit 1	Set	Not set	-
12	Deselect SDI positive	Yes	No	2824
13	Deselect SDI negative	Yes	No	2824
19	Select SLP position range	SLP2	SLP1	2822
23	Deselect SCA	Yes	No	-
24	Select gearbox bit 0	Set	Not set	-
25	Select gearbox bit 1	Set	Not set	-
26	Select gearbox bit 2	Set	Not set	-
27	Gear change	Set	Not set	-
28	Deselect SS2E	Yes	No	-

Note: This parameter is only supplied with actual values in the case of Safety Integrated Extended Functions. For Safety Integrated Basic Functions (SBC, SS1, STO), the value is equal to zero.

r9721.0...15 CO/BO: SI Motion status signals (Control Unit) / SI Mtn stat_sig CU

HLA

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status signals of the safe motion monitoring functions on monitoring channel 1.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	SOS or SLS active	Yes	No	-
01	SOS active	Yes	No	-
02	STO active	Yes	No	-
03	Active SLS stage bit 0	Set	Not set	-
04	Active SLS stage bit 1	Set	Not set	-
05	Velocity below limit value n_x	Yes	No	-
06	SLP active	Yes	No	-
07	Safely referenced	Yes	No	-
08	SDI positive active	Yes	No	-
09	SDI negative active	Yes	No	-
10	SLP active position area	SLP2	SLP1	-
11	SLA active	Yes	No	-

12	STOP A or STOP B or STO or SS1 active	Yes	No	2819
13	STOP C or SS2 active	Yes	No	2819
14	STOP D or SS2E active	Yes	No	2819
15	STOP E active	Yes	No	-

Note: This parameter is only supplied with actual values in the case of Safety Integrated Extended Functions. For Safety Integrated Basic Functions (SBC, SS1, STO), the value is equal to zero.

r9721.0...15 CO/BO: SI Motion status signals (Control Unit) / SI Mtn stat_sig CU

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status signals of the safe motion monitoring functions on monitoring channel 1.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	SOS or SLS active	Yes	No	-
01	SOS active	Yes	No	-
02	Pulse enable	Deleted	Enabled	-
03	Active SLS stage bit 0	Set	Not set	-
04	Active SLS stage bit 1	Set	Not set	-
05	Velocity below limit value n_x	Yes	No	-
06	SLP active	Yes	No	-
07	Safely referenced	Yes	No	-
08	SDI positive active	Yes	No	-
09	SDI negative active	Yes	No	-
10	SLP active position area	SLP2	SLP1	-
11	SLA active	Yes	No	-
12	STOP A or STOP B or STO or SS1 active	Yes	No	2819
13	STOP C or SS2 active	Yes	No	2819
14	STOP D or SS2E active	Yes	No	2819
15	STOP E active	Yes	No	-

Note: This parameter is only supplied with actual values in the case of Safety Integrated Extended Functions. For Safety Integrated Basic Functions (SBC, SS1, STO), the value is equal to zero.

r9722.0...31 CO/BO: SI Motion drive-integrated status signals (Control Unit) / SI Mtn int stat CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2840, 2905
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Status signal for safety-relevant motion monitoring functions integrated in the drive on monitoring channel 1.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	STO or safe pulse suppression active	Yes	No	-
01	SS1 active	Yes	No	-
02	SS2 active	Yes	No	-
03	SOS active	Yes	No	-
04	SLS active	Yes	No	-
06	SLP active	Yes	No	2822
07	Internal event	No	Yes	-
08	SLA active	Yes	No	2838
09	Active SLS stage bit 0	Set	Not set	-
10	Active SLS stage bit 1	Set	Not set	-
11	SOS selected	Yes	No	-
12	SDI positive active	Yes	No	2824
13	SDI negative active	Yes	No	2824
15	SSM (speed below limit value)	Yes	No	2823
19	SLP active position area	SLP2	SLP1	2822

22	SP valid	Yes	No	-
23	Safely referenced	Yes	No	-
28	SS2E active	Yes	No	-
30	SLP limit upper maintained	Yes	No	2822
31	SLP limit lower maintained	Yes	No	2822

Notice: For bit 07:

The signal state behaves in an opposite way to the PROFIsafe Standard.

Note: This parameter is only supplied with actual values in the case of Safety Integrated Extended Functions. For Safety Integrated Basic Functions (SBC, SS1, STO), the value is equal to zero.

For bit 07:

An internal event is displayed if a STOP A ... F is active.

r9722.0...31 CO/BO: SI Motion drive-integrated status signals (Control Unit) / SI Mtn int stat CU

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2840, 2905
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Status signal for safety-relevant motion monitoring functions integrated in the drive on monitoring channel 1.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	STO or safe pulse suppression active	Yes	No	-
01	SS1 active	Yes	No	-
02	SS2 active	Yes	No	-
03	SOS active	Yes	No	-
04	SLS active	Yes	No	-
06	SLP active	Yes	No	2822
07	Internal event	No	Yes	-
08	SLA active	Yes	No	2838
09	Active SLS stage bit 0	Set	Not set	-
10	Active SLS stage bit 1	Set	Not set	-
11	SOS selected	Yes	No	-
12	SDI positive active	Yes	No	2824
13	SDI negative active	Yes	No	2824
15	SSM (velocity below limit value)	Yes	No	2823
19	SLP active position area	SLP2	SLP1	2822
22	SP valid	Yes	No	-
23	Safely referenced	Yes	No	-
28	SS2E active	Yes	No	-
30	SLP limit upper maintained	Yes	No	2822
31	SLP limit lower maintained	Yes	No	2822

Notice: For bit 07:

The signal state behaves in an opposite way to the PROFIsafe Standard.

Note: This parameter is only supplied with actual values in the case of Safety Integrated Extended Functions. For Safety Integrated Basic Functions (SBC, SS1, STO), the value is equal to zero.

For bit 07:

An internal event is displayed if a STOP A ... F is active.

r9723.0...17 CO/BO: SI Motion diagnostic signals integrated in the drive / SI Mtn integ diag

HLA

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the diagnostic signals for safety-relevant motion monitoring functions integrated in the drive.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Forced checking procedure required	Yes	No	-
01	STOP F and then STOP B active	Yes	No	2819
02	Communication failure	Yes	No	-
03	Actual value sensing supplies valid value	Yes	No	2821
12	Test stop active	Yes	No	-
16	SAM/SBR active	Yes	No	2820
17	Position referenced	Yes	No	2821

Note: For bit 00:

A required dynamization is also displayed via alarm A01679.

For bit 01:

This bit can be used, to execute a drive-based or control-based ESR.

For bit 12:

An active test stop is also displayed using the safety message C01798.

ESR: Extended Stop and Retract

SAM: Safe Acceleration Monitor (safe acceleration monitoring)

SBR: Safe Brake Ramp (safe brake ramp monitoring)

r9723.0...17 CO/BO: SI Motion diagnostic signals integrated in the drive / SI Mtn integ diag

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the diagnostic signals for safety-relevant motion monitoring functions integrated in the drive.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Forced checking procedure required	Yes	No	-
01	STOP F and then STOP B active	Yes	No	2819
02	Communication failure	Yes	No	-
03	Actual value sensing supplies valid value	Yes	No	2821
04	Encoderless act val sensing acc to technique for U/f control	Yes	No	-
09	Safe pulse suppression active	Yes	No	-
12	Test stop active	Yes	No	-
16	SAM/SBR active	Yes	No	2820
17	Position referenced	Yes	No	2821

Note: For bit 00:

A required dynamization is also displayed via alarm A01679.

For bit 01:

This bit can be used, to execute a drive-based or control-based ESR.

For bit 04:

When sensing the velocity without encoder, a distinction is made between the closed-loop speed controlled and open-loop speed controlled (U/f) modes.

For bit 09:

Safe pulse pulse cancellation is a state that can only occur for the combination of velocity sensing without encoder (p9506) and drive-integrated motion monitoring functions without selection (p9601.5). In this state, internally an STO is initiated, which can be withdrawn again using an OFF1 enable.

For bit 12:

An active test stop is also displayed using the safety message C01798.

ESR: Extended Stop and Retract

SAM: Safe Acceleration Monitor (safe acceleration monitoring)

SBR: Safe Brake Ramp (safe brake ramp monitoring)

r9724 SI Motion cross-check clock cycle / SI Mtn KDV clk cyc

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [ms]	- [ms]	- [ms]

Description: Displays the cross-check clock cycle.

The value indicates the clock cycle time with which each individual KDV value is compared between the two monitoring channels.

Dependency: Refer to: p9500

Note: Cross-check clock cycle = monitoring clock cycle (p9500) * number of data to be cross-checked

KDV: Data cross-check

r9725[0...2] SI Motion diagnostics STOP F / SI Mtn Diag STOP F

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: For index [0]:

Displays the message value that resulted in the STOP F on the drive.

Value = 0:

The Control Unit signaled a STOP F.

Value = 1 ... 999:

Number of the incorrect date in the data cross-check between the monitoring channels.

Value >= 1000:

Additional diagnostic values of the drive.

For index [1]:

Displays the value of the Control Unit that resulted in the STOP F.

For index [2]:

Displays the value from the second channel that resulted in the STOP F.

Index: [0] = Message value for KDV
[1] = Control Unit KDV actual value
[2] = Components KDV actual value

Dependency: Refer to: C01711

Note: The significance of the individual message values is described in message C01711.

KDV: Data cross-check

For index [1, 2]:

When Safety message C01711 with message value >= 1000 occurs, these indices are not supplied with values.

p9726 SI Motion user agreement selection/de-selection / SI Mtn UserAgr sel

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95), U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	00AC hex	0000 hex

Description: Setting to select and de-select the user agreement.

Value:
0: [00 hex] De-select user agreement
172: [AC hex] Select user agreement

Dependency: Refer to: r9727

r9727 SI Motion user agreement inside the drive / SI Mtn UserAgr int

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 2822
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the internal state of the user agreement.

Value = 0: User agreement is not set.

Value = AC hex: User agreement is set.

Dependency: Refer to: p9726

r9728[0...2] SI Motion actual checksum SI parameters / SI Mtn act CRC

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the checksum over the checked Safety Integrated parameters of the motion monitoring functions (actual checksum).

Index:
[0] = Checksum over SI parameters for motion monitoring
[1] = Checksum over SI parameters for actual values
[2] = Checksum over SI parameters for hardware

Dependency: Refer to: p9729

Refer to: F01680

p9729[0...2] SI Motion reference checksum SI parameters / SI Mtn ref CRC

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the checksum using the checksum-tested Safety Integrated parameters for motion monitoring functions (reference checksum).

Index:
[0] = Checksum over SI parameters for motion monitoring
[1] = Checksum over SI parameters for actual values
[2] = Checksum over SI parameters for hardware

Dependency: Refer to: r9728

Refer to: F01680

r9730 SI Motion Safe maximum velocity / SI mtn safe v_Max

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [mm/min]	- [mm/min]	- [mm/min]

Description: Displays the safe maximum velocity (on the load side) that is permissible for the safe motion monitoring functions as a result of the actual value sensing.

This parameter indicates up to which load velocity the safe encoder actual values (redundant encoder coarse position) can still be correctly detected as a result of the particular encoder parameterization.

This parameter is only of significance for enabled safety with encoder (otherwise "0").

Note: If the value displayed is exceeded, message C01711 is output indicating relevant subsequent faults.

r9730 SI Motion Safe maximum velocity / SI mtn safe v_Max

SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the safe maximum velocity (on the load side) that is permissible for the safe motion monitoring functions as a result of the actual value sensing.

This parameter indicates up to which load velocity the safe encoder actual values (redundant encoder coarse position) can still be correctly detected as a result of the particular encoder parameterization.

This parameter is only of significance for enabled safety with encoder (otherwise "0").

Note: If the value displayed is exceeded, message C01711 is output indicating relevant subsequent faults.

r9731 SI Motion safe position accuracy / SI Mtn pos_accur

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [mm]	- [mm]	- [mm]

Description: Displays the safe position accuracy (load side).

As a result of the actual value sensing for safe motion monitoring functions, this accuracy can be achieved as the maximum.

In the case of a 2-encoder system, the accuracy of the poorer encoder - as a result of the number of encoder pulses - is displayed here.

Note: The parameter is only of significance for enabled safety with encoder (otherwise "0").

r9731 SI Motion safe position accuracy / SI Mtn pos_accur

SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [°]	- [°]	- [°]

Description: Displays the safe position accuracy (load side).

As a result of the actual value sensing for safe motion monitoring functions, this accuracy can be achieved as the maximum.

In the case of a 2-encoder system, the accuracy of the poorer encoder - as a result of the number of encoder pulses - is displayed here.

Note: The parameter is only of significance for enabled safety with encoder (otherwise "0").

r9732[0...1] SI Motion velocity resolution / SI Mtn v_res

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [mm/min]	- [mm/min]	- [mm/min]

Description: Displays the velocity resolution for safety-relevant motion monitoring functions.

For index [0]:

Displays the safe velocity resolution (load side). Setpoints for velocity limits or parameter changes for velocities below this threshold have no effect.

For index [1]:

Displays the safe velocity accuracy based on the safe encoder accuracy

Index: [0] = Actual velocity resolution
[1] = Minimum velocity resolution

Note: For index [0]:

This parameter does not provide any information about the actual accuracy of the velocity sensing. This depends on the type of actual value sensing, the gear factors as well as the quality of the encoder being used.

Conversion of:

(internal fixed value/ Tsi) to mm/min (linear) or rpm (rotary) with Tsi = p9500 (SI Motion monitoring clock cycle).

Example:

For Tsi = 12 ms, r9732[0] = 5 mm/min (linear) or 1/72 rpm (rotary) is obtained.

For index [1]:

- for a 2-encoder system with non safety-capable encoders, this means the poorer value for both encoders. Index[1] takes into account the coarse resolution of the encoder only

Internal calculation, which also incorporates the factor for the motor-load side conversion, the gearbox ratio and the safety monitoring clock cycle. Result returns mm/min (linear) or rpm (rotary).

- for safety without encoder, index 1 is not relevant, and is always the value of zero.

r9732[0...1] SI Motion velocity resolution / SI Mtn v_res

SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the velocity resolution for safety-relevant motion monitoring functions.

For index [0]:

Displays the safe velocity resolution (load side). Setpoints for velocity limits or parameter changes for velocities below this threshold have no effect.

For index [1]:

Displays the safe velocity accuracy based on the safe encoder accuracy

Index: [0] = Actual velocity resolution
[1] = Minimum velocity resolution

Note: For index [0]:

This parameter does not provide any information about the actual accuracy of the velocity sensing. This depends on the type of actual value sensing, the gear factors as well as the quality of the encoder being used.

Conversion of:

(internal fixed value/ Tsi) to mm/min (linear) or rpm (rotary) with Tsi = p9500 (SI Motion monitoring clock cycle).

Example:

For Tsi = 12 ms, r9732[0] = 5 mm/min (linear) or 1/72 rpm (rotary) is obtained.

For index [1]:

- for a 2-encoder system with non safety-capable encoders, this means the poorer value for both encoders. Index[1] takes into account the coarse resolution of the encoder only

Internal calculation, which also incorporates the factor for the motor-load side conversion, the gearbox ratio and the safety monitoring clock cycle. Result returns mm/min (linear) or rpm (rotary).

- for safety without encoder, index 1 is not relevant, and is always the value of zero.

r9733[0...2] CO: SI Motion setpoint speed limit effective / SI Mtn setp_lim

HLA

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2820, 2824, 3630
P-Group: Safety Integrated	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Displays the necessary setpoint speed limit as a result of the selected motion monitoring functions.

Contrary to the parameterization of the SI limit values, this parameter specifies the actuator-side limit value and not the load-side limit value.

Recommendation: For the ramp-function generator, by appropriately interconnecting the speed limits p1051 and p1052 with r9733[0, 1], a drive-based setpoint velocity limiting can be realized.

- CI: p1051 = r9733[0]

- CI: p1052 = r9733[1]

Additional limiting can also be activated using connector input p1085 and p1088.

Index: [0] = Setpoint limiting positive
[1] = Setpoint limiting negative
[2] = Setpoint limit absolute

Dependency: For SLS: r9733[0] = p9531[x] x p9533 (converted from the load side to the actuator side)

For SDI negative: r9733[0] = 0

For SLS: r9733[1] = - p9531[x] x p9533 (converted from the load side to the actuator side)

For SDI positive: r9733[1] = 0

[x] = Selected SLS stage

Conversion factor from the actuator side to the load side:

- actuator = rotary and axis type = linear: p9522 / (p9521 x p9520)
- otherwise: p9522 / p9521

Refer to: p9531, p9533

Notice: If p1051 = r9733[0] is interconnected, p1052 = r9733[1] must also be interconnected and vice versa.

If only the absolute value of the setpoint velocity limiting is required, r9733[2] must be interconnected.

Note: If the "SLS" or "SDI" function is not selected, r9733[0] shows p1082 and r9733[1] shows -p1082.

The display in r9733 can be delayed by up to one Safety monitoring clock cycle as compared to the display in r9719/r9720 and r9721/r9722.

r9733[0...2] CO: SI Motion setpoint speed limit effective / SI Mtn setp_lim

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2820, 2824, 3630
P-Group: Safety Integrated	**Unit group:** 3_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the necessary setpoint speed limit as a result of the selected motion monitoring functions.

Contrary to the parameterization of the SI limit values, this parameter specifies the motor-side limit value and not the load-side limit value.

Recommendation: For the ramp-function generator, by appropriately interconnecting the speed limits p1051 and p1052 with r9733[0, 1], a drive-based setpoint velocity limiting can be realized.

- CI: p1051 = r9733[0]
- CI: p1052 = r9733[1]

Additional limiting can also be activated using connector input p1085 and p1088.

Index: [0] = Setpoint limiting positive
[1] = Setpoint limiting negative
[2] = Setpoint limit absolute

Dependency: For SLS: r9733[0] = p9531[x] x p9533 (converted from the load side to the motor side)

For SDI negative: r9733[0] = 0

For SLS: r9733[1] = - p9531[x] x p9533 (converted from the load side to the motor side)

For SDI positive: r9733[1] = 0

[x] = Selected SLS stage

Conversion factor from the motor side to the load side:

- motor type = rotary and axis type = linear: p9522 / (p9521 x p9520)
- otherwise: p9522 / p9521

Refer to: p9531, p9533

Notice: If p1051 = r9733[0] is interconnected, p1052 = r9733[1] must also be interconnected and vice versa.

If only the absolute value of the setpoint velocity limiting is required, r9733[2] must be interconnected.

Note: The unit changeover between linear and rotary axis is not implemented via the safety changeover (p9502) but by the linear motor changeover.

If the "SLS" or "SDI" function is not selected, r9733[0] shows p1082 and r9733[1] shows -p1082.

The display in r9733 can be delayed by up to one Safety monitoring clock cycle as compared to the display in r9719/r9720 and r9721/r9722.

When selecting SOS or a STOP A ... D, setpoint 0 is specified in r9733.

r9733[0...2] CO: SI Motion setpoint speed limit effective / SI Mtn setp_lim

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2820, 2824, 3630
P-Group: Safety Integrated	**Unit group:** 4_1	**Unit selection:** p0505
Not for motor type: -	**Scaling:** p2000	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/min]	- [m/min]	- [m/min]

Description: Displays the necessary setpoint speed limit as a result of the selected motion monitoring functions.

Contrary to the parameterization of the SI limit values, this parameter specifies the motor-side limit value and not the load-side limit value.

Recommendation: For the ramp-function generator, by appropriately interconnecting the speed limits p1051 and p1052 with r9733[0, 1], a drive-based setpoint velocity limiting can be realized.

- CI: p1051 = r9733[0]
- CI: p1052 = r9733[1]

Additional limiting can also be activated using connector input p1085 and p1088.

Index:
[0] = Setpoint limiting positive
[1] = Setpoint limiting negative
[2] = Setpoint limit absolute

Dependency: For SLS: r9733[0] = p9531[x] x p9533 (converted from the load side to the motor side)

For SDI negative: r9733[0] = 0

For SLS: r9733[1] = - p9531[x] x p9533 (converted from the load side to the motor side)

For SDI positive: r9733[1] = 0

[x] = Selected SLS stage

Conversion factor from the motor side to the load side:

- motor type = rotary and axis type = linear: p9522 / (p9521 x p9520)
- otherwise: p9522 / p9521

Refer to: p9531, p9533

Notice: If p1051 = r9733[0] is interconnected, p1052 = r9733[1] must also be interconnected and vice versa.

If only the absolute value of the setpoint velocity limiting is required, r9733[2] must be interconnected.

Note: The unit changeover between linear and rotary axis is not implemented via the safety changeover (p9502) but by the linear motor changeover.

If the "SLS" or "SDI" function is not selected, r9733[0] shows p1082 and r9733[1] shows -p1082.

The display in r9733 can be delayed by up to one Safety monitoring clock cycle as compared to the display in r9719/r9720 and r9721/r9722.

When selecting SOS or a STOP A ... D, setpoint 0 is specified in r9733.

r9734.0...15 CO/BO: SI Safety Information Channel status word S_ZSW1B / SIC S_ZSW1B

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for status word S_ZSW1B of the Safety Information Channel.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	STO active	Yes	No	-
01	SS1 active	Yes	No	-
02	SS2 active	Yes	No	-
03	SOS active	Yes	No	-
04	SLS active	Yes	No	-
05	SOS selected	Yes	No	-
06	SLS selected	Yes	No	-
07	Internal event	Yes	No	-
08	SLA selected	Yes	No	-
09	Select SLS bit0	Yes	No	-

10	Select SLS bit1	Yes	No	-
12	SDI positive selected	Yes	No	-
13	SDI negative selected	Yes	No	-
14	ESR retract requested	Yes	No	-
15	Safety message present	Yes	No	-

Note: SIC: Safety Information Channel

For bit 07:

An internal event is displayed if a STOP A ... F is active.

r9735[0...1] SI Motion diagnostics result list 3 / SI Mtn res_list 3

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays result list 3, that for the data cross-check with the control, led to the fault.

Index: [0] = Result list second channel
[1] = Result list drive

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Actual value > upper limit SN1+	Yes	No	-
01	Actual value > lower limit SN1+	Yes	No	-
02	Actual value > upper limit SN1-	Yes	No	-
03	Actual value > lower limit SN1-	Yes	No	-
04	Actual value > upper limit SN2+	Yes	No	-
05	Actual value > lower limit SN2+	Yes	No	-
06	Actual value > upper limit SN2-	Yes	No	-
07	Actual value > lower limit SN2-	Yes	No	-
08	Actual value > upper limit SN3+	Yes	No	-
09	Actual value > lower limit SN3+	Yes	No	-
10	Actual value > upper limit SN3-	Yes	No	-
11	Actual value > lower limit SN3-	Yes	No	-
12	Actual value > upper limit SN4+	Yes	No	-
13	Actual value > lower limit SN4+	Yes	No	-
14	Actual value > upper limit SN4-	Yes	No	-
15	Actual value > lower limit SN4-	Yes	No	-
16	Actual value > upper limit SN5+	Yes	No	-
17	Actual value > lower limit SN5+	Yes	No	-
18	Actual value > upper limit SN5-	Yes	No	-
19	Actual value > lower limit SN5-	Yes	No	-
20	Actual value > upper limit SN6+	Yes	No	-
21	Actual value > lower limit SN6+	Yes	No	-
22	Actual value > upper limit SN6-	Yes	No	-
23	Actual value > lower limit SN6-	Yes	No	-

Dependency: Refer to: C01711

r9736[0...1] SI Motion diagnostics result list 4 / SI Mtn res_list 4

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays result list 4, that for the data cross-check with the control, led to the fault.

Index:
[0] = Result list second channel
[1] = Result list drive

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Actual value > upper limit SN7+	Yes	No	-
01	Actual value > lower limit SN7+	Yes	No	-
02	Actual value > upper limit SN7-	Yes	No	-
03	Actual value > lower limit SN7-	Yes	No	-
04	Actual value > upper limit SN8+	Yes	No	-
05	Actual value > lower limit SN8+	Yes	No	-
06	Actual value > upper limit SN8-	Yes	No	-
07	Actual value > lower limit SN8-	Yes	No	-
08	Actual value > upper limit SN9+	Yes	No	-
09	Actual value > lower limit SN9+	Yes	No	-
10	Actual value > upper limit SN9-	Yes	No	-
11	Actual value > lower limit SN9-	Yes	No	-
12	Actual value > upper limit SN10+	Yes	No	-
13	Actual value > lower limit SN10+	Yes	No	-
14	Actual value > upper limit SN10-	Yes	No	-
15	Actual value > lower limit SN10-	Yes	No	-
16	Actual value > upper limit SN11+	Yes	No	-
17	Actual value > lower limit SN11+	Yes	No	-
18	Actual value > upper limit SN11-	Yes	No	-
19	Actual value > lower limit SN11-	Yes	No	-
20	Actual value > upper limit SN12+	Yes	No	-
21	Actual value > lower limit SN12+	Yes	No	-
22	Actual value > upper limit SN12-	Yes	No	-
23	Actual value > lower limit SN12-	Yes	No	-

Dependency: Refer to: C01711

r9737[0...1] SI Motion diagnostics result list 5 / SI Mtn res_list 5

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays result list 5, that for the data cross-check with the control, led to the fault.

Index:
[0] = Result list second channel
[1] = Result list drive

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Actual value > upper limit SN13+	Yes	No	-
01	Actual value > lower limit SN13+	Yes	No	-
02	Actual value > upper limit SN13-	Yes	No	-
03	Actual value > lower limit SN13-	Yes	No	-
04	Actual value > upper limit SN14+	Yes	No	-
05	Actual value > lower limit SN14+	Yes	No	-
06	Actual value > upper limit SN14-	Yes	No	-
07	Actual value > lower limit SN14-	Yes	No	-
08	Actual value > upper limit SN15+	Yes	No	-
09	Actual value > lower limit SN15+	Yes	No	-
10	Actual value > upper limit SN15-	Yes	No	-

11	Actual value > lower limit SN15-	Yes	No	-
12	Actual value > upper limit SN16+	Yes	No	-
13	Actual value > lower limit SN16+	Yes	No	-
14	Actual value > upper limit SN16-	Yes	No	-
15	Actual value > lower limit SN16-	Yes	No	-
16	Actual value > upper limit SN17+	Yes	No	-
17	Actual value > lower limit SN17+	Yes	No	-
18	Actual value > upper limit SN17-	Yes	No	-
19	Actual value > lower limit SN17-	Yes	No	-
20	Actual value > upper limit SN18+	Yes	No	-
21	Actual value > lower limit SN18+	Yes	No	-
22	Actual value > upper limit SN18-	Yes	No	-
23	Actual value > lower limit SN18-	Yes	No	-

Dependency: Refer to: C01711

r9738[0...1] SI Motion diagnostics result list 6 / SI Mtn res_list 6

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays result list 5, that for the data cross-check with the control, led to the fault.

Index:
[0] = Result list second channel
[1] = Result list drive

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Actual value > upper limit SN19+	Yes	No	-
01	Actual value > lower limit SN19+	Yes	No	-
02	Actual value > upper limit SN19-	Yes	No	-
03	Actual value > lower limit SN19-	Yes	No	-
04	Actual value > upper limit SN20+	Yes	No	-
05	Actual value > lower limit SN20+	Yes	No	-
06	Actual value > upper limit SN20-	Yes	No	-
07	Actual value > lower limit SN20-	Yes	No	-
08	Actual value > upper limit SN21+	Yes	No	-
09	Actual value > lower limit SN21+	Yes	No	-
10	Actual value > upper limit SN21-	Yes	No	-
11	Actual value > lower limit SN21-	Yes	No	-
12	Actual value > upper limit SN22+	Yes	No	-
13	Actual value > lower limit SN22+	Yes	No	-
14	Actual value > upper limit SN22-	Yes	No	-
15	Actual value > lower limit SN22-	Yes	No	-
16	Actual value > upper limit SN23+	Yes	No	-
17	Actual value > lower limit SN23+	Yes	No	-
18	Actual value > upper limit SN23-	Yes	No	-
19	Actual value > lower limit SN23-	Yes	No	-
20	Actual value > upper limit SN24+	Yes	No	-
21	Actual value > lower limit SN24+	Yes	No	-
22	Actual value > upper limit SN24-	Yes	No	-
23	Actual value > lower limit SN24-	Yes	No	-

Dependency: Refer to: C01711

r9739[0...1] SI Motion diagnostics result list 7 / SI Mtn res_list 7

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays result list 7, that for the data cross-check with the control, led to the fault.

Index:
[0] = Result list second channel
[1] = Result list drive

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Actual value > upper limit SN25+	Yes	No	-
01	Actual value > lower limit SN25+	Yes	No	-
02	Actual value > upper limit SN25-	Yes	No	-
03	Actual value > lower limit SN25-	Yes	No	-
04	Actual value > upper limit SN26+	Yes	No	-
05	Actual value > lower limit SN26+	Yes	No	-
06	Actual value > upper limit SN26-	Yes	No	-
07	Actual value > lower limit SN26-	Yes	No	-
08	Actual value > upper limit SN27+	Yes	No	-
09	Actual value > lower limit SN27+	Yes	No	-
10	Actual value > upper limit SN27-	Yes	No	-
11	Actual value > lower limit SN27-	Yes	No	-
12	Actual value > upper limit SN28+	Yes	No	-
13	Actual value > lower limit SN28+	Yes	No	-
14	Actual value > upper limit SN28-	Yes	No	-
15	Actual value > lower limit SN28-	Yes	No	-
16	Actual value > upper limit SN29+	Yes	No	-
17	Actual value > lower limit SN29+	Yes	No	-
18	Actual value > upper limit SN29-	Yes	No	-
19	Actual value > lower limit SN29-	Yes	No	-
20	Actual value > upper limit SN30+	Yes	No	-
21	Actual value > lower limit SN30+	Yes	No	-
22	Actual value > upper limit SN30-	Yes	No	-
23	Actual value > lower limit SN30-	Yes	No	-

Dependency: Refer to: C01711

p9740 SI Motion user agreement selection/de-selection MM / SI mtn UserAgr MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95), U, T	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	00AC hex	0000 hex

Description: Setting to select and de-select the user agreement on the Motor Module/Hydraulic Module.

Value:
0: [00 hex] De-select user agreement
172: [AC hex] Select user agreement

Dependency: Refer to: r9741

r9741 SI Motion user agreement inside the drive MM / SI Mtn UserAgr int

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 2822
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the internal state of the user agreement.

Value = 0: User agreement is not set.

Value = AC hex: User agreement is set.

Dependency: Refer to: p9740

r9743.4...15 CO/BO: SI Safety Information Channel status word S_ZSW2B / SIC S_ZSW2B

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for status word S_ZSW2B of the Safety Information Channel.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
04	SLP selected position area	SLP2	SLP1	-
07	SLP selected and user agreement set	Yes	No	-
08	SDI positive selected	Yes	No	-
09	SDI negative selected	Yes	No	-
12	Test stop active	Yes	No	-
13	Test stop required	Yes	No	-
14	Reference position required	Yes	No	-
15	Reference trigger command identified or reference position valid	Yes	No	-

Note: SIC: Safety Information Channel

r9744 SI message buffer changes, counter / SI msg_buffer chng

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the changes of the safety message buffer.

This counter is incremented every time that the safety message buffer changes.

Recommendation: This is used to check whether the safety message buffer has been read out consistently.

Dependency: Refer to: r9747, r9748, r9749, p9752, r9753, r9754, r9755, r9756

r9745[0...63] SI components / SI comp

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the component of the safety message that has occurred.

Note: Value = 0: Assignment to a component not possible.

r9747[0...63] SI message code / SI msg_code

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the numbers of safety messages that have occurred.

Dependency: Refer to: r9744, r9748, r9749, p9752, r9753, r9754, r9755, r9756

Note: The messages type "safety message" (Cxxxxx) are entered in the message fault buffer.

Message buffer structure (principle):

r9747[0], r9748[0], r9749[0], r9753[0], r9754[0], r9755[0], r9756[0] --> Actual message case, safety message 1

...

r9747[7], r9748[7], r9749[7], r9753[7], r9754[7], r9755[7], r9756[7] --> Actual message case, safety message 8

r9747[8], r9748[8], r9749[8], r9753[8], r9754[8], r9755[8], r9756[8] --> 1st acknowledged message case, safety message 1

...

r9747[15], r9748[15], r9749[15], r9753[15], r9754[15], r9755[15], r9756[15] --> 1st acknowledged message case, safety message 8

...

r9747[56], r9748[56], r9749[56], r9753[56], r9754[56], r9755[56], r9756[56] --> 7th acknowledged message case, safety message 1

...

r9747[63], r9748[63], r9749[63], r9753[63], r9754[63], r9755[63], r9756[63] --> 7th acknowledged message case, safety message 8

r9748[0...63] SI message time received in milliseconds / SI t_msg recv ms

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [ms]	- [ms]	- [ms]

Description: Displays the relative system runtime in milliseconds when the safety message occurred.

Dependency: Refer to: r9744, r9747, r9749, p9752, r9753, r9754, r9755, r9756

r9749[0...63] SI message value / SI msg_value

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the additional information about the safety message that occurred (as integer number).

Dependency: Refer to: r9744, r9747, r9748, p9752, r9753, r9754, r9755, r9756

r9750[0...63] SI diagnostic attributes / SI diag_attr

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the diagnostic attributes of the safety messages that have occurred.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Hardware replacement recommended	Yes	No	-
15	Message has gone	Yes	No	-
16	PROFIdrive fault class bit 0	High	Low	-
17	PROFIdrive fault class bit 1	High	Low	-
18	PROFIdrive fault class bit 2	High	Low	-
19	PROFIdrive fault class bit 3	High	Low	-
20	PROFIdrive fault class bit 4	High	Low	-

Note: The buffer parameters are cyclically updated in the background (refer to status signal in r2139).

The structure of the SI message buffer and the assignment of the indices is shown in r9747.

For bits 20 ... 16:

Bits 20, 19, 18, 17, 16 = 0, 0, 0, 0, 0 --> PROFIdrive message class 0: not assigned

Bit 20, 19, 18, 17, 16 = 0, 0, 0, 0, 1 --> PROFIdrive message class 1: hardware fault/software error

Bits 20, 19, 18, 17, 16 = 0, 0, 0, 1, 0 --> PROFIdrive message class 2: line fault

Bits 20, 19, 18, 17, 16 = 0, 0, 0, 1, 1 --> PROFIdrive message class 3: supply voltage fault

Bits 20, 19, 18, 17, 16 = 0, 0, 1, 0, 0 --> PROFIdrive message class 4: DC link fault

Bits 20, 19, 18, 17, 16 = 0, 0, 1, 0, 1 --> PROFIdrive message class 5: power electronics faulted

Bits 20, 19, 18, 17, 16 = 0, 0, 1, 1, 0 --> PROFIdrive message class 6: overtemperature electronic components

Bits 20, 19, 18, 17, 16 = 0, 0, 1, 1, 1 --> PROFIdrive message class 7: ground fault/phase fault detected

Bits 20, 19, 18, 17, 16 = 0, 1, 0, 0, 0 --> PROFIdrive message class 8: motor overload

Bits 20, 19, 18, 17, 16 = 0, 1, 0, 0, 1 --> PROFIdrive message class 9: communication error to the higher-level control

Bits 20, 19, 18, 17, 16 = 0, 1, 0, 1, 0 --> PROFIdrive message class 10: safe monitoring channel has identified an error

Bits 20, 19, 18, 17, 16 = 0, 1, 0, 1, 1 --> PROFIdrive message class 11: incorrect position actual value/speed actual value or not available

Bits 20, 19, 18, 17, 16 = 0, 1, 1, 0, 0 --> PROFIdrive message class 12: internal (DRIVE-CLiQ) communication error

Bits 20, 19, 18, 17, 16 = 0, 1, 1, 0, 1 --> PROFIdrive message class 13: infeed unit faulted

Bits 20, 19, 18, 17, 16 = 0, 1, 1, 1, 0 --> PROFIdrive message class 14: braking controller/Braking Module faulted

Bits 20, 19, 18, 17, 16 = 0, 1, 1, 1, 1 --> PROFIdrive message class 15: line filter faulted

Bits 20, 19, 18, 17, 16 = 1, 0, 0, 0, 0 --> PROFIdrive message class 16: external measured value/signal state outside the permissible range

Bits 20, 19, 18, 17, 16 = 1, 0, 0, 0, 1 --> PROFIdrive message class 17: application/technology function faulted

Bits 20, 19, 18, 17, 16 = 1, 0, 0, 1, 0 --> PROFIdrive message class 18: error in the parameterization/configuration/commissioning sequence

Bits 20, 19, 18, 17, 16 = 1, 0, 0, 1, 1 --> PROFIdrive message class 19: general drive fault

Bits 20, 19, 18, 17, 16 = 0, 1, 1, 0, 0 --> PROFIdrive message class 20: auxiliary unit faulted

p9752 SI message cases counter / SI msg_cases count

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	65535	0

Description: Number of safety messages that have occurred since the last reset.

Dependency: The safety message buffer is cleared by resetting the parameter to 0.

Refer to: r9744, r9747, r9748, r9749, r9753, r9754, r9755, r9756

Note: The parameter is reset to 0 at POWER ON.

r9753[0...63] SI message value for float values / SI msg_val float

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays additional information about the safety message that has occurred for float values.

Dependency: Refer to: r9744, r9747, r9748, r9749, p9752, r9754, r9755, r9756

r9754[0...63] SI message time received in days / SI t_msg recv days

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the relative system runtime in days when the safety message occurred.

Dependency: Refer to: r9744, r9747, r9748, r9749, p9752, r9753, r9755, r9756

r9755[0...63] SI message time removed in milliseconds / SI t_msg rem ms

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [ms]	- [ms]	- [ms]

Description: Displays the relative system runtime in milliseconds when the safety message was removed.

Dependency: Refer to: r9744, r9747, r9748, r9749, p9752, r9753, r9754, r9756

r9756[0...63] SI message time removed in days / SI t_msg rem days

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Messages	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the relative system runtime in days when the safety message was removed.

Dependency: Refer to: r9744, r9747, r9748, r9749, p9752, r9753, r9754, r9755

p9761 SI password input / SI password inp

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C1, C2(95), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2800
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Enters the Safety Integrated password.

Dependency: Refer to: F01659

Note: It is not possible to change Safety Integrated parameters until the Safety Integrated password has been entered.

p9762 SI password new / SI password new

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2800
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Enters a new Safety Integrated password.

Dependency: A change made to the Safety Integrated password must be acknowledged in the following parameter:

Refer to: p9763

p9763 SI password acknowledgment / SI ackn password

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2800
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Acknowledges the new Safety Integrated password.

Dependency: Refer to: p9762

Note: The new password entered into p9762 must be re-entered in order to acknowledge.

p9762 = p9763 = 0 is automatically set after the new Safety Integrated password has been successfully acknowledged.

r9765 SI Motion forced check procedure remaining time (Control Unit) / SI Mtn dyn remain

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [h]	- [h]	- [h]

Description: Displays the time remaining until the next dynamization and testing of the safety motion monitoring functions integrated in the drives.

The signal source to initiate the forced checking procedure is parameterized in p9705.

Dependency: Refer to: p9705

Refer to: C01798

r9768[0...7] SI PROFIsafe receive control words (Control Unit) / SI Ps PZD recv CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the received PROFIsafe telegram on the Control Unit.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8

Dependency: Refer to: r9769

Note: The PROFIsafe trailer at the end of the telegram is also displayed (2 words).

r9769[0...7] SI PROFIsafe send status words (Control Unit) / SI Ps PZD send CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the PROFIsafe telegram to be sent on the Control Unit.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8

Dependency: Refer to: r9768

Note: The PROFIsafe trailer at the end of the telegram is also displayed (2 words).

r9770[0...3] SI version drive-integrated safety function (Control Unit) / SI Version CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2802
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the Safety Integrated version for the drive-integrated safety functions on the Control Unit.

Index:
[0] = Safety Version (major release)
[1] = Safety Version (minor release)
[2] = Safety Version (baselevel or patch)
[3] = Safety Version (hotfix)

Dependency: Refer to: r9870, r9890

Note: Example:
r9770[0] = 2, r9770[1] = 60, r9770[2] = 1, r9770[3] = 0 --> Safety version V02.60.01.00

r9771 SI common functions (Control Unit) / SI common fct CU

HLA

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2804
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the supported Safety Integrated monitoring functions supported on both monitoring channels.

The Control Unit determines this display.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	STO supported via terminals	Yes	No	2804
02	Extended Functions supported (p9501 > 0)	Yes	No	2804
03	SS1 supported	Yes	No	2804
04	Extended Functions PROFIsafe supported	Yes	No	-
05	Extended Functions integrated in drive supported (p9601.2 = 1)	Yes	No	-
06	Basic Functions PROFIsafe supported	Yes	No	-
07	Extended Functions encoderless supported	Yes	No	-
11	Extended Functions SDI supported	Yes	No	-
12	Extended Functions SSM encoderless supported	Yes	No	-
13	ESR delay of the pulse suppression	Yes	No	-
15	SLS limit SP supported via PROFIsafe	Yes	No	-
16	Safety functions without selection, SLP, SS1E supported	Yes	No	-
17	Safe gearbox stage switchover ref supported via SCC	Yes	No	-
18	Controlling Basic Functions with TM54F	Yes	No	-
20	STOP B for PROFIsafe failure supported	Yes	No	-
21	SBR with encoder and SS2E supported	Yes	No	-
22	SCA, deactivation SOS/SLS during an external STOP A	Yes	No	-
23	Synchronous safe position and SLA via PROFIsafe supported	Yes	No	-

Dependency: Refer to: r9871

Note: CU: Control Unit

ESR: Extended Stop and Retract

SCA: Safe Cam

SCC: Safety Control Channel

SDI: Safe Direction (safe motion direction)

SI: Safety Integrated

SLA: Safely-Limited Acceleration

SLP: Safely-Limited Position

SP: Safe Position

SS1: Safe Stop 1

SS1E: Safe Stop 1 External (Safe Stop 1 with external stop)

SS2E: Safe Stop 2 external (Safe Stop 2 with external stop, external STOP D)

SSM: Safe Speed Monitor (safety-related feedback signal from the speed monitoring) / SGA n < nx: Safety-related output n < nx

STO: Safe Torque Off / SH: Safe standstill

For bit 16:

SS1E is supported for Safety Extended Functions.

r9771 SI common functions (Control Unit) / SI common fct CU

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2804
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the supported Safety Integrated monitoring functions supported on both monitoring channels.

The Control Unit determines this display.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	STO supported via terminals	Yes	No	2804
01	SBC supported	Yes	No	2804
02	Extended Functions supported (p9501 > 0)	Yes	No	2804
03	SS1 supported	Yes	No	2804
04	Extended Functions PROFIsafe supported	Yes	No	-
05	Extended Functions integrated in drive supported (p9601.2 = 1)	Yes	No	-
06	Basic Functions PROFIsafe supported	Yes	No	-
07	Extended Functions encoderless supported	Yes	No	-
08	Safe Brake Adapter supported	Yes	No	-
09	Basic Functions PROFIsafe for parallel connection supported	Yes	No	-
10	Extended Functions integrated in drive for parallel connection	Yes	No	-
11	Extended Functions SDI supported	Yes	No	-
12	Extended Functions SSM encoderless supported	Yes	No	-
13	ESR delay of the pulse suppression	Yes	No	-
14	SBC for parallel connection supported	Yes	No	-
15	SLS limit SP supported via PROFIsafe	Yes	No	-
16	Safety functions without selection, SLP, SS1E supported	Yes	No	-
17	Safe gearbox stage switchover ref supported via SCC	Yes	No	-
18	Controlling Basic Functions with TM54F	Yes	No	-
20	STOP B for PROFIsafe failure supported	Yes	No	-
21	SBR with encoder and SS2E supported	Yes	No	-
22	SCA, deactivation SOS/SLS during an external STOP A	Yes	No	-
23	Synchronous safe position and SLA via PROFIsafe supported	Yes	No	-

Dependency: Refer to: r9871

Note: CU: Control Unit

ESR: Extended Stop and Retract

SBC: Safe Brake Control

SBR: Safe Brake Ramp (safe brake ramp monitoring)

SCA: Safe Cam

SCC: Safety Control Channel

SDI: Safe Direction (safe motion direction)

SI: Safety Integrated

SLA: Safely-Limited Acceleration

SLP: Safely-Limited Position

SLS: Safely-Limited Speed / SG: Safely reduced speed

SOS: Safe Operating Stop / SBH: Safe operating stop

SP: Safe Position

SS1: Safe Stop 1

SS1E: Safe Stop 1 External (Safe Stop 1 with external stop)

SS2E: Safe Stop 2 external (Safe Stop 2 with external stop, external STOP D)

SSM: Safe Speed Monitor (safety-related feedback signal from the speed monitoring) / SGA n < nx: Safety-related output n < nx

STO: Safe Torque Off / SH: Safe standstill

For bit 16:

SS1E is supported for Safety Extended Functions.

r9772.0...23 CO/BO: SI status (Control Unit) / SI status CU

HLA

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2804
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the Safety Integrated status on the Control Unit.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	STO or safe power inhibit on CU selected	Yes	No	2810
01	STO or safe power inhibit on CU active	Yes	No	2810
02	SS1 delay time active on CU	Yes	No	2810
05	SS1 on CU selected (Basic Functions)	Yes	No	-
06	SS1 on CU active (Basic Functions)	Yes	No	-
07	STO terminal state on CU (Basic Functions)	High	Low	-
09	STOP A cannot be acknowledged active	Yes	No	2802
10	STOP A active	Yes	No	2802
15	STOP F active	Yes	No	2802
16	STO cause: Safety comm. mode	Yes	No	-
17	STO cause selection via terminal (Basic Functions)	Yes	No	-
18	STO cause selection via Safe Motion Monitoring (SMM)	Yes	No	-
19	STO cause actual value missing or safe power inhibit	Yes	No	-
20	STO cause selection PROFIsafe/TM54F (Basic Functions)	Yes	No	-
21	STO cause selection on other monitoring channel	Yes	No	-
22	SS1 cause selection terminal (Basic Functions)	Yes	No	-
23	SS1 cause selection PROFIsafe/TM54F (Basic Functions)	Yes	No	-

Dependency: Refer to: r9872

Note: For bit 00:

When STO or "Safe power inhibit" is selected, the cause is displayed in bits 16 ... 21.

For bit 01:

- For p9772.1 = 1 and p9772.19 = 0, an STO from the Safety Basic functions is active.
- For p9772.1 = 1 and p9772.19 = 1, safe power inhibit is active, if safety functions without selection are activated via p9601.2/p9801.2 = 1 and p9601.5/p9801.5 = 1.

Note:

If p9601.0 = 1 and p9601.2 = 1 and p9801.5 = 1 then for bit 0 and 1, the STO function applies.

For bit 05:

When SS1 is selected, the cause is displayed in bits 22 and 23.

For bit 18:

When the bit is set, STO is selected via PROFIsafe or Terminal Module 54F (TM54F).

For bit 19:

With SMM with encoder no actual value sensing is possible on account of parking.

For Safety functions without selection, safe power inhibit to selected (p9772.19 = 1).

SMM: Safe Motion Monitoring

For bit 22 and 23:

These bits show via which path the SS1 has been triggered, i.e. what has started the SS1 delay time.

If the SS1 delay time is not started (e.g. because an STO is triggered at the same time), neither of the two bits is set.

r9772.0...23 CO/BO: SI status (Control Unit) / SI status CU

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC			
	Can be changed: -	**Calculated:** -	**Access level:** 2
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2804
	P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Display and BICO output for the Safety Integrated status on the Control Unit.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	STO or safe pulse cancellation on CU selected	Yes	No	2810
01	STO or safe pulse cancellation on CU active	Yes	No	2810
02	SS1 delay time active on CU	Yes	No	2810
04	SBC requested	Yes	No	2814
05	SS1 on CU selected (Basic Functions)	Yes	No	-
06	SS1 on CU active (Basic Functions)	Yes	No	-
07	STO terminal state on CU (Basic Functions)	High	Low	-
09	STOP A cannot be acknowledged active	Yes	No	2802
10	STOP A active	Yes	No	2802
15	STOP F active	Yes	No	2802
16	STO cause: Safety comm. mode	Yes	No	-
17	STO cause selection via terminal (Basic Functions)	Yes	No	-
18	STO cause selection via Safe Motion Monitoring (SMM)	Yes	No	-
19	STO cause actual value missing or safe pulse cancellation	Yes	No	-
20	STO cause selection PROFIsafe/TM54F (Basic Functions)	Yes	No	-
21	STO cause selection on other monitoring channel	Yes	No	-
22	SS1 cause selection terminal (Basic Functions)	Yes	No	-
23	SS1 cause selection PROFIsafe/TM54F (Basic Functions)	Yes	No	-

Dependency: Refer to: r9872

Note: For bit 00:

When STO or "Safe pulse cancellation" is selected, the cause is displayed in bits 16 ... 21.

For bit 01:

- For p9772.1 = 1 and p9772.19 = 0, an STO from the Safety Basic functions is active.

- For p9772.1 = 1 and p9772.19 = 1, safe pulse cancellation is active, if safety functions without selection are activated via p9601.2/p9801.2 = 1 and p9601.5/p9801.5 = 1.

Note:

If p9601.0 = 1 and p9601.2 = 1 and p9801.5 = 1 then for bit 0 and 1, the STO function applies.

For bit 05:

When SS1 is selected, the cause is displayed in bits 22 and 23.

For bit 18:

When the bit is set, STO is selected via PROFIsafe or Terminal Module 54F (TM54F).

For bit 19:

With SMM encoderless no actual value sensing is possible on account of OFF2.

With SMM with encoder no actual value sensing is possible on account of parking.

For Safety functions without selection, safe pulse cancellation to selected (p9772.19 = 1).

SMM: Safe Motion Monitoring

For bit 22 and 23:

These bits show via which path the SS1 has been triggered, i.e. what has started the SS1 delay time.

If the SS1 delay time is not started (e.g. because an STO is triggered at the same time), neither of the two bits is set.

r9773.0...31 CO/BO: SI status (Control Unit + Hydraulic Module) / SI status CU+HM

HLA

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2804
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output of the Safety Integrated status on the drive (Control Unit + Hydraulic Module).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	STO selected in drive	Yes	No	2804
01	STO active in drive	Yes	No	2804
02	SS1 delay time active in the drive	Yes	No	2804
05	SS1 selected in the drive (Basic Functions)	Yes	No	-
06	SS1 active in the drive (Basic Functions)	Yes	No	-
31	Test stop required for STO	Yes	No	2810

Note: This status is formed from the AND operation of the relevant status of the two monitoring channels.

r9773.0...31 CO/BO: SI status (Control Unit + Motor Module) / SI status CU+MM

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2804
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output of the Safety Integrated status on the drive (Control Unit + Motor Module).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	STO selected in drive	Yes	No	2804
01	STO active in drive	Yes	No	2804
02	SS1 delay time active in the drive	Yes	No	2804
04	SBC requested	Yes	No	2804
05	SS1 selected in the drive (Basic Functions)	Yes	No	-
06	SS1 active in the drive (Basic Functions)	Yes	No	-
31	Test stop required for STO	Yes	No	2810

Note: This status is formed from the AND operation of the relevant status of the two monitoring channels.

r9774.0...31 CO/BO: SI status (group STO) / SI stat group STO

HLA

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2804
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the Safety Integrated status of the group to which this drive belongs.

These signals are an AND logic operation of the individual status signals of the drives included in this group.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	STO selected in group	Yes	No	2804
01	STO active in group	Yes	No	2804
02	SS1 delay time active in group	Yes	No	-
05	SS1 selected in group (Basic Functions)	Yes	No	-
06	SS1 active in group (Basic Functions)	Yes	No	-
31	Switch-off signal paths of the group must be tested	Yes	No	2804

Dependency: Refer to: p9620, r9773

Notice: If a drive belonging to a group is deactivated via p0105, then the signals in r9774 can no longer be correctly displayed (Remedy: Before deactivating, remove this drive from the group).

Note: A group is formed by appropriately grouping the terminals for the function "Safe Torque Off" (STO).

The status of a group of n drives is, for drives 1 to n - 1 displayed with a delay of one monitoring clock cycle; this is a system-related effect.

r9774.0...31 CO/BO: SI status (group STO) / SI stat group STO

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2804
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the Safety Integrated status of the group to which this drive belongs.

These signals are an AND logic operation of the individual status signals of the drives included in this group.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	STO selected in group	Yes	No	2804
01	STO active in group	Yes	No	2804
02	SS1 delay time active in group	Yes	No	-
04	SBC requested in group	Yes	No	2804
05	SS1 selected in group (Basic Functions)	Yes	No	-
06	SS1 active in group (Basic Functions)	Yes	No	-
31	Switch-off signal paths of the group must be tested	Yes	No	2804

Dependency: Refer to: p9620, r9773

Notice: If a drive belonging to a group is deactivated via p0105, then the signals in r9774 can no longer be correctly displayed (Remedy: Before deactivating, remove this drive from the group).

Note: A group is formed by appropriately grouping the terminals for the function "Safe Torque Off" (STO).

The status of a group of n drives is, for drives 1 to n - 1 displayed with a delay of one monitoring clock cycle; this is a system-related effect.

r9776.0...3 BO: SI diagnostics / SI diag

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: The parameter is used for diagnostics.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Safety parameter changed POWER ON required	Yes	No	-
01	Safety functions enabled	Yes	No	-
02	Safety component replaced and data save required	Yes	No	-
03	Safety component replaced and acknowledge/save required	Yes	No	-

Dependency: Refer to: r9793

Note: For bit 00 = 1:

At least one Safety parameter has been changed that will only take effect after a POWER ON.

For bit 01 = 1:

Safety functions (basic functions or extended functions) have been enabled and are active.

For bit 02 = 1:

A safety-relevant component has been replaced. Data save required (p0977 = 1 or p0971 = 1 or "copy RAM to ROM").

For bit 03 = 1:

A safety-relevant component has been replaced. Acknowledge (p9702 = 29) and save (p0977 = 1 or p0971 = 1 or "Copy RAM to ROM") required.

r9776.0...2 BO: SI diagnostics / SI diag

TM54F_MA

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: The parameter is used for diagnostics.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Safety parameter changed POWER ON required	Yes	No	-
01	Safety functions enabled	Yes	No	-
02	Safety component replaced and data save required	Yes	No	-

Dependency: Refer to: r9793

Note: For bit 00 = 1:

At least one Safety parameter has been changed that will only take effect after a POWER ON.

For bit 01 = 1:

Safety functions (basic functions or extended functions) have been enabled and are active.

For bit 02 = 1:

A safety-relevant component has been replaced. Data save required (p0977 = 1 or p0971 = 1 or "copy RAM to ROM").

r9780 SI monitoring clock cycle (Control Unit) / SI monitor_clck CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2802
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [ms]	- [ms]	- [ms]

Description: Displays the clock cycle time for the Safety Integrated Basic Functions on the Control Unit.

Dependency: Refer to: r0110, p0115, r9880

Note: Information regarding the relationship between monitoring clock cycle and response times can be found in the following references:

- SINAMICS S120 Function Manual Safety Integrated
- technical documentation for the particular product

r9781[0...1] SI checksum to check changes (Control Unit) / SI chg chksm CU

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the checksum to track changes for Safety Integrated.

These are additional checksums that are created to track changes (fingerprint for the "safety logbook" functionality) to safety parameters (that are relevant for checksums).

Index: [0] = SI checksum to track functional changes
[1] = SI checksum to track hardware-specific changes

Dependency: Refer to: p9601, p9729, p9799

Refer to: F01690

r9782[0...1] SI time stamps to check changes (Control Unit) / SI chg t CU

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [h]	- [h]	- [h]

Description: Displays the time stamps for the checksums for tracking changes for Safety Integrated.

The time stamps for the checksums for tracking changes (fingerprint for the "safety logbook" functionality) made to safety parameters are saved in parameters p9781[0] and p9781[1].

Index: [0] = SI time stamp for checksum to track functional changes
[1] = SI time stamp for checksum to track hardware-specific changes

Dependency: Refer to: p9601, p9729, p9799

Refer to: F01690

p9783 SI Motion act. value sensing sensorless synchr. motor I_inject / Actv sl sync I_inj

SERVO, VECTOR (n/M), SERVO_AC, VECTOR_AC (n/M), SERVO_I_AC, VECTOR_I_AC (n/M)

Can be changed: C2(95), U, T	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-50.00 [%]	0.00 [%]	-20.00 [%]

Description: Sets the additional field-generating current for synchronous motors with sensorless actual value sensing.

The set value is referred to p0305.

This parameter ensures a "base load" for the motor.

The value must fulfill the following condition:

|p0305 x p9783| >= p9588 x 1.2

Dependency: Refer to: p9588

Refer to: C01711

Notice: Reducing this percentage value can adversely affect actual value sensing with synchronous motors.

If the value is increased, this results in an increased motor power loss.

Note: This parameter is only effective for encoderless actual value sensing (p9506/p9306 = 1, 3).

For p9783 = maximum value, current injection is deactivated.

Current injection is not effective in the U/f control mode.

r9784[0...1] SI Motion diagnostics sensorless acceleration / Diag sl a

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [mm/s²]	- [mm/s²]	- [mm/s²]

Description: Display to diagnose acceleration values of the encoderless actual values sensing.

Index: [0] = Setpoint acceleration value
[1] = Actual acceleration value

Dependency: Refer to: p9589

Note: For index [0]:

Shows the parameterized acceleration value of p9589.

For index [1]:

Shows the actually measured acceleration values of the encoderless actual value sensing

r9784[0...1] SI Motion diagnostics sensorless acceleration / Diag sl a

SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)			
	Can be changed: -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [rev/s²]	- [rev/s²]	- [rev/s²]

Description: Display to diagnose acceleration values of the encoderless actual values sensing.

Index:
[0] = Setpoint acceleration value
[1] = Actual acceleration value

Dependency: Refer to: p9589

Note: For index [0]:

Shows the parameterized acceleration value of p9589.

For index [1]:

Shows the actually measured acceleration values of the encoderless actual value sensing

r9785[0...1] SI Motion diagnostics sensorless minimum current / Diag sl I_min

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC			
	Can be changed: -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Safety Integrated	**Unit group:** 6_3	**Unit selection:** p0505
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [mA]	- [mA]	- [mA]

Description: Display to diagnose currents of the encoderless actual value sensing.

Index:
[0] = Minimum current parameterized
[1] = Minimum current measured

Dependency: Refer to: p9588

Note: For index [0]:

Displays the parameterized minimum current of p9588.

For index [1]:

Displays the currently measured current of the encoderless actual value sensing

r9786[0...2] SI Motion diagnostics sensorless angle / Diag sl angle

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC			
	Can be changed: -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [°]	- [°]	- [°]

Description: Display to diagnose the angle for sensorless actual value sensing.

Index:
[0] = Plausibility angle actual value
[1] = Voltage angle actual value
[2] = Current angle actual value

Dependency: Refer to: p9585

Note: For index [0]:

Displays the actual plausibility angle.

For index [1]:

Displays the actual voltage angle.

For index [2]:

Displays the actual current angle.

r9787 SI Motion diagnostics sensorless velocity deviation / Diag sl v_dev

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [mm/min]	- [mm/min]	- [mm/min]

Description: Displays the actual velocity deviation for sensorless actual value sensing.

This value is calculated when setting p9585/p9385.

The actual velocity has a deviation of +/- r9787 for 6 ms * p9585/p9385 within a monitoring time of 1 s.

Dependency: Refer to: p9585

Note: For linear axes, the following unit applies: millimeters per minute

For rotary axes, the following unit applies: revolutions per minute

r9787 SI Motion diagnostics sensorless velocity deviation / Diag sl v_dev

SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the actual velocity deviation for sensorless actual value sensing.

This value is calculated when setting p9585/p9385.

The actual velocity has a deviation of +/- r9787 for 6 ms * p9585/p9385 within a monitoring time of 1 s.

Dependency: Refer to: p9585

Note: For linear axes, the following unit applies: millimeters per minute

For rotary axes, the following unit applies: revolutions per minute

r9790 SI Motion SLA acceleration resolution / SI Mtn SLA a_res

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [m/s²]	- [m/s²]	- [m/s²]

Description: Displays the acceleration resolution (load side) for the "SLA" function.

Setpoints for acceleration limits or parameter changes for acceleration levels below this threshold have no effect.

Note: This parameter does not provide any information about the actual accuracy of the acceleration sensing. This depends on the type of actual value sensing, the gear factors as well as the quality of the encoder being used.

Conversion of:

(internal fixed value/ Tsi²) to m/s² (linear) or 1/s² (rotary) with Tsi = p9500 (SI motion monitoring clock cycle)

Example:

For Tsi = 12 ms, r9790 = 0.006944 m/s² (linear) or 0.019290 1/s² (rotary) is obtained.

Internal calculation, which also incorporates the factor for the motor-load side conversion, the gearbox ratio and the safety monitoring clock cycle.

Result is 0.006944 m/s² (linear) or 0.019290 1/s² (rotary).

The result listed above is applicable for the default setting of spindle pitch and gear unit stage.

SLA: Safely-Limited Acceleration

r9790 SI Motion SLA acceleration resolution / SI Mtn SLA a_res

SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [rev/s²]	- [rev/s²]	- [rev/s²]

Description: Displays the acceleration resolution (load side) for the "SLA" function.

Setpoints for acceleration limits or parameter changes for acceleration levels below this threshold have no effect.

Note: This parameter does not provide any information about the actual accuracy of the acceleration sensing. This depends on the type of actual value sensing, the gear factors as well as the quality of the encoder being used.

Conversion of:

(internal fixed value/ Tsi²) to m/s² (linear) or 1/s² (rotary) with Tsi = p9500 (SI motion monitoring clock cycle)

Example:

For Tsi = 12 ms, r9790 = 0.006944 m/s² (linear) or 0.019290 1/s² (rotary) is obtained.

Internal calculation, which also incorporates the factor for the motor-load side conversion, the gearbox ratio and the safety monitoring clock cycle.

Result is 0.006944 m/s² (linear) or 0.019290 1/s² (rotary).

The result listed above is applicable for the default setting of spindle pitch and gear unit stage.

SLA: Safely-Limited Acceleration

r9793[0...9] SI diagnostics component replacement / Diag comp_replace

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the component number for the first 10 replaced safety-relevant components.

Dependency: Refer to: r9776

Note: This parameter does not exist for a Control Unit and Terminal Module.

r9794[0...19] SI cross-check list (Control Unit) / SI KDV_list CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2802
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the number of the data that are being presently cross-checked on the Control Unit.

The content of the list of cross-checked data is dependent upon the particular application.

Dependency: Refer to: r9894

Note: KDV: Data cross-check

Example:

r9794[0] = 1 (monitoring clock cycle)

r9794[1] = 2 (enable safety functions)

r9794[2] = 3 (F-DI changeover, tolerance time)

...

A complete list of numbers for cross-checked data items appears in fault F01611.

r9795 SI diagnostics STOP F (Control Unit) / SI diag STOP F CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2802
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the number of the cross-checked data item which has caused STOP F on the Control Unit.

Dependency: Refer to: r9895

Refer to: F01611

Note: A complete list of numbers for cross-checked data items appears in fault F01611.

r9798 SI actual checksum SI parameters (Control Unit) / SI act_checksum CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2800
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the checksum over the checked Safety Integrated parameters on the Control Unit (actual checksum).

Dependency: Refer to: p9799, r9898

p9799 SI reference checksum SI parameters (Control Unit) / SI set_checksum CU

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2800
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the checksum for the checked Safety Integrated parameters on the Control Unit (reference checksum).

Dependency: Refer to: r9798, p9899

p9801 SI enable functions integrated in the drive (Motor Module) / SI enable fct MM

HLA

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 bin

Description: Sets the enable signals for the safety functions integrated in the drive and the type of selection on the Hydraulic Module.

The following settings are permitted:

0000 hex:

Safety functions integrated in the drive inhibited (no safety function).

0001 hex:

Basic functions are enabled via onboard terminals (permissible for r9871.0 = 1).

0004 hex:

Extended functions via Terminal Module 54F (TM54F) have been enabled (permissible for r9871.5 = 1).

0005 hex:

Extended functions via Terminal Module 54F (TM54F) and the basic functions via onboard terminals have been enabled (permissible for r9871.5 = 1).

0008 hex:

Basic functions are enabled via PROFIsafe (permissible for r9871.6 = 1).

0009 hex:

Basic functions are enabled via PROFIsafe onboard terminals (permissible for r9871.6 = 1).

000C hex:

Extended functions are enabled via PROFIsafe (permissible for r9871.4 = 1).

000D hex:

Extended functions are enabled via PROFIsafe and basic functions via onboard terminals (permissible for r9871.4 = 1).

0024 hex:

Extended functions without selection are enabled (permissible for r9871.16 = 1).

0025 hex:

Extended functions without selection and basic functions via onboard terminals are enabled (permissible for r9871.16 = 1).

0040 hex:

Basic functions are enabled via TM54F

0041 hex:

Basic functions are enabled via TM54F and onboard terminals.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	STO (SH) via terminals (MM) enable	Enable	Inhibit	2810
02	Enable motion monitoring functions integrated in drive (MM)	Enable	Inhibit	-
03	Enable PROFIsafe (MM)	Enable	Inhibit	-
05	Enab motion monit functions integr in drive w/out selection (MM)	Enable	Inhibit	-
06	Basic functions via TM54F	Enable	Inhibit	-

Dependency: Refer to: p9601, r9871

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: A change always becomes effective only after a POWER ON. Exception: Changes to p9801.0 become effective immediately.

SI: Safety Integrated

SMM: Safe Motion Monitoring

STO: Safe Torque Off / SH: Safe standstill

SS1: Safe Stop 1 (corresponds to Stop Category 1 acc. to EN60204)

p9801 SI enable functions integrated in the drive (Motor Module) / SI enable fct MM

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 bin

Description: Sets the enable signals for the safety functions integrated in the drive and the type of selection on the Motor Module.

Not all of the settings listed below will be permissible, depending on the Control Unit and Motor Module or Power Module being used:

0000 hex:

Safety functions integrated in the drive inhibited (no safety function).

0001 hex:

Basic functions are enabled via onboard terminals (permissible for r9871.0 = 1).

0004 hex:

Extended functions via Terminal Module 54F (TM54F) have been enabled (permissible for r9871.5 = 1).

0005 hex:

Extended functions via Terminal Module 54F (TM54F) and the basic functions via onboard terminals have been enabled (permissible for r9871.5 = 1).

0008 hex:

Basic functions are enabled via PROFIsafe (permissible for r9871.6 = 1).

0009 hex:

Basic functions are enabled via PROFIsafe onboard terminals (permissible for r9871.6 = 1).

000C hex:

Extended functions are enabled via PROFIsafe (permissible for r9871.4 = 1).

000D hex:

Extended functions are enabled via PROFIsafe and basic functions via onboard terminals (permissible for r9871.4 = 1).

0014 hex:

Extended functions via integrated F-DI/F-DO have been enabled.

0024 hex:

Extended functions without selection are enabled (permissible for r9871.16 = 1).

0025 hex:

Extended functions without selection and basic functions via onboard terminals are enabled (permissible for r9871.16 = 1).

0040 hex:

Basic functions are enabled via TM54F

0041 hex:

Basic functions are enabled via TM54F and onboard terminals.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	STO (SH) via terminals (MM) enable	Enable	Inhibit	2810
02	Enable motion monitoring functions integrated in drive (MM)	Enable	Inhibit	-
03	Enable PROFIsafe (MM)	Enable	Inhibit	-
04	Enable onboard F-DI	Onboard F-DI	F-DI with TM54F	-
05	Enab motion monit functions integr in drive w/out selection (MM)	Enable	Inhibit	-
06	Basic functions via TM54F	Enable	Inhibit	-

Dependency: Refer to: p9601, r9871

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: A change always becomes effective only after a POWER ON. Exception: Changes to p9801.0 become effective immediately.

MM: Motor Module

SI: Safety Integrated

SMM: Safe Motion Monitoring

STO: Safe Torque Off / SH: Safe standstill

SS1: Safe Stop 1 (corresponds to Stop Category 1 acc. to EN60204)

F-DI: Failsafe Digital Input

F-DO: Failsafe Digital Output

p9801 SI enable functions integrated in the drive (Motor Module) / SI enable fct MM

SERVO, VECTOR

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 bin

Description: Sets the enable signals for the safety functions integrated in the drive and the type of selection on the Motor Module.

Not all of the settings listed below will be permissible, depending on the Control Unit and Motor Module or Power Module being used:

0000 hex:

Safety functions integrated in the drive inhibited (no safety function).

0001 hex:

Basic functions are enabled via onboard terminals (permissible for r9871.0 = 1).

0004 hex:

Extended functions via Terminal Module 54F (TM54F) have been enabled (permissible for r9871.5 = 1).

0005 hex:

Extended functions via Terminal Module 54F (TM54F) and the basic functions via onboard terminals have been enabled (permissible for r9871.5 = 1).

0008 hex:

Basic functions are enabled via PROFIsafe (permissible for r9871.6 = 1).

0009 hex:

Basic functions are enabled via PROFIsafe onboard terminals (permissible for r9871.6 = 1).

000C hex:

Extended functions are enabled via PROFIsafe (permissible for r9871.4 = 1).

000D hex:

Extended functions are enabled via PROFIsafe and basic functions via onboard terminals (permissible for r9871.4 = 1).

0024 hex:

Extended functions without selection are enabled (permissible for r9871.16 = 1).

0025 hex:

Extended functions without selection and basic functions via onboard terminals are enabled (permissible for r9871.16 = 1).

0040 hex:

Basic functions are enabled via TM54F

0041 hex:

Basic functions are enabled via TM54F and onboard terminals.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	STO (SH) via terminals (MM) enable	Enable	Inhibit	2810
02	Enable motion monitoring functions integrated in drive (MM)	Enable	Inhibit	-
03	Enable PROFIsafe (MM)	Enable	Inhibit	-
05	Enab motion monit functions integr in drive w/out selection (MM)	Enable	Inhibit	-
06	Basic functions via TM54F	Enable	Inhibit	-

Dependency: Refer to: p9601, r9871

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: A change always becomes effective only after a POWER ON. Exception: Changes to p9801.0 become effective immediately.

MM: Motor Module

SI: Safety Integrated

SMM: Safe Motion Monitoring

STO: Safe Torque Off / SH: Safe standstill

SS1: Safe Stop 1 (corresponds to Stop Category 1 acc. to EN60204)

F-DI: Failsafe Digital Input

F-DO: Failsafe Digital Output

p9802 SI enable Safe Brake Control (Motor Module) / SI enable SBC MM

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** 2814
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the enable signal for the "Safe Brake Control" function (SBC) on the Motor Module.

0: Inhibit SBC

1: Enable SBC

Dependency: Refer to: p9602

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: The "Safe Brake Control" function is not activated until at least one safety monitoring function has been enabled (i.e. p9501 not equal to 0 and/or p9801 not equal to 0).

It does not make sense to parameterize "no motor holding brake available" and enable "Safe Brake Control" (p1215 = 0, p9602 = p9802 = 1) if there is no motor holding brake.

The parameterization "motor holding brake the same as sequence control, connection via BICO" and "Safe Brake Control" enabled (p1215 = 3, p9602 = 1, p9802 = 1) is not practical.

The parameterization "motor holding brake without feedback signals" and "Safe Brake Control" enabled (p1278 = 1, p9602 = 1, p9802 = 1) is not permissible.

MM: Motor Module

SBC: Safe Brake Control

SI: Safety Integrated

p9810 SI PROFIsafe address (Motor Module) / SI Ps address MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	65534	0

Description: Sets the PROFIsafe address of the Motor Module/Hydraulic module.

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: A change only becomes effective after a POWER ON.

p9811 SI PROFIsafe telegram selection (Motor Module) / SI Ps telegram MM

HLA

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	998	998

Description: Sets the PROFIsafe telegram number for the Hydraulic Module.

Value:
0: No PROFIsafe telegram selected
30: PROFIsafe standard telegram 30, PZD-1/1
31: PROFIsafe standard telegram 31, PZD-2/2
900: PROFIsafe SIEMENS telegram 900, PZD-2/2
901: PROFIsafe SIEMENS telegram 901, PZD-3/5
902: PROFIsafe SIEMENS telegram 902, PZD-3/6
903: PROFIsafe SIEMENS telegram 903, PZD-3/5
998: Compatibility mode (as for firmware version < 4.5)

Dependency: Refer to: p9611, p60022

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: A change only becomes effective after a POWER ON.

For p9601.3 = p9801.3 = 1 (PROFIsafe enabled), the following variants exist when parameterizing PROFIsafe telegram 30:

- p9611 = p9811 = 998 and p60022 = 0
- p9611 = p9811 = 998 and p60022 = 30
- p9611 = p9811 = 30 and p60022 = 30

p9811 SI PROFIsafe telegram selection (Motor Module) / SI Ps telegram MM

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	998	998

Description: Sets the PROFIsafe telegram number for the Motor Module/Hydraulic Module.

Value:
0: No PROFIsafe telegram selected
30: PROFIsafe standard telegram 30, PZD-1/1
31: PROFIsafe standard telegram 31, PZD-2/2
900: PROFIsafe SIEMENS telegram 900, PZD-2/2
901: PROFIsafe SIEMENS telegram 901, PZD-3/5
902: PROFIsafe SIEMENS telegram 902, PZD-3/6
903: PROFIsafe SIEMENS telegram 903, PZD-3/5
998: Compatibility mode (as for firmware version < 4.5)

Dependency: Refer to: p9611, p60022

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: A change only becomes effective after a POWER ON.

For p9601.3 = p9801.3 = 1 (PROFIsafe enabled), the following variants exist when parameterizing PROFIsafe telegram 30:

- p9611 = p9811 = 998 and p60022 = 0
- p9611 = p9811 = 998 and p60022 = 30
- p9611 = p9811 = 30 and p60022 = 30

p9812 SI PROFIsafe failure response (Motor Module) / SI Ps fail MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the stop response when PROFIsafe communication fails.

Value:
0: STOP A
1: STOP B

Dependency: Refer to: p9612

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: For the set stop response STOP B, in order that the OFF3 ramp is actually maintained, when just using Safety Basic Functions, the following must be carefully observed:

- the transition time STOP F to STOP A (p9658, p9858) must be set longer or equal to the SS1 delay time (p9652, p9852).
- if a higher-level control responds to a drive fault by withdrawing the controller enable signals, for faults F01611 and F30611, the message type must be changed to alarm (p2118, p2119).

p9821 BI: SI Safe Brake Adapter signal source (Motor Module) / SI SBA S_src MM

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2814
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for Safe Brake Adapter (SBA).

This defines via which digital input the Safe Brake Adapter feedback signal is read-in (SBA_DIAG).

p9621/p9821 = 0:

There is no Safe Brake Control (SBC) with Safe Brake Adapter (SBA) available.

p9621/p9821 = r0722.x (x = 0, 1 ... 7)

Safe Brake Adapter and Booksize unit (no Communication Interface Module (CIM)).

p9621/p9821 = r9872.3

Safe Brake Adapter and Chassis unit (CIM).

Dependency: Refer to: p9601, p9602, p9621

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: No difference is tolerated for a data cross-check between p9621 and p9821.

To use the "Safe Brake Adapter" function the following must apply:

p9601 = p9801 <> 0 and p9602 = p9802 = 1

p9822[0...1] SI SBA relay delay times (Motor Module) / SI SBA relay t MM

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2814
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [µs]	1000000.00 [µs]	[0] 100000.00 [µs] [1] 65000.00 [µs]

Description: Sets the delay times for activating and deactivating the Safe Brake Adapter relay.

The relay-specific minimum delay times for evaluating the feedback signal contacts have to be set. They differ for the activation and deactivation of one and the same relay.

Index: [0] = Wait time activation
[1] = Wait time deactivation

Dependency: Refer to: p9622

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: The set time is rounded internally to an integer multiple of the monitoring clock cycle.

For index [0]:

Wait time switch on = drop-out time + bounce time NO contact + effect of the free-wheeling diode in the Safe Brake Adapter

For index [1]:

Wait time switch off = response time + bounce time NC contact + effect of the free-wheeling diode in the Safe Brake Adapter

p9825[0...1] SI HLA shutoff valve wait time (MM) / Shutoff valve t MM

HLA

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [µs]	2000000.00 [µs]	[0] 250000.00 [µs] [1] 250000.00 [µs]

Description: Sets the delay time for switching on and switching off the shutoff valve.

The valve-specific minimum delay times for evaluating the feedback signal contacts have to be set.

Index: [0] = Activating
[1] = Deactivating

Dependency: Refer to: p9625

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: The set time is rounded internally to an integer multiple of the monitoring clock cycle.

MM: Motor Module

p9826 SI HLA shutoff valve feedback signal contact configuration (MM) / FS config MM

HLA

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	5	0

Description: Sets the feedback signal contacts of the shutoff valve to be monitored.

The sensors for the feedback signal of the shutoff valves are connected via X281/X282.

Value:
0: NC contact/NO contact (NC/NO)
1: NC contact/NC contact (NC/NC)
2: NO contact/NO contact (NO/NO)
4: NC contact (NC)
5: NO contact (NO)

Dependency: Refer to: p9626

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: MM: Motor Module

NC: Normally Closed contact

NO: Normally Open contact

p9850 SI SGE changeover discrepancy time (Motor Module) / SI SGE chg t MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2810
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [µs]	2000000.00 [µs]	500000.00 [µs]

Description: Sets the discrepancy time to change over the safety-related inputs (SGE) on the Motor Module/Hydraulic Module.

An SGE changeover is not effective simultaneously due to the different runtimes in the two monitoring channels. After an SGE changeover, dynamic data is not subject to a data cross-check during this discrepancy time.

Dependency: Refer to: p9650

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: For a data cross-check between p9650 and p9850, a difference of one Safety monitoring clock cycle is tolerated.

Rounding effects can occur in the last decimal place of the parameterized time.

The set time is rounded internally to an integer multiple of the monitoring clock cycle.

SGE: Safety-related input (e.g. STO terminals)

p9851 SI STO/SS1 debounce time (Motor Module) / SI STO t_debou MM

HLA

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [µs]	100000.00 [µs]	0.00 [µs]

Description: Sets the debounce time for the STO terminal of the Hydraulic Module.

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: Rounding effects can occur in the last decimal place of the parameterized time.

The debounce time is rounded to whole milliseconds. It specifies the maximum duration of a fault pulse at the failsafe digital inputs with no reaction/influence on the selection or deselection of the Safety Basic Functions.

Example:

Debounce time = 1 ms: Fault pulses of 1 ms are filtered; only pulses longer than 2 ms are processed.

Debounce time = 3 ms: Fault pulses of 3 ms are filtered; only pulses longer than 4 ms are processed.

p9851 SI STO/SBC/SS1 debounce time (Motor Module) / SI STO t_debou MM

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [µs]	100000.00 [µs]	0.00 [µs]

Description: Sets the debounce time for the EP terminal of the Motor Module.

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: Rounding effects can occur in the last decimal place of the parameterized time.

The debounce time is rounded to whole milliseconds. It specifies the maximum duration of a fault pulse at the failsafe digital inputs with no reaction/influence on the selection or deselection of the Safety Basic Functions.

Example:

Debounce time = 1 ms: Fault pulses of 1 ms are filtered; only pulses longer than 2 ms are processed.

Debounce time = 3 ms: Fault pulses of 3 ms are filtered; only pulses longer than 4 ms are processed.

p9852 SI Safe Stop 1 delay time (Motor Module) / SI Stop 1 t_del MM

HLA

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	300000.00 [ms]	0.00 [ms]

Description: Sets the delay time for STO for the function "Safe Stop 1" (SS1) on the Hydraulic Module to brake along the OFF3 down ramp (p1135).

Recommendation: The delay time should be set as follows so that the drive can completely decelerate along the OFF3 ramp:

Delay time >= p1135 + p1228

Dependency: Refer to: p1135, p9652

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: Pulse cancellation after failure of PROFIsafe communication is delayed by this time if "STOP B" is set (p9812 = 1).

For a data cross-check between p9652 and p9852, a difference of one Safety monitoring clock cycle is tolerated.

Rounding effects can occur in the last decimal place of the parameterized time.

The set time is rounded internally to an integer multiple of the monitoring clock cycle.

SS1: Safe Stop 1 (corresponds to Stop Category 1 acc. to EN60204)

p9852 SI Safe Stop 1 delay time (Motor Module) / SI Stop 1 t_del MM

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	300000.00 [ms]	0.00 [ms]

Description: Sets the delay time of the pulse suppression for the function "Safe Stop 1" (SS1) on the Motor Module to brake along the OFF3 down ramp (p1135).

Recommendation: In order that the drive can completely ramp-down along the OFF3 ramp and a motor holding brake that is possibly available can close, then the delay time should be set as follows:

Motor holding brake parameterized: delay time >= p1135 + p1228 + p1217

Motor holding brake not parameterized: delay time >= p1135 + p1228

Dependency: Refer to: p1135, p9652

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: Pulse cancellation after failure of PROFIsafe communication is delayed by this time if "STOP B" is set (p9812 = 1).

For a data cross-check between p9652 and p9852, a difference of one Safety monitoring clock cycle is tolerated.

Rounding effects can occur in the last decimal place of the parameterized time.

The set time is rounded internally to an integer multiple of the monitoring clock cycle.

SS1: Safe Stop 1 (corresponds to Stop Category 1 acc. to EN60204)

p9858 SI transition time STOP F to STOP A (Motor Module) / SI STOP F->A MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2802
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [µs]	30000000.00 [µs]	0.00 [µs]

Description: Sets the transition period from STOP F to STOP A on the Motor Module/Hydraulic Module.

Dependency: Refer to: p9658, r9895

Refer to: F30611

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: For a data cross-check between p9658 and p9858, a difference of one Safety monitoring clock cycle is tolerated.

Rounding effects can occur in the last decimal place of the parameterized time.

The set time is rounded internally to an integer multiple of the monitoring clock cycle.

If a higher-level control responds to a drive fault by withdrawing the controller enable signals, for faults F01611 and F30611, the message type must be changed to alarm (p2118, p2119). As a consequence, the drive can still be braked in a controlled fashion during this delay time.

STOP F: Defect in a monitoring channel (error in the data cross-check)

STOP A: STO as a result of a fault detected by Safety Integrated

r9870[0...3] SI version drive-integrated safety function (Motor Module) / SI version MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2802
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the Safety Integrated version for the drive-integrated safety functions on the Motor Module/Hydraulic Module.

Index:
[0] = Safety Version (major release)
[1] = Safety Version (minor release)
[2] = Safety Version (baselevel or patch)
[3] = Safety Version (hotfix)

Dependency: Refer to: r9770, r9890

Note: Example:

r9870[0] = 2, r9870[1] = 60, r9870[2] = 1, r9870[3] = 0 --> Safety version V02.60.01.00

r9871 SI common functions (Motor Module) / SI general fct MM

HLA			
	Can be changed: -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2804
	P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the supported Safety Integrated monitoring functions supported on both monitoring channels.

The Motor Module/Hydraulic Module determines this display.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	STO supported via terminals	Yes	No	2804
02	Extended Functions supported (p9501 > 0)	Yes	No	2804
03	SS1 supported	Yes	No	2804
04	Extended Functions PROFIsafe supported	Yes	No	-
05	Extended Functions integrated in drive supported (p9601.2 = 1)	Yes	No	-
06	Basic Functions PROFIsafe supported	Yes	No	-
07	Extended Functions encoderless supported	Yes	No	-
11	Extended Functions SDI supported	Yes	No	-
12	Extended Functions SSM encoderless supported	Yes	No	-
13	ESR delay of the pulse suppression	Yes	No	-
15	SLS limit SP supported via PROFIsafe	Yes	No	-
16	Safety functions without selection, SLP, SS1E supported	Yes	No	-
17	Safe gearbox stage switchover ref supported via SCC	Yes	No	-
18	Controlling Basic Functions with TM54F	Yes	No	-
20	STOP B for PROFIsafe failure supported	Yes	No	-
21	SBR with encoder and SS2E supported	Yes	No	-
22	SCA, deactivation SOS/SLS during an external STOP A	Yes	No	-
23	Synchronous safe position and SLA via PROFIsafe supported	Yes	No	-

Dependency: Refer to: r9771

Note: ESR: Extended Stop and Retract

MM: Motor Module

SBC: Safe Brake Control

SBR: Safe Brake Ramp (safe brake ramp monitoring)

SCA: Safe Cam

SCC: Safety Control Channel

SDI: Safe Direction (safe motion direction)

SI: Safety Integrated

SLA: Safely-Limited Acceleration

SLP: Safely-Limited Position

SLS: Safely-Limited Speed / SG: Safely reduced speed

SOS: Safe Operating Stop / SBH: Safe operating stop

SP: Safe Position

SS1: Safe Stop 1

SS1E: Safe Stop 1 External (Safe Stop 1 with external stop)

SS2E: Safe Stop 2 external (Safe Stop 2 with external stop, external STOP D)

SSM: Safe Speed Monitor (safety-related feedback signal from the speed monitoring) / SGA n < nx: Safety-related output n < nx

STO: Safe Torque Off / SH: Safe standstill
For bit 16:
SS1E is supported for Safety Extended Functions.

r9871 SI common functions (Motor Module) / SI general fct MM

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2804
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the supported Safety Integrated monitoring functions supported on both monitoring channels.
The Motor Module/Hydraulic Module determines this display.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	STO supported via terminals	Yes	No	2804
01	SBC supported	Yes	No	2804
02	Extended Functions supported (p9501 > 0)	Yes	No	2804
03	SS1 supported	Yes	No	2804
04	Extended Functions PROFIsafe supported	Yes	No	-
05	Extended Functions integrated in drive supported (p9601.2 = 1)	Yes	No	-
06	Basic Functions PROFIsafe supported	Yes	No	-
07	Extended Functions encoderless supported	Yes	No	-
08	Safe Brake Adapter supported	Yes	No	-
09	Basic Functions PROFIsafe for parallel connection supported	Yes	No	-
10	Extended Functions integrated in drive for parallel connection	Yes	No	-
11	Extended Functions SDI supported	Yes	No	-
12	Extended Functions SSM encoderless supported	Yes	No	-
13	ESR delay of the pulse suppression	Yes	No	-
14	SBC for parallel connection supported	Yes	No	-
15	SLS limit SP supported via PROFIsafe	Yes	No	-
16	Safety functions without selection, SLP, SS1E supported	Yes	No	-
17	Safe gearbox stage switchover ref supported via SCC	Yes	No	-
18	Controlling Basic Functions with TM54F	Yes	No	-
20	STOP B for PROFIsafe failure supported	Yes	No	-
21	SBR with encoder and SS2E supported	Yes	No	-
22	SCA, deactivation SOS/SLS during an external STOP A	Yes	No	-
23	Synchronous safe position and SLA via PROFIsafe supported	Yes	No	-

Dependency: Refer to: r9771

Note: ESR: Extended Stop and Retract
MM: Motor Module
SBC: Safe Brake Control
SBR: Safe Brake Ramp (safe brake ramp monitoring)
SCA: Safe Cam
SCC: Safety Control Channel
SDI: Safe Direction (safe motion direction)
SI: Safety Integrated
SLA: Safely-Limited Acceleration
SLP: Safely-Limited Position
SLS: Safely-Limited Speed / SG: Safely reduced speed
SOS: Safe Operating Stop / SBH: Safe operating stop
SP: Safe Position
SS1: Safe Stop 1
SS1E: Safe Stop 1 External (Safe Stop 1 with external stop)
SS2E: Safe Stop 2 external (Safe Stop 2 with external stop, external STOP D)
SSM: Safe Speed Monitor (safety-related feedback signal from the speed monitoring) / SGA n < nx: Safety-related output n < nx
STO: Safe Torque Off / SH: Safe standstill
For bit 16:
SS1E is supported for Safety Extended Functions.

r9872.0...26 CO/BO: SI status list (Motor Module) / SI status MM

HLA

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2804
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the Safety Integrated status on the Motor Module/Hydraulic Module.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	STO selected on HM	Yes	No	2810
01	STO active on HM	Yes	No	2810
02	SS1 delay time active on HM	Yes	No	2810
05	SS1 selected on HM (Basic Functions)	Yes	No	-
06	SS1 auf HM active (Basic Functions)	Yes	No	-
07	STO terminal state on HM (Basic Functions)	High	Low	-
09	STOP A cannot be acknowledged active	Yes	No	2802
10	STOP A active	Yes	No	2802
15	STOP F active	Yes	No	2802
16	STO cause: Safety comm. mode	Yes	No	-
17	STO cause selection via terminal (Basic Functions)	Yes	No	-
18	STO cause: selection via SMM	Yes	No	-
20	STO cause selection PROFIsafe/TM54F (Basic Functions)	Yes	No	-
21	STO cause selection on other monitoring channel	Yes	No	-
22	SS1 cause selection terminal (Basic Functions)	Yes	No	-
23	SS1 cause selection PROFIsafe/TM54F (Basic Functions)	Yes	No	-
25	Shutoff valve feedback signal contact DI0	High	Low	-
26	Shutoff valve feedback signal contact DI1	High	Low	-

Dependency: Refer to: r9772

Notice: If communication between both monitoring channels is interrupted (e.g. by switching off the power unit), this display parameter is no longer updated. The last transferred status of the Motor Module/Hydraulic Module is displayed.

Note: For bit 00:

When STO is selected, the cause is displayed in bits 16 ... 21.

For bit 05:

When SS1 is selected, the cause is displayed in bits 22 and 23.

For bit 18:

When the bit is set, STO is selected via PROFIsafe or Terminal Module 54F (TM54F).

SMM: Safe Motion Monitoring

For bit 22, 23:

These bits show via which path the SS1 was triggered, i.e. what has started the SS1 delay time.

If the SS1 delay time is not started (e.g. because an STO is triggered at the same time), neither of the two bits is set.

For bit 25, 26:

DI 0 (X281.3/X282.3, axis 1/2)

DI 1 (X281.2/X282.2, axis 1/2)

r9872.0...24 CO/BO: SI status list (Motor Module) / SI status MM

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2804
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the Safety Integrated status on the Motor Module/Hydraulic Module.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	STO selected on MM	Yes	No	2810
01	STO on MM act	Yes	No	2810
02	SS1 delay time active on MM	Yes	No	2810
03	Safe Brake Adapter feedback signal	Yes	No	2814
04	SBC requested	Yes	No	2814
05	SS1 selected on MM (Basic Functions)	Yes	No	-
06	SS1 active on MM (Basic Functions)	Yes	No	-
07	STO terminal state on MM (Basic Functions)	High	Low	-
09	STOP A cannot be acknowledged active	Yes	No	2802
10	STOP A active	Yes	No	2802
15	STOP F active	Yes	No	2802
16	STO cause: Safety comm. mode	Yes	No	-
17	STO cause selection via terminal (Basic Functions)	Yes	No	-
18	STO cause: selection via SMM	Yes	No	-
20	STO cause selection PROFIsafe/TM54F (Basic Functions)	Yes	No	-
21	STO cause selection on other monitoring channel	Yes	No	-
22	SS1 cause selection terminal (Basic Functions)	Yes	No	-
23	SS1 cause selection PROFIsafe/TM54F (Basic Functions)	Yes	No	-
24	Slave MM ready for communication	Yes	No	-

Dependency: Refer to: r9772

Notice: If communication between both monitoring channels is interrupted (e.g. by switching off the power unit), this display parameter is no longer updated. The last transferred status of the Motor Module/Hydraulic Module is displayed.

Note: For bit 00:

When STO is selected, the cause is displayed in bits 16 ... 21.

For bit 05:

When SS1 is selected, the cause is displayed in bits 22 and 23.

For bit 18:

When the bit is set, STO is selected via PROFIsafe or Terminal Module 54F (TM54F).

SMM: Safe Motion Monitoring

For bit 22, 23:

These bits show via which path the SS1 was triggered, i.e. what has started the SS1 delay time.

If the SS1 delay time is not started (e.g. because an STO is triggered at the same time), neither of the two bits is set.

For bit 24:

Only for a parallel connection and active motion monitoring functions.

r9880 SI monitoring clock cycle (Motor Module) / SI monitor_clck MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2802
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [ms]	- [ms]	- [ms]

Description: Displays the clock cycle time for the Safety Integrated Basic Functions on the Motor Module/Hydraulic Module.

Dependency: Refer to: r0110, p0115, r9780

Note: Information about the interrelationship between the monitoring clock cycle and the response times can be taken from the technical documentation on the particular product.

r9881[0...11] SI Motion Sensor Module Node Identifier second channel / SI Mtn SM Ident

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the Node Identifier of the Sensor Module that the second channel uses for the motion monitoring functions.

r9890[0...2] SI version (Sensor Module) / SI version SM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the Safety Integrated version on the Sensor Module.

Index:
[0] = Safety Version (major release)
[1] = Safety Version (minor release)
[2] = Safety Version (baselevel or patch)

Dependency: Refer to: r9770, r9870

Note: Example:

r9890[0] = 2, r9890[1] = 3, r9890[2] = 1 --> Safety-Version V02.03.01

r9894[0...19] SI cross-check list (Motor Module) / SI KDV_list MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2802
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the number of the data that are being presently cross-checked on the Motor Module/Hydraulic Module.

The content of the list of cross-checked data is dependent upon the particular application.

Dependency: Refer to: r9794

Note: KDV: Data cross-check
Example:
r9894[0] = 1 (monitoring clock cycle)
r9894[1] = 2 (enable safety functions)
r9894[2] = 3 (F-DI changeover, tolerance time)
...
The complete list of numbers for data cross-check is listed in Fault F30611.

r9895 SI diagnostics STOP F (Motor Module) / SI diag STOP F MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2802
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the number of the cross-checked data item which caused STOP F on the Motor Module/Hydraulic Module.

Dependency: Refer to: r9795
Refer to: F30611

Note: The complete list of numbers for data cross-check is listed in Fault F30611.

p9897 SI Motion bus failure STO delay time (MM) / SI Mtn IL t_del MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [µs]	800000.00 [µs]	0.00 [µs]

Description: Sets the delay time for STO after bus failure on the Motor Module/Hydraulic Module (e.g. used for ESR).

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: Rounding effects can occur in the last decimal place of the parameterized time. The set time is rounded internally to an integer multiple of the monitoring clock cycle.
ESR: Extended Stop and Retract
STO: Safe Torque Off / SH: Safe standstill

r9898 SI actual checksum SI parameters (Motor Module) / SI act_checksum MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2800
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the checksum for the checked Safety Integrated parameters on the Motor Module/Hydraulic Module (actual checksum).

Dependency: Refer to: r9798, p9899

p9899 SI reference checksum SI parameters (Motor Module) / SI set_checksum MM

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2800
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the checksum for the checked Safety Integrated parameters on the Motor Module/Hydraulic Module (reference checksum).

Dependency: Refer to: p9799, r9898

r9900 Actual topology number of indices / Act topo indices

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Topology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the number of indices of the actual topology.

Dependency: Refer to: r9901

Note: Only for internal Siemens use.

The parameter is not displayed for the STARTER commissioning tool.

r9901[0...n] Actual topology / Act topo

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** r9900	**Func. diagram:** -
P-Group: Topology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the actual topology of the drive unit.

The actual topology is sub-divided into several sections. Each of the following data is saved under an index.

General data on the topology:

- version
- attribute to compare the actual topology and target topology
- number of components

Data on a component:

- type component of the node ID of the component
- number of DRIVE-CLiQ sockets in the Node Identifier
- manufacturer and version of the Node Identifier
- serial number of the Node Identifier (4 indices)
- index of the component
- article number (8 indices)
- attribute to compare the actual topology and target topology of the component
- communications address
- number of port types
- port type
- number of ports of the port type
- communications address of the associated/linked component
- number of the associated/linked port
- communications address of the associated/linked component
- number of the associated port, etc.

Data on the next component:

- etc.

Dependency: Refer to: r9900

Note: Only for internal Siemens use.

The parameter is not displayed for the STARTER commissioning tool.

p9902 Target topology number of indices / TargetTopo indices

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Topology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
1	65535	1

Description: Sets the number of target topology indices.

Dependency: Refer to: p9903

Note: Only for internal Siemens use.

The parameter is not displayed for the STARTER commissioning tool.

p9903[0...n] Target topology / Target topo

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** p9902	**Func. diagram:** -
P-Group: Topology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
0000 hex	FFFF hex	0000 hex

Description: Sets the target topology of the drive unit.

The target topology is sub-divided into several sections. Each of the following data is saved under an index.

General data on the topology:

- version
- attribute to compare the actual topology and target topology
- number of components

Data on a component:

- type component of the Node Identifier of the component
- number of DRIVE-CLiQ sockets in the Node Identifier
- manufacturer and version of the Node Identifier
- serial number of the Node Identifier (4 indices)
- index of the component
- article number (8 indices)
- attribute to compare the actual topology and target topology of the component
- component number
- number of port types
- port type
- number of ports of the port type
- component number of the associated/linked component
- number of the associated/linked port
- component number of the associated/linked component
- number of the associated port, etc.

Data on the next component:

- etc.

Dependency: Refer to: p9902

Note: The target topology can only be changed using the commissioning tool.

The parameter is not displayed for the STARTER commissioning tool.

Changes only become effective when the state of p0009 = 101 changes to 0 or 111.

p9904 Topology comparison acknowledge differences / Topo_compare ackn

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: C1(1)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Topology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: If, when comparing the actual topology and target topology, only error has occurred, that can be acknowledged, then using this parameter, a new comparison can be started - acknowledging the error in the target topology.

Differences that can be acknowledged:

- topology comparison, component shifted

- topology comparison, serial number of a component has been detected to be different (byte 3 = 1)

- topology comparison shows one component that is connected differently

The following parameter values are available:

p9904 = 1 --> the procedure is started.

p9904 = 0 after starting --> the procedure has been successfully completed.

p9904 = 1 after starting --> the procedure has not been successfully completed.

The possible causes for an unsuccessful procedure are located in bytes 4, 3, 2.

Byte 2:

Number of structural differences.

Byte 3:

Number of differences that can be acknowledged (p9904).

Byte 4:

Number of differences. These differences can be resolved as follows:

- sets the topology comparison (p9906 or p9907/p9908).

- change over the actual topology.

The appropriate action should be selected corresponding to the message that is displayed/output.

Note: In order to permanently accept the acknowledgment of the fault that can be resolved, then it must be saved in a non-volatile fashion (p0977).

p9905 Device specialization / Specialization

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: C1(1)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Topology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	2	0

Description: With p9905 = 1, the serial numbers and the hardware versions of all of the components are transferred from the actual topology into the target topology and a new comparison is started.

For this device specialization, the components of the target topology may only differ from those of the actual topology by the serial numbers.

With p9905 = 2, the serial numbers, the hardware versions and the article numbers of all of the components are transferred from the actual topology into the target topology and a new comparison is started.

For this device specialization, the components of the target topology may only differ from those of the actual topology by the serial numbers and article numbers.

Note: p9905 is automatically set to 0 at the end of the operation.

In order to permanently accept the data, it is necessary to save in a non-volatile fashion (p0977).

p9906 Topology comparison all components comparison level / Topo_comp all lev

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: C1(1)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Topology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	99	0

Description: Sets the type of comparison between the actual topology and target topology.

The comparison is started by setting the required value.

Value:
0: High: Compares the complete electronic rating plate
1: Medium: Compares the component type and the article number
2: Low: Compares the component type
3: Minimum: Compares the component class
99: Topology has different comparison stages

Note: The electronic rating plate comprises the following data:

- component type (e.g. "SMC20")
- article number (e.g. "6SL3055-0AA0-5BA0")
- manufacturer (e.g. SIEMENS)
- hardware version (e.g. "A")
- Serial No. (e.g. "T-P30050495")

When comparing the topology, the following data is compared in the target and actual topologies:

p9906 = 0: Component type, Article Number, Hardware version, Manufacturer, Serial No.

p9906 = 1: Component type, Article Number

p9906 = 2: Component type

p9906 = 3: Component class (e.g. Sensor Module or Motor Module)

p9907 Topology comparison component number / Topo_cmpr comp_no

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: C1(1)	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: Topology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	199	0

Description: Enters the number of the component where the setting of how the actual topology should be compared to the target topology should be changed.

Dependency: Refer to: p9908

p9908 Topology comparison of a component comparison level / Topo_comp level 1

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: C1(1)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Topology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	99	0

Description: Sets the type of comparison of a component in the target topology with the actual topology.

The comparison is started by setting the required value.

Value:
0: High: Compares the complete electronic rating plate
1: Medium: Compares the component type and the article number
2: Low: Compares the component type
3: Minimum: Compares the component class
99: Topology has different comparison stages

Dependency: Refer to: p9907

Note: The electronic rating plate comprises the following data:
- component type (e.g. "SMC20")
- article number (e.g. "6SL3055-0AA0-5BA0")
- manufacturer (e.g. SIEMENS)
- hardware version (e.g. "A")
- Serial No. (e.g. "T-P30050495")

When comparing the topology, the following data is compared in the target and actual topologies:

p9908 = 0: Component type, Article No., Hardware version, Manufacturer, Serial No.

p9908 = 1: Component type, Article Number

p9908 = 2: Component type

p9908 = 3: Component class (e.g. Sensor Module or Motor Module)

p9909 Topology comparison component replacement / Topo_cmpr replace

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: C1(1)	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: Topology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	1

Description: For p9909 = 1, the serial number and the hardware version of the new replaced component is automatically transferred from the actual topology into the target topology and then saved in a non-volatile fashion.

For the components that have been replaced, the electronic rating plate must match as far as the following data is concerned:
- component type (e.g. "SMC20")
- article number (e.g. "6SL3055-0AA0-5BA0")

For p9909 = 0, serial numbers and hardware versions are not automatically transferred. In this case, the transfer must be made using p9904.

Dependency: Refer to: p9904, p9905

Note: The modified target topology is automatically saved in a non-volatile fashion when the drive object runs-up (e.g. after a POWER ON).

Special case for Control Unit and option slot modules:

When replacing these components, independent of p9909, the serial number and hardware version are automatically transferred and saved in a non-volatile fashion.

p9910 Target topology accept additional components / Add comp accept

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: C1(1)	**Calculated:** -	**Access level:** 1
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Topology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	6	0

Description: Accept additional inserted DRIVE-CLiQ components into the target topology.

The corresponding drive objects are added to the project.

Value:
0: No selection
1: Drive object type SERVO
2: Drive object type VECTOR
3: SINAMICS GM (DFEMV & VECTORMV)
4: SINAMICS SM (AFEMV & VECTORMV)
5: SINAMICS GL (VECTORGL)
6: SINAMICS SL (VECTORSL)

p9911[0...6] Insert drive object / Drv_obj insert

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: C1(1)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: All groups	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
0	4294967295	0

Description: New drive objects can be created using this parameter.

Index 0:

The values 2 ... 62 are permissible.

Index 1:

Number of the drive object type (e.g. 11 for type SERVO).

Index 2, 4, 5, 6:

Function modules defined for the drive object.

Index 3:

= 0: Ready.

= 1: Reset (only indices 0 ... 3).

= 2: Reset all (indices 0 ... 3 and flagged entries).

= 3: Check and flag for insertion.

Index:
[0] = Drive object number
[1] = Drive object type
[2] = Drive object function module
[3] = Reset or check and flag for insertion
[4] = Drive object function module expansion 1
[5] = Drive object function module expansion 2
[6] = Drive object function module expansion 3

Note: Only for internal Siemens use.

The parameter is not displayed for the STARTER commissioning tool.

p9912[0...1] Delete drive object / Drv_obj delete

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: C1(3)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: All groups	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
0	62	0

Description: Drive objects can be deleted using this parameter.

Index 0:

The values 2 ... 62 are permissible.

Index 1:

= 0: Ready.

= 1: Reset (only indices 0 and 1)

= 2: Reset all (indices 0 and 1 and flagged entries).

= 3: Check and flag for deletion.

= 30: Check and flag for deletion. Keep target topology.

Index:
[0] = Drive object number
[1] = Reset or check and flag for deletion

Note: Only for internal Siemens use.

The parameter is not displayed for the STARTER commissioning tool.

p9913[0...2] Change drive object number / Change drv_obj_no

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: C1(4)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: All groups	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
0	62	0

Description: Existing drive objects can be assigned new numbers using these parameters.

Index 0:

The values 2 ... 62 are permissible.

Index 1:

The values 2 ... 62 are permissible.

Index 2:

= 0: Ready.

= 1: Reset (only indices 0 ... 2).

= 2: Reset all (indices 0 ... 2 and flagged entries).

= 3: Check and flag for modification.

Index:
[0] = Drive object number old
[1] = Drive object number new
[2] = Reset or check and flag for modification

Note: Only for internal Siemens use.

The parameter is not displayed for the STARTER commissioning tool.

p9914[0...2] Change component number / Change comp_no

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: C1	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: All groups	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
0	199	0

Description: You can change the number of topology components using this parameter.

Index 0:

The values 2 ... 199 are permissible.

Index 1:

The values 2 ... 199 are permissible.

Index 2:

= 0: Ready.

= 1: Reset (only indices 0 ... 2).

= 2: Reset all (indices 0 ... 2 and flagged entries).

= 3: Check and flag for modification.

Index:
[0] = Component number old
[1] = Component number new
[2] = Reset or check and flag for modification

Note: Only for internal Siemens use.

The parameter is not displayed for the STARTER commissioning tool.

p9915 DRIVE-CLiQ data transfer error shutdown threshold master / DQ fault master

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: C1(1)	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Topology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	0007 07FF hex	0007 02FF hex

Description: Only for internal Siemens service purposes.

p9916 DRIVE-CLiQ data transfer error shutdown threshold slave / DQ fault slave

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: C1(1)	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Topology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	0007 07FF hex	0007 02FF hex

Description: Only for internal Siemens service purposes.

p9917[0...1] Delete component / Delete comp

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: C1(30)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: All groups	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
0	199	0

Description: Excessive components that have not been assigned can be removed from the component target topology using this parameter.

Index 0:

The values 2 ... 199 are permissible.

Index 1:

= 0: Ready.

= 1: Reset (only indices 0 and 1)

= 2: Reset all (indices 0 and 1 and flagged entries).

= 3: Check and flag for deletion.

Index: [0] = Component number
[1] = Reset or check and flag for deletion

Note: Only for internal Siemens use.

The parameter is not displayed for the STARTER commissioning tool.

p9918 Licensing active Trial License / Trial License act

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP	**Can be changed:** U, T	**Calculated:** -	**Access level:** 2
	Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: -	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	1	0

Description: Activating the "Trial License" function.

Activation must be made for each period. A period comprises 300 hours. 3 periods are available.

The actual status of the "Trial License" function is indicated in r9919.

It is not possible to activate the "Trial License" function in the following situations:

- the existing license is adequate.
- the function requiring a license does not support "Trial License".

Value:
0: Inactive
1: Activate Trial License

Dependency: Refer to: r9919

Note: After a period has expired, then p9918 is automatically set = 0.

r9919[0...3] Licensing Trial License status / Trial License stat

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP	**Can be changed:** -	**Calculated:** -	**Access level:** 2
	Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
	P-Group: -	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the status of the "Trial License" function.

Index:
[0] = Period actual remaining time
[1] = Period actual
[2] = Maximum period duration
[3] = Maximum number of periods

Dependency: Refer to: p9918

Note: For index [0]:

Displays the remaining time of the actual period in hours.

For index [1]:

Displays the actual periods.

For index [2]:

Displays the maximum duration of a period in hours.

For index [3]:

Displays the number of maximum periods.

p9920[0...99] Licensing enter license key / Enter license key

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Enters the license key for this drive unit.

Example of the license key:

EACZ-QBCA = 69 65 67 90 45 81 66 67 65 dec (ASCII characters)

Index 0 = license key character 1 (e.g. 69 dec)

Index 1 = license key character 2 (e.g. 65 dec)

...

Index 8 = license key character 9 (e.g. 65 dec)

Index 9 = license key character 10 (e.g. 0 dec)

...

Dependency: Refer to: r7843, p9921

Refer to: F13000, A13001, F13010

Notice: An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.

With the STARTER commissioning tool, the ASCII characters are not entered coded, i.e. the license key characters can be entered as printed in the Certificate of License. In this case, the commissioning tool codes the characters.

Note: For an invalid license key, all the indices have the value 0 dec.

Only the ASCII characters contained in a license key can be entered ("1" to "9", "A" to "H", "K" to "N", "P" to "Z" as well as "-").

When manually changing p9920[x] to the value 0 dec, all the values of all the following indices are also set to 0 dec.

After entering the license key, the license key must be activated (p9921).

The following fault and LED indicate that the licensing is not adequate:

- F13000 --> licensing not adequate
- LED READY --> flashes red at approximately 2 Hz

p9921 Licensing activate license key / Act license key

CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: U, T	**Calculated:** -	**Access level:** 2
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Activates the entered license key.

The following is executed when activating the license key.

- the checksum of the entered license key is checked.
- the entered license key is saved in a non-volatile fashion on the memory card.
- re-enter the license key.

Value:
0: Inactive
1: Activate start license key

Dependency: Refer to: p9920

Refer to: F13000, A13001, F13010

Note: Before activation, the license key entered using parameter p9920 is checked. If this check identifies an error, activation is rejected. In this case, writing a 1 to p9921 is rejected.

When the license key has been activated, p9921 is automatically set to 0.

r9925[0...99] Firmware file incorrect / FW file incorr

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the directory and name of the file whose status as shipped from the factory was identified as impermissible.

Dependency: Refer to: r9926

Refer to: A01016

Note: The directory and name of the file is displayed in the ASCII code.

r9926 Firmware check status / FW check status

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 2
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status when the firmware is checked when the system is booted.

0: Firmware not yet checked.

1: Check running.

2: Check successfully completed.

3: Check indicates an error.

Dependency: Refer to: r9925

Refer to: A01016

p9930[0...8] System logbook activation / SYSLOG activation

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Only for service purposes.

Index:
[0] = System logbook stage (0: Not active)
[1] = COM2/COM1 (0: COM2, 1: COM1)
[2] = Activate file write (0: Not active)
[3] = Display time stamp (0: Not displayed)
[4...7] = Reserved
[8] = System logbook file size (stages, each 10 kB)

Notice: Before switching off the Control Unit, ensure that the system logbook is switched out (p9930[0] = 0).

If writing to the file is activated (p9930[2] = 1), writing to the file must be deactivated again before switching off the Control Unit (p9930[2] = 0) in order to ensure that the system logbook has been completely written to the file.

p9931[0...194] System logbook module selection / SYSLOG mod select.

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Only for service purposes.

p9932 Save system logbook EEPROM / SYSLOG EEPROM save

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Only for service purposes.

r9935.0 BO: POWER ON delay signal / POWER ON t_delay

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and binector output for a delay after POWER ON.

After switch-on, binector output r9935.0 is set with the start of the first sampling time and is again reset after approx. 100 ms.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	POWER ON delay signal	High	Low	-

r9936[0...199] DRIVE-CLiQ diagnostic error counter connection / DQdiag err counter

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the error counter for the individual DRIVE-CLiQ connections/cables.

r9936[0]: sum of the error counter for all connections

r9936[1]: not used

r9936[2]: error counter for the feeder cable to DRIVE-CLiQ components with component number 2

...

r9936[199]: error counter for the feeder cable to DRIVE-CLiQ components with component number 199

The feeder cable is the DRIVE-CLiQ cable that is connected to a component in the direction of the Control Unit.

Dependency: Refer to: p9937, p9938

p9937 DRIVE-CLiQ diagnostic configuration / DQ diag config

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 bin

Description: Sets the configuration for the DRIVE-CLiQ diagnostics (error counter r9936).

Using this function, connections and cables of DRIVE-CLiQ connections can be checked for transfer errors. The error counter is evaluated in the PHY blocks involved.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Alarm for connection error	Yes	No	-
08	Reset error counter	Yes	No	-

Dependency: Refer to: r9936, p9938

Refer to: A01839

Note: For bit 00:

To activate this function, p9938 must be set to 0 (inactive).

After changing the error counter (r9936), an appropriate alarm is output.

The alarm automatically disappears after 5 seconds.

For bit 08:

With p9937.8 = 1, the error counters are reset (r9936[0...199]).

After the reset, p9937.8 is automatically set to 0.

p9938 DRIVE-CLiQ detailed diagnostics configuration / DQ diag config

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	6	0

Description: Sets the configuration for the DRIVE-CLiQ detailed diagnostics (r9943).

Using the detailed diagnostics, it is possible to investigate data transfer errors on an individual connection, selected using p9942.

Value:

0: Inactive
1: Sum send and receive errors
2: Only send errors
3: Only receive errors
4: Siemens internal
5: Siemens internal
6: Siemens internal

Dependency: The functions in p9938 can only be set for p9937.0 = 0.

Refer to: r9936, p9937, p9939, p9942

Notice: If value = 0:

- detailed diagnostics is inactive.
- the error counter is active (r9936).

If value > 0:

- the error counter is inactive (r9936).
- the detailed diagnostics as configured is active (r9943).

p9939 DRIVE-CLiQ detailed diagnostics time interval / DQ detail t_interv

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1 [s]	3600 [s]	1 [s]

Description: Sets the time interval for recording the error counter in r9943.

Dependency: Refer to: r9936, p9938, p9942, r9943

p9941 Target topology feature delete all components / Feature delete

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: C1(1)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Topology	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 0
Min	**Max**	**Factory setting**
0	1	0

Description: For p9941 =1, the serial numbers of all components in the target topology are deleted (zero is written).

Through activation and deactivation this enables the actual topology components to be newly assigned to the target topology components.

Note: p9941 is automatically set to 0 at the end of the operation.

A warm restart is triggered automatically after p0009 = 0.

p9942 DRIVE-CLiQ detailed diagnostics select individual connection / DQ detail conn

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	199	0

Description: Sets the component, whose feeder cable is monitored for data transfer errors.

The feeder cable is the DRIVE-CLiQ cable that is connected to a component in the direction of the Control Unit.

Errors that have occurred in the selected time interval (p9939) can be read-out from r9943.

Dependency: Refer to: r9936, p9938, p9939, r9943

r9943 DRIVE-CLiQ detailed diagn. individual connection error counter / DQ det err counter

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Integer32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the connection errors of the individual connection that have occurred within the time interval (p9939).

The detailed diagnostics for the individual connection is activated via p9938 > 0 and is selected via p9942.

Dependency: Refer to: r9936, p9938, p9939, p9942

r9975[0...7] System utilization measured / Sys util meas

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the measured system utilization.

The higher the value displayed, the higher the system utilization.

Index:
[0] = Computing time utilization (min)
[1] = Computing time utilization (averaged)
[2] = Computing time utilization (max)
[3] = Largest total utilization (min)
[4] = Largest total utilization (averaged)
[5] = Largest total utilization (max)
[6] = Reserved
[7] = Reserved

Dependency: Refer to: r9976, r9979, r9980, r9981

Refer to: F01054, F01205

Note: For index [3...5]:

The total utilizations are determined using all sampling times used. The largest total utilizations are mapped here. The sampling time with the largest total utilization is displayed in r9979.

Total utilization:

Computing time load of sampling time involved including load from higher-priority sampling times (interrupts).

r9976[0...7] System utilization / Sys util

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the system utilization.

If the utilization is greater than 100%, fault F01054 is output.

Index:
[0] = Reserved
[1] = Computing time utilization
[2] = Reserved
[3] = Reserved
[4] = Reserved
[5] = Largest total utilization
[6] = Reserved
[7] = Reserved

Dependency: Refer to: r9979, r9980

Refer to: F01054, F01205

Note: For index [1]:

The value shows the total computing time load of the system.

For index [5]:

The total utilization is determined using all sampling times used. The largest total utilization is mapped here. The sampling time with the largest total utilization is displayed in r9979.

Total utilization:

Computing time load of sampling time involved including load from higher-priority sampling times (interrupts).

r9979 Sampling time with largest total utilization / t_sampl lg total

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: -	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [µs]	- [µs]	- [µs]

Description: Displays the sampling time with the largest total utilization.

Dependency: Refer to: r7901, r9976

Refer to: F01054

Note: The largest total utilization is displayed in r9976[5].

Total utilization:

Computing time load of sampling time involved including load from higher-priority sampling times (interrupts).

r9980[0...165] Sampling times utilization calculated / t_sampl util calc

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410	**Can be changed:** -	**Calculated:** -	**Access level:** 4
	Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
	P-Group: -	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	- [%]	- [%]	- [%]

Description: Displays the calculated utilizations for the active sampling times based on the existing target topology.

Index:
[0] = Net utilization 0
[1] = Total utilization 0
[2] = Net utilization 1
[3] = Total utilization 1
[4] = Net utilization 2
[5] = Total utilization 2
[6] = Net utilization 3
[7] = Total utilization 3
[8] = Net utilization 4
[9] = Total utilization 4
[10] = Net utilization 5
[11] = Total utilization 5
[12] = Net utilization 6
[13] = Total utilization 6
[14] = Net utilization 7
[15] = Total utilization 7
[16] = Net utilization 8
[17] = Total utilization 8
[18] = Net utilization 9
[19] = Total utilization 9
[20] = Net utilization 10
[21] = Total utilization 10
[22] = Net utilization 11
[23] = Total utilization 11
[24] = Net utilization 12
[25] = Total utilization 12
[26] = Net utilization 13
[27] = Total utilization 13
[28] = Net utilization 14
[29] = Total utilization 14
[30] = Net utilization 15
[31] = Total utilization 15
[32] = Net utilization 16
[33] = Total utilization 16
[34] = Net utilization 17
[35] = Total utilization 17

[36] = Net utilization 18
[37] = Total utilization 18
[38] = Net utilization 19
[39] = Total utilization 19
[40] = Net utilization 20
[41] = Total utilization 20
[42] = Net utilization 21
[43] = Total utilization 21
[44] = Net utilization 22
[45] = Total utilization 22
[46] = Net utilization 23
[47] = Total utilization 23
[48] = Net utilization 24
[49] = Total utilization 24
[50] = Net utilization 25
[51] = Total utilization 25
[52] = Net utilization 26
[53] = Total utilization 26
[54] = Net utilization 27
[55] = Total utilization 27
[56] = Net utilization 28
[57] = Total utilization 28
[58] = Net utilization 29
[59] = Total utilization 29
[60] = Net utilization 30
[61] = Total utilization 30
[62] = Net utilization 31
[63] = Total utilization 31
[64] = Net utilization 32
[65] = Total utilization 32
[66] = Net utilization 33
[67] = Total utilization 33
[68] = Net utilization 34
[69] = Total utilization 34
[70] = Net utilization 35
[71] = Total utilization 35
[72] = Net utilization 36
[73] = Total utilization 36
[74] = Net utilization 37
[75] = Total utilization 37
[76] = Net utilization 38
[77] = Total utilization 38
[78] = Net utilization 39
[79] = Total utilization 39
[80] = Net utilization 40
[81] = Total utilization 40
[82] = Net utilization 41
[83] = Total utilization 41
[84] = Net utilization 42
[85] = Total utilization 42
[86] = Net utilization 43
[87] = Total utilization 43
[88] = Net utilization 44
[89] = Total utilization 44
[90] = Net utilization 45
[91] = Total utilization 45
[92] = Net utilization 46
[93] = Total utilization 46
[94] = Net utilization 47
[95] = Total utilization 47
[96] = Net utilization 48
[97] = Total utilization 48
[98] = Net utilization 49
[99] = Total utilization 49
[100] = Net utilization 50
[101] = Total utilization 50

[102] = Net utilization 51
[103] = Total utilization 51
[104] = Net utilization 52
[105] = Total utilization 52
[106] = Net utilization 53
[107] = Total utilization 53
[108] = Net utilization 54
[109] = Total utilization 54
[110] = Net utilization 55
[111] = Total utilization 55
[112] = Net utilization 56
[113] = Total utilization 56
[114] = Net utilization 57
[115] = Total utilization 57
[116] = Net utilization 58
[117] = Total utilization 58
[118] = Net utilization 59
[119] = Total utilization 59
[120] = Net utilization 60
[121] = Total utilization 60
[122] = Net utilization 61
[123] = Total utilization 61
[124] = Net utilization 62
[125] = Total utilization 62
[126] = Net utilization 63
[127] = Total utilization 63
[128] = Net utilization 64
[129] = Total utilization 64
[130] = Net utilization 65
[131] = Total utilization 65
[132] = Net utilization 66
[133] = Total utilization 66
[134] = Net utilization 67
[135] = Total utilization 67
[136] = Net utilization 68
[137] = Total utilization 68
[138] = Net utilization 69
[139] = Total utilization 69
[140] = Net utilization 70
[141] = Total utilization 70
[142] = Net utilization 71
[143] = Total utilization 71
[144] = Net utilization 72
[145] = Total utilization 72
[146] = Net utilization 73
[147] = Total utilization 73
[148] = Net utilization 74
[149] = Total utilization 74
[150] = Net utilization 75
[151] = Total utilization 75
[152] = Net utilization 76
[153] = Total utilization 76
[154] = Net utilization 77
[155] = Total utilization 77
[156] = Net utilization 78
[157] = Total utilization 78
[158] = Net utilization 79
[159] = Total utilization 79
[160] = Net utilization 80
[161] = Total utilization 80
[162] = Net utilization 81
[163] = Total utilization 81
[164] = Net utilization 82
[165] = Total utilization 82

Dependency: Refer to: r7901, r9976, r9979

Refer to: F01054

Note: The corresponding sampling times can be read out in parameter r7901.

Net utilization:

Computing time load that is only called by the sampling time involved.

Total utilization:

Computing time load of sampling time involved including load from higher-priority sampling times (interrupts).

r9981[0...165] Sampling times utilization measured / t_sampl util meas

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the utilizations measured for the active sampling times.

Index:
[0] = Net utilization 0
[1] = Total utilization 0
[2] = Net utilization 1
[3] = Total utilization 1
[4] = Net utilization 2
[5] = Total utilization 2
[6] = Net utilization 3
[7] = Total utilization 3
[8] = Net utilization 4
[9] = Total utilization 4
[10] = Net utilization 5
[11] = Total utilization 5
[12] = Net utilization 6
[13] = Total utilization 6
[14] = Net utilization 7
[15] = Total utilization 7
[16] = Net utilization 8
[17] = Total utilization 8
[18] = Net utilization 9
[19] = Total utilization 9
[20] = Net utilization 10
[21] = Total utilization 10
[22] = Net utilization 11
[23] = Total utilization 11
[24] = Net utilization 12
[25] = Total utilization 12
[26] = Net utilization 13
[27] = Total utilization 13
[28] = Net utilization 14
[29] = Total utilization 14
[30] = Net utilization 15
[31] = Total utilization 15
[32] = Net utilization 16
[33] = Total utilization 16
[34] = Net utilization 17
[35] = Total utilization 17
[36] = Net utilization 18
[37] = Total utilization 18
[38] = Net utilization 19
[39] = Total utilization 19
[40] = Net utilization 20
[41] = Total utilization 20
[42] = Net utilization 21
[43] = Total utilization 21
[44] = Net utilization 22
[45] = Total utilization 22

[46] = Net utilization 23
[47] = Total utilization 23
[48] = Net utilization 24
[49] = Total utilization 24
[50] = Net utilization 25
[51] = Total utilization 25
[52] = Net utilization 26
[53] = Total utilization 26
[54] = Net utilization 27
[55] = Total utilization 27
[56] = Net utilization 28
[57] = Total utilization 28
[58] = Net utilization 29
[59] = Total utilization 29
[60] = Net utilization 30
[61] = Total utilization 30
[62] = Net utilization 31
[63] = Total utilization 31
[64] = Net utilization 32
[65] = Total utilization 32
[66] = Net utilization 33
[67] = Total utilization 33
[68] = Net utilization 34
[69] = Total utilization 34
[70] = Net utilization 35
[71] = Total utilization 35
[72] = Net utilization 36
[73] = Total utilization 36
[74] = Net utilization 37
[75] = Total utilization 37
[76] = Net utilization 38
[77] = Total utilization 38
[78] = Net utilization 39
[79] = Total utilization 39
[80] = Net utilization 40
[81] = Total utilization 40
[82] = Net utilization 41
[83] = Total utilization 41
[84] = Net utilization 42
[85] = Total utilization 42
[86] = Net utilization 43
[87] = Total utilization 43
[88] = Net utilization 44
[89] = Total utilization 44
[90] = Net utilization 45
[91] = Total utilization 45
[92] = Net utilization 46
[93] = Total utilization 46
[94] = Net utilization 47
[95] = Total utilization 47
[96] = Net utilization 48
[97] = Total utilization 48
[98] = Net utilization 49
[99] = Total utilization 49
[100] = Net utilization 50
[101] = Total utilization 50
[102] = Net utilization 51
[103] = Total utilization 51
[104] = Net utilization 52
[105] = Total utilization 52
[106] = Net utilization 53
[107] = Total utilization 53
[108] = Net utilization 54
[109] = Total utilization 54
[110] = Net utilization 55
[111] = Total utilization 55

[112] = Net utilization 56
[113] = Total utilization 56
[114] = Net utilization 57
[115] = Total utilization 57
[116] = Net utilization 58
[117] = Total utilization 58
[118] = Net utilization 59
[119] = Total utilization 59
[120] = Net utilization 60
[121] = Total utilization 60
[122] = Net utilization 61
[123] = Total utilization 61
[124] = Net utilization 62
[125] = Total utilization 62
[126] = Net utilization 63
[127] = Total utilization 63
[128] = Net utilization 64
[129] = Total utilization 64
[130] = Net utilization 65
[131] = Total utilization 65
[132] = Net utilization 66
[133] = Total utilization 66
[134] = Net utilization 67
[135] = Total utilization 67
[136] = Net utilization 68
[137] = Total utilization 68
[138] = Net utilization 69
[139] = Total utilization 69
[140] = Net utilization 70
[141] = Total utilization 70
[142] = Net utilization 71
[143] = Total utilization 71
[144] = Net utilization 72
[145] = Total utilization 72
[146] = Net utilization 73
[147] = Total utilization 73
[148] = Net utilization 74
[149] = Total utilization 74
[150] = Net utilization 75
[151] = Total utilization 75
[152] = Net utilization 76
[153] = Total utilization 76
[154] = Net utilization 77
[155] = Total utilization 77
[156] = Net utilization 78
[157] = Total utilization 78
[158] = Net utilization 79
[159] = Total utilization 79
[160] = Net utilization 80
[161] = Total utilization 80
[162] = Net utilization 81
[163] = Total utilization 81
[164] = Net utilization 82
[165] = Total utilization 82

Dependency: Refer to: r7901, r9975, r9980

Refer to: F01054

Note: The corresponding sampling times can be read out in parameter r7901.

Net utilization:

Computing time load that is only called by the sampling time involved.

Total utilization:

Computing time load of sampling time involved including load from higher-priority sampling times (interrupts).

r9982[0...4] Data memory utilization / Mem_util dat_mem

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the calculated data memory utilization rates based on the existing target topology.

Index:
[0] = Fast data memory 1
[1] = Fast data memory 2
[2] = Fast data memory 3
[3] = Fast data memory 4
[4] = Reserved

Dependency: Refer to: F01068

r9983[0...4] Measured data memory utilization (actual load) / Mem_ut dat_mem ms

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the measured data memory utilization rates based on the existing target topology.

Index:
[0] = Fast Memory 1
[1] = Fast Memory 2
[2] = Fast Memory 3
[3] = Fast Memory 4
[4] = Heap

Dependency: Refer to: F01068

r9984[0...4] Data memory utilization TEC / Data mem util TEC

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the data memory utilization as a result of Technology Extensions.

Index:
[0] = Fast Memory 1
[1] = Fast Memory 2
[2] = Fast Memory 3
[3] = Fast Memory 4
[4] = Reserved

Dependency: Refer to: F01068

Note: TEC: Technology Extension

r9986[0...7] DRIVE-CLiQ system load / DQ system load

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the calculated DRIVE-CLiQ system utilization based on the existing target topology.
The values are only available in the "Initialization finished" state (r3988 = 800).
Index 0 ... 7 corresponds to DRIVE-CLiQ socket X100 ... X107.

Dependency: Refer to: F01340

r9987[0...7] DRIVE-CLiQ bandwidth load / DQ bandw load

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the calculated DRIVE-CLiQ bandwidth utilization based on the existing target topology.
The values are only available in the "Initialization finished" state (r3988 = 800).
Index 0 ... 7 corresponds to DRIVE-CLiQ socket X100 ... X107.

Dependency: Refer to: F01340

r9988[0...7] DRIVE-CLiQ DPRAM load / DQ DPRAM load

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the calculated DRIVE-CLiQ DPRAM load based on the existing target topology.
The values are not made available until the RUNUP READY (800) state is adopted (see p3988).
Index 0 ... 7 corresponds to DRIVE-CLiQ socket X100 ... X107.

Dependency: Refer to: F01340

p9990 DO memory usage actual value determination selection / Mem_use ActVal sel

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: U, T	**Calculated:** -	**Access level:** 4
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	65535	0

Description: The meaning of the parameter differs for reading and writing.
Read:
- Returns the number of memory areas monitored.
Write:
- Memory usage of a drive object: Enter drive object number
- Memory usage of the complete system: Enter value 65535

r9991[0...4] Memory usage drive object actual value / Mem_use DO ActVal

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the memory usage for each drive object as actual value.

Index:
[0] = Fast Memory 1
[1] = Fast Memory 2
[2] = Fast Memory 3
[3] = Fast Memory 4
[4] = Heap

r9992[0...4] Memory usage drive object reference value / Mem_use DO ref val

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the memory usage for each drive object as reference value.

Index:
[0] = Fast Memory 1
[1] = Fast Memory 2
[2] = Fast Memory 3
[3] = Fast Memory 4
[4] = Heap

r9993[0...4] Memory utilization Technology Extension / Mem_util TEC

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the memory usage of a Technology Extension.

Index:
[0] = Fast Memory 1
[1] = Fast Memory 2
[2] = Fast Memory 3
[3] = Fast Memory 4
[4] = Heap

Note: TEC: Technology Extension

r9999[0...99] Software error internal supplementary diagnostics / SW_err int diag

CU_I, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP, CU_S150_DP, CU_I_D410

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Diagnostics parameter to display additional information for internal software errors.

Note: Only for internal Siemens troubleshooting.

p10000[0...5] SI TM54F communication clock cycle / TM54F comm_cycle

TM54F_MA, TM54F_SL

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00000 [ms]	25.00000 [ms]	[0] 12.00000 [ms] [1...5] 0.00000 [ms]

Description: Sets the safety communication clock cycle with which the TM54F communicates with a drive.

The communication clock cycle must correspond to the safety monitoring clock cycle of the drive.

Index:
[0] = Drive 1
[1] = Drive 2
[2] = Drive 3
[3] = Drive 4
[4] = Drive 5
[5] = Drive 6

Note: - if only index 0 of p10000 is used, then p10000[0] defines the communication clock cycle that is applicable for all drives used in p10010[]. In this case, all safety monitoring clock cycles on the Control Unit must be identical with p10000[0].

- the minimum communication clock cycle is 1 ms.

p10001 SI Motion delay time for test stop at DO (processor 1) / SI t_delay DO P1

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
4.00 [ms]	2000.00 [ms]	500.00 [ms]

Description: Sets the delay time for testing the digital output.

Within this time, for a forced checking procedure of the digital output, the signal must have been detected via the corresponding readback input (p10047).

Dependency: Refer to: p10003, p10007, p10017, p10046

Note: The delay time must be set to a value greater than the debounce time (p10017).

Regardless of p10001, the forced checking procedure will pause for at least two safety monitoring clock cycles between each stage of the test.

The test stop is only performed if the safety output is being used (see p10042).

p10001 SI TM54F delay time for test stop at DO 0 ... DO 3 / SI t_delay DO

TM54F_MA, TM54F_SL

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
2.00 [ms]	2000.00 [ms]	500.00 [ms]

Description: Sets the delay time for testing the digital outputs 0 ... 3 (DO 0 ... DO 3).

Within this time, for a forced checking procedure of the digital outputs, the signal must have been detected via the corresponding readback input (p10047).

Dependency: Refer to: p10003, p10007, p10041, p10046

Note: The delay time must be set to a value greater than the debounce time (p10017).

The set time is rounded internally to an integer multiple of the TM54F sampling time (r10015).

p10002 SI Motion F-DI changeover discrepancy time (processor 1) / SI Mtn DI chg t P1

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1.00 [ms]	2000.00 [ms]	500.00 [ms]

Description: Sets the discrepancy time for digital inputs.

The signal states at the two associated digital inputs (F-DI) must assume the same state within this discrepancy time.

Dependency: Refer to: p10102

p10002 SI TM54F F-DI changeover discrepancy time / SI F-DI chg t

TM54F_MA, TM54F_SL

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2893, 2894
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1.00 [ms]	2000.00 [ms]	500.00 [ms]

Description: Sets the discrepancy time for digital inputs.

The signal states at the two associated digital inputs (F-DI) must assume the same state within this discrepancy time.

Note: The discrepancy time of the F-DIs must always be set higher than the highest value of parameter p9780 or p9500 of the drives that use safety with TM54F. The set time is rounded internally to an integer multiple of the TM54F sampling time (r10015).

p10003 SI Motion forced checking procedure timer / SI Mtn dyn t

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [h]	8760.00 [h]	8.00 [h]

Description: Sets the time to carry out the forced checking procedure (test stop).

Within the parameterized time, the digital inputs/outputs must must have been subject to a forced checking procedure at least once. The forced checking procedure is started with binector input p10007 = 0/1 signal.

Dependency: Refer to: p10002, p10007, p10046

p10003 SI TM54F forced checking procedure timer / SI dyn t

TM54F_MA

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2892
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [h]	8760.00 [h]	8.00 [h]

Description: Sets the time to carry out the forced checking procedure (test stop).

Within the parameterized time, the digital inputs/outputs must must have been subject to a forced checking procedure at least once. The forced checking procedure is started with binector input p10007 = 0/1 signal.

Dependency: Refer to: p10001, p10007, p10046

r10004[0...1] SI TM54F parameter actual checksum / SI par CRC act

TM54F_MA, TM54F_SL

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2891
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the actual checksum of the checksum-checked parameters for the Terminal Module 54F (TM54F).

Index:
[0] = Checksum HW-independent TM54F parameters
[1] = Checksum HW-dependent TM54F parameters (MM)

p10005[0...1] SI TM54F parameter reference checksum / SI par CRC target

TM54F_MA, TM54F_SL

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2891
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Displays the reference checksum of the checksum-checked parameters for the Terminal Module 54F (TM54F).

Index:
[0] = Checksum HW-independent TM54F parameters
[1] = Checksum HW-dependent TM54F parameters (MM)

p10006 SI Motion acknowledgment internal event F-DI (processor 1) / SI Mtn ackn int P1

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 2900, 2905
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Select a failsafe digital input (F-DI) for the signal "acknowledge internal event" (internal fault).

The falling edge at this input resets the status "internal event" in the drive.

The rising edge at this input acknowledges any existing discrepancy errors.

Value:
0: Static selected
1: F-DI 0
2: F-DI 1
3: F-DI 2
255: Static deselected

Dependency: Refer to: p10106

Refer to: A01666, A30666

Note: The values "static selected" and "static deselected" result in an inactive function of the safe acknowledgment.

F-DI: Failsafe Digital Input

p10006 SI TM54F acknowledgment internal event input terminal / SI ackn int event

TM54F_MA, TM54F_SL

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 2900, 2905
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Select a failsafe digital input (F-DI) for the signal "acknowledge internal event" (internal fault).

The signal is transferred to the corresponding control signal of all drives.

The falling edge at this input resets the status "internal event" in the drives.

The rising edge at this input acknowledges any existing discrepancy errors.

Value:
0: Static selected
1: F-DI 0 (X521.2/3/6)
2: F-DI 1 (X521.4/5/7)
3: F-DI 2 (X522.1/2/7)
4: F-DI 3 (X522.3/4/8)
5: F-DI 4 (X522.5/6/9)
6: F-DI 5 (X531.2/3/6)
7: F-DI 6 (X531.4/5/7)
8: F-DI 7 (X532.1/2/7)
9: F-DI 8 (X532.3/4/8)
10: F-DI 9 (X532.5/6/9)
255: Static deselected

Dependency: Refer to: A35081

Note: The values "static selected" and "static deselected" result in an inactive function of the safe acknowledgment.

F-DI: Failsafe Digital Input

p10007 BI: SI Motion forced checking procedure F-DO signal source / SI dynF-DI/DOs_src

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2892
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Selects an input terminal to start the test stop.

The test stop is started with a 0/1 signal at the input terminal and is then only possible if the drive is not in commissioning mode.

Dependency: Refer to: p10001, p10002, p10003, p10040, p10046

p10007 BI: SI TM54F forced checking procedure F-DI/F-DO signal source / SI dynF-DI/DOs_src

TM54F_MA

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2892
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to initiate the test stop.

For example, a digital input of the Control Unit or one of the other Terminal Modules can be set as signal source.

The test stop is triggered on a 0/1 signal edge.

The TM54F must be in the "ready" state (p0010 = 0).

Dependency: Refer to: p10001, p10003, p10041, p10046

Notice: Digital inputs of the TM54F must not be used to trigger the test stop.

p10008 SI TM54F operating mode / SI op_mod

TM54F_MA, TM54F_SL

Can be changed: C2(95)	**Calculated:** -	**Access level:** 4
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	1

Description: Sets the operating mode for the Terminal Module 54F (TM54F).

Value:
0: Function interface
1: Control interface

Note: Parameter being prepared. For this firmware version, the function interface is not supported.

p10009 SI Motion SLP retraction F-DI (processor 1) / SLP retrF-DI P1

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	3	0

Description: Selects a failsafe digital input (F-DI) for the "SLP retract" function.

A rising edge at this F-DI makes it possible to retract the axis, if at this instant in time indicates a violation of the SLP limit.

After safe acknowledgment of the active safety faults, the drive can be traversed in the direction of the permitted position range.

In the retract mode, SLP becomes inactive, and SDI, if enabled, is selected in the direction of the permitted position range.

A 0 signal at the F-DI for retraction, deactivates the active retraction mode (SLP becomes active again, and SDI selected corresponding to the actual F-DIs).

Value:

0: Function inactive
1: F-DI 0
2: F-DI 1
3: F-DI 2

Note: - retraction is only possible if SDI is not already selected in the opposite direction of the permitted position range.

- a discrepancy at this F-DI must be acknowledged using a safe acknowledgment.

F-DI: Failsafe Digital Input

SDI: Safe Direction (safe motion direction)

SLP: Safely-Limited Position

p10009 SI TM54F SLP retract F-DI / SI SLP retr F-DI

TM54F_MA, TM54F_SL

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	10	0

Description: Selects a failsafe digital input (F-DI) for the "SLP retract" function.

A rising edge at this F-DI makes it possible to retract the drives, which at this instant in time indicate a violation of the SLP limit.

After safe acknowledgment of the active safety faults, the drives can be traversed in the direction of the permitted position range.

In the retract mode, SLP becomes inactive, and SDI, if enabled, is selected in the direction of the permitted position range.

A 0 signal at the F-DI for retraction, deactivates the active retraction mode (SLP becomes active again, and SDI selected corresponding to the actual F-DIs).

Value:

0: Function inactive
1: F-DI 0 (X521.2/3/6)
2: F-DI 1 (X521.4/5/7)
3: F-DI 2 (X522.1/2/7)
4: F-DI 3 (X522.3/4/8)
5: F-DI 4 (X522.5/6/9)
6: F-DI 5 (X531.2/3/6)
7: F-DI 6 (X531.4/5/7)
8: F-DI 7 (X532.1/2/7)
9: F-DI 8 (X532.3/4/8)
10: F-DI 9 (X532.5/6/9)

Note: - retraction is only possible if SDI is not already selected in the opposite direction of the permitted position range.
- a discrepancy at this F-DI must be acknowledged using a safe acknowledgment.
F-DI: Failsafe Digital Input
SDI: Safe Direction (safe motion direction)
SLP: Safely-Limited Position

p10010[0...5] SI TM54F drive object assignment / SI drv_obj assign

TM54F_MA, TM54F_SL

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2891, 2892
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	62	0

Description: Sets the drive object number for the drives that are available.

Index:
[0] = Drive 1
[1] = Drive 2
[2] = Drive 3
[3] = Drive 4
[4] = Drive 5
[5] = Drive 6

Note: A change only becomes effective after a POWER ON.

p10011[0...5] SI TM54F drive group assignment / SI drv_gr assign

TM54F_MA, TM54F_SL

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2892
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	4	1

Description: Sets the drive group for the drives that are available.
A drive group is a combination of several drives with the same types of behavior.

Index:
[0] = Drive 1
[1] = Drive 2
[2] = Drive 3
[3] = Drive 4
[4] = Drive 5
[5] = Drive 6

Note: If the basic functions are controlled via the TM54F, then within a drive group, only drives with basic functions or drives with extended functions can be assigned.

p10012[0...5] SI TM54F Motor/Hydraulic Module Node Identifier Word 1 / SI MM/HM Node ID 1

TM54F_MA, TM54F_SL

Can be changed: C2(95)	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the actual Node Identifier (word 1, bit 0 ... 31) for the Motor/Hydraulic Modules.

Index:
[0] = Drive 1
[1] = Drive 2
[2] = Drive 3
[3] = Drive 4
[4] = Drive 5
[5] = Drive 6

Dependency: Refer to: p10013, p10014

Note: The Node Identifier (96 bit) is represented in the following 3 parameters.
p10012[0] word 1 (bit 0 ... 31) for Motor/Hydraulic Module 1
...
p10012[5] word 1 (bit 0 ... 31) for Motor/Hydraulic Module 6
p10013[0] word 2 (bit 32 ... 63) for Motor/Hydraulic Module 1
...
p10013[5] word 2 (bit 32 ... 63) for Motor/Hydraulic Module 6
p10014[0] word 3 (bit 64 ... 95) for Motor/Hydraulic Module 1
...
p10014[5] word 3 (bit 64 ... 95) for Motor/Hydraulic Module 6

p10013[0...5] SI TM54F Motor/Hydraulic Module Node Identifier Word 2 / SI MM Node ID 2

TM54F_MA, TM54F_SL

Can be changed: C2(95)	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the actual Node Identifier (word 2, bit 32 ... 63) for the Motor/Hydraulic Modules.

Index:
[0] = Drive 1
[1] = Drive 2
[2] = Drive 3
[3] = Drive 4
[4] = Drive 5
[5] = Drive 6

Dependency: Refer to: p10012, p10014

Note: The complete Node Identifier (96 bit) is represented in p10012, p10013 and p10014.

p10014[0...5] SI TM54F Motor/Hydraulic Module Node Identifier Word 3 / SI MM Node ID 3

TM54F_MA, TM54F_SL

Can be changed: C2(95)	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the actual Node Identifier (word 3, bit 64 ... 95) for the Motor/Hydraulic Modules.

Index:
[0] = Drive 1
[1] = Drive 2
[2] = Drive 3
[3] = Drive 4
[4] = Drive 5
[5] = Drive 6

Dependency: Refer to: p10012, p10013

Note: The complete Node Identifier (96 bit) is represented in p10012, p10013 and p10014.

r10015 SI TM54F sampling time / SI t_sample

TM54F_MA, TM54F_SL

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [ms]	- [ms]	- [ms]

Description: Displays the active sampling time of the TM54F.

In this clock cycle, the debounced F-DIs (p10017) are evaluated, and converted over to SGEs.

In this clock cycle, also the F-DOs are controlled corresponding to the presently available SGAs.

This clock cycle corresponds to the smallest communication clock cycle that was entered in p10000[].

SGEs are transferred to the drives, and the SGAs received from the drives are transferred with the specific communication clock cycle of each drive in p10000[].

The value of a specific index of p10000[] represents the communication clock cycle of the drive, which is entered in the same index of p10010[].

Note: SGA: Safety-related output

SGE: Safety-relevant input

p10017 SI Motion digital inputs debounce time (processor 1) / SI DI t_debounceP1

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	100.00 [ms]	1.00 [ms]

Description: Sets the debounce time for digital inputs.

The debounce time is accepted rounded off to whole milliseconds.

The debounce time acts on the following digital inputs:

- Failsafe digital inputs (F-DI).
- Single-channel digital inputs (DI).
- Single-channel digital input 22 (DI 22, read back input for the forced checking procedure).

Dependency: Refer to: p10117

Notice: To filter noise pulses or test impulses from F-DOs, there is the following dependency on the parameter p0799[0]:

- if p0799[0] is less than 1 ms, then p10017 = 1 ms or a multiple integer of 1 ms.
- if p0799[0] is greater or equal to 1 ms, then p10017 must = p0799[0] - or must be a multiple integer of p0799[0].

Note: Example:

Debounce time = 1 ms: Fault pulses of 1 ms are filtered; only pulses longer than 2 ms are processed.

Debounce time = 3 ms: Fault pulses of 3 ms are filtered; only pulses longer than 4 ms are processed.

The debounce result can be read in r10051.

The set debounce time impacts the response time of the safety function.

p10017 SI TM54F digital inputs debounce time / SI DI t_debounce

TM54F_MA, TM54F_SL

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1.00 [ms]	100.00 [ms]	1.00 [ms]

Description: Sets the debounce time for digital inputs.

The debounce time is accepted rounded off to whole milliseconds.

The debounce time acts on the following digital inputs:

- Failsafe digital inputs (F-DI).
- Single-channel digital inputs (DI).

Notice: To filter noise pulses or test impulses from F-DOs, there is the following dependency on the parameter p0799[0]:
- if p0799[0] is less than 1 ms, then p10017 = 1 ms or a multiple integer of 1 ms.
- if p0799[0] is greater or equal to 1 ms, then p10017 must = p0799[0] - or must be a multiple integer of p0799[0].

Note: Example:
Debounce time = 1 ms: Fault pulses of 1 ms are filtered; only pulses longer than 2 ms are processed.
Debounce time = 3 ms: Fault pulses of 3 ms are filtered; only pulses longer than 4 ms are processed.
The debounce result can be read in r10051.
The set debounce time impacts the response time of the safety function.

p10020[0...3] SI TM54F special operating mode selection / SI spec op sel

TM54F_MA, TM54F_SL

Can be changed: C2(95)	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	3	1

Description: Sets the special operating mode for the operating mode "function interface".
0 = Inactive
1 = Safe Operating Stop with braking (SS2)
2 = Safe Operating Stop without braking (SOS)
3 = Safely reduced speed without standstill (SLS)
4 = Safely reduced speed with agreement (SS2 --> SLS)

Index: [0] = Drive group 1
[1] = Drive group 2
[2] = Drive group 3
[3] = Drive group 4

Dependency: Refer to: p10008

Note: Parameter being prepared. For this firmware version, the function interface is not supported.
SLS: Safely-Limited Speed
SOS: Safe Operating Stop
SS2: Safe Stop 2

p10021[0...3] SI TM54F Emergency Stop stop response / SI Emergency Stop

TM54F_MA, TM54F_SL

Can be changed: C2(95)	**Calculated:** -	**Access level:** 4
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	2	0

Description: Sets the stop response for the drive group for Emergency Stop.
The input terminal for Emergency Stop is set in p10038.
0 = Stop reaction STO
1 = Stop reaction SS1
2 = Stop reaction SS2

Index: [0] = Drive group 1
[1] = Drive group 2
[2] = Drive group 3
[3] = Drive group 4

Dependency: Refer to: p10008, p10038

Note: Parameter being prepared. For this firmware version, the function interface is not supported.

p10022 SI Motion STO input terminal (processor 1) / SI Mtn STO F-DI P1

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 2900, 2905
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the failsafe digital input (F-DI) for the "STO" function.

Value:
0: Static selected
1: F-DI 0
2: F-DI 1
3: F-DI 2
255: Static deselected

Dependency: Refer to: p10122

Note: If value = 0:

No terminal assigned, safety function always selected.

If value = 255:

No terminal assigned, safety function always deselected.

F-DI: Failsafe Digital Input

STO: Safe Torque Off

p10022[0...3] SI TM54F STO input terminal / SI STO F-DI

TM54F_MA, TM54F_SL

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 2900, 2905
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the failsafe digital input (F-DI) for the "STO" function (operating mode "control interface").

Value:
0: Static selected
1: F-DI 0 (X521.2/3/6)
2: F-DI 1 (X521.4/5/7)
3: F-DI 2 (X522.1/2/7)
4: F-DI 3 (X522.3/4/8)
5: F-DI 4 (X522.5/6/9)
6: F-DI 5 (X531.2/3/6)
7: F-DI 6 (X531.4/5/7)
8: F-DI 7 (X532.1/2/7)
9: F-DI 8 (X532.3/4/8)
10: F-DI 9 (X532.5/6/9)
255: Static deselected

Index:
[0] = Drive group 1
[1] = Drive group 2
[2] = Drive group 3
[3] = Drive group 4

Note: If value = 0:

No terminal assigned, safety function always selected.

If value = 255:

No terminal assigned, safety function always deselected.

F-DI: Failsafe Digital Input

STO: Safe Torque Off

p10023 SI Motion SS1 input terminal (processor 1) / SI Mtn SS1 F-DI P1

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 2900, 2905
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the failsafe digital input (F-DI) for the "SS1" function.

Value:
0: Static selected
1: F-DI 0
2: F-DI 1
3: F-DI 2
255: Static deselected

Dependency: Refer to: p10123

Note: If value = 0:

No terminal assigned, safety function always selected.

If value = 255:

No terminal assigned, safety function always deselected.

F-DI: Failsafe Digital Input

SS1: Safe Stop 1

p10023[0...3] SI TM54F SS1 input terminal / SI SS1 F-DI

TM54F_MA, TM54F_SL

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 2900, 2905
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the failsafe digital input (F-DI) for the "SS1" function (operating mode "control interface").

Value:
0: Static selected
1: F-DI 0 (X521.2/3/6)
2: F-DI 1 (X521.4/5/7)
3: F-DI 2 (X522.1/2/7)
4: F-DI 3 (X522.3/4/8)
5: F-DI 4 (X522.5/6/9)
6: F-DI 5 (X531.2/3/6)
7: F-DI 6 (X531.4/5/7)
8: F-DI 7 (X532.1/2/7)
9: F-DI 8 (X532.3/4/8)
10: F-DI 9 (X532.5/6/9)
255: Static deselected

Index:
[0] = Drive group 1
[1] = Drive group 2
[2] = Drive group 3
[3] = Drive group 4

Note: If value = 0:

No terminal assigned, safety function always selected.

If value = 255:

No terminal assigned, safety function always deselected.

F-DI: Failsafe Digital Input

SS1: Safe Stop 1

p10024 SI Motion SS2 input terminal (processor 1) / SI Mtn SS2 F-DI P1

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the failsafe digital input (F-DI) for the "SS2" function.

Value:
0: Static selected
1: F-DI 0
2: F-DI 1
3: F-DI 2
255: Static deselected

Note: If value = 0:

No terminal assigned, safety function always selected.

If value = 255:

No terminal assigned, safety function always deselected.

F-DI: Failsafe Digital Input

SS2: Safe Stop 2

p10024[0...3] SI TM54F SS2 input terminal / SI SS2 F-DI

TM54F_MA, TM54F_SL

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the failsafe digital input (F-DI) for the "SS2" function (operating mode "control interface").

Value:
0: Static selected
1: F-DI 0 (X521.2/3/6)
2: F-DI 1 (X521.4/5/7)
3: F-DI 2 (X522.1/2/7)
4: F-DI 3 (X522.3/4/8)
5: F-DI 4 (X522.5/6/9)
6: F-DI 5 (X531.2/3/6)
7: F-DI 6 (X531.4/5/7)
8: F-DI 7 (X532.1/2/7)
9: F-DI 8 (X532.3/4/8)
10: F-DI 9 (X532.5/6/9)
255: Static deselected

Index:
[0] = Drive group 1
[1] = Drive group 2
[2] = Drive group 3
[3] = Drive group 4

Note: If value = 0:

No terminal assigned, safety function always selected.

If value = 255:

No terminal assigned, safety function always deselected.

F-DI: Failsafe Digital Input

SS2: Safe Stop 2

p10025 SI Motion SOS input terminal (processor 1) / SI Mtn SOS F-DI P1

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the failsafe digital input (F-DI) for the "SOS" function.

Value:
0: Static selected
1: F-DI 0
2: F-DI 1
3: F-DI 2
255: Static deselected

Note: If value = 0:

No terminal assigned, safety function always selected.

If value = 255:

No terminal assigned, safety function always deselected.

F-DI: Failsafe Digital Input

SOS: Safe Operating Stop

p10025[0...3] SI TM54F SOS input terminal / SI SOS F-DI

TM54F_MA, TM54F_SL

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the failsafe digital input (F-DI) for the "SOS" function (operating mode "control interface").

Value:
0: Static selected
1: F-DI 0 (X521.2/3/6)
2: F-DI 1 (X521.4/5/7)
3: F-DI 2 (X522.1/2/7)
4: F-DI 3 (X522.3/4/8)
5: F-DI 4 (X522.5/6/9)
6: F-DI 5 (X531.2/3/6)
7: F-DI 6 (X531.4/5/7)
8: F-DI 7 (X532.1/2/7)
9: F-DI 8 (X532.3/4/8)
10: F-DI 9 (X532.5/6/9)
255: Static deselected

Index:
[0] = Drive group 1
[1] = Drive group 2
[2] = Drive group 3
[3] = Drive group 4

Note: If value = 0:

No terminal assigned, safety function always selected.

If value = 255:

No terminal assigned, safety function always deselected.

F-DI: Failsafe Digital Input

SOS: Safe Operating Stop

p10026 SI Motion SLS input terminal (processor 1) / SI Mtn SLS F-DI P1

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the failsafe digital input (F-DI) for the "SLS" function.

Value:
0: Static selected
1: F-DI 0
2: F-DI 1
3: F-DI 2
255: Static deselected

Dependency: Refer to: p10126

Note: If value = 0:

No terminal assigned, safety function always selected.

If value = 255:

No terminal assigned, safety function always deselected.

F-DI: Failsafe Digital Input

SLS: Safely-Limited Speed

p10026[0...3] SI TM54F SLS input terminal / SI SLS F-DI

TM54F_MA, TM54F_SL

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the failsafe digital input (F-DI) for the "SLS" function (operating mode "control interface").

Value:
0: Static selected
1: F-DI 0 (X521.2/3/6)
2: F-DI 1 (X521.4/5/7)
3: F-DI 2 (X522.1/2/7)
4: F-DI 3 (X522.3/4/8)
5: F-DI 4 (X522.5/6/9)
6: F-DI 5 (X531.2/3/6)
7: F-DI 6 (X531.4/5/7)
8: F-DI 7 (X532.1/2/7)
9: F-DI 8 (X532.3/4/8)
10: F-DI 9 (X532.5/6/9)
255: Static deselected

Index:
[0] = Drive group 1
[1] = Drive group 2
[2] = Drive group 3
[3] = Drive group 4

Note: If value = 0:

No terminal assigned, safety function always selected.

If value = 255:

No terminal assigned, safety function always deselected.

F-DI: Failsafe Digital Input

SLS: Safely-Limited Speed

p10027 SI Motion SLS limit bit 0 input terminal (processor 1) / SI SLS lim0F-DI P1

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the failsafe digital input (F-DI) for the limit value bit 0 of the "SLS" function.

Value:
0: Static selected
1: F-DI 0
2: F-DI 1
3: F-DI 2
255: Static deselected

Note: If value = 0:

No terminal assigned, selection bit remains statically at "0".

If value = 255:

No terminal assigned, selection bit remains statically at "1".

F-DI: Failsafe Digital Input

SLS: Safely-Limited Speed

p10027[0...3] SI TM54F SLS limit bit 0 input terminal / SI SLS lim 0 F-DI

TM54F_MA, TM54F_SL

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the failsafe digital input (F-DI) for the limit value bit 0 of the "SLS" function (operating mode "control interface").

Value:
0: Static selected
1: F-DI 0 (X521.2/3/6)
2: F-DI 1 (X521.4/5/7)
3: F-DI 2 (X522.1/2/7)
4: F-DI 3 (X522.3/4/8)
5: F-DI 4 (X522.5/6/9)
6: F-DI 5 (X531.2/3/6)
7: F-DI 6 (X531.4/5/7)
8: F-DI 7 (X532.1/2/7)
9: F-DI 8 (X532.3/4/8)
10: F-DI 9 (X532.5/6/9)
255: Static deselected

Index:
[0] = Drive group 1
[1] = Drive group 2
[2] = Drive group 3
[3] = Drive group 4

Note: If value = 0:

No terminal assigned, selection bit remains statically at "0".

If value = 255:

No terminal assigned, selection bit remains statically at "1".

F-DI: Failsafe Digital Input

SLS: Safely-Limited Speed

p10028 SI Motion SLS limit bit 1 input terminal (processor 1) / SI SLS lim1F-DI P1

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the failsafe digital input (F-DI) for the limit value bit 1 of the "SLS" function.

Value:
0: Static selected
1: F-DI 0
2: F-DI 1
3: F-DI 2
255: Static deselected

Note: If value = 0:

No terminal assigned, selection bit remains statically at "0".

If value = 255:

No terminal assigned, selection bit remains statically at "1".

F-DI: Failsafe Digital Input

SLS: Safely-Limited Speed

p10028[0...3] SI TM54F SLS limit bit 1 input terminal / SI SLS lim 1 F-DI

TM54F_MA, TM54F_SL

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the failsafe digital input (F-DI) for the limit value bit 1 of the "SLS" function (operating mode "control interface").

Value:
0: Static selected
1: F-DI 0 (X521.2/3/6)
2: F-DI 1 (X521.4/5/7)
3: F-DI 2 (X522.1/2/7)
4: F-DI 3 (X522.3/4/8)
5: F-DI 4 (X522.5/6/9)
6: F-DI 5 (X531.2/3/6)
7: F-DI 6 (X531.4/5/7)
8: F-DI 7 (X532.1/2/7)
9: F-DI 8 (X532.3/4/8)
10: F-DI 9 (X532.5/6/9)
255: Static deselected

Index:
[0] = Drive group 1
[1] = Drive group 2
[2] = Drive group 3
[3] = Drive group 4

Note: If value = 0:

No terminal assigned, selection bit remains statically at "0".

If value = 255:

No terminal assigned, selection bit remains statically at "1".

F-DI: Failsafe Digital Input

SLS: Safely-Limited Speed

p10030 SI Motion SDI positive input terminal (processor 1) / SI SDI pos F-DI P1

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the failsafe digital input (F-DI) for the "SDI positive" function.

Value:
0: Static selected
1: F-DI 0
2: F-DI 1
3: F-DI 2
255: Static deselected

Note: If value = 0:

No terminal assigned, safety function always selected.

If value = 255:

No terminal assigned, safety function always deselected.

F-DI: Failsafe Digital Input

SDI: Safe Direction (safe motion direction)

p10030[0...3] SI TM54F SDI positive input terminal / SI SDI pos F-DI

TM54F_MA, TM54F_SL

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the failsafe digital input (F-DI) for the "SDI" function (operating mode "control interface").

Value:
0: Static selected
1: F-DI 0 (X521.2/3/6)
2: F-DI 1 (X521.4/5/7)
3: F-DI 2 (X522.1/2/7)
4: F-DI 3 (X522.3/4/8)
5: F-DI 4 (X522.5/6/9)
6: F-DI 5 (X531.2/3/6)
7: F-DI 6 (X531.4/5/7)
8: F-DI 7 (X532.1/2/7)
9: F-DI 8 (X532.3/4/8)
10: F-DI 9 (X532.5/6/9)
255: Static deselected

Index:
[0] = Drive group 1
[1] = Drive group 2
[2] = Drive group 3
[3] = Drive group 4

Note: If value = 0:

No terminal assigned, safety function always selected.

If value = 255:

No terminal assigned, safety function always deselected.

F-DI: Failsafe Digital Input

SDI: Safe Direction (safe motion direction)

p10031 SI Motion SDI negative input terminal (processor 1) / SI SDI neg F-DI P1

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the failsafe digital input (F-DI) for the "SDI negative" function.

Value:
0: Static selected
1: F-DI 0
2: F-DI 1
3: F-DI 2
255: Static deselected

Note: If value = 0:

No terminal assigned, safety function always selected.

If value = 255:

No terminal assigned, safety function always deselected.

F-DI: Failsafe Digital Input

SDI: Safe Direction (safe motion direction)

p10031[0...3] SI TM54F SDI negative input terminal / SI SDI neg F-DI

TM54F_MA, TM54F_SL

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the failsafe digital input (F-DI) for the "SDI negative" function (operating mode "control interface").

Value:
0: Static selected
1: F-DI 0 (X521.2/3/6)
2: F-DI 1 (X521.4/5/7)
3: F-DI 2 (X522.1/2/7)
4: F-DI 3 (X522.3/4/8)
5: F-DI 4 (X522.5/6/9)
6: F-DI 5 (X531.2/3/6)
7: F-DI 6 (X531.4/5/7)
8: F-DI 7 (X532.1/2/7)
9: F-DI 8 (X532.3/4/8)
10: F-DI 9 (X532.5/6/9)
255: Static deselected

Index:
[0] = Drive group 1
[1] = Drive group 2
[2] = Drive group 3
[3] = Drive group 4

Note: If value = 0:

No terminal assigned, safety function always selected.

If value = 255:

No terminal assigned, safety function always deselected.

F-DI: Failsafe Digital Input

SDI: Safe Direction (safe motion direction)

p10032 SI Motion SLP select input terminal (processor 1) / SI SLS sel F-DI P1

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the failsafe digital input (F-DI) for the "SLP" function.

Value:
0: Static selected
1: F-DI 0
2: F-DI 1
3: F-DI 2
255: Static deselected

Dependency: Refer to: p10132

Note: If value = 0:

No terminal assigned, safety function always selected.

If value = 255:

No terminal assigned, safety function always deselected.

F-DI: Failsafe Digital Input

SLP: Safely-Limited Position

p10032[0...3] SI TM54F SLP input terminal / SI SLP F-DI

TM54F_MA, TM54F_SL

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the failsafe digital input (F-DI) for the "SLP" function (operating mode "control interface").

Value:
0: Static selected
1: F-DI 0 (X521.2/3/6)
2: F-DI 1 (X521.4/5/7)
3: F-DI 2 (X522.1/2/7)
4: F-DI 3 (X522.3/4/8)
5: F-DI 4 (X522.5/6/9)
6: F-DI 5 (X531.2/3/6)
7: F-DI 6 (X531.4/5/7)
8: F-DI 7 (X532.1/2/7)
9: F-DI 8 (X532.3/4/8)
10: F-DI 9 (X532.5/6/9)
255: Static deselected

Index:
[0] = Drive group 1
[1] = Drive group 2
[2] = Drive group 3
[3] = Drive group 4

Note: If value = 0:

No terminal assigned, safety function always selected.

If value = 255:

No terminal assigned, safety function always deselected.

F-DI: Failsafe Digital Input

SLP: Safely-Limited Position

p10033 SI Motion SLP position range input terminal (processor 1) / SI SLP pos F-DI P1

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the failsafe digital input (F-DI) for the selection of the position range for "SLP".

Value:
0: Static selected
1: F-DI 0
2: F-DI 1
3: F-DI 2
255: Static deselected

Note: If value = 0:

No terminal assigned, selection bit remains statically at "0".

If value = 255:

No terminal assigned, selection bit remains statically at "1".

F-DI: Failsafe Digital Input

SLP: Safely-Limited Position

p10033[0...3] SI TM54F SLP position range input terminal / SI SLP pos F-DI

TM54F_MA, TM54F_SL

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the failsafe digital input (F-DI) for the selection of the position range for "SLP" (operating mode "control interface").

Value:
0: Static selected
1: F-DI 0 (X521.2/3/6)
2: F-DI 1 (X521.4/5/7)
3: F-DI 2 (X522.1/2/7)
4: F-DI 3 (X522.3/4/8)
5: F-DI 4 (X522.5/6/9)
6: F-DI 5 (X531.2/3/6)
7: F-DI 6 (X531.4/5/7)
8: F-DI 7 (X532.1/2/7)
9: F-DI 8 (X532.3/4/8)
10: F-DI 9 (X532.5/6/9)
255: Static deselected

Index:
[0] = Drive group 1
[1] = Drive group 2
[2] = Drive group 3
[3] = Drive group 4

Note: If value = 0:

No terminal assigned, selection bit remains statically at "0".

If value = 255:

No terminal assigned, selection bit remains statically at "1".

F-DI: Failsafe Digital Input

SLP: Safely-Limited Position

p10036[0...3] SI TM54F special operating mode input terminal / SI spec mode F-DI

TM54F_MA, TM54F_SL

Can be changed: C2(95)	**Calculated:** -	**Access level:** 4
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the failsafe digital input (F-DI) for the "special operating mode" function (operating mode "function interface").

Value:
0: Static selected
1: F-DI 0 (X521.2/3/6)
2: F-DI 1 (X521.4/5/7)
3: F-DI 2 (X522.1/2/7)
4: F-DI 3 (X522.3/4/8)
5: F-DI 4 (X522.5/6/9)
6: F-DI 5 (X531.2/3/6)
7: F-DI 6 (X531.4/5/7)
8: F-DI 7 (X532.1/2/7)
9: F-DI 8 (X532.3/4/8)
10: F-DI 9 (X532.5/6/9)
255: Static deselected

Index:
[0] = Drive group 1
[1] = Drive group 2
[2] = Drive group 3
[3] = Drive group 4

Note: Parameter being prepared. For this firmware version, the function interface is not supported.

If value = 0:

No terminal assigned, static special operation.

If value = 255:

No terminal assigned, static normal operation.

F-DI: Failsafe Digital Input

p10037[0...3] SI TM54F agreement input terminal / SI agreement F-DI

TM54F_MA, TM54F_SL

Can be changed: C2(95)	**Calculated:** -	**Access level:** 4
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the failsafe digital input (F-DI) for the "agreement" function (operating mode "function interface").

Value:
0: Static selected
1: F-DI 0 (X521.2/3/6)
2: F-DI 1 (X521.4/5/7)
3: F-DI 2 (X522.1/2/7)
4: F-DI 3 (X522.3/4/8)
5: F-DI 4 (X522.5/6/9)
6: F-DI 5 (X531.2/3/6)
7: F-DI 6 (X531.4/5/7)
8: F-DI 7 (X532.1/2/7)
9: F-DI 8 (X532.3/4/8)
10: F-DI 9 (X532.5/6/9)
255: Static deselected

Index:
[0] = Drive group 1
[1] = Drive group 2
[2] = Drive group 3
[3] = Drive group 4

Note: Parameter being prepared. For this firmware version, the function interface is not supported.

If value = 0:

No terminal assigned, no static agreement.

If value = 255:

No terminal assigned, static agreement.

F-DI: Failsafe Digital Input

p10038[0...3] SI TM54F Emergency Stop input terminal / SI E-Stop F-DI

TM54F_MA, TM54F_SL

Can be changed: C2(95)	**Calculated:** -	**Access level:** 4
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the failsafe digital input (F-DI) for the "Emergency Stop" function (operating mode "function interface").

The behavior of this input signal is set in p10021.

Value:
0: Static selected
1: F-DI 0 (X521.2/3/6)
2: F-DI 1 (X521.4/5/7)
3: F-DI 2 (X522.1/2/7)
4: F-DI 3 (X522.3/4/8)
5: F-DI 4 (X522.5/6/9)
6: F-DI 5 (X531.2/3/6)
7: F-DI 6 (X531.4/5/7)
8: F-DI 7 (X532.1/2/7)
9: F-DI 8 (X532.3/4/8)
10: F-DI 9 (X532.5/6/9)
255: Static deselected

Index:
[0] = Drive group 1
[1] = Drive group 2
[2] = Drive group 3
[3] = Drive group 4

Dependency: Refer to: p10008, p10021

Note: Parameter being prepared. For this firmware version, the function interface is not supported.

If value = 0:

No terminal assigned, "Emergency Stop" statically selected.

If value = 255:

No terminal assigned, no "Emergency Stop" statically deselected.

F-DI: Failsafe Digital Input

p10039 SI Motion Safe State signal selection (processor 1) / SI Safe State P1

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2901, 2906
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0001 bin

Description: Selects the individual signals that should be logically combined to create "Safe State".

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Power_removed	Selected	Not selected	-
01	SS1_active	Selected	Not selected	-
02	SS2_active	Selected	Not selected	-
03	SOS_active	Selected	Not selected	-
04	SLS_active	Selected	Not selected	-
05	SDI_pos_active	Selected	Not selected	-
06	SDI_neg_active	Selected	Not selected	-
07	SLP_active	Selected	Not selected	-

p10039[0...3] SI TM54F Safe State signal selection / SI Safe State Sel

TM54F_MA, TM54F_SL

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2901, 2906
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0001 bin

Description: Sets the signals for the drive group specific signal "Safe State".

Index:
[0] = Drive group 1
[1] = Drive group 2
[2] = Drive group 3
[3] = Drive group 4

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Power_removed	Selected	Not selected	-
01	SS1_active	Selected	Not selected	-
02	SS2_active	Selected	Not selected	-
03	SOS_active	Selected	Not selected	-
04	SLS_active	Selected	Not selected	-
05	SDI_pos_active	Selected	Not selected	-
06	SDI_neg_active	Selected	Not selected	-
07	SLP_active	Selected	Not selected	-

p10040 SI Motion F-DI input mode (processor 1) / SI F-DI mode P1

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Sets the input mode for the safety digital inputs (F-DI).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	F-DI 1 (X130.2)	NO contact	NC contact	2893
01	F-DI 2 (X130.5)	NO contact	NC contact	2893
02	F-DI 3 (X131.2)	NO contact	NC contact	2893

Note: Only an NC contact can be connected for the safety digital inputs not listed.

p10040 SI TM54F F-DI input mode / SI F-DI inp_mode

TM54F_MA, TM54F_SL

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 bin

Description: Sets the input mode for the safety digital inputs (F-DI).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	F-DI 0, DI 1+ (X521.3)	NO contact	NC contact	2893
01	F-DI 1, DI 3+ (X521.5)	NO contact	NC contact	2893
02	F-DI 2, DI 5+ (X522.2)	NO contact	NC contact	2893
03	F-DI 3, DI 7+ (X522.4)	NO contact	NC contact	2893
04	F-DI 4, DI 9+ (X522.6)	NO contact	NC contact	2893
05	F-DI 5, DI 11+ (X531.3)	NO contact	NC contact	2894
06	F-DI 6, DI 13+ (X531.5)	NO contact	NC contact	2894
07	F-DI 7, DI 15+ (X532.2)	NO contact	NC contact	2894
08	F-DI 8, DI 17+ (X532.4)	NO contact	NC contact	2894
09	F-DI 9, DI 19+ (X532.6)	NO contact	NC contact	2894

Note: Only an NC contact can be connected for the safety digital inputs not listed.

p10041 SI TM54F F-DI enable for test / SI F-DI enab test

TM54F_MA, TM54F_SL

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2892
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 bin

Description: Enable signal for the integration of F-DI in the test (forced checking procedure) of the sensor power supply.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	F-DI 0, power supply L1+	Test active	No test	-
01	F-DI 1, power supply L1+	Test active	No test	-
02	F-DI 2, power supply L1+	Test active	No test	-
03	F-DI 3, power supply L1+	Test active	No test	-
04	F-DI 4, power supply L1+	Test active	No test	-
05	F-DI 5, power supply L2+	Test active	No test	-
06	F-DI 6, power supply L2+	Test active	No test	-
07	F-DI 7, power supply L2+	Test active	No test	-
08	F-DI 8, power supply L2+	Test active	No test	-
09	F-DI 9, power supply L2+	Test active	No test	-

Note: F-DI: Failsafe Digital Input

p10042[0...5] SI Motion F-DO signal sources (processor 1) / SI Mtn F-DOs_srcP1

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 2877
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	15	0

Description: Sets the signal sources for F-DO 0 (X131.5).

The 6 signal sources in p10042[0...5] are AND'ed and the result is output at F-DO 0.

Value:

0: No function
1: STO active
2: SS1 active
3: SS2 active
4: SOS active
5: SLS active
6: SSM feedback signal active
7: Safe state
8: SOS selected
9: Internal event
10: Active SLS stage bit 0
11: Active SLS stage bit 1
12: SDI positive active
13: SDI negative active
14: SLP active
15: Active SLP area

Index:

[0] = AND logic operation input 1
[1] = AND logic operation input 2
[2] = AND logic operation input 3
[3] = AND logic operation input 4
[4] = AND logic operation input 5
[5] = AND logic operation input 6

Note: F-DO: Failsafe Digital Output

p10042[0...5] SI TM54F F-DO 0 signal sources / SI F-DO 0 S_src

TM54F_MA, TM54F_SL

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 2902, 2907
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	783	0

Description: Sets the signal sources for F-DO 0.

The 6 signal sources in p10042[0...5] are AND'ed and the result is output at F-DO 0.

Value:

0: No function
1: Drive group 1 STO active
2: Drive group 1 SS1 active
3: Drive group 1 SS2 active
4: Drive group 1 SOS active
5: Drive group 1 SLS active
6: Drive group 1 SSM feedback signal active
7: Drive group 1 safe state
8: Drive group 1 SOS selected
9: Drive group 1 internal event
10: Drive group 1 active SLS stage bit 0
11: Drive group 1 active SLS stage bit 1
12: Drive group 1 SDI positive active
13: Drive group 1 SDI negative active
14: Drive group 1 SLP active
15: Drive group 1 active SLP area
257: Drive group 2 STO active
258: Drive group 2 SS1 active
259: Drive group 2 SS2 active
260: Drive group 2 SOS active
261: Drive group 2 SLS active
262: Drive group 2 SSM feedback signal active
263: Drive group 2 safe state
264: Drive group 2 SOS selected
265: Drive group 2 internal event
266: Drive group 2 active SLS stage bit 0
267: Drive group 2 active SLS stage bit 1
268: Drive group 2 SDI positive active
269: Drive group 2 SDI negative active
270: Drive group 2 SLP active
271: Drive group 2 active SLP area
513: Drive group 3 STO active
514: Drive group 3 SS1 active
515: Drive group 3 SS2 active
516: Drive group 3 SOS active
517: Drive group 3 SLS active
518: Drive group 3 SSM feedback signal active
519: Drive group 3 safe state
520: Drive group 3 SOS selected
521: Drive group 3 internal event
522: Drive group 3 active SLS stage bit 0
523: Drive group 3 active SLS stage bit 1
524: Drive group 3 SDI positive active
525: Drive group 3 SDI negative active
526: Drive group 3 SLP active
527: Drive group 3 active SLP area

769: Drive group 4 STO active
770: Drive group 4 SS1 active
771: Drive group 4 SS2 active
772: Drive group 4 SOS active
773: Drive group 4 SLS active
774: Drive group 4 SSM feedback signal active
775: Drive group 4 safe state
776: Drive group 4 SOS selected
777: Drive group 4 internal event
778: Drive group 4 active SLS stage bit 0
779: Drive group 4 active SLS stage bit 1
780: Drive group 4 SDI positive active
781: Drive group 4 SDI negative active
782: Drive group 4 SLP active
783: Drive group 4 active SLP area

Index:
[0] = AND logic operation input 1
[1] = AND logic operation input 2
[2] = AND logic operation input 3
[3] = AND logic operation input 4
[4] = AND logic operation input 5
[5] = AND logic operation input 6

Note: F-DO: Failsafe Digital Output

p10043[0...5] SI TM54F F-DO 1 signal sources / SI F-DO 1 S_src

TM54F_MA, TM54F_SL

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 2902, 2907
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	783	0

Description: Sets the signal sources for F-DO 1.

The 6 signal sources in p10043[0...5] are AND'ed and the result is output at F-DO 1.

Value:
0: No function
1: Drive group 1 STO active
2: Drive group 1 SS1 active
3: Drive group 1 SS2 active
4: Drive group 1 SOS active
5: Drive group 1 SLS active
6: Drive group 1 SSM feedback signal active
7: Drive group 1 safe state
8: Drive group 1 SOS selected
9: Drive group 1 internal event
10: Drive group 1 active SLS stage bit 0
11: Drive group 1 active SLS stage bit 1
12: Drive group 1 SDI positive active
13: Drive group 1 SDI negative active
14: Drive group 1 SLP active
15: Drive group 1 active SLP area
257: Drive group 2 STO active
258: Drive group 2 SS1 active
259: Drive group 2 SS2 active
260: Drive group 2 SOS active
261: Drive group 2 SLS active
262: Drive group 2 SSM feedback signal active
263: Drive group 2 safe state
264: Drive group 2 SOS selected
265: Drive group 2 internal event
266: Drive group 2 active SLS stage bit 0
267: Drive group 2 active SLS stage bit 1
268: Drive group 2 SDI positive active
269: Drive group 2 SDI negative active
270: Drive group 2 SLP active
271: Drive group 2 active SLP area

513: Drive group 3 STO active
514: Drive group 3 SS1 active
515: Drive group 3 SS2 active
516: Drive group 3 SOS active
517: Drive group 3 SLS active
518: Drive group 3 SSM feedback signal active
519: Drive group 3 safe state
520: Drive group 3 SOS selected
521: Drive group 3 internal event
522: Drive group 3 active SLS stage bit 0
523: Drive group 3 active SLS stage bit 1
524: Drive group 3 SDI positive active
525: Drive group 3 SDI negative active
526: Drive group 3 SLP active
527: Drive group 3 active SLP area
769: Drive group 4 STO active
770: Drive group 4 SS1 active
771: Drive group 4 SS2 active
772: Drive group 4 SOS active
773: Drive group 4 SLS active
774: Drive group 4 SSM feedback signal active
775: Drive group 4 safe state
776: Drive group 4 SOS selected
777: Drive group 4 internal event
778: Drive group 4 active SLS stage bit 0
779: Drive group 4 active SLS stage bit 1
780: Drive group 4 SDI positive active
781: Drive group 4 SDI negative active
782: Drive group 4 SLP active
783: Drive group 4 active SLP area

Index:
[0] = AND logic operation input 1
[1] = AND logic operation input 2
[2] = AND logic operation input 3
[3] = AND logic operation input 4
[4] = AND logic operation input 5
[5] = AND logic operation input 6

Note: F-DO: Failsafe Digital Output

p10044[0...5] SI TM54F F-DO 2 signal sources / SI F-DO 2 S_src

TM54F_MA, TM54F_SL	**Can be changed:** C2(95)	**Calculated:** -	**Access level:** 3
	Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 2902, 2907
	P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	0	783	0

Description: Sets the signal sources for F-DO 2.

The 6 signal sources in p10044[0...5] are AND'ed and the result is output at F-DO 2.

Value:
0: No function
1: Drive group 1 STO active
2: Drive group 1 SS1 active
3: Drive group 1 SS2 active
4: Drive group 1 SOS active
5: Drive group 1 SLS active
6: Drive group 1 SSM feedback signal active
7: Drive group 1 safe state
8: Drive group 1 SOS selected
9: Drive group 1 internal event
10: Drive group 1 active SLS stage bit 0
11: Drive group 1 active SLS stage bit 1
12: Drive group 1 SDI positive active
13: Drive group 1 SDI negative active
14: Drive group 1 SLP active
15: Drive group 1 active SLP area

257: Drive group 2 STO active
258: Drive group 2 SS1 active
259: Drive group 2 SS2 active
260: Drive group 2 SOS active
261: Drive group 2 SLS active
262: Drive group 2 SSM feedback signal active
263: Drive group 2 safe state
264: Drive group 2 SOS selected
265: Drive group 2 internal event
266: Drive group 2 active SLS stage bit 0
267: Drive group 2 active SLS stage bit 1
268: Drive group 2 SDI positive active
269: Drive group 2 SDI negative active
270: Drive group 2 SLP active
271: Drive group 2 active SLP area
513: Drive group 3 STO active
514: Drive group 3 SS1 active
515: Drive group 3 SS2 active
516: Drive group 3 SOS active
517: Drive group 3 SLS active
518: Drive group 3 SSM feedback signal active
519: Drive group 3 safe state
520: Drive group 3 SOS selected
521: Drive group 3 internal event
522: Drive group 3 active SLS stage bit 0
523: Drive group 3 active SLS stage bit 1
524: Drive group 3 SDI positive active
525: Drive group 3 SDI negative active
526: Drive group 3 SLP active
527: Drive group 3 active SLP area
769: Drive group 4 STO active
770: Drive group 4 SS1 active
771: Drive group 4 SS2 active
772: Drive group 4 SOS active
773: Drive group 4 SLS active
774: Drive group 4 SSM feedback signal active
775: Drive group 4 safe state
776: Drive group 4 SOS selected
777: Drive group 4 internal event
778: Drive group 4 active SLS stage bit 0
779: Drive group 4 active SLS stage bit 1
780: Drive group 4 SDI positive active
781: Drive group 4 SDI negative active
782: Drive group 4 SLP active
783: Drive group 4 active SLP area

Index:
[0] = AND logic operation input 1
[1] = AND logic operation input 2
[2] = AND logic operation input 3
[3] = AND logic operation input 4
[4] = AND logic operation input 5
[5] = AND logic operation input 6

Note: F-DO: Failsafe Digital Output

p10045[0...5] SI TM54F F-DO 3 signal sources / SI F-DO 3 S_src

TM54F_MA, TM54F_SL

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 2902, 2907
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	783	0

Description: Sets the signal sources for F-DO 3.

The 6 signal sources in p10045[0...5] are AND'ed and the result is output at F-DO 3.

Value:

0: No function
1: Drive group 1 STO active
2: Drive group 1 SS1 active
3: Drive group 1 SS2 active
4: Drive group 1 SOS active
5: Drive group 1 SLS active
6: Drive group 1 SSM feedback signal active
7: Drive group 1 safe state
8: Drive group 1 SOS selected
9: Drive group 1 internal event
10: Drive group 1 active SLS stage bit 0
11: Drive group 1 active SLS stage bit 1
12: Drive group 1 SDI positive active
13: Drive group 1 SDI negative active
14: Drive group 1 SLP active
15: Drive group 1 active SLP area
257: Drive group 2 STO active
258: Drive group 2 SS1 active
259: Drive group 2 SS2 active
260: Drive group 2 SOS active
261: Drive group 2 SLS active
262: Drive group 2 SSM feedback signal active
263: Drive group 2 safe state
264: Drive group 2 SOS selected
265: Drive group 2 internal event
266: Drive group 2 active SLS stage bit 0
267: Drive group 2 active SLS stage bit 1
268: Drive group 2 SDI positive active
269: Drive group 2 SDI negative active
270: Drive group 2 SLP active
271: Drive group 2 active SLP area
513: Drive group 3 STO active
514: Drive group 3 SS1 active
515: Drive group 3 SS2 active
516: Drive group 3 SOS active
517: Drive group 3 SLS active
518: Drive group 3 SSM feedback signal active
519: Drive group 3 safe state
520: Drive group 3 SOS selected
521: Drive group 3 internal event
522: Drive group 3 active SLS stage bit 0
523: Drive group 3 active SLS stage bit 1
524: Drive group 3 SDI positive active
525: Drive group 3 SDI negative active
526: Drive group 3 SLP active
527: Drive group 3 active SLP area
769: Drive group 4 STO active
770: Drive group 4 SS1 active
771: Drive group 4 SS2 active
772: Drive group 4 SOS active
773: Drive group 4 SLS active
774: Drive group 4 SSM feedback signal active
775: Drive group 4 safe state
776: Drive group 4 SOS selected
777: Drive group 4 internal event
778: Drive group 4 active SLS stage bit 0
779: Drive group 4 active SLS stage bit 1
780: Drive group 4 SDI positive active
781: Drive group 4 SDI negative active
782: Drive group 4 SLP active
783: Drive group 4 active SLP area

Index: [0] = AND logic operation input 1
[1] = AND logic operation input 2
[2] = AND logic operation input 3
[3] = AND logic operation input 4
[4] = AND logic operation input 5
[5] = AND logic operation input 6

Note: F-DO: Failsafe Digital Output

p10046 SI Motion F-DO feedback signal input activation / SI F-DO FS act

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Activates the readback input for the safety digital output (F-DO)
The test mode for the particular safety digital output is set in p10047.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Test F-DO 0	Test active	No test	-

Dependency: Refer to: p10001, p10003, p10007, p10047

Note: The test stop is only performed if the safety output of the Control Unit is being used (see p10042).

p10046 SI TM54F F-DO feedback signal input activation / SI F-DO FS act

TM54F_MA, TM54F_SL

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2892
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Activates the readback input for the safety digital outputs (F-DO)
The test mode for the particular safety digital output is set in p10047.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Read back F-DO 0	Test active	No test	-
01	Read back F-DO 1	Test active	No test	-
02	Read back F-DO 2	Test active	No test	-
03	Read back F-DO 3	Test active	No test	-

Dependency: Refer to: p10047

Note: F-DO: Failsafe Digital Output

p10047 SI Motion F-DO test stop mode (processor 1) / SI F-DO testmodeP1

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	3	2

Description: Sets the test stop mode for the safety digital output (F-DO)

Value:
1: Test mode 1 evaluation of int. diagnostic signal (passive load)
2: Test mode 2 read back F-DO in DI (relay circuit)
3: Test mode 3 read back F-DO in DI (actuator with feedback signal)

Dependency: Refer to: p10001, p10003, p10007, p10046

Note: The test stop is only performed if the safety output is being used (see p10042).

p10047[0...3] SI TM54F F-DO test stop mode / SI F-DO test mode

TM54F_MA, TM54F_SL

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	3	2

Description: Sets the test stop mode for the particular safety digital output (F-DO)

Index 0: F-DO 0

Index 1: F-DO 1

Index 2: F-DO 2

Index 3: F-DO 3

Value:
1: Test mode 1 evaluation of int. diagnostic signal (passive load)
2: Test mode 2 read back F-DO in DI (relay circuit)
3: Test mode 3 read back F-DO in DI (actuator with feedback signal)

Note: If value = 1:

When this test mode is being used, and excessive resistance of the load between DO+ and DO- can lead to problems during the test stop. It is therefore important to make sure that the load resistance at an individual F-DO does not exceed 10 kOhm.

p10048 SI TM54F F-DI F-DO test stop configuration / SI teststop config

TM54F_MA

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the configuration for the test stop of the F-DI and F-DO of the 54F Terminal Module (TM54F).

For p10048 = 1:

If the automatic test stop is activated, then the test stop can still be started using binector input p10007.

Value:
0: Manual test stop via BICO p10007
1: Automatic test stop

Note: The automatic test stop is started after power up, partial power up or a warm restart.

r10049 SI Motion F-DI monitoring status (processor 1) / SI F-DI status P1

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the monitoring status of the failsafe digital inputs (F-DI).

The F-DIs that are being used by the Safety Integrated Functions are displayed.

If the module used has fewer than 3 F-DIs, "Freely available" is displayed for the F-DIs which are not in use.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	F-DI 0	Safety monitored	Freely available	-
01	F-DI 1	Safety monitored	Freely available	-
02	F-DI 2	Safety monitored	Freely available	-

Dependency: p10006 / p10106

p10009 / p10109

p10022 / p10122

p10023 / p10123

p10024 / p10124

p10025 / p10125

p10026 / p10126
p10027 / p10127
p10028 / p10128
p10030 / p10130
p10031 / p10131
p10032 / p10132
p10033 / p10133
p10036 / p10136
p10050 / p10150
Refer to: r10149

p10050 SI Motion PROFIsafe F-DI transfer (processor 1) / SI Ps F-DI tran P1

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Setting for the transfer and evaluation of failsafe digital inputs (F-DI) via PROFIsafe.

The safe state of the selected F-DIs is transferred to the F-control via PROFIsafe. The F-DIs are monitored for discrepancies. Discrepancy faults can be acknowledged via PROFIsafe.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	F-DI 0 processor 1	Transfer	No transfer	-
01	F-DI 1 processor 1	Transfer	No transfer	-
02	F-DI 2 processor 1	Transfer	No transfer	-

Dependency: Refer to: p10150

Note: F-DI: Failsafe Digital Input

r10051.0...2 CO/BO: SI Motion digital inputs status (processor 1) / SI DI status P1

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the single-channel debounced status of digital inputs DI 16, DI 18 and DI 20.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	F-DI 0 processor 1	High	Low	-
01	F-DI 1 processor 1	High	Low	-
02	F-DI 2 processor 1	High	Low	-

Dependency: Refer to: p9501, p9601, p10017, p10040, p10050, r10151

Note: If a safety function is assigned to an input (e.g. via p10022), then the following applies:

- logical "0": Safety function is selected
- logical "1": Safety function is de-selected

The relationship between the logic level and the external voltage level at the input depends on the parameterization (see p10040) of the input as NC contact or NO contact, and is aligned to the use of a safety function:

With 24 V at the input, NC contacts have a logical "1" level, for 0 V at the input, a logical "0" level.

This means that an NC/NC contact parameterization of 0 V at both inputs of the F-DI selects the safety function, for 24 V at both inputs, de-selects the safety function.

With 24 V at the input, NO contacts have a logical "0" level, for 0 V at the input, a logical "1" level.

This means that for an NC/NO contact parameterization, the level 0 V/24 V selects the safety function, the level 24 V/0 V de-selects the safety function.

F-DI: Failsafe Digital Input

The state of parameter r10151 is delayed by one monitoring clock cycle in relation to r10051.

The parameter is only updated in the following cases:

- if the Safety Extended Functions are enabled by means of activation via F-DI.
- if transfer of the F-DIs via PROFIsafe is enabled (see p9501).

In this case only the F-DIs transferred for PROFIsafe are displayed and updated (see p10050/p10150). All F-DIs which have not been transferred have a static zero value.

r10051.0...9 CO/BO: SI TM54F digital inputs status / SI DI status

TM54F_MA, TM54F_SL

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2893, 2894
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the single-channel, logical, and debounced status of the safety digital inputs F-DI 0 ... 9 at Terminal Module 54F (TM54F).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	F-DI 0	Logical 1	Logical 0	2893
01	F-DI 1	Logical 1	Logical 0	2893
02	F-DI 2	Logical 1	Logical 0	2893
03	F-DI 3	Logical 1	Logical 0	2893
04	F-DI 4	Logical 1	Logical 0	2893
05	F-DI 5	Logical 1	Logical 0	2894
06	F-DI 6	Logical 1	Logical 0	2894
07	F-DI 7	Logical 1	Logical 0	2894
08	F-DI 8	Logical 1	Logical 0	2894
09	F-DI 9	Logical 1	Logical 0	2894

Dependency: Refer to: p10017, p10040

Note: If a safety function is assigned to an input (e.g. via p10022), then the following applies:

- logical "0": Safety function is selected
- logical "1": Safety function is de-selected

The relationship between the logic level and the external voltage level at the input depends on the parameterization (see p10040) of the input as NC contact or NO contact, and is aligned to the use of a safety function:

With 24 V at the input, NC contacts have a logical "1" level, for 0 V at the input, a logical "0" level.

This means that an NC/NC contact parameterization of 0 V at both inputs of the F-DI selects the safety function, for 24 V at both inputs, de-selects the safety function.

With 24 V at the input, NO contacts have a logical "0" level, for 0 V at the input, a logical "1" level.

This means that for an NC/NO contact parameterization, the level 0 V/24 V selects the safety function, the level 24 V/0 V de-selects the safety function.

F-DI: Failsafe Digital Input

r10052.0 CO/BO: SI Motion digital outputs status (processor 1) / SI DO status P1

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status of digital output DO 16+ (X131.5) from processor 1.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DO 0	High	Low	2895

Note: F-DO: Failsafe Digital Output

r10052.0...3 CO/BO: SI TM54F digital outputs status / SI DO status

TM54F_MA, TM54F_SL

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status of the digital outputs at Terminal Module 54F (TM54F).

TM54F_MA (master): display of DO-

TM54F_SL (slave): display of DO+

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DO 0	High	Low	2895
01	DO 1	High	Low	2895
02	DO 2	High	Low	2895
03	DO 3	High	Low	2895

Note: F-DO: Failsafe Digital Output

r10053.0...3 CO/BO: SI TM54F digital inputs 20 ... 23 status / SI DI 20...23 stat

TM54F_SL

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2892
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status of the digital inputs at the Terminal Module 54F (TM54F).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI 20	High	Low	2895
01	DI 21	High	Low	2895
02	DI 22	High	Low	2895
03	DI 23	High	Low	2895

r10054 SI TM54F failsafe events active / SI failsafe act

TM54F_MA, TM54F_SL

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the events that lead to the transfer of failsafe signals to all drives assigned to the TM54F.

If the second channel of the TM54F transmits failsafe signals, then these are synchronized to the other channel. In this particular case, p10054 of the other TM54F channel should be evaluated.

Possibilities of resolving the situation:

- error during test stop: correctly perform the test stop.
- internal software error: no possibility of resolving this problem, POWER ON.
- internal synchronization problem: no possibility of resolving this problem, POWER ON.
- internal status error: no possibility of resolving this problem, POWER ON.
- parameterizing error: evaluate fault F35004 or F35006. Resolve parameterizing error. POWER ON. After the TM54F firmware has been updated, a POWER ON may be required.
- all other causes: remove the cause of the error and carry out a safe acknowledgment (p10006).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Commissioning mode active (p0010 = 95)	Yes	No	2891
01	Checksum error of the safety parameters	Yes	No	-
02	Synchronization problem within TM54F	Yes	No	-
03	Internal software error	Yes	No	-
04	Overvoltage in the TM54F	Yes	No	-
05	Undervoltage in the TM54F	Yes	No	-
06	Error at test stop	Yes	No	-
07	Error on data cross-check within TM54F	Yes	No	-
08	Overtemperature in the TM54F	Yes	No	-
09	Internal state error	Yes	No	-
10	Param error	Yes	No	-
31	Failsafe events active on another channel	Yes	No	-

r10055 SI TM54F communication status drive-specific / SI comm_stat drv

TM54F_MA, TM54F_SL

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the communication status of the individual drives with the Terminal Module 54F (TM54F).

For r10055 = 0, the following applies:

All drives assigned in p10010 communicate with the TM54F.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Communication between drive 1 and TM54F	Not configured	Configured	-
01	Communication between drive 2 and TM54F	Not configured	Configured	-
02	Communication between drive 3 and TM54F	Not configured	Configured	-
03	Communication between drive 4 and TM54F	Not configured	Configured	-
04	Communication between drive 5 and TM54F	Not configured	Configured	-
05	Communication between drive 6 and TM54F	Not configured	Configured	-

r10056.0 CO/BO: SI TM54F status / SI stat

TM54F_MA

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status of the Terminal Module 54F (TM54F).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Test stop status	Active	Inactive	-

p10061 SI TM54F password input / SI password inp

TM54F_MA, TM54F_SL

Can be changed: C2(95), U, T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2891
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Enters the Safety Integrated password for the Terminal Module 54F (TM54F).

This password is required to change the safety-relevant parameters.

p10062 SI TM54F password new / SI password new

TM54F_MA, TM54F_SL

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2891
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Enters the new Safety Integrated password for the Terminal Module 54F (TM54F).

Dependency: A change made to the Safety Integrated password must be acknowledged in the following parameter:

Refer to: p10063

p10063 SI TM54F password acknowledgment / SI ackn password

TM54F_MA, TM54F_SL

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2891
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Acknowledgment of the new Safety Integrated password for the Terminal Module 54F (TM54F).

Dependency: Refer to: p10062

Note: The new password entered into p10062 must be re-entered in order to acknowledge.

p10062 = p10063 = 0 is automatically set after the new Safety Integrated password has been successfully acknowledged.

p10070 SI TM54F module identifier / SI module ID

TM54F_MA

Can be changed: C2(95), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	4294967295	0

Description: CRC via Node Identifier of the TM54F

r10090[0...3] SI TM54F version / SI Version

TM54F_MA, TM54F_SL

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the Safety Integrated version for the Terminal Module 54F (TM54F).

Index:
[0] = Safety Version (major release)
[1] = Safety Version (minor release)
[2] = Safety Version (baselevel or patch)
[3] = Safety Version (hotfix)

Dependency: Refer to: r9390, r9590, r9770, r9870, r9890

Note: Example:

r10090[0] = 2, r10090[1] = 60, r10090[2] = 1, r10090[3] = 0 --> SI TM54F version V02.60.01.00

p10101 SI Motion delay time for test stop at DO (processor 2) / SI t_delay DO P2

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
4.00 [ms]	2000.00 [ms]	500.00 [ms]

Description: Sets the delay time for testing the digital output.

Within this time, for a forced checking procedure of the digital output, the signal must have been detected via the corresponding readback input (p10047).

Dependency: Refer to: p10003, p10007, p10041, p10046

Note: The delay time must be set to a value greater than the debounce time (p10017).

Regardless of p10001, the forced checking procedure will pause for at least two safety monitoring clock cycles between each stage of the test.

The test stop is only performed if the safety output is being used (p10142).

p10102 SI Motion F-DI changeover discrepancy time (processor 2) / SI Mtn F-DI t P2

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2893, 2894
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1.00 [ms]	2000.00 [ms]	500.00 [ms]

Description: Sets the discrepancy time for digital inputs.

The signal states at the two associated digital inputs (F-DI) must assume the same state within this discrepancy time.

Dependency: Refer to: p10002

Note: F-DI: Failsafe Digital Input

p10106 SI Motion acknowledgment internal event F-DI (processor 2) / SI ackn int evt P2

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Select a failsafe digital input (F-DI) for the signal "acknowledge internal event" (internal fault).

The falling edge at this input resets the status "internal event" in the drive.

The rising edge at this input acknowledges any existing discrepancy errors.

Value:
0: Static selected
1: F-DI 0
2: F-DI 1
3: F-DI 2
255: Static deselected

Dependency: Refer to: p10006

Note: The values "static selected" and "static deselected" result in an inactive function of the safe acknowledgment.

F-DI: Failsafe Digital Input

p10109 SI Motion SLP retraction F-DI (processor 2) / SI SLPretractDI P2

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	3	0

Description: Selects a failsafe digital input (F-DI) for the "SLP retract" function.

A rising edge at this F-DI makes it possible to retract the axis, if at this instant in time indicates a violation of the SLP limit.

After safe acknowledgment of the active safety faults, the drive can be traversed in the direction of the permitted position range.

In the retract mode, SLP becomes inactive, and SDI, if enabled, is selected in the direction of the permitted position range.

A 0 signal at the F-DI for retraction, deactivates the active retraction mode (SLP becomes active again, and SDI selected corresponding to the actual F-DIs).

Value:
0: Function inactive
1: F-DI 0
2: F-DI 1
3: F-DI 2

Note: - retraction is only possible if SDI is not already selected in the opposite direction of the permitted position range.

- a discrepancy at this F-DI must be acknowledged using a safe acknowledgment.

F-DI: Failsafe Digital Input

p10117 SI Motion digital inputs debounce time (processor 2) / SI DI t_debounceP2

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.00 [ms]	100.00 [ms]	1.00 [ms]

Description: Sets the debounce time for digital inputs.

The debounce time acts on the following digital inputs:

- Failsafe digital inputs (F-DI).
- Single-channel digital input 22 (DI 22, read back input for the forced checking procedure).

The debounce time is accepted rounded off to whole milliseconds.

Dependency: Refer to: p10017

Note: Example:

Debounce time = 1 ms: Fault pulses of 1 ms are filtered; only pulses longer than 2 ms are processed.

Debounce time = 3 ms: Fault pulses of 3 ms are filtered; only pulses longer than 4 ms are processed.

The debounce result can be read in r10151.

p10122 SI Motion STO input terminal (processor 2) / SI STO F-DI P2

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the failsafe digital input (F-DI) for the "STO" function.

Value:
0: Static selected
1: F-DI 0
2: F-DI 1
3: F-DI 2
255: Static deselected

Dependency: Refer to: p10022

Note: If value = 0:

No terminal assigned, safety function always selected.

If value = 255:

No terminal assigned, safety function always deselected.

F-DI: Failsafe Digital Input

STO: Safe Torque Off

p10123 SI Motion SS1 input terminal (processor 2) / SI SS1 F-DI P2

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the failsafe digital input (F-DI) for the "SS1" function.

Value:
0: Static selected
1: F-DI 0
2: F-DI 1
3: F-DI 2
255: Static deselected

Dependency: Refer to: p10023

Note: If value = 0:
No terminal assigned, safety function always selected.
If value = 255:
No terminal assigned, safety function always deselected.
F-DI: Failsafe Digital Input
SS1: Safe Stop 1

p10124 SI Motion SS2 input terminal (processor 2) / SI SS2 F-DI P2

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the failsafe digital input (F-DI) for the "SS2" function.

Value:
0: Static selected
1: F-DI 0
2: F-DI 1
3: F-DI 2
255: Static deselected

Note: If value = 0:
No terminal assigned, safety function always selected.
If value = 255:
No terminal assigned, safety function always deselected.
F-DI: Failsafe Digital Input
SS2: Safe Stop 2

p10125 SI Motion SOS input terminal (processor 2) / SI SOS F-DI P2

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the failsafe digital input (F-DI) for the "SOS" function.

Value:
0: Static selected
1: F-DI 0
2: F-DI 1
3: F-DI 2
255: Static deselected

Note: If value = 0:
No terminal assigned, safety function always selected.
If value = 255:
No terminal assigned, safety function always deselected.
F-DI: Failsafe Digital Input
SOS: Safe Operating Stop

p10126 SI Motion SLS input terminal (processor 2) / SI SLS F-DI P2

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the failsafe digital input (F-DI) for the "SLS" function.

Value:
0: Static selected
1: F-DI 0
2: F-DI 1
3: F-DI 2
255: Static deselected

Dependency: Refer to: p10026

Note: If value = 0:

No terminal assigned, safety function always selected.

If value = 255:

No terminal assigned, safety function always deselected.

F-DI: Failsafe Digital Input

SLS: Safely-Limited Speed

p10127 SI Motion SLS limit bit 0 input terminal (processor 2) / SI SLS lim0F-DI P2

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the failsafe digital input (F-DI) for the limit value bit 0 of the "SLS" function.

Value:
0: Static selected
1: F-DI 0
2: F-DI 1
3: F-DI 2
255: Static deselected

Note: If value = 0:

No terminal assigned, selection bit remains statically at "0".

If value = 255:

No terminal assigned, selection bit remains statically at "1".

F-DI: Failsafe Digital Input

SLS: Safely-Limited Speed

p10128 SI Motion SLS limit bit 1 input terminal (processor 2) / SI SLS lim1F-DI P2

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the failsafe digital input (F-DI) for the limit value bit 1 of the "SLS" function.

Value:
0: Static selected
1: F-DI 0
2: F-DI 1
3: F-DI 2
255: Static deselected

Note: If value = 0:
No terminal assigned, selection bit remains statically at "0".
If value = 255:
No terminal assigned, selection bit remains statically at "1".
F-DI: Failsafe Digital Input
SLS: Safely-Limited Speed

p10130 SI Motion SDI positive input terminal (processor 2) / SI SDI pos F-DI P2

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the failsafe digital input (F-DI) for the "SDI positive" function.

Value:
0: Static selected
1: F-DI 0
2: F-DI 1
3: F-DI 2
255: Static deselected

Note: If value = 0:
No terminal assigned, safety function always selected.
If value = 255:
No terminal assigned, safety function always deselected.
F-DI: Failsafe Digital Input
SDI: Safe Direction (safe motion direction)

p10131 SI Motion SDI negative input terminal (processor 2) / SI SDI neg F-DI P2

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the failsafe digital input (F-DI) for the "SDI negative" function.

Value:
0: Static selected
1: F-DI 0
2: F-DI 1
3: F-DI 2
255: Static deselected

Note: If value = 0:
No terminal assigned, safety function always selected.
If value = 255:
No terminal assigned, safety function always deselected.
F-DI: Failsafe Digital Input
SDI: Safe Direction (safe motion direction)

p10132 SI Motion SLP input terminal (processor 2) / SI SLP F-DI P2

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the failsafe digital input (F-DI) for the "SLP" function.

Value:
0: Static selected
1: F-DI 0
2: F-DI 1
3: F-DI 2
255: Static deselected

Dependency: Refer to: p10032

Note: If value = 0:

No terminal assigned, safety function always selected.

If value = 255:

No terminal assigned, safety function always deselected.

F-DI: Failsafe Digital Input

SLP: Safely-Limited Position

p10133 SI Motion SLP position range input terminal (processor 2) / SLP pos F-DI P2

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the failsafe digital input (F-DI) for the selection of the position range for "SLP".

Value:
0: Static selected
1: F-DI 0
2: F-DI 1
3: F-DI 2
255: Static deselected

Note: If value = 0:

No terminal assigned, selection bit remains statically at "0".

If value = 255:

No terminal assigned, selection bit remains statically at "1".

F-DI: Failsafe Digital Input

SLP: Safely-Limited Position

p10139 SI Motion Safe State signal selection (processor 2) / SI Safe State P2

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2906
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 0001 bin

Description: Selects the individual signals that should be logically combined to create "Safe State".

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Power_removed	Selected	Not selected	-
01	SS1_active	Selected	Not selected	-
02	SS2_active	Selected	Not selected	-
03	SOS_active	Selected	Not selected	-
04	SLS_active	Selected	Not selected	-
05	SDI_pos_active	Selected	Not selected	-
06	SDI_neg_active	Selected	Not selected	-
07	SLP_active	Selected	Not selected	-

p10140 SI Motion F-DI input mode (processor 2) / SI F-DI mode P2

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Sets the input mode for the safety digital inputs (F-DI).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	F-DI 1 (X130.2)	NO contact	NC contact	2893
01	F-DI 2 (X130.5)	NO contact	NC contact	2893
02	F-DI 3 (X131.2)	NO contact	NC contact	2893

Note: Only an NC contact can be connected for the safety digital inputs not listed.

p10142[0...5] SI Motion F-DO signal sources (processor 2) / SI F-DO S_src P2

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 2907
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	15	0

Description: Sets the signal sources for F-DO 0 (X131.6).

The 6 signal sources in p10142[0...5] are AND'ed and the result is output at F-DO 0.

Value:

0: No function
1: STO active
2: SS1 active
3: SS2 active
4: SOS active
5: SLS active
6: SSM feedback signal active
7: Safe state
8: SOS selected
9: Internal event
10: Active SLS stage bit 0
11: Active SLS stage bit 1
12: SDI positive active

13: SDI negative active
14: SLP active
15: Active SLP area

Index:
[0] = AND logic operation input 1
[1] = AND logic operation input 2
[2] = AND logic operation input 3
[3] = AND logic operation input 4
[4] = AND logic operation input 5
[5] = AND logic operation input 6

Note: F-DO: Failsafe Digital Output

p10146 SI Motion test sensor feedback signal (processor 2) / SI test sens FS P2

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2892
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Sets the test of the feedback line for forced checking procedure.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Test F-DO 0	Test active	No test	-

Note: F-DO: Failsafe Digital Output

p10147 SI Motion F-DO test stop mode (processor 2) / SI F-DO testmodeP2

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1	3	2

Description: Sets the test stop mode for the safety digital output (F-DO)

Value:
1: Test mode 1 evaluation of int. diagnostic signal (passive load)
2: Test mode 2 read back F-DO in DI (relay circuit)
3: Test mode 3 read back F-DO in DI (actuator with feedback signal)

Dependency: Refer to: p10001, p10003, p10007, p10046

r10149 SI Motion F-DI monitoring status (processor 2) / SI F-DI status P2

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the monitoring status of the failsafe digital inputs (F-DI).

The F-DIs that are being used by the Safety Integrated Functions are displayed.

If the module used has fewer than 3 F-DIs, "Freely available" is displayed for the F-DIs which are not in use.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	F-DI 0	Safety monitored	Freely available	-
01	F-DI 1	Safety monitored	Freely available	-
02	F-DI 2	Safety monitored	Freely available	-

Dependency:
p10006 / p10106
p10022 / p10122
p10023 / p10123
p10024 / p10124
p10025 / p10125

p10026 / p10126
p10027 / p10127
p10028 / p10128
p10030 / p10130
p10031 / p10131
p10036 / p10136
p10050 / p10150
Refer to: r10049

p10150 SI Motion PROFIsafe F-DI transfer (processor 2) / SI Ps F-DI tran P2

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Setting for the transfer and evaluation of failsafe digital inputs (F-DI) via PROFIsafe.

The safe state of the selected F-DIs is transferred to the F-control via PROFIsafe. The F-DIs are monitored for discrepancies. Discrepancy faults can be acknowledged via PROFIsafe.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	F-DI 0 processor 2	Transfer	No transfer	-
01	F-DI 1 processor 2	Transfer	No transfer	-
02	F-DI 2 processor 2	Transfer	No transfer	-

Dependency: Refer to: p10050

Note: F-DI: Failsafe Digital Input

r10151.0...2 CO/BO: SI Motion digital inputs status (processor 2) / SI DI status P2

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the single-channel debounced status of digital inputs DI 17, DI 19 and DI 21.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	F-DI 0 processor 2	High	Low	-
01	F-DI 1 processor 2	High	Low	-
02	F-DI 2 processor 2	High	Low	-

Dependency: Refer to: p9501, p9601, p10117, p10140, p10150

Note: F-DI: Failsafe Digital Input

If a safety function is assigned to an input (e.g. via p10122), then the following applies:

- logical "0": Safety function is selected
- logical "1": Safety function is de-selected

The relationship between the logic level and the external voltage level at the input depends on the parameterization (see p10140) of the input as NC contact or NO contact, and is aligned to the use of a safety function:

With 24 V at the input, NC contacts have a logical "1" level, for 0 V at the input, a logical "0" level.

This means that an NC/NC contact parameterization of 0 V at both inputs of the F-DI selects the safety function, for 24 V at both inputs, de-selects the safety function.

With 24 V at the input, NO contacts have a logical "0" level, for 0 V at the input, a logical "1" level.

This means that for an NC/NO contact parameterization, the level 0 V/24 V selects the safety function, the level 24 V/0 V de-selects the safety function.

The state of parameter r10151 is delayed by one monitoring clock cycle in relation to r10051.

The parameter is only updated in the following cases:

- if the Safety Extended Functions are enabled by means of activation via F-DI.
- if transfer of the F-DIs via PROFIsafe is enabled (see p9501).

In this case only the F-DIs transferred for PROFIsafe are displayed and updated (see p10050/p10150). All F-DIs which have not been transferred have a static zero value.

r10152.0 CO/BO: SI Motion digital outputs status (processor 2) / SI DO status P2

SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status of digital output DO 16- (X131.6) of processor 2.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DO 0	High	Low	2895

Note: F-DO: Failsafe Digital Output

p10201 SI Motion SBT enable / SBT enable

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Sets the enable for the safe brake test.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Enable safe brake test	Yes	No	-

Note: SBT: Safe Brake Test

p10202[0...1] SI Motion SBT brake selection / SBT brake select

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	2	0

Description: Selects the brakes to be tested.

Value:
0: Inhibit
1: Test motor holding brake
2: Test external brake

Index:
[0] = Brake 1
[1] = Brake 2

Dependency: Refer to: p10203, p10230, p10235

Refer to: A01785

Note: It is not possible to test two motor holding brakes. An appropriate message is output for an incorrect parameterization.

The brake to be tested is selected using p10230[2] or p10235.2.

p10203 SI Motion SBT control selection / SBT control select

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 2837
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	2	0

Description: Selects the control for the safe brake test.

Value:
0: SBT via SCC (p10235)
1: SBT via BICO (p10230)
2: SBT for test stop selection (p9705/p10250.8)

Dependency: Refer to: p9705, p10230, p10235, p10250

Note: SCC: Safety Control Channel

For a value = 2, the following applies:

Brake 1 with sequence 1 (p10210[0], p10211[0], p10212[0], p10218) is tested. Brake 1 must be configured as motor holding brake (p10202[0] = 1).

p10204 SI Motion SBT motor type / SBT motor type

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Selects the motor type for the safe brake test.

Value:
0: Rotating
1: Linear

Dependency: Refer to: F01787

Note: For safety functions that are not enabled (p9501 = 0), the following applies:

- p10204 is automatically set the same as r0108.12 when the system boots.

When the safe brake test is enabled (10201.0 = 1), the following applies:

- p10204 is checked when the system boots to see that it matches r0108.12.

p10208[0...1] SI Motion SBT test torque ramp time / SBT M_test t_ramp

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2836
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
20 [ms]	10000 [ms]	1000 [ms]

Description: Sets the time, during which the test torque is ramped up against the closed brake.

The test torque is then ramped down after the safe brake test.

Index:
[0] = Brake 1
[1] = Brake 2

Note: The set time is rounded internally to an integer multiple of the monitoring clock cycle.

p10208[0...1] SI Motion SBT test force ramp time / SBT F_test t_ramp

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2836
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
20 [ms]	10000 [ms]	1000 [ms]

Description: Sets the time, during which the test force is ramped up against the closed brake.

The test force is then ramped down after the safe brake test.

Index: [0] = Brake 1
[1] = Brake 2

Note: The set time is rounded internally to an integer multiple of the monitoring clock cycle.

p10209[0...1] SI Motion SBT brake holding torque / SBT brake M_stop

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2836
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1.00 [Nm]	60000.00 [Nm]	10.00 [Nm]

Description: Sets the effective holding torque on the motor side of the brake to be tested.

Index: [0] = Brake 1
[1] = Brake 2

Dependency: The holding torque of an external brake should be converted to the motor side.

Conversion factor:

- motor type = rotary and axis type = linear: p9522 / (p9521 x p9520)
- otherwise: p9522 / p9521

Further, the efficiency of the mechanical system should be taken into account.

Refer to: p10210, p10220

Note: The test torque effective for the brake test can be set for each sequence using a factor (p10210, p10220).

p10209[0...1] SI Motion SBT brake holding force / SBT brake F_stop

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2836
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
1.00 [N]	100000.00 [N]	10.00 [N]

Description: Sets the holding force of the brake to be tested.

Index: [0] = Brake 1
[1] = Brake 2

Dependency: Refer to: p10210, p10220

Note: The effective test force can be set for each sequence using a factor (p10210, p10220).

p10210[0...1] SI Motion SBT test torque factor sequence 1 / SBT M_test fact 1

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2836
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.30	1.00	1.00

Description: Sets the factor for the test torque of sequence 1 for the safe brake test.

The factor is referred to the holding torque of the brake (p10209).

Index: [0] = Brake 1
[1] = Brake 2

Dependency: Refer to: p10209, p10230, p10235

Note: The test sequence is selected using p10230[4] or p10235.4.

p10210[0...1] SI Motion SBT test force factor sequence 1 / SBT F_test fact 1

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2836
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.30	1.00	1.00

Description: Sets the factor for the test force of sequence 1 for the safe brake test.

The factor is referred to the holding force of the brake (p10209).

Index: [0] = Brake 1
[1] = Brake 2

Dependency: Refer to: p10209, p10230, p10235

Note: The test sequence is selected using p10230[4] or p10235.4.

p10211[0...1] SI Motion SBT test duration sequence 1 / SBT t_test seq 1

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2836
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
20 [ms]	10000 [ms]	1000 [ms]

Description: Sets the test duration for sequence 1 for the safe brake test.

The test torque is available for this time at the closed brake.

Index: [0] = Brake 1
[1] = Brake 2

Dependency: Refer to: p10230, p10235

Note: The test sequence is selected using p10230[4] or p10235.4.

The set time is rounded internally to an integer multiple of the monitoring clock cycle.

p10211[0...1] SI Motion SBT test duration sequence 1 / SBT t_test seq 1

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2836
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
20 [ms]	10000 [ms]	1000 [ms]

Description: Sets the test duration for sequence 1 for the safe brake test.

The test force is available for this time at the closed brake.

Index: [0] = Brake 1
[1] = Brake 2

Dependency: Refer to: p10230, p10235

Note: The test sequence is selected using p10230[4] or p10235.4.

The set time is rounded internally to an integer multiple of the monitoring clock cycle.

p10212[0...1] SI Motion SBT position tolerance sequence 1 / SBT pos_tol seq 1

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2836
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.001 [mm]	360.000 [mm]	1.000 [mm]

Description: Sets the tolerated position deviation for sequence 1 for the safe brake test.

Index: [0] = Brake 1
[1] = Brake 2

Dependency: Refer to: p10230, p10235

Note: The test sequence is selected using p10230[4] or p10235.4.

p10212[0...1] SI Motion SBT position tolerance sequence 1 / SBT pos_tol seq 1

SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2836
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.001 [°]	360.000 [°]	1.000 [°]

Description: Sets the tolerated position deviation for sequence 1 for the safe brake test.

Index: [0] = Brake 1
[1] = Brake 2

Dependency: Refer to: p10230, p10235

Note: The test sequence is selected using p10230[4] or p10235.4.

p10218 SI Motion SBT test torque sign / SBT M_test sign

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 2837
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the sign for the test torque for the safe brake test.

This parameter is only valid for "SBT for test stop selection" (p10203 = 2).

Value: 0: Positive
1: Negative

Dependency: Refer to: p10203

p10218 SI Motion SBT test force sign / SBT F_test sign

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** 2837
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the sign for the test force for the safe brake test.

This parameter is only valid for "SBT for test stop selection" (p10203 = 2).

Value:
0: Positive
1: Negative

Dependency: Refer to: p10203

p10220[0...1] SI Motion SBT test torque factor sequence 2 / SBT M_test fact 2

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2836
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.30	1.00	1.00

Description: Sets the factor for the test torque of sequence 2 for the safe brake test.

The factor is referred to the holding torque of the brake (p10209).

Index:
[0] = Brake 1
[1] = Brake 2

Dependency: Refer to: p10209, p10230, p10235

Note: The test sequence is selected using p10230[4] or p10235.4.

p10220[0...1] SI Motion SBT test force factor sequence 2 / SBT F_test fact 2

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2836
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.30	1.00	1.00

Description: Sets the factor for the test force of sequence 2 for the safe brake test.

The factor is referred to the holding force of the brake (p10209).

Index:
[0] = Brake 1
[1] = Brake 2

Dependency: Refer to: p10209, p10230, p10235

Note: The test sequence is selected using p10230[4] or p10235.4.

p10221[0...1] SI Motion SBT test duration sequence 2 / SBT t_test seq 2

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2836
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
20 [ms]	10000 [ms]	1000 [ms]

Description: Sets the test duration for sequence 2 for the safe brake test.

The test torque is available for this time at the closed brake.

Index:
[0] = Brake 1
[1] = Brake 2

Dependency: Refer to: p10230, p10235

Note: The test sequence is selected using p10230[4] or p10235.4.
The set time is rounded internally to an integer multiple of the monitoring clock cycle.

p10221[0...1] SI Motion SBT test duration sequence 2 / SBT t_test seq 2

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2836
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
20 [ms]	10000 [ms]	1000 [ms]

Description: Sets the test duration for sequence 2 for the safe brake test.
The test force is available for this time at the closed brake.

Index: [0] = Brake 1
[1] = Brake 2

Dependency: Refer to: p10230, p10235

Note: The test sequence is selected using p10230[4] or p10235.4.
The set time is rounded internally to an integer multiple of the monitoring clock cycle.

p10222[0...1] SI Motion SBT position tolerance sequence 2 / SBT pos_tol seq 2

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2836
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.001 [mm]	360.000 [mm]	1.000 [mm]

Description: Sets the tolerated position deviation for sequence 2 for the safe brake test.

Index: [0] = Brake 1
[1] = Brake 2

Dependency: Refer to: p10230, p10235

Note: The test sequence is selected using p10230[4] or p10235.4.

p10222[0...1] SI Motion SBT position tolerance sequence 2 / SBT pos_tol seq 2

SERVO (Safety rot), VECTOR (Safety rot), SERVO_AC (Safety rot), VECTOR_AC (Safety rot), SERVO_I_AC (Safety rot), VECTOR_I_AC (Safety rot)

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2836
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.001 [°]	360.000 [°]	1.000 [°]

Description: Sets the tolerated position deviation for sequence 2 for the safe brake test.

Index: [0] = Brake 1
[1] = Brake 2

Dependency: Refer to: p10230, p10235

Note: The test sequence is selected using p10230[4] or p10235.4.

p10230[0...5] BI: SI Motion SBT control word / SBT STW

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2837
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal sources for the control word of the safe brake test
This parameter is only valid for "SBT via BICO" (p10203 = 1).

Index:
[0] = Select brake test
[1] = Start brake test
[2] = Select brake
[3] = Select test torque sign
[4] = Select test sequence
[5] = External brake status

Note:
For BI: p10230[0]:
0/1 signal: select brake test.
0 signal: inactive.
For BI: p10230[1]:
0/1 signal: start brake test.
For BI: p10230[2]:
1 signal: select brake 2.
0 signal: select brake 1.
For BI: p10230[3]:
1 signal: select negative test torque.
0 signal: select positive test torque.
For BI: p10230[4]:
1 signal: select test sequence 2.
0 signal: select test sequence 1.
For BI: p10230[5]:
1 signal: external brake closed.
0 signal: external brake open.

p10230[0...5] BI: SI Motion SBT control word / SBT STW

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: C2(95)	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Binary	**Dyn. index:** -	**Func. diagram:** 2837
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description:
Sets the signal sources for the control word of the safe brake test
This parameter is only valid for "SBT via BICO" (p10203 = 1).

Index:
[0] = Select brake test
[1] = Start brake test
[2] = Select brake
[3] = Select test force sign
[4] = Select test sequence
[5] = External brake status

Note:
For BI: p10230[0]:
0/1 signal: select brake test.
0 signal: inactive.
For BI: p10230[1]:
0/1 signal: start brake test.
For BI: p10230[2]:
1 signal: select brake 2.
0 signal: select brake 1.
For BI: p10230[3]:
1 signal: select negative test force.
0 signal: select positive test force.
For BI: p10230[4]:
1 signal: select test sequence 2.
0 signal: select test sequence 1.
For BI: p10230[5]:
1 signal: external brake closed.
0 signal: external brake open.

r10231 SI Motion SBT control word diagnostics / SBT STW diag

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2836, 2837
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the diagnostic bits for the control word of the safe brake test

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Select brake test	Yes	No	-
01	Start brake test	Yes	No	-
02	Select brake	Brake 2	Brake 1	-
03	Select test torque sign	Negative	Positive	-
04	Select test sequence	Test sequence 2	Test sequence 1	-
05	External brake status	Closed	Open	-

Dependency: Refer to: p10203

Note: The bits indicate the actual control signals of the control set in p10203.

r10231 SI Motion SBT control word diagnostics / SBT STW diag

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2836, 2837
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the diagnostic bits for the control word of the safe brake test

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Select brake test	Yes	No	-
01	Start brake test	Yes	No	-
02	Select brake	Brake 2	Brake 1	-
03	Select test force sign	Negative	Positive	-
04	Select test sequence	Test sequence 2	Test sequence 1	-
05	External brake status	Closed	Open	-

Dependency: Refer to: p10203

Note: The bits indicate the actual control signals of the control set in p10203.

r10234.11...15 CO/BO: SI Safety Information Channel status word S_ZSW3B / SIC S_ZSW3B

HLA

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2836
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for status word S_ZSW3B of the Safety Information Channel.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
11	SS2E active	Yes	No	-
14	Acceptance test SLP (SE) active	Yes	No	-
15	Acceptance test mode selected	Yes	No	-

Note: SIC: Safety Information Channel

SLP: Safely-Limited Position / SE: Safe software limit switches

SS2E: Safe Stop 2 external (Safe Stop 2 with external stop, external STOP D)

r10234.0...15 CO/BO: SI Safety Information Channel status word S_ZSW3B / SIC S_ZSW3B

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** 2836
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for status word S_ZSW3B of the Safety Information Channel.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Brake test selected	Yes	No	-
01	Setpoint input drive/external	Drive	External	-
02	Active brake	Brake 2	Brake 1	-
03	Brake test active	Yes	No	-
04	Brake test result	Successful	Erroneous/not	-
05	Brake test completed	Yes	No	-
06	External brake request	Close	Open	-
07	Actual load sign	Negative	Positive	-
11	SS2E active	Yes	No	-
14	Acceptance test SLP (SE) active	Yes	No	-
15	Acceptance test mode selected	Yes	No	-

Note: SIC: Safety Information Channel

SLP: Safely-Limited Position / SE: Safe software limit switches

SS2E: Safe Stop 2 external (Safe Stop 2 with external stop, external STOP D)

For bits 05, 04:

For r10234.4 = 0 signal, it is possible to make a distinction as to whether the brake test was executed with error - or has still not been executed - using bit 5.

Bit 5/4 = 0/0: The brake test has still not been executed since the last warm restart or POWER ON.

Bit 5/4 = 1/0: The last brake test that was executed had an error.

p10235 CI: SI Safety Control Channel control word S_STW3B / SCC S_STW3B

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Integer16	**Dyn. index:** -	**Func. diagram:** 2837
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for control word S_STW3B of the Safety Control Channel.

Dependency: This parameter is used as control word for the safe brake test only for "SBT via SCC" (p10203 = 0).

Refer to: p10203

Note: SBT: Safe Brake Test

SCC: Safety Control Channel

r10240 SI Motion SBT test torque diagnostics / SBT M_test diag

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2836
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Displays the effective maximum test torque on the motor side for a safe brake test.

Dependency: The test torque for an external brake should be converted to the load side.

Conversion factor:

- motor type = rotary and axis type = linear: (p9521 x p9520) / p9522
- otherwise: p9521 / p9522

Further, the efficiency of the mechanical system should be taken into account.

Refer to: p10210, p10220

Note: The value remains displayed until the start of the next test sequence.

r10240 SI Motion SBT test force diagnostics / SBT F_test diag

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2836
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [N]	- [N]	- [N]

Description: Displays the maximum test force for a safe brake test.

Dependency: Refer to: p10210, p10220

Note: The value remains displayed until the start of the next test sequence.

r10241 SI Motion SBT load torque diagnostics / SBT M_load diag

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2836
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Displays the load torque for a safe brake test.

When initializing the brake test, this load torque is available at the drive.

Note: The value remains displayed until the brake test is deselected.

r10241 SI Motion SBT load force diagnostics / SBT F_load diag

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** 2836
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
- [N]	- [N]	- [N]

Description: Displays the load force for a safe brake test.

When initializing the brake test, this load force is available at the drive.

Note: The value remains displayed until the brake test is deselected.

r10242 SI Motion SBT state diagnostics / SBT state diag

SERVO, VECTOR, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	16	-

Description: Displays the actual state of the safe brake test.

Value:
0: Brake test inactive, wait for SBT selection
1: Setpoint input drive
2: Determining the load
3: Brake test is initialized, wait for start of test sequence
4: Start test sequence
5: Closing the brake, establishing the test torque
6: Brake test active, wait for test duration sequence
7: Reduce test torque
8: Wait for the brake to open
9: Brake test successfully completed, wait for start deselection
10: Change to brake test initialized - fault acknowledgment
11: Brake test canceled, torque is reduced
12: Brake test canceled, wait for brake to open
13: Brake test ended with error, wait for acknowledgment
14: Brake opening timer elapsed
15: Error when initializing the brake test, wait for acknowledgment
16: Change to brake test inactive, acknowledgment active

p10250 CI: SI Safety Control Channel control word S_STW1B / SCC S_STW1B

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned32 / Integer16	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for control word S_STW1B of the Safety Control Channel.

Dependency: Refer to: p10203, r10251

Note: SCC: Safety Control Channel

r10251.8...12 CO/BO: SI Safety Control Channel control word S_STW1B diagnostics / SCC S_STW1B diag

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: -	**Calculated:** -	**Access level:** 3
Data type: Unsigned32	**Dyn. index:** -	**Func. diagram:** -
P-Group: -	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the diagnostics of control word S_STW1B of the Safety Control Channel.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
08	Extended Functions test stop selection	Selected	Not selected	2837
09	Extended Functions referencing trigger	Selected	Not selected	-
10	Extended Functions referencing reset	Selected	Not selected	-
12	Extended Functions premature SOS after STOP D	Selected	Not selected	-

Dependency: Refer to: p10250

Note: SCC: Safety Control Channel

p60000 PROFIdrive reference speed reference frequency / PD n_ref f_ref

SERVO, SERVO_AC, SERVO_I_AC, ENC

Can be changed: T	**Calculated:** CALC_MOD_ALL	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
6.00 [rpm]	210000.00 [rpm]	3000.00 [rpm]

Description: Sets the reference quantity for speed and frequency.
All speeds or frequencies specified as relative value are referred to this reference quantity.
The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

Dependency: Refer to: p2000

Note: Parameter p60000 is an image of parameter p2000 in conformance with PROFIdrive.
A change always effects both parameters.

p60000 Reference velocity reference frequency / v_ref f_ref

SERVO (Lin), SERVO_AC (Lin), SERVO_I_AC (Lin)

Can be changed: T	**Calculated:** CALC_MOD_ALL	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.60 [m/min]	700.00 [m/min]	120.00 [m/min]

Description: Sets the reference quantity for velocity and frequency.
All velocities or frequencies specified as relative value are referred to this reference quantity.
The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).
The following applies: Reference frequency (in Hz) = reference velocity (in (m/min) / 60)

Dependency: Refer to: p2000

Note: Parameter p60000 is an image of parameter p2000 in conformance with PROFIdrive.
A change always effects both parameters.

p60000 PROFIdrive reference speed reference frequency / PD n_ref f_ref

VECTOR, VECTOR_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** CALC_MOD_ALL	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
6.00 [rpm]	210000.00 [rpm]	3000.00 [rpm]

Description: Sets the reference quantity for speed and frequency.
All speeds or frequencies specified as relative value are referred to this reference quantity.
The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).
The following applies: Reference frequency (in Hz) = reference speed (in ((rpm) / 60) x pole pair number)

Dependency: Refer to: p2000

Note: Parameter p60000 is an image of parameter p2000 in conformance with PROFIdrive.
A change always effects both parameters.

p60000 PROFIdrive reference velocity reference frequency / PD v_ref f_ref

ENC (Lin_enc)

Can be changed: T	**Calculated:** CALC_MOD_ALL	**Access level:** 2
Data type: FloatingPoint32	**Dyn. index:** -	**Func. diagram:** -
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0.60 [m/min]	600.00 [m/min]	120.00 [m/min]

Description: Sets the reference quantity for velocity and frequency.

All velocities or frequencies specified as relative value are referred to this reference quantity.

The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

The following applies: Reference frequency (in Hz) = reference velocity (in (m/min) / 60)

Dependency: Refer to: p2000

Note: Parameter p60000 is an image of parameter p2000 in conformance with PROFIdrive.

A change always effects both parameters.

p60022 PROFIsafe telegram selection / Ps telegram_sel

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: C2(95), T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** -
P-Group: Safety Integrated	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
0	903	0

Description: Sets the telegram number for PROFIsafe.

Value:

0: No PROFIsafe telegram selected
30: PROFIsafe standard telegram 30, PZD-1/1
31: PROFIsafe standard telegram 31, PZD-2/2
901: PROFIsafe SIEMENS telegram 901, PZD-3/5
902: PROFIsafe SIEMENS telegram 902, PZD-3/6
903: PROFIsafe SIEMENS telegram 903, PZD-3/5

Dependency: Refer to: p9611, p9811

Note: For p9601.3 = p9801.3 = 1 (PROFIsafe enabled), the following variants exist when parameterizing PROFIsafe telegram 30:

- p9611 = p9811 = 998 and p60022 = 0
- p9611 = p9811 = 998 and p60022 = 30
- p9611 = p9811 = 30 and p60022 = 30

p60122 IF1 PROFIdrive SIC/SCC telegram selection / IF1 SIC/SCC telegr

SERVO, VECTOR, HLA, SERVO_AC, VECTOR_AC, SERVO_I_AC, VECTOR_I_AC

Can be changed: T	**Calculated:** -	**Access level:** 3
Data type: Unsigned16	**Dyn. index:** -	**Func. diagram:** 2423
P-Group: Communications	**Unit group:** -	**Unit selection:** -
Not for motor type: -	**Scaling:** -	**Expert list:** 1
Min	**Max**	**Factory setting**
700	999	999

Description: Sets the telegram for the Safety Information Channel (SIC) / Safety Control Channel (SCC).

The SIC/SCC telegram p60122 is attached directly to the PZD telegram p0922/p2079.

Value:

700: Supplementary telegram 700, PZD-0/3
701: Supplementary telegram 701, PZD-2/5
999: No telegram

Dependency: For p8864 equal to 999, then p60122 is locked.

Note: The clearance to the PZD telegram can be increased using p2070/p2071.

After changing p0922/p2079 or p2070/p2071, then p60122 must be set again.

The telegram interconnections can only be changed if p60122 and p0922 are both set to 999.

r61000[0...239] PROFINET Name of Station / PN Name of Station

CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP (PN CBE20), CU_S150_DP (PN CBE20)	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** 2410
	P-Group: -	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays PROFINET Name of Station.

Notice: An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.

r61001[0...3] PROFINET IP of Station / PN IP of Station

CU_S_AC_PN, CU_S120_PN, CU_S150_PN, CU_S120_DP (PN CBE20), CU_S150_DP (PN CBE20)	**Can be changed:** -	**Calculated:** -	**Access level:** 3
	Data type: Unsigned8	**Dyn. index:** -	**Func. diagram:** 2410
	P-Group: -	**Unit group:** -	**Unit selection:** -
	Not for motor type: -	**Scaling:** -	**Expert list:** 1
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays PROFINET IP of Station.

2.3 Parameters for data sets

2.3.1 Parameters for command data sets (CDS)

Note

References: SINAMICS S120 Function Manual Drive Functions
Chapter "Data sets"

The following list contains the parameters that are dependent on the command data sets.

Product: SINAMICS S120/S150, Version: 5103400, Language: eng, Type: CDS

p0641[0...n]	CI: Current limit scaling signal source / I_lim scal s_src
p0700[0...n]	Macro Binector Input (BI) / Macro BI
p0820[0...n]	BI: Drive Data Set selection DDS bit 0 / DDS select., bit 0
p0821[0...n]	BI: Drive Data Set selection DDS bit 1 / DDS select., bit 1
p0822[0...n]	BI: Drive Data Set selection DDS bit 2 / DDS select., bit 2
p0823[0...n]	BI: Drive Data Set selection DDS bit 3 / DDS select., bit 3
p0824[0...n]	BI: Drive Data Set selection DDS bit 4 / DDS select., bit 4
p0828[0...n]	BI: Motor changeover feedback signal / Mot_chng fdbk sig
p0840[0...n]	BI: ON / OFF (OFF1) / ON / OFF (OFF1)
p0844[0...n]	BI: No coast-down / coast-down (OFF2) signal source 1 / OFF2 S_src 1
p0845[0...n]	BI: No coast-down / coast-down (OFF2) signal source 2 / OFF2 S_src 2
p0848[0...n]	BI: No Quick Stop / Quick Stop (OFF3) signal source 1 / OFF3 S_src 1
p0849[0...n]	BI: No Quick Stop / Quick Stop (OFF3) signal source 2 / OFF3 S_src 2
p0852[0...n]	BI: Enable operation/inhibit operation / Enable operation
p0854[0...n]	BI: Control by PLC/no control by PLC / Master ctrl by PLC
p0855[0...n]	BI: Unconditionally release holding brake / Uncond open brake
p0856[0...n]	BI: Enable speed controller / n_ctrl enable
p0856[0...n]	BI: Enable velocity controller / v_ctrl enable
p0858[0...n]	BI: Unconditionally close holding brake / Uncond close brake
p1000[0...n]	Macro Connector Inputs (CI) for speed setpoints / Macro CI n_set
p1000[0...n]	Macro Connector Inputs (CI) for velocity setpoints / Macro CI v_set
p1020[0...n]	BI: Fixed velocity setpoint selection Bit 0 / v_set_fixed Bit 0
p1020[0...n]	BI: Fixed speed setpoint selection Bit 0 / n_set_fixed Bit 0
p1021[0...n]	BI: Fixed velocity setpoint selection Bit 1 / v_set_fixed Bit 1
p1021[0...n]	BI: Fixed speed setpoint selection Bit 1 / n_set_fixed Bit 1
p1022[0...n]	BI: Fixed velocity setpoint selection Bit 2 / v_set_fixed Bit 2
p1022[0...n]	BI: Fixed speed setpoint selection Bit 2 / n_set_fixed Bit 2
p1023[0...n]	BI: Fixed velocity setpoint selection Bit 3 / v_set_fixed Bit 3
p1023[0...n]	BI: Fixed speed setpoint selection Bit 3 / n_set_fixed Bit 3
p1035[0...n]	BI: Motorized potentiometer setpoint raise / Mop raise
p1036[0...n]	BI: Motorized potentiometer lower setpoint / Mop lower
p1039[0...n]	BI: Motorized potentiometer inversion / MotP inv
p1041[0...n]	BI: Motorized potentiometer manual/automatic / Mop manual/auto
p1042[0...n]	CI: Motorized potentiometer automatic setpoint / Mop auto setpoint
p1043[0...n]	BI: Motorized potentiometer accept setting value / MotP acc set val
p1044[0...n]	CI: Motorized potentiometer setting value / Mop set val
p1051[0...n]	CI: Velocity limit RFG positive direction / v_limit RFG pos
p1051[0...n]	CI: Speed limit RFG positive direction of rotation / n_limit RFG pos
p1052[0...n]	CI: Velocity limit RFG negative direction / v_limit RFG neg
p1052[0...n]	CI: Speed limit RFG negative direction of rotation / n_limit RFG neg
p1055[0...n]	BI: Jog bit 0 / Jog bit 0

p1056[0...n]	BI: Jog bit 1 / Jog bit 1
p1070[0...n]	CI: Main setpoint / Main setpoint
p1071[0...n]	CI: Main setpoint scaling / Main setp scal
p1075[0...n]	CI: Supplementary setp / Suppl setp
p1076[0...n]	CI: Supplementary setpoint scaling / Suppl setp scal
p1085[0...n]	CI: Velocity limit positive direction / v_limit pos
p1085[0...n]	CI: Speed limit in positive direction of rotation / n_limit pos
p1088[0...n]	CI: Velocity limit negative direction / n_limit neg
p1088[0...n]	CI: Speed limit in negative direction of rotation / n_limit neg
p1098[0...n]	CI: Skip velocity scaling / v_skip scal
p1098[0...n]	CI: Skip speed scaling / n_skip scal
p1106[0...n]	CI: Minimum velocity signal source / v_min s_src
p1106[0...n]	CI: Minimum speed signal source / n_min s_src
p1110[0...n]	BI: Inhibit negative direction / Inhib neg dir
p1111[0...n]	BI: Inhibit positive direction / Inhib pos dir
p1113[0...n]	BI: Setpoint inversion / Setp inv
p1122[0...n]	BI: Bypass ramp-function generator / Bypass RFG
p1138[0...n]	CI: Ramp-function generator ramp-up time scaling / RFG t_RU scal
p1139[0...n]	CI: Ramp-function generator ramp-down time scaling / RFG t_RD scal
p1140[0...n]	BI: Enable ramp-function generator/inhibit ramp-function generator / Enable RFG
p1141[0...n]	BI: Continue ramp-function generator/freeze ramp-function generator / Continue RFG
p1142[0...n]	BI: Enable setpoint/inhibit setpoint / Setpoint enable
p1143[0...n]	BI: Ramp-function generator, accept setting value / RFG accept set v
p1144[0...n]	CI: Ramp-function generator setting value / RFG setting value
p1155[0...n]	CI: Speed controller speed setpoint 1 / n_ctrl n_set 1
p1155[0...n]	CI: Velocity controller velocity setpoint 1 / v_ctrl v_set 1
p1160[0...n]	CI: Speed controller speed setpoint 2 / n_ctrl n_set 2
p1160[0...n]	CI: Velocity controller velocity setpoint 2 / v_ctrl v_set 2
p1201[0...n]	CI: Position offset incremental/absolute valid / x_off valid
p1201[0...n]	BI: Flying restart enable signal source / Fly_res enab S_src
p1230[0...n]	BI: Armature short-circuit / DC braking activation / ASC/DCBRK act
p1235[0...n]	BI: External armature short-circuit contactor feedback signal / ASC ext feedback
p1330[0...n]	CI: U/f control independent voltage setpoint / Uf U_set independ.
p1356[0...n]	CI: U/f control angular setpoint / Uf ang setpoint
p1430[0...n]	CI: Velocity precontrol / v_prectrl
p1430[0...n]	CI: Speed precontrol / n_prectrl
p1437[0...n]	CI: Speed controller reference model I component input / n_ctrRefMod I_comp
p1440[0...n]	CI: Speed controller speed actual value input / n_ctrl n_act
p1455[0...n]	CI: Speed controller P gain adaptation signal / n_ctr adapt_sig Kp
p1455[0...n]	CI: Velocity controller P gain adaptation signal / v_ctr adapt_sig Kp
p1466[0...n]	CI: Speed controller P-gain scaling / n_ctrl Kp scal
p1466[0...n]	CI: Velocity controller P gain scaling / v_ctrl Kp scal
p1475[0...n]	CI: Speed controller torque setting value for motor holding brake / n_ctrl M_sv MHB
p1476[0...n]	BI: Velocity controller hold integrator / v_ctrl integ stop
p1476[0...n]	BI: Speed controller hold integrator / n_ctrl integ stop
p1477[0...n]	BI: Velocity controller set integrator value / v_ctrl integ set
p1477[0...n]	BI: Speed controller set integrator value / n_ctrl integ set
p1478[0...n]	CI: Velocity controller integrator value / v_ctr integ_setVal
p1478[0...n]	CI: Speed controller integrator setting value / n_ctr integ_setVal
p1479[0...n]	CI: Speed controller integrator setting value scaling / n_ctrl I_val scal
p1486[0...n]	CI: Droop compensation torque / Droop M_comp
p1492[0...n]	BI: Droop feedback enable / Droop enable
p1495[0...n]	CI: Acceleration precontrol / a_prectrl
p1497[0...n]	CI: Moment of inertia scaling signal source / M_inert scal s_src
p1497[0...n]	CI: Mass scaling signal source / Mass scal s_src

p1500[0...n]	Macro Connector Inputs (CI) for torque setpoints / Macro CI M_set
p1500[0...n]	Macro Connector Inputs (CI) for force setpoints / Macro CI F_set
p1501[0...n]	BI: Change over between closed-loop speed/torque control / Changeov n/M_ctrl
p1501[0...n]	BI: Change over velocity/force control / Changeov n/F_ctrl
p1502[0...n]	BI: Freeze moment of inertia estimator / J_estim freeze
p1503[0...n]	CI: Torque setpoint / M_set
p1511[0...n]	CI: Force setpoint / F_set
p1511[0...n]	CI: Supplementary torque 1 / M_suppl 1
p1511[0...n]	CI: Supplementary force 1 / F_suppl 1
p1512[0...n]	CI: Force setpoint scaling / F_set scal
p1512[0...n]	CI: Supplementary torque 1 scaling / M_suppl 1 scal
p1512[0...n]	CI: Supplementary force 1 scaling / F_suppl 1 scal
p1513[0...n]	CI: Supplementary torque 2 / M_suppl 2
p1513[0...n]	CI: Supplementary force 2 / F_suppl 2
p1522[0...n]	CI: Force limit upper/motoring / F_max upper/mot
p1522[0...n]	CI: Torque limit upper/motoring / M_max upper/mot
p1522[0...n]	CI: Torque limit upper / M_max upper
p1523[0...n]	CI: Force limit lower/regenerative / F_max lower/regen
p1523[0...n]	CI: Torque limit lower/regenerative / M_max lower/regen
p1523[0...n]	CI: Torque limit lower / M_max lower
p1528[0...n]	CI: Force limit upper/motoring scaling / F_max up/mot scal
p1528[0...n]	CI: Torque limit upper/motoring scaling / M_max up/mot scal
p1528[0...n]	CI: Torque limit upper scaling / M_max upper scal
p1529[0...n]	CI: Force limit lower/regenerative scaling / F_max lo/reg scal
p1529[0...n]	CI: Torque limit lower/regenerative scaling / M_max low/gen scal
p1529[0...n]	CI: Torque limit lower scaling / M_max lower scal
p1540[0...n]	CI: Torque limit speed controller upper scaling / M_max n-ctr upScal
p1541[0...n]	CI: Torque limiting speed controller lower scaling / M_max nctr lowScal
p1542[0...n]	CI: Travel to fixed stop torque reduction / TfS M_red
p1542[0...n]	CI: Travel to fixed stop force reduction / TfS F_red
p1545[0...n]	BI: Activates travel to a fixed stop / TfS activation
p1550[0...n]	BI: Transfer actual torque as torque offset / Accept act torque
p1550[0...n]	BI: Transfer actual force as force offset / Accept act force
p1551[0...n]	BI: Torque limit variable/fixed signal source / M_lim var/fixS_src
p1551[0...n]	BI: Force limit variable/fixed signal source / F_lim var/fixS_src
p1552[0...n]	CI: Torque limit upper scaling without offset / M_max up w/o offs
p1552[0...n]	CI: Force limit upper scaling without offset / F_max up w/o offs
p1554[0...n]	CI: Torque limit lower scaling without offset / M_max low w/o offs
p1554[0...n]	CI: Force limit lower scaling without offset / F_max low w/o offs
p1555[0...n]	CI: Power limit / P_max
p1569[0...n]	CI: Supplementary torque 3 / M_suppl 3
p1569[0...n]	CI: Supplementary force 3 / F_suppl 3
p1571[0...n]	CI: Supplementary flux setpoint / Suppl flux setp
p1640[0...n]	CI: Excitation current actual value signal source / I_exc_ActVal S_src
p2103[0...n]	BI: 1st acknowledge faults / 1st acknowledge
p2104[0...n]	BI: 2nd acknowledge faults / 2nd acknowledge
p2105[0...n]	BI: 3rd acknowledge faults / 3rd acknowledge
p2106[0...n]	BI: External fault 1 / External fault 1
p2107[0...n]	BI: External fault 2 / External fault 2
p2108[0...n]	BI: External fault 3 / External fault 3
p2112[0...n]	BI: External alarm 1 / External alarm 1
p2116[0...n]	BI: External alarm 2 / External alarm 2
p2117[0...n]	BI: External alarm 3 / External alarm 3
p2144[0...n]	BI: Motor stall monitoring enable (negated) / Mot stall enab neg
p2148[0...n]	BI: RFG active / RFG active

p2151[0...n]	CI: Speed setpoint for messages/signals / n_set for msg
p2151[0...n]	CI: Velocity setpoint for messages/signals / v_set for msg
p2154[0...n]	CI: Speed setpoint 2 / n_set 2
p2154[0...n]	CI: Velocity setpoint 2 / v_set 2
p2200[0...n]	BI: Technology controller enable / Tec_ctrl enable
p2220[0...n]	BI: Technology controller fixed value selection bit 0 / Tec_ctrl sel bit 0
p2221[0...n]	BI: Technology controller fixed value selection bit 1 / Tec_ctrl sel bit 1
p2222[0...n]	BI: Technology controller fixed value selection bit 2 / Tec_ctrl sel bit 2
p2223[0...n]	BI: Technology controller fixed value selection bit 3 / Tec_ctrl sel bit 3
p2235[0...n]	BI: Technology controller motorized potentiometer raise setpoint / Tec_ctrl mop raise
p2236[0...n]	BI: Technology controller motorized potentiometer lower setpoint / Tec_ctrl mop lower
p2253[0...n]	CI: Technology controller setpoint 1 / Tec_ctrl setp 1
p2254[0...n]	CI: Technology controller setpoint 2 / Tec_ctrl setp 2
p2264[0...n]	CI: Technology controller actual value / Tec_ctrl act val
p2286[0...n]	BI: Hold technology controller integrator / Tec_ctr integ hold
p2289[0...n]	CI: Technology controller precontrol signal / Tec_ctr prectr_sig
p2296[0...n]	CI: Technology controller output scaling / Tec_ctrl outp scal
p2297[0...n]	CI: Technology controller maximum limit signal source / Tec_ctrMaxLimS_src
p2298[0...n]	CI: Technology controller minimum limit signal source / Tec_ctrl min_l s_s
p2299[0...n]	CI: Technology controller limit offset / Tech_ctrl lim offs
p2550[0...n]	BI: LR enable 2 / Enable 2
p3111[0...n]	BI: External fault 3 enable / Ext fault 3 enab
p3112[0...n]	BI: External fault 3 enable negated / Ext flt 3 enab neg
p3240[0...n]	CI: I2t input value signal source / I2t in_value s_src
p3749[0...n]	CI: APC velocity actual value external input / APC v_act ext inp
p3750[0...n]	CI: APC acceleration sensor input / APC accel input
p3802[0...n]	BI: Sync-line-drive enable / Sync enable
p3848[0...n]	CI: Friction characteristic speed actual value signal source / Frict n_act s_src

2.3.2 Parameters for drive data sets (DDS)

Note

References: SINAMICS S120 Function Manual Drive Functions
Chapter "Data sets"

The following list contains the parameters that are dependent on the drive data sets.

Product: SINAMICS S120/S150, Version: 5103400, Language: eng, Type: DDS

p0186[0...n]	Motor Data Sets (MDS) number / MDS number
p0187[0...n]	Encoder 1 encoder data set number / Enc 1 EDS number
p0188[0...n]	Encoder 2 encoder data set number / Enc 2 EDS number
p0189[0...n]	Encoder 3 encoder data set number / Enc 3 EDS number
p0340[0...n]	Automatic parameter calculation / Auto par calc
p0340[0...n]	Automatic calculation motor/control parameters / Calc auto par
p0345[0...n]	Required damping controlled axis / Damped ctrl axis
p0350[0...n]	Damping uncontrolled axis / Damp unctrl axis
p0351[0...n]	Piston position natural frequency minimum / Piston pos fn min
p0352[0...n]	Axis natural frequency A side / Axis fn A
p0353[0...n]	Axis natural frequency center / Axis fn center
p0354[0...n]	Axis natural frequency B side / Axis fn B
p0572[0...n]	Activate/deactivate inhibit list / Inh_list act/deact
p0578[0...n]	Calculate technology-dependent parameters / Calc tec par
p0640[0...n]	Current limit / Current limit

p0642[0...n]	Encoderless operation current reduction / Encoderl op I_red
p0644[0...n]	Current limit excitation induction motor / Imax excit ASM
p1001[0...n]	CO: Fixed velocity setpoint 1 / v_set_fix 1
p1001[0...n]	CO: Fixed speed setpoint 1 / n_set_fixed 1
p1002[0...n]	CO: Fixed velocity setpoint 2 / v_set_fix 2
p1002[0...n]	CO: Fixed speed setpoint 2 / n_set_fixed 2
p1003[0...n]	CO: Fixed velocity setpoint 3 / v_set_fix 3
p1003[0...n]	CO: Fixed speed setpoint 3 / n_set_fixed 3
p1004[0...n]	CO: Fixed velocity setpoint 4 / v_set_fix 4
p1004[0...n]	CO: Fixed speed setpoint 4 / n_set_fixed 4
p1005[0...n]	CO: Fixed velocity setpoint 5 / v_set_fix 5
p1005[0...n]	CO: Fixed speed setpoint 5 / n_set_fixed 5
p1006[0...n]	CO: Fixed velocity setpoint 6 / v_set_fix 6
p1006[0...n]	CO: Fixed speed setpoint 6 / n_set_fixed 6
p1007[0...n]	CO: Fixed velocity setpoint 7 / v_set_fix 7
p1007[0...n]	CO: Fixed speed setpoint 7 / n_set_fixed 7
p1008[0...n]	CO: Fixed velocity setpoint 8 / v_set_fix 8
p1008[0...n]	CO: Fixed speed setpoint 8 / n_set_fixed 8
p1009[0...n]	CO: Fixed velocity setpoint 9 / v_set_fix 9
p1009[0...n]	CO: Fixed speed setpoint 9 / n_set_fixed 9
p1010[0...n]	CO: Fixed velocity setpoint 10 / v_set_fix 10
p1010[0...n]	CO: Fixed speed setpoint 10 / n_set_fixed 10
p1011[0...n]	CO: Fixed velocity setpoint 11 / v_set_fix 11
p1011[0...n]	CO: Fixed speed setpoint 11 / n_set_fixed 11
p1012[0...n]	CO: Fixed velocity setpoint 12 / v_set_fix 12
p1012[0...n]	CO: Fixed speed setpoint 12 / n_set_fixed 12
p1013[0...n]	CO: Fixed velocity setpoint 13 / v_set_fix 13
p1013[0...n]	CO: Fixed speed setpoint 13 / n_set_fixed 13
p1014[0...n]	CO: Fixed velocity setpoint 14 / v_set_fix 14
p1014[0...n]	CO: Fixed speed setpoint 14 / n_set_fixed 14
p1015[0...n]	CO: Fixed velocity setpoint 15 / v_set_fix 15
p1015[0...n]	CO: Fixed speed setpoint 15 / n_set_fixed 15
p1030[0...n]	Motorized potentiometer configuration / Mop configuration
p1037[0...n]	Motorized potentiometer maximum velocity / MotP n_max
p1037[0...n]	Motorized potentiometer maximum speed / MotP n_max
p1038[0...n]	Motorized potentiometer minimum velocity / MotP n_min
p1038[0...n]	Motorized potentiometer minimum speed / MotP n_min
p1040[0...n]	Motorized potentiometer starting value / Mop start value
p1047[0...n]	Motorized potentiometer ramp-up time / Mop ramp-up time
p1048[0...n]	Motorized potentiometer ramp-down time / Mop ramp-down time
p1058[0...n]	Jog 1 velocity setpoint / Jog 1 v_set
p1058[0...n]	Jog 1 speed setpoint / Jog 1 n_set
p1059[0...n]	Jog 2 velocity setpoint / Jog 2 v_set
p1059[0...n]	Jog 2 speed setpoint / Jog 2 n_set
p1063[0...n]	Setpoint channel velocity limit / Setp_chan v_lim
p1063[0...n]	Setpoint channel speed limit / Setp_chan n_lim
p1080[0...n]	Minimum velocity / v_min
p1080[0...n]	Minimum speed / n_min
p1082[0...n]	Maximum velocity / v_max
p1082[0...n]	Maximum speed / n_max
r1082[0...n]	Encoder emulation maximum speed / Enc_emul n_max
p1083[0...n]	CO: Velocity limit positive direction / v_limit pos
p1083[0...n]	CO: Speed limit in positive direction of rotation / n_limit pos
p1086[0...n]	CO: Velocity limit negative direction / v_limit neg
p1086[0...n]	CO: Speed limit in negative direction of rotation / n_limit neg

p1091[0...n]	Skip velocity 1 / v_skip 1
p1091[0...n]	Skip speed 1 / n_skip 1
p1092[0...n]	Skip velocity 2 / v_skip 2
p1092[0...n]	Skip speed 2 / n_skip 2
p1093[0...n]	Skip velocity 3 / v_skip 3
p1093[0...n]	Skip speed 3 / n_skip 3
p1094[0...n]	Skip velocity 4 / v_skip 4
p1094[0...n]	Skip speed 4 / n_skip 4
p1101[0...n]	Skip velocity bandwidth / v_skip bandwidth
p1101[0...n]	Skip speed bandwidth / n_skip bandwidth
p1120[0...n]	Ramp-function generator ramp-up time / RFG ramp-up time
p1121[0...n]	Ramp-function generator ramp-down time / RFG ramp-down time
p1130[0...n]	Ramp-function generator initial rounding-off time / RFG t_start_round
p1131[0...n]	Ramp-function generator final rounding-off time / RFG t_end_delay
p1134[0...n]	Ramp-function generator rounding-off type / RFG round-off type
p1135[0...n]	OFF3 ramp-down time / OFF3 t_RD
p1136[0...n]	OFF3 initial rounding-off time / RFGOFF3 t_strt_rnd
p1137[0...n]	OFF3 final rounding-off time / RFG OFF3 t_end_del
p1145[0...n]	Ramp-function generator tracking intensity. / RFG track intens
p1148[0...n]	Ramp-function gen. tolerance for ramp-up and ramp-down active / RFG tol HL/RL act
p1151[0...n]	Ramp-function generator configuration / RFG config
p1189[0...n]	Speed setpoint configuration / n_ctrl config
p1189[0...n]	Velocity setpoint configuration / v_ctrl config
p1192[0...n]	DSC encoder selection / DSC enc selection
p1193[0...n]	DSC encoder adaptation factor / DSC encodAdaptFact
p1200[0...n]	Flying restart operating mode / FlyRest op_mode
p1202[0...n]	Flying restart search current / FlyRest I_srch
p1203[0...n]	Flying restart search rate factor / FlyRst v_Srch Fact
p1226[0...n]	Standstill detection velocity threshold / v_standst v_thresh
p1226[0...n]	Threshold for zero speed detection / n_standst n_thresh
p1240[0...n]	Vdc controller or Vdc monitoring configuration / Vdc ctrl config
p1243[0...n]	Vdc_max controller dynamic factor / Vdc_max dyn_factor
p1244[0...n]	DC link voltage threshold upper / Vdc upper thresh
p1245[0...n]	Vdc_min controller switch-in level (kinetic buffering) / Vdc_min on_level
p1247[0...n]	Vdc_min controller dynamic factor (kinetic buffering) / Vdc_min dyn_factor
p1248[0...n]	DC link voltage threshold lower / Vdc lower thresh
p1249[0...n]	Vdc_max controller speed threshold / Vdc_max n_thresh
p1250[0...n]	Vdc controller proportional gain / Vdc_ctrl Kp
p1251[0...n]	Vdc controller integral time / Vdc_ctrl Tn
p1252[0...n]	Vdc controller rate time / Vdc_ctrl t_rate
p1255[0...n]	Vdc_min controller time threshold / Vdc_min t_thresh
p1256[0...n]	Vdc_min controller response (kinetic buffering) / Vdc_min response
p1257[0...n]	Vdc_min controller speed threshold / Vdc_min n_thresh
p1262[0...n]	Bypass dead time / Bypass t_dead
p1270[0...n]	Flying restart configuration / Fly restart config
p1271[0...n]	Flying restart maximum frequency for the inhibited direction / FlyRes f_max dir
p1280[0...n]	Vdc controller or Vdc monitoring configuration (U/f) / Vdc_ctr config U/f
p1281[0...n]	Vdc controller configuration / Vdc ctrl config
p1283[0...n]	Vdc_max controller dynamic factor (U/f) / Vdc_max dyn_factor
p1284[0...n]	Vdc_max controller time threshold (U/f) / Vdc_max t_thresh
p1285[0...n]	Vdc_min controller switch-in level (kinetic buffering) (U/f) / Vdc_min on_level
p1287[0...n]	Vdc_min controller dynamic factor (kinetic buffering) (U/f) / Vdc_min dyn_factor
p1288[0...n]	Vdc_max controller feedback coupling factor ramp-fct. gen. (U/f) / Vdc_max factor RFG
p1289[0...n]	Vdc_max controller speed threshold (U/f) / Vdc_max n_thresh
p1290[0...n]	Vdc controller proportional gain (U/f) / Vdc_ctrl Kp

p1291[0...n]	Vdc controller integral time (U/f) / Vdc_ctrl Tn
p1292[0...n]	Vdc controller rate time (U/f) / Vdc_ctrl t_rate
p1293[0...n]	Vdc min controller output limit (U/f) / Vdc_min outp_lim
p1295[0...n]	Vdc_min controller time threshold (U/f) / Vdc_min t_thresh
p1296[0...n]	Vdc_min controller response (kinetic buffering) (U/f) / Vdc_min response
p1297[0...n]	Vdc_min controller speed threshold (U/f) / Vdc_min n_thresh
p1300[0...n]	Open-loop/closed-loop control operating mode / Op/cl-lp ctrl_mode
p1302[0...n]	U/f control configuration / U/f config
p1310[0...n]	Starting current (voltage boost) permanent / I_start (Ua) perm
p1311[0...n]	Starting current (voltage boost) when accelerating / I_start accel
p1312[0...n]	Starting current (voltage boost) when starting / I_start start
p1317[0...n]	U/f control activation / Uf act
p1318[0...n]	U/f control ramp-up/ramp-down time / Uf t_rmp-up_rmp-dn
p1319[0...n]	U/f control voltage at zero frequency / Uf U at f=0 Hz
p1320[0...n]	U/f control programmable characteristic frequency 1 / Uf char f1
p1321[0...n]	U/f control programmable characteristic voltage 1 / Uf char U1
p1322[0...n]	U/f control programmable characteristic frequency 2 / Uf char f2
p1323[0...n]	U/f control programmable characteristic voltage 2 / Uf char U2
p1324[0...n]	U/f control programmable characteristic frequency 3 / Uf char f3
p1325[0...n]	U/f control programmable characteristic voltage 3 / Uf char U3
p1326[0...n]	U/f control characteristic frequency / Uf char f
p1326[0...n]	U/f control programmable characteristic frequency 4 / Uf char f4
p1327[0...n]	U/f control characteristic voltage / Uf char U
p1327[0...n]	U/f control programmable characteristic voltage 4 / Uf char U4
p1331[0...n]	Voltage limiting / U_lim
p1333[0...n]	U/f control FCC starting frequency / U/f FCC f_start
p1334[0...n]	U/f control slip compensation starting frequency / Slip comp start
p1335[0...n]	Slip compensation scaling / Slip comp scal
p1336[0...n]	Slip compensation limit value / Slip comp lim val
p1338[0...n]	U/f mode resonance damping gain / Uf Res_damp gain
p1339[0...n]	U/f mode resonance damping filter time constant / Uf Res_damp T
p1340[0...n]	I_max frequency controller proportional gain / I_max_ctrl Kp
p1341[0...n]	I_max frequency controller integral time / I_max_ctrl Tn
p1345[0...n]	DC braking proportional gain / DCBRK Kp
p1345[0...n]	I_max voltage controller proportional gain / I_max_U_ctrl Kp
p1346[0...n]	DC braking integral time / DCBRK Tn
p1346[0...n]	I_max voltage controller integral time / I_max_U_ctrl Tn
p1349[0...n]	U/f mode resonance damping maximum frequency / Uf res_damp f_max
p1350[0...n]	U/f control soft start / U/f soft start
p1351[0...n]	CO: Motor holding brake starting frequency / Brake f_start
p1358[0...n]	Angular difference symmetrizing actual angle / Sym act angle
p1381[0...n]	U/f control modulation limit reduction / U/f mod_lim reduce
p1400[0...n]	Closed-loop control configuration / Ctrl config
p1400[0...n]	Speed control configuration / n_ctrl config
p1400[0...n]	Velocity control configuration / v_ctrl config
p1401[0...n]	Flux control configuration / Flux ctrl config
p1402[0...n]	Closed-loop current control and motor model configuration / I_ctrl config
p1404[0...n]	Encoderless operation changeover speed / Encoderl op n_chg
p1404[0...n]	Encoderless operation changeover velocity / Encoderl op v_chg
p1409[0...n]	Speed control extended configuration / n_ctrl ext config
p1409[0...n]	Velocity control extended configuration / v_ctrl ext config
p1412[0...n]	TM41 increm. encoder emulation, speed setpoint filter deadtime / n_set dead time
p1413[0...n]	Velocity actual value filter activation / v_act_filt act
p1413[0...n]	Speed actual value filter activation / n_act_filt act
p1414[0...n]	Velocity setpoint filter activation / v_set_filt act

p1414[0...n]	Speed setpoint filter activation / n_set_filt act
p1414[0...n]	TM41 incr. encoder emulation speed setpoint filter activation / n_set_filt act
p1415[0...n]	Velocity setpoint filter 1 type / v_setp_filt 1 type
p1415[0...n]	Speed setpoint filter 1 type / n_set_filt 1 type
p1416[0...n]	Velocity setpoint filter 1 time constant / v_set_filt 1 T
p1416[0...n]	Speed setpoint filter 1 time constant / n_set_filt 1 T
p1417[0...n]	Velocity setpoint filter 1 denominator natural frequency / v_set_filt1 fn_den
p1417[0...n]	Speed setpoint filter 1 denominator natural frequency / n_set_filt1 fn_den
p1417[0...n]	TM41 Speed setpoint filter 1 denominator natural frequency / n_set_filt1 fn_den
p1418[0...n]	Velocity setpoint filter 1 denominator damping / v_set_filt 1 D_den
p1418[0...n]	Speed setpoint filter 1 denominator damping / n_set_filt 1 D_den
p1418[0...n]	TM41 Speed setpoint filter 1 denominator damping / n_set_filt 1 D_den
p1419[0...n]	Velocity setpoint filter 1 numerator natural frequency / v_set_filt1 fn_num
p1419[0...n]	Speed setpoint filter 1 numerator natural frequency / n_set_filt1 fn_num
p1420[0...n]	Velocity setpoint filter 1 numerator damping / v_set_filt 1 D_num
p1420[0...n]	Speed setpoint filter 1 numerator damping / n_set_filt 1 D_num
p1421[0...n]	Velocity setpoint filter 2 type / v_setp_filt 2 type
p1421[0...n]	Speed setpoint filter 2 type / n_set_filt 2 type
p1422[0...n]	Velocity setpoint filter 2 time constant / v_set_filt 2 T
p1422[0...n]	Speed setpoint filter 2 time constant / n_set_filt 2 T
p1423[0...n]	Velocity setpoint filter 2 denominator natural frequency / v_set_filt2 fn_den
p1423[0...n]	Speed setpoint filter 2 denominator natural frequency / n_set_filt2 fn_den
p1424[0...n]	Velocity setpoint filter 2 denominator damping / v_set_filt 2 D_den
p1424[0...n]	Speed setpoint filter 2 denominator damping / n_set_filt 2 D_den
p1425[0...n]	Velocity setpoint filter 2 numerator natural frequency / v_set_filt2 fn_num
p1425[0...n]	Speed setpoint filter 2 numerator natural frequency / n_set_filt2 fn_num
p1426[0...n]	Velocity setpoint filter 2 numerator damping / v_set_filt 2 D_num
p1426[0...n]	Speed setpoint filter 2 numerator damping / n_set_filt 2 D_num
p1427[0...n]	DSC symmetrizing time constant additive T_SYMM_ADD / DSC T_SYMM_ADD
p1428[0...n]	Velocity precontrol symmetrizing dead time / n_prectrSym t_dead
p1428[0...n]	Speed precontrol symmetrizing dead time / n_prectrSym t_dead
p1429[0...n]	Speed precontrol symmetrizing time constant / n_prectr sym T
p1429[0...n]	Velocity precontrol symmetrizing time constant / n_prectr sym T
p1433[0...n]	Velocity controller reference model natural frequency / v_ctrl RefMod fn
p1433[0...n]	Speed controller reference model natural frequency / n_ctrl RefMod fn
p1434[0...n]	Velocity controller reference model damping / v_ctrl RefMod D
p1434[0...n]	Speed controller reference model damping / n_ctrl RefMod D
p1435[0...n]	Speed controller reference model dead time / n_ctrRefMod t_dead
p1435[0...n]	Velocity controller reference model dead time / v_ctrRefMod t_dead
p1441[0...n]	Actual velocity smoothing time / v_act t_smooth
p1441[0...n]	Actual speed smoothing time / n_act T_smooth
p1442[0...n]	Speed controller speed actual value smoothing time / n_ctr n_act T_smth
p1446[0...n]	Velocity actual value filter type / v_act_filt type
p1446[0...n]	Speed actual value filter type / n_act_filt type
p1447[0...n]	Velocity actual value filter denominator natural frequency / v_act_filt fn_den
p1447[0...n]	Speed actual value filter denominator natural frequency / n_act_filt fn_den
p1448[0...n]	Velocity actual value filter denominator damping / v_act_filt D_den
p1448[0...n]	Speed actual value filter denominator damping / n_act_filt D_den
p1449[0...n]	Velocity actual value filter numerator natural frequency / v_act_filt fn_num
p1449[0...n]	Speed actual value filter numerator natural frequency / n_act_filt fn_num
p1450[0...n]	Velocity actual value filter numerator damping / v_act_filt D_num
p1450[0...n]	Speed actual value filter numerator damping / n_act_filt D_num
p1451[0...n]	Speed actual value smoothing time sensorless / n_act t_sm SL
p1451[0...n]	Velocity actual value smoothing time sensorless / v_act t_sm SL
p1451[0...n]	Motor model speed actual value smoothing time sensorless / Mot_mod n_act t_sm

p1452[0...n]	Speed controller speed actual value smoothing time (sensorless) / n_C n_act T_s SL
p1456[0...n]	Speed controller P gain adaptation lower starting point / n_ctrl AdaptKpLow
p1456[0...n]	Velocity controller P gain adaptation lower starting point / v_ctrl AdaptKpLow
p1457[0...n]	Speed controller P gain adaptation upper starting point / n_ctrl AdaptKp up
p1457[0...n]	Velocity controller P gain adaptation upper starting point / v_ctrl AdaptKp up
p1458[0...n]	Adaptation factor lower / Adapt_factor lower
p1459[0...n]	Adaptation factor upper / Adapt_factor upper
p1460[0...n]	Velocity controller P gain A / v_ctrl Kp A
p1460[0...n]	Speed controller P gain adaptation speed lower / n_ctrl Kp n lower
p1460[0...n]	Velocity controller P gain adaptation velocity lower / v_ctrl Kp n lower
p1461[0...n]	Velocity controller P gain / v_ctr Kp
p1461[0...n]	Speed controller Kp adaptation speed upper scaling / n_ctr Kp n up scal
p1461[0...n]	Velocity controller Kp adaptation velocity upper scaling / v_ctr Kp n up scal
p1462[0...n]	Velocity controller P gain B / v_ctrl Kp B
p1462[0...n]	Speed controller integral time adaptation speed lower / n_ctrl Tn n lower
p1462[0...n]	Velocity contr. integral act. time adaptation velocity lower / v_ctrl Tn n lower
p1463[0...n]	Velocity controller integral time / v_ctr Tn
p1463[0...n]	Speed controller Tn adaptation speed upper scaling / n_ctr Tn n up scal
p1463[0...n]	Velocity controller Tn adaptation velocity upper scaling / v_ctr Tn n up scal
p1464[0...n]	Velocity controller D component smoothing time constant / v_ctr D comp T
p1464[0...n]	Speed controller adaptation speed lower / n_ctrl n lower
p1464[0...n]	Velocity controller adaptation velocity lower / v_ctrl n lower
p1465[0...n]	Velocity controller derivative-action time A / v_ctrl Tv A
p1465[0...n]	Speed controller adaptation speed upper / n_ctrl n upper
p1465[0...n]	Velocity controller adaptation velocity upper / v_ctrl n upper
p1466[0...n]	Velocity controller derivative-action time / v_ctrl Tv
p1467[0...n]	Velocity controller derivative-action time B / v_ctrl Tv B
p1470[0...n]	Speed controller encoderless operation P-gain / n_ctrl SL Kp
p1470[0...n]	Velocity controller encoderless operation P-gain / v_ctrl SLVC Kp
p1472[0...n]	Speed controller encoderless operation integral time / n_ctrl SL Tn
p1472[0...n]	Velocity controller encoderless operation integral time / v_ctrl SLVC Tn
p1475[0...n]	Velocity controller loop gain / v_ctrl loop_gain
p1487[0...n]	Droop compensation torque scaling / Droop M_comp scal
p1488[0...n]	Droop input source / Droop input source
p1489[0...n]	Droop feedback scaling / Droop scal
p1494[0...n]	Velocity controller integrator feedback time constant / v_ctr integ_fdbk T
p1494[0...n]	Speed controller integrator feedback time constant / n_ctr integ_fdbk T
p1495[0...n]	Integrator feedback velocity threshold / Integ_fdbk v_thr
p1496[0...n]	Acceleration precontrol scaling / a_prectrl scal
p1498[0...n]	Load mass / Load mass
p1498[0...n]	Load moment of inertia / Load M_inertia
p1499[0...n]	Accelerating for torque control scaling / a for M_ctrl scal
p1514[0...n]	Supplementary torque 2 scaling / M_suppl 2 scal
p1517[0...n]	Accelerating torque smoothing time constant / M_accel T_smooth
p1517[0...n]	Acceleration force smoothing time constant / F_accel T_smooth
p1520[0...n]	CO: Force limit upper/motoring / F_max upper/mot
p1520[0...n]	CO: Torque limit upper/motoring / M_max upper/mot
p1520[0...n]	CO: Torque limit upper / M_max upper
p1521[0...n]	CO: Force limit lower/regenerative / F_max lower/regen
p1521[0...n]	CO: Torque limit lower/regenerative / M_max lower/regen
p1521[0...n]	CO: Torque limit lower / M_max lower
p1524[0...n]	CO: Force limit upper/motoring scaling / F_max up/mot scal
p1524[0...n]	CO: Torque limit upper/motoring scaling / M_max up/mot scal
p1524[0...n]	CO: Torque limit upper scaling / M_max upper scal
p1525[0...n]	CO: Force limit lower/regenerative scaling / F_max lo/reg scal

p1525[0...n]	CO: Torque limit lower/regenerative scaling / M_max low/gen scal
p1525[0...n]	CO: Torque limit lower scaling / M_max lower scal
p1530[0...n]	Power limit motoring / P_max mot
p1531[0...n]	Power limit regenerative / P_max gen
p1532[0...n]	CO: Force offset, force limit / F_max offset
p1532[0...n]	CO: Torque limit offset / M_max offset
p1552[0...n]	Stiction velocity threshold / Stiction v_thresh
p1553[0...n]	Stall limit scaling / Stall limit scal
p1554[0...n]	Stiction shutdown rate action / Stict shutdown
p1555[0...n]	Stiction force velocity positive / Stiction F v pos
p1556[0...n]	Stiction force velocity negative / Stiction F v neg
p1556[0...n]	Power limit scaling / P_max scal
p1560[0...n]	Moment of inertia estimator accelerating force threshold value / J_est F thresh
p1560[0...n]	Moment of inertia estimator accelerating torque threshold value / J_est M thresh
p1561[0...n]	Inertia estimator change time high inertia mass / J_est t_change M
p1561[0...n]	Moment of inertia estimator change time moment of inertia / J_est t_change J
p1562[0...n]	Moment of inertia estimator change time load / J_est t load
p1563[0...n]	CO: Moment of inertia estimator load force positive direction / J_est F pos
p1563[0...n]	CO: Mom. of inertia estimator load torque direction of rotation pos. / J_est M pos
p1564[0...n]	CO: Moment of inertia estimator load force negative direction / J_est F neg
p1564[0...n]	CO: Mom. of inertia estimator load torque direction of rotation neg. / J_est M neg
r1566[0...n]	Flux reduction torque factor transition value / Flux red M trans
p1567[0...n]	Magnetization rate time scaling / Mag Tv scale
p1570[0...n]	Stiction voltage pulse positive / Stiction U pos
p1571[0...n]	Stiction voltage pulse negative / Stiction U neg
p1572[0...n]	Supplementary flux setpoint / Suppl flux setp
p1573[0...n]	Flux threshold value magnetizing / Flux thresh magnet
p1574[0...n]	Voltage reserve dynamic / U_reserve dyn
p1575[0...n]	Voltage target value limit / U_tgt val lim
p1576[0...n]	Flux boost adaptation speed, lower / Flux boost n lower
p1577[0...n]	Flux boost adaptation speed upper / Flux boost n upper
p1578[0...n]	Flux reduction flux decrease smoothing time / Flux red dec t_sm
p1579[0...n]	Flux reduction flux build-up smoothing time / Flux red up t_sm
p1580[0...n]	Efficiency optimization / Efficiency opt.
p1581[0...n]	Flux reduction factor / Flux red factor
p1582[0...n]	Flux setpoint smoothing time / Flux setp T_smth
p1584[0...n]	Field weakening operation flux setpoint smoothing time / Field weak T_smth
p1585[0...n]	Flux actual value smoothing time / Flux actVal T_smth
p1586[0...n]	Field weakening characteristic scaling / Field weak scal
p1590[0...n]	Flux controller P gain / Flux controller Kp
p1592[0...n]	Flux controller integral time / Flux controller Tn
p1594[0...n]	Field-weakening controller P gain / Field_ctrl Kp
p1595[0...n]	Field weakening controller additional setpoint / Field_ctr add_setp
p1596[0...n]	Field weakening controller integral-action time / Field_ctrl Tn
p1599[0...n]	Flux controller excitation current difference / Flux ctr I_exc_dif
p1600[0...n]	P flux controller P gain / P flux ctrl Kp
p1601[0...n]	Current injection ramp time / I_inject t_ramp
p1603[0...n]	Field-generating current maximum / Id max
p1604[0...n]	Pulse technique current limit / Pulse current lim
p1605[0...n]	Pulse technique pattern configuration / Puls pattrn config
p1607[0...n]	Pulse technique excitation / Pulse excitation
p1609[0...n]	I/f operation current setpoint / I/f op I_setp
p1610[0...n]	Torque setpoint static (sensorless) / M_set static
p1611[0...n]	Additional acceleration torque (sensorless) / M_suppl_accel
p1612[0...n]	Current setpoint open-loop control, encoderless / I_setCtrEncoderl

p1612[0...n]	Current setpoint magnetizing open-loop controlled / Id_set ctrl
p1616[0...n]	Current setpoint smoothing time / I_set T_smooth
p1619[0...n]	Setpoint/actual value tracking threshold / SetAct track thrsh
p1620[0...n]	Stator current minimum / I_stator min
p1621[0...n]	Changeover speed inner cos phi = 1 / n_chngov cos phi=1
p1622[0...n]	Field-generating current setpoint smoothing time constant / Id_setp T_smth
p1625[0...n]	Excitation current setpoint calibration / I_exc_setp cal
p1628[0...n]	Current model controller dynamic factor / I_mod_ctr dyn_fact
p1629[0...n]	Current model controller P gain / I_mod_ctrl Kp
p1630[0...n]	Current model controller integral time / I_mod_ctrl Tn
p1642[0...n]	Minimum excitation current / Min I_exc
p1643[0...n]	Minimum excitation current closed-loop control gain factor / I_exc_min Kp
p1653[0...n]	Current setpoint torque-generating smoothing time minimum / Isq_s T_smth min
p1654[0...n]	Curr. setpoint torque-gen. smoothing time field weakening range / Isq_s T_smth FW
p1656[0...n]	Manipulated variable filter velocity controller activation / Filt v_ctrl act
p1656[0...n]	Activates current setpoint filter / I_setp_filt act
p1656[0...n]	Current setpoint/Speed actual value filter activation / I_setp_filt act
p1657[0...n]	Manipulated variable filter 1 velocity controller type / Filt 1 v_ctrl type
p1657[0...n]	Current setpoint filter 1 type / I_set_filt 1 type
p1658[0...n]	Manip. var. filter 1 velocity controller denom. natural freq. / Filt1 v_ctr fn_den
p1658[0...n]	Current setpoint filter 1 denominator natural frequency / I_set_filt1 fn_den
p1659[0...n]	Manip. variable filter 1 velocity controller denominator damping / Filt 1 v_ctr D_den
p1659[0...n]	Current setpoint filter 1 denominator damping / I_set_filt 1 D_den
p1660[0...n]	Manip. var. filter 1 velocity controller numerator natural freq. / Filt1 v_ctr fn_num
p1660[0...n]	Current setpoint filter 1 numerator natural frequency / I_set_filt1 fn_num
p1661[0...n]	Manip. variable filter 1 velocity controller numerator damping / Filt 1 v_ctr D_num
p1661[0...n]	Current setpoint filter 1 numerator damping / I_set_filt 1 D_num
p1662[0...n]	Manipulated variable filter 2 velocity controller type / Filt 2 v_ctrl type
p1662[0...n]	Current setpoint filter 2 type / I_set_filt 2 type
p1663[0...n]	Manip. var. filter 2 velocity controller denom. natural freq. / Filt2 v_ctr fn_den
p1663[0...n]	Current setpoint filter 2 denominator natural frequency / I_set_filt2 fn_den
p1664[0...n]	Manip. variable filter 2 velocity controller denominator damping / Filt 2 v_ctr D_den
p1664[0...n]	Current setpoint filter 2 denominator damping / I_set_filt 2 D_den
p1665[0...n]	Manip. var. filter 2 velocity controller numerator natural freq. / Filt2 v_ctr fn_num
p1665[0...n]	Current setpoint filter 2 numerator natural frequency / I_set_filt2 fn_num
p1666[0...n]	Manip. variable filter 2 velocity controller numerator damping / Filt 2 v_ctr D_num
p1666[0...n]	Current setpoint filter 2 numerator damping / I_set_filt 2 D_num
p1667[0...n]	Manipulated variable filter 3 velocity controller type / Filt 3 v_ctrl type
p1667[0...n]	Current setpoint filter 3 type / I_set_filt 3 type
p1668[0...n]	Manip. var. filter 3 velocity controller denom. natural freq. / Filt3 v_ctr fn_den
p1668[0...n]	Current setpoint filter 3 denominator natural frequency / I_set_filt3 fn_den
p1669[0...n]	Manip. variable filter 3 velocity controller denominator damping / Filt 3 v_ctr D_den
p1669[0...n]	Current setpoint filter 3 denominator damping / I_set_filt 3 D_den
p1670[0...n]	Manip. var. filter 3 velocity controller numerator natural freq. / Filt3 v_ctr fn_num
p1670[0...n]	Current setpoint filter 3 numerator natural frequency / I_set_filt3 fn_num
p1671[0...n]	Manip. variable filter 3 velocity controller numerator damping / Filt 3 v_ctr D_num
p1671[0...n]	Current setpoint filter 3 numerator damping / I_set_filt 3 D_num
p1672[0...n]	Manipulated variable filter 4 velocity controller type / Filt 4 v_ctrl type
p1672[0...n]	Current setpoint filter 4 type / I_set_filt 4 type
p1673[0...n]	Manip. var. filter 4 velocity controller denom. natural freq. / Filt4 v_ctr fn_den
p1673[0...n]	Current setpoint filter 4 denominator natural frequency / I_set_filt4 fn_den
p1674[0...n]	Manip. variable filter 4 velocity controller denominator damping / Filt 4 v_ctr D_den
p1674[0...n]	Current setpoint filter 4 denominator damping / I_set_filt 4 D_den
p1675[0...n]	Manip. var. filter 4 velocity controller numerator natural freq. / Filt4 v_ctr fn_num
p1675[0...n]	Current setpoint filter 4 numerator natural frequency / I_set_filt4 fn_den

p1676[0...n]	Manip. variable filter 4 velocity controller numerator damping / Filt 4 v_ctr D_num
p1676[0...n]	Current setpoint filter 4 numerator damping / I_set_filt 4 D_num
p1677[0...n]	Speed actual value filter 5 type / n_act_filt 5 type
p1678[0...n]	Speed actual value filter 5 denominator natural frequency / n_act_filt5 fn_den
p1679[0...n]	Speed actual value filter 5 denominator damping / n_act_filt 5 D_den
p1680[0...n]	Speed actual value filter 5 numerator natural frequency / n_act_filt5 fn_num
p1681[0...n]	Speed actual value filter 5 numerator damping / n_act_filt 5 D_num
p1700[0...n]	Force controller loop gain / F_ctrl loop_gain
p1701[0...n]	Current controller reference model dead time / I_ctrRefMod t_dead
p1702[0...n]	Isd current controller precontrol scaling / Isd_ctr_prectrScal
p1703[0...n]	Isq current controller precontrol scaling / Isq_ctr_prectrScal
p1704[0...n]	Isq current controller precontrol EMF scaling / Isq_ctrl EMF scal
p1705[0...n]	Flux setpoint/actual value tracking threshold / Flux track thresh
p1715[0...n]	Force controller P gain / F_ctrl Kp
p1715[0...n]	Current controller P gain / I_ctrl Kp
p1716[0...n]	Force controller P gain weakening / F_ctrl Kp red
p1717[0...n]	Force controller integral time / F_ctrl Tn
p1717[0...n]	Current controller integral-action time / I_ctrl Tn
p1718[0...n]	Force controller D component smoothing time constant / F_ctrl D comp T
p1719[0...n]	Force controller derivative-action time / F_ctrl t_deriv
p1720[0...n]	Force controller precontrol factor / F_ctr prectr fact
p1720[0...n]	Current controller d axis p gain / Id_ctrl Kp
p1721[0...n]	Precontrol filter activation / Prectrl_filt act
p1722[0...n]	Precontrol filter type / Prectrl_filt type
p1722[0...n]	Current controller d axis integral time / I_ctrl d-axis Tn
p1724[0...n]	Precontrol filter denominator natural frequency / Prectr_filt fn_den
p1725[0...n]	Precontrol filter denominator damping / Prectrl_filt D_den
p1726[0...n]	Precontrol filter numerator natural frequency / Prectr_filt fn_num
p1726[0...n]	Quadrature arm decoupling scaling / Transv_decpl scal
p1727[0...n]	Precontrol filter numerator damping / Prectrl_filt D_num
p1727[0...n]	Quadrature arm decoupling at voltage limit scaling / TrnsvDecplVmaxScal
p1730[0...n]	Isd controller integral component shutdown threshold / Isd ctrl Tn shutd
p1731[0...n]	Isd controller combination current time component / Isd ctr I_combi T1
p1734[0...n]	Isq current controller precontrol eddy current compensation drop / Isq_ctr_prctr drop
p1735[0...n]	Isq current controller prectrl eddy current comp time constant / Isq_ctr_prectr T
p1740[0...n]	Gain resonance damping for encoderless closed-loop control / Gain res_damp
p1744[0...n]	Motor model speed threshold stall detection / MotMod n_thr stall
p1745[0...n]	Motor model error threshold stall detection / MotMod ThreshStall
p1747[0...n]	Motor model pulse technique transition speed / MotMod puls tech n
p1748[0...n]	Motor model lower changeover speed n_set -> n_act / MotMod low n_chng
p1749[0...n]	Motor model upper changeover speed / increase changeover speed / Up/incr n_chngov
p1750[0...n]	Motor model configuration / MotMod config
p1752[0...n]	Motor model changeover speed operation with encoder / MotMod n_chgov enc
p1752[0...n]	Motor model with encoder changeover velocity / MotMod enc v_chgov
p1753[0...n]	Motor model changeover speed hysteresis operation with encoder / MotMod n_chgovHysE
p1754[0...n]	Flux angle difference smoothing time / Angle diff T_smth
p1755[0...n]	Motor model changeover speed encoderless operation / MotMod n_chgSnsorl
p1755[0...n]	Motor model changeover velocity encoderless operation / MotMod v_chgSnsorl
p1757[0...n]	Motor model w/o enc. op./cl.-loop controlled stab. controller Kp / MotMod w/o enc Kp
p1758[0...n]	Motor model changeover delay time closed/open-loop control / MotMod t cl_op
p1759[0...n]	Motor model changeover delay time open/closed-loop control / MotMod t op_cl
p1760[0...n]	Motor model with encoder speed adaptation Kp / MotMod wE n_ada Kp
p1761[0...n]	Motor model with encoder speed adaptation Tn / MotMod wE n_ada Tn
p1764[0...n]	Motor model without encoder speed adaptation Kp / MotMod woE n_adaKp
p1766[0...n]	Motor model voltage model calculation enable / U_mod calc enab

p1767[0...n]	Motor model without encoder speed adaptation Tn / MotMod woE n_adaTn
p1769[0...n]	Motor model changeover delay time closed-loop control / MotMod t cl_ctrl
p1774[0...n]	Motor model offset voltage compensation alpha / MotMod offs comp A
p1775[0...n]	Motor model offset voltage compensation beta / MotMod offs comp B
p1780[0...n]	Motor model adaptation configuration / MotMod adapt conf
p1780[0...n]	Motor/converter model adaptation configuration / MotMod adapt conf
p1784[0...n]	Motor model feedback scaling / MotMod fdbk scal
p1785[0...n]	Motor model Lh adaptation Kp / MotMod Lh Kp
p1786[0...n]	Motor model Lh adaptation integral time / MotMod Lh Tn
r1787[0...n]	Motor model Lh adaptation corrective value / MotMod Lh corr
p1795[0...n]	Motor model kT adaptation smoothing time / MotMod kT T_smth
p1795[0...n]	Motor model kT adaptation integral time / MotMod kT Tn
r1797[0...n]	Motor model kT adaptation corrective value / MotMod kT corr
p1798[0...n]	Motor model pulse technique speed adaptation Kp / MotMod PulsTech Kp
p1799[0...n]	Motor model pulse technique speed adaptation Tn / MotMod PulsTech Tn
p1800[0...n]	Manipulated variable filter activation / ManVarFilt act
p1800[0...n]	Pulse frequency setpoint / Pulse freq setp
p1801[0...n]	Manipulated variable filter type / ManVarFilt type
p1802[0...n]	Manipulated variable filter denominator natural frequency / ManVarFilt fn_den
p1802[0...n]	Modulator mode / Modulator mode
p1803[0...n]	Manipulated variable filter denominator damping / ManVar_filt D_den
p1803[0...n]	Maximum modulation depth / Modulat depth max
p1804[0...n]	Manipulated variable filter numerator natural freq. / ManVarFilt fn_num
p1804[0...n]	Filter time constant smoothed modulation index / T_filt mod_idx sm
p1805[0...n]	Manipulated variable filter numerator damping / ManVarFilt D_num
p1806[0...n]	Filter time constant Vdc correction / T_filt Vdc_corr
p1811[0...n]	Pulse frequency wobbulation amplitude / Puls wobb ampl
p1814[0...n]	Vdc filter dead band for modulation switchover / Vdc filt dead band
p1820[0...n]	Invert output voltage / U_output inv
p1820[0...n]	Reverse the output phase sequence / Outp_ph_seq rev
p1821[0...n]	Direction / Direction
p1821[0...n]	Direction of rotation / Dir of rot
p1830[0...n]	Factor plane adaptation positive / Fact pl_adap pos
p1831[0...n]	Factor plane adaptation negative / Fact pl_adap neg
p1833[0...n]	Transition point compensation Q1 positive zero range / Trans pt Q1 pos
p1834[0...n]	Transition point compensation U1 positive zero range / Trans pt U1 pos
p1835[0...n]	Transition point compensation rounding 1 positive zero range / Trans pt rnd 1 pos
p1836[0...n]	Transition point compensation Q1 negative zero range / Trans pt Q1 neg
p1837[0...n]	Transition point compensation U1 negative zero range / Trans pt U1 neg
p1838[0...n]	Transition point compensation rounding 1 negative zero range / Trans pt rnd 1 neg
p1839[0...n]	Transition point compensation Q2 positive / Trans pt Q2 pos
p1840[0...n]	Transition point compensation U2 positive / Trans pt U2 pos
p1840[0...n]	Actual value correction configuration / ActVal_corr conf
p1841[0...n]	Transition point compensation rounding 2 positive / Trans pt rnd 2 pos
p1842[0...n]	Transition point compensation Q2 negative / Trans pt Q2 neg
p1843[0...n]	Transition point compensation U2 negative / Trans pt U2 neg
p1844[0...n]	Transition point compensation rounding 2 negative / Trans pt rnd 2 neg
p1845[0...n]	Transition point compensation Q3 positive saturation / TransPt Q3 pos sat
p1845[0...n]	Actual value correction evaluation factor Lsig / ActVal_cor ev Lsig
p1846[0...n]	Transition point compensation U3 positive saturation / TransPt U3 pos sat
p1846[0...n]	Actual value correction damping factor / ActV_corr D_factor
p1847[0...n]	Transition point compensation Q3 negative saturation / TransPt Q3 neg sat
p1848[0...n]	Transition point compensation U3 negative saturation / TransPt U3 neg sat
p1850[0...n]	Control voltage limiting positive / U_ctrl lim pos
p1851[0...n]	Control voltage limiting negative / U_ctrl limit neg

p1952[0...n]	Voltage emulation error final value / U_error final val
p1953[0...n]	Voltage emulation error current offset / U_error I_offset
p1954[0...n]	Voltage emulation error semiconductor voltage / U_error U_semi
p1959[0...n]	Data identification moving configuration / Dat_id mov config
p1998[0...n]	PolID circle center point / PolID circ center
p2140[0...n]	Hysteresis speed 2 / n_hysteresis 2
p2140[0...n]	Hysteresis velocity 2 / v_hysteresis 2
p2141[0...n]	Speed threshold 1 / n_thresh val 1
p2141[0...n]	Velocity threshold value 1 / v_thresh val 1
p2142[0...n]	Hysteresis speed 1 / n_hysteresis 1
p2149[0...n]	Monitoring configuration / Monit config
p2150[0...n]	Hysteresis speed 3 / n_hysteresis 3
p2150[0...n]	Hysteresis velocity 3 / v_hysteresis 3
p2153[0...n]	Velocity actual value filter time constant / v_act_filt T
p2153[0...n]	Speed actual value filter time constant / n_act_filt T
p2155[0...n]	Speed threshold 2 / n_thresh val 2
p2155[0...n]	Velocity threshold value 2 / v_thresh val 2
p2156[0...n]	On delay comparison value reached / t_on cmpr val rchd
p2161[0...n]	Speed threshold 3 / n_thresh val 3
p2161[0...n]	Velocity threshold value 3 / v_thresh val 3
p2162[0...n]	Hysteresis speed n_act > n_max / Hyst n_act>n_max
p2162[0...n]	Hysteresis velocity v_act > v_max / Hyst v_act>v_max
p2163[0...n]	Velocity threshold value 4 / v_thresh val 4
p2163[0...n]	Speed threshold 4 / n_thresh val 4
p2164[0...n]	Hysteresis velocity 4 / v_hysteresis 4
p2164[0...n]	Hysteresis speed 4 / n_hysteresis 4
p2166[0...n]	Off delay v_act = v_set / t_del_off n_i=n_so
p2166[0...n]	Off delay n_act = n_set / t_del_off n_i=n_so
p2167[0...n]	Switch-on delay n_act = n_set / t_on n_act=n_set
p2167[0...n]	On delay v_act = v_set / t_on n_act=n_set
p2174[0...n]	Torque threshold value 1 / M_thresh val 1
p2174[0...n]	Force threshold value 1 / F_thresh val 1
p2175[0...n]	Motor blocked velocity threshold / Mot lock v_thresh
p2175[0...n]	Motor blocked speed threshold / Mot lock n_thresh
p2177[0...n]	Motor blocked delay time / Mot lock t_del
p2178[0...n]	Motor stalled delay time / Mot stall t_del
p2181[0...n]	Load monitoring response / Load monit resp
p2182[0...n]	Load monitoring velocity threshold 1 / v_thresh 1
p2182[0...n]	Load monitoring speed threshold value 1 / n_thresh 1
p2183[0...n]	Load monitoring velocity threshold 2 / v_thresh 2
p2183[0...n]	Load monitoring speed threshold value 2 / n_thresh 2
p2184[0...n]	Load monitoring velocity threshold 3 / v_thresh 3
p2184[0...n]	Load monitoring speed threshold value 3 / n_thresh 3
p2185[0...n]	Load monitoring force threshold 1 upper / F_thresh 1 upper
p2185[0...n]	Load monitoring torque threshold 1 upper / M_thresh 1 upper
p2186[0...n]	Load monitoring force threshold 1 lower / F_thresh 1 lower
p2186[0...n]	Load monitoring torque threshold 1 lower / M_thresh 1 lower
p2187[0...n]	Load monitoring force threshold 2 upper / F_thresh 2 upper
p2187[0...n]	Load monitoring torque threshold 2 upper / M_thresh 2 upper
p2188[0...n]	Load monitoring force threshold 2 lower / F_thresh 2 lower
p2188[0...n]	Load monitoring torque threshold 2 lower / M_thresh 2 lower
p2189[0...n]	Load monitoring force threshold 3 upper / F_thresh 3 upper
p2189[0...n]	Load monitoring torque threshold 3 upper / M_thresh 3 upper
p2190[0...n]	Load monitoring force threshold 3 lower / F_thresh 3 lower
p2190[0...n]	Load monitoring torque threshold 3 lower / M_thresh 3 lower

p2192[0...n]	Load monitoring delay time / Load monit t_del
p2194[0...n]	Torque threshold value 2 / M_thresh val 2
p2194[0...n]	Force threshold value 2 / F_thresh val 2
p2195[0...n]	Torque utilization switch-off delay / M_util t_off
p2195[0...n]	Force utilization switch-off delay / F_util t_off
p2196[0...n]	Torque utilization scaling / M_util scal
p2201[0...n]	CO: Technology controller fixed value 1 / Tec_ctrl fix val1
p2202[0...n]	CO: Technology controller fixed value 2 / Tec_ctr fix val 2
p2203[0...n]	CO: Technology controller fixed value 3 / Tec_ctr fix val 3
p2204[0...n]	CO: Technology controller fixed value 4 / Tec_ctr fix val 4
p2205[0...n]	CO: Technology controller fixed value 5 / Tec_ctr fix val 5
p2206[0...n]	CO: Technology controller fixed value 6 / Tec_ctr fix val 6
p2207[0...n]	CO: Technology controller fixed value 7 / Tec_ctr fix val 7
p2208[0...n]	CO: Technology controller fixed value 8 / Tec_ctr fix val 8
p2209[0...n]	CO: Technology controller fixed value 9 / Tec_ctr fix val 9
p2210[0...n]	CO: Technology controller fixed value 10 / Tec_ctr fix val 10
p2211[0...n]	CO: Technology controller fixed value 11 / Tec_ctr fix val 11
p2212[0...n]	CO: Technology controller fixed value 12 / Tec_ctr fix val 12
p2213[0...n]	CO: Technology controller fixed value 13 / Tec_ctr fix val 13
p2214[0...n]	CO: Technology controller fixed value 14 / Tec_ctr fix val 14
p2215[0...n]	CO: Technology controller fixed value 15 / Tec_ctr fix val 15
p2216[0...n]	Technology controller fixed value selection method / Tec_ctr FixVal sel
p2230[0...n]	Technology controller motorized potentiometer configuration / Tec_ctr mop config
p2237[0...n]	Technology controller motorized potentiometer maximum value / Tec_ctrl mop max
p2238[0...n]	Technology controller motorized potentiometer minimum value / Tec_ctrl mop min
p2240[0...n]	Technology controller motorized potentiometer starting value / Tec_ctrl mop start
p2247[0...n]	Technology controller motorized potentiometer ramp-up time / Tec_ctr mop t_r-up
p2248[0...n]	Technology controller motorized potentiometer ramp-down time / Tec_ctrMop t_rdown
p2502[0...n]	LR encoder assignment / Encoder assignment
p2503[0...n]	LR length unit LU per 10 mm / LU per 10 mm
p2504[0...n]	LR motor/load motor distance / Mot/load motor dis
p2504[0...n]	LR motor/load motor revolutions / Mot/load motor rev
p2505[0...n]	LR motor/load load revolutions / Mot/load load rev
p2506[0...n]	LR length unit LU per load path / LU per load path
p2506[0...n]	LR length unit LU per load revolution / LU per load rev
p2519[0...n]	LR position actual value preprocessing config. DDS changeover / s_act config DDS
p2533[0...n]	LR position setpoint filter time constant / s_set_filt T
p2534[0...n]	LR velocity precontrol factor / v_prectrl fact
p2534[0...n]	LR speed precontrol factor / n_prectrl fact
p2535[0...n]	LR velocity precontrol symmetrizing filter dead time / v_prectrFlt t_dead
p2535[0...n]	LR speed precontrol symmetrizing filter dead time / n_prectrFlt t_dead
p2536[0...n]	LR velocity precontrol symmetrizing filter PT1 / v_prectrl filt PT1
p2536[0...n]	LR speed precontrol symmetrizing filter PT1 / n_prectrl filt PT1
p2538[0...n]	LR proportional gain / Kp
p2539[0...n]	LR integral time / Tn
p2546[0...n]	LR dynamic following error monitoring tolerance / s_delta_monit tol
p2567[0...n]	LR force precontrol mass / F_prectrl mass
p2567[0...n]	LR torque precontrol moment of inertia / M_prectr M_inertia
p2634[0...n]	EPOS fixed stop maximum following error / Following err max
p2720[0...n]	Load gear configuration / Load gear config
p2721[0...n]	Load gear rotary absolute encoder revolutions virtual / Abs rot rev
p2722[0...n]	Load gear position tracking tolerance window / Pos track tol
r2723[0...n]	CO: Load gear absolute value / Load gear abs_val
r2724[0...n]	CO: Load gear position difference / Load gear pos diff
p2900[0...n]	CO: Fixed value 1 [%] / Fixed value 1 [%]

p2901[0...n]	CO: Fixed value 2 [%] / Fixed value 2 [%]
p2930[0...n]	CO: Fixed value F [N] / Fixed value F [N]
p2930[0...n]	CO: Fixed value M [Nm] / Fixed value M [Nm]
p3201[0...n]	Excitation current outside the tolerance threshold value / I_exc n Tol thresh
p3202[0...n]	Excitation current outside the tolerance hysteresis / I_exc n Tol hyst
p3203[0...n]	Excitation current outside the tolerance delay time / I_exc n Tol t_del
p3204[0...n]	Flux outside the tolerance threshold value / Flux n tol thresh
p3205[0...n]	Flux outside the tolerance hysteresis / Flux n tol hyst
p3206[0...n]	Flux outside tolerance delay time / Flux n tol t_del
p3207[0...n]	Zero current signal threshold value / I_0_sig thresh
p3208[0...n]	Zero current signal hysteresis / I_0_sig hyst
p3209[0...n]	Zero current signal delay time / I_0_sig t_del
p3233[0...n]	Torque actual value filter time constant / M_act_filt T
p3236[0...n]	Speed threshold value 7 / n_thresh val 7
p3237[0...n]	Hysteresis speed 7 / n_hysteresis 7
p3238[0...n]	OFF delay n_act_motor model = n_act external / t_del n_a = n_ext
p3241[0...n]	Permissible I2t continuous value / Perm I2t cont val
p3242[0...n]	I2t maximum duration / I2t max_dur
p3243[0...n]	I2t alarm threshold / I2t alarm thresh
p3315[0...n]	Efficiency optimization 2 minimum flux limit value / Min flux lim val
p3316[0...n]	Efficiency optimization 2 maximum flux limit value / Max flux lim val
p3320[0...n]	Fluid flow machine power point 1 / Fluid_mach P1
p3321[0...n]	Fluid flow machine speed point 1 / Fluid_mach n1
p3322[0...n]	Fluid flow machine power point 2 / Fluid_mach P2
p3323[0...n]	Fluid flow machine speed point 2 / Fluid_mach n2
p3324[0...n]	Fluid flow machine power point 3 / Fluid_mach P3
p3325[0...n]	Fluid flow machine speed point 3 / Fluid_mach n3
p3326[0...n]	Fluid flow machine power point 4 / Fluid_mach P4
p3327[0...n]	Fluid flow machine speed point 4 / Fluid_mach n4
p3328[0...n]	Fluid flow machine power point 5 / Fluid_mach P5
p3329[0...n]	Fluid flow machine speed point 5 / Fluid_mach n5
p3370[0...n]	Pulse technique configuration / Pulse config
p3371[0...n]	Pulse technique excitation starting point 1 / Pulse excit pt 1
p3372[0...n]	Pulse technique excitation starting point 2 / Pulse excit pt 2
p3373[0...n]	Pulse technique excitation adaptation / Pulse excit scale
p3702[0...n]	APC load speed/motor speed weighting / APC n_load/mot wt
p3704[0...n]	APC filter activation / APC filter act
p3705[0...n]	APC filter type / APC filter type
p3706[0...n]	APC sub-sampling filter 2.x / APC sub-samp. 2.x
p3707[0...n]	APC sub-sampling filter 3.x / APC sub-samp. 3.x
p3708[0...n]	APC velocity actual value smoothing time encoder 2 / APC v_act t_sm 2
p3708[0...n]	APC speed actual value smoothing time encoder 2 / APC n_act t_sm 2
p3709[0...n]	AVS/APC velocity actual value smoothing time encoder 3 / APC v_act t_sm 3
p3709[0...n]	AVS/APC speed act value smoothing time encoder3/ w/o load sensor / APC n_act t_sm 3
p3711[0...n]	APC filter 1.1 denominator natural frequency / APC Filt1.1 fn_den
p3712[0...n]	APC filter 1.1 denominator damping / APC Filt 1.1 D_den
p3713[0...n]	APC filter 1.1 numerator natural frequency / APC Filt 1 fn_num
p3714[0...n]	APC filter 1.1 numerator damping / APC Filt 1.1 D_num
p3721[0...n]	APC filter 2.1 denominator natural frequency / APC Filt2.1 fn_den
p3722[0...n]	APC filter 2.1 denominator damping / APC Filt 2.1 D_den
p3723[0...n]	APC filter 2.1 numerator natural frequency / APC Filt2.1 fn_num
p3724[0...n]	APC filter 2.1 numerator damping / APC Filt 2.1 D_num
p3726[0...n]	APC filter 2.2 denominator natural frequency / APC Filt2.2 fn_den
p3727[0...n]	APC filter 2.2 denominator damping / APC Filt 2.2 D_den
p3728[0...n]	APC filter 2.2 numerator natural frequency / APC Filt2.2 fn_num

p3729[0...n]	APC filter 2.2 numerator damping / APC Filt 2.2 D_num
p3731[0...n]	APC filter 3.1 denominator natural frequency / APC Filt3.1 fn_den
p3732[0...n]	APC filter 3.1 denominator damping / APC Filt 3.1 D_den
p3733[0...n]	APC filter 3.1 numerator natural frequency / APC Filt3.1 fn_num
p3734[0...n]	APC filter 3.1 numerator damping / APC Filt 3.1 D_num
p3736[0...n]	APC filter 3.2 denominator natural frequency / APC Filt3.2 fn_den
p3737[0...n]	APC filter 3.2 denominator damping / APC Filt 3.2 D_den
p3738[0...n]	APC filter 3.2 numerator natural frequency / APC Filt3.2 fn_num
p3739[0...n]	APC filter 3.2 numerator damping / APC Filt 3.2 D_num
p3740[0...n]	APC torque setpoint filter 1 denominator natural frequency / APC M flt 1 fn_den
p3741[0...n]	APC torque setpoint filter 1 denominator damping / APC M filt 1 D_den
p3742[0...n]	APC torque setpoint filter 1 numerator natural frequency / APC M flt 1 fn_num
p3743[0...n]	APC torque setpoint filter 1 numerator damping / APC M flt 1 D_num
p3744[0...n]	APC torque setpoint filter 2 denominator natural frequency / APC M flt 2 fn_den
p3745[0...n]	APC torque setpoint filter 2 denominator damping / APC M filt 2 D_den
p3746[0...n]	APC torque setpoint filter 2 numerator natural frequency / APC M flt 2 fn_num
p3747[0...n]	APC torque setpoint filter 2 numerator damping / APC M filt 2 D_num
p3748[0...n]	APC velocity input scaling / APC v_input scale
p3751[0...n]	AVS/APC acceleration sensor high pass time constant / APC accel DT1 T
p3752[0...n]	AVS controller preassignment natural oscillation frequency / AVS ctr_preassn fn
p3753[0...n]	APC torque setpoint preassignment natural oscillation frequency / APC M_filt def fn
p3754[0...n]	APC torque setpoint filter preassignment gain / APC M_filt def V
p3755[0...n]	AVS/APC motor mass factor / APC mot_mass fact
p3755[0...n]	AVS/APC motor moment of inertia factor / APC M_inert factor
p3760[0...n]	APC load velocity controller 1 P gain / APC v_load ctr1 Kp
p3760[0...n]	APC load speed controller 1 P gain / APC n_load ctr1 Kp
p3761[0...n]	AVS/APC load velocity controller 1 rate time / APC v_load ctr1 Tv
p3761[0...n]	AVS/APC load speed controller 1 rate time / APC n_load ctr1 Tv
p3765[0...n]	APC load velocity controller 2 P gain / APC v_load ctr2 Kp
p3765[0...n]	APC load speed controller 2 P gain / APC n_load ctr2 Kp
p3766[0...n]	APC load velocity controller 2 rate time / APC v_load ctr2 Tv
p3766[0...n]	APC load speed controller 2 rate time / APC n_load ctr2 Tv
p3767[0...n]	APC differential position high pass time constant / APC s_Dif DT1 T
p3768[0...n]	APC differential position gain factor / APC s_dif Kp
p3774[0...n]	APC differential speed gain factor / APC n_dif Kp
p3778[0...n]	APC velocity limit / APC v_limit
p3778[0...n]	APC speed limit / APC n_limit
p3779[0...n]	APC velocity limit monitoring time / APC v_limit t
p3779[0...n]	APC speed limit monitoring time / APC n_limit t
p3800[0...n]	Sync-line-drive activation / Sync act
p3801[0...n]	Sync-line-drive drive object number / Sync DO_no
p3806[0...n]	Sync-line-drive frequency difference threshold value / Sync f_diff thresh
p3809[0...n]	Sync-line-drive phase setpoint / Sync phase setp
p3811[0...n]	Sync-line-drive frequency limiting / Sync f_lim
p3813[0...n]	Sync-line-drive phase synchronism threshold value / Sync Ph_sync thrsh
p3815[0...n]	Sync-line-drive voltage difference threshold value / Sync U_diff thresh
p3820[0...n]	Friction characteristic value n0 / Friction n0
p3820[0...n]	Friction characteristic value v0 / Friction v0
p3821[0...n]	Friction characteristic value n1 / Friction n1
p3821[0...n]	Friction characteristic value v1 / Friction v1
p3822[0...n]	Friction characteristic value n2 / Friction n2
p3822[0...n]	Friction characteristic value v2 / Friction v2
p3823[0...n]	Friction characteristic value n3 / Friction n3
p3823[0...n]	Friction characteristic value v3 / Friction v3
p3824[0...n]	Friction characteristic value n4 / Friction n4

p3824[0...n]	Friction characteristic value v4 / Friction v4
p3825[0...n]	Friction characteristic value n5 / Friction n5
p3825[0...n]	Friction characteristic value v5 / Friction v5
p3826[0...n]	Friction characteristic value n6 / Friction n6
p3826[0...n]	Friction characteristic value v6 / Friction v6
p3827[0...n]	Friction characteristic value n7 / Friction n7
p3827[0...n]	Friction characteristic value v7 / Friction v7
p3828[0...n]	Friction characteristic value n8 / Friction n8
p3828[0...n]	Friction characteristic value v8 / Friction v8
p3829[0...n]	Friction characteristic value n9 / Friction n9
p3829[0...n]	Friction characteristic value v9 / Friction v9
p3830[0...n]	Friction characteristic value M0 / Friction M0
p3830[0...n]	Friction characteristic value F0 / Friction F0
p3831[0...n]	Friction characteristic value M1 / Friction M1
p3831[0...n]	Friction characteristic value F1 / Friction F1
p3832[0...n]	Friction characteristic value M2 / Friction M2
p3832[0...n]	Friction characteristic value F2 / Friction F2
p3833[0...n]	Friction characteristic value M3 / Friction M3
p3833[0...n]	Friction characteristic value F3 / Friction F3
p3834[0...n]	Friction characteristic value M4 / Friction M4
p3834[0...n]	Friction characteristic value F4 / Friction F4
p3835[0...n]	Friction characteristic value M5 / Friction M5
p3835[0...n]	Friction characteristic value F5 / Friction F5
p3836[0...n]	Friction characteristic value M6 / Friction M6
p3836[0...n]	Friction characteristic value F6 / Friction F6
p3837[0...n]	Friction characteristic value M7 / Friction M7
p3837[0...n]	Friction characteristic value F7 / Friction F7
p3838[0...n]	Friction characteristic value M8 / Friction M8
p3838[0...n]	Friction characteristic value F8 / Friction F8
p3839[0...n]	Friction characteristic value M9 / Friction M9
p3839[0...n]	Friction characteristic value F9 / Friction F9
p3843[0...n]	Friction characteristic frictional torque diff. smoothing time / Frict M_diff t_sm
p3844[0...n]	Friction characteristic number changeover point upper / FricNo chng_pt up
p3846[0...n]	Friction characteristic record ramp-up/ramp-down time / Frict rec t_RU/RD
p3847[0...n]	Friction characteristic record warm-up time / Frict rec t_warm
r3925[0...n]	Identification final display / Ident final_disp
r3927[0...n]	Motor data identification induction motor data determined / MotID ASM dat det
r3928[0...n]	Motor data identification synchronous motor data determined / MotId PMSM dat det
p3940[0...n]	Motor/controller data calculation / Mot/ctrl_data calc
r3998[0...n]	First drive commissioning / First drv_comm
p5200[0...n]	Current setpoint filter 5 ... 10 activation / I_setp_filt act
p5201[0...n]	Current setpoint filter 5 type / I_set_filt 5 type
p5202[0...n]	Current setpoint filter 5 denominator natural frequency / I_set_filt5 fn_den
p5203[0...n]	Current setpoint filter 5 denominator damping / I_set_filt 5 D_den
p5204[0...n]	Current setpoint filter 5 numerator natural frequency / I_set_filt5 fn_num
p5205[0...n]	Current setpoint filter 5 numerator damping / I_set_filt 5 D_num
p5206[0...n]	Current setpoint filter 6 type / I_set_filt 6 type
p5207[0...n]	Current setpoint filter 6 denominator natural frequency / I_set_filt6 fn_den
p5208[0...n]	Current setpoint filter 6 denominator damping / I_set_filt 6 D_den
p5209[0...n]	Current setpoint filter 6 numerator natural frequency / I_set_filt6 fn_num
p5210[0...n]	Current setpoint filter 6 numerator damping / I_set_filt 6 D_num
p5211[0...n]	Current setpoint filter 7 type / I_set_filt 7 type
p5212[0...n]	Current setpoint filter 7 denominator natural frequency / I_set_filt7 fn_den
p5213[0...n]	Current setpoint filter 7 denominator damping / I_set_filt 7 D_den
p5214[0...n]	Current setpoint filter 7 numerator natural frequency / I_set_filt7 fn_num

p5215[0...n]	Current setpoint filter 7 numerator damping / I_set_filt 7 D_num
p5216[0...n]	Current setpoint filter 8 type / I_set_filt 8 type
p5217[0...n]	Current setpoint filter 8 denominator natural frequency / I_set_filt8 fn_den
p5218[0...n]	Current setpoint filter 8 denominator damping / I_set_filt 8 D_den
p5219[0...n]	Current setpoint filter 8 numerator natural frequency / I_set_filt8 fn_num
p5220[0...n]	Current setpoint filter 8 numerator damping / I_set_filt 8 D_num
p5221[0...n]	Current setpoint filter 9 type / I_set_filt 9 type
p5222[0...n]	Current setpoint filter 9 denominator natural frequency / I_set_filt9 fn_den
p5223[0...n]	Current setpoint filter 9 denominator damping / I_set_filt 9 D_den
p5224[0...n]	Current setpoint filter 9 numerator natural frequency / I_set_filt9 fn_num
p5225[0...n]	Current setpoint filter 9 numerator damping / I_set_filt 9 D_num
p5226[0...n]	Current setpoint filter 10 type / I_set_filt 10 type
p5227[0...n]	Current setpoint filter 10 denominator natural frequency / I_set_filt1 fn_den
p5228[0...n]	Current setpoint filter 10 denominator damping / I_set_filt10 D_den
p5229[0...n]	Current setpoint filter 10 numerator natural frequency / I_set_filt 10 fn
p5230[0...n]	Current setpoint filter 10 numerator damping / I_set_filt10 D_num
p5250[0...n]	Compensation configuration / Comp config
p5256[0...n]	Cogging torque compensation direction reversal hysteresis / Cog_M_comp hyst
p5265[0...n]	Periodic position error compensation amplitude 1 / Pos err comp ampl1
p5266[0...n]	Periodic position error compensation angle 1 / Pos err comp ang 1
p5267[0...n]	Periodic position error compensation amplitude 2 / Pos err comp ampl2
p5268[0...n]	Periodic position error compensation angle 2 / Pos err comp ang 2
p5271[0...n]	Online / One Button Tuning configuration / Ot OBT config
p5272[0...n]	Online tuning dynamic factor / Ot dyn_factor
p5273[0...n]	Online tuning dynamic factor load / Ot dyn_factor load
p5275[0...n]	Online / One Button Tuning dynamic response time constant / Ot dyn T
r5276[0...n]	Online / One Button Tuning maximum Kv factor estimated / Ot Kv estimated
r5277[0...n]	Online/One Button Tuning precontrol symmetrizing time estimated / Ot FFW estim
p5280[0...n]	Current setpoint filter adaptation configuration / Filt adapt config
p5281[0...n]	Current setpoint filter adaptation assignment / Filt adapt assign
p5282[0...n]	Current setpoint filter adaptation limit frequency lower / Filt adapt f lower
p5283[0...n]	Current setpoint filter adaptation limit frequency upper / Filt adapt f upper
p5284[0...n]	Current setpoint filter adaptation activation threshold / Filt adapt thresh
r5285[0...n]	Current setpoint filter adaptation actual frequency / Filt adapt act f
p5300[0...n]	Autotuning selection / Autotuning select
p5301[0...n]	One Button Tuning configuration / OBT config
p5302[0...n]	Online tuning configuration / Ot config
r5306[0...n]	Autotuning status / Autotuning stat
p5307[0...n]	Activate One Button Tuning test signal / Act OBT test sig
p5308[0...n]	One Button Tuning test signal distance limiting / OBT test sig lim
p5309[0...n]	One Button Tuning test signal duration / OBT test sig dur
p5310[0...n]	Moment of inertia precontrol configuration / J_est config
r5311[0...n]	Moment of inertia precontrol status word / J_prectrl ZSW
p5312[0...n]	Moment of inertia precontrol linear positive / J_est lin pos
p5313[0...n]	Moment of inertia precontrol constant positive / J_est const pos
p5314[0...n]	Moment of inertia precontrol linear negative / J_est lin neg
p5315[0...n]	Moment of inertia precontrol constant negative / J_est const neg
p5316[0...n]	Inertia precontrol change time inertia / J_precontrl t_ch J
p5316[0...n]	Moment of inertia precontrol change time moment of inertia / J_precontrl t_ch J
p5322[0...n]	Moment of inertia determination configuration / J_determine config
p5323[0...n]	Moment of inertia determination lower frequency limit / J_determ f_lim low
p5324[0...n]	Moment of inertia determination upper frequency limit / J_determ f_lim up
p6277[0...n]	Reverse field excitation speed setpoint rotat field inversion / RFE n_set revers
p6278[0...n]	Reverse field excit speed setp rotat field inversion hysteresis / n_inverse IE Hyst
p6700[0...n]	Voltage model angle smoothing / U_mod ang smooth

p7035[0...n]	Par_circuit circulating current control operating mode / I_cct_ctrl mode
p7036[0...n]	Par_circuit circulating current control proportional gain / Circ_I Kp
p7037[0...n]	Par_circuit circulating current control integral time / I_circ Tn
p7038[0...n]	Par_circuit circulating current control limit / I_circ limit

2.3.3 Parameters for encoder data sets (EDS)

Note

References: SINAMICS S120 Function Manual Drive Functions
Chapter "Data sets"

The following list contains the parameters that are dependent on the encoder data sets.

Product: SINAMICS S120/S150, Version: 5103400, Language: eng, Type: EDS

p0141[0...n]	Encoder interface (Sensor Module) component number / Enc_interf comp_no
p0142[0...n]	Encoder component number / Encoder comp_no
p0144[0...n]	Sensor Module detection via LED / SM detection LED
p0145[0...n]	Activate/deactivate encoder interface / Enc_intf act/deact
r0146[0...n]	Encoder interface active/inactive / Enc_intf act/inact
r0147[0...n]	Sensor Module EEPROM data version / SM EEPROM version
r0148[0...n]	Sensor Module firmware version / SM FW version
p0400[0...n]	Encoder type selection / Enc_typ sel
p0402[0...n]	Gearbox type selection / Gearbox type sel
p0404[0...n]	Encoder configuration effective / Enc_config eff
p0405[0...n]	Square-wave encoder track A/B / Sq-wave enc A/B
p0407[0...n]	Linear encoder grid division / Enc grid div
p0408[0...n]	Rotary encoder pulse number / Rot enc pulse No.
p0410[0...n]	Encoder inversion actual value / Enc inv act value
p0411[0...n]	Measuring gear configuration / Meas gear config
p0412[0...n]	Measuring gear absolute encoder rotary revolutions virtual / Abs rot rev
p0413[0...n]	Measuring gear position tracking tolerance window / Pos track window
p0414[0...n]	Redundant coarse position value relevant bits (identified) / Relevant bits
p0415[0...n]	Gx_XIST1 Coarse position safe most significant bit (identified) / Gx_XIST1 safe MSB
p0416[0...n]	Non safety-relevant meas. steps position value POS1 (detected) / nsrPos1
p0417[0...n]	Encoder safety comparison algorithm (detected) / Safety comp_algo
p0418[0...n]	Fine resolution Gx_XIST1 (in bits) / Enc fine Gx_XIST1
p0419[0...n]	Fine resolution absolute value Gx_XIST2 (in bits) / Enc fine Gx_XIST2
p0420[0...n]	Encoder connection / Enc_connection
p0421[0...n]	Absolute encoder rotary multiturn resolution / Enc abs multiturn
p0422[0...n]	Absolute encoder linear measuring step resolution / Enc abs meas step
p0423[0...n]	Absolute encoder rotary singleturn resolution / Enc abs singleturn
p0424[0...n]	Encoder linear zero mark distance / Enc lin ZM_dist
p0425[0...n]	Encoder rotary zero mark distance / Enc rot dist ZM
p0426[0...n]	Encoder zero mark differential distance / Enc ZM Dif_dist
p0427[0...n]	Encoder SSI baud rate / Enc SSI baud rate
p0428[0...n]	Encoder SSI monoflop time / Enc SSI t_monoflop
p0429[0...n]	Encoder SSI configuration / Enc SSI config
p0430[0...n]	Sensor Module configuration / SM config
p0431[0...n]	Angular commutation offset / Ang_com offset
p0432[0...n]	Gearbox factor encoder revolutions / Grbx_fact enc_rev
p0433[0...n]	Gearbox factor motor/load revolutions / Grbx_fact mot_rev
p0434[0...n]	Encoder SSI error bit / Enc SSI error bit
p0435[0...n]	Encoder SSI alarm bit / Enc SSI alarm bit

p0436[0...n]	Encoder SSI parity bit / Enc SSI parity bit
p0437[0...n]	Sensor Module configuration extended / SM config ext
p0438[0...n]	Squarewave encoder filter time / Enc t_filt
p0439[0...n]	Encoder ramp-up time / Enc ramp-up time
p0440[0...n]	Copy encoder serial number / Copy enc ser_no
p0441[0...n]	Encoder commissioning serial number part 1 / Enc comm ser_no 1
p0442[0...n]	Encoder commissioning serial number part 2 / Enc comm ser_no 2
p0443[0...n]	Encoder commissioning serial number part 3 / Enc comm ser_no 3
p0444[0...n]	Encoder commissioning serial number part 4 / Enc comm ser_no 4
p0445[0...n]	Encoder commissioning serial number part 5 / Enc comm ser_no 5
p0446[0...n]	Encoder SSI number of bits before the absolute value / Enc SSI bit before
p0447[0...n]	Encoder SSI number of bits absolute value / Enc SSI bit val
p0448[0...n]	Encoder SSI number of bits after the absolute value / Enc SSI bit after
p0449[0...n]	Encoder SSI number of bits filler bits / Enc SSI fill bits
p0453[0...n]	Pulse encoder evaluation zero speed measuring time / Enc_ev n_0 t_meas
p0454[0...n]	Sensor Module configuration extended Part 2 / SM config ext 2
p0476[0...n]	Piston zero point calibration value / Piston 0 pt calib
p0493[0...n]	Zero mark selection input terminal / ZM_sel inp_term
p0494[0...n]	Equivalent zero mark input terminal / ZM_equiv inp_term
p2507[0...n]	LR absolute encoder adjustment status / Abs_enc_adj stat
p2525[0...n]	CO: LR encoder adjustment offset / Enc_adj offset
p2733[0...n]	CO: LR encoder adjustment DDS / Enc_adjust DDS
p4600[0...n]	Motor temperature sensor 1 sensor type / Temp_sens 1 type
p4601[0...n]	Motor temperature sensor 2 sensor type / Temp_sens 2 type
p4602[0...n]	Motor temperature sensor 3 sensor type / Temp_sens 3 type
p4603[0...n]	Motor temperature sensor 4 sensor type / Temp_sens 4 type
p4630[0...n]	Absolute encoder linear measuring step factor / Abs_enc meas fact
p4631[0...n]	Cylinder distance per encoder revolution / x_cyl per rev
p4643[0...n]	DRIVE-CLiQ encoder repeat telegram / DQ enc repeat
p4649[0...n]	Encoder function reserve amplitude limit incremental signals / Enc fct amp inc
p4662[0...n]	Encoder characteristic type / Enc char_type
p4663[0...n]	Encoder characteristic K0 / Enc char K0
p4664[0...n]	Encoder characteristic K1 / Enc char K1
p4665[0...n]	Encoder characteristic K2 / Enc char K2
p4666[0...n]	Encoder characteristic K3 / Enc char K3
p4670[0...n]	Analog sensor configuration / Ana_sens config
p4671[0...n]	Analog sensor input / Ana_sens inp
p4672[0...n]	Analog sensor channel A voltage at actual value zero / Ana_sens A U at 0
p4673[0...n]	Analog sensor channel A voltage per encoder period / Ana_sens A U/per
p4674[0...n]	Analog sensor channel B voltage at actual value zero / Ana_sens B U at 0
p4675[0...n]	Analog sensor channel B voltage per encoder period / Ana_sens B U/per
p4676[0...n]	Analog sensor range limit threshold / Ana_sens lim thr
p4677[0...n]	Analog sensor LVDT configuration / Ana_sens LVDT conf
p4678[0...n]	Analog sensor LVDT ratio / An_sens LVDT ratio
p4679[0...n]	Analog sensor LVDT phase / An_sens LVDT ph
p4680[0...n]	Zero mark monitoring tolerance permissible / ZM_monit tol perm
p4681[0...n]	Zero mark monitoring tolerance window limit 1 positive / ZM tol lim 1 pos
p4682[0...n]	Zero mark monitoring tolerance window limit 1 negative / ZM tol lim 1 neg
p4683[0...n]	Zero mark monitoring tolerance window alarm threshold positive / ZM tol A_thr pos
p4684[0...n]	Zero mark monitoring tolerance window alarm threshold negative / ZM tol A_thr neg
p4685[0...n]	Speed actual value mean value generation / n_act mean val
p4686[0...n]	Zero mark minimum length / ZM min length

2.3.4 Parameters for motor data sets (MDS)

Note

References: SINAMICS S120 Function Manual Drive Functions
Chapter "Data sets"

The following list contains the parameters that are dependent on the motor data sets.

Product: SINAMICS S120/S150, Version: 5103400, Language: eng, Type: MDS

p0131[0...n]	Motor component number / Mot comp_no
p0133[0...n]	Motor configuration / Motor config
p0300[0...n]	Motor type selection / Mot type sel
p0301[0...n]	Motor code number selection / Mot code No. sel
r0302[0...n]	Motor code number of motor with DRIVE-CLiQ / Mot code mot w/ DQ
r0303[0...n]	Motor with DRIVE-CLiQ status word / Motor w DQ ZSW
p0304[0...n]	Rated motor voltage / Mot U_rated
p0305[0...n]	Rated motor current / Mot I_rated
p0306[0...n]	Number of motors connected in parallel / Motor qty
p0307[0...n]	Rated motor power / Mot P_rated
p0308[0...n]	Rated motor power factor / Mot cos phi rated
p0309[0...n]	Rated motor efficiency / Mot eta_rated
p0310[0...n]	Cylinder piston diameter / Cyl piston diam
p0310[0...n]	Rated motor frequency / Mot f_rated
p0311[0...n]	Cylinder piston rod diameter A side / Cyl PistRodDiam A
p0311[0...n]	Rated motor speed / Mot n_rated
p0311[0...n]	Rated motor velocity / Mot v_rated
p0312[0...n]	Cylinder piston rod diameter B side / Cyl rod diam B
p0312[0...n]	Rated motor torque / Mot M_rated
p0312[0...n]	Rated motor force / Mot F_rated
p0313[0...n]	Cylinder piston stroke / Cyl pist stroke
r0313[0...n]	Motor pole pair number, actual (or calculated) / Mot PolePairNo act
p0314[0...n]	Cylinder dead volume A side / Cyl_dead vol A
p0314[0...n]	Motor pole pair number / Mot pole pair No.
p0315[0...n]	Cylinder dead volume B side / Cyl_dead vol B
p0315[0...n]	Motor pole pair width / MotPolePair width
p0316[0...n]	Motor torque constant / Mot kT
p0316[0...n]	Motor force constant / Mot kT
p0317[0...n]	Motor voltage constant / Mot kE
p0318[0...n]	Motor stall current / Mot I_standstill
p0319[0...n]	Motor stall torque / Mot M_standstill
p0319[0...n]	Motor stall force / Mot F_standstill
p0320[0...n]	Motor rated magnetizing current/short-circuit current / Mot I_mag_rated
p0322[0...n]	Maximum motor speed / Mot n_max
p0322[0...n]	Motor maximum velocity / Mot v_max
p0323[0...n]	Maximum motor current / Mot I_max
p0324[0...n]	Winding maximum speed / Winding n_max
p0324[0...n]	Winding maximum velocity / Winding v_max
p0325[0...n]	Motor pole position identification current 1st phase / Mot PolID I 1st Ph
p0326[0...n]	Motor stall torque correction factor / Mot M_stall_corr
p0326[0...n]	Motor stall force correction factor / Mot F_stall_corr
p0327[0...n]	Optimum motor load angle / Mot phi_load opt
p0328[0...n]	Motor reluctance torque constant / Mot kT_reluctance
p0328[0...n]	Motor reluctance force constant / Mot kT_reluctance
p0329[0...n]	Motor pole position identification current / Mot PolID current
r0330[0...n]	Rated motor slip / Mot slip_rated

r0331[0...n]	Actual motor magnetizing current/short-circuit current / Mot I_mag_rtd act
r0332[0...n]	Rated motor power factor / Mot cos phi rated
r0333[0...n]	Rated motor torque / Mot M_rated
r0334[0...n]	Actual motor-torque constant / Mot kT act
r0334[0...n]	Actual motor force constant / Mot kT act
p0335[0...n]	Motor cooling type / Mot cool type
r0336[0...n]	Actual rated motor frequency / Mot f_rated act
r0337[0...n]	Rated motor EMF / Mot EMF_rated
p0338[0...n]	Motor limit current / Mot I_limit
r0339[0...n]	Rated motor voltage / Mot U_rated
p0341[0...n]	Cylinder weight / Cyl weight
p0341[0...n]	Motor moment of inertia / Mot M_inert
p0341[0...n]	Motor weight / Mot weight
p0342[0...n]	Ratio between the total and motor moment of inertia / Mot MomInert Ratio
p0343[0...n]	Valve/cylinder configuration / Valve/cyl config
p0343[0...n]	Rated motor current identified / Mot I_rated ident
p0344[0...n]	Cylinder mounting position A side / Cyl mount pos A
p0344[0...n]	Motor weight (for the thermal motor model) / Mot weight th mod
r0345[0...n]	Nominal motor starting time / Mot t_start_rated
p0346[0...n]	Line length A side / Line length A
p0346[0...n]	Motor excitation build-up time / Mot t_excitation
p0347[0...n]	Line length B side / Line length B
p0347[0...n]	Motor de-excitation time / Mot t_de-excitat
p0348[0...n]	Internal line diameter / Line_inner diam
p0348[0...n]	Speed at the start of field weakening Vdc = 600 V / n_strt field weak
p0348[0...n]	Velocity at the start of field weakening Vdc = 600 V / v_strt field weak
p0350[0...n]	Motor stator resistance cold / Mot R_stator cold
p0352[0...n]	Cable resistance / R_cable
p0353[0...n]	Motor series inductance / Mot L_series
p0354[0...n]	Motor rotor resistance cold / damping resistance d axis / Mot R_r cold/R_D d
p0355[0...n]	Motor damping resistance q axis / Mot R_damp q
p0356[0...n]	Motor stator leakage inductance / Mot L_stator leak.
p0357[0...n]	Motor stator inductance d axis / Mot L_stator d
p0358[0...n]	Motor rotor leakage inductance / damping inductance d axis / Mot L_r leak / LDd
p0359[0...n]	Motor damping inductance q axis / Mot L_damp q
p0360[0...n]	Motor magnetizing inductance/magn. inductance d axis saturated / Mot Lh/Lh d sat
p0361[0...n]	Motor magnetizing inductance q axis saturated / Mot L_magn q sat
p0362[0...n]	Motor saturation characteristic flux 1 / Mot saturat.flux 1
p0363[0...n]	Motor saturation characteristic flux 2 / Mot saturat.flux 2
p0364[0...n]	Motor saturation characteristic flux 3 / Mot saturat.flux 3
p0365[0...n]	Motor saturation characteristic flux 4 / Mot saturat.flux 4
p0366[0...n]	Motor saturation characteristic I_mag 1 / Mot sat. I_mag 1
p0367[0...n]	Motor saturation characteristic I_mag 2 / Mot sat. I_mag 2
p0368[0...n]	Motor saturation characteristic I_mag 3 / Mot sat. I_mag 3
p0369[0...n]	Motor saturation characteristic I_mag 4 / Mot sat. I_mag 4
r0370[0...n]	Motor stator resistance cold / Mot R_stator cold
r0372[0...n]	Total power unit cable resistance / PU cable R tot
r0373[0...n]	Motor rated stator resistance / Mot R_stator rated
r0374[0...n]	Motor rotor resistance cold / damping resistance d axis / Mot R_r cold/R_D d
r0375[0...n]	Motor damping resistance q axis / Mot R_damp q
r0376[0...n]	Rated motor rotor resistance / Mot rated R_rotor
r0377[0...n]	Motor leakage inductance total / Mot L_leak total
r0378[0...n]	Motor stator inductance d axis / Mot L_stator d
r0380[0...n]	Motor damping inductance d axis / Mot L_damp d
r0381[0...n]	Motor damping inductance q axis / Mot L_damp q

r0382[0...n]	Motor magnetizing inductance transformed / Lh d axis saturated / Mot L_m tr/Lhd sat
r0383[0...n]	Motor magnetizing inductance q axis saturated / Mot L_magn q sat
r0384[0...n]	Motor rotor time constant / damping time constant d axis / Mot T_rotor/T_Dd
r0385[0...n]	Motor damping time constant q axis / Mot L_damping q
r0386[0...n]	Motor stator leakage time constant / Mot T_stator leak
r0387[0...n]	Motor stator leakage time constant q axis / Mot T_Sleak /T_Sq
p0388[0...n]	Motor stall torque correction factor for p1402.6 = 1 / Mot M_stallCorrNew
p0389[0...n]	Excitation rated no-load current / Exc I_noload_rated
p0390[0...n]	Rated excitation current / Exc I_rated
p0391[0...n]	Current controller adaptation starting point Kp / I_adapt pt Kp
p0392[0...n]	Current controller adaptation starting point Kp adapted / I_adapt pt Kp adap
p0393[0...n]	Current controller adaptation p gain adaptation / I_adapt Kp adapt
p0393[0...n]	Current controller adaptation P gain scaling / I_adapt Kp scal
r0395[0...n]	Actual stator resistance / R_stator act
r0396[0...n]	Actual rotor resistance / R_rotor act
p0397[0...n]	Angle magnetic decoupling maximum angle / Magn decpl max_ang
p0398[0...n]	Angle magn decoupling (cross saturation) coeff 1 / Magn decoupl C1
p0399[0...n]	Angle magn decoupling (cross saturation) coeff 3 / Magn decoupl C3
p0530[0...n]	Bearing version selection / Bearing vers sel
p0531[0...n]	Bearing code number selection / Bearing codeNo sel
p0532[0...n]	Bearing maximum speed / Bearing n_max
p0532[0...n]	Bearing maximum velocity / Bearing v_max
p0541[0...n]	Load gearbox code number / Load grbx CodeNo
p0542[0...n]	Load gearbox maximum speed / Load grbx n_max
p0543[0...n]	Load gearbox maximum torque / Load grbx M_max
p0544[0...n]	Load gearbox overall ratio numerator / Load grbx ratio N
p0545[0...n]	Load gearbox overall ratio denominator / Load grbx ratio D
p0546[0...n]	Load gearbox direction of rotation inversion / Load grbx dir inv
p0547[0...n]	Load gearbox moment of inertia / Load gbx M_inertia
p0550[0...n]	Brake version / Brake version
p0551[0...n]	Brake code number / Brake code no.
p0552[0...n]	Maximum brake speed / Brake n_max
p0553[0...n]	Brake holding torque / Brake M_hold
p0554[0...n]	Brake moment of inertia / Brake M_inertia
p0600[0...n]	Motor temperature sensor for monitoring / Mot temp_sensor
p0601[0...n]	Motor temperature sensor type / Mot_temp_sens type
p0604[0...n]	Mot_temp_mod 2: sensor alarm threshold / Mod 2: sens A_thr
p0605[0...n]	Mot_temp_mod 1/2 sensor threshold and temperature value / Mod 1/2 sens thr_T
p0606[0...n]	Mot_temp_mod 2: sensor timer / Mod 2:sens timer
p0607[0...n]	Temperature sensor fault timer / Sensor fault time
p0610[0...n]	Motor overtemperature response / Mot temp response
p0611[0...n]	I2t motor model thermal time constant / I2t mot_mod T
p0612[0...n]	Mot_temp_mod activation / Mot_temp_mod act
p0613[0...n]	Mot_temp_mod 1/3 ambient temperature / Mod 1/3 amb_temp
p0614[0...n]	Thermal resistance adaptation reduction factor / Therm R_adapt red
p0615[0...n]	Mot_temp_mod 1 (I2t) fault threshold / I2t F thresh
p0616[0...n]	Motor overtemperature alarm threshold 1 / Mot temp alarm 1
p0617[0...n]	Stator thermally relevant iron component / Stat therm iron
p0618[0...n]	Stator thermally relevant copper component / Stat therm copper
p0619[0...n]	Rotor thermally relevant weight / Rotor therm weight
p0620[0...n]	Thermal adaptation, stator and rotor resistance / Mot therm_adapt R
p0621[0...n]	Identification stator resistance after restart / Rst_ident Restart
p0622[0...n]	Motor excitation time for Rs_ident after switching on again / t_excit Rs_id
p0624[0...n]	Motor temperature offset PT100 / Mot T_offset PT100
p0625[0...n]	Motor ambient temperature during commissioning / Mot T_ambient

p0626[0...n]	Motor overtemperature, stator core / Mot T_over core
p0627[0...n]	Motor overtemperature, stator winding / Mot T_over stator
p0628[0...n]	Motor overtemperature rotor / Mot T_over rotor
p0629[0...n]	Stator resistance reference / R_stator ref
r0630[0...n]	Mot_temp_mod ambient temperature / Mod T_ambient
r0631[0...n]	Mot_temp_mod stator iron temperature / Mod T_stator
r0632[0...n]	Mot_temp_mod stator winding temperature / Mod T_winding
r0633[0...n]	Mot_temp_mod rotor temperature / Mod rotor temp
p0634[0...n]	Q flux flux constant unsaturated / PSIQ KPSI UNSAT
p0635[0...n]	Q flux quadrature axis current constant unsaturated / PSIQ KIQ UNSAT
p0636[0...n]	Q flux direct axis current constant unsaturated / PSIQ KID UNSAT
p0637[0...n]	Q flux flux gradient saturated / PSIQ Grad SAT
p0643[0...n]	Overvoltage protection for synchronous motors / Overvolt_protect
p0645[0...n]	Motor kT characteristic kT1 / Mot kT char kT1
p0646[0...n]	Motor kT characteristic kT3 / Mot kT char kT3
p0647[0...n]	Motor kT characteristic kT5 / Mot kT char kT5
p0648[0...n]	Motor kT characteristic kT7 / Mot kT char kT7
p0650[0...n]	Actual motor operating hours / Mot t_oper act
p0651[0...n]	Motor operating hours maintenance interval / Mot t_op maint
p0652[0...n]	Motor stator resistance scaling / Mot R_stator scal
p0653[0...n]	Motor stator leakage inductance scaling / Mot L_S_leak scal
p0655[0...n]	Motor magnetizing inductance d axis saturated scaling / Mot L_m d sat scal
p0656[0...n]	Motor magnetizing inductance q axis saturated scaling / Mot L_m q sat scal
p0657[0...n]	Motor damping inductance d axis scaling / Mot L_damp d scal
p0658[0...n]	Motor damping inductance q axis scaling / Mot L_damp q scal
p0659[0...n]	Motor damping resistance d axis scaling / Mot R_damp d scal
p0660[0...n]	Motor damping resistance q axis scaling / Mot R_damp q scal
p0690[0...n]	Brushless excitation rated current / BLE I_rated
p0691[0...n]	Reverse field excitation correction factor / RFE correction
p0692[0...n]	Reverse field excitation iron resistance / RFE iron resist
p0693[0...n]	Brushless excitation inductance d-axis saturated / BLE L_d sat
p0694[0...n]	Reverse field excitation leakage inductance / RFE L_leak
p0696[0...n]	Brushless excitation ratio / BLE ratio
p0697[0...n]	Brushless excitation number of pole pairs / BLE PolePairNo
p0698[0...n]	Brushless excitation, excitation resistance / BLE exc_resist
p0699[0...n]	Excitation configuration / Exc config
p0826[0...n]	Motor changeover motor number / Mot_chng mot No.
p0827[0...n]	Motor changeover status word bit number / Mot_chg ZSW bitNo.
p1231[0...n]	Armature short-circuit / DC braking configuration / ASC/DCBRK config
p1232[0...n]	DC braking braking current / DCBRK I_brake
p1233[0...n]	DC braking time / DCBRK time
p1234[0...n]	Speed at the start of DC braking / DCBRK n_start
p1234[0...n]	DC braking starting velocity / DCBRK v_start
p1236[0...n]	Ext. armature short-cct. contactor feedback signal monit. time / ASC ext t_monit
p1237[0...n]	External armature short-circuit delay time when opening / ASC ext t_wait
p1710[0...n]	Current controller adaptation in-line axis starting point Kp / Id_adapt pt Kp
p1711[0...n]	Current ctrl adaptation in-line axis starting point Kp adapted / Id_adap pt Kp adap
p1712[0...n]	Current controller adaptation in-line axis p gain adaptation / Id_adapt Kp adapt
p1909[0...n]	Motor data identification control word / MotID STW
p1958[0...n]	Rotating measurement ramp-up/ramp-down time / Rot meas t_r up/dn
p1958[0...n]	Moving measurement ramp-up/ramp-down time / Mov meas t_r up/dn
p1959[0...n]	Rotating measurement configuration / Rot meas config
p1959[0...n]	Moving measurement configuration / Mov meas config
p1980[0...n]	PolID technique / PolID technique
p1981[0...n]	PolID distance max / PolID distance max

p1982[0...n]	PolID selection / PolID selection
p1991[0...n]	Motor changeover angular commutation correction / Ang_com corr
p1993[0...n]	PolID motion-based current / PolID I mot_bas
p1994[0...n]	PolID motion-based rise time / PolID T mot_bas
p1995[0...n]	PolID motion-based gain / PolID kp mot_bas
p1996[0...n]	PolID motion-based integral time / PolID Tn mot_bas
p1997[0...n]	PolID motion-based smoothing time / PolID t_sm mot_bas
p1999[0...n]	Ang. commutation offset calibr. and PolID scaling / Com_ang_offs scal
p3011[0...n]	MotID current control adaptation lower starting point identified / I_adapt low ident
p3012[0...n]	MotID current control adaptation upper starting point identified / I_adapt up ident
p3013[0...n]	MotId current controller adaptation P gain identified / I_adapt Kp ident
p3049[0...n]	MotId Speed at start of field weakening identified / ident
p3049[0...n]	MotId Speed at start of field weakening identified / v_Fieldweak ident
p3050[0...n]	MotorId stator resistance identified / R_stator ident
p3054[0...n]	MotId rotor resistance identified / R_rotor ident
p3056[0...n]	MotId stator leakage inductance identified / L_stator leak
p3058[0...n]	MotId rotor leakage inductance identified / L_rotor leak
p3060[0...n]	MotId magnetizing inductance identified / MotId Lh ident
p3090[0...n]	PolID elasticity-based configuration / PolID el config
p3091[0...n]	PolID elasticity-based ramp time / PolID el t_ramp
p3092[0...n]	PolID elasticity-based wait time / PolID el t_wait
p3093[0...n]	PolID elasticity-based measurement number / PolID el meas
p3094[0...n]	PolID elasticity-based deflection expected / PolID el defl exp
p3095[0...n]	PolID elasticity-based deflection permissible / PolID el defl exp
p3096[0...n]	PolID elasticity-based current / PolID el curr
p4610[0...n]	Motor temperature sensor 1 sensor type MDS / Temp sens1 typ MDS
p4611[0...n]	Motor temperature sensor 2 sensor type MDS / Temp sens2 typ MDS
p4612[0...n]	Motor temperature sensor 3 sensor type MDS / Temp sens3 typ MDS
p4613[0...n]	Motor temperature sensor 4 sensor type MDS / Temp sens4 typ MDS
p5350[0...n]	Mot_temp_mod 1/3 boost factor at standstill / Standst boost_fact
p5390[0...n]	Mot_temp_mod 1/3 alarm threshold / A thresh
p5391[0...n]	Mot_temp_mod 1/3 fault threshold / F thresh
r5398[0...n]	Mot_temp_mod 1/3 alarm threshold image p5390 / A thr image p5390
r5399[0...n]	Mot_temp_mod 1/3 fault threshold image p5391 / F thr image p5391

2.3.5 Parameters for power unit data sets (PDS)

Note

References: SINAMICS S120 Function Manual Drive Functions
Chapter "Data sets"

The following list contains the parameters that are dependent on the power unit data sets.

Product: SINAMICS S120/S150, Version: 5103400, Language: eng, Type: PDS

p0121[0...n]	Power unit component number / PU comp_no
p0124[0...n]	Power unit detection via LED / PU detection LED
p0125[0...n]	Activate/deactivate power unit components / PU_comp act/deact
r0126[0...n]	Power unit components active/inactive / PU comp act/inact
r0127[0...n]	Power unit EEPROM data version / PU EEPROM version
r0128[0...n]	Power unit firmware version / PU FW version
r0200[0...n]	Power unit code number actual / PU code no. act
p0201[0...n]	Power unit code number / PU code no
r0203[0...n]	Actual power unit type / PU actual type
r0204[0...n]	Power unit hardware properties / PU HW property
p0205[0...n]	Valve rated voltage / Valve Un
p0206[0...n]	Valve transition point flow rate / Valve trans flow
p0207[0...n]	Valve transition point voltage / Valve trans U
p0208[0...n]	Valve rated flow rate / Valve Vn
p0209[0...n]	Valve rated pressure drop / Valve Pn
p0211[0...n]	Valve, flow rate ratio A to B side / Flowrate_ratio A/B
p0216[0...n]	Valve natural frequency / Valve fn
p0217[0...n]	Valve damping / Valve D
p0218[0...n]	Cylinder safety configuration / Cyl safety config
p0222[0...n]	Valve precontrol pressure / Valve p_prectrl
p0230[0...n]	Manipulated variable inhibit time / Manip var t_inhib
p0231[0...n]	Power enable inhibit time / Pow_enab t_inhib
p0232[0...n]	Valve monitoring time / Valve t_monit
p0240[0...n]	Pressure sensor A reference value at 10 V / Sensor A ref 10V
p0241[0...n]	Pressure sensor A offset correction / Sensor A offs
p0242[0...n]	Pressure sensor B reference value at 10 V / Sensor B ref 10V
p0243[0...n]	Pressure sensor B offset correction / Sensor B offs
p0244[0...n]	Pressure sensor P reference value at 10 V / Sensor P ref 10V
p0245[0...n]	Pressure sensor P offset correction / Sensor P offs_corr
p0251[0...n]	Power unit heat sink fan operating hours counter / PU fan t_oper
p0254[0...n]	Operating hours counter power unit fan inside the converter / PU inner fan t_op
r0277[0...n]	Power unit heat sink fan wear counter / PU fan wear_count
p0895[0...n]	BI: Activate/deactivate power unit components / PU_comp act/deact
p1832[0...n]	Valve offset / Valve offset
p3469[0...n]	Latch delay time correction, zero crossover detection / t_latch corr PLL
p3901[0...n]	Power unit EEPROM Vdc offset calibration / PU EEPROM Vdc offs
p7001[0...n]	Par_circuit power units enable / PU enable
r7002[0...n]	CO: Par_circuit status power units / Status PU
r7020[0...n]	CO: Par_circuit deviation current in phase U / Phase U curr dev
r7021[0...n]	CO: Par_circuit deviation current in phase V / Phase V curr dev
r7022[0...n]	CO: Par_circuit deviation current in phase W / Phase W curr dev
r7030[0...n]	CO: Par_circuit DC link voltage deviation / Vdc deviation
p7040[0...n]	Par_circuit correction valve lockout time phase U / Comp t_lockout U
p7042[0...n]	Par_circuit correction valve lockout time phase V / Comp t_lockout V
p7044[0...n]	Par_circuit correction valve lockout time phase W / Comp t_lockout W
r7050[0...n]	Par_circuit circulating current phase U / Circ_I_phase U

r7051[0...n]	Par_circuit circulating current phase V / Circ_I_phase V
r7052[0...n]	Par_circuit circulating current phase W / Circ_I_phase W
r7199[0...n]	Par_circuit power unit temperatures capacitor air discharge / PU temp capacitor
r7200[0...n]	Par_circuit power unit overload I2t / PU overload I2t
r7201[0...n]	CO: Par_circuit power unit temperatures max. inverter / PU temp max inv
r7202[0...n]	Par_circuit power unit temperatures max. depletion layer / PU TempMaxDepLayer
r7203[0...n]	CO: Par_circuit power unit temperatures max. rectifier / PU temp max rect
r7204[0...n]	CO: Par_circuit power unit temperatures air intake / PU temp air intake
r7205[0...n]	Par_circuit power unit temperatures electronics / PU temp electr
r7206[0...n]	Par_circuit power unit temperatures inverter 1 / PU temp inv 1
r7207[0...n]	Par_circuit power unit temperatures inverter 2 / PU temp inv 2
r7208[0...n]	Par_circuit power unit temperatures inverter 3 / PU temp inv 3
r7209[0...n]	Par_circuit power unit temperatures inverter 4 / PU temp inv 4
r7210[0...n]	Par_circuit power unit temperatures inverter 5 / PU temp inv 5
r7211[0...n]	Par_circuit power unit temperatures inverter 6 / PU temp inv 6
r7212[0...n]	Par_circuit power unit temperatures inverter 1 / PU temp rect 1
r7213[0...n]	Par_circuit power unit temperatures inverter 2 / PU temp rect 2
r7214[0...n]	Par_circuit power unit temperatures depletion layer 1 / PU temp DepLayer 1
r7215[0...n]	Par_circuit power unit temperatures depletion layer 2 / PU temp DepLayer 2
r7216[0...n]	Par_circuit power unit temperatures depletion layer 3 / PU temp DepLayer 3
r7217[0...n]	Par_circuit power unit temperatures depletion layer 4 / PU temp DepLayer 4
r7218[0...n]	Par_circuit power unit temperatures depletion layer 5 / PU temp DepLayer 5
r7219[0...n]	Par_circuit power unit temperatures depletion layer 6 / PU temp DepLayer 6
r7220[0...n]	CO: Par_circuit drive output current maximum / Drv I_outp max
r7220[0...n]	Infeed par_circuit absolute current value motoring permissible / INF I_abs mot perm
r7221[0...n]	Infeed par_circuit absolute current regenerating permissible / INF I_absRegenPerm
r7222[0...n]	CO: Par_circuit absolute current actual value / I_act abs val
r7223[0...n]	CO: Par_circuit phase current actual value phase U / I_phase U act val
r7224[0...n]	CO: Par_circuit phase current actual value phase V / I_phase V act val
r7225[0...n]	CO: Par_circuit phase current actual value phase W / I_phase W act val
r7226[0...n]	CO: Par_circuit phase current actual value phase U offset / I_phase U offset
r7227[0...n]	CO: Par_circuit phase current actual value phase V offset / I_phase V offset
r7228[0...n]	CO: Par_circuit phase current actual value phase W offset / I_phase W offset
r7229[0...n]	CO: Par_circuit phase current actual value sum U, V, W / I_phase sum UVW
r7230[0...n]	CO: Par_circuit DC link voltage actual value / Vdc_act
r7231[0...n]	CO: Par_circuit phase voltage actual value phase U / U_phase U act val
r7232[0...n]	CO: Par_circuit phase voltage actual value phase V / U_phase V act val
r7233[0...n]	CO: Par_circuit phase voltage actual value phase W / U_phase W act val
r7240[0...n]	Par_circuit gating unit status word 1 / Gating unit ZSW1
p7786[0...n]	Service report / Service report
p9671[0...n]	SI module identifier Hydraulic Module / Module ID HM
p9671[0...n]	SI module identifier Motor Module / Module ID MM

2.4 Parameters for write protection and know-how protection

Note

References: SINAMICS S120 Function Manual Drive Functions
Chapter "Write protection and know-how protection"

2.4.1 Parameters with "WRITE_NO_LOCK"

The following list contains the parameters with the "WRITE_NO_LOCK" attribute.

These parameters are not affected by the write protection.

Product: SINAMICS S120/S150, Version: 5103400, Language: eng, Type: WRITE_NO_LOCK

p0003	BOP access level / BOP acc_level
p0009	Device commissioning parameter filter / Dev comm par_filt
p0124[0...n]	Main component detection using LED / M_comp detect LED
p0124[0...n]	Power unit detection via LED / PU detection LED
p0144[0...n]	Sensor Module detection via LED / SM detection LED
p0144[0...n]	Voltage Sensing Module detection via LED / VSM detection LED
p0154[0...n]	Voltage Sensing Module 2 detection via LED / VSM2 detection LED
p0154	Terminal Module detection via LED / TM detection LED
p0154	DRIVE-CLiQ Hub Module detection via LED / Hub detection LED
p0972	Drive unit reset / Drv_unit reset
p0976	Reset and load all parameters / Reset load all par
p0977	Save all parameters / Save all par
p1903	BI: Data identification control / Data ident ctrl
p2035	Fieldbus interface USS PIV drive object number / Fieldbus USS DO_no
p2102	BI: Acknowledge all faults / Ackn all faults
p2111	Alarm counter / Alarm counter
p3100	RTC time stamp mode / RTC t_stamp mode
p3101[0...1]	Setting UTC time / Set UTC time
p3103	UTC synchronization process / UTC sync_process
p3950	Service parameter / Serv par
p3981	Acknowledge drive object faults / Ackn DO faults
p3985	Master control mode selection / PcCtrl mode select
p4700[0...1]	Trace control / Trace control
p4701	Measuring function control / Meas fct ctrl
p4703[0...1]	Trace options / Trace options
p4707	Measurement function configuration / Meas fct config
p4710[0...1]	Trace trigger condition / Trace Trig_cond
p4711[0...5]	Trace trigger signal / Trace trig_signal
p4712[0...1]	Trace trigger threshold / Trace trig_thresh
p4713[0...1]	Trace tolerance band trigger threshold 1 / Trace trig thr 1
p4714[0...1]	Trace tolerance band trigger threshold 2 / Trace trig thr 2
p4715[0...1]	Trace bit mask trigger, bit mask / Trace trig mask
p4716[0...1]	Trace bit mask trigger trigger condition / Trace Trig_cond
p4717	Measuring function number of averaging operations / Meas fct avg qty
p4718	Measuring function number of stabilizing periods / MeasFct StabPerQty
p4720[0...1]	Trace recording cycle / Trace record_cyc
p4721[0...1]	Trace recording time / Trace record_time
p4722[0...1]	Trace trigger delay / Trace trig_delay
p4723[0...1]	Trace time slice cycle / Trace cycle
p4724[0...1]	Trace average in the time range / Trace average

p4730[0...5]	Trace record signal 0 / Trace record sig 0
p4731[0...5]	Trace record signal 1 / Trace record sig 1
p4732[0...5]	Trace record signal 2 / Trace record sig 2
p4733[0...5]	Trace record signal 3 / Trace record sig 3
p4734[0...5]	Trace record signal 4 / Trace record sig 4
p4735[0...5]	Trace record signal 5 / Trace record sig 5
p4736[0...5]	Trace record signal 6 / Trace record sig 6
p4737[0...5]	Trace record signal 7 / Trace record sig 7
p4780[0...1]	Trace physical address signal 0 / Trace PhyAddr Sig0
p4781[0...1]	Trace physical address signal 1 / Trace PhyAddr Sig1
p4782[0...1]	Trace physical address signal 2 / Trace PhyAddr Sig2
p4783[0...1]	Trace physical address signal 3 / Trace PhyAddr Sig3
p4784[0...1]	Trace physical address signal 4 / Trace PhyAddr Sig4
p4785[0...1]	Trace physical address signal 5 / Trace PhyAddr Sig5
p4786[0...1]	Trace physical address signal 6 / Trace PhyAddr Sig6
p4787[0...1]	Trace physical address signal 7 / Trace PhyAddr Sig7
p4789[0...1]	Trace physical address trigger signal / Trace PhyAddr Trig
p4795	Trace memory bank changeover / Trace mem changeov
p4800	Function generator control / FG control
p4810	Function generator mode / FG operating mode
p4812	Function generator physical address / FG phys address
p4813	Function generator physical address reference value / FG phys addr ref
p4815[0...2]	Function generator drive number / FG drive number
p4816	Function generator output signal integer number scaling / FG outp integ scal
p4819	BI: Function generator control / FG control
p4820	Function generator signal shape / FG signal shape
p4821	Function generator period / FG period duration
p4822	Function generator pulse width / FG pulse width
p4823	Function generator bandwidth / FG bandwidth
p4824	Function generator amplitude / FG amplitude
p4825	Function generator 2nd amplitude / FG 2nd amplitude
p4826	Function generator offset / FG offset
p4827	Function generator ramp-up time to offset / FG ramp-up offset
p4828	Function generator lower limit / FG lower limit
p4829	Function generator upper limit / FG upper limit
p4830	Function generator time slice cycle / FG time slice
p4831	Function generator amplitude scaling / FG amplitude scal
p4832[0...2]	Function generator amplitude scaling / FG amplitude scal
p4833[0...2]	Function generator offset scaling / FG offset scal
p4835[0...4]	Function generator free measurement function scaling / FG fr MeasFct scal
p4840[0...1]	MTrace cycle number setting / Cycle number
p7761	Write protection / Write protection
p7770	NVRAM action / NVRAM action
p8550	AOP LOCAL/REMOTE / AOP LOCAL/REMOTE
p8806[0...53]	Identification and Maintenance 1 / I&M 1
p8807[0...15]	Identification and Maintenance 2 / I&M 2
p8808[0...53]	Identification and Maintenance 3 / I&M 3
p9210	Flashing component number / Flash comp_no.
p9211	Flash function / Flash fct.
p9484	BICO interconnections search signal source / BICO S_src srch

2.4.2 Parameters with "KHP_WRITE_NO_LOCK"

The following list contains the parameters with the "KHP_WRITE_NO_LOCK" attribute.

These parameters are not affected by the know-how protection.

Product: SINAMICS S120/S150, Version: 5103400, Language: eng, Type: KHP_WRITE_NO_LOCK

p0003	BOP access level / BOP acc_level
p0009	Device commissioning parameter filter / Dev comm par_filt
p0124[0...n]	Main component detection using LED / M_comp detect LED
p0124[0...n]	Power unit detection via LED / PU detection LED
p0144[0...n]	Sensor Module detection via LED / SM detection LED
p0144[0...n]	Voltage Sensing Module detection via LED / VSM detection LED
p0154[0...n]	Voltage Sensing Module 2 detection via LED / VSM2 detection LED
p0154	Terminal Module detection via LED / TM detection LED
p0154	DRIVE-CLiQ Hub Module detection via LED / Hub detection LED
p0972	Drive unit reset / Drv_unit reset
p0976	Reset and load all parameters / Reset load all par
p0977	Save all parameters / Save all par
p2035	Fieldbus interface USS PIV drive object number / Fieldbus USS DO_no
p2040	COMM INT monitoring time / COMM INT t_monit
p2040	Fieldbus interface monitoring time / Fieldbus t_monit
p2102	BI: Acknowledge all faults / Ackn all faults
p2111	Alarm counter / Alarm counter
p3100	RTC time stamp mode / RTC t_stamp mode
p3101[0...1]	Setting UTC time / Set UTC time
p3103	UTC synchronization process / UTC sync_process
p3105[0...3]	NTP server IP address / NTP IP addr
p3106	NTP time zone / Time zone
p3950	Service parameter / Serv par
p3981	Acknowledge drive object faults / Ackn DO faults
p3985	Master control mode selection / PcCtrl mode select
p7761	Write protection / Write protection
p7770	NVRAM action / NVRAM action
p8550	AOP LOCAL/REMOTE / AOP LOCAL/REMOTE
p8806[0...53]	Identification and Maintenance 1 / I&M 1
p8807[0...15]	Identification and Maintenance 2 / I&M 2
p8808[0...53]	Identification and Maintenance 3 / I&M 3
p8835	CBE20 firmware selection / CBE20 FW sel
p8839[0...1]	PZD interface hardware assignment / PZD IF HW assign
p8840	COMM BOARD monitoring time / CB t_monit
p9210	Flashing component number / Flash comp_no.
p9211	Flash function / Flash fct.
p9484	BICO interconnections search signal source / BICO S_src srch

2.4.3 Parameters with "KHP_ACTIVE_READ"

The following list contains the parameters with the "KHP_ACTIVE_READ" attribute.

These parameters can also be read with activated know-how protection.

Product: SINAMICS S120/S150, Version: 5103400, Language: eng, Type: KHP_ACTIVE_READ

p0015	Macro drive unit / Macro drv unit
p0015	Macro drive object / Macro DO
p0100	IEC/NEMA Standards / IEC/NEMA Standards
p0101[0...n]	Drive object numbers / DO numbers
p0103[0...n]	Application-specific view / Appl_spec view
p0105	Activate/deactivate drive object / DO act/deact
p0107[0...n]	Drive object type / DO type
p0108[0...n]	Drive objects function module / DO fct_mod
p0120	Number of valve data sets (PDS) / PDS count
p0120	Number of Power unit Data Sets (PDS) / PDS count
p0121[0...n]	Power unit component number / PU comp_no
p0125[0...n]	Activate/deactivate power unit components / PU_comp act/deact
p0130	Number of Motor Data Sets (MDS) / MDS count
p0131[0...n]	Motor component number / Mot comp_no
p0140	Number of Encoder Data Sets (EDS) / EDS count
p0140	Number of VSM data sets / VSM count
p0141[0...n]	Encoder interface (Sensor Module) component number / Enc_interf comp_no
p0141[0...n]	VSM component number / VSM comp_no
p0142[0...n]	Encoder component number / Encoder comp_no
p0145[0...n]	Activate/deactivate encoder interface / Enc_intf act/deact
p0145[0...n]	Voltage Sensing Module activate/deactivate / VSM act/deact
p0150	Number of VSM data sets / VSM dat_sets qty.
p0150	VSM2 data sets selection / VSM2 dat_sets qty
p0151[0...n]	Voltage Sensing Module component number / VSM comp_no
p0151[0...n]	Voltage Sensing Module 2 component number / VSM2 comp_no
p0151	Terminal Module component number / TM comp_no
p0151[0...1]	DRIVE-CLiQ Hub Module component number / Hub comp_no
p0161	Valve component number / Valve comp_no
p0161	HF Damping Module component number / HF Damp comp_no
p0161	Option board component number / Opt board comp_no
p0162	HF Choke Module component number / HF Choke comp_no
p0162	CU-LINK slave component number / CU-LINK comp_no
p0170	Number of Command Data Sets (CDS) / CDS count
p0171[0...n]	Drive objects function module 1 / DO fct_mod 1
p0172[0...n]	Drive objects function module 2 / DO fct_mod 2
p0173[0...n]	Drive objects function module 3 / DO fct_mod 3
p0180	Number of Drive Data Sets (DDS) / DDS count
p0199[0...24]	Drive object name / DO name
p0300[0...n]	Motor type selection / Mot type sel
p0304[0...n]	Rated motor voltage / Mot U_rated
p0305[0...n]	Rated motor current / Mot I_rated
p0349	System of units motor equivalent circuit diagram data / Unit_sys mot ESB
p0400[0...n]	Encoder type selection / Enc_typ sel
p0505	Selecting the system of units / Unit sys select
p0595	Technological unit selection / Tech unit select
p0806	BI: Inhibit master control / PcCtrl inhibit
p0864	BI: System pressure available / p_sys available
p0864	BI: Infeed operation / INF operation
p0870	BI: Close main contactor / Close main cont
p0915[0...29]	TM15 PROFIdrive PZD setpoint assignment / TM15 PD PZD setp

p0915[0...35]	TM17 PROFIdrive PZD setpoint assignment / TM17 PD PZD setp
p0916[0...29]	TM15 PROFIdrive PZD actual value assignment / TM15 PD PZD actVal
p0916[0...35]	TM17 PROFIdrive PZD actual value assignment / TM17 PD PZD actVal
p0922	IF1 PROFIdrive PZD telegram selection / IF1 PZD telegr
p0978[0...n]	List of drive objects / List of the DO
p1080[0...n]	Minimum velocity / v_min
p1080[0...n]	Minimum speed / n_min
p1082[0...n]	Maximum velocity / v_max
p1082[0...n]	Maximum speed / n_max
p1520[0...n]	CO: Force limit upper/motoring / F_max upper/mot
p1520[0...n]	CO: Torque limit upper/motoring / M_max upper/mot
p1520[0...n]	CO: Torque limit upper / M_max upper
p1532[0...n]	CO: Force offset, force limit / F_max offset
p1532[0...n]	CO: Torque limit offset / M_max offset
p1544	Travel to fixed stop evaluation torque reduction / TfS M_red eval
p1544	Travel to fixed stop evaluation force reduction / TfS F_red eval
p2000	Reference velocity / v_ref
p2000	Reference speed reference frequency / n_ref f_ref
p2000	Reference velocity reference frequency / v_ref f_ref
p2000	Reference frequency / f_ref
p2001	Reference voltage / Reference voltage
p2002	Reference pressure / p_ref
p2002	Reference current / I_ref
p2003	Reference force / F_ref
p2003	Reference torque / M_ref
p2003	Reference force / Reference force
p2005	Reference angle / Reference angle
p2006	Reference temperature / Ref temp
p2007	Reference acceleration / a_ref
p2030	Field bus interface protocol selection / Field bus protocol
p2038	IF1 PROFIdrive STW/ZSW interface mode / PD STW/ZSW IF mode
p2079	IF1 PROFIdrive PZD telegram selection extended / IF1 PZD telegr ext
p4956[0...n]	TEC DO-specific activation / TEC DO act
p5043[0...6]	Spindle speed limits / n_limits
p7763	KHP OEM exception list number of indices for p7764 / KHP OEM qty p7764
p7764[0...n]	KHP OEM exception list / KHP OEM excep list
p7852	Number of indices for r7853 / Qty indices r7853
p8836	SINAMICS link node address / Node address
p8864	IF1 PROFIdrive first supplementary telegram selection / IF1 Pd 1. sup_tel
p8865	IF1 PROFIdrive second supplementary telegram selection / IF1 Pd 2. sup_tel
p8870[0...15]	SINAMICS Link PZD receive word / PZD recv word
p8870[0...31]	SINAMICS Link PZD receive word / PZD recv word
p8871[0...15]	SINAMICS Link PZD send word / PZD send word
p8871[0...31]	SINAMICS Link PZD send word / PZD send word
p8872[0...15]	SINAMICS Link PZD receive address / PZD recv adr.
p8872[0...31]	SINAMICS Link PZD receive address / PZD recv adr.
p9500	SI Motion monitoring clock cycle (Control Unit) / SI Mtn clock CU
p9601	SI enable functions integrated in the drive (Control Unit) / SI enable fct CU
p9810	SI PROFIsafe address (Motor Module) / SI Ps address MM
p9902	Target topology number of indices / TargetTopo indices

Function diagrams 3

Content

3.1 Table of contents

3.2 Explanations on the function diagrams

Function diagrams

Parameters

Symbol	Meaning
Parameter name [Unit] rxxxx[x]	Monitoring parameter with index [x].
Parameter name [Unit] rxxxx[x...y]	Monitoring parameter with index range [x...y].
[aaaa.b] Parameter name from ... to [Unit] pxxxx[y...z] (Def)	Setting parameter (if the parameter appears a multiple number of times, then diagram references are specified).
[aaaa.b] Parameter name from ... to [Unit] pxxxx[y] (Def)	Setting parameter with index (if the parameter appears a multiple number of times, then diagram references are specified).

Connectors

Symbol	Meaning
name pxxxx (xxxx)	Connector input CI.
name pxxxx[y] (xxxx [x])	Connector input CI with index [y].
name pxxxx[y...z] (xxxx [y])	Connector input CI with index range [y...z].
name [unit] rxxxx[y...z]	Connector output CO with [dimension unit] and index range [y...z].
name [unit] rxxxx[y]	Connector output CO [dimension unit] and with index [y].

CI: Connector Input
CO: Connector Output
CO/BO: Connector/Binector Output

Binectors

Symbol	Meaning
name pxxxx (Def)	Binector input BI with factory setting (Def).
name pxxxx[y] (Def)	Binector input BI with index [y] and factory setting (Def).
name pxxxx[y...z] (Def)	Binector input BI with index range [y...z] and factory setting (Def).
name rxxxx	Binector output BO.
name rxxxx.y	Binector output BO with bit y.

BI: Binector Input
BO: Binector Output

Connectors/binectors

Symbol	Meaning
Parameter name rxxxx rxxxx	Connector/binector output CO/BO.

Cross references between diagrams

Symbol	Meaning
1 . . . 8 Signal path 1 Signal path 8 [aaaa.1] … [aaaa.8]	The function diagrams are sub-divided into 8 signal paths in order to facilitate orientation.
Text → [aaaa.b]	Text = Unique signal designation aaaa = Signal goes to target diagram aaaa b = Signal goes to signal path b
[cccc.d] → Text	Text = Unique signal designation cccc = Signal comes from source diagram cccc d = Signal comes from signal path d

To "function diagram name" [aaaa.b] = for binectors.

Cross references for control bits

Symbol	Meaning
pxxxx [aaaa.b]	pxxxx= Original parameter of signal aaaa = Signal comes from source diagram aaaa b = Signal comes from signal path b

Data sets

Symbol	Meaning
pxxxx[C]	Parameter belongs to the Command Data Set (CDS).
pxxxx[D]	Parameter belongs to the Drive Data Set (DDS).
pxxxx[E]	Parameter belongs to the Encoder Data Set (EDS).
pxxxx[M]	Parameter belongs to the Motor Data Set (MDS).
pxxxx[P]	Parameter belongs to the Power unit Data Set (PDS).

Information on parameters, binectors, connectors

Symbol	Meaning
Parameter name	Parameter name (up to 18 characters).
[Unit]	[dimension unit] rotatory axis, for linear axis see list of parameters.
rxxxx[y] or rxxxx[y...z] or rxxxx[y].ww or rxxxx.ww	"r" = monitoring parameter. These parameters are read-only "xxxx" stands for the parameter number, "[y]" specifies the valid index, "[y...z]" specifies the applicable index range ".ww" specifies the bit number (e.g. 0...15).
pxxxx[y] or pxxxx[y...z] or pxxxx[y].ww or pxxxx.ww	"p" = setting parameter. These parameters can be changed. "xxxx" stands for the parameter number, "[y]" specifies the applicable index, "[y...z]" specifies the applicable index range ".ww" specifies the bit number (e.g. 0...15).
from ... to	Value range.
(xxxx[y].ww)	Parameter number (xxxx) with Index number [y] and bit number .ww.
(Def)	Factory setting.
(Def.w)	Factory setting with bit number as prefix.
[aaaa.b]	Diagram references for setting parameters that occur a multiple number of times. [Function diagram number, signal path]

Sampling times

Symbol	Meaning
pxxxx[Y] (ZZZ.ZZ μs)	Setting parameter with factory setting to select the time slice.
p0115[y] (Drive Object)	Time slice depending on the pre-setting p0112 of the drive object. "[y]" specifies the applicable index.
p0115[y] (Motor Modules)	Time slice depending on the rated pulse frequency of the motor module. "[y]" specifies the applicable index.
PROFIdrive sampling time	Presetting for IF1 in p2048. Presetting for IF2 in p8848. The bus clock applies to a clock synchronized operate to IF1 or IF2.
CAN bus sampling time	Presetting in p8848.
Background	There is no fixed sampling time for this function. The processing takes place in background. The cycle time depends on the computational load of the control unit.
Not relevant	A static state is displayed here. The sampling time data is not relevant.

1	2	3	4	5	6	7	8

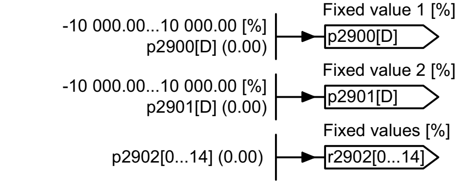
DO: All objects	fp_1020_51_eng.vsd	Function diagram	- 1020 -
Explanations on the function diagrams - Explanation of the symbols (part 1)	27.11.15 V05.01.01	SINAMICS	

Fig. 3-1 1020 – Explanation of the symbols (part 1)

Fig. 3-2 1021 – Explanation of the symbols (part 2)

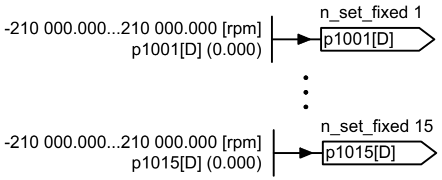
Pre-assigned binectors and connectors

Fixed percentage values

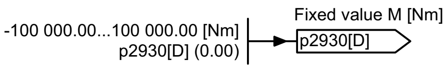


p2902[0] = +0 %	p2902[5] = +100 %	p2902[10] = -20 %
p2902[1] = +5 %	p2902[6] = +150 %	p2902[11] = -50 %
p2902[2] = +10 %	p2902[7] = +200 %	p2902[12] = -100 %
p2902[3] = +20 %	p2902[8] = -5 %	p2902[13] = -150 %
p2902[4] = +50 %	p2902[9] = -10 %	p2902[14] = -200 %

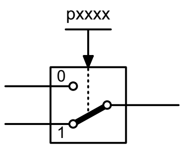
Fixed speed values



Fixed torque value



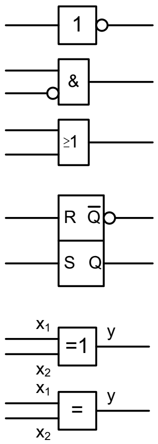
Switch symbol



Simple changeover switch

The switch position is shown according to the factory setting of pxxxx (in this case switch position 1).

Symbols for logic functions



NOT element

Logical inversion (negation).

AND element

With logical inversion of an input.

OR element

R/S flip-flop

S/R = setting input/reset input
Q = non-inverted output
$\overline{Q}$ = inverted output
With a simultaneous 1-signal at the R and S inputs, the S input dominates.

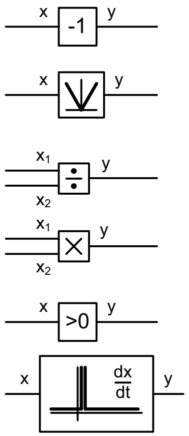
Exclusiv-OR/XOR

y = 1 when $x_1 \neq x_2$ is.

Comparator

y = 1 when $x_1 = x_2$ is.

Symbols for computational and closed-loop control functions



Sign reversal

y = -x

Absolute value generator

y = |x|

Divider

$y = \frac{x_1}{x_2}$

Multiplier

$y = x_1 * x_2$

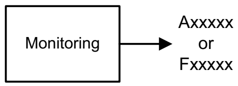
Comparator

y = 1 if the analog signal x > 0, i.e. is positive.

Differentiator

$Y = \frac{dx}{dt}$

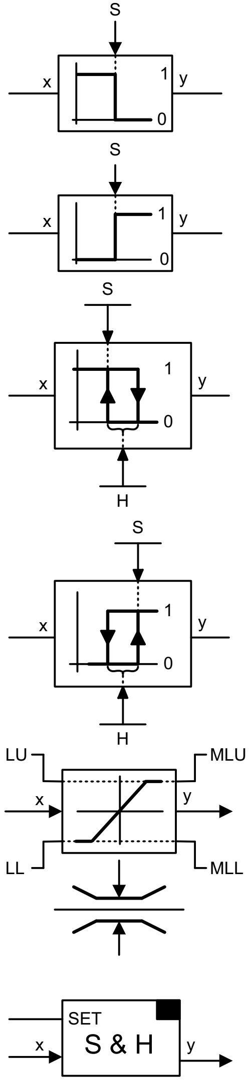
Symbol for monitoring



Monitoring

In the bottom right-hand corner of the diagram.

Symbols for computational and closed-loop control functions



Threshold value switch 1/0

Outputs at y a logical "1" if x < S.

Threshold value switch 0/1

Outputs at y a logical "1" if x > S.

Threshold value switch 1/0 with hysteresis

Outputs at y a logical "1" if x < S.

If x >= S + H, then y returns to 0.

Threshold value switch 0/1 with hysteresis

Outputs at y a logical "1" if x > S.

If x <= S – H, then y returns to 0.

Limiter

x is limited to the upper limit LU and the lower limit LL and output at y.
The digital signals MLU and MLL have the value "1", if the upper or lower limit is active.

Sample & Hold element

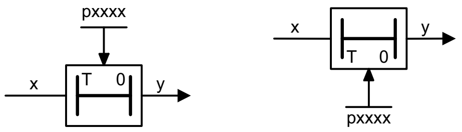
Sample and hold element.
y = x if SET = 1
(not saved retentively at POWER OFF)

1	2	3	4	5	6	7	8

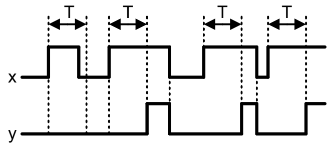
DO: All objects	fp_1021_51_eng.vsd	Function diagram	- 1021 -
Explanations on the function diagrams - Explanation of the symbols (part 2)	26.11.15 V05.01.01	SINAMICS	

Fig. 3-3 1022 – Explanation of the symbols (part 3)

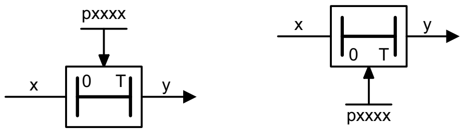
Switch-on delay



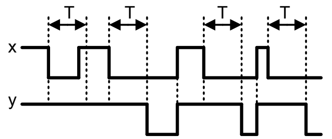
The digital signal x must have the value "1" without any interruption during the time T before output y changes to "1".



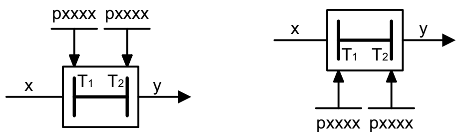
Switch-off delay



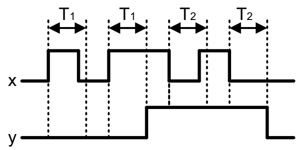
The digital signal x must have the value "0" without interruption during the time T before output y changes to "0".



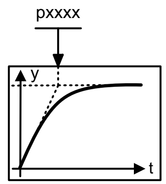
Delay (switch-on and switch-off)



The digital signal x must have the value "1" without interruption during time T_1 or must have the value "0" during time T_2 before output y changes its signal state.



PT1 element



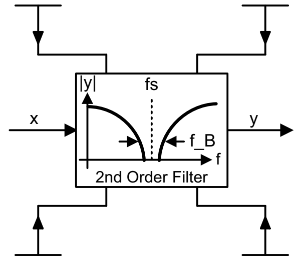
Delay element, first order.

pxxxx = time constant

2nd-order filter (bandstop/general filter)

Natural frequency, numerator
fn_n
pxxxx

Damping, numerator
D_n
pxxxx



Natural frequency, denominator
fn_d
pxxxx

Damping, denominator
D_d
pxxxx

Used as bandstop filter - center frequency fs: fn_n = fs
fn_d = fs

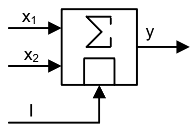
- bandwidth f_B: D_n = 0

$$D\_d = \frac{f\_B}{2 \cdot fs}$$

Transfer function when used as general filter

$$H(s) = \frac{\left(\frac{s}{2\,\pi\,fn\_n}\right)^2 + \frac{2 \cdot D\_n}{2\,\pi\,fn\_n} \cdot s + 1}{\left(\frac{s}{2\,\pi\,fn\_d}\right)^2 + \frac{2 \cdot D\_d}{2\,\pi\,fn\_d} \cdot s + 1}$$

Analog adder can be activated



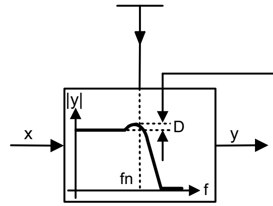
The following applies to I = 1 signal: $y = x_1 + x_2$

The following applies to I = 0 signal: $y = x_1$

PT2 low pass

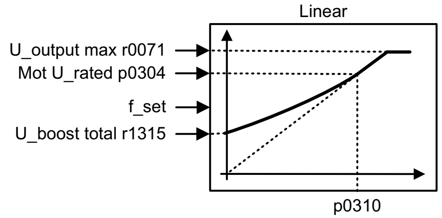
Natural frequency, denominator
fn_d
pxxxx

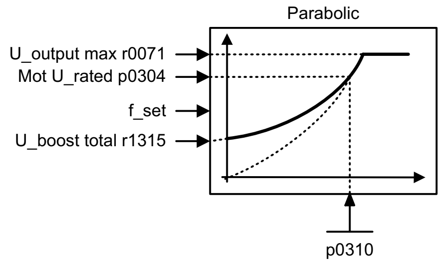
Damping, denominator
D_d
pxxxx

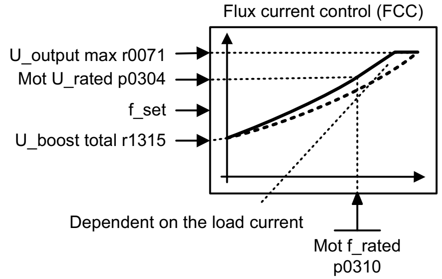


Transfer function

$$H(s) = \frac{1}{\left(\frac{s}{2\,\pi\,fn\_d}\right)^2 + \frac{2 \cdot D\_d}{2\,\pi\,fn\_d} \cdot s + 1}$$







1	2	3	4	5	6	7	8

DO: All objects	fp_1022_51_eng.vsd	Function diagram	- 1022 -
Explanations on the function diagrams - Explanation of the symbols (part 3)	17.07.13 V05.01.01	SINAMICS	

Fig. 3-4 1030 – Handling BICO technology

Handling BICO technology

Binector: r0723.15

Binectors are binary signals that can be freely interconnected (BO = Binector Output).
They represent a bit of a "BO:" display parameter (e.g. bit 15 from r0723).

Connector: r0723

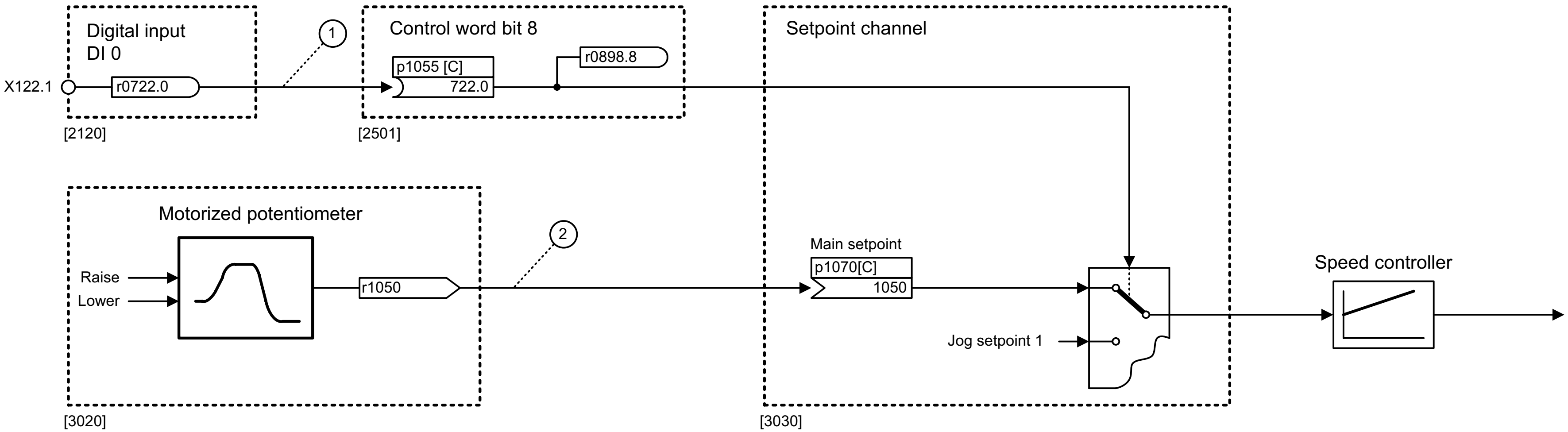
Connectors are bit fields or numerical values that can be freely interconnected (e.g. "analog signals", like percentage variables, speeds or torques).
Connectors are also "CO:" display parameters (CO = Connector Output).

Parameterization:

At the signal destination, the required binector or connector is selected using appropriate parameters:
"BI:" parameter for binectors (BI = Binector Input)
or
"CI:" parameter for connectors (CI = Connector Input)

Example:

The main setpoint for the speed controller (CI: p1070) should be received from the output of the motorized potentiometer (CO: r1050) and the "jog" command (BI: p1055) from digital input DI 0 (BO: r0722.0, X122.1 terminal) on the CU320.



Parameterizing steps:

1. p1055[0] = 722.0 Terminal X122.1 acts as "Jog bit 0".
2. p1070[0] = 1050 The output of the motorized potentiometer acts as main setpoint for the speed controller.

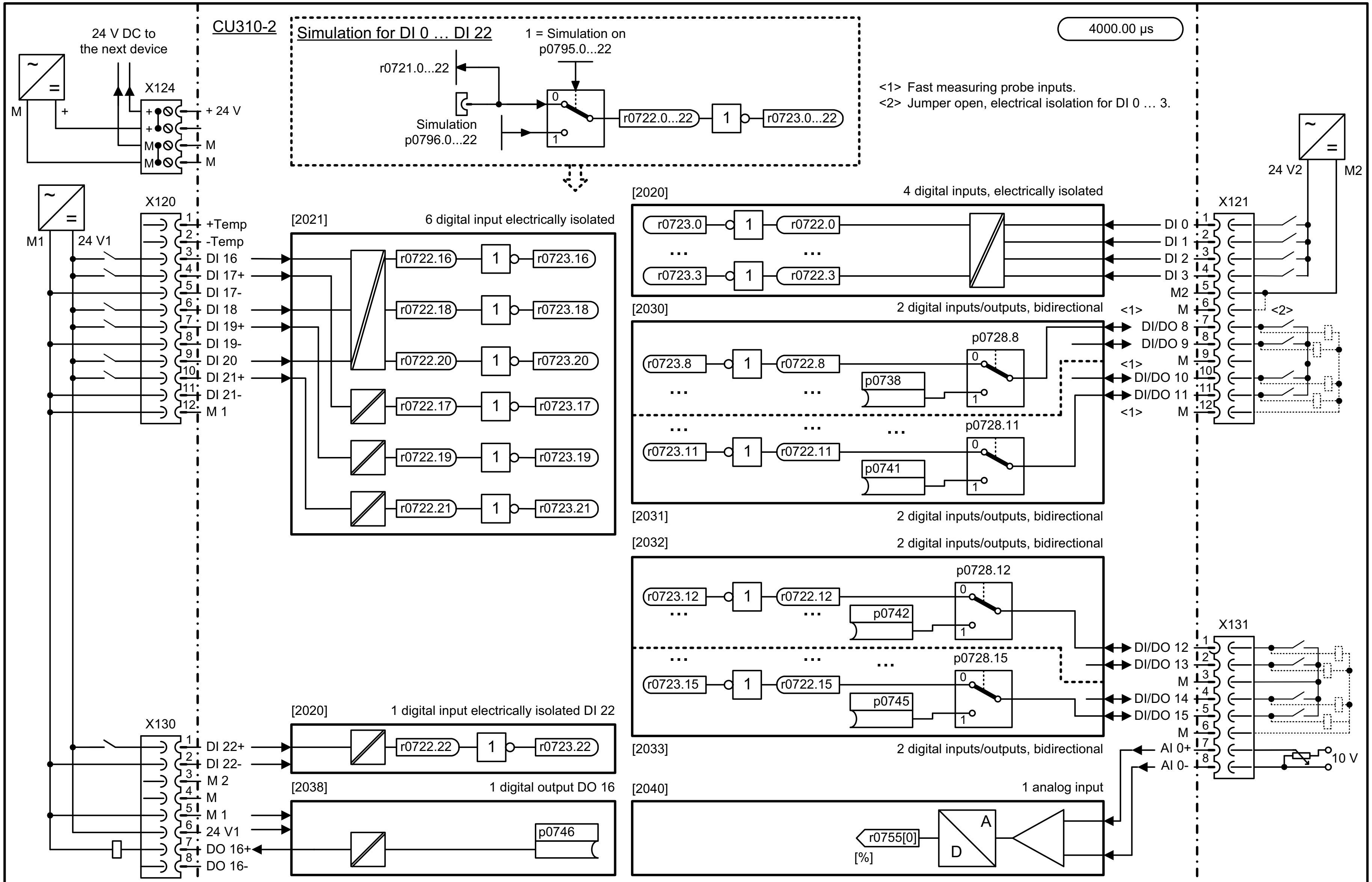
1	2	3	4	5	6	7	8

DO: All objects	fp_1030_51_eng.vsd	Function diagram	- 1030 -
Explanations on the function diagrams - Handling BICO technology	10.05.11 V05.01.01	SINAMICS	

3.3 CU310-2 input/output terminals

Function diagrams

Fig. 3-5 2019 – Overview



1	2	3	4	5	6	7	8

DO: CU310-2	fp_2019_51_eng.vsd	Function diagram	- 2019 -
CU310-2 input/output terminals - Overview	12.03.13 V05.01.01	SINAMICS	

Fig. 3-6 2020 – Digital inputs, electrically isolated (DI 0 ... DI 3, DI 22)

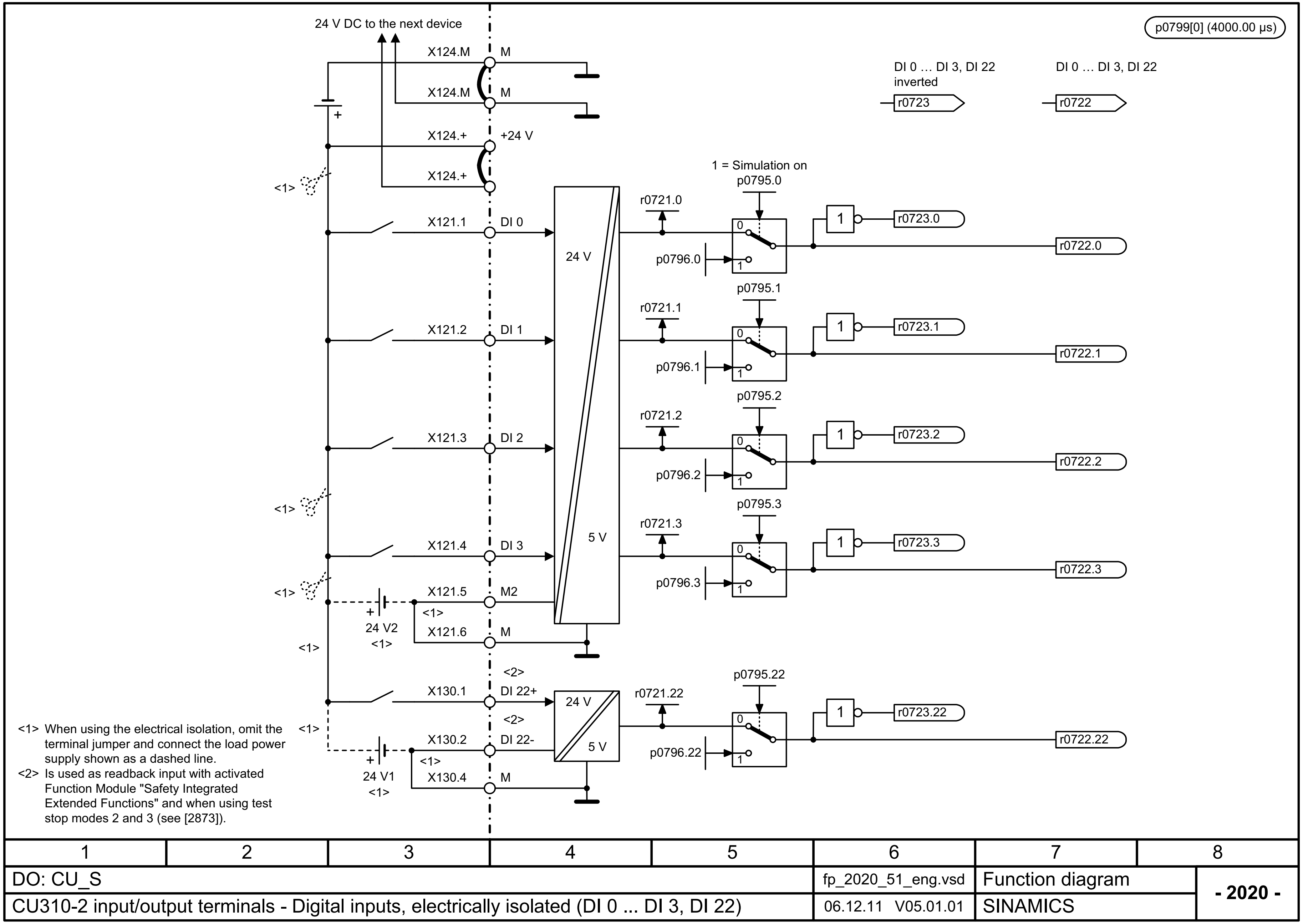
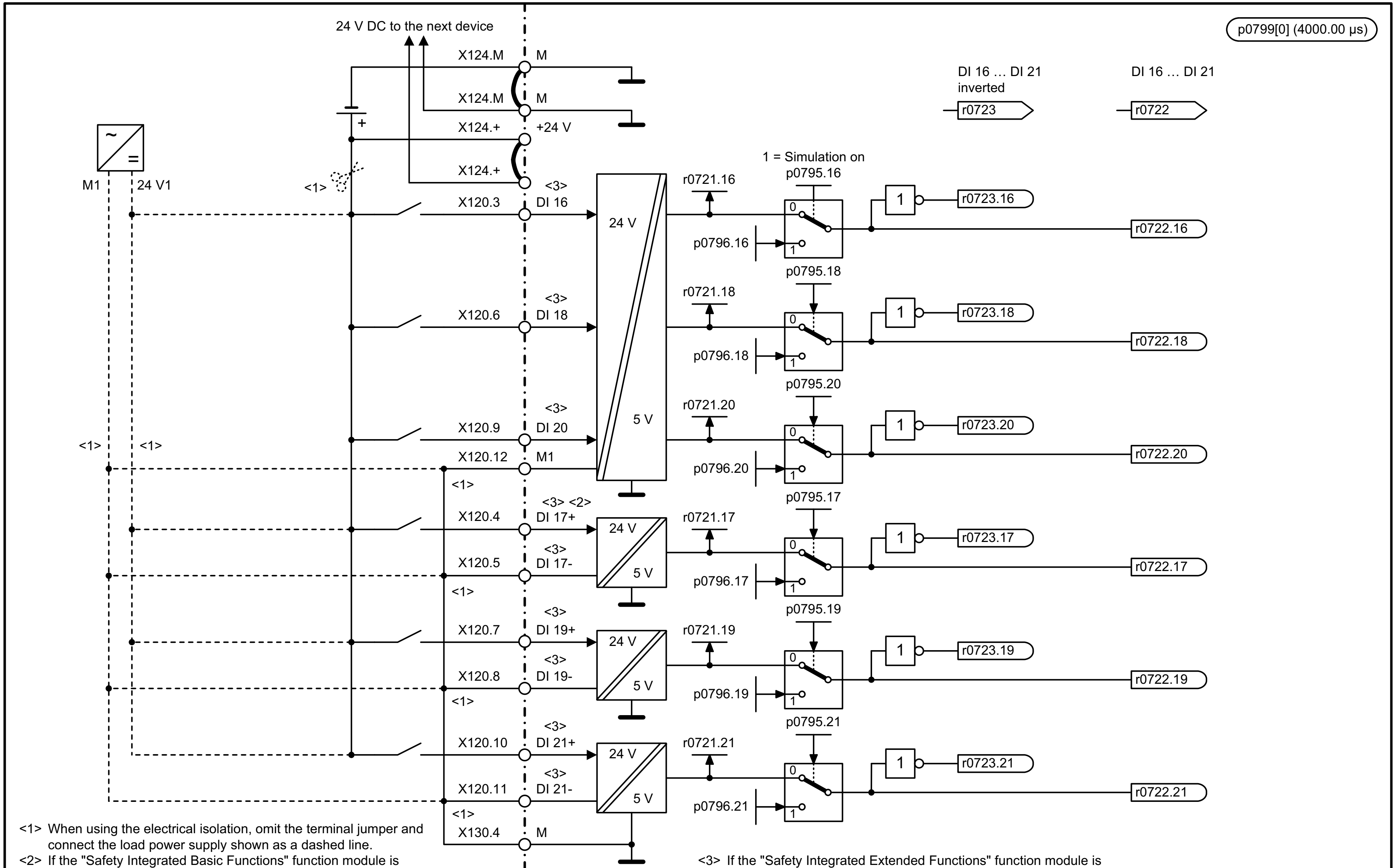


Fig. 3-7 2021 – Digital inputs, electrically isolated (DI 16 … DI 21)

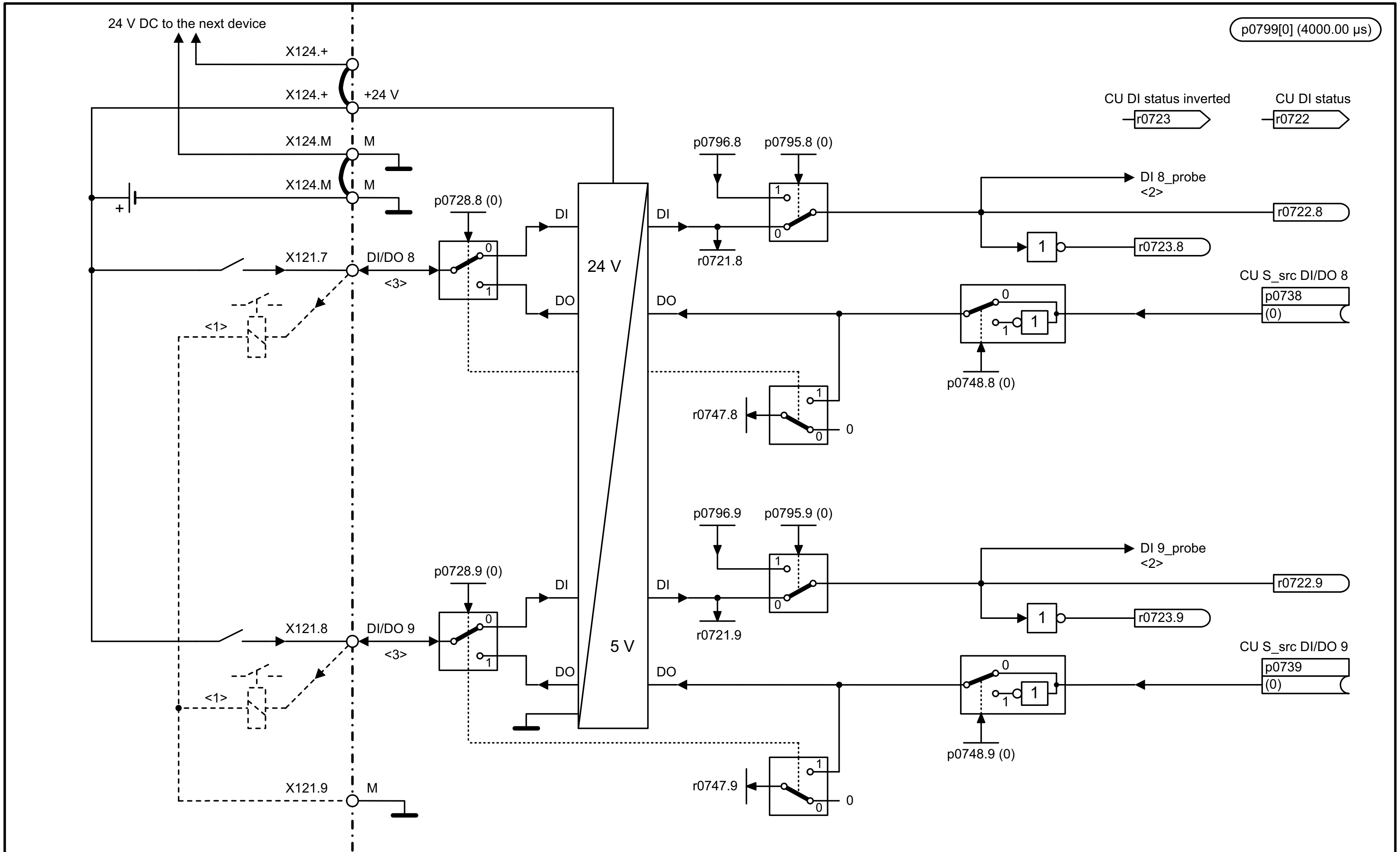


<1> When using the electrical isolation, omit the terminal jumper and connect the load power supply shown as a dashed line.
<2> If the "Safety Integrated Basic Functions" function module is activated, DI 17 is used as an EP terminal.
<3> If the "Safety Integrated Extended Functions" function module is activated, it can also be used as F-DI (see [2870]).

1	2	3	4	5	6	7	8

DO: CU_S	fp_2021_51_eng.vsd	Function diagram	- 2021 -
CU310-2 input/output terminals - Digital inputs, electrically isolated (DI 16 ... DI 21)	07.12.11 V05.01.01	SINAMICS	

Fig. 3-8 2030 – Digital inputs/outputs, bidirectional (DI/DO 8 ... DI/DO 9)



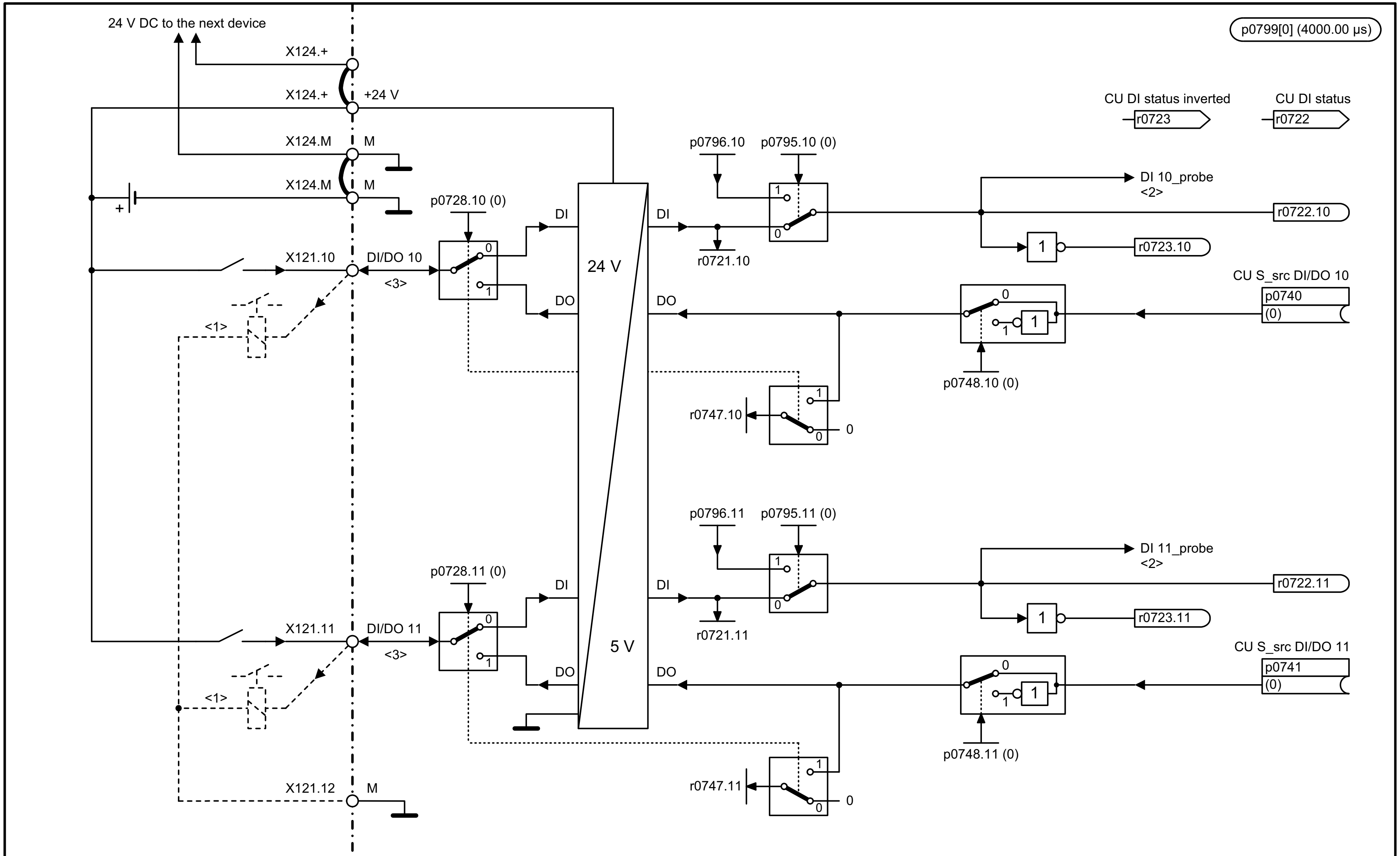
<1> The wiring shown as a dashed line applies when used as digital output (p0728.x = 1).

<2> Can be used as fast measuring probe inputs (refer to [4735], [4740]).
<3> The digital output access authority is displayed in r0729.

1	2	3	4	5	6	7	8

DO: CU_S	fp_2030_51_eng.vsd	Function diagram	- 2030 -
CU310-2 input/output terminals - Digital inputs/outputs, bidirectional (DI/DO 8 ... DI/DO 9)	20.03.17 V05.01.01	SINAMICS	

Fig. 3-9 2031 – Digital inputs/outputs, bidirectional (DI/DO 10 ... DI/DO 11)

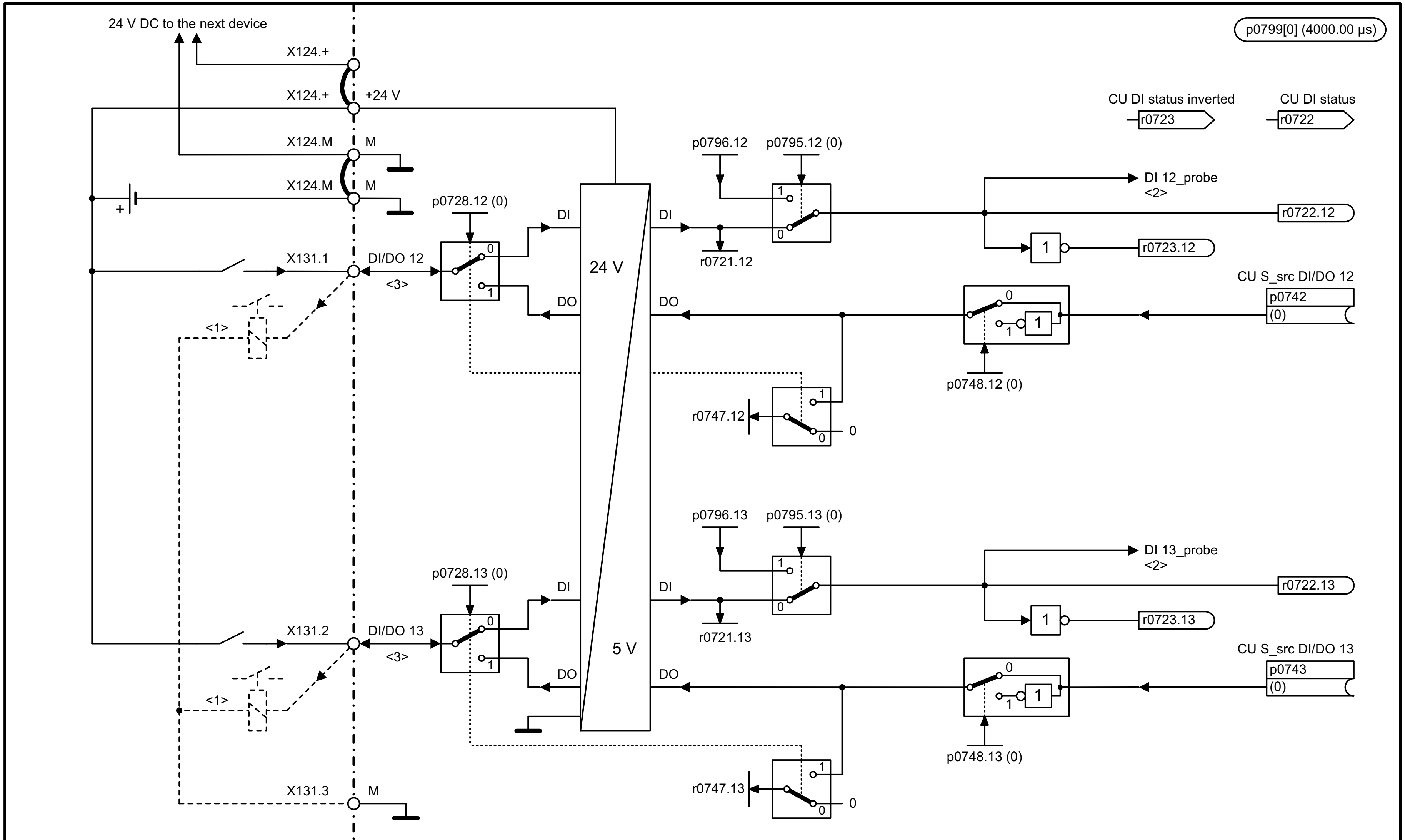


<1> The wiring shown as a dashed line applies when used as digital output (p0728.x = 1).

<2> Can be used as fast measuring probe inputs (refer to [4735], [4740]).
<3> The digital output access authority is displayed in r0729.

1	2	3	4	5	6	7	8

DO: CU_S	fp_2031_51_eng.vsd	Function diagram	- 2031 -
CU310-2 input/output terminals - Digital inputs/outputs, bidirectional (DI/DO 10 ... DI/DO 11)	20.03.17 V05.01.01	SINAMICS	



<1> The wiring shown as a dashed line applies when used as digital output (p0728.x = 1).

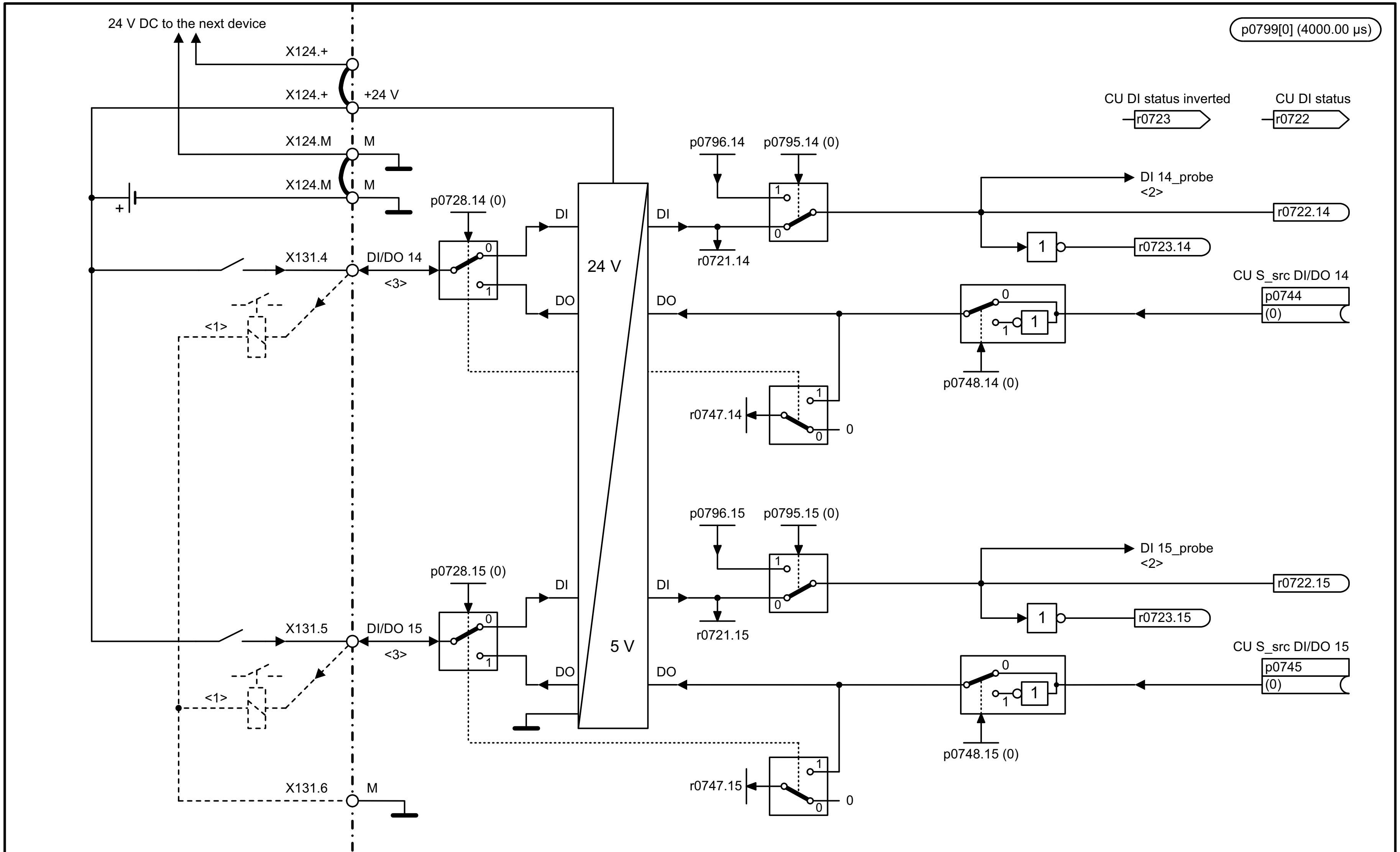
<2> For SERVO and VECTOR (except for SINAMICS G130/G150), the following applies: Can be used as fast measuring probe inputs (refer to [4735], [4740]).

<3> The digital output access authority is displayed in r0729.

1	2	3	4	5	6	7	8
DO: CU_S					fp_2032_51_eng.vsd	Function diagram	- 2032 -
CU310-2 input/output terminals - Digital inputs/outputs, bidirectional (DI/DO 12 ... DI/DO 13)					20.03.17 V05.01.01	SINAMICS	

Fig. 3-10 2032 – Digital inputs/outputs, bidirectional (DI/DO 12 ... DI/DO 13)

Fig. 3-11 2033 – Digital inputs/outputs, bidirectional (DI/DO 14 ... DI/DO 15)



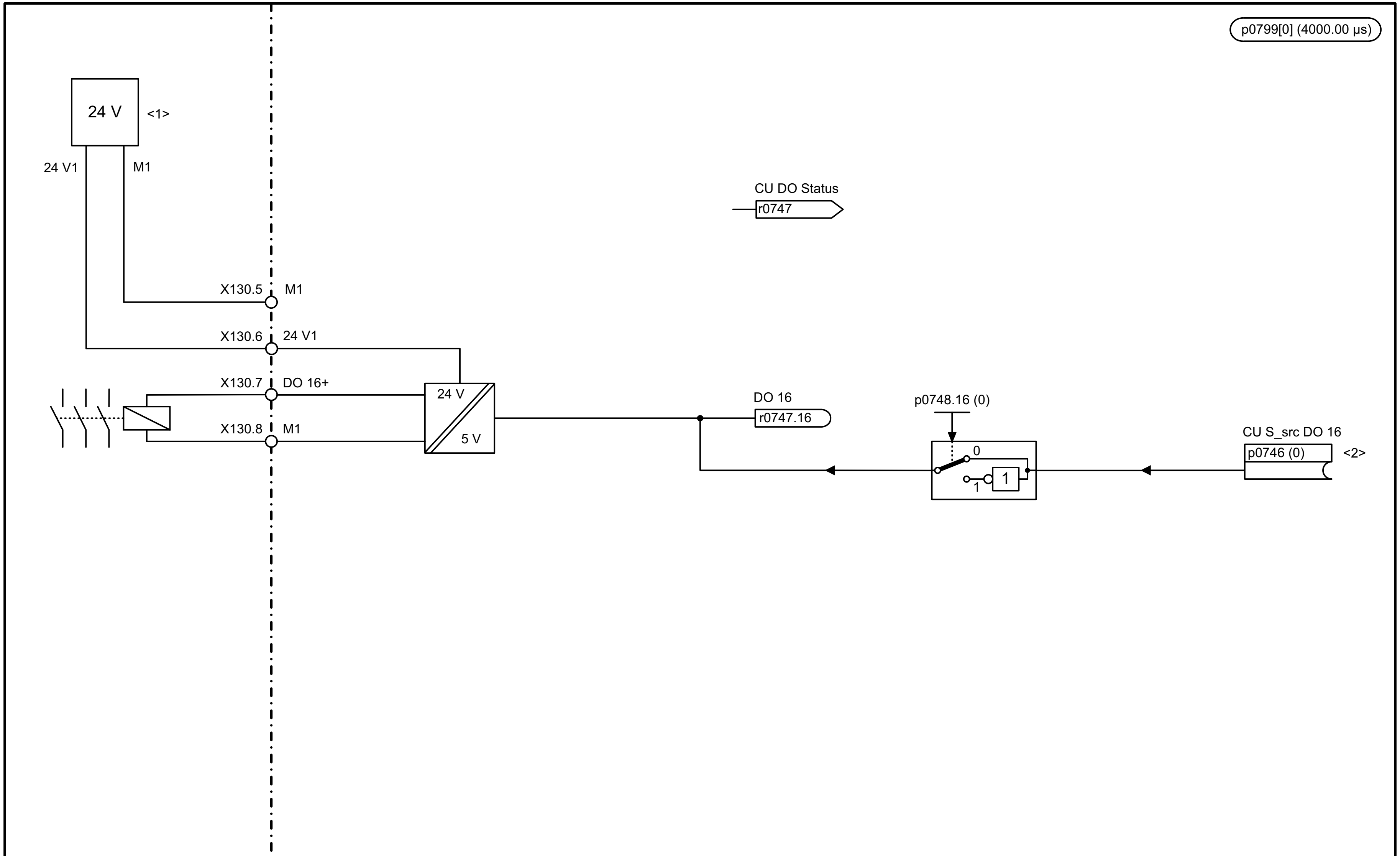
<1> The wiring shown as a dashed line applies when used as digital output (p0728.x = 1).

<2> Can be used as fast measuring probe inputs (refer to [4735], [4740]).
<3> The digital output access authority is displayed in r0729.

1	2	3	4	5	6	7	8

DO: CU_S	fp_2033_51_eng.vsd	Function diagram	- 2033 -
CU310-2 input/output terminals - Digital inputs/outputs, bidirectional (DI/DO 14 ... DI/DO 15)	21.03.17 V05.01.01	SINAMICS	

Fig. 3-12 2038 – Digital output (DO 16)

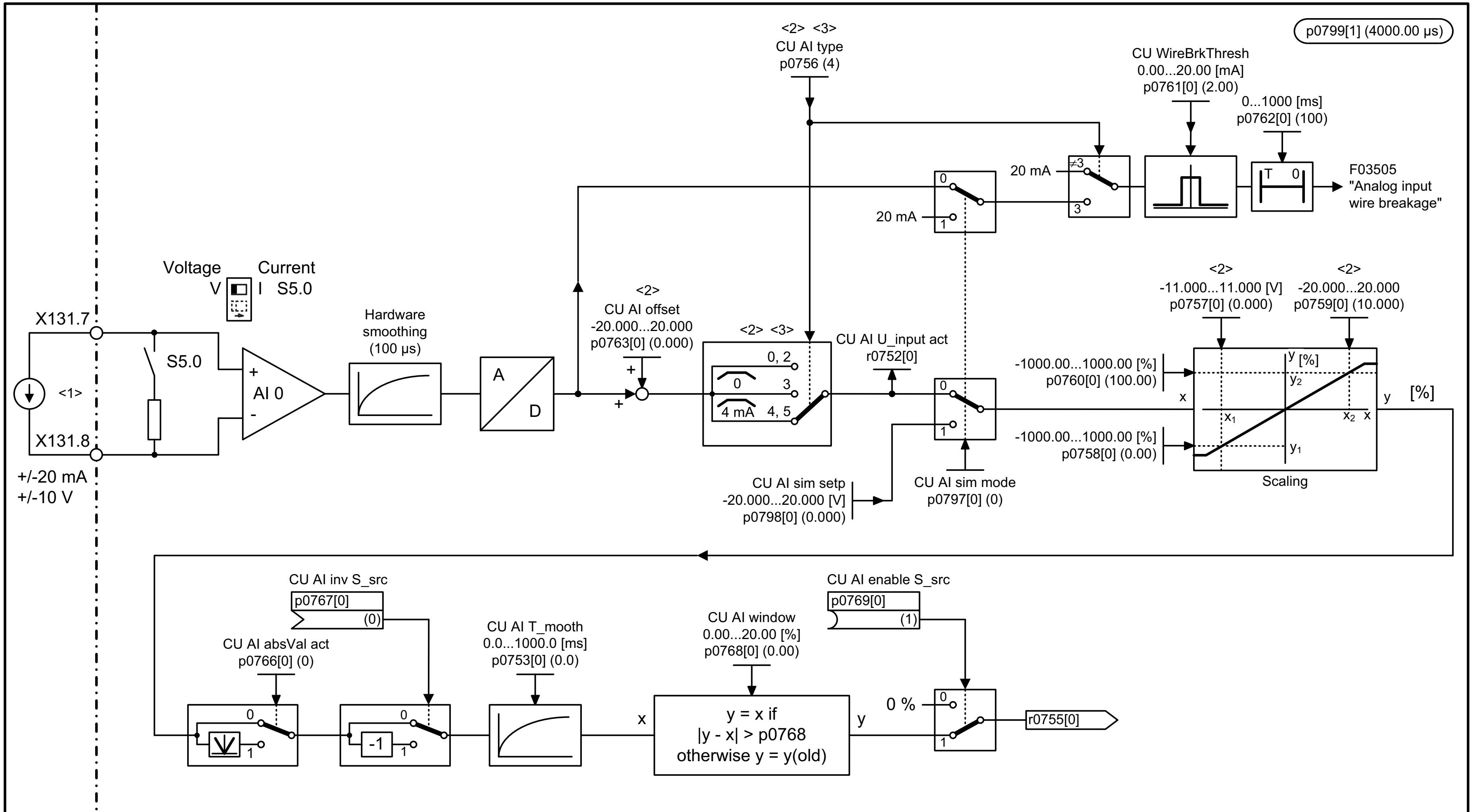


<1> Additional external I/O supply.
<2> For restrictions, refer to p0746.

1	2	3	4	5	6	7	8

DO: CU310-2	fp_2038_51_eng.vsd	Function diagram	- 2038 -
CU310-2 input/output terminals - Digital output (DO 16)	07.12.11 V05.01.01	SINAMICS	

Fig. 3-13 2040 – Analog input (AI 0)



<1> Differential input!
In case of a ground-based input signal, the terminal X131.8 must be connected to the reference potential M.
Caution:
The voltage between an input (X131.7 or X131.8) and the grounding point must not exceed 35 V.
When the load resistor is switched in (S5.0 closed), the voltage between the input terminals must not exceed 15 V.
<2> For p0756 = 2, 3, 5 the units are mA.
For p0756 = 0, 4 the units are V.

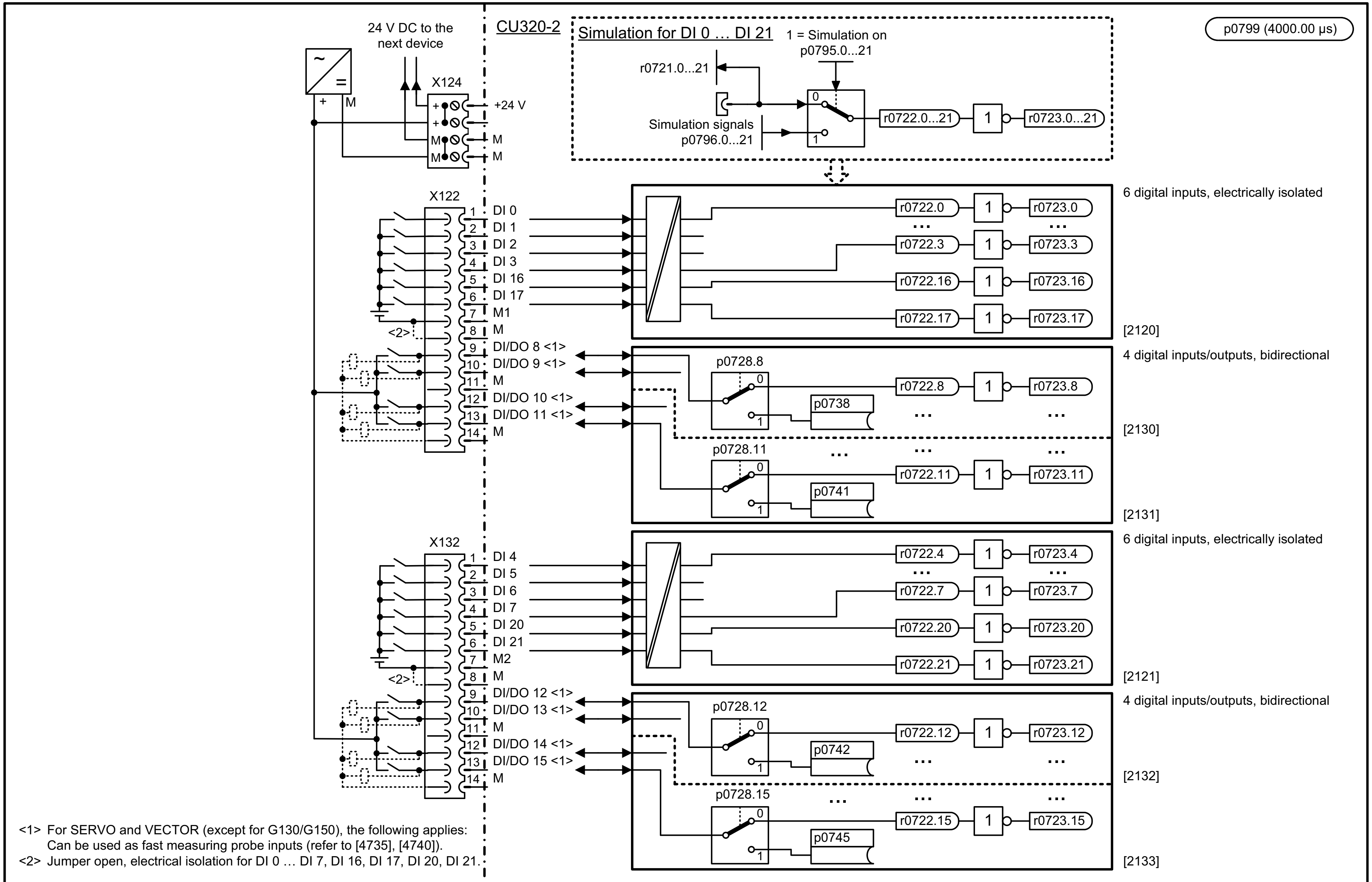
<3> p0756
= 0: 0 V ... +10 V
= 2: 0 mA ... +20 mA
= 3: 4 mA ... +20 mA with monitoring
= 4: -10 V ... +10 V
= 5: -20 mA ... +20 mA

1	2	3	4	5	6	7	8
DO: CU310-2					fp_2040_51_eng.vsd	Function diagram	- 2040 -
CU310-2 input/output terminals - Analog input (AI 0)					11.12.12 V05.01.01	SINAMICS	

3.4 CU320-2 input/output terminals

Function diagrams

Fig. 3-14 2119 – Overview



1	2	3	4	5	6	7	8
DO: CU_G, CU_MV, CU_S					fp_2119_51_eng.vsd	Function diagram	- 2119 -
CU320-2 input/output terminals - Overview					12.03.13 V05.01.01	SINAMICS	

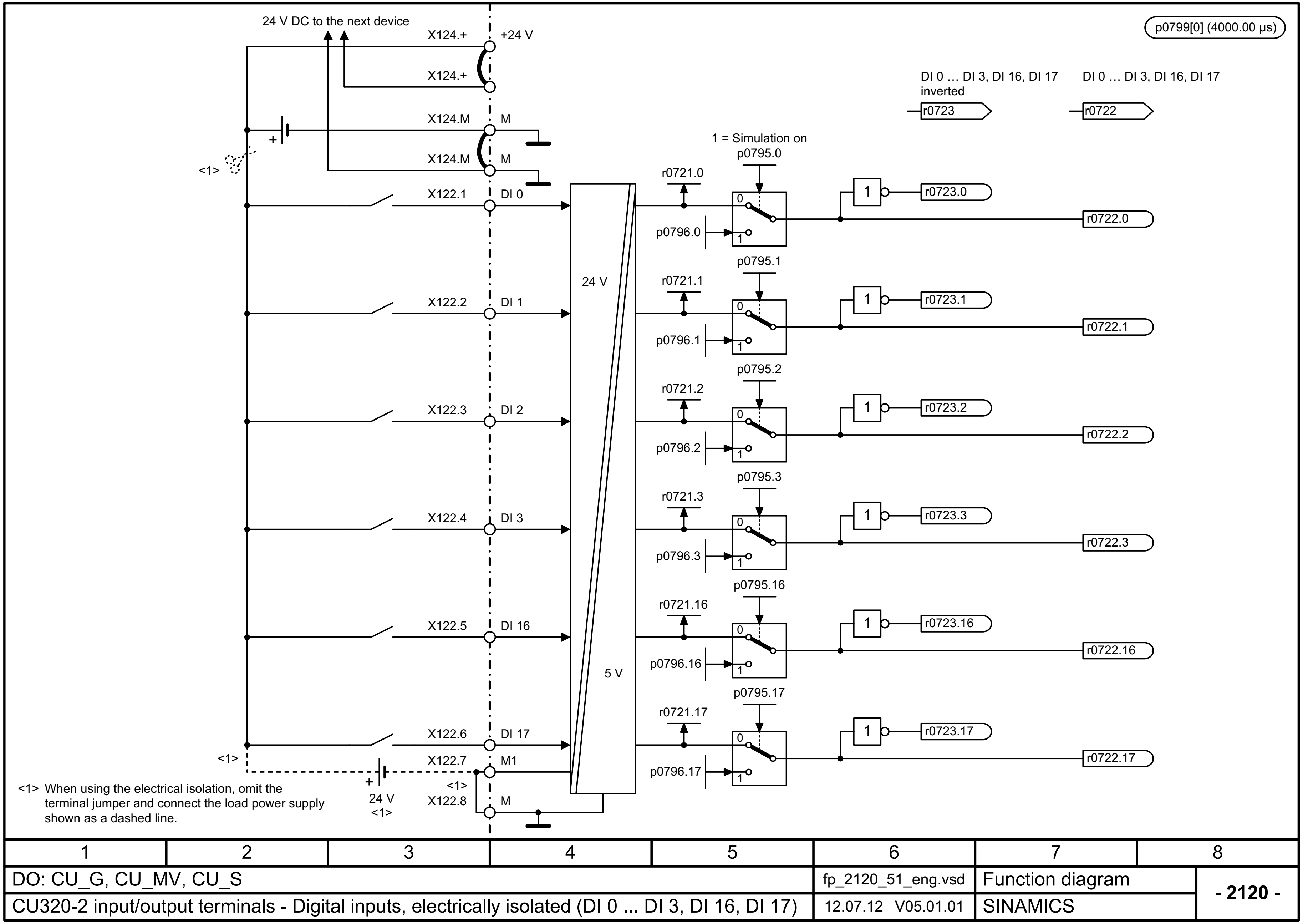
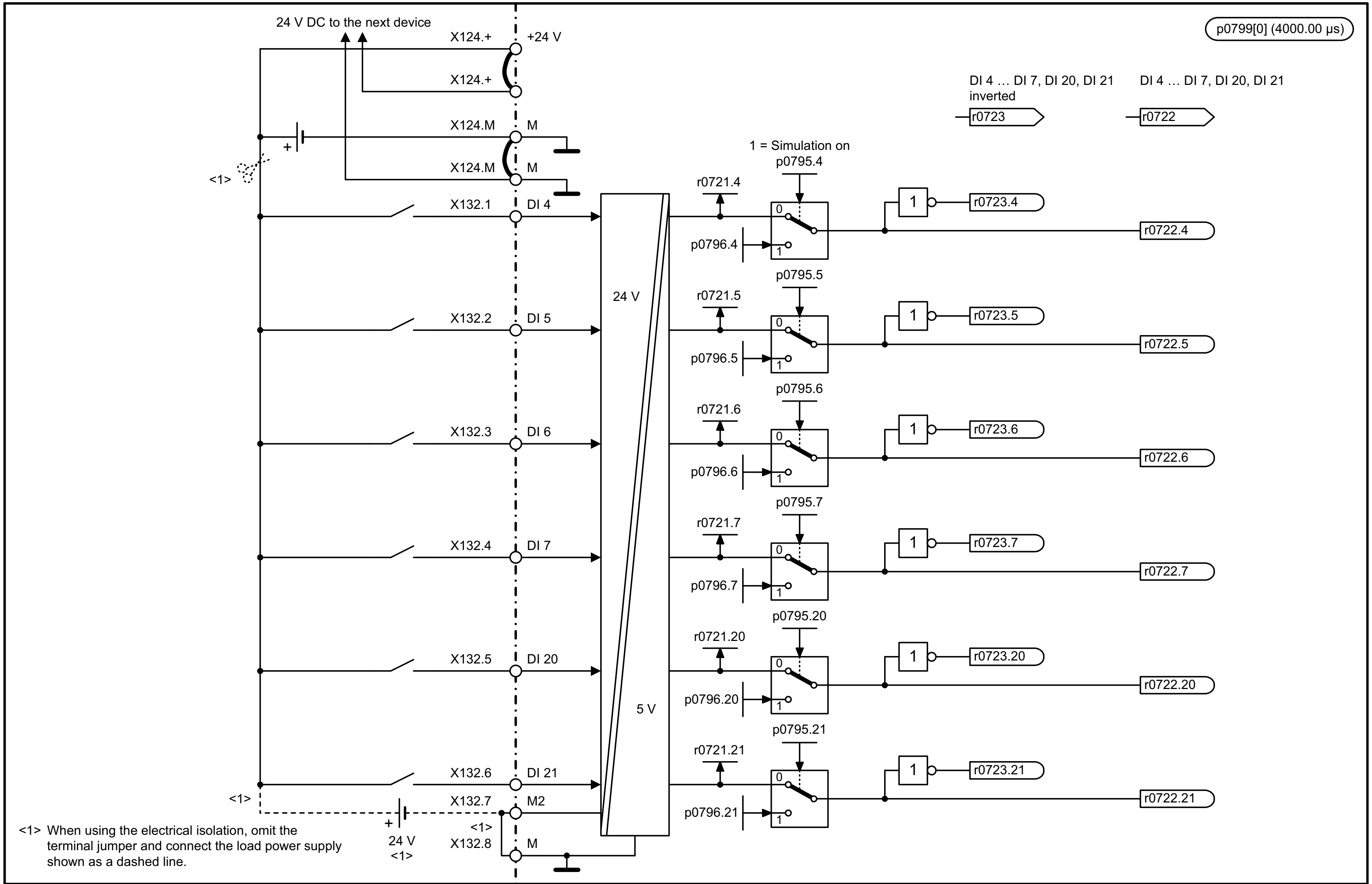


Fig. 3-15 2120 – Digital inputs, electrically isolated (DI 0 … DI 3, DI 16, DI 17)

Fig. 3-16 2121 – Digital inputs, electrically isolated (DI 4 ... DI 7, DI 20, DI 21)



1	2	3	4	5	6	7	8
DO: CU_G, CU_MV, CU_S					fp_2121_51_eng.vsd	Function diagram	- 2121 -
CU320-2 input/output terminals - Digital inputs, electrically isolated (DI 4 ... DI 7, DI 20, DI 21)					12.07.12 V05.01.01	SINAMICS	

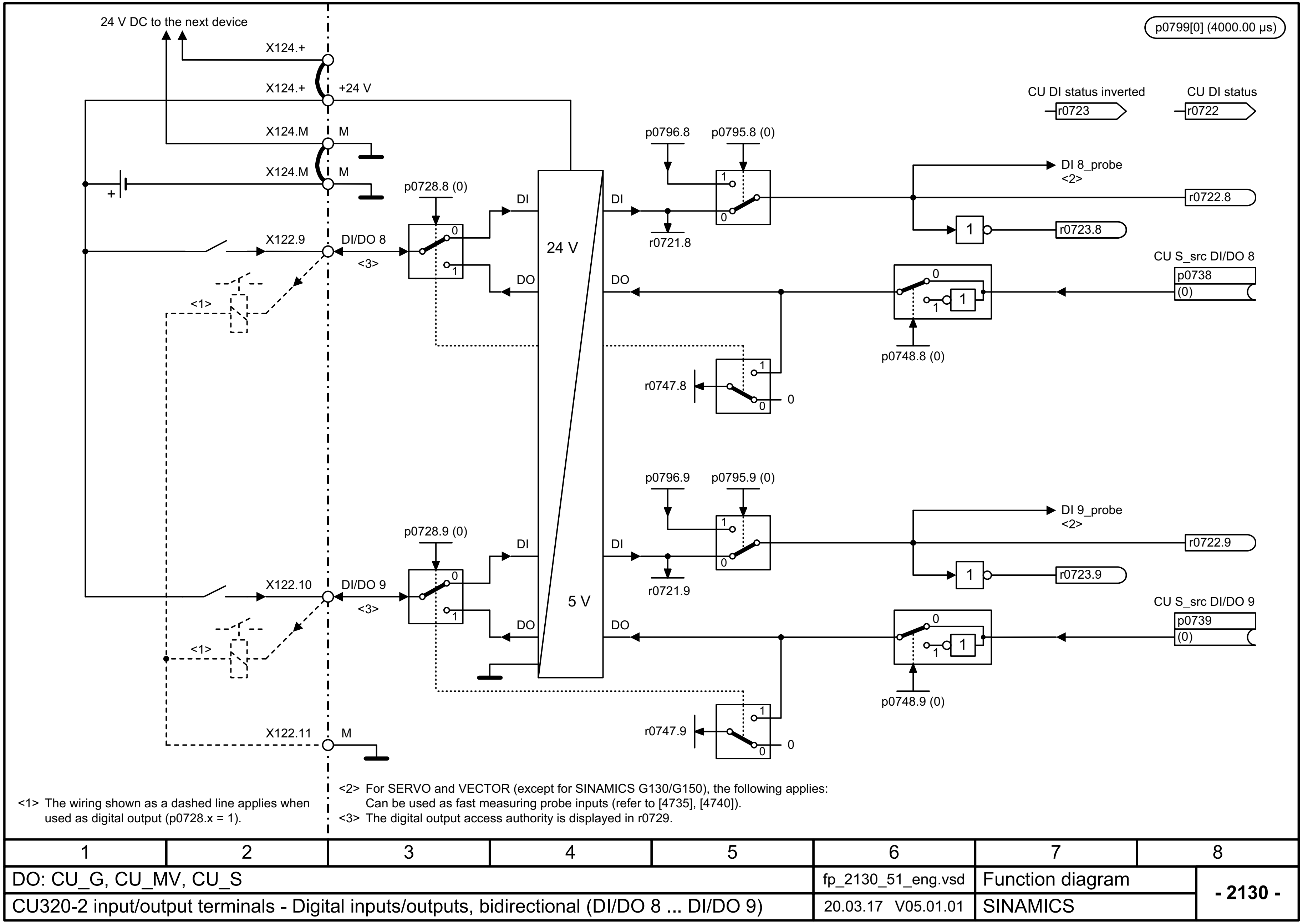
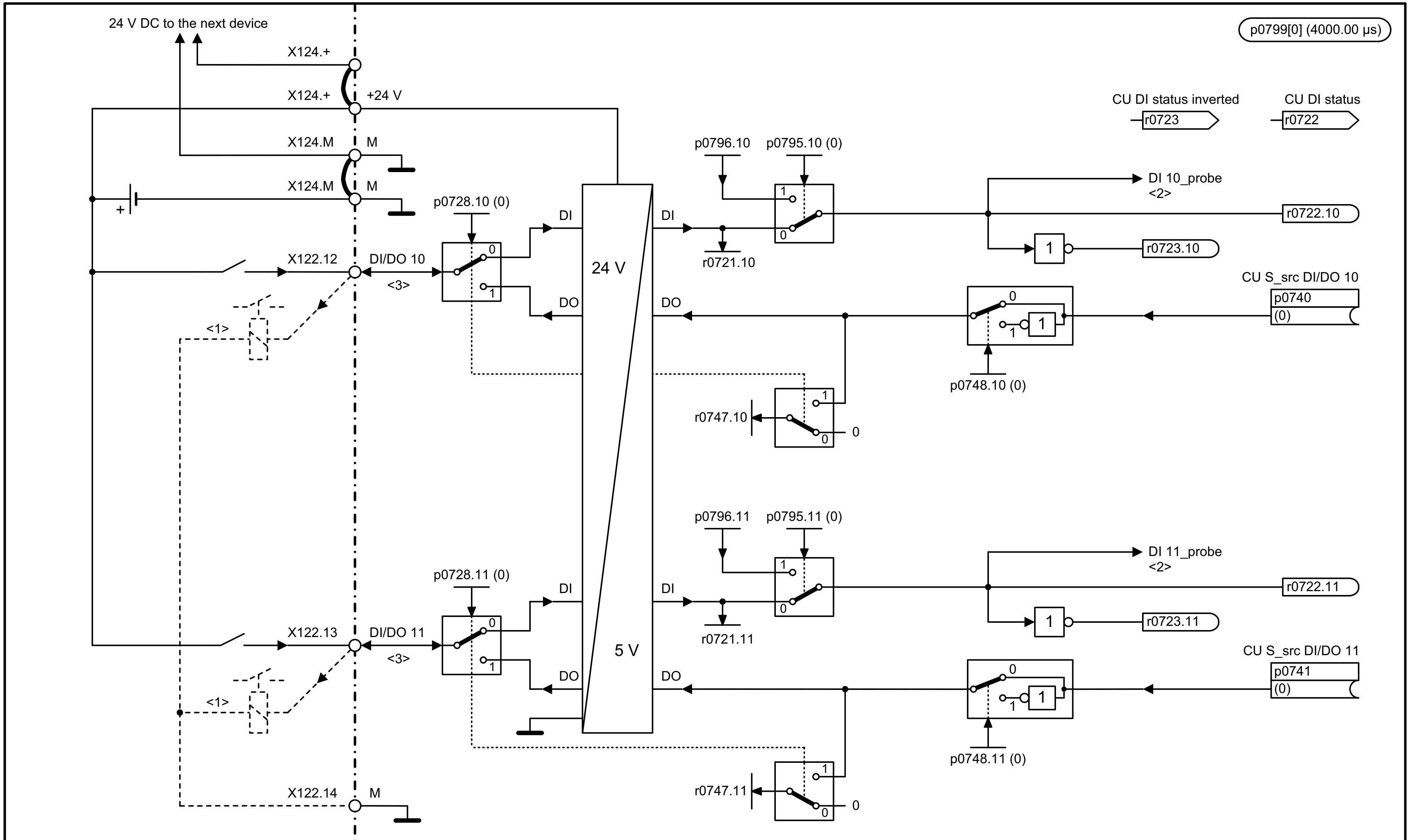


Fig. 3-17 2130 – Digital inputs/outputs, bidirectional (DI/DO 8 ... DI/DO 9)

Fig. 3-18 2131 – Digital inputs/outputs, bidirectional (DI/DO 10 ... DI/DO 11)



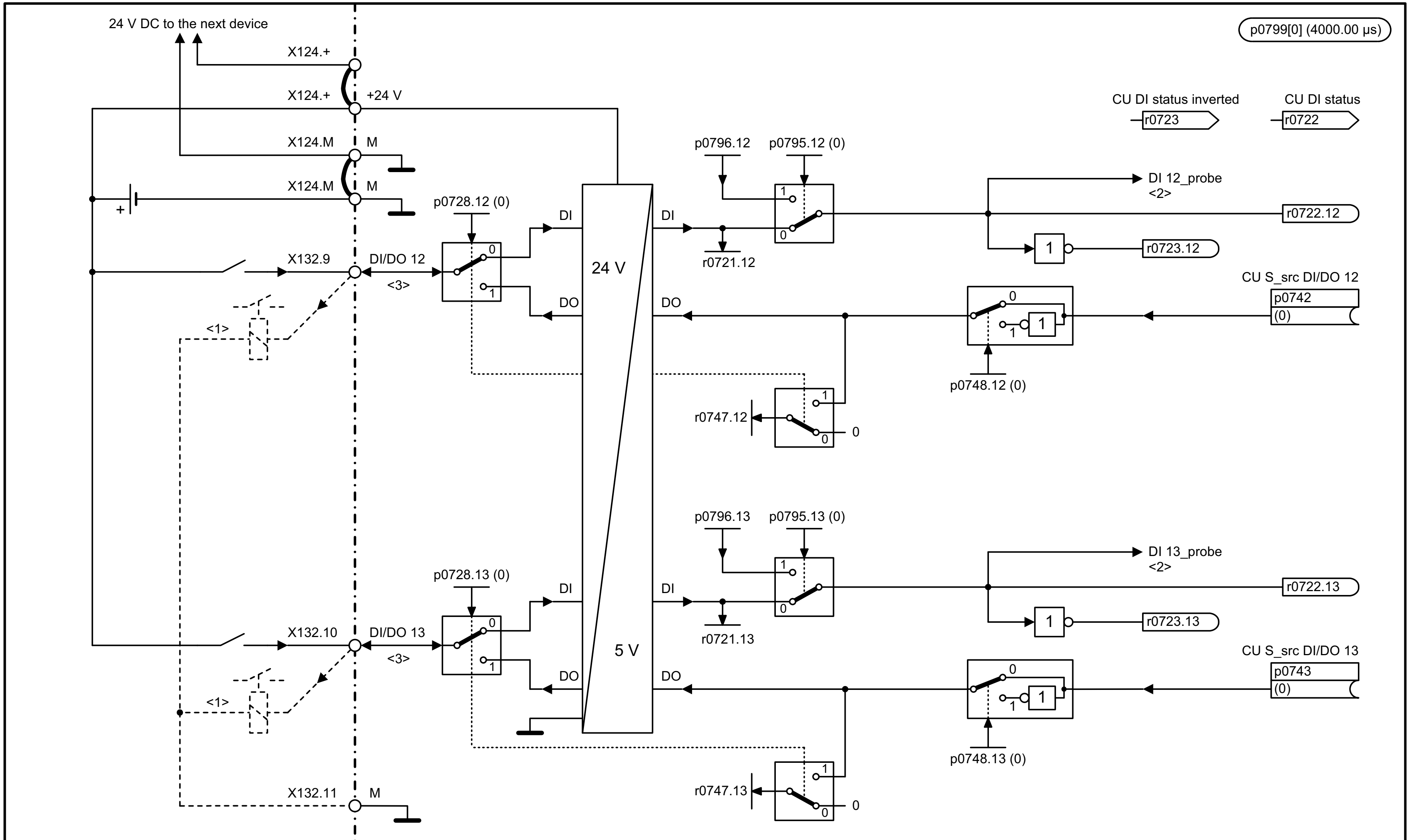
<1> The wiring shown as a dashed line applies when used as digital output (p0728.x = 1).

<2> For SERVO and VECTOR (except for SINAMICS G130/G150), the following applies: Can be used as fast measuring probe inputs (refer to [4735], [4740]).

<3> The digital output access authority is displayed in r0729.

1	2	3	4	5	6	7	8

DO: CU_G, CU_MV, CU_S	fp_2131_51_eng.vsd	Function diagram	- 2131 -
CU320-2 input/output terminals - Digital inputs/outputs, bidirectional (DI/DO 10 ... DI/DO 11)	12.07.12 V05.01.01	SINAMICS	



<1> The wiring shown as a dashed line applies when used as digital output (p0728.x = 1).

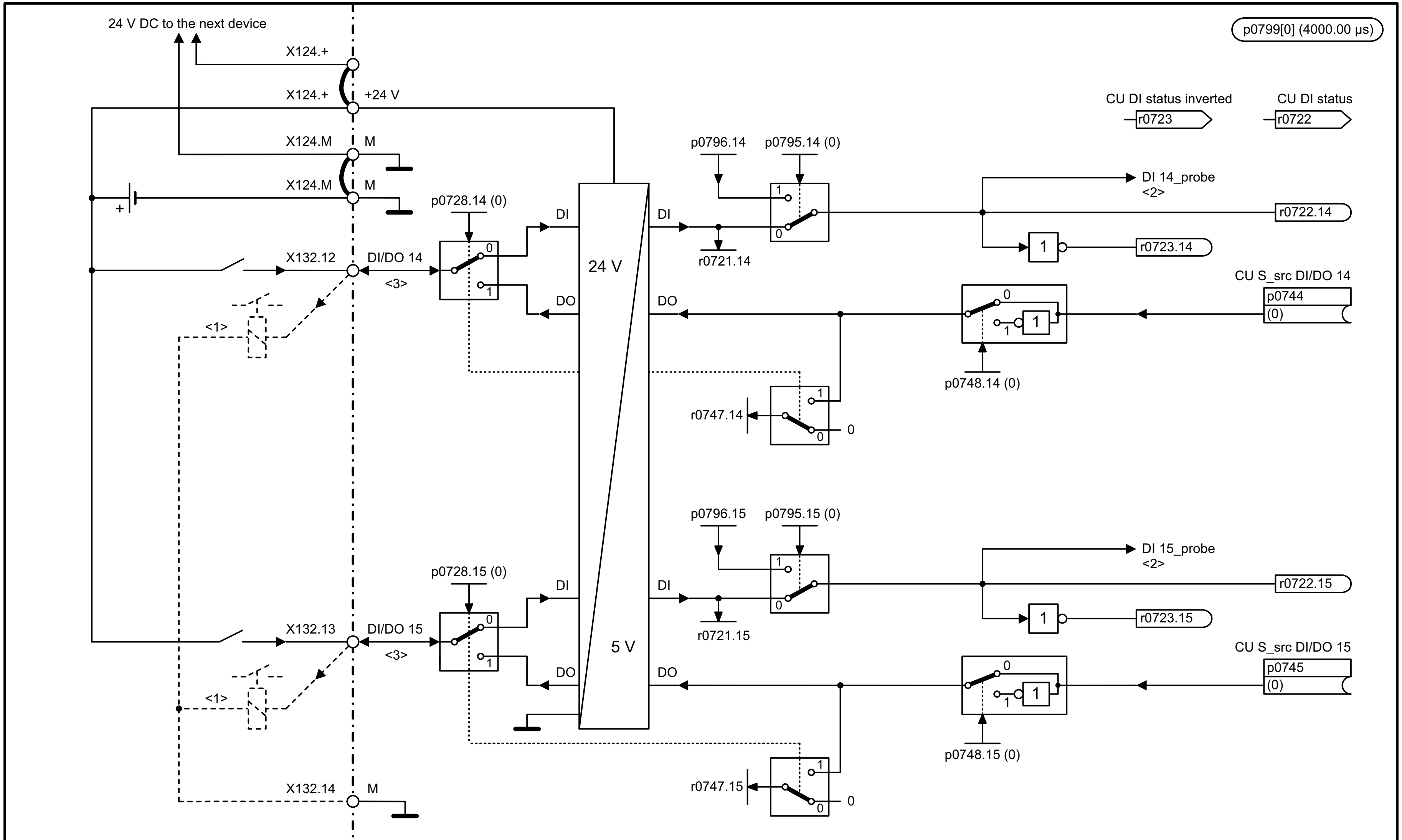
<2> For SERVO and VECTOR (except for SINAMICS G130/G150), the following applies: Can be used as fast measuring probe inputs (refer to [4735], [4740]).

<3> The digital output access authority is displayed in r0729.

1	2	3	4	5	6	7	8
DO: CU_G, CU_MV, CU_S					fp_2132_51_eng.vsd	Function diagram	- 2132 -
CU320-2 input/output terminals - Digital inputs/outputs, bidirectional (DI/DO 12 ... DI/DO 13)					12.07.12 V05.01.01	SINAMICS	

Fig. 3-19 2132 – Digital inputs/outputs, bidirectional (DI/DO 12 ... DI/DO 13)

Fig. 3-20 2133 – Digital inputs/outputs, bidirectional (DI/DO 14 ... DI/DO 15)



<1> The wiring shown as a dashed line applies when used as digital output (p0728.x = 1).

<2> For SERVO and VECTOR (except for SINAMICS G130/G150), the following applies: Can be used as fast measuring probe inputs (refer to [4735], [4740]).

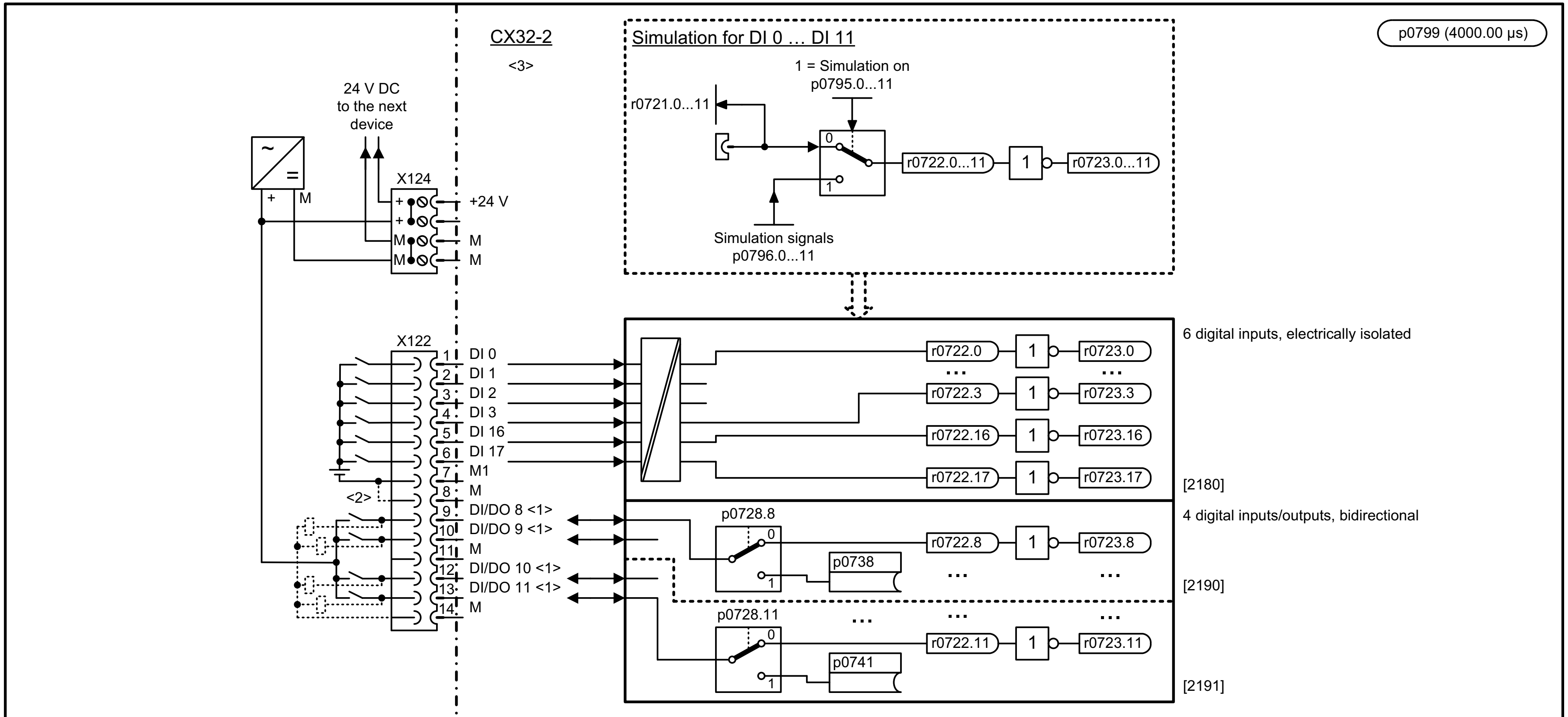
<3> The digital output access authority is displayed in r0729.

1	2	3	4	5	6	7	8
DO: CU_G, CU_MV, CU_S					fp_2133_51_eng.vsd	Function diagram	- 2133 -
CU320-2 input/output terminals - Digital inputs/outputs, bidirectional (DI/DO 14 ... DI/DO 15)					21.03.17 V05.01.01	SINAMICS	

3.5 CX32-2 input/output terminals

Function diagrams

Fig. 3-21 2179 – Overview



<1> For SERVO drive object, the following applies:
Fast measuring probe inputs.
<2> Jumper open, electrical isolation for DI 0 … 3.
<3> Can only be used in conjunction with drive object CU_I
(e.g. SIMOTION D).

1	2	3	4	5	6	7	8

DO: CU_CX32	fp_2179_51_eng.vsd	Function diagram	- 2179 -
CX32-2 input/output terminals - Overview	12.03.13 V05.01.01	SINAMICS	

Fig. 3-22 2180 – Digital inputs, electrically isolated (DI 0 ... DI 3, DI 16, DI 17)

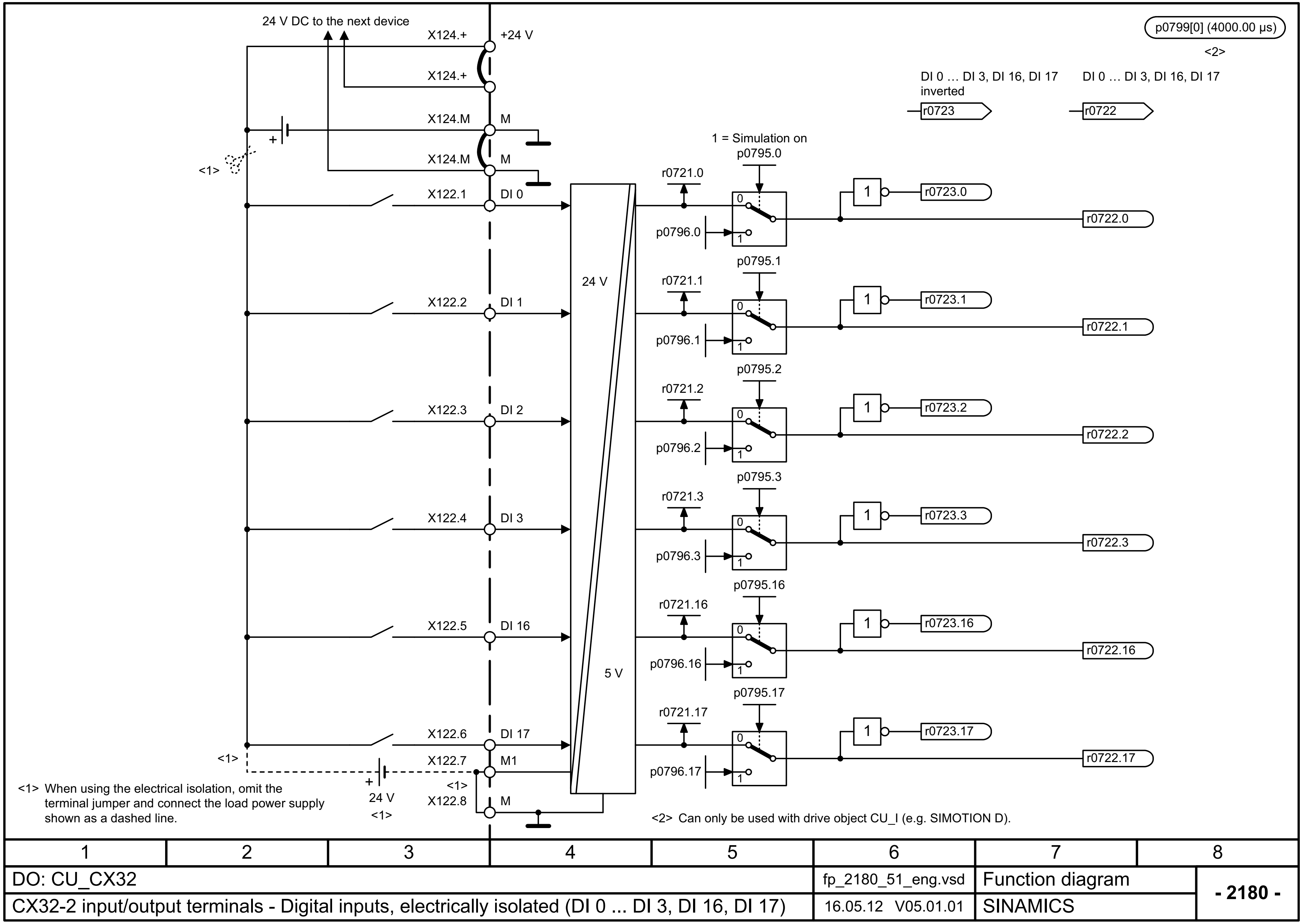
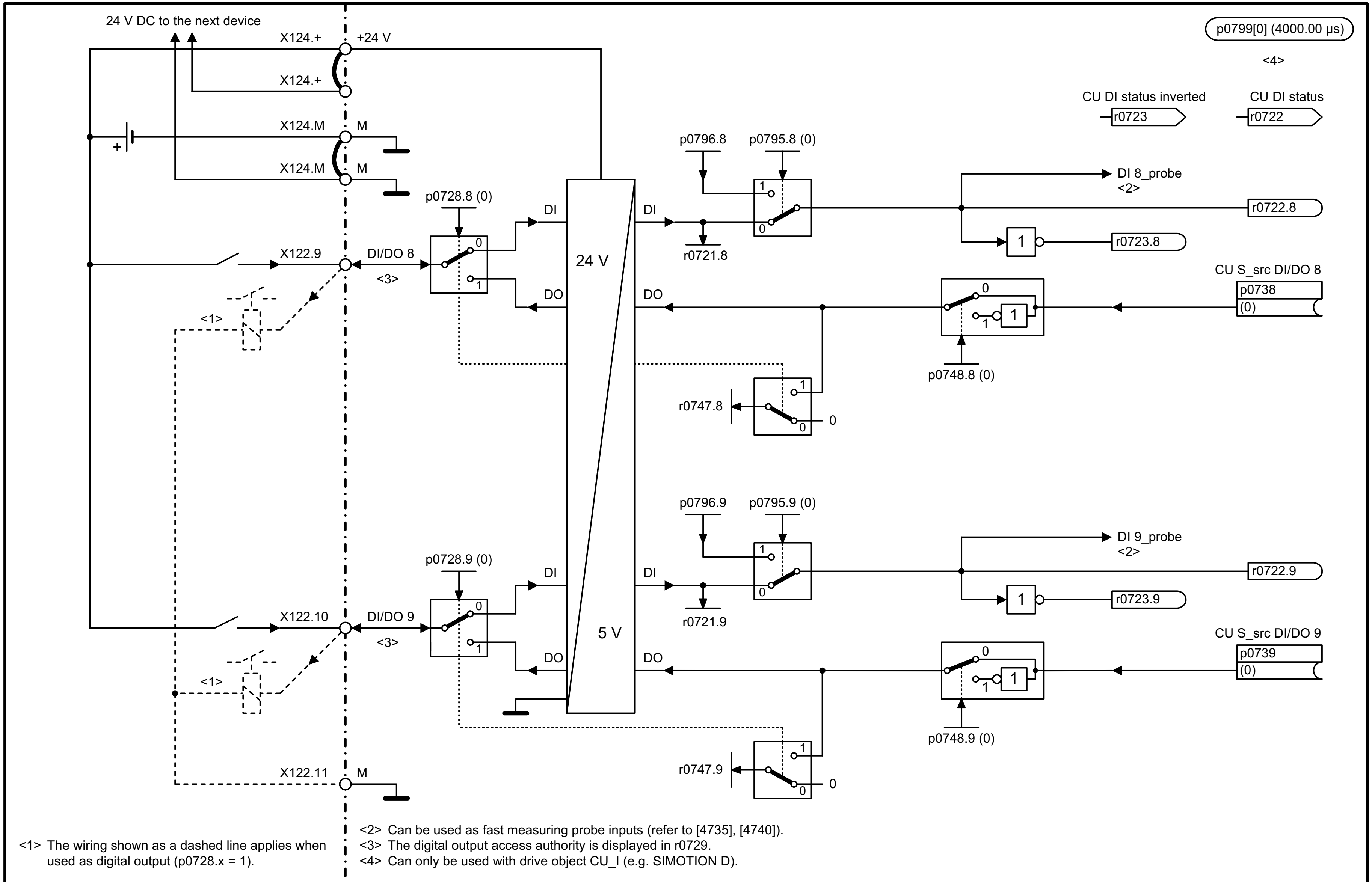


Fig. 3-23 2190 – Digital inputs/outputs, bidirectional (DI/DO 8 ... DI/DO 9)



1	2	3	4	5	6	7	8

DO: CU_CX32	fp_2190_51_eng.vsd	Function diagram	- 2190 -
CX32-2 input/output terminals - Digital inputs/outputs, bidirectional (DI/DO 8 ... DI/DO 9)	23.03.17 V05.01.01	SINAMICS	

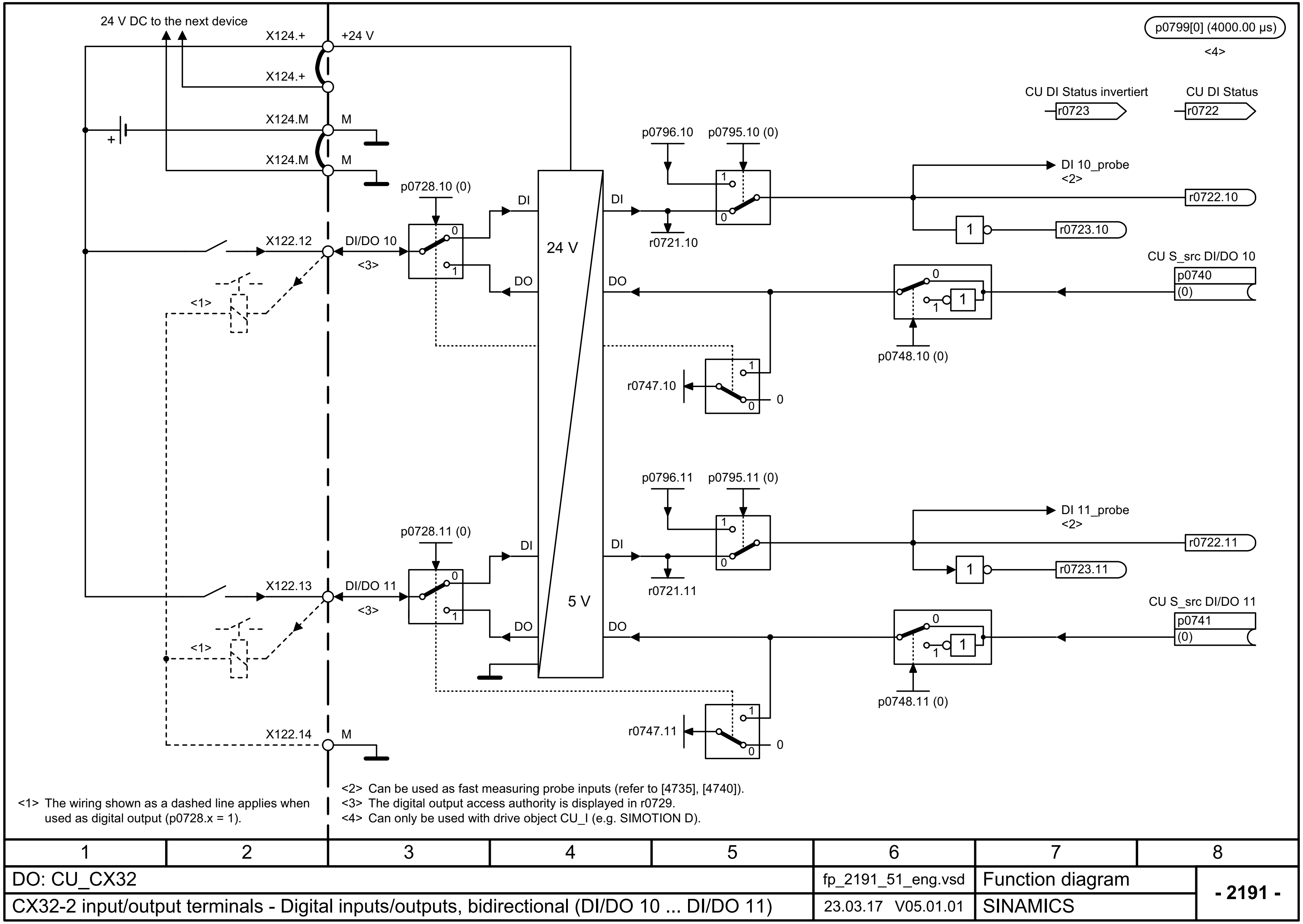
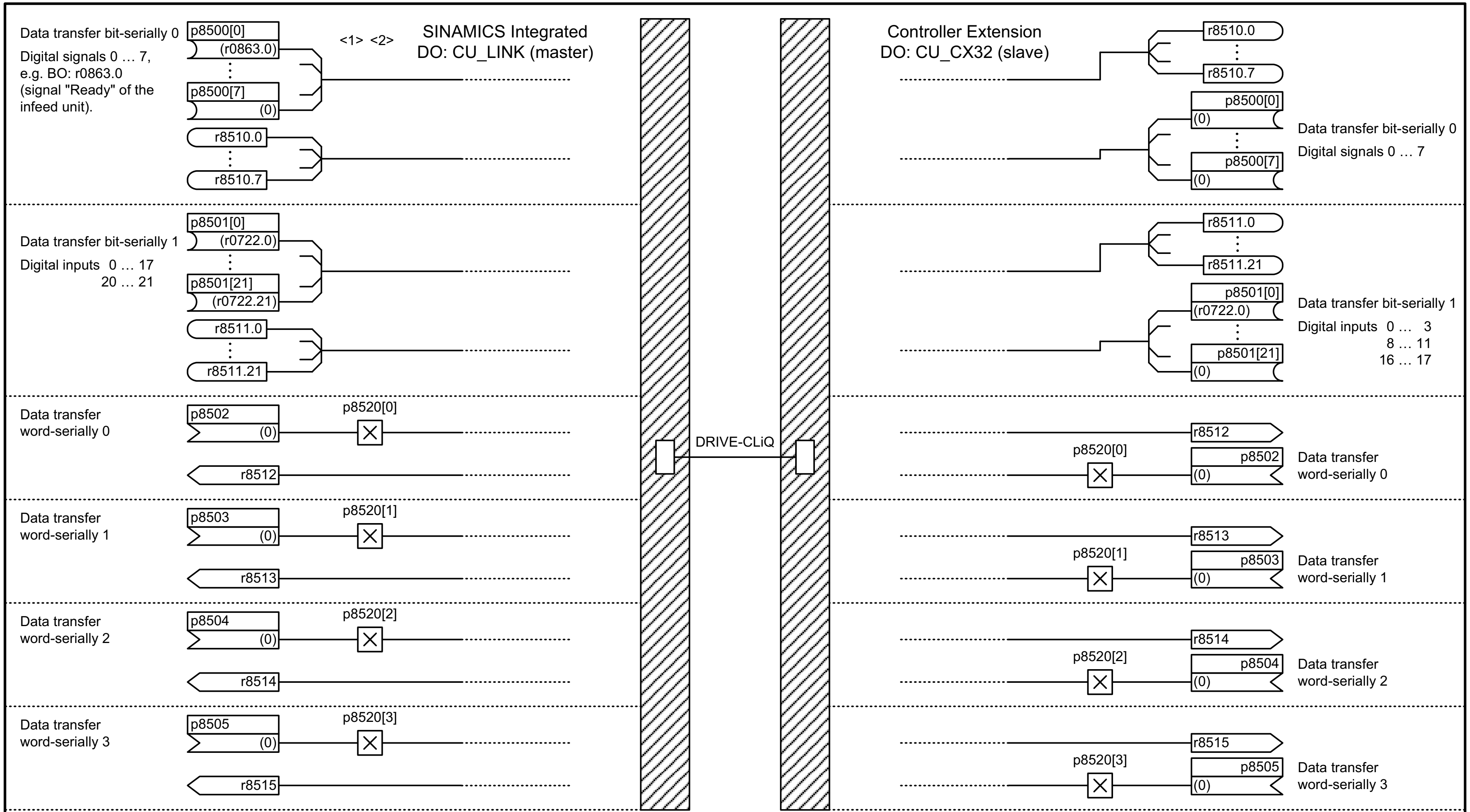


Fig. 3-24 2191 – Digital inputs/outputs, bidirectional (DI/DO 10 ... DI/DO 11)

3.6 Control Unit communication

Function diagrams

Fig. 3-25 2194 – CU_CX32/CU_LINK

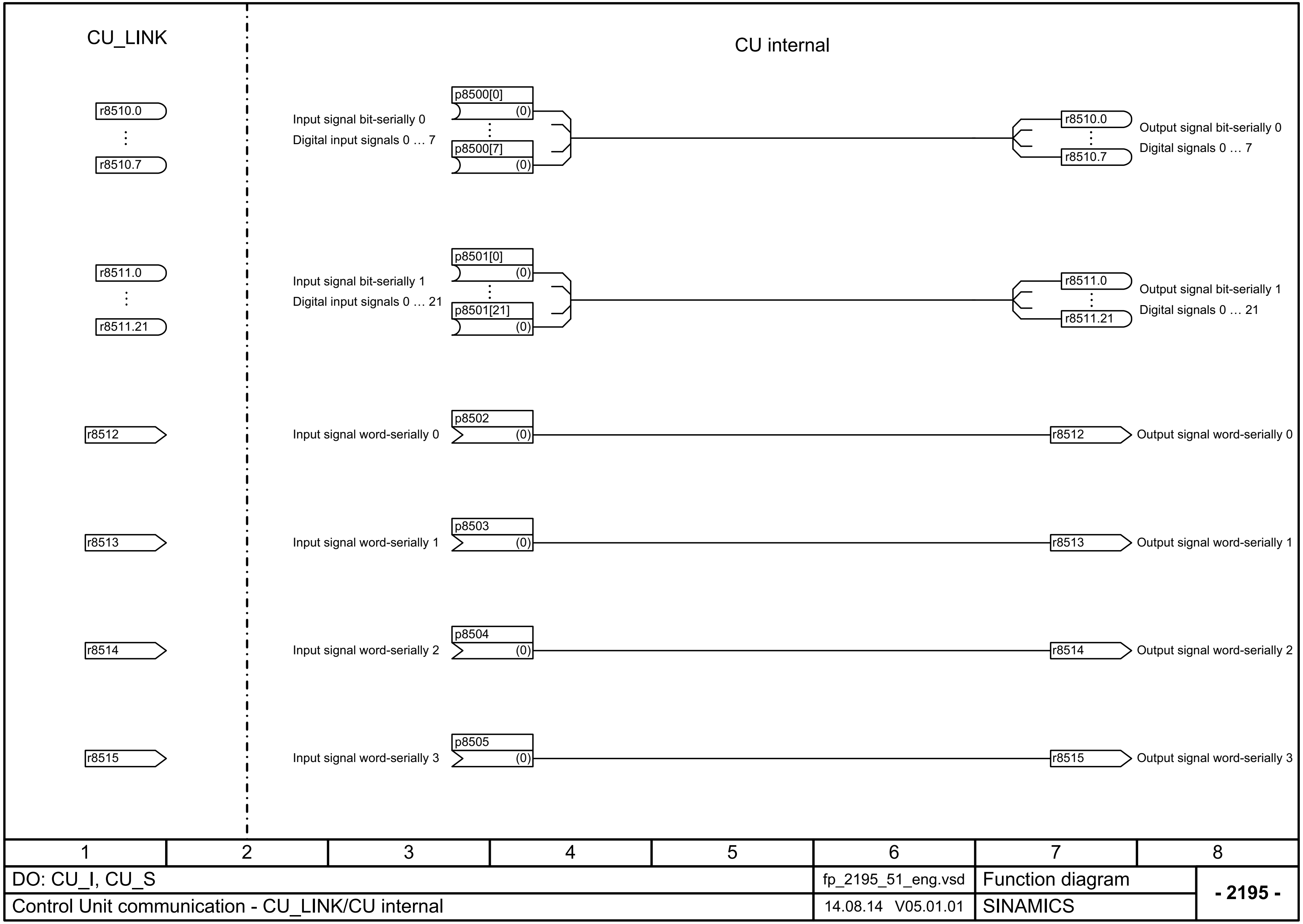


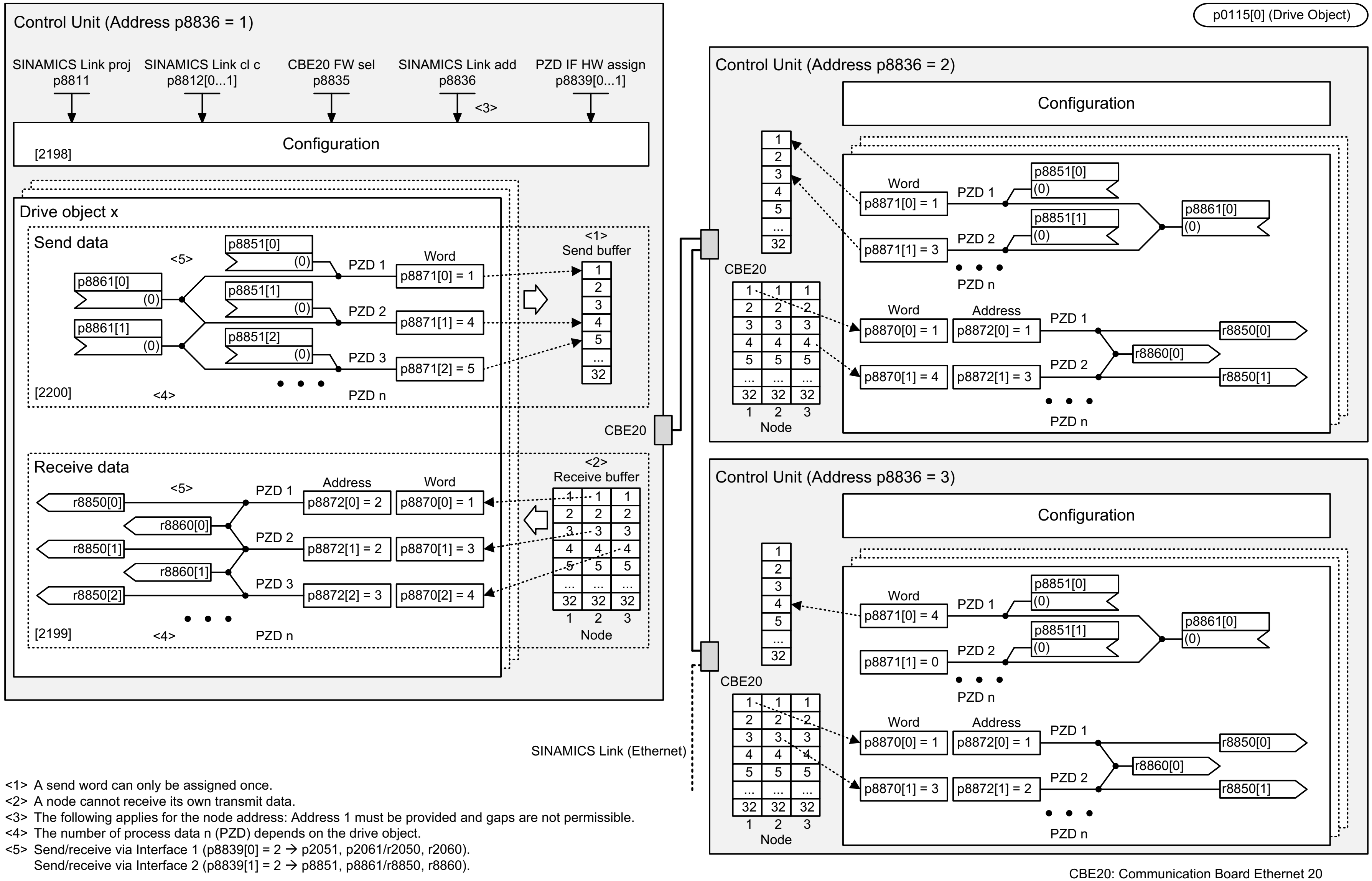
<1> The drive object CU_LINK only exists for automation systems with SINAMICS Integrated (e.g. SIMOTION D, SINUMERIK NCU) and the corresponding controller extension (e.g. CX32-2, NX10).
On the SINAMICS Integrated, each controller extension is represented by a drive object CU_LINK.

<2> p8800: CU_LINK address.
Address of the controller extension, represented by the drive object CU_LINK. The address correlates with the DRIVE-CLiQ socket of the Control Unit connected/configured to the controller extension configured.
Value range: See p0918 (PROFIBUS address)
The parameter p8800 is only readable through non-cyclic parameter access via DPV1 services.

1	2	3	4	5	6	7	8
DO: CU_CX32, CU_LINK					fp_2194_51_eng.vsd	Function diagram	- 2194 -
Control Unit communication - CU_CX32/CU_LINK					14.08.14 V05.01.01	SINAMICS	

Fig. 3-26 2195 – CU_LINK/CU internal

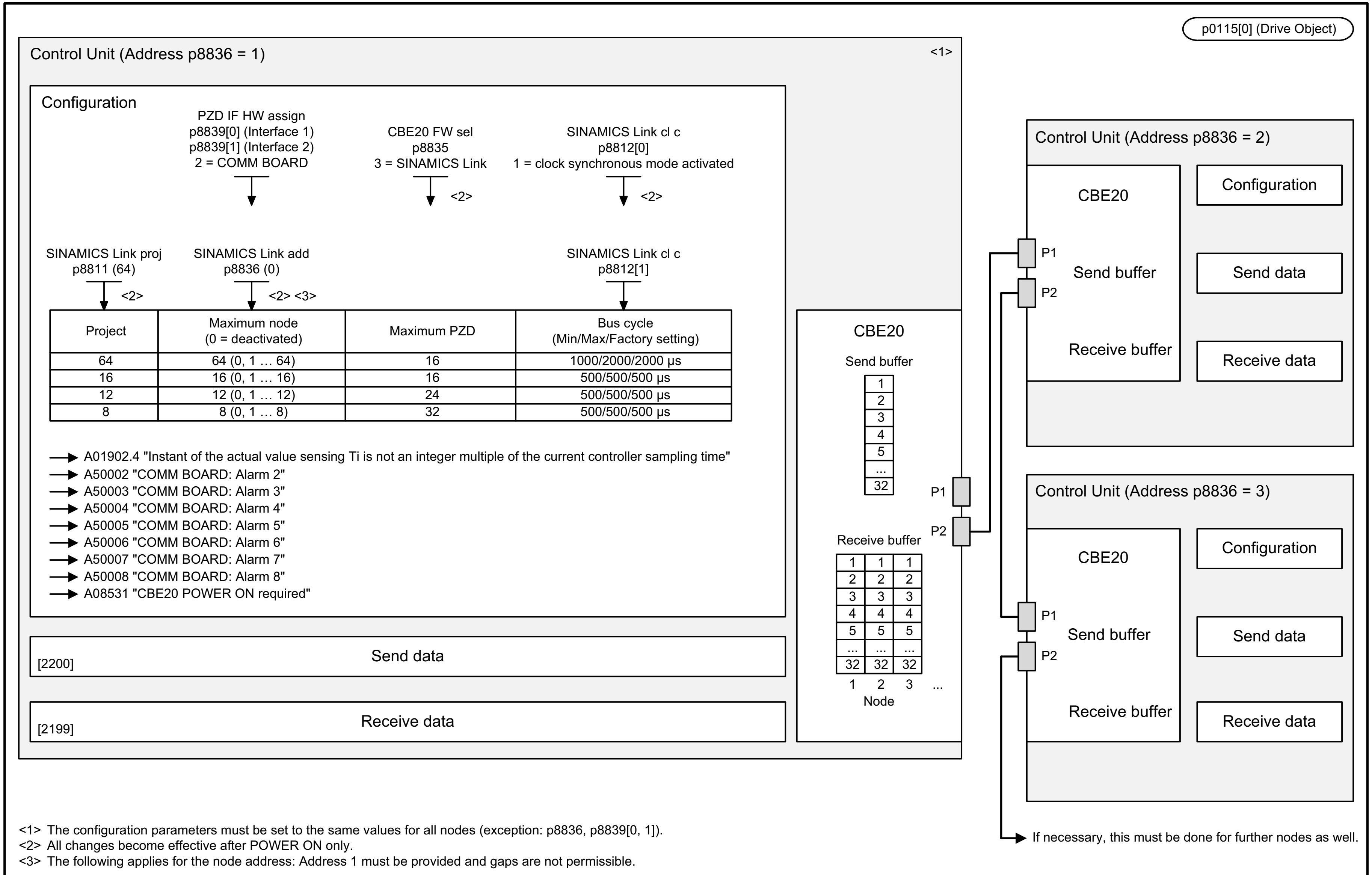




<1> A send word can only be assigned once.
<2> A node cannot receive its own transmit data.
<3> The following applies for the node address: Address 1 must be provided and gaps are not permissible.
<4> The number of process data n (PZD) depends on the drive object.
<5> Send/receive via Interface 1 (p8839[0] = 2 → p2051, p2061/r2050, r2060).
Send/receive via Interface 2 (p8839[1] = 2 → p8851, p8861/r8850, r8860).

1	2	3	4	5	6	7	8
DO: CU_G, CU_MV, CU_S					fp_2197_51_eng.vsd	Function diagram	- 2197 -
Control Unit communication - SINAMICS Link overview (r0108.31 = 1, p8835 = 3)					16.09.14 V05.01.01	SINAMICS	

Fig. 3-27 2197 – SINAMICS Link overview (r0108.31 = 1, p8835 = 3)



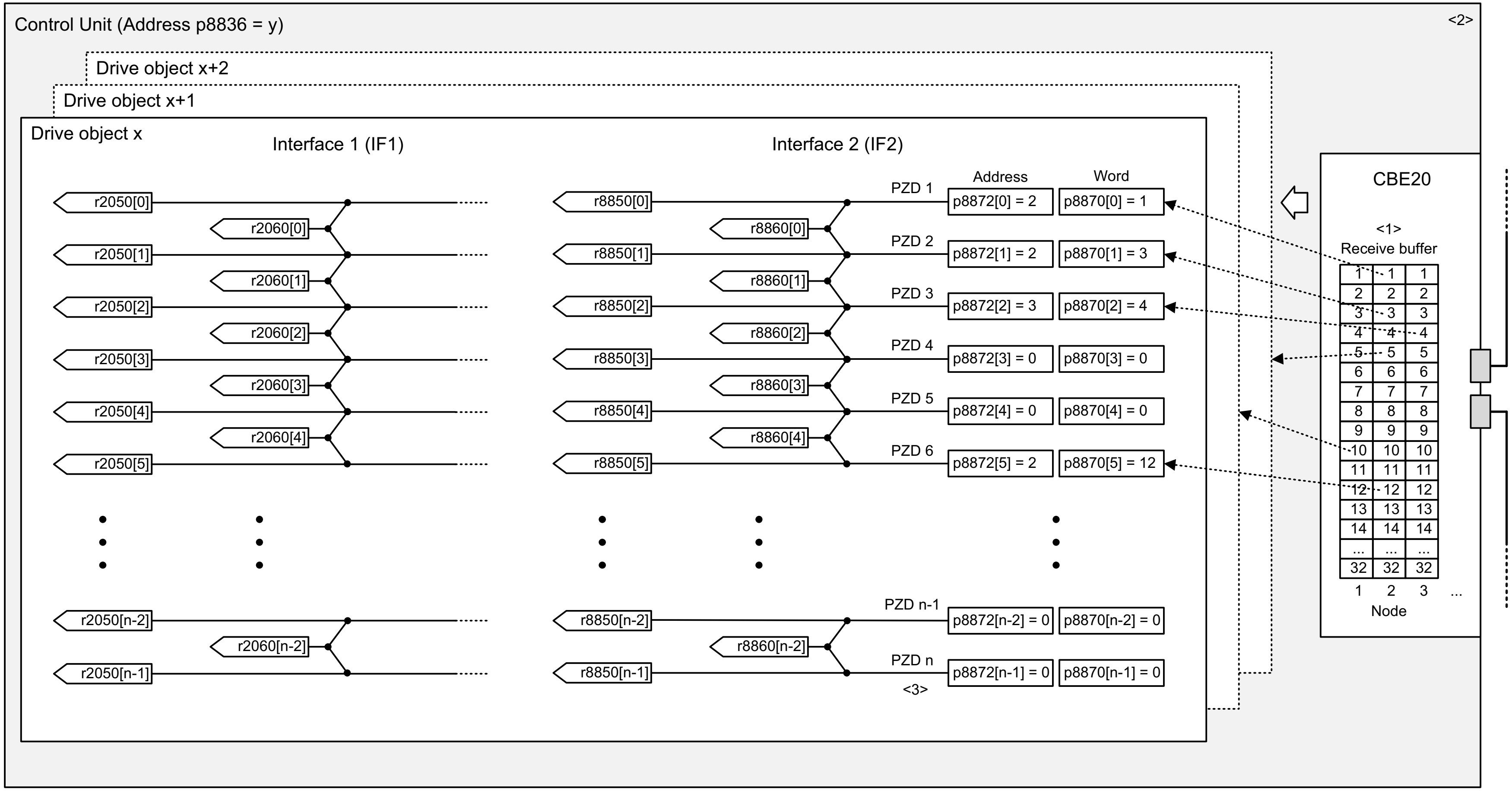
Project	Maximum node (0 = deactivated)	Maximum PZD	Bus cycle (Min/Max/Factory setting)
64	64 (0, 1 … 64)	16	1000/2000/2000 µs
16	16 (0, 1 … 16)	16	500/500/500 µs
12	12 (0, 1 … 12)	24	500/500/500 µs
8	8 (0, 1 … 8)	32	500/500/500 µs

<1> The configuration parameters must be set to the same values for all nodes (exception: p8836, p8839[0, 1]).
<2> All changes become effective after POWER ON only.
<3> The following applies for the node address: Address 1 must be provided and gaps are not permissible.

1	2	3	4	5	6	7	8

DO: CU_G, CU_MV, CU_S | fp_2198_51_eng.vsd | Function diagram | **- 2198 -**
Control Unit communication - SINAMICS Link configuration (r0108.31 = 1, p8835 = 3) | 08.10.14 V05.01.01 | SINAMICS

Fig. 3-28 2198 – SINAMICS Link configuration (r0108.31 = 1, p8835 = 3)



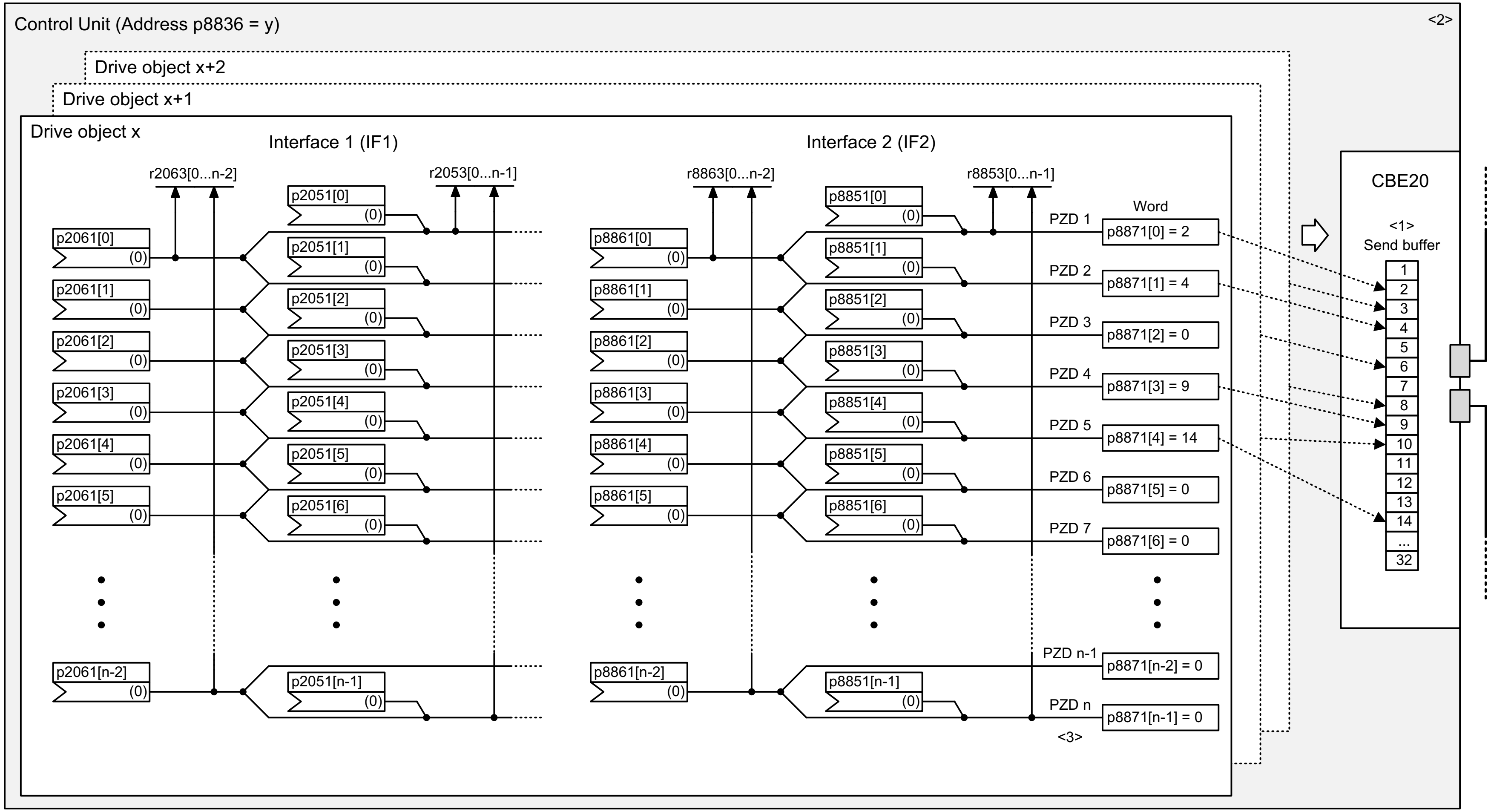
<1> A pair of values p8870[Index], p8872[Index] may only be used once in a device.
<2> All changes become effective with p8842 = 1. Afterwards, p8842 = 0 is automatically set.
A change can also be activated via warm restart, project download or POWER ON.
<3> The number of process data n (PZD) depends on the drive object.

1	2	3	4	5	6	7	8

DO: CU_G, CU_MV, CU_S	fp_2199_51_eng.vsd	Function diagram	- 2199 -
Control Unit communication - SINAMICS Link receive data (r0108.31 = 1, p8835 = 3)	16.09.14 V05.01.01	SINAMICS	

Fig. 3-29 2199 – SINAMICS Link receive data (r0108.31 = 1, p8835 = 3)

Fig. 3-30 2200 – SINAMICS Link send data (r0108.31 = 1, p8835 = 3)

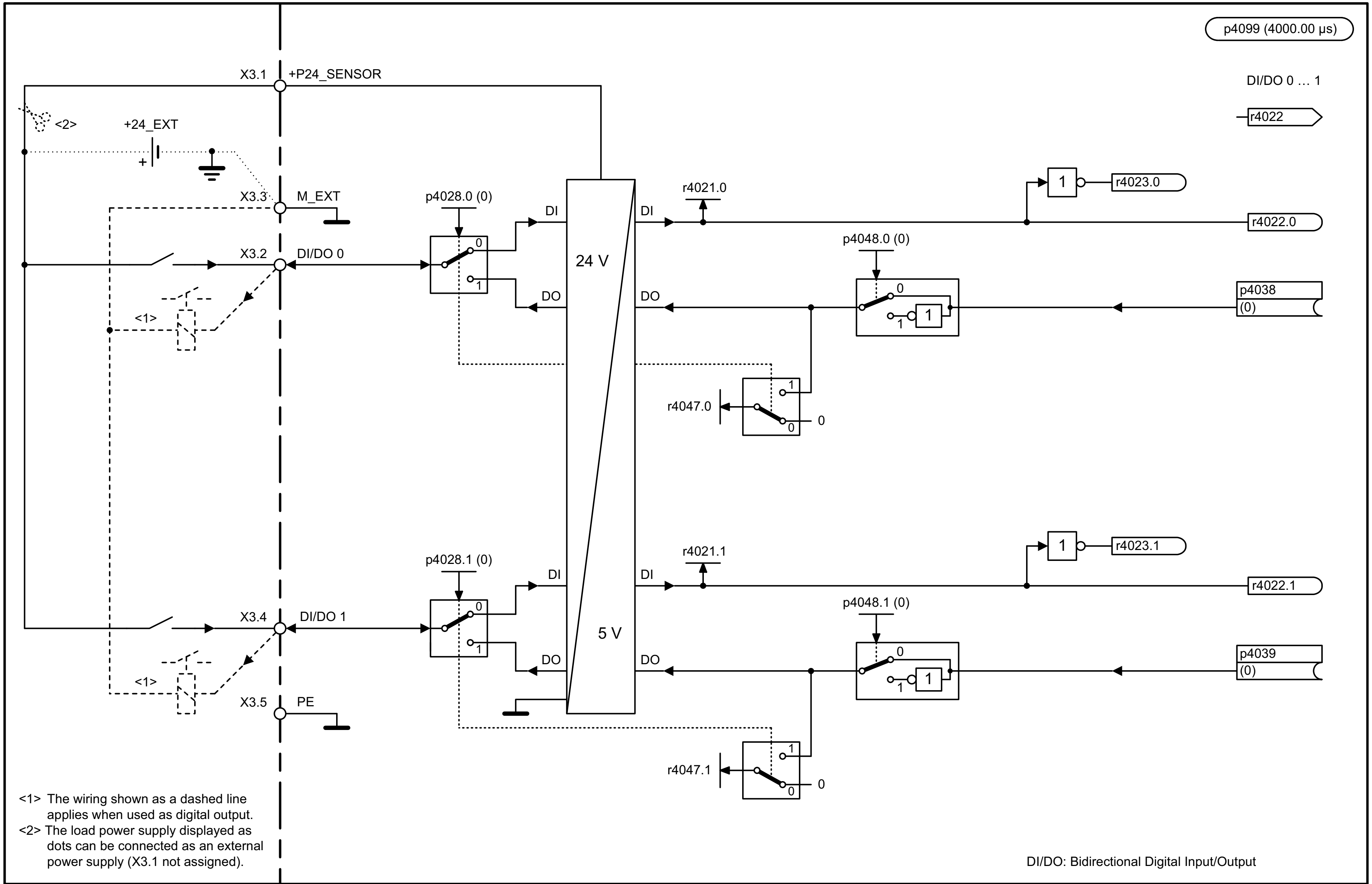


<1> A send word can only be assigned once.
<2> All changes become effective with p8842 = 1. Afterwards, p8842 = 0 is automatically set.
A change can also be activated via warm restart, project download or POWER ON.
<3> The number of process data n (PZD) depends on the drive object.

1	2	3	4	5	6	7	8
DO: CU_G, CU_MV, CU_S					fp_2200_51_eng.vsd	Function diagram	- 2200 -
Control Unit communication - SINAMICS Link send data (r0108.31 = 1, p8835 = 3)					16.09.14 V05.01.01	SINAMICS	

3.7 S120M input/output terminals

Function diagrams



1	2	3	4	5	6	7	8

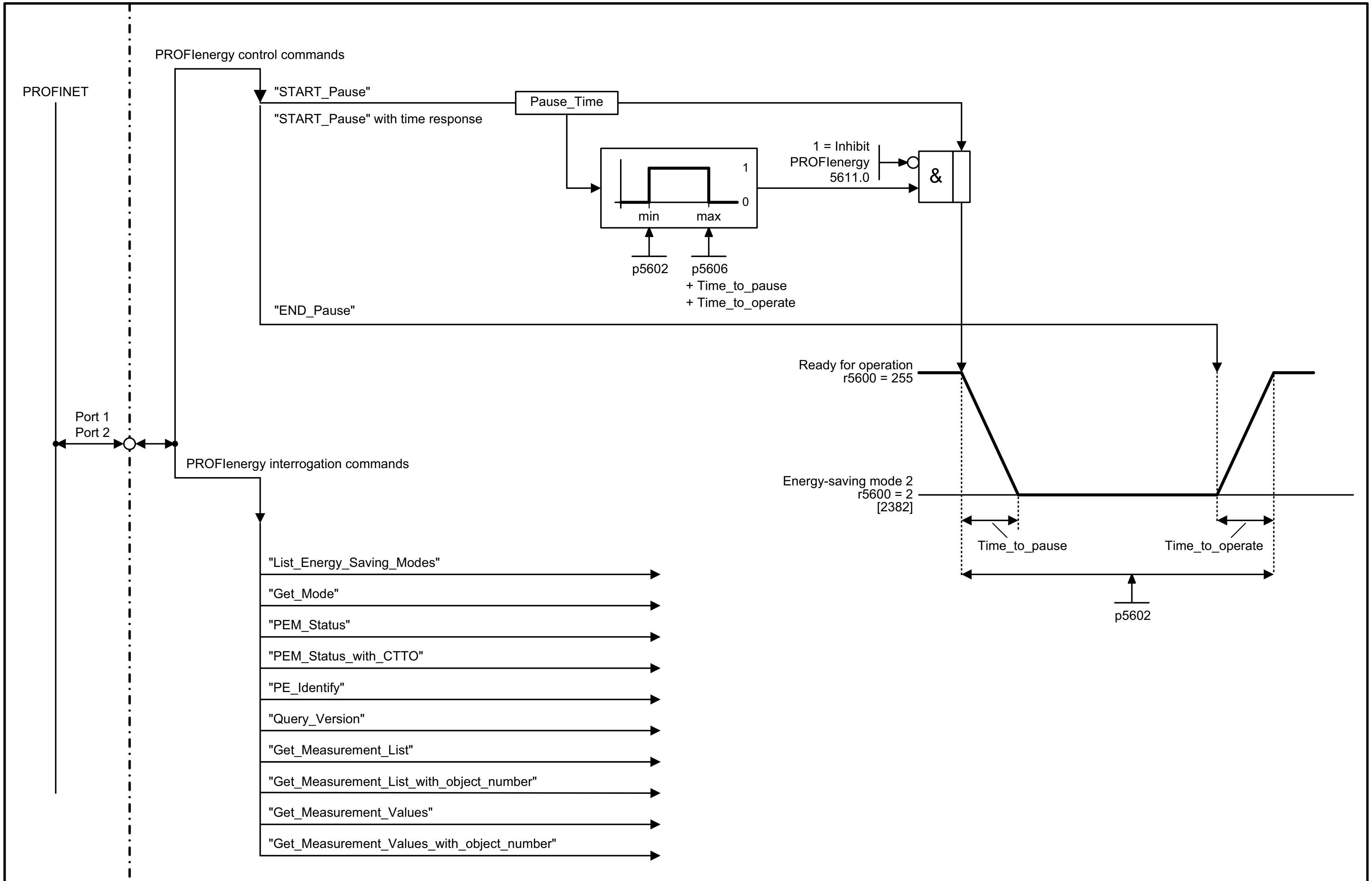
DO: SERVO (DI/DO)	fp_2201_51_eng.vsd	Function diagram	- 2201 -
S120M input/output terminals - Digital inputs/outputs, bidirectional (DI/DO 0 ... DI/DO 1)	08.01.13 V05.01.01	SINAMICS	

Fig. 3-31 2201 – Digital inputs/outputs, bidirectional (DI/DO 0 ... DI/DO 1)

3.8 PROFIenergy

Function diagrams

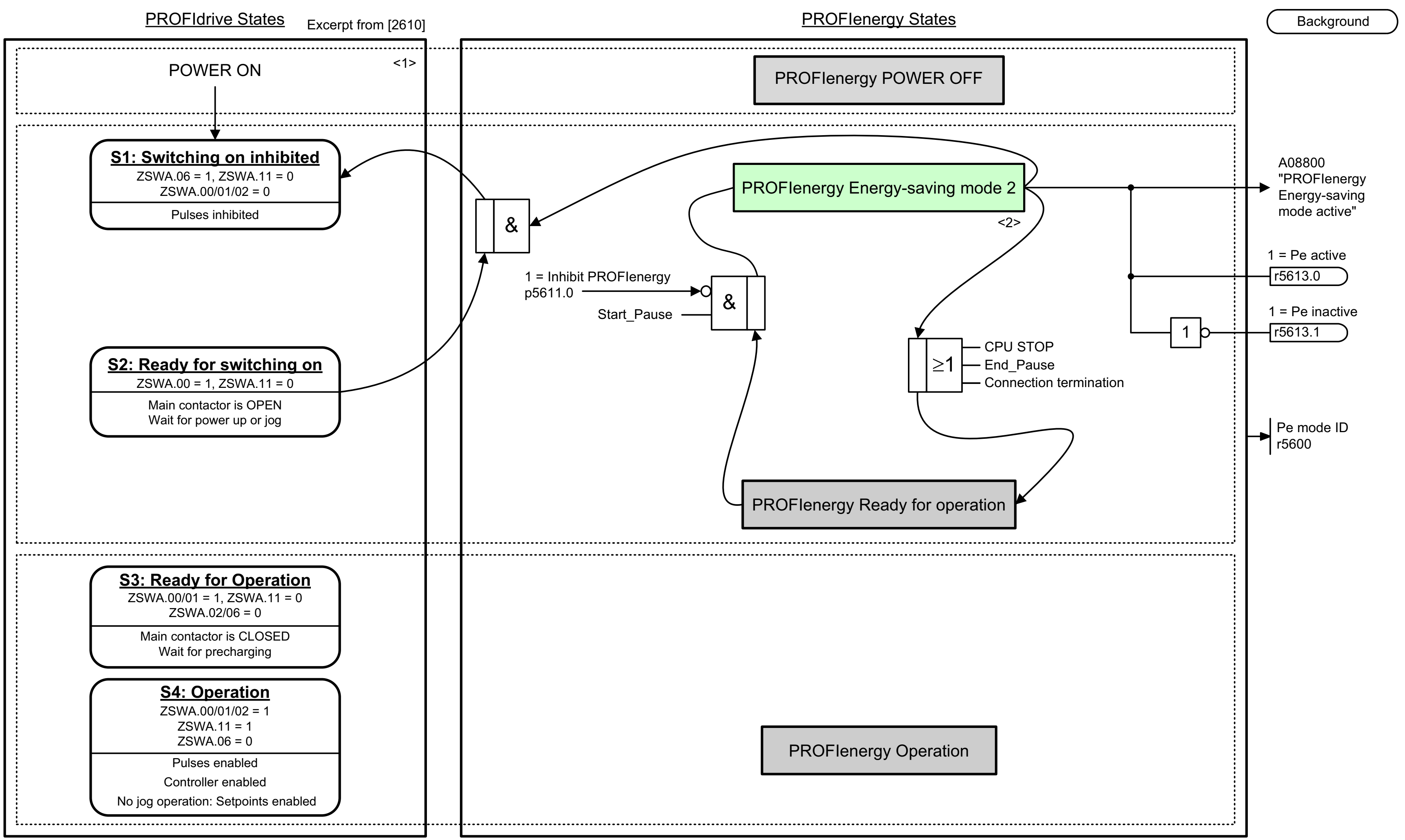
Fig. 3-32 2381 – Control commands / interrogation commands



1	2	3	4	5	6	7	8

DO: A_INF, B_INF, SERVO, S_INF, VECTOR	fp_2381_54_eng.vsd	Function diagram	- 2381 -
PROFIenergy - Control commands/interrogation commands	09.04.13 V05.01.01	S120/S150/G130/G150	

Fig. 3-33 2382 – States



<1> Excerpt from: Basic state machine of a PROFIdrive drive axis (source: PROFIBUS Nutzerorganisation (PNO)).
<2> Diagnostic alarms to the CPU inhibited.

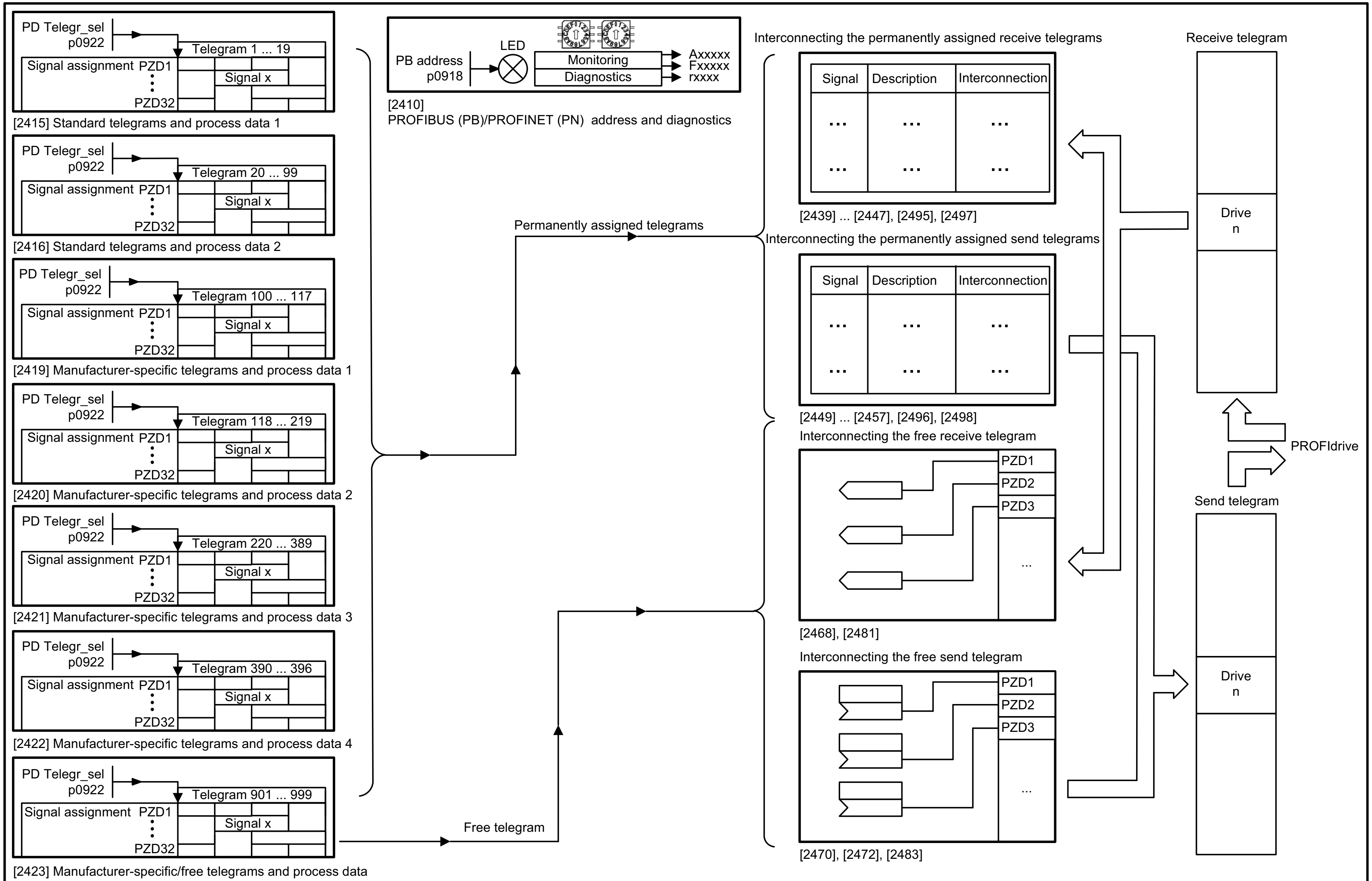
1	2	3	4	5	6	7	8

DO: A_INF, B_INF, SERVO, S_INF, VECTOR	fp_2382_55_eng.vsd	Function diagram	- 2382 -
PROFIenergy - States	26.11.15 V05.01.01	SINAMICS S120/S150	

3.9 PROFIdrive

Function diagrams

Fig. 3-34 2401 – Overview



1	2	3	4	5	6	7	8

DO: All objects	fp_2401_54_eng.vsd	Function diagram	- 2401 -
PROFIdrive - Overview	12.03.13 V05.01.01	S120/S150/G130/G150	

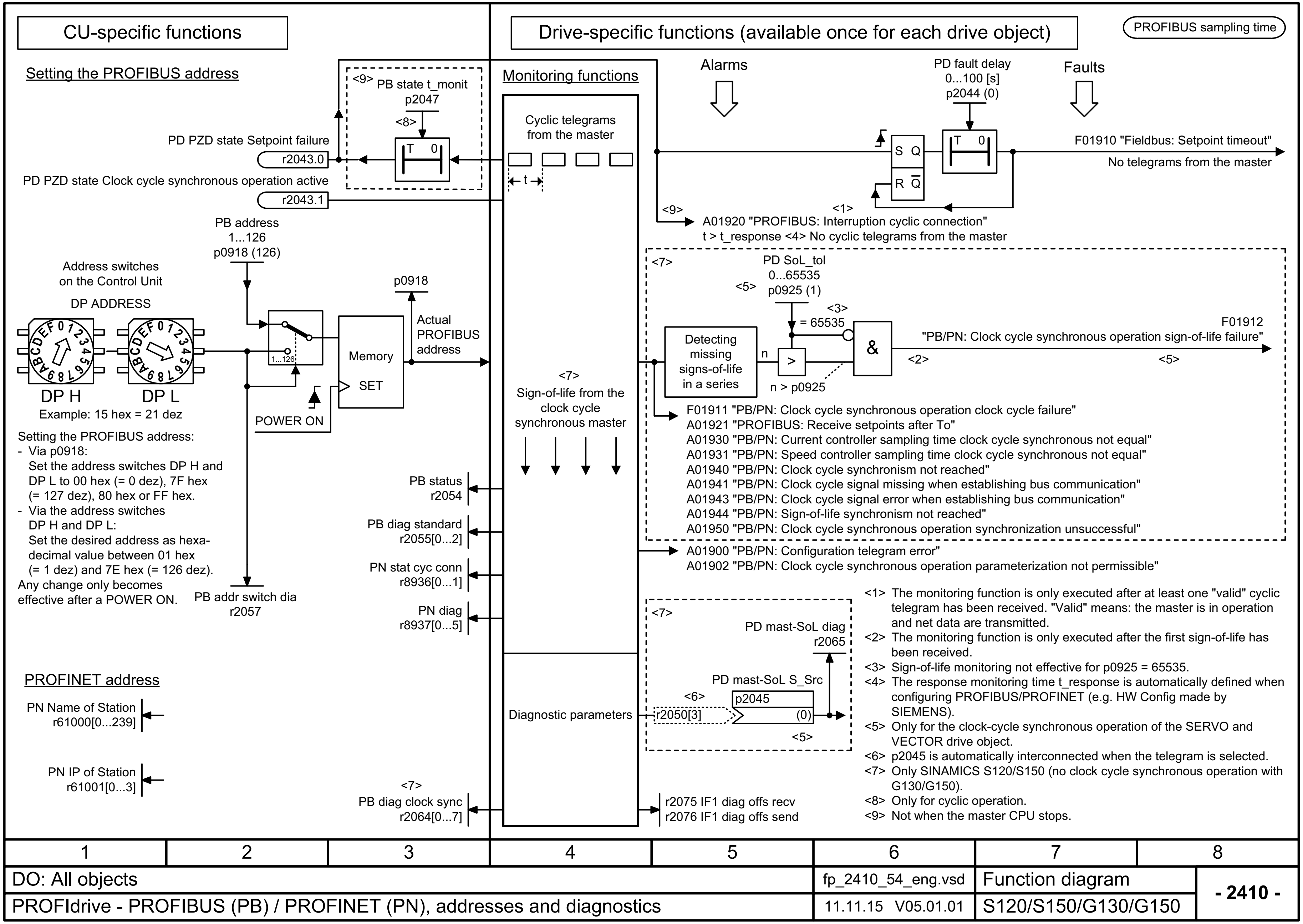


Fig. 3-35 2410 – PROFIBUS (PB) / PROFINET (PN), addresses and diagnostics

PROFIdrive sampling time

<1> <2> <3>
PD Telegram select
p0922 (999)

Not suitable for sensorless vector control (telegrams 3, 4)

[2440] [2450] automatically

Interconnection is made according to									<4>		<4>				<4>	
Telegram	1		2		3		4		5		6		7		9	
Appl. class	1		1		1, 4		1, 4		4 DSC		4 DSC		3		3	
PZD1	STW1	ZSW1	STW1	ZSW1	STW1	ZSW1	STW1	ZSW1	STW1	ZSW1	STW1	ZSW1	STW1	ZSW1	STW1	ZSW1
PZD2	NSOLL_A	NIST_A	NSOLL_B	NIST_B	NSOLL_B	NIST_B	NSOLL_B	NIST_B	NSOLL_B	NIST_B	NSOLL_B	NIST_B	SATZANW	AKTSATZ	SATZANW	AKTSATZ
PZD3															STW2	ZSW2
PZD4			STW2	ZSW2	STW2	ZSW2	STW2	ZSW2	STW2	ZSW2	STW2	ZSW2			MDI_TARPOS	XIST_A
PZD5					G1_STW	G1_ZSW	G1_STW	G1_ZSW	G1_STW	G1_ZSW	G1_STW	G1_ZSW				
PZD6						G1_XIST1	G2_STW	G1_XIST1	XERR	G1_XIST1	G2_STW	G1_XIST1			MDI_VELOCITY	
PZD7											XERR					
PZD8						G1_XIST2		G1_XIST2	KPC	G1_XIST2		G1_XIST2			MDI_ACC	
PZD9											KPC				MDI_DEC	
PZD10								G2_ZSW				G2_ZSW			MDI_MOD	
PZD11								G2_XIST1				G2_XIST1				
PZD12																
PZD13								G2_XIST2				G2_XIST2				
PZD14																
PZD15																
PZD16																
PZD17																
PZD18																
PZD19																
PZD20																
PZD21																
PZD22																
PZD23																
PZD24																
PZD25																
PZD26																
PZD27																
PZD28																
PZD29																
PZD30																
PZD31																
PZD32		Receive telegram from PROFIBUS/PROFINET	Send telegram to PROFIBUS/PROFINET	Receive telegram from PROFIBUS/PROFINET	Send telegram to PROFIBUS/PROFINET	Receive telegram from PROFIBUS/PROFINET	Send telegram to PROFIBUS/PROFINET	Receive telegram from PROFIBUS/PROFINET	Send telegram to PROFIBUS/PROFINET	Receive telegram from PROFIBUS/PROFINET	Send telegram to PROFIBUS/PROFINET	Receive telegram from PROFIBUS/PROFINET	Send telegram to PROFIBUS/PROFINET	Receive telegram from PROFIBUS/PROFINET	Send telegram to PROFIBUS/PROFINET	Receive telegram from PROFIBUS/PROFINET	Send telegram to PROFIBUS/PROFINET

<1> Depending on the drive object, only specific telegrams can be used. Not suitable for sensorless vector control.
<2> If p0922 = 999 is changed to another value, the telegram is automatically assigned as specified in [2415] to [2423].
If p0922 ≠ 999 is changed to p0922 = 999, the "old" telegram assignment is maintained as specified in [2415] to [2423].
<3> The maximum number of PZD words depends on the drive object type.
<4> Only for SINAMICS S120/S150.

= Position encoder signal

1	2	3	4	5	6	7	8
DO: ENC, SERVO, VECTOR					fp_2415_54_eng.vsd	Function diagram	- 2415 -
PROFIdrive - Standard telegrams and process data 1					06.03.14 V05.01.01	S120/S150/G130/G150	

Fig. 3-36 2415 – Standard telegrams and process data 1

Fig. 3-37 2416 – Standard telegrams and process data 2

<1> <2> <4>
PD Telegram select
p0922 (999)

PROFIdrive sampling time

Interconnection is made according to	[2440] [2450] automatically							
			<5>		<5>		<5>	
Telegram	20		81		82		83	
Application class	1		4		4		4	
PZD1	STW1	ZSW1	STW2_ENC	ZSW2_ENC	STW2_ENC	ZSW2_ENC	STW2_ENC	ZSW2_ENC
PZD2	NSOLL_A	NIST_A_GLATT	G1_STW	G1_ZSW	G1_STW	G1_ZSW	G1_STW	G1_ZSW
PZD3		IAIST_GLATT		G1_XIST1		G1_XIST1		G1_XIST1
PZD4		MIST_GLATT						
PZD5		PIST_GLATT		G1_XIST2		G1_XIST2		G1_XIST2
PZD6		user <3>						
PZD7						NIST_A		NIST_B
PZD8								
PZD9								
PZD10								
PZD11								
PZD12								
PZD13								
PZD14								
PZD15								
PZD16								
PZD17								
PZD18								
PZD19								
PZD20								
PZD21								
PZD22								
PZD23								
PZD24								
PZD25								
PZD26								
PZD27								
PZD28								
PZD29								
PZD30								
PZD31								
PZD32	Receive telegram from PROFIBUS/PROFINET	Send telegram to PROFIBUS/PROFINET	Receive telegram from PROFIBUS/PROFINET	Send telegram to PROFIBUS/PROFINET	Receive telegram from PROFIBUS/PROFINET	Send telegram to PROFIBUS/PROFINET	Receive telegram from PROFIBUS/PROFINET	Send telegram to PROFIBUS/PROFINET

<1> Depending on the drive object, only specific telegrams can be used. Not suitable for sensorless vector control.
<2> If p0922 = 999 is changed to another value, the telegram is automatically assigned as specified in [2415] - [2423].
If p0922 ≠ 999 is changed to p0922 = 999, the "old" telegram assignment is maintained as specified in [2415] - [2423].
<3> Freely interconnectable (pre-setting: MELD_NAMUR).
<4> The maximum number of PZD words depends on the drive object type.
<5> Only for ENCODER.

= Position encoder signal

1	2	3	4	5	6	7	8
DO: ENC, SERVO, VECTOR					fp_2416_54_eng.vsd	Function diagram	- 2416 -
PROFIdrive - Standard telegrams and process data 2					14.03.18 V05.01.01	S120/S150/G130/G150	

Fig. 3-38 2419 – Manufacturer-specific telegrams and process data 1

PROFIdrive sampling time

<1> <2> <4>
PD Telegr_select
p0922 (999)

[2440] [2450] automatically

Interconnection is made according to	<5>		<5>		<5>		<5>		<5>		<5>		<5>	
Telegram	102		103		105		106		110		111		116	
Appl. class	1, 4		1, 4		4 DSC		4 DSC		3		3		4 DSC	
PZD1	STW1	ZSW1	STW1	ZSW1	STW1	ZSW1	STW1	ZSW1	STW1	ZSW1	STW1	ZSW1	STW1	ZSW1
PZD2	NSOLL_B	NIST_B	NSOLL_B	NIST_B	NSOLL_B	NIST_B	NSOLL_B	NIST_B	SATZANW	AKTSATZ	POS_STW1	POS_ZSW1	NSOLL_B	NIST_B
PZD3									POS_STW	POS_ZSW	POS_STW2	POS_ZSW2		
PZD4	STW2	ZSW2	STW2	ZSW2	STW2	ZSW2	STW2	ZSW2	STW2	ZSW2	STW2	ZSW2	STW2	ZSW2
PZD5	MOMRED	MELDW	MOMRED	MELDW	MOMRED	MELDW	MOMRED	MELDW	OVERRIDE	MELDW	OVERRIDE	MELDW	MOMRED	MELDW
PZD6	G1_STW	G1_ZSW	G1_STW	G1_ZSW	G1_STW	G1_ZSW	G1_STW	G1_ZSW	MDI_TARPOS	XIST_A	MDI_TARPOS	XIST_A	G1_STW	G1_ZSW
PZD7		G1_XIST1	G2_STW	G1_XIST1	XERR	G1_XIST1	G2_STW	G1_XIST1					G2_STW	G1_XIST1
PZD8							XERR		MDI_VELOCITY		MDI_VELOCITY	NIST_B	XERR	
PZD9		G1_XIST2		G1_XIST2	KPC	G1_XIST2		G1_XIST2						G1_XIST2
PZD10							KPC		MDI_ACC		MDI_ACC	FAULT_CODE	KPC	
PZD11				G2_ZSW				G2_ZSW	MDI_DEC		MDI_DEC	WARN_CODE		G2_ZSW
PZD12				G2_XIST1				G2_XIST1	MDI_MODE		user <3>	user <3>		G2_XIST1
PZD13														
PZD14				G2_XIST2				G2_XIST2						G2_XIST2
PZD15														
PZD16														AIST_GLATT
PZD17														MSOLL_GLATT
PZD18														PIST_GLATT
PZD19														ITIST_GLATT
PZD20 … PZD32	Receive telegram from PROFIBUS/PROFINET	Send telegram to PROFIBUS/PROFINET	Receive telegram from PROFIBUS/PROFINET	Send telegram to PROFIBUS/PROFINET	Receive telegram from PROFIBUS/PROFINET	Send telegram to PROFIBUS/PROFINET	Receive telegram from PROFIBUS/PROFINET	Send telegram to PROFIBUS/PROFINET	Receive telegram from PROFIBUS/PROFINET	Send telegram to PROFIBUS/PROFINET	Receive telegram from PROFIBUS/PROFINET	Send telegram to PROFIBUS/PROFINET	Receive telegram from PROFIBUS/PROFINET	Send telegram to PROFIBUS/PROFINET

<1> Depending on the drive object, only specific telegrams can be used.
<2> If p0922 = 999 is changed to another value, the telegram is automatically assigned as specified in [2415] - [2423].
If p0922 ≠ 999 is changed to p0922 = 999, the "old" telegram assignment is maintained as specified in [2415] - [2423]!
<3> Can be freely connected.
<4> The maximum number of PZD words depends on the drive object type.
<5> Only for SINAMICS S120/S150.

= Position encoder signal

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_2419_54_eng.vsd	Function diagram	- 2419 -
PROFIdrive - Manufacturer-specific telegrams and process data 1	06.03.14 V05.01.01	S120/S150/G130/G150	

Fig. 3-39 2420 – Manufacturer-specific telegrams and process data 2

<1> <2> <4>
PD Telegr_select
p0922 (999)

PROFIdrive sampling time

Interconnection is made according to	[2440] [2450] automatically													
	<3>		<3>		<3>				<7>		<6>			
Telegram	118		125		126		136		138		139		166	
Appl. class	4 DSC		4 DSC		4 DSC		4 DSC		4 DSC		4 DSC		4 DSC	
PZD1	STW1	ZSW1	STW1	ZSW1	STW1	ZSW1	STW1	ZSW1	STW1	ZSW1	STW1	ZSW1	STW1	ZSW1
PZD2	NSOLL_B	NIST_B	NSOLL_B	NIST_B	NSOLL_B	NIST_B	NSOLL_B	NIST_B	NSOLL_B	NIST_B	NSOLL_B	NIST_B	NSOLL_B	NIST_B
PZD3														
PZD4	STW2	ZSW2	STW2	ZSW2	STW2	ZSW2	STW2	ZSW2	STW2	ZSW2	STW2	ZSW2	STW2	ZSW2
PZD5	MOMRED	MELDW	MOMRED	MELDW	MOMRED	MELDW	MOMRED	MELDW	MOMRED	MELDW	MOMRED	MELDW	MOMRED	MELDW
PZD6	G2_STW	G2_ZSW	G1_STW	G1_ZSW	G1_STW	G1_ZSW	G2_STW	G1_ZSW	G2_STW	G2_ZSW	G1_STW	G1_ZSW	G1_STW	G1_ZSW
PZD7	G3_STW	G2_XIST1	XERR	G1_XIST1	G2_STW	G1_XIST1	G3_STW	G1_XIST1	G3_STW	G2_XIST1	res	G1_XIST1	G2_STW	G1_XIST1
PZD8	XERR				XERR		XERR		XERR		XERR		XERR	
PZD9		G2_XIST2	KPC	G1_XIST2		G1_XIST2		G1_XIST2		G2_XIST2		G1_XIST2		G1_XIST2
PZD10	KPC				KPC		KPC		KPC		KPC		KPC	
PZD11		G3_ZSW	M_VST			G2_ZSW		G2_ZSW		G3_ZSW		SP_ZSW		G2_ZSW
PZD12		G3_XIST1	DSC_STW <5>		M_VST	G2_XIST1	M_VST	G3_XIST1	M_VST	G2_XIST1	M_VST	SP_XIST_A	G1_MP	G2_XIST1
PZD13			res		DSC_STW <5>		DSC_STW <5>		DSC_STW <5>		DSC_STW <5>	SP_XIST_D		
PZD14		G3_XIST2	T_SYMM <5>		res	G2_XIST2	res	G3_XIST2	res	G2_XIST2	res	SP_KONFIG	G1_MP_ZSW	G2_XIST2
PZD15					T_SYMM <5>		T_SYMM <5>		T_SYMM <5>		T_SYMM <5>	res		
PZD16		AIST_GLATT						AIST_GLATT		AIST_GLATT		AIST_GLATT		VA_VALVELIFT
PZD17		MSOLL_GLATT						MSOLL_GLATT		MSOLL_GLATT		MSOLL_GLATT		VA_TORQUE
PZD18		PIST_GLATT						PIST_GLATT		PIST_GLATT		PIST_GLATT		VA_POWER
PZD19		ITIST_GLATT						ITIST_GLATT		ITIST_GLATT		ITIST_GLATT		VA_PRESSURE_A
PZD20														VA_PRESSURE_B
PZD21	Receive telegram from PROFIBUS/PROFINET	Send telegram to PROFIBUS/PROFINET	Receive telegram from PROFIBUS/PROFINET	Send telegram to PROFIBUS/PROFINET	Receive telegram from PROFIBUS/PROFINET	Send telegram to PROFIBUS/PROFINET	Receive telegram from PROFIBUS/PROFINET	Send telegram to PROFIBUS/PROFINET	Receive telegram from PROFIBUS/PROFINET	Send telegram to PROFIBUS/PROFINET	Receive telegram from PROFIBUS/PROFINET	Send telegram to PROFIBUS/PROFINET	Receive telegram from PROFIBUS/PROFINET	Send telegram to PROFIBUS/PROFINET
PZD22														
PZD23														
PZD24														
PZD25														
PZD26														
PZD27														
PZD28														
PZD29														
PZD30														
PZD31														
PZD32														

<1> Depending on the drive object, only specific telegrams can be used.
<2> If p0922 = 999 is changed to another value, the telegram is automatically assigned as specified in [2415] - [2423].
If p0922 ≠ 999 is changed to p0922 = 999, the "old" telegram assignment is maintained as specified in [2415] - [2423].
<3> Only for SINAMICS S120/S150.
<4> The maximum number of PZD words depends on the drive object type.
<5> Only if the "DSC with Spline" function module is active (r0108.6 = 1).
<6> Only if the "Spindle diagnostics" function module is active (r0108.11 = 1).
<7> Only for SINAMICS S120.

= Position encoder signal

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_2420_54_eng.vsd	Function diagram	- 2420 -
PROFIdrive - Manufacturer-specific telegrams and process data 2	06.03.14 V05.01.01	S120/S150/G130/G150	

Fig. 3-40 2421 – Manufacturer-specific telegrams and process data 3

PROFIdrive sampling time

<1> <2> <4>
PD Telegram select
p0922 (999)

Interconnection is made according to	[2440] [2450] automatically		<10>		<8>			
Telegram	220		352		370		371	
Appl. class	1		1		-		-	
PZD1 <5>	STW1_BM	ZSW1_BM	STW1	ZSW1	E_STW1	E_ZSW1	E_STW1_BM	E_ZSW1_BM
PZD2	NSOLL_B	NIST_A /NIST_A_GLATT user <3> <9>	NSOLL_A	NIST_A_GLATT			user <3>	IAIST
PZD3		IAIST/IAIST_GLATT user <3> <9>	<3>	IAIST_GLATT			user <3>	WARN_CODE
PZD4	STW2_BM	MIST/MIST_GLATT user <3> <9>	<3>	MIST_GLATT			user <3>	FAULT_CODE
PZD5	M_ADD <7><10>	WARN_CODE	<3>	WARN_CODE			user <3>	user <3>
PZD6	M_LIM <6> <7>	FAULT_CODE	<3>	FAULT_CODE				user <3>
PZD7	user <3>	ZSW2_BM						user <3>
PZD8	user <3>	r1482 user <3>						user <3>
PZD9	user <3>	user <3>						
PZD10	user <3>	user <3>						
PZD11								
PZD12								
PZD13								
PZD14								
PZD15								
PZD16								
PZD17								
PZD18								
PZD19								
PZD20								
PZD21								
PZD22								
PZD23								
PZD24								
PZD25								
PZD26								
PZD27								
PZD28								
PZD29								
PZD30								
PZD31								
PZD32								
	Receive telegram from PROFIBUS/PROFINET	Send telegram to PROFIBUS/PROFINET	Receive telegram from PROFIBUS/PROFINET	Send telegram to PROFIBUS/PROFINET	Receive telegram from PROFIBUS/PROFINET	Send telegram to PROFIBUS/PROFINET	Receive telegram from PROFIBUS/PROFINET	Send telegram to PROFIBUS/PROFINET

<1> Depending on the drive object, only specific telegrams can be used.
<2> If p0922 = 999 is changed to another value, the telegram is automatically assigned as specified in [2415] - [2423].
If p0922 ≠ 999 is changed to p0922 = 999, the "old" telegram assignment is maintained as specified in [2415] - [2423]!
<3> Freely interconnectable.
<4> The maximum number of PZD words depends on the drive object type.
<5> In order to comply with the PROFIdrive profile, PZD1 must be used as control word 1 (STW1) or status word 1 (ZSW1).
p2037 = 2 should be set if STW1 is not transferred with PZD1 as specified in the PROFIdrive profile.

<6> Not for U/f control.
<7> Preassignment, not disabled.
<8> Only for S120/S150.
<9> Values smoothed at VECTOR, Values unsmoothed at SERVO.
<10> Not for SERVO.

1	2	3	4	5	6	7	8
DO: A_INF, B_INF, CU_G, CU_S, S_INF, SERVO, VECTOR					fp_2421_54_eng.vsd	Function diagram	- 2421 -
PROFIdrive - Manufacturer-specific telegrams and process data 3					06.03.14 V05.01.01	S120/S150/G130/G150	

<1> <2> <3>
PD Telegram select
p0922 (999)

PROFIdrive sampling time

Interconnection is made according to	[2440] [2450] automatically												<4>	
Telegram	390		391		392		393		394		395		396	
Appl. class	-		-		-		-		-		-		-	
PZD1	CU_STW1	CU_ZSW1	CU_STW1	CU_ZSW1	CU_STW1	CU_ZSW1	CU_STW1	CU_ZSW1	CU_STW1	CU_ZSW1	CU_STW1	CU_ZSW1	CU_STW1	CU_ZSW1
PZD2	A_DIGITAL	E_DIGITAL	A_DIGITAL	E_DIGITAL	A_DIGITAL	E_DIGITAL	A_DIGITAL	E_DIGITAL	A_DIGITAL	E_DIGITAL	A_DIGITAL	E_DIGITAL	A_DIGITAL	E_DIGITAL
PZD3			MT_STW	MT_ZSW	MT_STW	MT_ZSW	A_DIGITAL_1	E_DIGITAL_1	A_DIGITAL_1	E_DIGITAL_1	A_DIGITAL_1	E_DIGITAL_1	A_DIGITAL_1	E_DIGITAL_1
PZD4				MT1_ZS_F		MT1_ZS_F	MT_STW	MT_ZSW			MT_STW	MT_ZSW	MT_STW	MT_ZSW
PZD5				MT1_ZS_S		MT1_ZS_S		MT1_ZS_F				MT_DIAG	NOCKEN1_ZS_F	MT1_ZS_F
PZD6				MT2_ZS_F		MT2_ZS_F		MT1_ZS_S				MT_ZS_1	NOCKEN1_ZS_S	MT1_ZS_S
PZD7				MT2_ZS_S		MT2_ZS_S		MT2_ZS_F				MT_ZS_2	NOCKEN2_ZS_F	MT2_ZS_F
PZD8						MT3_ZS_F		MT2_ZS_S				MT_ZS_3	NOCKEN2_ZS_S	MT2_ZS_S
PZD9						MT3_ZS_S		MT3_ZS_F				MT_ZS_4	NOCKEN3_ZS_F	MT3_ZS_F
PZD10						MT4_ZS_F		MT3_ZS_S				MT_ZSB1	NOCKEN3_ZS_S	MT3_ZS_S
PZD11						MT4_ZS_S		MT4_ZS_F				MT_ZS_5	NOCKEN4_ZS_F	MT4_ZS_F
PZD12						MT5_ZS_F		MT4_ZS_S				MT_ZS_6	NOCKEN4_ZS_S	MT4_ZS_S
PZD13						MT5_ZS_S		MT5_ZS_F				MT_ZS_7	NOCKEN5_ZS_F	MT5_ZS_F
PZD14						MT6_ZS_F		MT5_ZS_S				MT_ZS_8	NOCKEN5_ZS_S	MT5_ZS_S
PZD15						MT6_ZS_S		MT6_ZS_F				MT_ZSB2	NOCKEN6_ZS_F	MT6_ZS_F
PZD16								MT6_ZS_S				MT_ZS_9	NOCKEN6_ZS_S	MT6_ZS_S
PZD17								MT7_ZS_F				MT_ZS_10	NOCKEN7_ZS_F	MT7_ZS_F
PZD18								MT7_ZS_S				MT_ZS_11	NOCKEN7_ZS_S	MT7_ZS_S
PZD19								MT8_ZS_F				MT_ZS_12	NOCKEN8_ZS_F	MT8_ZS_F
PZD20								MT8_ZS_S				MT_ZSB3	NOCKEN8_ZS_S	MT8_ZS_S
PZD21								E_ANALOG				MT_ZS_13		E_ANALOG
PZD22												MT_ZS_14		
PZD23												MT_ZS_15		
PZD24												MT_ZS_16		
PZD25												MT_ZSB4		
PZD26 … PZD32	Receive telegram from PROFIBUS/PROFINET	Send telegram to PROFIBUS/PROFINET	Receive telegram from PROFIBUS/PROFINET	Send telegram to PROFIBUS/PROFINET	Receive telegram from PROFIBUS/PROFINET	Send telegram to PROFIBUS/PROFINET	Receive telegram from PROFIBUS/PROFINET	Send telegram to PROFIBUS/PROFINET	Receive telegram from PROFIBUS/PROFINET	Send telegram to PROFIBUS/PROFINET	Receive telegram from PROFIBUS/PROFINET	Send telegram to PROFIBUS/PROFINET	Receive telegram from PROFIBUS/PROFINET	Send telegram to PROFIBUS/PROFINET

<1> Depending on the drive object, only specific telegrams can be used.
<2> If p0922 = 999 is changed to another value, the telegram is automatically assigned as specified in [2415] - [2423].
If p0922 ≠ 999 is changed to p0922 = 999, the "old" telegram assignment is maintained as specified in [2415] - [2423].
<3> The maximum number of PZD words depends on the drive object type.
<4> Only for CU_I_D410.
<5> (grey box) Connected Only for CU_S_AC or CU_I_D410.

1	2	3	4	5	6	7	8

DO: A_INF, B_INF, CU_G, CU_S, S_INF, SERVO, VECTOR	fp_2422_54_eng.vsd	Function diagram	- 2422 -
PROFIdrive - Manufacturer-specific telegrams and process data 4	07.03.14 V05.01.01	S120/S150/G130/G150	

Fig. 3-41 2422 – Manufacturer-specific telegrams and process data 4

PROFIdrive sampling time

<4> Telegr SIC/SCC p60122

<1> <2> <4> PD Telegram select p0922 (999)

Interconnection is made according to	Supplementary telegram							[2481] [2483]	
Telegram	700		701		750			999	
Application class	-		-		-			<3> - <3>	
PZD1		S_ZSW1B (r9734)	S_STW1B (p10250)	S_ZSW1B (r9734)	M_ADD1 (p1511)	M_ACT (r0080)		STW1	ZSW1
PZD2		S_V_LIMIT_B (r9733[2])	S_STW3B (p10235)	S_ZSW2B (r9743)	M_LIMIT_POS (p1522)				
PZD3				S_V_LIMIT_B (r9733[2])	M_LIMIT_NEG (p1523)				
PZD4									
PZD5				S_ZSW3B (r10234)					
PZD6									
• • •									
PZD30									
PZD31									
PZD32									
	Receive telegram from PROFIBUS/PROFINET	Send telegram to PROFIBUS/PROFINET	Receive telegram from PROFIBUS/PROFINET	Send telegram to PROFIBUS/PROFINET	Receive telegram from PROFIBUS/PROFINET			Receive telegram from PROFIBUS/PROFINET; Receive telegram length freely selectable via central PROFIdrive configuration in the master <4>	Send telegram to PROFIBUS/PROFINET; Send telegram length freely selectable via central PROFIdrive configuration in the master <4>

The arrangement of process data (PZD) for the supplementary telegram 700/701/750 depends on the telegram selection (p0922, p2079) and the receive and send words reserved (p2070, p2071).
The first supplementary telegram (p60122, p8864) is appended to the telegram selected resp. the words reserved.
The second supplementary telegram (p8865) is appended to the first supplementary telegram.

<1> Depending on the drive object, only specific telegrams can be used.
<2> If p0922 = 999 is changed to another value, the telegram is automatically assigned as specified in [2415] - [2423].
If p0922 ≠ 999 is changed to p0922 = 999, the "old" telegram assignment is maintained as specified in [2415] - [2423].
<3> In order to comply with the PROFIdrive profile, PZD1 must be used as control word 1 (STW1) or status word 1 (ZSW1).
p2037 = 2 should be set if STW1 is not transferred with PZD1 as specified in the PROFIdrive profile.
<4> The maximum number of PZD words depends on the drive object type.

1	2	3	4	5	6	7	8
DO: SERVO, VECTOR					fp_2423_54_eng.vsd	Function diagram	- 2423 -
PROFIdrive - Manufacturer-spezific/free telegrams and process data					28.09.17 V05.01.01	S120/S150/G130/G150	

Fig. 3-42 2423 – Manufacturer-specific/free telegrams and process data

Fig. 3-43 2425 – STW1_BM control word, metal industry interconnection

Signal targets for STW1_BM

<1>

PROFIdrive sampling time

Signal	Meaning	Interconnection parameters	[Function diagram] internal control word	[Function diagram] signal target	Inverted
STW1.0	**0 = OFF (OFF1)** = ON	p0840[0] = r2090.0	[2501.3]	[2610]	-
STW1.1	**0 = OFF2** (immediate pulse suppression and switch on inhibit) 1 = No OFF2 (enable is possible)	p0844[0] = r2090.1	[2501.3]	[2610]	-
STW1.2	0 = OFF3 (braking along the OFF3 ramp (p1135), then pulse suppression and switch on inhibit) **1 = No OFF3** (enable is possible)	p0848[0] = r2090.2	[2501.3]	[2610]	-
STW1.3	0 = Inhibit operation **1 = Enable operation**	p2816[0] = r2090.3	[2501.3]	[2634.3]	-
STW1.4	0 = Inhibit ramp-function generator **1 = Operating condition**	p1140[0] = r2090.4	[2501.3]	[3060] [3070] [3080]	-
STW1.5	0 = Stop the ramp-function generator **1 = Enable the ramp-function generator**	p1141[0] = r2090.5	[2501.3]	[3060] [3070]	-
STW1.6	0 = Inhibit setpoint = 0 **1 = Enable setpoint**	p1142[0] = r2090.6	[2501.3]	[3060] [3070] [3080]	-
STW1.7	**= Acknowledge faults**	p2103[0] = r2090.7	[2546.1]	[8060]	-
STW1.8	**Reserved**	-	-	-	-
STW1.9	**Reserved**	-	-	-	-
STW1.10	**1 = Control by PLC** <2>	p0854[0] = r2090.10	[2501.3]	[2501]	-
STW1.11	**Reserved**	-	-	-	-
STW1.12	**Reserved** <3>	<3>	-	-	-
STW1.13	**Reserved** <3>	<3>	-	-	-
STW1.14	**Reserved** <3>	<3>	-	-	-
STW1.15	**Reserved** <3>	<3>	-	-	-

<1> Used in telegram 220.
<2> STW1.10 must be set to ensure that the drive object accepts the process data (PZD).
<3> Interconnection is not disabled.

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_2425_54_eng.vsd	Function diagram	- 2425 -
PROFIdrive - STW1_BM control word, metal industry interconnection	27.06.13 V05.01.01	S120/S150/G130/G150	

PROFIdrive sampling time

Signal targets for STW2_BM <1>

Signal	Meaning	Interconnection parameters	[Function diagram] internal control word	[Function diagram] signal target	Inverted
STW2.0	**Command data set selection CDS, bit 0**	p0810 = r2093.0	-	[8560]	-
STW2.1	**Command data set selection CDS, bit 1** <3>	p0811 = r2093.1	-	[8560]	-
STW2.2	**Drive data set selection DDS, bit 0**	p0820[0] = r2093.2 <2>	-	[8565]	-
STW2.3	**Drive data set selection DDS, bit 1**	p0821[0] = r2093.3 <2>	-	[8565]	-
STW2.4	**Drive data set selection DDS, bit 2**	p0822[0] = r2093.4 <2>	-	[8565]	-
STW2.5	**1 = Bypass ramp-function generator** <4>	p1122[0] = r2093.5	-	-	-
STW2.6	**Reserved**	-	-	-	-
STW2.7	**1 = Speed controller set integrator value**	p1477[0] = r2093.7	-	-	-
STW2.8	**1 = Droop enabled** <3>	p1492[0] = r2093.8	-	[6030]	-
STW2.9	**1 = Speed controller enabled**	p0856[0] = r2093.9 <2>	-	-	-
STW2.10	**Reserved** <2>	<2>	-	-	-
STW2.11	**1 = Torque controlled operation** 0 = Speed controlled operation	p1501[0] = r2093.11	-	-	-
STW2.12	**Reserved** <2>	<2>	-	-	-
STW2.13	**Reserved** <2>	<2>	-	-	-
STW2.14	**Reserved** <2>	<2>	-	-	-
STW2.15	**Controller slave sign-of-life Toggle bit**	p2081[15] = r2093.15	-	-	-

<1> Used in telegram 220.
<2> Interconnection is not disabled.
<3> Only for VECTOR.
<4> Only for "Extended setpoint channel".

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_2426_54_eng.vsd	Function diagram	- 2426 -
PROFIdrive - STW2_BM control word, metal industry interconnection	27.06.13 V05.01.01	S120/S150/G130/G150	

Fig. 3-44 2426 – STW2_BM control word, metal industry interconnection

Fig. 3-45 2427 – E_STW1_BM control word, infeed metal industry interconnection

PROFIdrive sampling time

Signal targets for E_STW1_BM

<1> <7>

Signal	Meaning	Interconnection parameters	[Function diagram] internal control word			[Function diagram] signal target			Inverted
			A_INF	B_INF <7>	S_INF <5>	A_INF	B_INF <7>	S_INF <5>	
STW1.0	**= ON** (close precharging/line contactor, pulses can be enabled) 0 = OFF1 (reduce Vdc along a ramp, suppress pulse and open precharging/line contactor)	p0840[0] = r2090.0	[8920.3]	[8720.3]	[8820.3]	[8932]	[8732]	[8832]	-
STW1.1	**1 = No OFF2 (enable is possible)** 0 = OFF2 (immediate pulse suppression and power-on inhibit)	p0844[0] = r2090.1	[8920.3]	[8720.3]	[8820.3]	[8932]	[8732]	[8832]	-
STW1.2	Reserved	-	-	-	-	-	-	-	-
STW1.3	**1 = Enable operation (pulses can be enabled)** 0 = Inhibit operation (suppress pulses) <3>	p0852[0] = r2090.3	[8920.3]	-	[8820.3]	[8932]	-	[8832]	-
STW1.4	Reserved	-	-	-	-	-	-	-	-
STW1.5	**1 = Infeed, inhibit motoring** <4>	p3532 = r2090.5	[8920.3]	-	-	[8920]	-	-	-
STW1.6	**1 = Infeed, inhibit regenerative operation** <3>	p3533 = r2090.6	[8920.3]	-	[8820.3]	[8920]	-	[8820]	-
STW1.7	**= Acknowledge faults**	p2103[0] = r2090.7	[2546.3]			[8060]			-
STW1.8	Reserved <6>	<6>	-	-	-	-	-	-	-
STW1.9	Reserved <6>	<6>	-	-	-	-	-	-	-
STW1.10	**1 = Control by PLC** <2>	p0854[0] = r2090.10	[8920.3]	[8720.3]	[8820.3]	[8920]	[8720]	[8820]	-
STW1.11	Reserved <6>	<6>	-	-	-	-	-	-	-
STW1.12	Reserved <6>	<6>	-	-	-	-	-	-	-
STW1.13	Reserved <6>	<6>	-	-	-	-	-	-	-
STW1.14	Reserved <6>	<6>	-	-	-	-	-	-	-
STW1.15	**Controller-sign-of-life Toggle bit**	p2080[15] = r2090.15	-	-	-	-	-	-	-

<1> Used in telegram 371.
<2> STW1.10 must be set to ensure that the drive object accepts the process data (PZD).
<3> Only for A_INF, S_INF.
<4> Only for A_INF.
<5> B_INF and S_INF only for S120.
<6> Interconnection is not disabled.
<7> Only for S120 and G150.
<8> Not for G130.

1	2	3	4	5	6	7	8

DO: A_INF, B_INF, S_INF	fp_2427_54_eng.vsd	Function diagram	- 2427 -
PROFIdrive - E_STW1_BM control word, infeed metal industry interconnection	27.06.13 V05.01.01	S120/S150/G130/G150	

PROFIdrive sampling time

Signal sources for ZSW1_BM

<1>

Signal	Meaning	Interconnection parameters	[Function diagram] Internal status word	[Function diagram] signal source	Inverted <2>
ZSW1.0	**1 = Ready for switching on**	p2080[0] = r0899.0	[2503.7]	[2610]	-
ZSW1.1	**1 = Ready for operation**	p2080[1] = r0899.1	[2503.7]	[2610]	-
ZSW1.2	**1 = Operation enabled**	p2080[2] = r2811.0	[2503.7]	[2610]	-
ZSW1.3	**1 = Fault present**	p2080[3] = r2139.3	[2548.7]	[8060]	-
ZSW1.4	**1 = No coast down active (OFF2 inactive)**	p2080[4] = r0899.4	[2503.7]	[2610]	-
ZSW1.5	**1 = No quick stop active (OFF3 inactive)**	p2080[5] = r0899.5	[2503.7]	[2610]	-
ZSW1.6	**1 = Switching on inhibited active**	p2080[6] = r0899.6	[2503.7]	[2610]	-
ZSW1.7	**1 = Alarm present**	p2080[7] = r2139.7	[2548.7]	[8065]	-
ZSW1.8	**1 = Speed setpoint - actual value deviation within tolerance t_off**	p2080[8] = r2197.7	[2534.7]	[8010]	-
ZSW1.9	**1 = Control requested** <3>	p2080[9] = r0899.9	[2503.7]	[2503]	-
ZSW1.10	**1 = f or n comparison value reached/exceeded**	p2080[10] = r2199.1	[2536.7]	[8010]	-
ZSW1.11	**1 = I, M, or P limit not reached** <4>	p2080[11] = r1407.7	[2522.7]	[5610] [6060] <5>	✔
ZSW1.12	**1 = Open the holding brake**	p2080[12] = r0899.12	[2503.7]	[2701]	-
ZSW1.13	**Reserved** <6>	<6>	-	-	-
ZSW1.14	**Reserved** <6>	<6>	-	-	-
ZSW1.15	**Reserved** <6>	<6>	-	-	-

<1> Used in telegram 220.
<2> The ZSW1 is generated using the binector-connector converter (BI: p2080[0...15], inversion: p2088[0].0...p2088[0].15)
<3> The drive object is ready to accept data.
<4> Not for VECTOR U/f.
<5> Only for SINAMICS S120.
<6> Interconnection is not disabled.

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_2428_54_eng.vsd	Function diagram	- 2428 -
PROFIdrive - ZSW1_BM status word, metal industry interconnection	27.06.13 V05.01.01	S120/S150/G130/G150	

Fig. 3-46 2428 – ZSW1_BM status word, metal industry interconnection

Signal sources for ZSW2_BM <1>

PROFIdrive sampling time

Signal	Meaning	Interconnection parameters	[Function diagram] internal status word	[Function diagram] signal source	Inverted
ZSW2.0	**Reserved** <3>	<3>	-	-	-
ZSW2.1	**Reserved** <3>	<3>	-	-	-
ZSW2.2	**Reserved** <3>	<3>	-	-	-
ZSW2.3	**Reserved** <3>	<3>	-	-	-
ZSW2.4	**Reserved** <3>	<3>	-	-	-
ZSW2.5	**1 = Alarm class bit 0**	p2081[5] = r2139.11	-	[2548]	-
ZSW2.6	**1 = Alarm class bit 1**	p2081[6] = r2139.12	-	[2548]	-
ZSW2.7	**Reserved**	-	-	-	-
ZSW2.8	**Reserved**	-	-	-	-
ZSW2.9	**1 = Speed setpoint limited** <2>	p2081[9] = r1407.11	-	-	-
ZSW2.10	**1 = Upper torque limit** <2>	p2081[10] = r1407.8	-	-	-
ZSW2.11	**1 = Lower torque limit** <2>	p2081[11] = r1407.9	-	-	-
ZSW2.12	**1 = Encoderless operation due to fault**	p2081[12] = r1407.13	-	-	-
ZSW2.13	**1 = SS1 delay time active in the drive**	p2081[13] = r9773.2	-	-	-
ZSW2.14	**1 = STO active in drive**	p2081[14] = r9773.1	-	-	-
ZSW2.15	**Controller slave sign-of-life Toggle bit**	p2081[15] = r2093.15	-	-	-

<1> Used in telegram 220.
<2> Not for VECTOR U/f.
<3> Interconnection is not disabled.

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_2429_54_eng.vsd	Function diagram	- 2429 -
PROFIdrive - ZSW2_BM status word, metal industry interconnection	27.06.13 V05.01.01	S120/S150/G130/G150	

Fig. 3-47 2429 – ZSW2_BM status word, metal industry interconnection

Fig. 3-48 2430 – E_ZSW1_BM status word, infeed metal industry interconnection

PROFIdrive sampling time

Signal sources for E_ZSW1_BM

<1> <6>

Signal	Meaning	Interconnection parameters	[Function diagram] signal source			[Function diagram] internal status word			Inverted
			A_INF	B_INF <5>	S_INF <3>	A_INF	B_INF <5>	S_INF <3>	
ZSW1.0	**1 = Ready for switching on**	p2080[0] = r0899.0	[8932]	[8732]	[8832]	[8926.7]	[8726.7]	[8826.7]	-
ZSW1.1	**1 = Ready for operation**	p2080[1] = r0899.1	[8932]	[8732]	[8832]	[8926.7]	[8726.7]	[8826.7]	-
ZSW1.2	**1 = Operation enabled**	p2080[2] = r0899.2	[8932]	[8732]	[8832]	[8926.7]	[8726.7]	[8826.7]	-
ZSW1.3	**1 = Fault present**	p2080[3] = r2139.3	[8060]			[2548.7]			-
ZSW1.4	**1 = No OFF2 effective**	p2080[4] = r0899.4	[8932]	[8732]	[8832]	[8926.7]	[8726.7]	[8826.7]	-
ZSW1.5	Reserved	-	-	-	-	-	-	-	-
ZSW1.6	**1 = Switching on inhibited**	p2080[6] = r0899.6	[8932]	[8732]	[8832]	[8926.7]	[8726.7]	[8826.7]	-
ZSW1.7	**1 = Alarm present**	p2080[7] = r2139.7	[8065]			[2548.7]			-
ZSW1.8	Reserved <4>	<4>	-	-	-	-	-	-	-
ZSW1.9	**1 = PLC requests control** <2>	p2080[9] = r0899.9	[8926]	[8726]	[8826]	[8926.7]	[8726.7]	[8826.7]	-
ZSW1.10	Reserved <4>	<4>	-	-	-	-	-	-	-
ZSW1.11	**1 = Precharging completed**	p2080[11] = r0899.11	[8950]	[8750]	[8850]	[8926.7]	[8726.7]	[8826.7]	-
ZSW1.12	**1 = Line contactor closed**	p2080[12] = r0899.12	[8938]	[8738]	[8838]	[8926.7]	[8726.7]	[8826.7]	-
ZSW1.13	Reserved <4>	<4>	-	-	-	-	-	-	-
ZSW1.14	Reserved <4>	<4>	-	-	-	-	-	-	-
ZSW1.15	**Controller sign-of-life Toggle bit**	r2080[15] = r2090.15	-	-	-	-	-	-	-

<1> Used in telegram 371.
<2> The drive object is ready to accept data.
<3> Only for S120.
<4> Interconnection is not disabled.
<5> Only for S120 and G150.
<6> Not for G130.

1	2	3	4	5	6	7	8

DO: A_INF, B_INF, S_INF	fp_2430_54_eng.vsd	Function diagram	**- 2430 -**
PROFIdrive - E_ZSW1_BM status word, infeed metal industry interconnection	19.06.15 V05.01.01	S120/S150/G130/G150	

Fig. 3-49 2433 – STW2_ENC control word, ENCODER interconnection

PROFIdrive sampling time

Signal targets for STW2_ENC <1>

Signal	Meaning	Interconnection parameters	[Function diagram] internal control word	[Function diagram] signal target	Inverted
STW1.0	**Reserved**	-	-	-	-
STW1.1	**Reserved**	-	-	-	-
STW1.2	**Reserved**	-	-	-	-
STW1.3	**Reserved**	-	-	-	-
STW1.4	**Reserved**	-	-	-	-
STW1.5	**Reserved**	-	-	-	-
STW1.6	**Reserved**	-	-	-	-
STW1.7	**= Acknowledge faults**	p2103[0] = r2090.7	[2546.1]	[8060]	-
STW1.8	**Reserved**	-	-	-	-
STW1.9	**Reserved**	-	-	-	-
STW1.10	**1 = Control by PLC** <2>	p0854[0] = r2090.10	[2501.3]	[2501]	-
STW1.11	**Reserved**	-	-	-	-
STW1.12	**Master-sign-of-life, bit 0**	p2045 = r2050	-	[2410]	-
STW1.13	**Master-sign-of-life, bit 1**				
STW1.14	**Master-sign-of-life, bit 2**				
STW1.15	**Master-sign-of-life, bit 3**				

<1> Used in telegrams 81, 82, 83.
<2> STW1.10 must be set to ensure that the drive object accepts the process data (PZD).

1	2	3	4	5	6	7	8

DO: ENC	fp_2433_55_eng.vsd	Function diagram	- 2433 -
PROFIdrive - STW2_ENC control word ENCODER interconnection	17.07.13 V05.01.01	SINAMICS S120/S150	

PROFIdrive sampling time

Signal sources for ZSW2_ENC <1>

Signal	Meaning	Interconnection parameters	[Function diagram] signal source	[Function diagram] internal status word	Inverted
ZSW1.0	**Reserved**	-	-	-	-
ZSW1.1	**Reserved**	-	-	-	-
ZSW1.2	**Reserved**	-	-	-	-
ZSW1.3	**1 = Fault present**	p2080[3] = r2139.3	[2548.7]	[8060]	-
ZSW1.4	**Reserved**	-	-	-	-
ZSW1.5	**Reserved**	-	-	-	-
ZSW1.6	**Reserved**	-	-	-	-
ZSW1.7	**1 = Alarm present**	p2080[7] = r2139.7	[2548.7]	[8065]	-
ZSW1.8	**Reserved**	-	-	-	-
ZSW1.9	**1 = Control requested** <2>	p2080[9] = r0899.9	[2503.7]	[2503]	-
ZSW1.10	**Reserved**	-	-	-	-
ZSW1.11	**Reserved**	-	-	-	-
ZSW1.12	**Slave-sign-of-life bit 0**	p2045 = r2050[3]	-	[2410]	-
ZSW1.13	**Slave-sign-of-life bit 1**				
ZSW1.14	**Slave-sign-of-life bit 2**				
ZSW1.15	**Slave-sign-of-life bit 3**				

<1> Used in telegrams 81, 82, 83.
<2> The drive object is ready to accept data.

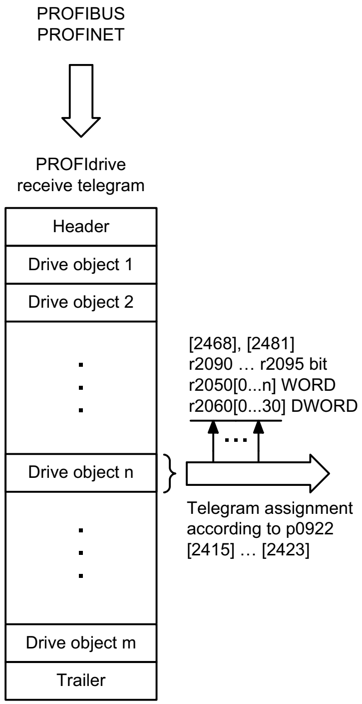
1	2	3	4	5	6	7	8

DO: ENC	fp_2434_55_eng.vsd	Function diagram	- 2434 -
PROFIdrive - ZSW2-ENC status word ENCODER interconnection	17.07.13 V05.01.01	SINAMICS S120/S150	

Fig. 3-50 2434 – ZSW2_ENC status word, ENCODER interconnection

Fig. 3-51 2439 – PZD receive signals interconnection, profile-specific

PROFIdrive sampling time



Signal receivers for PZD receive signals

	Signal	Meaning	PROFIdrive Signal No.	Interconnection parameter <1>	Function diagram	Data type <2>	Scaling
	STW1	Control word 1	1	(bitwise)	[2442], [2443] <3> [2475] <3>	U16	-
	STW2	Control word 2	3	(bitwise)	[2444] [2445]	U16	-
	NSOLL_A	Speed setpoint A (16-bit)	5	p1070 p1155	[3030.2] [3080.4] <3>	I16	4000 hex ≙ p2000
	NSOLL_B	Speed setpoint B (32-bit)	7	p1070 p1155 p1430 <3>	[3030.2] [3080.4] [3090.8] <3>	I32	4000 0000 hex ≙ p2000
<3>	G1_STW	Encoder 1 control word	9	p0480[0]	[4720]	U16	-
<3>	G2_STW	Encoder 2 control word	13	p0480[1]	[4720]	U16	-
<3>	G3_STW	Encoder 3 control word	17	p0480[2]	[4720]	U16	-
	A_DIGITAL	Digital output (16-bit)	22	(bitwise)	[2497]	U16	-
<3>	XERR	Position deviation	25	p1190	[3090.5]	I32	-
<3>	KPC	Position controller gain factor	26	p1191	[3090.5]	I32	-
	SATZANW	Pos block selection	32	(bitwise)	[2476]	U16	-
	MDI_TARPOS	MDI position	34	p2642	[3618]	I32	1 hex ≙ 1 LU
	MDI_VELOCITY	MDI velocity	35	p2643	[3618]	I32	1 hex ≙ 1000 LU/min
	MDI_ACC	MDI acceleration override	36	p2644	[3618]	I16	4000 hex ≙ 100 %
	MDI_DEC	MDI deceleration override	37	p2645	[3618]	I16	4000 hex ≙ 100 %
	MDI_MOD	MDI mode	38	(bitwise)	[2480]	U16	-
<4>	STW2_ENC	Control word 2 ENCODER	80	(bitwise)	[2433]	U16	-

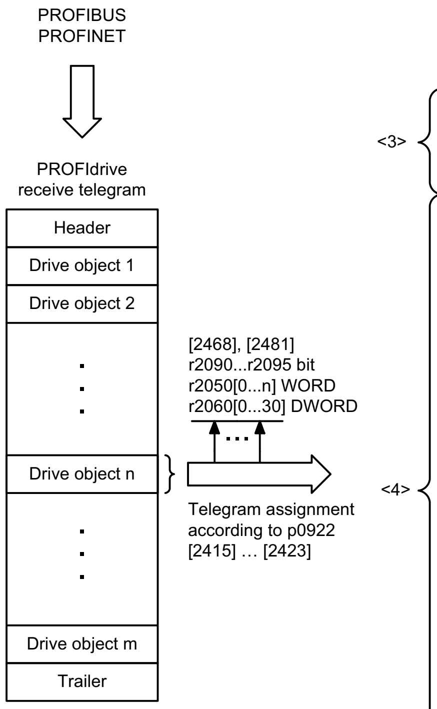
<1> When selecting a standard telegram or a manufacturer-specific telegram via p0922, these interconnection parameters of the command data set CDS0 are automatically set.
<2> Data type according to to the PROFIdrive profile:
I16 = Integer16, I32 = Integer32, U16 = Unsigned16, U32 = Unsigned32.
<3> Only for SINAMICS S120.
<4> Only for ENCODER.

1	2	3	4	5	6	7	8

DO: A_INF, B_INF, CU_CX32, CU_G, CU_S, ENC, S_INF, SERVO, VECTOR	fp_2439_54_eng.vsd	Function diagram	- 2439 -
PROFIdrive - PZD receive signals, interconnection, profile-specific	27.06.13 V05.01.01	S120/S150/G130/G150	

Fig. 3-52 2440 – PZD receive signals interconnection, manufacturer-specific

PROFIdrive sampling time



Signal receivers for PZD receive signals

	Signal	Meaning	PROFIdrive Signal No.	<1> Interconnection parameter	Function diagram	<2> Data type	Scaling
<3>	MOMRED	Torque reduction	101	p1542	[5610.2]	I16	4000 hex ≙ p1544
<3>	M_VST	Torque pre-control value	112	p1513[0]	[5060]	I16	4000 hex ≙ p2003
<3>	DSC_STW	DSC control word	114	p1194	[3090]	U16	
<3>	T_SYMM	DSC Symmetrizing time constant	115	p1195	[3090]	U16	
<4>	MT_STW	Measuring probe control word	130	p0682	-	U16	
<4>	NOCKEN1_ZS_F	Cam_0 switching instant for a falling edge	169	p0715[0]	-	U16	
<4>	NOCKEN1_ZS_S	Cam_0 switching instant for a rising edge	170	p0714[0]	-	U16	
<4>	NOCKEN2_ZS_F	Cam_1 switching instant for a falling edge	171	p0715[1]	-	U16	
<4>	NOCKEN2_ZS_S	Cam_1 switching instant for a rising edge	172	p0714[1]	-	U16	
<4>	NOCKEN3_ZS_F	Cam_2 switching instant for a falling edge	173	p0715[2]	-	U16	
<4>	NOCKEN3_ZS_S	Cam_2 switching instant for a rising edge	174	p0714[2]	-	U16	
<4>	NOCKEN4_ZS_F	Cam_3 switching instant for a falling edge	175	p0715[3]	-	U16	
<4>	NOCKEN4_ZS_S	Cam_3 switching instant for a rising edge	176	p0714[3]	-	U16	
<4>	NOCKEN5_ZS_F	Cam_4 switching instant for a falling edge	177	p0715[4]	-	U16	
<4>	NOCKEN5_ZS_S	Cam_4 switching instant for a rising edge	178	p0714[4]	-	U16	
<4>	NOCKEN6_ZS_F	Cam_5 switching instant for a falling edge	179	p0715[5]	-	U16	
<4>	NOCKEN6_ZS_S	Cam_5 switching instant for a rising edge	180	p0714[5]	-	U16	
<4>	NOCKEN7_ZS_F	Cam_6 switching instant for a falling edge	181	p0715[6]	-	U16	
<4>	NOCKEN7_ZS_S	Cam_6 switching instant for a rising edge	182	p0714[6]	-	U16	
<4>	NOCKEN8_ZS_F	Cam_7 switching instant for a falling edge	183	p0715[7]	-	U16	
<4>	NOCKEN8_ZS_S	Cam_7 switching instant for a rising edge	184	p0714[7]	-	U16	
<4>	POS_STW	Pos control word	203	(bitwise)	[2462]	U16	
<4>	OVERRIDE	Pos velocity override	205	p2646	[3630]	I16	4000 hex ≙ 100 %
<4>	POS_STW1	Pos control word 1	220	(bitwise)	[2463]	U16	
<4>	POS_STW2	Pos control word 2	222	(bitwise)	[2464]	U16	
<4>	MDI_MODE	Pos MDI mode	229	p2654	[3620]	U16	
	A_DIGITAL_1	Digital output (16 bit)	307	(bitwise)	[2499]	U16	
<4>	M_LIM	Torque limit	310	p1503/p1552/p1554	-	U16	
<4>	M_ADD	Additional torque	311	p1495	-	U16	
	E_STW1	Control word 1 for Active Infeed (ALM, SMART)	320	(bitwise)	[2447]	U16	
	STW1_BM	Control word 1, variant for BM	322	(bitwise)	[2425]	U16	
	STW2_BM	Control word 2, variant for BM	324	(bitwise)	[2426]	U16	
	E_STW1_BM	Control word 1 for Active Infeed	326	(bitwise)	[2427]	U16	
	CU_STW1	Control word 1 for Control Unit	500	(bitwise)	[2495]	U16	

<1> When selecting a standard telegram or a manufacturer-specific telegram via p0922, these interconnection parameters of the command data set CDS0 are automatically set.
<2> Data type according to to the PROFIdrive profile: I16 = Integer16, I32 = Integer32, U16 = Unsigned16, U32 = Unsigned32.
<3> Only for S120.
<4> Only for S120/S150.

1	2	3	4	5	6	7	8

DO: A_INF, B_INF, CU_CX32, CU_G, CU_S, S_INF, SERVO, VECTOR	fp_2440_54_eng.vsd	Function diagram	- 2440 -
PROFIdrive - PZD receive signals, interconnection, manufacturer specific	16.05.17 V05.01.01	S120/S150/G130/G150	

Fig. 3-53 2441 – STW1 control word interconnection (p2038 = 2)

PROFIdrive sampling time

Signal targets for STW1 in Interface Mode VIK-NAMUR (p2038 = 2) <1>

Signal	Meaning	Interconnection parameters	[Function diagram] internal control word	[Function diagram] signal target	Inverted
STW1.0	↑ = ON (pulses can be enabled) **0 = OFF1** (braking with ramp-function generator, then pulse suppression & ready for switching on)	p0840[0] = r2090.0	[2501.3]	[2610]	-
STW1.1	**1 = No OFF2** (enable is possible) <3> 0 = OFF2 (immediate pulse suppression and switching on inhibited)	p0844[0] = r2090.1	[2501.3]	[2610]	-
STW1.2	**1 = No OFF3** (enable possible) <3> 0 = OFF3 (braking with the OFF3 ramp p1135, then pulse suppression and switching on inhibited)	p0848[0] = r2090.2	[2501.3]	[2610]	-
STW1.3	**1 = Enable operation** (pulses can be enabled) 0 = Inhibit operation (suppress pulses)	p0852[0] = r2090.3	[2501.3]	[2610]	-
STW1.4	**1 = Operating condition** (the ramp-function generator can be enabled) 0 = Inhibit ramp-function generator (set the ramp-function generator output to zero)	p1140[0] = r2090.4	[2501.3]	[3060] [3070] [3080]	-
STW1.5	**1 = Enable the ramp-function generator** 0 = Stop the ramp-function generator (freeze the ramp-function generator output)	p1141[0] = r2090.5	[2501.3]	[3060] [3070]	-
STW1.6	**1 = Enable setpoint** 0 = Inhibit setpoint (set the ramp-function generator input to zero)	p1142[0] = r2090.6	[2501.3]	[3060] [3070] [3080]	-
STW1.7	**↑ = 1. Acknowledge faults**	p2103[0] = r2090.7	[2546.1]	[8060]	-
STW1.8	**Reserved**	-	-	-	-
STW1.9	**Reserved**	-	-	-	-
STW1.10	**1 = Control by PLC** <2>	p0854[0] = r2090.10	[2501.3]	[2501]	-
STW1.11	**1 = Setpoint inversion**	p1113[0] = r2090.11	[2505.3]	[3040]	-
STW1.12	**Reserved**	-	-	-	-
STW1.13	**Reserved**	-	-	-	-
STW1.14	**Reserved**	-	-	-	-
STW1.15	**1 = Command Data Set selection CDS bit 0**	<4> p0810[0] = 2090.15	-	[8560]	-

<1> Used in telegram 20.
<2> STW1.10 must be set to ensure that the drive object accepts the process data (PZD).
<3> OC = Operating condition.
<4> Interconnection is not disabled.

1	2	3	4	5	6	7	8

DO: VECTOR	fp_2441_54_eng.vsd	Function diagram	- 2441 -
PROFIdrive - STW1 control word interconnection (p2038 = 2)	13.04.17 V05.01.01	S120/S150/G130/G150	

Fig. 3-54 2442 – STW1 control word interconnection (p2038 = 0)

PROFIdrive sampling time

Signal targets for STW1 in Interface Mode SINAMICS (p2038 = 0) <1>

Signal	Meaning	Interconnection parameters	[Function diagram] internal control word	[Function diagram] signal target	Inverted
STW1.0	↑= ON (pulses can be enabled) **0 = OFF1** (braking with ramp-function generator, then pulse suppression & ready for switching on)	p0840[0] = r2090.0	[2501.3]	[2610]	-
STW1.1	**1 = No OFF2** (enable is possible) 0 = OFF2 (immediate pulse suppression and switching on inhibited)	p0844[0] = r2090.1	[2501.3]	[2610]	-
STW1.2	**1 = No OFF3** (enable possible) 0 = OFF3 (braking with the OFF3 ramp p1135, then pulse suppression and switching on inhibited)	p0848[0] = r2090.2	[2501.3]	[2610]	-
STW1.3	**1 = Enable operation** (pulses can be enabled) 0 = Inhibit operation (suppress pulses)	p0852[0] = r2090.3	[2501.3]	[2610]	-
STW1.4	**1 = Operating condition** (the ramp-function generator can be enabled) 0 = Inhibit ramp-function generator (set the ramp-function generator output to zero)	p1140[0] = r2090.4	[2501.3]	[3060] [3070] [3080]	-
STW1.5	**1 = Continue ramp-function generator** 0 = Freeze ramp-function generator (freeze the ramp-function generator output)	p1141[0] = r2090.5	[2501.3]	[3060] [3070]	-
STW1.6	**1 = Enable setpoint** 0 = Inhibit setpoint (set the ramp-function generator input to zero)	p1142[0] = r2090.6	[2501.3]	[3060] [3070] [3080]	-
STW1.7	↑**= 1. Acknowledge faults**	p2103[0] = r2090.7	[2546.1]	[8060]	-
STW1.8	**Reserved**	-	-	-	-
STW1.9	**Reserved**	-	-	-	-
STW1.10	**1 = Control by PLC** <2>	p0854[0] = r2090.10	[2501.3]	[2501]	-
STW1.11	**1 = Setpoint inversion** <3>	p1113[0] = r2090.11	[2505.3]	[3040]	-
STW1.12	**Reserved**	-	-	-	-
STW1.13	**1 = Motorized potentiometer setpoint raise** <3>	p1035[0] = r2090.13	[2505.3]	[3020]	-
STW1.14	**1 = Motorized potentiometer setpoint lower** <3>	p1036[0] = r2090.14	[2505.3]	[3020]	-
STW1.15	**Reserved**	-	-	-	-

<1> Used in telegrams 1, 2, 3, 4, 5, 6, 352 (telegram 5 and 6 only for S120).
<2> STW1.10 must be set to ensure that the drive object accepts the process data (PZD).
<3> Only for "expanded setpoint channel" and "extended ramp-function generator".

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_2442_54_eng.vsd	Function diagram	- 2442 -
PROFIdrive - STW1 control word interconnection (p2038 = 0)	03.12.15 V05.01.01	S120/S150/G130/G150	

Fig. 3-55 2443 – STW1 control word interconnection (p2038 = 1)

PROFIdrive sampling time

Signal targets for STW1 in Interface Mode SIMODRIVE 611 universal (p2038 = 1) <1>

Signal	Meaning	Interconnection parameters	[Function diagram] internal control word	[Function diagram] signal target	Inverted
STW1.0	= ON (pulses can be enabled) **0 = OFF1** (braking with ramp-function generator, then pulse suppression & ready for switching on)	p0840[0] = r2090.0	[2501.3]	[2610]	-
STW1.1	**1 = No OFF2** (enable is possible) <3> 0 = OFF2 (immediate pulse cancellation and power-on inhibit)	p0844[0] = r2090.1	[2501.3]	[2610]	-
STW1.2	**1 = No OFF3** (enable possible) <3> 0 = OFF3 (braking with the OFF3 ramp p1135, then pulse cancellation and power-on inhibit)	p0848[0] = r2090.2	[2501.3]	[2610]	-
STW1.3	**1 = Enable operation** (pulses can be enabled) 0 = Inhibit operation (cancel pulses)	p0852[0] = r2090.3	[2501.3]	[2610]	-
STW1.4	**1 = Operating condition** (the ramp-function generator can be enabled) 0 = Inhibit ramp-function generator (set the ramp-function generator output to zero)	p1140[0] = r2090.4	[2501.3]	[3060] [3070] [3080]	-
STW1.5	**1 = Enable the ramp-function generator** 0 = Stop the ramp-function generator (freeze the ramp-function generator output)	p1141[0] = r2090.5	[2501.3]	[3060] [3070]	-
STW1.6	**1 = Enable setpoint** 0 = Inhibit setpoint (set the ramp-function generator input to zero)	p1142[0] = r2090.6	[2501.3]	[3060] [3070] [3080]	-
STW1.7	**= Acknowledge faults**	p2103[0] = r2090.7	[2546.1]	[8060]	-
STW1.8	**Reserved**	-	-	-	-
STW1.9	**1 = Enable ESR reaction** <4>	p0889 = r2090.9	[2495]	[3082]	-
STW1.10	**1 = Control by PLC** <2>	p0854[0] = r2090.10	[2501.3]	[2501]	-
STW1.11	**1 = Ramp-function generator active**	p2148[0] = r2090.11	-	[8010]	-
STW1.12	**1 = Unconditionally open the holding brake**	p0855[0] = r2090.12	[2501.3]	[2701]	-
STW1.13	**Reserved**	-	-	-	-
STW1.14	1 = Closed-loop torque control active **0 = Closed-loop speed control active**	p1501[0] = r2090.14	[2520.3]	[5060] [6060]	-
STW1.15	**Reserved**	-	-	-	-

<1> Used in telegrams 102, 103, 105, 106, 116, 118, 125, 126, 136, 138, 139.
<2> STW1.10 must be set to ensure that the drive object accepts the process data (PZD).
<3> OC -> Operating condition.
<4> Only available when the function module "Extended setpoint channel" is active (r0108.9 = 1).

1	2	3	4	5	6	7	8

DO: SERVO	fp_2443_55_eng.vsd	Function diagram	- 2443 -
PROFIdrive - STW1 control word interconnection (p2038 = 1)	04.12.12 V05.01.01	SINAMICS S120/S150	

Fig. 3-56 2444 – STW2 control word interconnection (p2038 = 0)

PROFIdrive sampling time

Signal targets for STW2 in Interface Mode SINAMICS (p2038 = 0) <1>

Signal	Meaning	Interconnection parameters	[Function diagram] internal control word	[Function diagram] signal target	Inverted
STW2.0	**Drive data set selection DDS, bit 0**	p0820[0] = r2093.0 <4> r2092.0	-	[8565]	-
STW2.1	**Drive data set selection DDS, bit 1**	p0821[0] = r2093.1 <4> r2092.1	-	[8565]	-
STW2.2	**Drive data set selection DDS, bit 2**	p0822[0] = r2093.2 <4> r2092.2	-	[8565]	-
STW2.3	**Drive data set selection DDS, bit 3**	p0823[0] = r2093.3 <4> r2092.3	-	[8565]	-
STW2.4	**Drive data set selection DDS, bit 4**	p0824[0] = r2093.4 <4> r2092.4	-	[8565]	-
STW2.5	**Reserved**	-	-	-	-
STW2.6	**Reserved**	-	-	-	-
STW2.7	**1 = Parking axis**	p0897 = r2093.7 <4> r2092.7	-	-	-
STW2.8	**1 = Traverse to fixed endstop** <2> <3> <5>	p1545[0] = r2093.8	[2520.2]	[8012]	-
STW2.9	**Reserved**	-	-	-	-
STW2.10	**Reserved**	-	-	-	-
STW2.11	**= Motor changeover, feedback Signal**	p0828[0] = r2093.11 <4> r2092.11	-	-	-
STW2.12	**Master sign-of-life, bit 0** <5>	p2045 = r2050[3] <4> r2050[2]	-	[2410]	-
STW2.13	**Master sign-of-life, bit 1** <5>				
STW2.14	**Master sign-of-life, bit 2** <5>				
STW2.15	**Master sign-of-life, bit 3** <5>				

<1> Used in telegrams 2, 3, 4, $\overbrace{\text{5, 6, 9, 110 and 111}}^{<3>}$.
<2> Not for telegrams 9, 110 and 111.
<3> Only for SINAMICS S120.
<4> Only for telegram 9.
<5> Not for Vector U/f.

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_2444_54_eng.vsd	Function diagram	- 2444 -
PROFIdrive - STW2 control word interconnection (p2038 = 0)	27.06.13 V05.01.01	S120/S150/G130/G150	

Fig. 3-57 2445 – STW2 control word interconnection (p2038 = 1)

PROFIdrive sampling time

Signal targets for STW2 in Interface Mode SIMODRIVE 611 universal (p2038 = 1) <1>

Signal	Meaning	Interconnection parameters	[Function diagram] internal control word	[Function diagram] signal target	Inverted
STW2.0	**Drive data set selection DDS, bit 0**	p0820[0] = r2093.0	-	[8565]	-
STW2.1	**Drive data set selection DDS, bit 1**	p0821[0] = r2093.1	-	[8565]	-
STW2.2	**Drive data set selection DDS, bit 2**	p0822[0] = r2093.2	-	[8565]	-
STW2.3	**Reserved**	-	-	-	-
STW2.4	**1 = Bypass ramp-function generator** <3>	p1122[0] = r2093.4	-	[3060] [3070]	-
STW2.5	**Reserved**	-	-	-	-
STW2.6	**1 = Integrator inhibit, speed controller** <2>	p1477[0] = r2093.6	-	[5040] [5210]	-
STW2.7	**1 = Parking axis selection**	p0897 = r2093.7	-	-	-
STW2.8	**1 = Traverse to fixed endstop**	p1545[0] = r2093.8	[2520.2]	[8012]	-
STW2.9	**Drive data set selection DDS, bit 3**	p0823[0] = r2093.9	-	[8565]	-
STW2.10	**Drive data set selection DDS, bit 4**	p0824[0] = r2093.10	-	[8565]	-
STW2.11	**= Motor changeover, feedback signal**	p0828[0] = r2093.11	-	-	-
STW2.12	**Master sign-of-life, bit 0**	p2045 = r2050[3]	-	[2410]	-
STW2.13	**Master sign-of-life, bit 1**				
STW2.14	**Master sign-of-life, bit 2**				
STW2.15	**Master sign-of-life, bit 3**				

<1> Used in telegrams 102, 103, 105, 106, 116, 118, 125, 126, 136, 138, 139.
<2> For a 1 signal, the integral component of the speed controller is cleared and the integrator is inhibited.
<3> Only if the function module "extended setpoint channel" is active (r0108.8 = 1).

1	2	3	4	5	6	7	8

DO: SERVO	fp_2445_55_eng.vsd	Function diagram	- 2445 -
PROFIdrive - STW2 control word interconnection (p2038 = 1)	17.07.13 V05.01.01	SINAMICS S120/S150	

Fig. 3-58 2447 – E_STW1 control word infeed interconnection

PROFIdrive sampling time

Signal targets for E_STW1

<1> <7>

Signal	Meaning	Interconnection parameters	[Function diagram] internal control word			[Function diagram] signal target			Inverted
			A_INF	B_INF <6>	S_INF <5>	A_INF	B_INF <6>	S_INF <5>	
STW1.0	↑ **= ON** (close precharging/line contactor, pulses can be enabled) 0 = OFF1 (reduce Vdc along a ramp, suppress pulse and open precharging/line contactor)	p0840[0] = r2090.0	[8920.3]	[8720.3]	[8820.3]	[8932]	[8732]	[8832]	-
STW1.1	**1 = No OFF2 (enable is possible)** 0 = OFF2 (immediate pulse suppression and switching on inhibited)	p0844[0] = r2090.1	[8920.3]	[8720.3]	[8820.3]	[8932]	[8732]	[8832]	-
STW1.2	**Reserved**		-	-	-	-	-	-	-
STW1.3	**1 = Enable operation (pulses can be enabled)** <3> 0 = Inhibit operation (suppress pulses)	p0852[0] = r2090.3	[8920.3]	-	[8820.3]	[8932]	-	[8832]	-
STW1.4	**Reserved**	-	-	-	-	-	-	-	-
STW1.5	**1 = Infeed, inhibit motoring operation** <4>	p3532 = r2090.5	[8920.3]	-	-	[8920]	-	-	-
STW1.6	**1 = Infeed, inhibit regenerative operation** <3>	p3533 = r2090.6	[8920.3]	-	[8820.3]	[8920]	-	[8820]	-
STW1.7	↑ **= Acknowledge faults**	p2103[0] = r2090.7	[2546.3]			[8060]			-
STW1.8	**Reserved**	-	-	-	-	-	-	-	-
STW1.9	**Reserved**	-	-	-	-	-	-	-	-
STW1.10	**1 = Control by PLC** <2>	p0854[0] = r2090.10	[8920.3]	[8720.3]	[8820.3]	[8920]	[8720]	[8820]	-
STW1.11	**Reserved**	-	-	-	-	-	-	-	-
STW1.12	**Reserved**	-	-	-	-	-	-	-	-
STW1.13	**Reserved**	-	-	-	-	-	-	-	-
STW1.14	**Reserved**	-	-	-	-	-	-	-	-
STW1.15	**Reserved**	-	-	-	-	-	-	-	-

<1> Used in telegram 370.
<2> STW1.10 must be set to ensure that the drive object accepts the process data (PZD).
<3> Only for A_INF, S_INF.
<4> Only for A_INF.
<5> B_INF and S_INF only for S120.
<6> Only for S120 and G150.
<7> Not for G130.

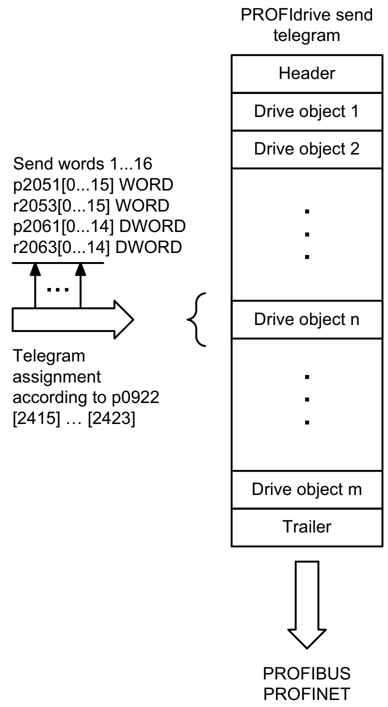
1	2	3	4	5	6	7	8

DO: A_INF, B_INF, S_INF	fp_2447_54_eng.vsd	Function diagram	- 2447 -
PROFIdrive - E_STW1 control word infeed interconnection	27.06.13 V05.01.01	S120/S150/G130/G150	

PROFIdrive sampling time

Signal sources for PZD send signals <1>

	Signal	Description	PROFIdrive Signal No.	Interconnection parameter	Function diagram	Data type	Scaling
	ZSW1	Status word 1	2	r2089[0]	[2452], [2453], [2479] <2>	U16	-
	ZSW2	Status word 2	4	r2089[1]	[2454], [2455] <2>	U16	-
	NIST_A	Speed setpoint A (16 bit)	6	r0063 SERVO r0063[0] VECTOR r0061 ENCODER	[4710] <2> [4715] [4710]	I16	4000 hex ≙ p2000
	NIST_B	Speed setpoint B (32 bit)	8	r0063 SERVO r0063[0] VECTOR r0061 ENCODER	[4710] <2> [4715] [4710]	I32	4000 0000 hex ≙ p2000
<2>	G1_ZSW	Encoder 1 status word	10	r0481[0]	[4730]	U16	-
<2>	G1_XIST1	Encoder 1 actual position 1	11	r0482[0]	[4704]	U32	-
<2>	G1_XIST2	Encoder 1 actual position 2	12	r0483[0]	[4704]	U32	-
<2>	G2_ZSW	Encoder 2 status word	14	r0481[1]	[4730]	U16	-
<2>	G2_XIST1	Encoder 2 actual position 1	15	r0482[1]	[4704]	U32	-
<2>	G2_XIST2	Encoder 2 actual position 2	16	r0483[1]	[4704]	U32	-
<2>	G3_ZSW	Encoder 3 status word	18	r0481[2]	[4730]	U16	-
<2>	G3_XIST1	Encoder 3 actual position 1	19	r0482[2]	[4704]	U32	-
<2>	G3_XIST2	Encoder 3 actual position 2	20	r0483[2]	[4704]	U32	-
	E_DIGITAL	Digital inputs	21	r2089[2]	[2459]	U16	-
	E_ANALOG	Analog inputs	23	p2051[20]	-	U16	-
<2>	XIST_A	Position actual value A	28	r2521[0]	[4010]	I32	1 hex ≙ 1 LU
<2>	AKTSATZ	Pos selected block	33	r2670	[3650]	U16	-
	IAIST_GLATT	Absolute actual current, smoothed	51	r0068[1]	[6714]	I16	4000 hex ≙ p2002
	ITIST_GLATT	Current actual value, torque-generating	52	r0078[1]	[6714]	I16	4000 hex ≙ p2002
	MIST_GLATT	Actual torque smoothed	53	r0080[1]	[6714]	I16	4000 hex ≙ p2003
	PIST_GLATT	Power factor, smoothed	54	r0082[1]	[6714]	I16	4000 hex ≙ p2004
	NIST_A_GLATT	Actual speed, smoothed	57	r0063[1]	[4715]	I16	4000 hex ≙ p2000
	MELD_NAMUR	VIK-NAMUR message bit bar	58	r3113	-	U16	-
	IAIST	Absolute actual current	59	r0068[0]	[6714]	I16	4000 hex ≙ p2002
	MIST	Actual torque	60	r0080[0]	[6714]	I16	4000 hex ≙ p2003
<3>	ZSW2_ENC	Status word 2 ENCODER	81	(bitwise)	[2434]	U16	-



<1> Data type according to the PROFIdrive profile:
I16 = Integer16, I32 = Integer32, U16 = Unsigned16, U32 = Unsigned32
<2> Only for SINAMICS S120.
<3> Only for ENCODER.

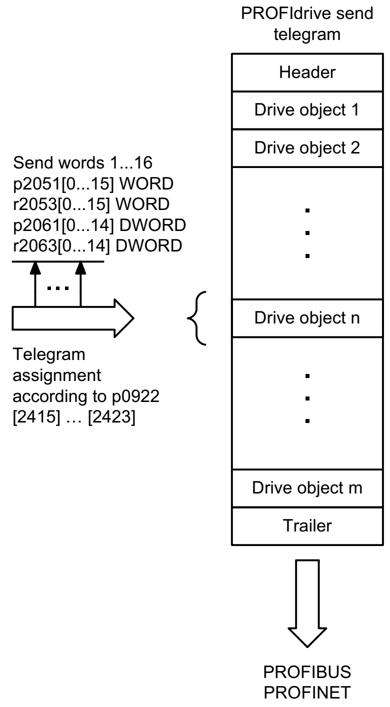
1	2	3	4	5	6	7	8

DO: A_INF, B_INF, ENC, S_INF, SERVO, VECTOR	fp_2449_54_eng.vsd	Function diagram	- 2449 -
PROFIdrive - PZD send signals interconnection, profile-specific	27.06.13 V05.01.01	S120/S150/G130/G150	

Signal sources for PZD send signals

PROFIdrive sampling time

	Signal	Description	PROFIdrive Signal No.	Interconnection parameter	Function diagram	Data type <1>	Scaling
	MELDW	Message word	102	r2089[2]	[2456]	U16	-
	MSOLL_GLATT	Total speed setpoint smoothed	120	r0079[1]	[5610] <2>	I16	4000 hex ≙ p2003
	AIST_GLATT	Torque utilization smoothed	121	r0081	[8012]	I16	4000 hex ≙ 100%
	MT_ZSW	Measuring probe status word	131	r0688	-	U16	-
	MT1_ZS_F	Measuring probe 1 measuring time falling edge	132	r0687[0]	-	U16	-
	MT1_ZS_S	Measuring probe 1 measuring time rising edge	133	r0686[0]	-	U16	-
	MT2_ZS_F	Measuring probe 2 measuring time falling edge	134	r0687[1]	-	U16	-
	MT2_ZS_S	Measuring probe 2 measuring time rising edge	135	r0686[1]	-	U16	-
	MT3_ZS_F	Measuring probe 3 measuring time falling edge	136	r0687[2]	-	U16	-
	MT3_ZS_S	Measuring probe 3 measuring time rising edge	137	r0686[2]	-	U16	-
	MT4_ZS_F	Measuring probe 4 measuring time falling edge	138	r0687[3]	-	U16	-
	MT4_ZS_S	Measuring probe 4 measuring time rising edge	139	r0686[3]	-	U16	-
	MT5_ZS_F	Measuring probe 5 measuring time falling edge	140	r0687[4]	-	U16	-
	MT5_ZS_S	Measuring probe 5 measuring time rising edge	141	r0686[4]	-	U16	-
	MT6_ZS_F	Measuring probe 6 measuring time falling edge	142	r0687[5]	-	U16	-
	MT6_ZS_S	Measuring probe 6 measuring time rising edge	143	r0686[5]	-	U16	-
	MT7_ZS_F	Measuring probe 7 measuring time falling edge	144	r0687[6]	-	U16	-
	MT7_ZS_S	Measuring probe 7 measuring time rising edge	145	r0686[6]	-	U16	-
<2>	MT8_ZS_F	Measuring probe 8 measuring time falling edge	146	r0687[7]	-	U16	-
	MT8_ZS_S	Measuring probe 8 measuring time rising edge	147	r0686[7]	-	U16	-
	MT_DIAG	Measuring probe (stage 3) diagnostics word	148	r0567	-	U16	-
	MT_ZS1	Measuring probe (stage 3) measuring time 1	149	r0565[0]	-	U16	-
	• • •	• • •	• • •	• • •	• • •	• • •	• • •
	MT_ZS16	Measuring probe (stage 3) measuring time 16	164	r0565[15]	-	U16	-
	MT_ZSB1	Measuring probe (stage 3) measuring time reference 1	165	r0566[0]	-	U16	-
	MT_ZSB2	Measuring probe (stage 3) measuring time reference 2	166	r0566[1]	-	U16	-
	MT_ZSB3	Measuring probe (stage 3) measuring time reference 3	167	r0566[2]	-	U16	-
	MT_ZSB4	Measuring probe (stage 3) measuring time reference 4	168	r0566[3]	-	U16	-
	POS_ZSW	Pos status word	204	r2683	[3645]	U16	-
	POS_ZSW1	Pos status word 1	221	r2089[3]	[2466]	U16	-
	POS_ZSW2	Pos status word 2	223	r2089[4]	[2467]	U16	-
	FAULT_CODE	Fault code	301	r2131	[8060]	U16	-
	WARN_CODE	Alarm code	303	r2132	[8065]	U16	-
	E_DIGITAL_1	Digital input (16 Bit)	307	r2089[3]	[2500]	U16	-
<2>	E_ZSW1	Status word 1 for Active Infeed	321	r2089[1]	[2457]	U16	-
	ZSW1_BM	Status word 1, variant for BM	323	r2089[0]	[2428]	U16	-
	ZSW2_BM	Status word 2, variant for BM	325	r2089[1]	[2429]	U16	-
	E_ZSW1_BM	Status word 1 for Infeed, variant for BM (ALM, BLM, SLM)	327	r2080	[2430]	U16	-
	CU_ZSW1	Status word 1 for Control Unit	501	r2089[1]	[2496]	U16	-



<1> Data type according to the PROFIdrive profile:
I16 = Integer16, I32 = Integer32, U16 = Unsigned16, U32 = Unsigned32
<2> Only for SINAMICS S120.

1	2	3	4	5	6	7	8

DO: A_INF, B_INF, S_INF, SERVO, TM41, VECTOR — fp_2450_54_eng.vsd — Function diagram — **- 2450 -**

PROFIdrive - PZD send signals interconnection, manufacture specific — 27.06.13 V05.01.01 — S120/S150/G130/G150

Fig. 3-60 2450 – PZD send signals interconnection, manufacturer-specific

PROFIdrive sampling time

Signal sources for ZSW1 in Interface Mode VIK-NAMUR (p2038 = 2) <1>

Signal	Meaning	Interconnection parameters	[Function diagram] Internal status word	[Function diagram] Signal source	Inverted <2>
ZSW1.0	**1 = Ready for switching on**	p2080[0] = r0899.0	[2503.7]	[2610]	-
ZSW1.1	**1 = Ready for operation** (DC link loaded, pulses inhibited)	p2080[1] = r0899.1	[2503.7]	[2610]	-
ZSW1.2	**1 = Operation enabled** (drive follows n_set)	p2080[2] = r0899.2	[2503.7]	[2610]	-
ZSW1.3	**1 = Fault present**	p2080[3] = r2139.3	[2548.7]	[8060]	-
ZSW1.4	**1 = No coast down active (OFF2 inactive)**	p2080[4] = r0899.4	[2503.7]	[2610]	-
ZSW1.5	**1 = No quick stop active (OFF3 inactive)**	p2080[5] = r0899.5	[2503.7]	[2610]	-
ZSW1.6	**1 = Power-on inhibit active**	p2080[6] = r0899.6	[2503.7]	[2610]	-
ZSW1.7	**1 = Alarm present**	p2080[7] = r2139.7	[2548.7]	[8065]	-
ZSW1.8	**1 = Speed setpoint - actual value deviation within tolerance t_off**	p2080[8] = r2197.7	[2534.7]	[8010]	-
ZSW1.9	**1 = Control requested** <3>	p2080[9] = r0899.9	[2503.7]	[2503]	-
ZSW1.10	**1 = f or n comparison value reached/exceeded**	p2080[10] = r2199.1	[2536.7]	[8010]	-
ZSW1.11	**1 = I, M, or P limit not reached**	p2080[11] = r0056.13	[2522.7]	[6060]	✔
ZSW1.12	**Reserved**	-	-	-	-
ZSW1.13	**1 = No motor overtemperature alarm**	p2080[13] = r2135.14	[2548.7]	[8016]	✔
ZSW1.14	**1 = Motor rotates forwards (n_act ≥ 0)** **0 = Motor rotates backwards (n_act < 0)**	p2080[14] = r2197.3	[2534.7]	[8011]	-
ZSW1.15	**1 = Command Data Set selection CDS bit 0**	<4> p2080[15] = r0836.0	-	-	-

<1> Used in telegram 20.
<2> The ZSW1 is generated using the binector-connector converter (BI: p2080[0...15], inversion: p2088[0].0...p2088[0].15)
<3> The drive object is ready to accept data.
<4> Interconnection is not disabled.

1	2	3	4	5	6	7	8

DO: VECTOR	fp_2451_54_eng.vsd	Function diagram	- 2451 -
PROFIdrive - ZSW1 status word interconnection (p2038 = 2)	27.06.13 V05.01.01	S120/S150/G130/G150	

Fig. 3-61 2451 – ZSW1 status word interconnection (p2038 = 2)

Fig. 3-62 2452 – ZSW1 status word interconnection (p2038 = 0)

PROFIdrive sampling time

Signal sources for ZSW1 im Interface Mode SINAMICS (p2038 = 0) <1>

Signal	Meaning	Interconnection parameters	[Function diagram] Internal status word	[Function diagram] signal source	Inverted <2>
ZSW1.0	**1 = Ready for switching on**	p2080[0] = r0899.0	[2503.7]	[2610]	-
ZSW1.1	**1 = Ready for operation**	p2080[1] = r0899.1	[2503.7]	[2610]	-
ZSW1.2	**1 = Operation enabled**	p2080[2] = r0899.2	[2503.7]	[2610]	-
ZSW1.3	**1 = Fault present**	p2080[3] = r2139.3	[2548.7]	[8060]	-
ZSW1.4	**1 = No coast down active (OFF2 inactive)**	p2080[4] = r0899.4	[2503.7]	[2610]	-
ZSW1.5	**1 = No quick stop active (OFF3 inactive)**	p2080[5] = r0899.5	[2503.7]	[2610]	-
ZSW1.6	**1 = Switching on inhibited active**	p2080[6] = r0899.6	[2503.7]	[2610]	-
ZSW1.7	**1 = Alarm present**	p2080[7] = r2139.7	[2548.7]	[8065]	-
ZSW1.8	**1 = Speed setpoint - actual value deviation within tolerance t_off**	p2080[8] = r2197.7	[2534.7]	[8010]	-
ZSW1.9	**1 = Control requested** <3>	p2080[9] = r0899.9	[2503.7]	[2503]	-
ZSW1.10	**1 = f or n comparison value reached/exceeded**	p2080[10] = r2199.1	[2536.7]	[8010]	-
ZSW1.11	**1 = I, M, or P limit reached** <4>	p2080[11] = r1407.7	[2522.7]	[5610] [6060] <5>	✔
ZSW1.12	**1 = Open the holding brake**	p2080[12] = r0899.12	[2503.7]	[2701]	-
ZSW1.13	**1 = No motor overtemperature alarm**	p2080[13] = r2135.14	[2548.7]	[8016]	✔
ZSW1.14	**1 = Motor rotates forwards (n_act ≥ 0)** **0 = Motor rotates backwards (n_act < 0)**	p2080[14] = r2197.3	[2534.7]	[8010]	-
ZSW1.15	**1 = No alarm, thermal overload, power unit**	p2080[15] = r2135.15	[2548.7]	[8021]	✔

<1> Used in telegrams 1, 2, 3, 4, $\overbrace{5, 6}^{<5>}$, 352.
<2> The ZSW1 is generated using the binector-connector converter (BI: p2080[0...15], inversion: p2088[0].0...p2088[0].15).
<3> The drive object is ready to accept data.
<4> Not for VECTOR U/f.
<5> Only for SINAMICS S120.

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_2452_54_eng.vsd	Function diagram	- 2452 -
PROFIdrive - ZSW1 status word interconnection (p2038 = 0)	26.07.13 V05.01.01	S120/S150/G130/G150	

Fig. 3-63 2453 – ZSW1 status word interconnection (p2038 = 1)

PROFIdrive sampling time

Signal sources for ZSW1 in Interface Mode SIMODRIVE 611 universal (p2038 = 1) <1>

Signal	Meaning	Interconnection parameters	[Function diagram] Internal status word	[Function diagram] Signal source	Inverted
ZSW1.0	**1 = Ready for switching on**	p2080[0] = r0899.0	[2503.7]	[2610]	-
ZSW1.1	**1 = Ready for operation**	p2080[1] = r0899.1	[2503.7]	[2610]	-
ZSW1.2	**1 = Operation enabled**	p2080[2] = r0899.2	[2503.7]	[2610]	-
ZSW1.3	**1 = Fault present**	p2080[3] = r2139.3	[2548.7]	[8060]	-
ZSW1.4	**1 = No coast down active**	p2080[4] = r0899.4	[2503.7]	[2610]	-
ZSW1.5	**1 = No quick stop active**	p2080[5] = r0899.5	[2503.7]	[2610]	-
ZSW1.6	**1 = Switching on inhibited active**	p2080[6] = r0899.6	[2503.7]	[2610]	-
ZSW1.7	**1 = Alarm present**	p2080[7] = r2139.7	[2548.7]	[8065]	-
ZSW1.8	**1 = Speed setpoint - actual value deviation within tolerance t_off**	p2080[8] = r2197.7	[2534.7]	[8010]	-
ZSW1.9	**1 = Control requested** <2>	p2080[9] = r0899.9	[2503.7]	[2503]	-
ZSW1.10	**1 = f or n comparison value reached/exceeded**	p2080[10] = r2199.1	[2536.7]	[8010]	-
ZSW1.11	**1 = Alarm class bit 0**	p2080[11] = r2139.11	[2548.7]	-	-
ZSW1.12	**1 = Alarm class bit 1**	p2080[12] = r2139.12	[2548.7]	-	-
ZSW1.13	**Reserved**	-	-	-	-
ZSW1.14	**1 = Closed-loop torque control active**	p2080[14] = r1407.2	[2522.7]	[2522]	-
ZSW1.15	**Reserved**	-	-	-	-

<1> Used in telegrams 102, 103, 105, 106, 116, 118, 125, 126, 136, 138, 139.
<2> The drive object is ready to accept data.

1	2	3	4	5	6	7	8

DO: SERVO	fp_2453_01_eng.vsd	Function diagram	- 2453 -
PROFIdrive - ZSW1 status word interconnection (p2038 = 1)	12.07.13 V05.01.01	SINAMICS S120	

Fig. 3-64 2454 – ZSW2 status word interconnection (p2038 = 0)

Signal sources for ZSW2 in Interface Mode SINAMICS (p2038 = 0) <1>

PROFIdrive sampling time

	Signal	Meaning	Interconnection parameters	[Function diagram] internal status word	[Function diagram] signal source	Inverted
	ZSW2.0	**1 = Drive data set DDS effective, bit 0**	p2081[0] = r0051.0	-	[8565]	-
	ZSW2.1	**1 = Drive data set DDS effective, bit 1**	p2081[1] = r0051.1	-	[8565]	-
	ZSW2.2	**1 = Drive data set DDS effective, bit 2**	p2081[2] = r0051.2	-	[8565]	-
	ZSW2.3	**1 = Drive data set DDS effective, bit 3**	p2081[3] = r0051.3	-	[8565]	-
	ZSW2.4	**1 = Drive data set DDS effective, bit 4**	p2081[4] = r0051.4	-	[8565]	-
	ZSW2.5	**1 = Alarm class bit 0**	p2081[5] = r2139.11	-	[2548]	-
	ZSW2.6	**1 = Alarm class bit 1**	p2081[6] = r2139.12	-	[2548]	-
	ZSW2.7	**1 = Parking axis active**	p2081[7] = r0896.0	-	-	-
<3> <4>	ZSW2.8	**1 = Traverse to fixed endstop**	p2081[8] = r1406.8	-	[2520]	-
	ZSW2.9	**Reserved**	-	-	-	-
	ZSW2.10	**1 = Pulses enabled**	p2082[13] = r0899.11	[2503.7]	[2610]	-
	ZSW2.11	**1 = Motor data set changeover active**	p2081[11] = r0835.0	-	-	-
<2> <4>	ZSW2.12	**Slave sign-of-life bit 0**	Implicitly interconnected	-	-	-
	ZSW2.13	**Slave sign-of-life bit 1**				
	ZSW2.14	**Slave sign-of-life bit 2**				
	ZSW2.15	**Slave sign-of-life bit 3**				

<1> Used in telegrams 2, 3, 4, $\overbrace{5, 6, 9, 110, 111}^{<3>}$.
<2> These signals are automatically interconnected for clock-cycle synchronous operation.
<3> Only for SINAMICS S120.
<4> Not for Vector U/f.

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_2454_54_eng.vsd	Function diagram	- 2454 -
PROFIdrive - ZSW2 status word interconnection (p2038 = 0)	27.06.13 V05.01.01	S120/S150/G130/G150	

Fig. 3-65 2455 – ZSW2 status word interconnection (p2038 = 1)

PROFIdrive sampling time

Signal sources for ZSW2 in Interface Mode SIMODRIVE 611 universal (p2038 = 1) <1>

Signal	Meaning	Interconnection parameters	[Function diagram] Internal status word	[Function diagram] Signal source	Inverted <4>
ZSW2.0	**1 = Drive data set DDS effective, bit 0**	p2081[0] = r0051.0	-	[8565]	-
ZSW2.1	**1 = Drive data set DDS effective, bit 1**	p2081[1] = r0051.1	-	[8565]	-
ZSW2.2	**1 = Drive data set DDS effective, bit 2**	p2081[2] = r0051.2	-	[8565]	-
ZSW2.3	**Reserved**	-	-	-	-
ZSW2.4	**1 = Ramp-function generator inactive** <3>	p2081[4] = r1199.2	-	[3060] [3080]	✔
ZSW2.5	**1 = Open the holding brake**	p2081[5] = r0899.12	[2503.7]	[2701]	-
ZSW2.6	**1 = Integrator inhibit, speed controller**	p2081[6] = r2093.6	-	[5040] [5210]	-
ZSW2.7	**1 = Parking axis active**	p2081[7] = r0896.0	-	-	-
ZSW2.8	**1 = Traverse to fixed endstop**	p2081[8] = r1406.8	-	[2520]	-
ZSW2.9	**1 = Drive data set DDS effective, bit 3**	p2081[9] = r0051.3	-	[8565]	-
ZSW2.10	**1 = Drive data set DDS effective, bit 4**	p2081[10] = r0051.4	-	[8565]	-
ZSW2.11	**1 = Motor data set changeover active**	p2081[11] = r0835.0	-	-	-
ZSW2.12 <2>	**Slave sign-of-life bit 0**	Implicitly interconnected	-	-	-
ZSW2.13 <2>	**Slave sign-of-life bit 1**				
ZSW2.14 <2>	**Slave sign-of-life bit 2**				
ZSW2.15 <2>	**Slave sign-of-life bit 3**				

<1> Used in telegrams 102, 103, 105, 106, 116, 118, 125, 126, 136, 138, 139.
<2> These signals are automatically interconnected for clock-cycle synchronous operation.
<3> Only if the function module "extended setpoint channel" is active (r0108.8 = 1).
<4> The ZSW2 is generated using the binector-connector converter (BI: p2081[0...15], inversion: p2088[1].0...p2088[1].15)

1	2	3	4	5	6	7	8

DO: SERVO	fp_2455_01_eng.vsd	Function diagram	- 2455 -
PROFIdrive - ZSW2 status word interconnection (p2038 = 1)	12.07.13 V05.01.01	SINAMICS S120	

PROFIdrive sampling time

Signal sources for MELDW <1>

Signal	Meaning	Interconnection parameters	[Function diagram] Internal status word	[Function diagram] signal source	Inverted <2>
MELDW.0	**1 = Ramp-up/ramp-down completed** **0 = Ramp-function generator active**	p2082[0] = r2199.5	[2537.7]	[8010]	-
MELDW.1	**1 = Torque utilization [%] < torque threshold value 2 (p2194)**	p2082[1] = r2199.11	[2537.7]	[8012]	-
MELDW.2	**1 = |n_act| < speed threshold value 3 (p2161)**	p2082[2] = r2199.0	[2537.7]	[8010]	-
MELDW.3	**1 = |n_act| ≤ speed threshold value 2 (p2155)**	p2082[3] = r2197.1	[2534.7]	[8010]	-
MELDW.4	**1 = Vdc_min controller active (Vdc < p1248)**	p2082[4] = r0056.15	-	-	-
MELDW.5	**Variable signaling function** <4>	p2082[5] = r3294	-	[5301]	-
MELDW.6	**1 = No motor overtemperature alarm**	p2082[6] = r2135.14	[2548.7]	[8016]	✔
MELDW.7	**1 = No alarm, thermal overload, power unit**	p2082[7] = r2135.15	[2548.7]	[8021]	✔
MELDW.8	**1 = Speed setpoint - actual value deviation within tolerance t_on**	p2082[8] = r2199.4	[2537.7]	[8010]	-
MELDW.9	**1 = ESR reaction initiated / Generator mode active** <3>	p2082[9] = r0887.12	-	-	-
MELDW.10	**Reserved**	-	-	-	-
MELDW.11	**1 = Controller enable**	p2082[11] = r0899.8	[2503.7]	[2610]	-
MELDW.12	**1 = Drive ready**	p2082[12] = r0899.7	[2503.7]	[2610]	-
MELDW.13	**1 = Pulses enabled**	p2082[13] = r0899.11	[2503.7]	[2610]	-
MELDW.14	**Reserved**	-	-	-	-
MELDW.15	**Reserved**	-	-	-	-

<1> Used in telegrams $\underbrace{102, 103, 105, 106,}_{<4>}$ $\underbrace{110, 111,}_{<5>}$ $\underbrace{116, 118, 125, 126, 136, 138, 139}_{<4>}$.

<2> The status word is generated using the binector-connector converter p2088[2].
<3> Only available when the function module "Extended setpoint channel" is active (r0108.9 = 1).

<4> Only for SERVO.
<5> Only for EPOS.

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_2456_55_eng.vsd	Function diagram	- 2456 -
PROFIdrive - MELDW status word interconnection	17.07.13 V05.01.01	SINAMICS S120/S150	

Fig. 3-66 2456 – MELDW status word interconnection

Fig. 3-67 2457 – E_ZSW1 status word infeed interconnection

PROFIdrive sampling time

Signal sources for E_ZSW1

<1> <5>

Signal	Meaning	Interconnection parameters	[Function diagram] signal source			[Function diagram] internal status word			Inverted
			A_INF	B_INF <4>	S_INF <3>	A_INF	B_INF <4>	S_INF <3>	
ZSW1.0	**1 = Ready for switching on**	p2080[0] = r0899.0	[8932]	[8732]	[8832]	[8926.7]	[8726.7]	[8826.7]	-
ZSW1.1	**1 = Ready for operation**	p2080[1] = r0899.1	[8932]	[8732]	[8832]	[8926.7]	[8726.7]	[8826.7]	-
ZSW1.2	**1 = Operation enabled**	p2080[2] = r0899.2	[8932]	[8732]	[8832]	[8926.7]	[8726.7]	[8826.7]	-
ZSW1.3	**1 = Fault present**	p2080[3] = r2139.3	[8060]			[2548.7]			-
ZSW1.4	**1 = No OFF2 effective**	p2080[4] = r0899.4	[8932]	[8732]	[8832]	[8926.7]	[8726.7]	[8826.7]	-
ZSW1.5	**Reserved**	-	-	-	-	-	-	-	-
ZSW1.6	**1 = Switching on inhibited**	p2080[6] = r0899.6	[8932]	[8732]	[8832]	[8926.7]	[8726.7]	[8826.7]	-
ZSW1.7	**1 = Alarm present**	p2080[7] = r2139.7	[8065]			[2548.7]			-
ZSW1.8	**Reserved**	-	-	-	-	-	-	-	-
ZSW1.9	**1 = PLC requests control** <2>	p2080[9] = r0899.9	[8926]	[8726]	[8826]	[8926.7]	[8726.7]	[8826.7]	-
ZSW1.10	**Reserved**	-	-	-	-	-	-	-	-
ZSW1.11	**1 = Precharging completed**	p2080[11] = r0899.11	[8950]	[8750]	[8850]	[8926.7]	[8726.7]	[8826.7]	-
ZSW1.12	**1 = Line contactor closed**	p2080[12] = r0899.12	[8938]	[8738]	[8838]	[8926.7]	[8726.7]	[8826.7]	-
ZSW1.13	**Reserved**	-	-	-	-	-	-	-	-
ZSW1.14	**Reserved**	-	-	-	-	-	-	-	-
ZSW1.15	**Reserved**	-	-	-	-	-	-	-	-

<1> Used in telegram 370.
<2> The drive object is ready to accept data.
<3> Only for S120.
<4> Only for S120 and G150.
<5> Not for G130.

1	2	3	4	5	6	7	8

DO: A_INF, B_INF, S_INF	fp_2457_54_eng.vsd	Function diagram	- 2457 -
PROFIdrive - E_ZSW1 status word infeed interconnection	19.06.15 V05.01.01	S120/S150/G130/G150	

PROFIdrive sampling time

Signal targets for POS_STW (positioning mode, r0108.4 = 1)

<1>

Signal	Meaning	Interconnection parameters	[Function diagram] internal control word	[Function diagram] signal target	Inverted
POS_STW.0	**1 = Tracking mode active** 0 = No tracking mode active	p2655[0] = r2092.0	-	[3635]	-
POS_STW.1	**1 = Set home position** 0 = Do not set home position	p2596 = r2092.1	-	[3612]	-
POS_STW.2	**1 = Reference cam active**	p2612 = r2092.2	-	[3612]	-
POS_STW.3	**Reserved**	-	-	-	-
POS_STW.4	**Reserved**	-	-	-	-
POS_STW.5	**1 = Jogging, incremental active** 0 = Jogging, velocity active	p2591 = r2092.5	-	[3610]	-
POS_STW.6	**Reserved**	-	-	-	-
POS_STW.7	**Reserved**	-	-	-	-
POS_STW.8	**Reserved**	-	-	-	-
POS_STW.9	**Reserved**	-	-	-	-
POS_STW.10	**Reserved**	-	-	-	-
POS_STW.11	**Reserved**	-	-	-	-
POS_STW.12	**Reserved**	-	-	-	-
POS_STW.13	**Reserved**	-	-	-	-
POS_STW.14	**Reserved**	-	-	-	-
POS_STW.15	**Reserved**	-	-	-	-

<1> Used in telegrams 110, 999.

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_2462_55_eng.vsd	Function diagram	- 2462 -
PROFIdrive - POS_STW positioning control word interconnection (r0108.4 = 1)	17.07.13 V05.01.01	SINAMICS S120/S150	

Fig. 3-68 2462 – POS_STW positioning control word interconnection (r0108.4 = 1)

Fig. 3-69 2463 – POS_STW1 positioning control word 1 interconnection (r0108.4 = 1)

PROFIdrive sampling time

Signal targets for POS_STW1 (positioning mode, r0108.4 = 1) <1>

Signal	Meaning	Interconnection parameters	[Function diagram] internal control word	[Function diagram] signal target	Inverted
POS_STW1.0	**Traversing block selection, bit 0**	p2625 = r2091.0	-	-	-
POS_STW1.1	**Traversing block selection, bit 1**	p2626 = r2091.1	-	-	-
POS_STW1.2	**Traversing block selection, bit 2**	p2627 = r2091.2	-	-	-
POS_STW1.3	**Traversing block selection, bit 3**	p2628 = r2091.3	-	-	-
POS_STW1.4	**Traversing block selection, bit 4**	p2629 = r2091.4	-	-	-
POS_STW1.5	**Traversing block selection, bit 5**	p2630 = r2091.5	-	-	-
POS_STW1.6	**Reserved**	-	-	-	-
POS_STW1.7	**Reserved**	-	-	-	-
POS_STW1.8	**1 = Absolute positioning is selected.** 0 = Relative positioning is selected.	p2648 = r2091.8	-	-	-
POS_STW1.9	**1 = Absolute positioning/MDI direction selection, positive.** **2 = Absolute positioning/MDI direction selection, negative.** **3 = Absolute positioning through the shortest distance.** **0 = Absolute positioning through the shortest distance.**	p2651 = r2091.9	-	-	-
POS_STW1.10		p2652 = r2091.10	-	-	-
POS_STW1.11	**Reserved**	-	-	-	-
POS_STW1.12	**1 = Continuous transfer** 0 = Activate MDI block change with of a traversing task (STW1.6)	p2649 = r2091.12	-	-	-
POS_STW1.13	**Reserved**	-	-	-	-
POS_STW1.14	**1 = Signal setting-up selected** 0 = Signal positioning selected.	p2653 = r2091.14	-	-	-
POS_STW1.15	**1 = MDI selection**	p2647 = r2091.15	-	-	-

<1> Used in telegram 111.

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_2463_55_eng.vsd	Function diagram	- 2463 -
PROFIdrive - POS_STW1 positioning control word 1 interconnection (r0108.4 = 1)	17.07.13 V05.01.01	SINAMICS S120/S150	

PROFIdrive sampling time

Signal targets for POS_STW2 (positioning mode, r0108.4 = 1)

<1>

Signal	Meaning	Interconnection parameters	[Function diagram] internal control word	[Function diagram] signal target	Inverted
POS_STW2.0	**1 = Tracking mode active**	p2655[0] = r2092.0	-	[3635]	-
POS_STW2.1	**1 = Set reference point**	p2596 = r2092.1	-	[3612]	-
POS_STW2.2	**1 = Reference cam active**	p2612 = r2092.2	-	[3612]	-
POS_STW2.3	**Reserved**	-	-	-	-
POS_STW2.4	**Reserved**	-	-	-	-
POS_STW2.5	**1 = Jogging, incremental active** 0 = Jogging, velocity active	p2591 = r2092.5	-	[3610]	-
POS_STW2.6	**Reserved**	-	-	-	-
POS_STW2.7	**Reserved**	-	-	-	-
POS_STW2.8	**1 = Referencing type selection for flying referencing** 0 = Referencing type selection for search for reference	p2597 = r2092.8	-	-	-
POS_STW2.9	**1 = Start the search for reference in the negative direction** 0 = Start the search for reference in the positive direction.	p2604 = r2092.9	-	-	-
POS_STW2.10	**1 = Measuring probe 2 is activated** 0 = Measuring probe 1 is activated	p2510[0] = r2092.10	-	-	-
POS_STW2.11	**1 = Falling edge of the measuring probe** 0 = Rising edge of the measuring probe	p2511[0] = r2092.11	-	-	-
POS_STW2.12	**Reserved**	-	-	-	-
POS_STW2.13	**Reserved**	-	-	-	-
POS_STW2.14	**1 = Software limit switch activation**	p2582 = r2092.14	-	-	-
POS_STW2.15	**1 = STOP cam active**	p2568 = r2092.15	-	-	-

<1> Used in telegram 111.

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_2464_55_eng.vsd	Function diagram	- 2464 -
PROFIdrive - POS_STW2 positioning control word 2 interconnection (r0108.4 = 1)	17.07.13 V05.01.01	SINAMICS S120/S150	

Fig. 3-70 2464 – POS_STW2 positioning control word 2 interconnection (r0108.4 = 1)

PROFIdrive sampling time

Signal targets for POS_ZSW1 (positioning mode, r0108.4 = 1)

<1>

Signal	Meaning	Interconnection parameters	[Function diagram] internal control word	[Function diagram] signal target	Inverted
POS_ZSW1.0	**Active Traversing Block Bit 0 (2^0)**	p2083[0] = r2670[0]	-	-	-
POS_ZSW1.1	**Active Traversing Block Bit 1 (2^1)**	p2083[1] = r2670[1]	-	-	-
POS_ZSW1.2	**Active Traversing Block Bit 2 (2^2)**	p2083[2] = r2670[2]	-	-	-
POS_ZSW1.3	**Active Traversing Block Bit 3 (2^3)**	p2083[3] = r2670[3]	-	-	-
POS_ZSW1.4	**Active Traversing Block Bit 4 (2^4)**	p2083[4] = r2670[4]	-	-	-
POS_ZSW1.5	**Active Traversing Block Bit 5 (2^5)**	p2083[5] = r2670[5]	-	-	-
POS_ZSW1.6	**Reserved**	-	-	-	-
POS_ZSW1.7	**Reserved**	-	-	-	-
POS_ZSW1.8	**1 = STOP cam minus active**	p2083[08] = r2684[13]	-	-	-
POS_ZSW1.9	**1 = STOP cam plus active**	p2083[09] = r2684[14]	-	-	-
POS_ZSW1.10	**1 = Jogging active**	p2083[10] = r2094[0]	-	-	-
POS_ZSW1.11	**1 = Reference point approach active**	p2083[11] = r2094[1]	-	-	-
POS_ZSW1.12	**1 = Flying referencing active**	p2083[12] = r2684[1]	-	-	-
POS_ZSW1.13	**1 = Traversing Block active**	p2083[13] = r2094[2]	-	-	-
POS_ZSW1.14	**1 = Set-up active**	p2083[14] = r2094[4]	-	-	-
POS_ZSW1.15	**1 = MDI active** 0 = MDI inactive	p2083[15] = r2670[15]	-	-	-

<1> Used in telegram 111.

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_2466_55_eng.vsd	Function diagram	- 2466 -
PROFIdrive - POS_ZSW1 positioning status word 1 interconnection (r0108.4 = 1)	17.07.13 V05.01.01	SINAMICS S120/S150	

Fig. 3-71 2466 – POS_ZSW1 positioning status word 1 interconnection (r0108.4 = 1)

Fig. 3-72 2467 – POS_ZSW2 positioning status word 2 interconnection (r0108.4 = 1)

PROFIdrive sampling time

Signal targets for POS_ZSW2 (positioning mode, r0108.4 = 1) <1>

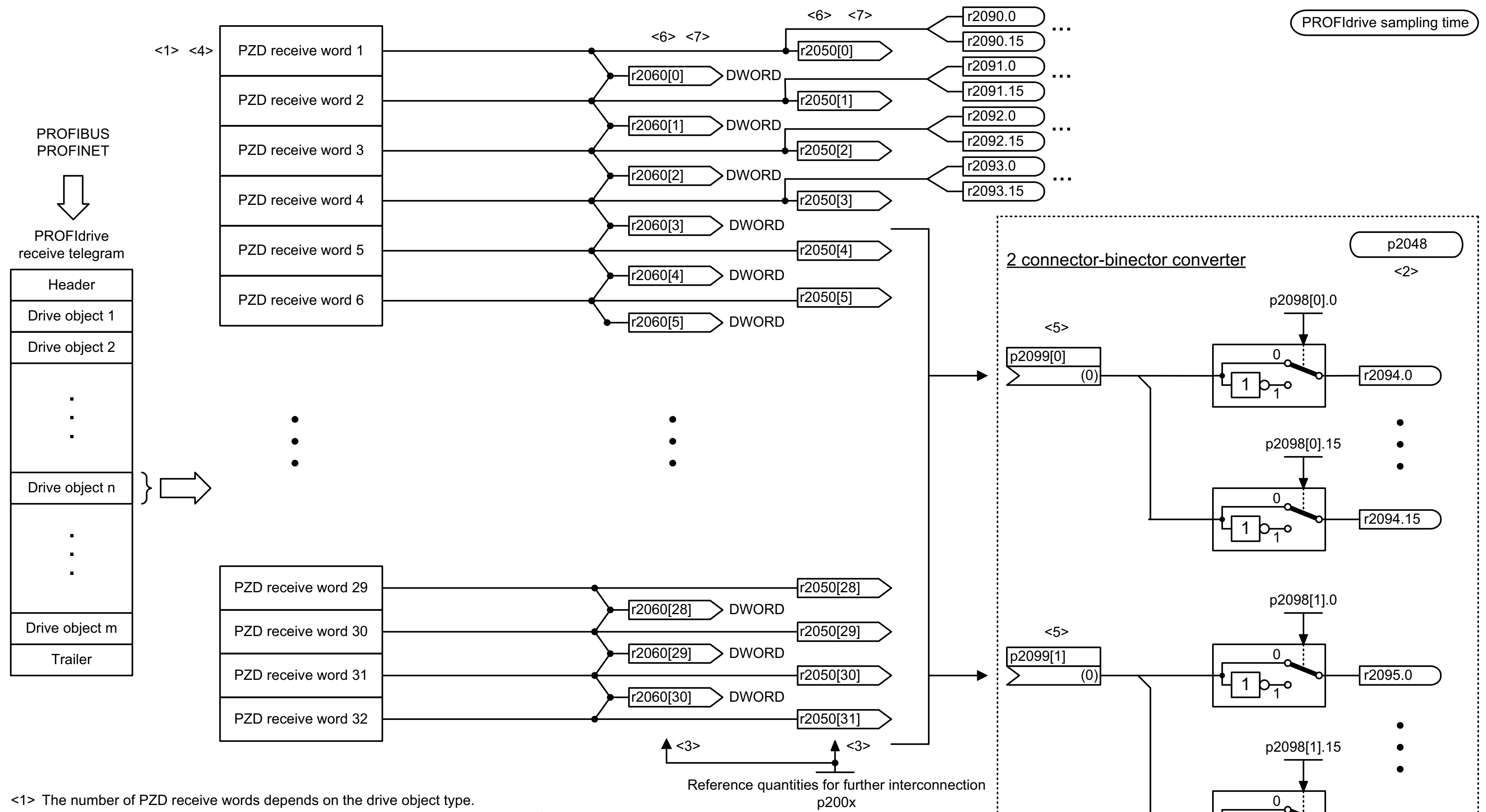
Signal	Meaning	Interconnection parameters	[Function diagram] internal control word	[Function diagram] signal target	Inverted
POS_ZSW2.0	**1 = Tracking mode active**	p2084[0] = r2683.0	-	-	-
POS_ZSW2.1	**1 = Velocity limiting active**	p2084[1] = r2683.1	-	-	-
POS_ZSW2.2	**1 = Setpoint available**	p2084[2] = r2683.2	-	-	-
POS_ZSW2.3	**1 = Printing mark outside outer window**	p2084[3] = r2684.3	-	-	-
POS_ZSW2.4	**1 = Axis moves forward**	p2084[4] = r2683.4	-	-	-
POS_ZSW2.5	**1 = Axis moves backwards**	p2084[5] = r2683.5	-	-	-
POS_ZSW2.6	**1 = Software limit switch minus reached**	p2084[6] = r2683.6	-	-	-
POS_ZSW2.7	**1 = Software limit switch plus reached**	p2084[7] = r2683.7	-	-	-
POS_ZSW2.8	**1 = Position actual value <= cam switching position 1**	p2084[8] = r2683.8	-	-	-
POS_ZSW2.9	**1 = Position actual value <= cam switching position 2**	p2084[9] = r2683.9	-	-	-
POS_ZSW2.10	**1 = Direct output 1 via traversing block**	p2084[10] = r2683.10	-	-	-
POS_ZSW2.11	**1 = Direct output 2 via traversing block**	p2084[11] = r2683.11	-	-	-
POS_ZSW2.12	**1 = Fixed stop reached**	p2084[12] = r2683.12	-	-	-
POS_ZSW2.13	**1 = Fixed stop clamping torque reached**	p2084[13] = r2683.13	-	-	-
POS_ZSW2.14	**1 = Travel to fixed stop active**	p2084[14] = r2683.14	-	-	-
POS_ZSW2.15	**1 = Traversing command active**	p2084[15] = r2684.15	-	-	-

<1> Used in telegram 111.

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_2467_55_eng.vsd	Function diagram	**- 2467 -**
PROFIdrive - POS_ZSW2 positioning status word 2 interconnection (r0108.4 = 1)	17.07.13 V05.01.01	SINAMICS S120/S150	

Fig. 3-73 2468 – IF1 receive telegram, free interconnection via BICO (p0922 = 999)

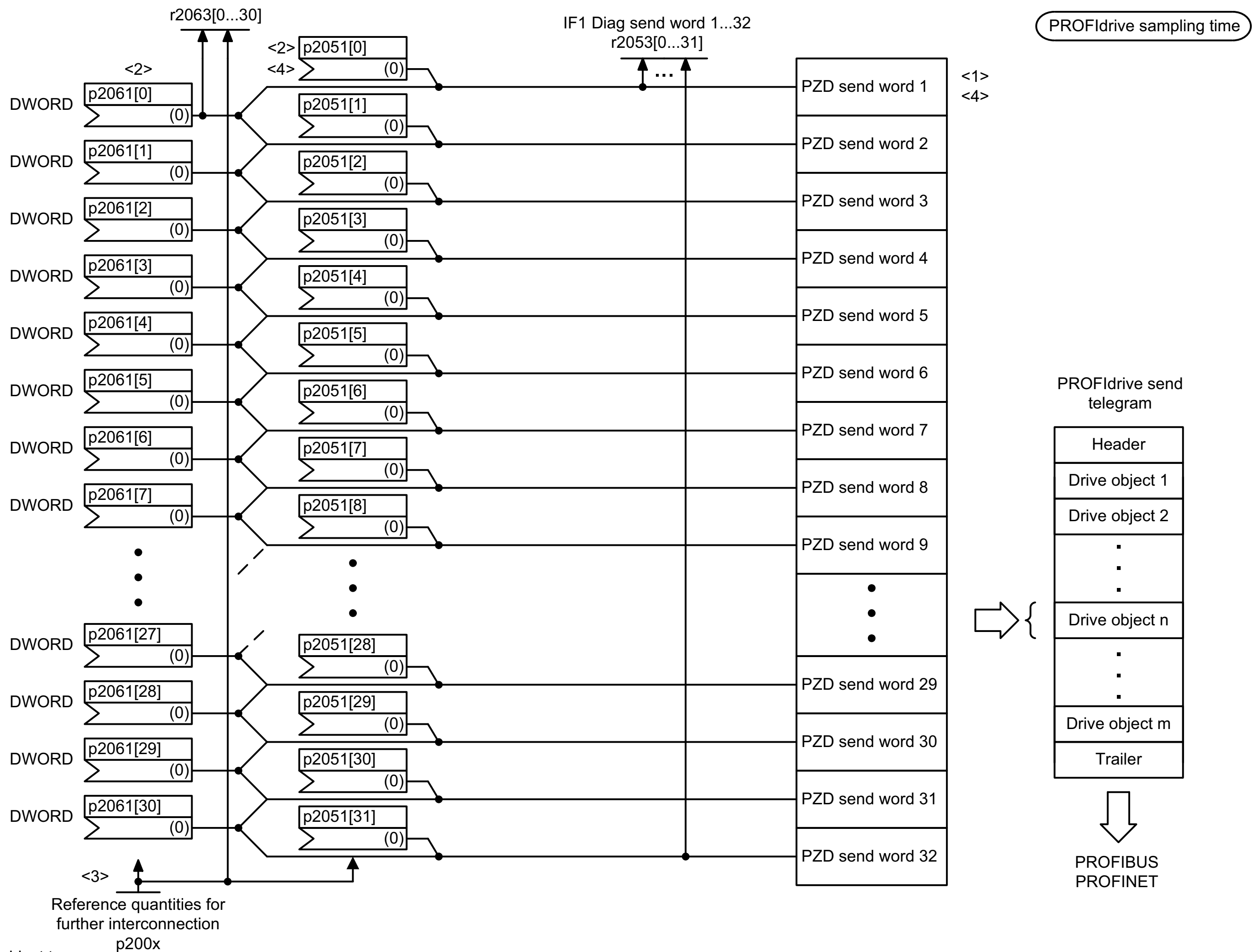


<1> The number of PZD receive words depends on the drive object type.
<2> The connector-binector converter only converts the lower 16 bits irrespective of the input variable.
<3> The following representation applies for words: 4000 hex = 100 % for double words 4000 0000 hex = 100 %.
The reference variables p200x apply for the ongoing interconnection (100 % -> p200x).
The following applies for temperature values: 100 °C -> 100 % = 4000 hex or 4000 0000 hex; 0 °C -> 0 %.
<4> In order to maintain the PROFIdrive profile, receive word 1 must be used as control word (STW1) (due to bit 10 "control requested").
<5> Using the connector-binector converters, the bits can be extracted from two of the PZD receive words 5 to 32 and used as binectors.
<6> Every PZD word can be assigned a word or a double word. Only one of the 2 interconnection parameters r2050 or r2060 can have a value ≠ 0 for a PZD word.
<7> When interconnecting a connector output multiple times all the connector inputs must have either Integer or FloatingPoint data type.

1	2	3	4	5	6	7	8

DO: ENC, SERVO, TM41, VECTOR	fp_2468_54_eng.vsd	Function diagram	- 2468 -
PROFIdrive - IF1 receive telegram, free interconnection via BICO (p0922 = 999)	27.06.13 V05.01.01	S120/S150/G130/G150	

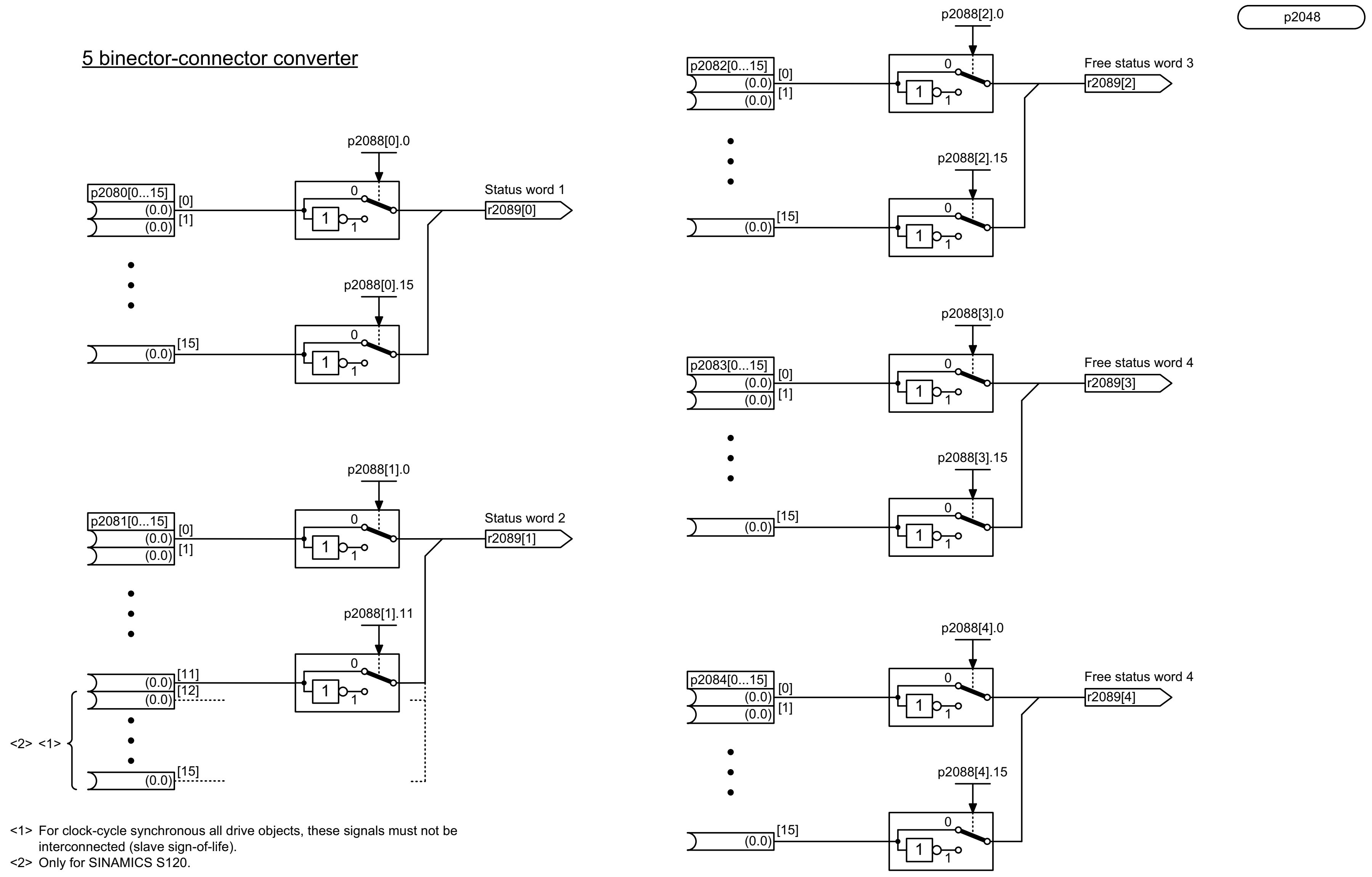
Fig. 3-74 2470 – IF1 send telegram, free interconnection via BICO (p0922 = 999)



<1> The number of PZD send words depends on the drive object type.
<2> A PZD send word can either be supplied via connector input p2051[x] (WORD) or via p2061[x] (DWORD).
The two corresponding connector inputs cannot be interconnected.
<3> Physical word and double word values are inserted in the telegram as referenced variables. p200x apply as reference variables (telegram contents = 4000 hex or 4000 0000 hex in the case of double words, if the input variable has the value p200x).
The following applies for temperature values: 100° C -> 100 % = 4000 hex or 4000 0000 hex; 0° C -> 0 %.
<4> To comply with the PROFIdrive profile, send word 1 must be used as status word 1 (ZSW1), not as DWORD.

1	2	3	4	5	6	7	8
DO: ENC, SERVO, TM41, VECTOR					fp_2470_54_eng.vsd	Function diagram	- 2470 -
PROFIdrive - IF1 send telegram, free interconnection via BICO (p0922 = 999)					27.06.13 V05.01.01	S120/S150/G130/G150	

Fig. 3-75 2472 – IF1 status words, free interconnection



<1> For clock-cycle synchronous all drive objects, these signals must not be interconnected (slave sign-of-life).
<2> Only for SINAMICS S120.

1	2	3	4	5	6	7	8
DO: All objects					fp_2472_54_eng.vsd	Function diagram	- 2472 -
PROFIdrive - IF1 status words, free interconnection					15.01.10 V05.01.01	S120/S150/G130/G150	

Fig. 3-76 2475 – STW1 control word 1 interconnection (r0108.4 = 1)

PROFIdrive sampling time

Signal targets for STW1 (positioning mode, r0108.4 = 1) <1>

Signal	Meaning	Interconnection parameters	[Function diagram] internal control word	[Function diagram] signal target	Inverted
STW1.0	= ON (pulses can be enabled) **0 = OFF1** (braking with ramp-funct. generator, then pulse suppression & ready for switching on)	p0840[0] = r2090.0	[2501.3]	[2610]	-
STW1.1	**1 = No OFF2** (enable is possible) <4> 0 = OFF2 (immediate pulse suppression and switching on inhibited)	p0844[0] = r2090.1	[2501.3]	[2610]	-
STW1.2	**1 = No OFF3** (enable possible) <4> 0 = OFF3 (braking with the OFF3 ramp p1135, then pulse suppression & switching on inhibited)	p0848[0] = r2090.2	[2501.3]	[2610]	-
STW1.3	**1 = Enable operation** (pulses can be enabled) 0 = Inhibit operation (suppress pulses)	p0852[0] = r2090.3	[2501.3]	[2610]	-
STW1.4	**1 = Do not reject traversing task** 0 = Reject traversing task (ramp-down with the maximum deceleration)	p2641 = r2090.4	-	[3616.5] [3625]	-
STW1.5	**1 = No intermediate stop** 0 = Intermediate stop	p2640 = r2090.5	-	[3616.5] [3625]	-
STW1.6	**= Activate traversing task**	<3> p2631 = r2090.6 p2650 = r2090.6	-	[3620.1] [3625]	-
STW1.7	**= Acknowledge faults**	p2103[0] = r2090.7	[2546.1]	[8060]	-
STW1.8	**1 = Jog 1 signal source**	p2589 = r2090.8	-	[3610.1] [3625]	-
STW1.9	**1 = Jog 2 signal source**	p2590 = r2090.9	-	[3610.1] [3625]	-
STW1.10	**1 = Control by PLC** <2>	p0854[0] = r2090.10	[2501.3]	[2501]	-
STW1.11	**1 = Start homing** 0 = Stop homing	p2595 = r2090.11	-	[3612.1] [3625]	-
STW1.12	**Reserved**	-	-	-	-
STW1.13	**= External block change**	p2633 = r2090.13	-	[3615]	-
STW1.14	**Reserved**	-	-	-	-
STW1.15	**Reserved**	-	-	-	-

<1> Used in telegrams 7, 9, 110, 111.
<2> STW1.10 must be set to ensure that the drive object accepts the process data (PZD).
<3> The interconnection p2649 = 0 is made additionally only in Telegram 7, 9 and 110.
<4> OC = Operating condition.

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_2475_55_eng.vsd	Function diagram	- 2475 -
PROFIdrive - STW1 control word 1 interconnection (r0108.4 = 1)	17.07.13 V05.01.01	SINAMICS S120/S150	

Fig. 3-77 2476 – SATZANW block selection interconnection (r0108.4 = 1)

Signal targets for SATZANW (positioning mode, r0108.4 = 1) <1>

PROFIdrive sampling time

Signal	Meaning	Interconnection parameters	[Function diagram] internal control word	[Function diagram] signal target	Inverted
SATZANW.0	1 = Traversing block selection, bit 0	p2625 = r2091.0	-	[3640]	-
SATZANW.1	1 = Traversing block selection, bit 1	p2626 = r2091.1	-	[3640]	-
SATZANW.2	1 = Traversing block selection, bit 2	p2627 = r2091.2	-	[3640]	-
SATZANW.3	1 = Traversing block selection, bit 3	p2628 = r2091.3	-	[3640]	-
SATZANW.4	1 = Traversing block selection, bit 4	p2629 = r2091.4	-	[3640]	-
SATZANW.5	1 = Traversing block selection, bit 5	p2630 = r2091.5	-	[3640]	-
SATZANW.6	Reserved	-	-	-	-
SATZANW.7	Reserved	-	-	-	-
SATZANW.8	Reserved	-	-	-	-
SATZANW.9	Reserved	-	-	-	-
SATZANW.10	Reserved	-	-	-	-
SATZANW.11	Reserved	-	-	-	-
SATZANW.12	Reserved	-	-	-	-
SATZANW.13	Reserved	-	-	-	-
SATZANW.14	Reserved	-	-	-	-
SATZANW.15	1 = Activate MDI **0 = De-activate MDI**	p2647 = r2091.15	-	[3625] [3640]	-

<1> Used in telegrams 7, 9, 110.

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_2476_55_eng.vsd	Function diagram	- 2476 -
PROFIdrive - SATZANW block selection interconnection (r0108.4 = 1)	26.07.13 V05.01.01	SINAMICS S120/S150	

PROFIdrive sampling time

Signal sources for ZSW1 (positioning mode, r0108.4 = 1)

<1>

Signal	Meaning	Interconnection parameters	[Function diagram] Internal status word	[Function diagram] signal source	Inverted
ZSW1.0	**1 = Ready for switching on**	p2080[0] = r0899.0	[2503.7]	[2610]	-
ZSW1.1	**1 = Ready for operation** (DC link loaded, pulses blocked)	p2080[1] = r0899.1	[2503.7]	[2610]	-
ZSW1.2	**1 = Operation enabled** (drive follows n_set)	p2080[2] = r0899.2	[2503.7]	[2610]	-
ZSW1.3	**1 = Fault present**	p2080[3] = r2139.3	[2548.7]	[8060]	-
ZSW1.4	**1 = No coast down active (OFF2 inactive)**	p2080[4] = r0899.4	[2503.7]	[2610]	-
ZSW1.5	**1 = No quick stop active (OFF3 inactive)**	p2080[5] = r0899.5	[2503.7]	[2610]	-
ZSW1.6	**1 = Switching on inhibited active**	p2080[6] = r0899.6	[2503.7]	[2610]	-
ZSW1.7	**1 = Alarm present**	p2080[7] = r2139.7	[2548.7]	[8065]	-
ZSW1.8	**1 = Following error within tolerance**	p2080[8] = r2684.8	[3646.7]	[4025]	-
ZSW1.9	**1 = Control requested** <2>	p2080[9] = r0899.9	[2503.7]	[2503]	-
ZSW1.10	**1 = Target position reached**	p2080[10] = r2684.10	[3646.7]	[4020] [3625]	-
ZSW1.11	**1 = Home position set**	p2080[11] = r2684.11	[3646.7]	[3612] [3614]	-
ZSW1.12	**= Acknowledgment traversing block activated**	p2080[12] = r2684.12	[3646.7]	[3616] [3620]	-
ZSW1.13	**1 = Setpoint fixed**	p2080[13] = r2683.2	[2537.7]	[8010] [3625]	-
ZSW1.14	**1 = Axis accelerated** <3>	p2080[14] = r2684.4	[3646.7]	[3635]	-
ZSW1.15	**1 = Axis decelerated** <3>	p2080[15] = r2684.5	[3646.7]	[3635]	-

<1> Used in telegrams 7, 9, 110, 111.
<2> The drive object is ready to accept data.
<3> Only for telegram 111.

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_2479_55_eng.vsd	Function diagram	- 2479 -
PROFIdrive - ZSW1 status word 1 interconnection (r0108.4 = 1)	17.07.13 V05.01.01	SINAMICS S120/S150	

Fig. 3-79 2480 – MDI_MOD-MDI mode interconnection (r0108.4 = 1)

PROFIdrive sampling time

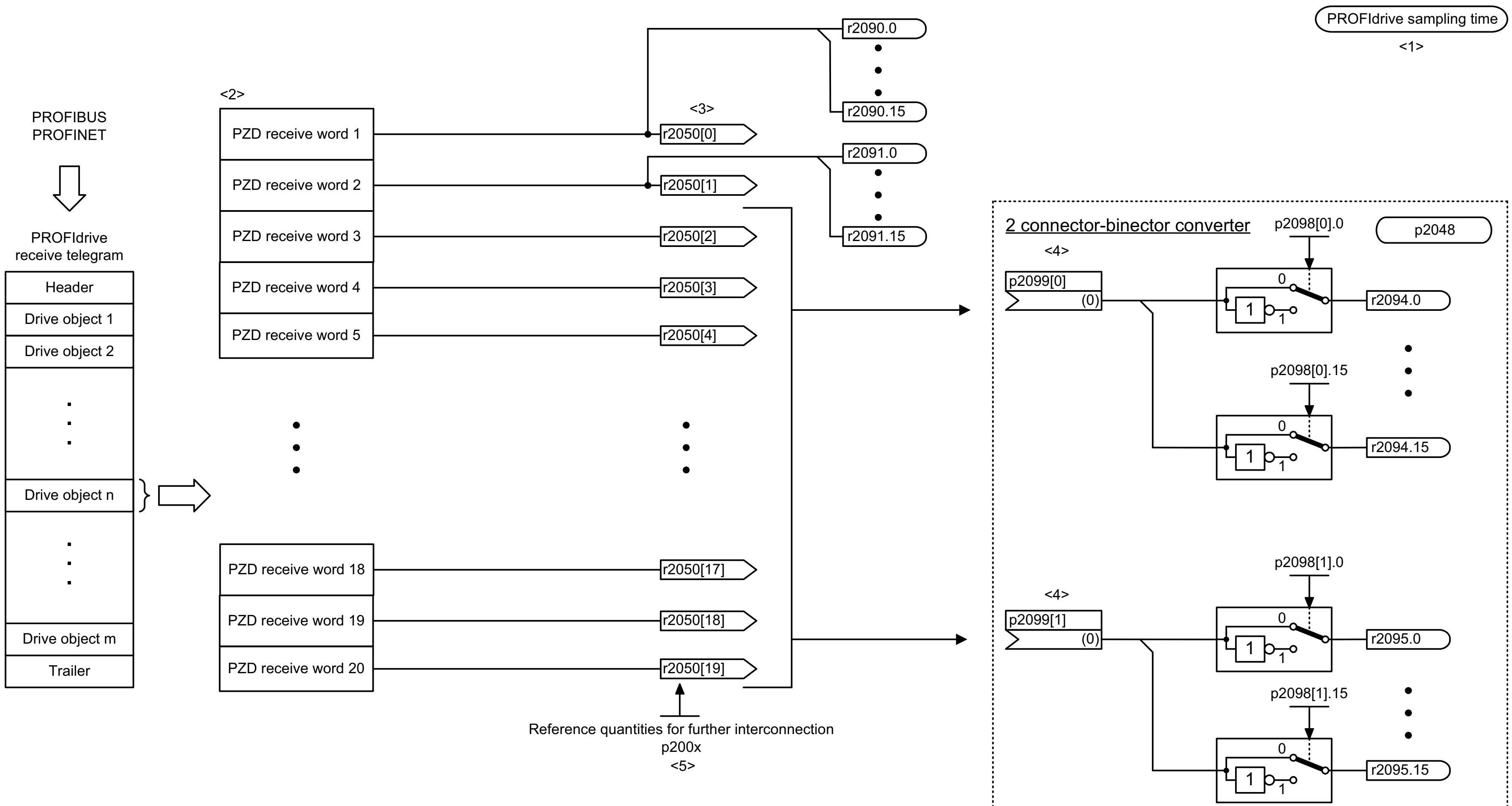
<table>
<tr><th colspan="9">Signal targets for MDI_MOD (positioning mode, r0108.4 = 1) <1></th></tr>
<tr><th>Signal</th><th colspan="4">Meaning</th><th>Interconnection parameters</th><th>[Function diagram] internal control word</th><th>[Function diagram] signal target</th><th>Inverted</th></tr>
<tr><td>MDI_MOD.0</td><td colspan="4">1 = Absolute positioning is selected.
0 = Relative positioning is selected.</td><td>p2648 = r2094.0</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td>MDI_MOD.1</td><td rowspan="2">0 = Absolute positioning through the shortest distance.</td><td rowspan="2">1 = Absolute positioning in the positive direction.</td><td rowspan="2">2 = Absolute positioning in the negative direction.</td><td rowspan="2">3 = Absolute positioning through the shortest distance.</td><td>p2651 = r2094.1</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td>MDI_MOD.2</td><td>p2652 = r2094.2</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td>MDI_MOD.3</td><td colspan="4">Reserved</td><td>-</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td>MDI_MOD.4</td><td colspan="4">Reserved</td><td>-</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td>MDI_MOD.5</td><td colspan="4">Reserved</td><td>-</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td>MDI_MOD.6</td><td colspan="4">Reserved</td><td>-</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td>MDI_MOD.7</td><td colspan="4">Reserved</td><td>-</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td>MDI_MOD.8</td><td colspan="4">Reserved</td><td>-</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td>MDI_MOD.9</td><td colspan="4">Reserved</td><td>-</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td>MDI_MOD.10</td><td colspan="4">Reserved</td><td>-</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td>MDI_MOD.11</td><td colspan="4">Reserved</td><td>-</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td>MDI_MOD.12</td><td colspan="4">Reserved</td><td>-</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td>MDI_MOD.13</td><td colspan="4">Reserved</td><td>-</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td>MDI_MOD.14</td><td colspan="4">Reserved</td><td>-</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td>MDI_MOD.15</td><td colspan="4">Reserved</td><td>-</td><td>-</td><td>-</td><td>-</td></tr>
</table>

<1> Used in telegram 9.

1	2	3	4	5	6	7	8

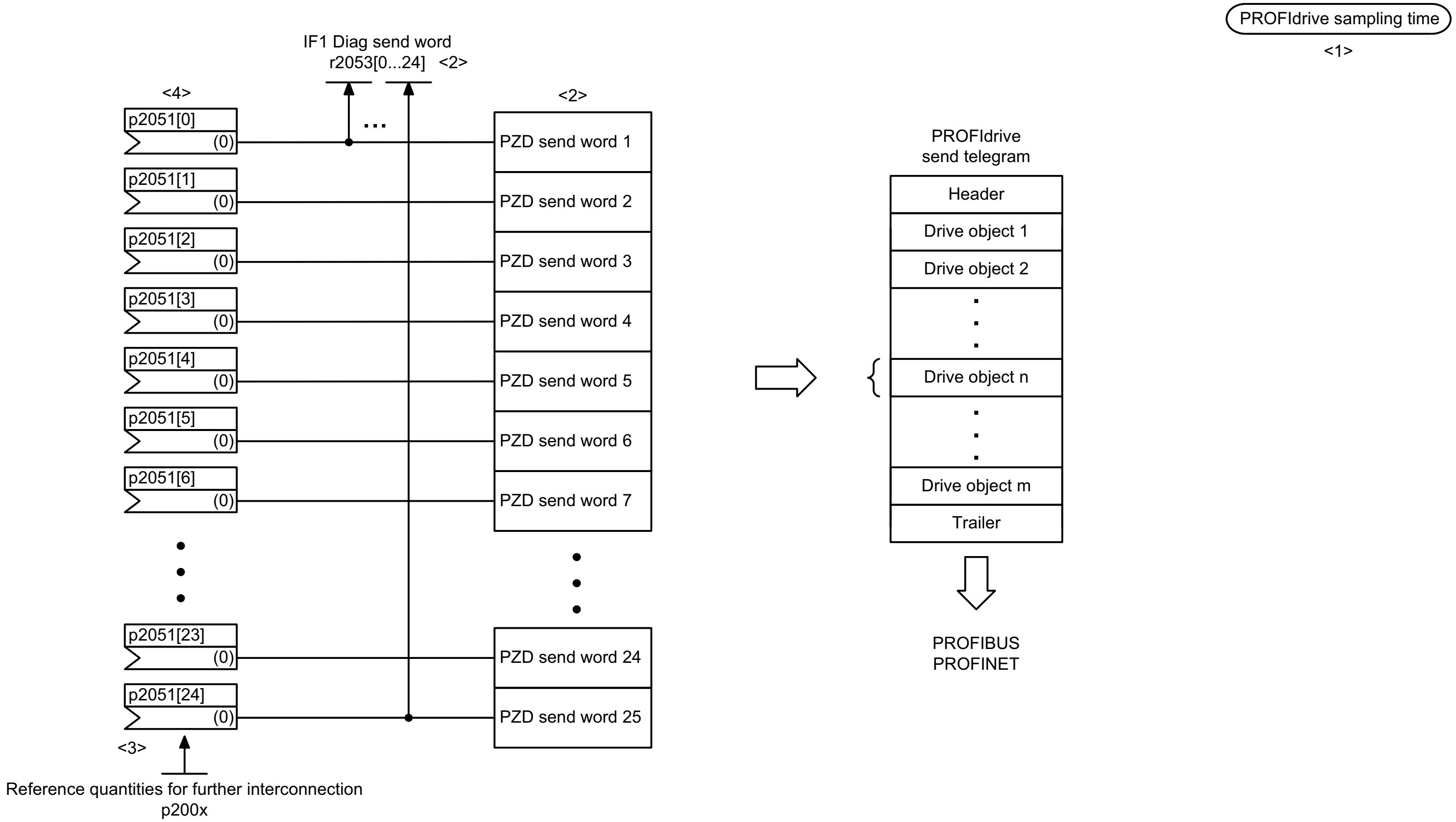
DO: SERVO, VECTOR	fp_2480_55_eng.vsd	Function diagram	- 2480 -
PROFIdrive - MDI_MOD-MDI mode interconnection (r0108.4 = 1)	17.07.13 V05.01.01	SINAMICS S120/S150	

Fig. 3-80 2481 – IF1 receive telegram, free interconnection via BICO (p0922 = 999)



<1> Not for G130/G150: TM15DI_DO, TM120.
Usable Infeeds:
G130: none, G150: B_INF, S120: x_INF, S150: A_INF
<2> The number of PZD receive words depends on the drive object type.
<3> When interconnecting a connector output multiple times all the connector inputs must have either Integer or FloatingPoint data type.
<4> Using the two connector-binector converters, two of the PZD receive words 3 to 20 can be converted into binectors for continued interconnection.
<5> The following representation applies for words: 4000 hex = 100 %. The reference variables p200x apply for the ongoing interconnection (100 % -> p200x).
The following applies for temperature values:
100 °C -> 100 % = 4000 hex; 0 °C -> 0 %.

1	2	3	4	5	6	7	8
DO: A_INF, B_INF, CU_G, CU_S, R_INF, S_INF, TB30, TM15DI_DO, TM31, TM120, TM150					fp_2481_54_eng.vsd	Function diagram	- 2481 -
PROFIdrive - IF1 receive telegram, free interconnection via BICO (p0922 = 999)					18.03.16 V05.01.01	S120/S150/G130/G150	

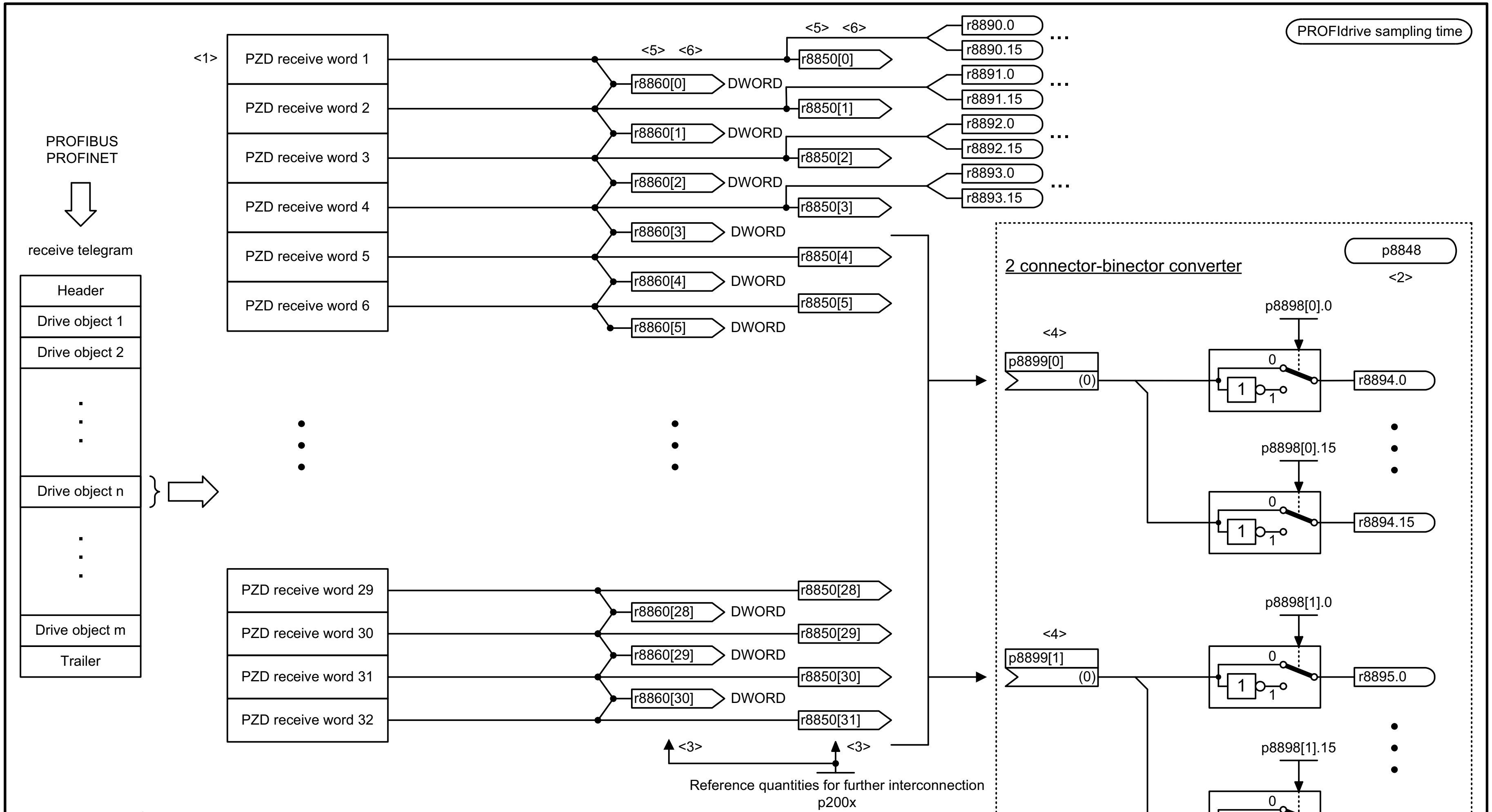


<1> Not for G130/G150: TM15DI_DO, TM120.
Usable infeeds:
G130: none, G150: B_INF, S120: x_INF, S150: A_INF
<2> The number of PZD send words depends on the drive object type.
<3> The following representation applies for words: 4000 hex = 100 %.
The reference variables p200x apply for the ongoing interconnection (100 % -> p200x).
The following applies for temperature values: 100 °C -> 100 % = 4000 hex; 0 °C -> 0 %.
<4> Using the binector/connector converters at [2472], bits of 5 send words can be interconnected with any binectors.

1	2	3	4	5	6	7	8

DO: A_INF, B_INF, CU_G, CU_S, R_INF, S_INF, TB30, TM15DI_DO, TM31, TM120, TM150	fp_2483_54_eng.vsd	Function diagram	- 2483 -
PROFIdrive - IF1 send telegram, free interconnection via BICO (p0922 = 999)	18.03.16 V05.01.01	S120/S150/G130/G150	

Fig. 3-81 2483 – IF1 send telegram, free interconnection via BICO (p0922 = 999)

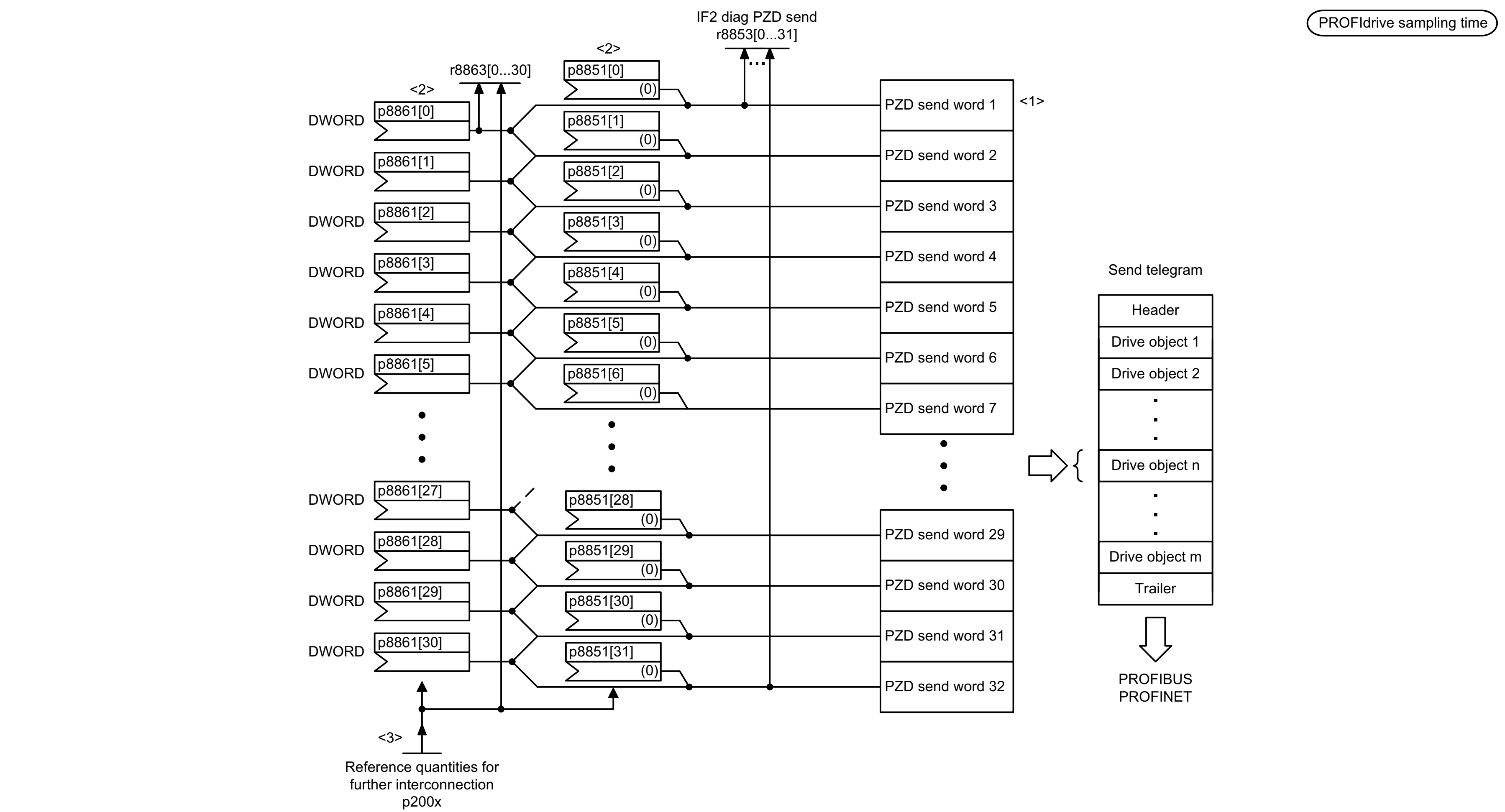


<1> The number of PZD receive words depends on the drive object type.
<2> The connector-binector converter only converts the lower 16 bits irrespective of the input variable.
<3> The following representation applies for words: 4000 hex = 100 % for double words 40000 0000 hex = 100 %.
The reference variables p200x apply for the ongoing interconnection (100 % -> p200x).
The following applies for temperature values: 100 °C -> 100 % = 4000 hex or 40000 0000 hex; 0 °C -> 0 %.
<4> Using the connector-binector converters, the bits can be extracted from two of the PZD receive words 5 to 16 and used as binectors.
<5> Every PZD word can be assigned a word or a double word. Only one of the 2 interconnection parameters r8850 or r8860 can have a value ≠ 0 for a PZD word.
<6> When interconnecting a connector output multiple times all the connector inputs must have either Integer or FloatingPoint data type.

1	2	3	4	5	6	7	8
DO: ENC, SERVO, TM41, VECTOR					fp_2485_54_eng.vsd	Function diagram	- 2485 -
PROFIdrive - IF2 receive telegram, free interconnection					27.06.13 V05.01.01	S120/S150/G130/G150	

Fig. 3-82 2485 – IF2 receive telegram, free interconnection

Fig. 3-83 2487 – IF2 send telegram, free interconnection



<1> The number of PZD send words depends on the drive object type.
<2> A PZD send word can either be supplied via connector input p8851[x] (WORD) or via p8861[x] (DWORD).
The two corresponding connector inputs cannot be interconnected.
<3> Physical word and double word values are inserted in the telegram as referenced variables. p200x apply as reference variables (telegram contents = 4000 hex or 4000 0000 hex in the case of double words, if the input variable has the value p200x).
For temperature values, the following applies:
100 °C -> 100 % = 4000 hex or 4000 0000 hex, 0 °C -> 0 %.

1	2	3	4	5	6	7	8
DO: ENC, SERVO, TM41, VECTOR					fp_2487_54_eng.vsd	Function diagram	- 2487 -
PROFIdrive - IF2 send telegram, free interconnection					18.03.16 V05.01.01	S120/S150/G130/G150	

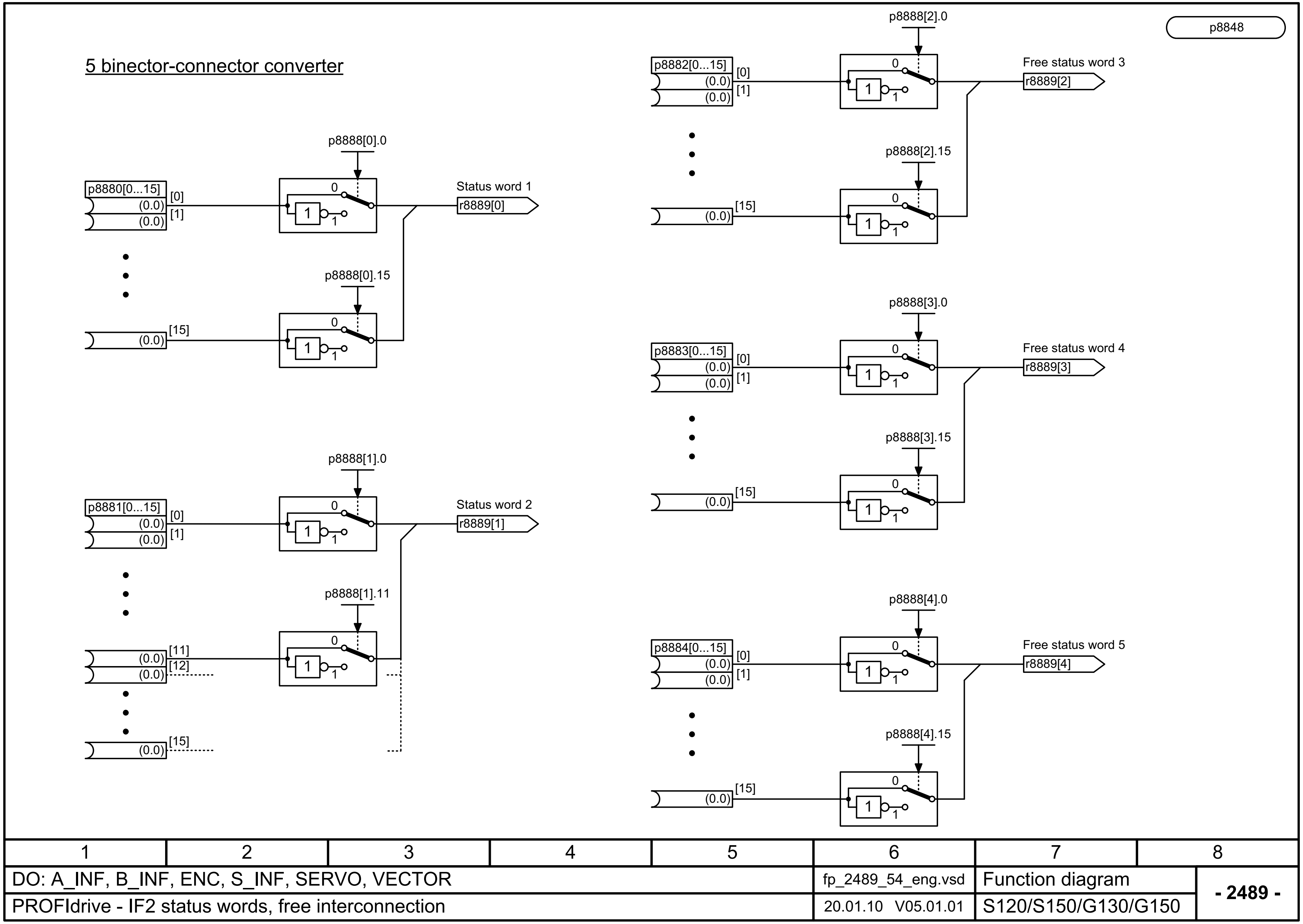
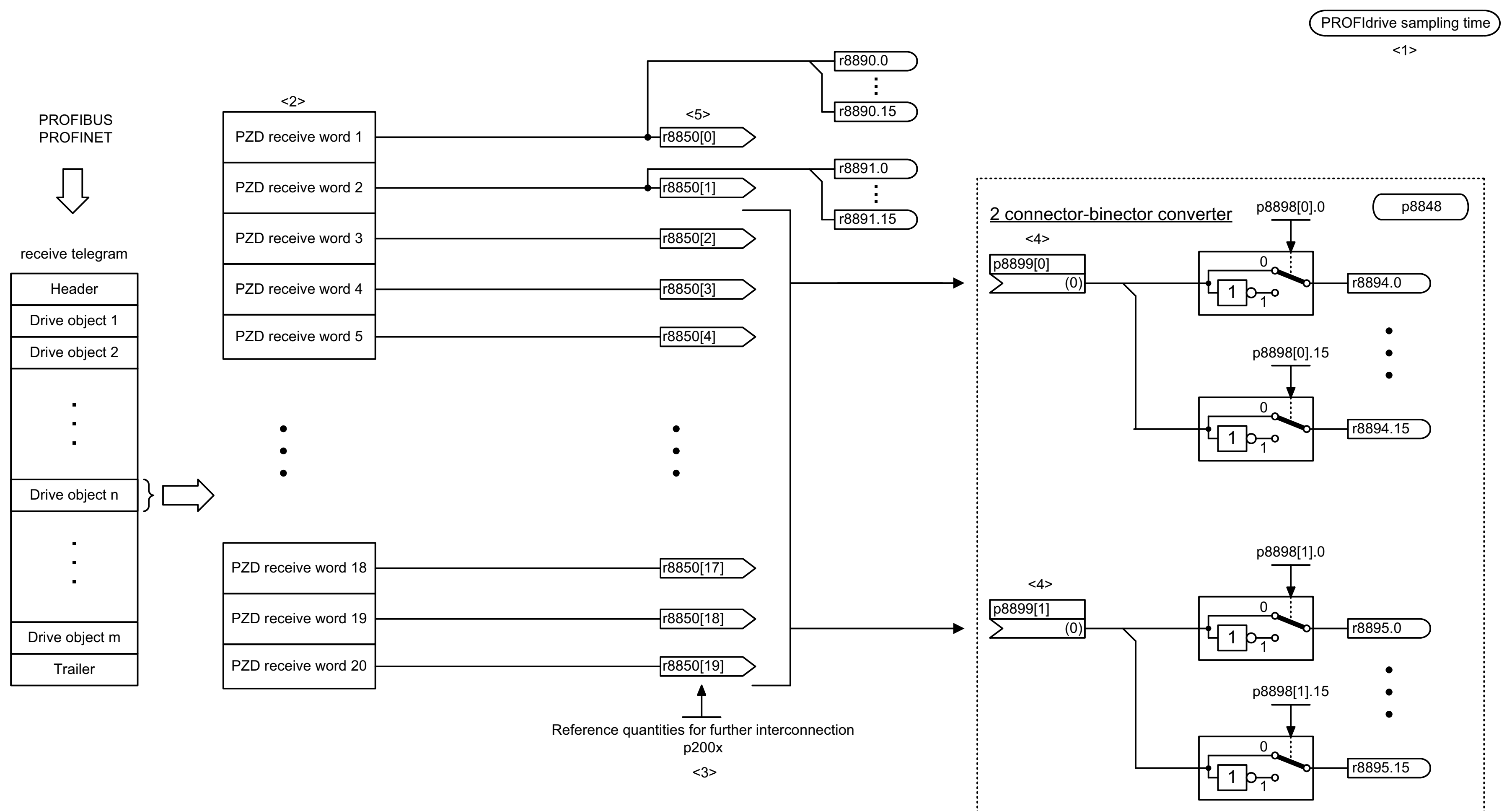


Fig. 3-84 2489 – IF2 status words, free interconnection

Fig. 3-85 2491 – IF2 receive telegram, free interconnection



<1> Not for G130/G150: TM15DI_DO, TM120.
Usable infeeds:
G130: none, G150: B_INF, S120: x_INF, S150: A_INF

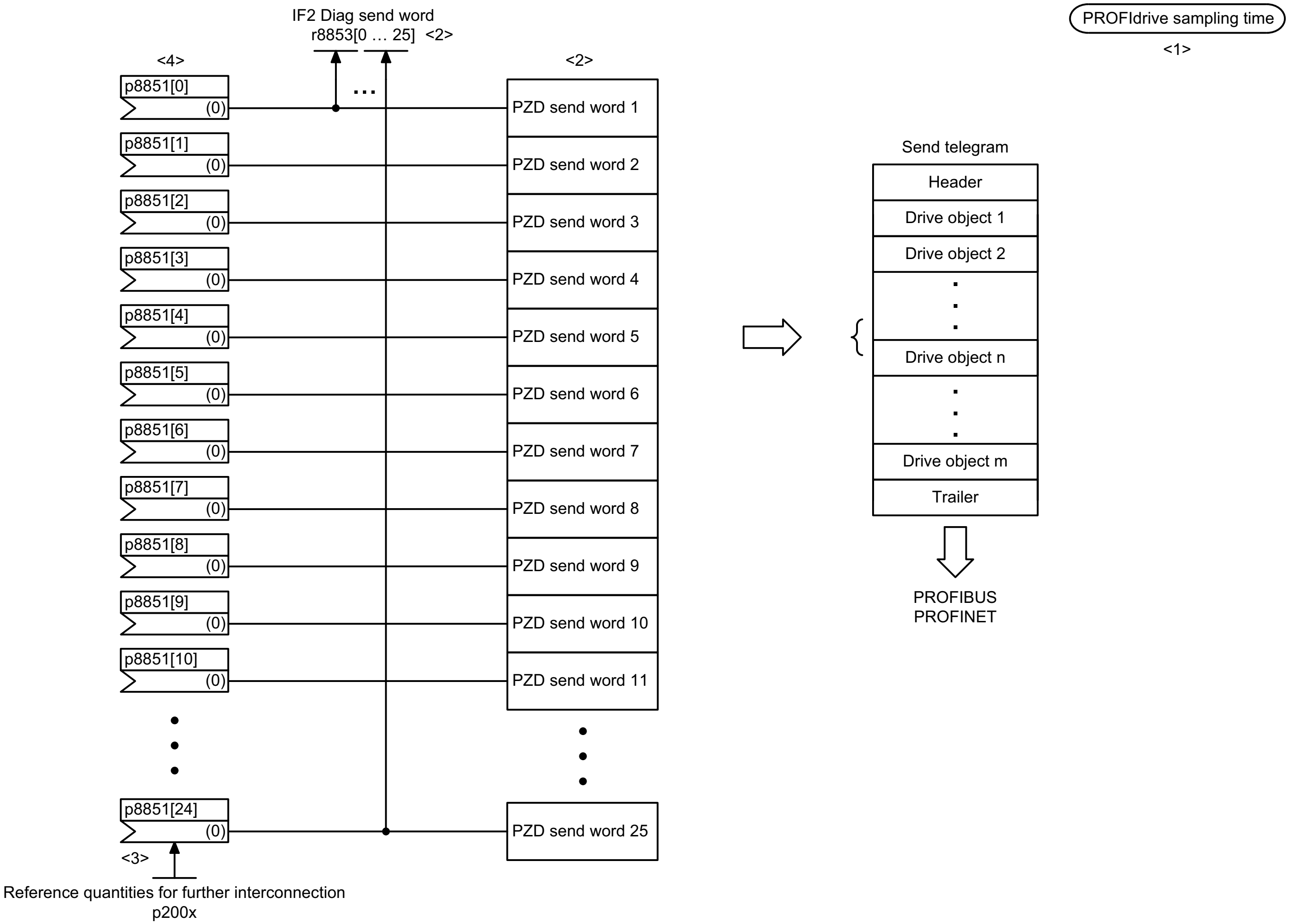
<2> The number of PZD receive words depends on the drive object type.

<3> The following representation applies for words: 4000 hex = 100 %. The reference variables p200x apply for the ongoing interconnection (100 % -> p200x).
For temperature values, the following applies: 100 °C -> 100 % = 4000 hex, 0 °C -> 0 %.

<4> Using the two connector-binector converters, two of the PZD receive words 3 to 20 can be converted into binectors for continued interconnection.

<5> When interconnecting a connector output multiple times all the connector inputs must have either Integer or FloatingPoint data type.

1	2	3	4	5	6	7	8
DO: A_INF, B_INF, CU_G, CU_S, R_INF, S_INF, TM15DI_DO, TM31, TM120, TM150					fp_2491_54_eng.vsd	Function diagram	- 2491 -
PROFIdrive - IF2 receive telegram, free interconnection					27.06.13 V05.01.01	S120/S150/G130/G150	



<1> Not for G130/G150: TM15DI_DO, TM120.
Usable infeeds:
G130: None, G150: B_INF, S120: x_INF, S150: A_INF
<2> The number of PZD send words depends on the drive object type.
<3> The following representation applies for words: 4000 hex = 100 %. The reference variables p200x apply for the ongoing interconnection (100 % -> p200x).
For temperature values, the following applies: 100 °C -> 100 % = 4000 hex, 0 °C -> 0 %.
<4> Using the binector/connector converters at [2489], bits of 5 send words can be interconnected with any binectors.

1	2	3	4	5	6	7	8
DO: A_INF, B_INF, CU_G, CU_S, R_INF, S_INF, TM15DI_DO, TM31, TM120, TM150					fp_2493_54_eng.vsd	Function diagram	- 2493 -
PROFIdrive - IF2 send telegram, free interconnection					18.03.16 V05.01.01	S120/S150/G130/G150	

Fig. 3-86 2493 – IF2 send telegram, free interconnection

PROFIdrive sampling time

Signal targets for CU_STW1

<1>

Signal	Meaning	Interconnection parameters	[Function diagram] internal control word	[Function diagram] signal target	Inverted
CU_STW1.0	**Central measuring probe, synchronizing signal source**	p0681[0] = r2090.0	-	-	-
CU_STW1.1	**RTC real time synchronization PING**	p3104 = r2090.1	-	-	-
CU_STW1.2	**ESR-Trigger** <2>	p0890.0 = r2090.2	-	-	-
CU_STW1.3	**Reserved**	-	-	-	-
CU_STW1.4	**Reserved**	-	-	-	-
CU_STW1.5	**Reserved**	-	-	-	-
CU_STW1.6	**Reserved**	-	-	-	-
CU_STW1.7	**1. Acknowledge faults**	p2103[0] = r2090.7	-	-	-
CU_STW1.8	**Reserved**	-	-	-	-
CU_STW1.9	**Reserved**	-	-	-	-
CU_STW1.10	**Acknowledgment automatically suppressed**	p3116 = r2090.10	-	-	-
CU_STW1.11	**Reserved**	-	-	-	-
CU_STW1.12	**Master sign-of-life bit 0**	p2045 = r2050[0]	-	-	-
CU_STW1.13	**Master sign-of-life bit 1**				
CU_STW1.14	**Master sign-of-life bit 2**				
CU_STW1.15	**Master sign-of-life bit 3**				

<1> Used in telegrams 390 to 394.
<2> Only available when the function module "Extended setpoint channel" is active (r0108.9 = 1).

1	2	3	4	5	6	7	8

DO: CU_G, CU_S	fp_2495_54_eng.vsd	Function diagram	- 2495 -
PROFIdrive - CU_STW1 control word 1, Control Unit interconnection	27.06.13 V05.01.01	S120/S150/G130/G150	

Fig. 3-87 2495 – CU_STW1 control word 1, Control Unit interconnection

Fig. 3-88 2496 – CU_ZSW1 status word 1, Control Unit interconnection

PROFIdrive sampling time

Signal sources for CU_ZSW1 <1>

Signal	Meaning	Interconnection parameters	[Function diagram] Internal status word	[Function diagram] signal source	Inverted <2>
CU_ZSW1.0	**Reserved**	-	-	-	-
CU_ZSW1.1	**Reserved**	-	-	-	-
CU_ZSW1.2	**Reserved**	-	-	-	-
CU_ZSW1.3	**1 = Fault present**	p2081[3] = r2139.3	-	-	-
CU_ZSW1.4	**Reserved**	-	-	-	-
CU_ZSW1.5	**Reserved**	-	-	-	-
CU_ZSW1.6	**Reserved**	-	-	-	-
CU_ZSW1.7	**1 = Alarm present**	p2081[7] = r2139.7	-	-	-
CU_ZSW1.8	**1 = System time synchronized (SYNC)**	p2081[8] = r0899.8	-	-	-
CU_ZSW1.9	**1 = No alarm present**	p2081[9] = r3114.9	-	-	✔
CU_ZSW1.10	**1 = No fault present**	p2081[10] = r3114.10	-	-	✔
CU_ZSW1.11	**1 = No safety message present**	p2081[11] = r3114.11	-	-	✔
CU_ZSW1.12	**Slave sign-of-life bit 0**	Implicitly interconnected	-	-	-
CU_ZSW1.13	**Slave sign-of-life bit 1**				
CU_ZSW1.14	**Slave sign-of-life bit 2**				
CU_ZSW1.15	**Slave sign-of-life bit 3**				

<1> Used in telegrams 390 to 394.
<2> The ZSW1 is generated using the binector-connector converter (BI: p2080[0...15], inversion: p2088[0].0...p2088[0].15).

1	2	3	4	5	6	7	8

DO: CU_G, CU_S	fp_2496_54_eng.vsd	Function diagram	- 2496 -
PROFIdrive - CU_ZSW1 status word 1, Control Unit interconnection	27.06.13 V05.01.01	S120/S150/G130/G150	

Fig. 3-89 2497 – A_DIGITAL interconnection

PROFIdrive sampling time

Signal targets for A_DIGITAL <1>

Signal	Meaning	Interconnection parameters <3>	[Function diagram] internal status word	[Function diagram] signal target	Inverted
A_DIGITAL.0	**Digital output 8 (DI/DO 8)** <2>	p0738 = r2091.0	-	-	-
A_DIGITAL.1	**Digital output 9 (DI/DO 9)** <2>	p0739 = r2091.1	-	-	-
A_DIGITAL.2	**Digital output 10 (DI/DO 10)** <2>	p0740 = r2091.2	-	-	-
A_DIGITAL.3	**Digital output 11 (DI/DO 11)** <2>	p0741 = r2091.3	-	-	-
A_DIGITAL.4	**Digital output 12 (DI/DO 12)** <2>	p0742 = r2091.4	-	-	-
A_DIGITAL.5	**Digital output 13 (DI/DO 13)** <2>	p0743 = r2091.5	-	-	-
A_DIGITAL.6	**Digital output 14 (DI/DO 14)** <2>	p0744 = r2091.6	-	-	-
A_DIGITAL.7	**Digital output 15 (DI/DO 15)** <2>	p0745 = r2091.7	-	-	-
A_DIGITAL.8	**Reserved**	-	-	-	-
A_DIGITAL.9	**Reserved**	-	-	-	-
A_DIGITAL.10	**Reserved**	-	-	-	-
A_DIGITAL.11	**Reserved**	-	-	-	-
A_DIGITAL.12	**Reserved**	-	-	-	-
A_DIGITAL.13	**Reserved**	-	-	-	-
A_DIGITAL.14	**Reserved**	-	-	-	-
A_DIGITAL.15	**Reserved**	-	-	-	-

<1> Used in telegrams 390 to 396.
<2> Can be set via p0728 as input (DI) or output (DO).
<3> Pre-assignment, can be freely changed.

1	2	3	4	5	6	7	8

DO: CU_G, CU_S	fp_2497_54_eng.vsd	Function diagram	- 2497 -
PROFIdrive - A_DIGITAL interconnection	27.06.13 V05.01.01	S120/S150/G130/G150	

PROFIdrive sampling time

Signal targets for E_DIGITAL <1>

Signal	Meaning		Interconnection parameters <3>	[Function diagram] Internal status word	[Function diagram] signal target	Inverted
E_DIGITAL.0	**Digital input 8 (DI/DO 8)**	<2>	p2081[0] = r0722.8	-	-	-
E_DIGITAL.1	**Digital input 9 (DI/DO 9)**	<2>	p2081[1] = r0722.9	-	-	-
E_DIGITAL.2	**Digital input 10 (DI/DO 10)**	<2>	p2081[2] = r0722.10	-	-	-
E_DIGITAL.3	**Digital input 11 (DI/DO 11)**	<2>	p2081[3] = r0722.11	-	-	-
E_DIGITAL.4	**Digital input 12 (DI/DO 12)**	<2>	p2081[4] = r0722.12	-	-	-
E_DIGITAL.5	**Digital input 13 (DI/DO 13)**	<2>	p2081[5] = r0722.13	-	-	-
E_DIGITAL.6	**Digital input 14 (DI/DO 14)**	<2>	p2081[6] = r0722.14	-	-	-
E_DIGITAL.7	**Digital input 15 (DI/DO 15)**	<2>	p2081[7] = r0722.15	-	-	-
E_DIGITAL.8	**Digital input 0 (DI 0)**		p2081[8] = r0722.0	-	-	-
E_DIGITAL.9	**Digital input 1 (DI 1)**		p2081[9] = r0722.1	-	-	-
E_DIGITAL.10	**Digital input 2 (DI 2)**		p2081[10] = r0722.2	-	-	-
E_DIGITAL.11	**Digital input 3 (DI 3)**		p2081[11] = r0722.3	-	-	-
E_DIGITAL.12	**Digital input 4 (DI 4)**	<4>	p2081[12] = r0722.4	-	-	-
E_DIGITAL.13	**Digital input 5 (DI 5)**	<4>	p2081[13] = r0722.5	-	-	-
E_DIGITAL.14	**Digital input 6 (DI 6)**	<4>	p2081[14] = r0722.6	-	-	-
E_DIGITAL.15	**Digital input 7 (DI 7)**	<4>	p2081[15] = r0722.7	-	-	-

<1> Used in telegrams 390 to 396.
<2> Can be set via p0728 as input (DI) or output (DO).
<3> Pre-assignment, can be freely changed.
<4> Only for CU320-2.

1	2	3	4	5	6	7	8

DO: CU_G, CU_S	fp_2498_54_eng.vsd	Function diagram	- 2498 -
PROFIdrive - E_DIGITAL interconnection	20.09.11 V05.01.01	S120/S150/G130/G150	

Fig. 3-90 2498 – E_DIGITAL interconnection

Fig. 3-91 2499 – A_DIGITAL_1 interconnection

PROFIdrive sampling time

Signal targets for A_DIGITAL_1 <1>

Signal	Meaning	Interconnection parameters <2>	[Function diagram] internal status word	[Function diagram] signal target	Inverted
A_DIGITAL_1.0	**Reserved**	-	-	-	-
A_DIGITAL_1.1	**Reserved**	-	-	-	-
A_DIGITAL_1.2	**Reserved**	-	-	-	-
A_DIGITAL_1.3	**Reserved**	-	-	-	-
A_DIGITAL_1.4	**Reserved**	-	-	-	-
A_DIGITAL_1.5	**Reserved**	-	-	-	-
A_DIGITAL_1.6	**Reserved**	-	-	-	-
A_DIGITAL_1.7	**Reserved**	-	-	-	-
A_DIGITAL_1.8	**Digital output 16 (DI/DO 16)** <3>	p0746 = r2092.8	-	-	-
A_DIGITAL_1.9	**Reserved**	-	-	-	-
A_DIGITAL_1.10	**Reserved**	-	-	-	-
A_DIGITAL_1.11	**Reserved**	-	-	-	-
A_DIGITAL_1.12	**Reserved**	-	-	-	-
A_DIGITAL_1.13	**Reserved**	-	-	-	-
A_DIGITAL_1.14	**Reserved**	-	-	-	-
A_DIGITAL_1.15	**Reserved**	-	-	-	-

<1> Used in telegrams 393 to 396.
<2> Pre-assignment, can be freely changed.
<3> Only for CU_S_AC or CU_I_D410.

1	2	3	4	5	6	7	8

DO: CU_G, CU_S	fp_2499_54_eng.vsd	Function diagram	- 2499 -
PROFIdrive - A_DIGITAL_1 interconnection	27.06.13 V05.01.01	S120/S150/G130/G150	

Signal targets for E_DIGITAL_1

PROFIdrive sampling time

<1>

Signal	Meaning	Interconnection parameters <3>	[Function diagram] Internal status word	[Function diagram] signal target	Inverted
E_DIGITAL_1.0	**Reserved**	-	-	-	-
E_DIGITAL_1.1	**Reserved**	-	-	-	-
E_DIGITAL_1.2	**Reserved**	-	-	-	-
E_DIGITAL_1.3	**Reserved**	-	-	-	-
E_DIGITAL_1.4	**Reserved**	-	-	-	-
E_DIGITAL_1.5	**Reserved**	-	-	-	-
E_DIGITAL_1.6	**Reserved**	-	-	-	-
E_DIGITAL_1.7	**Reserved**	-	-	-	-
E_DIGITAL_1.8	**Digital input 16 (DI 16)**	p2083[8] = r0722.16	-	-	-
E_DIGITAL_1.9	**Digital input 17 (DI 17)**	p2083[9] = r0722.17	-	-	-
E_DIGITAL_1.10	**Digital input 18 (DI 18)** <2>	p2083[10] = r0722.18	-	-	-
E_DIGITAL_1.11	**Digital input 19 (DI 19)** <2>	p2083[11] = r0722.19	-	-	-
E_DIGITAL_1.12	**Digital input 20 (DI 20)**	p2083[12] = r0722.20	-	-	-
E_DIGITAL_1.13	**Digital input 21 (DI 21)**	p2083[13] = r0722.21	-	-	-
E_DIGITAL_1.14	**Digital input 22 (DI 22)** <2>	p2083[14] = r0722.22	-	-	-
E_DIGITAL_1.15	**Reserved**	-	-	-	-

<1> Used in telegrams 393 to 396.
<2> Not for CU320-2.
<3> Pre-assignment, can be freely changed.

1	2	3	4	5	6	7	8

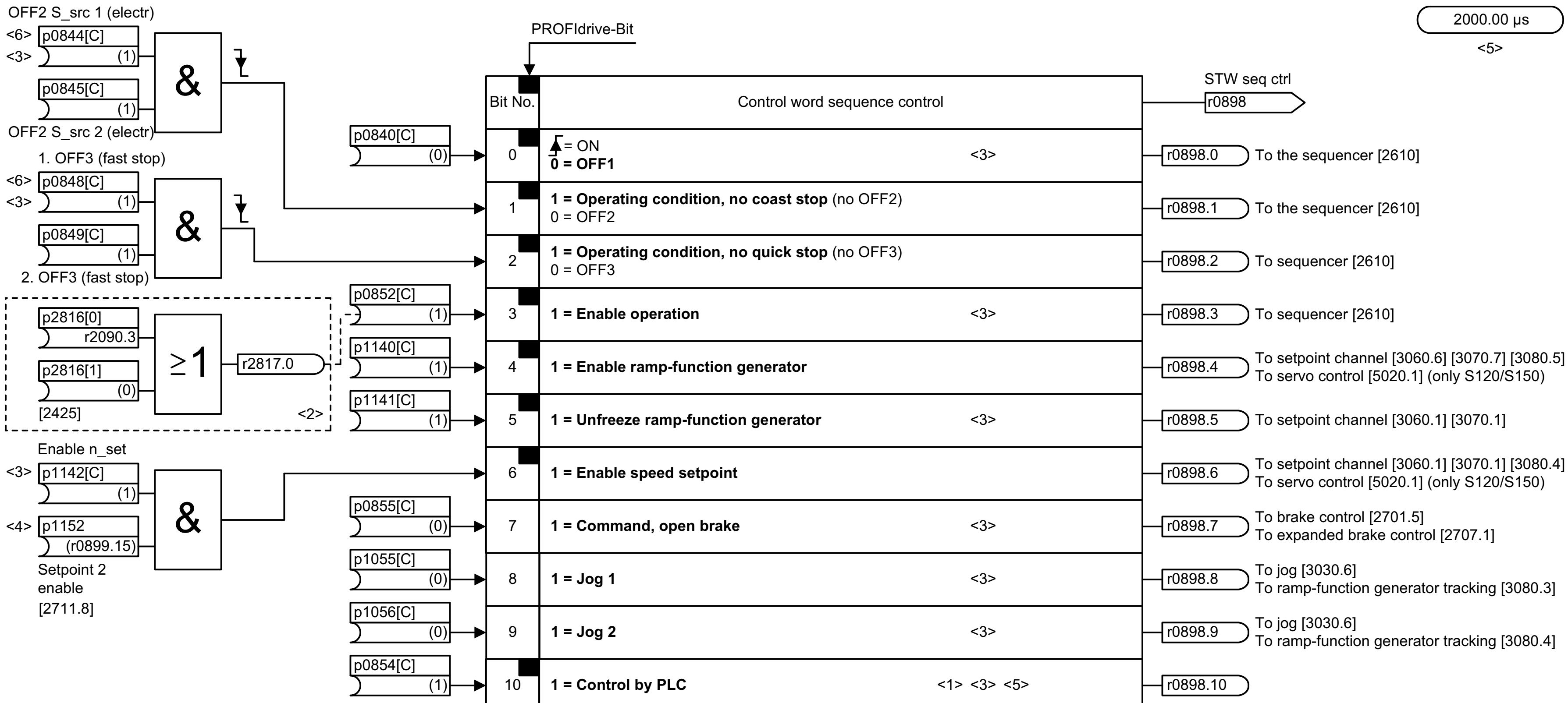
DO: CU_G, CU_S	fp_2500_54_eng.vsd	Function diagram	- 2500 -
PROFIdrive - E_DIGITAL_1 interconnection	27.06.13 V05.01.01	S120/S150/G130/G150	

Fig. 3-92 2500 – E_DIGITAL_1 interconnection

3.10 Internal control/status words

Function diagrams

Fig. 3-93 2501 – Control word, sequence control

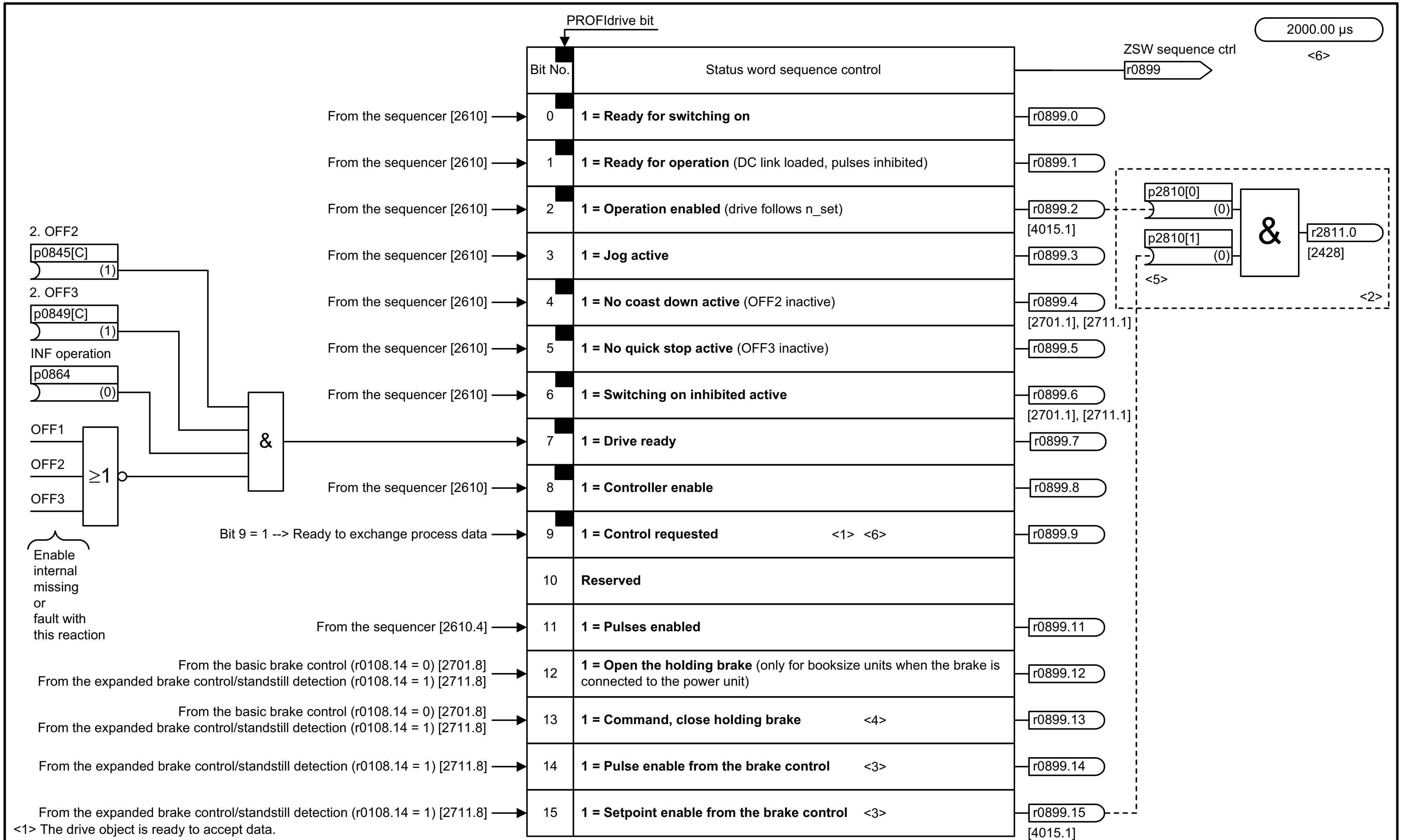


<1> STW1.10 must be set to ensure that the drive object accepts the process data (PZD).
<2> Only for telegram 220.
<3> When the master control is retrieved, predefined by commissioning tool or AOP30.
<4> Only applies if the function module "Extended brake control" (r0108.14 = 1) is active.
<5> For drive object ENC only bit 10.
<6> PROFIdrive interconnection:
For PROFIdrive standard telegrams, the upper inputs are connected with PROFIdrive-STW1 ([2415], [2416]). Only relevant for CDS0.

1	2	3	4	5	6	7	8

DO: ENC, SERVO, VECTOR	fp_2501_54_eng.vsd	Function diagram	- 2501 -
Internal control/status words - Control word, sequence control	22.12.11 V05.01.01	S120/S150/G130/G150	

Fig. 3-94 2503 – Status word, sequence control



<1> The drive object is ready to accept data.
<2> Only for Telegram 220.
<3> These signals are only relevant if the "extended brake control" function module is active (r0108.14 = 1).
<4> If "Safe Brake Control" (SBC) is activated and selected, the brake is no longer controlled via this signal.
<5> Only with message frame 220 and activated function module "Extended brake control" (r0108.14 = 1), otherwise hard wiring set to 1.
<6> For DO ENC only bit 9.

1	2	3	4	5	6	7	8

DO: ENC, SERVO, VECTOR	fp_2503_54_eng.vsd	Function diagram	- 2503 -
Internal control/status words - Status word, sequence control	24.11.11 V05.01.01	S120/S150/G130/G150	

p0115[3]

STW setpoint channel → r1198

Signal	Parameter	Bit No.	Control word, setpoint channel	Output	Destination
Fixed setpoint selection, bit 0	p1020[C] (0)	0	**1 = Fixed setpoint, bit 0**	r1198.0	To fixed speed setpoints [3010.2]
Fixed setpoint selection, bit 1	p1021[C] (0)	1	**1 = Fixed setpoint, bit 1**	r1198.1	To fixed speed setpoints [3010.2]
Fixed setpoint selection, bit 2	p1022[C] (0)	2	**1 = Fixed setpoint, bit 2**	r1198.2	To fixed speed setpoints [3010.2]
Fixed setpoint selection, bit 3	p1023[C] (0)	3	**1 = Fixed setpoint, bit 3**	r1198.3	To fixed speed setpoints [3010.2]
		4	**Reserved**		
Inhib neg dir	p1110[C] (0)	5	**1 = Inhibit negative direction**	r1198.5	To direction limiting and direction reversal [3040.3]
Inhib pos dir	p1111[C] (0)	6	**1 = Inhibit positive direction**	r1198.6	To direction limiting and direction reversal [3040.5]
		7	**Reserved**		
		8	**Reserved**		
		9	**Reserved**		
		10	**Reserved**		
Setpoint inversion	p1113[C] (0)	11	**1 = Setpoint inversion**	r1198.11	To direction limiting and direction reversal [3040.2]
		12	**Reserved**		
Motorized potentiometer, raise	p1035[C] (0)	13	**1 = Motorized potentiometer, raise**	r1198.13	To the motorized potentiometer [3020.1]
Motorized potentiometer, lower	p1036[C] (0)	14	**1 = Motorized potentiometer, lower**	r1198.14	To the motorized potentiometer [3020.1]
Bypass RFG	p1122[C] (0)	15	**1 = Bypass ramp-function generator**	r1198.15	To the setpoint channel [3060.1], [3070.1]

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR, VECTOR3P, VECTORGL, VECTORM2C, VECTORMV, VECTORSL	fp_2505_51_eng.vsd	Function diagram	- 2505 -
Internal control/status words - Control word, setpoint channel	09.03.18 V05.01.01	SINAMICS	

Fig. 3-95 2505 – Control word, setpoint channel

p0115[1] (Motor Modules)
1000.00 µs
<1>
<2>

STW n_ctrl r1406

Bit No.	Control word, speed controller	Servo <1> <2>	Vector	Input	Output
0	**Reserved**	-	-		
1	**Reserved**	-	-		
2	**Reserved**	-	-		
3	**Reserved**	-	-		
4	**1 = speed controller, hold I component**	-	✔	n_ctrl integ stop p1476[C] (0)	r1406.4 To the speed controller [6040.4]
5	**1 = speed controller, set I component**	-	✔	n_ctrl integ set p1477[C] (0)	r1406.5 To the speed controller [6040.4]
6	**Reserved**	-	-		
7	**Reserved**	-	-		
8	**1 = Travel to fixed stop** <2>	✔	✔	TfS activation <2> p1545[C] (0)	r1406.8 To torque signals, Motor locked/stalled [8012.5] <2>
9	**Reserved**	-	-		
10	**Reserved**	-	-		
11	**1 = Droop enable**	-	✔	Enables droop p1492[C] (0)	r1406.11 To the speed setpoint, droop [6030.1]
12	**1 = Closed-loop torque control active**	✔	✔	Changeov n/M_ctrl p1501[C] (0)	r1406.12 To the closed-loop speed control [5060.1 and 6060.1] <2>
13	**Reserved**	-	-		
14	**Reserved**	-	-		
15	**Set speed adaptation controller I component**	-	✔		r1406.15

<1> Only for SERVO.
<2> Only for SINAMICS S120.

1	2	3	4	5	6	7	8

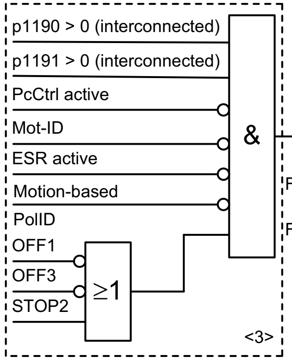
DO: SERVO, VECTOR	fp_2520_54_eng.vsd	Function diagram	- 2520 -
Internal control/status words - Control word, speed controller	27.02.08 V05.01.01	S120/S150/G130/G150	

Fig. 3-96 2520 – Control word, speed controller

Fig. 3-97 2522 – Status word, speed controller

p0115[1] (Motor Modules)
1000.00 µs

ZSW n_ctrl → r1407



r1406.12 — 1 = Torque control
[2520.7] <2> — Sensorless operation
& → Bit 2

Source	Bit No.	Status word, speed controller	Servo <2>	Vector <3>	Output	Destination
	0	**1 = U/f control active**	✔	✔	r1407.0	<2> <3>
<3> From the changeover, closed-loop control types [5060.5]	1	**1 = Sensorless operation active**	✔	✔	r1407.1	To the speed actual value and pole position sensing, motor encoder (encoder 1) [4710.4] <3>, [4715.4]
r1406.12 1 = Torque control & Sensorless operation [2520.7] <2>	2	**1 = Closed-loop torque control active**	✔	✔	r1407.2	To speed setpoint, droop [6030.5] To torque setpoint [6060.3]
From the sequencer [2610.4]	3	**1 = Closed-loop speed control active**	-	✔	r1407.3	
<3>	4	**1 = Speed setpoint from DSC** <3>	✔	-	r1407.4	To speed setpoint filter [5020.1] To reference mode [5030.3] <3>
<3><1> From the speed controller [5210.8] From the speed controller [5040.7], [6040.7]	5	**1 = Speed controller, I component held**	✔	✔	r1407.5	
<3><1> From the speed controller [5210.8] From the speed controller [5040.7], [6040.7]	6	**1 = Speed controller, I component set**	✔	✔	r1407.6	Ramp-function generator tracking [3080.1] "Traveling blocks" mode [3616.1]<3>
<3> From torque limiting [5610.4] From the torque setpoint [6060.7]	7	**1 = Torque limit reached**	✔	✔	r1407.7	Speed controller [5040.7] <3>, [5042.5], [6040.4]
<3> From torque limiting [5610.4] From the torque setpoint [6060.7]	8	**1 = Torque limiting, upper, active**	✔	✔	r1407.8	Motor locked/stalled [8012.5]
<3> From torque limiting [5610.4] From the torque setpoint [6060.4], [6060.7]	9	**1 = Torque limiting, lower, active**	✔	✔	r1407.9	
From the speed setpoint, droop [6030.3]	10	**1 = Droop enabled**	-	✔	r1407.10	
<3> From the setpoint, n-ctrl [5030.8] <3><1> From the speed controller [5210.3] From the speed setpoint, droop [6030.4], [6030.5]	11	**1 = Speed setpoint limited**	✔	✔	r1407.11	
	12	**1 = Ramp-function generator set**	-	✔	r1407.12	
	13	**1 = Sensorless operation due to a fault**	✔	✔	r1407.13	
	14	**1 = I/f control active**	-	✔	r1407.14	
	15	**1 = Torque limit reached (without pre-control)**	-	✔	r1407.15	
	16	**Reserved**	-	-		
From speed limiting [6640.8]	17	**1 = Speed limiting active**	-	✔	r1407.17	
	18	**Reserved**	-	-		
	19	**1 = DSC position controller limited**	✔	-	r1407.19	
	20	**1 = DSC with spline on**	✔	-	r1407.20	
	21	**1 = Speed pre-control for DSC with spline on**	✔	-	r1407.21	
	22	**1 = Torque pre-control for DSC with spline on**	✔	-	r1407.22	
	23	**1 = Acceleration model activated**	✔	✔	r1407.23	
	24	**1 = Moment of inertia estimator active**	✔	✔	r1407.24	
	25	**1 = Load estimate active**	✔	✔	r1407.25	
	26	**1 = Moment of inertia estimator stabilized**	✔	✔	r1407.26	
	27	**1 = Moment of inertia estimator fast estimation active**	-	✔	r1407.27	
	28...32	**Reserved**	-	-		

<1> Only for servo control without encoder.
<2> Only for SERVO.
<3> Only for SINAMICS S120.

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_2522_54_eng.vsd	Function diagram	- 2522 -
Internal control/status words - Status word, speed controller	21.10.14 V05.01.01	S120/S150/G130/G150	

Fig. 3-98 2526 – Status word, closed-loop control

p0115[1] (Motor Modules)

Status word closed-loop control

ZSW closed-loop control → r0056

Input	Bit No.	Meaning	Notes	Output	Target
	0	**1 = Initialization completed**	<2>	r0056.0	
	1	**1 = De-magnetization completed**		r0056.1	
	2	**1 = Pulses enabled**	<2>	r0056.2	
	3	**1 = Soft starting available**	<1> <2>	r0056.3	
<3> [6722.6], [6725.6]	4	**1 = Magnetization completed**		r0056.4	[2701.1], [2707.1]
	5	**Reserved**		r0056.5	
	6	**1 = Acceleration voltage active**	<1> <2>	r0056.6	
<3> [6725.4], [6730.5], [6731.5], <3> [6732.4]	7	**1 = Frequency, negative**	<2>	r0056.7	[6710.5]
[6722.3], <3> [6725.4]	8	**1 = Field weakening active**		r0056.8	
[6714.8]	9	**1 = Voltage limit active**	<2>	r0056.9	
[6310.8]	10	**1 = Slip limiting active**	<1> <2>	r0056.10	
<3> [6730.5], [6731.5], [6732.4]	11	**1 = Frequency limit active**	<2>	r0056.11	<3> [8020.1]
	12	**1 = Current limiting controller, voltage output active**	<1> <2>	r0056.12	[8012.5]
[6060.7]	13	**1 = Current/torque limiting active**	<1> <2>	r0056.13	
[6220.8], [6320.8]	14	**1 = Vdc_max controller active**		r0056.14	[6031.6], [6710.2]
[6220.8], [6320.8]	15	**1 = Vdc_min controller active**		r0056.15	[6031.6], [6710.2]

<1> Only for U/f control.
<2> Not for SERVO.
<3> Only for SINAMICS S120.

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_2526_54_eng.vsd	Function diagram	- 2526 -
Internal control/status words - Status word, closed-loop control	27.06.13 V05.01.01	S120/S150/G130/G150	

Fig. 3-99 2530 – Status word, closed-loop current control

p0115[0] (Motor Modules)

Status word closed-loop current control

ZSW closed-loop current control → r1408

Input	Bit No.	Meaning		Output
	0	**1 = Closed-loop current control active**		
[6714.5] →	1	**1 = Id control I component limiting active**	<2>	r1408.1
	2	**Reserved**		
[6714.7] →	3	**1 = Voltage limiting active**	<2>	r1408.3
	4	**1 = Limit Ud active**	<1> <3>	r1408.4
	5	**1 = Limit Uq active**	<1> <3>	r1408.5 [5040.7], [5042.5]
	6	**1 = Positive limiting Iq active**	<1> <3>	r1408.6 [5714.5] <3>
	7	**1 = Negative limiting Iq active**	<1> <3>	r1408.7 [5714.4] <3>
	8	**1 = Limit Iq_set active**	<1> <3>	r1408.8 [5714.4] <3>
	9	**1 = Limit Id_set active**	<1> <3>	r1408.9 [5722.7] <3>
[6730.3] →	10	**1 = Speed adaptation speed deviation active**	<2>	r1408.10
	11	**1 = Error EMF/Obs-N active**	<2>	r1408.11
	12	**1 = Motor stalled**	<2>	r1408.12
	13	**1 = Separately excited synchronous motor is excited**	<2>	r1408.13
	14	**1 = Current model SESM: magnetizing excitation current limited to zero**	<2>	r1408.14
	15	**1 = Excitation current differential exceeded**	<2>	r1408.15

<1> Only for SERVO.
<2> Only for VECTOR.
<3> Only for SINAMICS S120.

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_2530_54_eng.vsd	Function diagram	- 2530 -
Internal control/status words - Status word, current control	03.05.16 V05.01.01	S120/S150/G130/G150	

p0115[3]

ZSW monitoring functions 1
r2197

Signal source	Bit No.	Status word, monitoring functions 1		Output
	0	**Reserved**		
From speed signals 1 [8010.8]	1	**1 = |n_act| <= speed threshold value 2** (p2155)	<1>	r2197.1
From speed signals 1 [8010.8]	2	**1 = |n_act| > speed threshold value 2** (p2155)	<1>	r2197.2
From speed signals 2 [8011.8]	3	**1 = n_act >= 0**		r2197.3
	4	**Reserved**		
	5	**Reserved**		
From speed signals 1 [8010.4]	6	**1 = n_act > n_max**		r2197.6
From speed signals 2 [8011.8]	7	**1 = Speed setpoint - actual value deviation within tolerance t_off**		r2197.7
	8	**Reserved**		
	9	**Reserved**		
	10	**Reserved**		
	11	**Reserved**		
	12	**Reserved**		
	13	**1 = |n_act| > n_max (F07901)**		r2197.13
	14	**Reserved**		
	15	**Reserved**		

<1> n_{act} = Smoothed speed actual value r2169 [8010.2].

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_2534_54_eng.vsd	Function diagram	**- 2534 -**
Internal control/status words - Status word, monitoring functions 1	09.11.16 V05.01.01	S120/S150/G150/G150	

Fig. 3-100 2534 – Status word, monitoring functions 1

Fig. 3-101 2536 – Status word, monitoring functions 2

p0115[3] (4000.00 µs)

ZSW monitoring functions 2: r2198

Input	Bit No.	Status word, monitoring functions 2	Output
	0	**Reserved**	
	1	**Reserved**	
	2	**Reserved**	
	3	**Reserved**	
<1> From speed signals 2 [8011.8]	4	**1 = |n_set| < p2161**	r2198.4
<1> From speed signals 2 [8011.8]	5	**1 = n_set > 0**	r2198.5
From torque messages, motor locked/stalled [8012.8]	6	**1 = Motor blocked**	r2198.6
From torque messages, motor locked/stalled [8012.8]	7	**1 = Motor stalled**	r2198.7
	8	**Reserved**	
	9	**Reserved**	
From torque messages, motor locked/stalled [8012.3]	10	**1 = Torque setpoint < torque threshold value 1 (p2174)**	r2198.10
From load monitoring [8013.8]	11	**1 = Load monitoring signals an alarm**	r2198.11
From load monitoring [8013.8]	12	**1 = Load monitoring signals a fault**	r2198.12
	13	**Reserved**	
	14	**Reserved**	
	15	**Reserved**	

<1> Only relevant if the function module "Extended signals/monitoring functions" (r0108.17 = 1) is active.

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_2536_54_eng.vsd	Function diagram	- 2536 -
Internal control/status words - Status word, monitoring functions 2	09.11.16 V05.01.01	S120/S150/G130/G150	

p0115[4]

PROFIdrive bit

ZSW monitoring functions 3: r2199

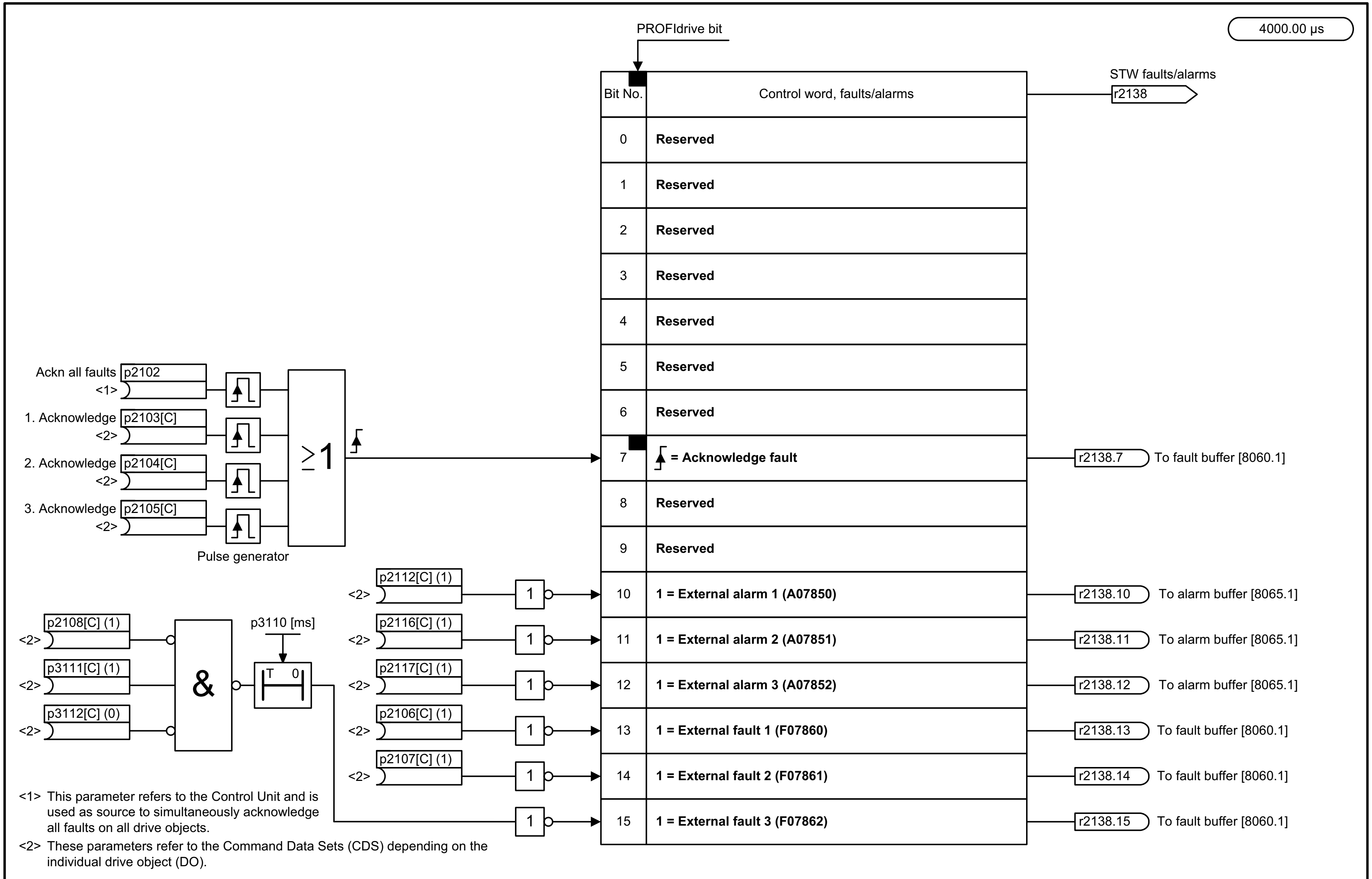
Input	Bit No.	Status word, monitoring functions 3	Output
From speed signals 1 [8010.8]	0	**1 = |n_act| < speed threshold value 3** (p2161) <1>	r2199.0
From speed signals 1 [8010.8]	1	**1 = f or n comparison value reached or exceeded** (p2141)	r2199.1
	2	**Reserved**	
	3	**Reserved**	
From speed signals 2 [8011.8]	4	**1 = Speed setpoint - actual value deviation within tolerance t_on**	r2199.4
From speed signals 2 [8011.8]	5	**1 = Ramp-up/ramp-down completed** 0 = Ramp-function generator active	r2199.5 [8012.1]
	6	**1 = Current below the zero current threshold**	r2199.6
From torque signals [8012.8]	7	**Speed deviation model/external in tolerance**	r2199.7
	8	**Reserved**	
	9	**Reserved**	
	10	**Reserved**	
From torque signals [8012.5]	11	**1 = Torque utilization < torque threshold value 2 (p2194)**	r2199.11
	12	**1 = Excitation current outside the tolerance range**	r2199.12
	13	**Reserved**	
	14	**Reserved**	
	15	**Reserved**	

<1> n_act = Smoothed speed actual value r2169 [8010.2].

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_2537_54_eng.vsd	Function diagram	- 2537 -
Internal control/status words - Status word, monitoring functions 3	09.11.16 V05.01.01	S120/S150/G130/G150	

Fig. 3-102 2537 – Status word, monitoring functions 3



1	2	3	4	5	6	7	8

DO: All objects	fp_2546_51_eng.vsd	Function diagram	- 2546 -
Internal control/status words - Control word, faults/alarms	30.06.14 V05.01.01	SINAMICS	

Fig. 3-103 2546 – Control word, faults/alarms

Fig. 3-104 2548 – Status word, faults/alarms 1 and 2

Source sampling time

ZSW faults/alarms 1

Input	Bit No.	Status word, faults/alarms 1	Output
			r2139
	0	**1 = Acknowledgment running**	r2139.0
	1	**1 = Acknowledgment required**	r2139.1
	2	**Reserved**	
From the fault buffer [8060.7]	3	**1 = Fault present**	r2139.3
	4	**Reserved**	
	5	**1 = Safety message present**	r2139.5
	6	**1 = Internal message 1 present**	r2139.6
From the alarm buffer [8065.4]	7	**1 = Alarm present**	r2139.7
	8	**1 = Internal message 2 present**	r2139.8
	9 ... 10	**Reserved**	
From the alarm buffer [8065.4]	11	**1 = Alarm class bit 0**	r2139.11
From the alarm buffer [8065.4]	12	**1 = Alarm class bit 1**	r2139.12
From the alarm buffer [8065.4]	13	**1 = Maintenance required**	r2139.13
From the alarm buffer [8065.4]	14	**1 = Maintenance urgently required**	r2139.14
From the fault buffer [8060.7]	15	**1 = Fault gone/can be acknowledged**	r2139.15

ZSW faults/alarms 2

Input	Bit No.	Status word, faults/alarms 2	Output
			r2135
	0	**1 = Fault encoder 1**	r2135.0
	1	**1 = Fault encoder 2**	r2135.1
	2	**1 = Fault encoder 3**	r2135.2
	3 ... 9	**Reserved**	
<1> From the thermal monitoring, infeed [8770.6]	10	**1 = Fault transformer overtemperature** <1>	r2135.10 <1>
<1> From the thermal monitoring, infeed [8970.6]	11	**1 = Alarm transformer overtemperature** <1>	r2135.11 <1>
From the thermal monitoring, motor [8016.8]	12	**1 = Fault motor overtemperature**	r2135.12
From the thermal monitoring, power unit [8014.8] [8021.8] <2>	13	**1 = Fault power unit thermal overload**	r2135.13
From the thermal monitoring, motor [8016.8]	14	**1 = Alarm motor overtemperature**	r2135.14
From the thermal monitoring, power unit [8014.8] [8021.8] <2>	15	**1 = Alarm power unit thermal overload**	r2135.15

<1> Only for A_INFMV, B_INFMV, VECTOR3P, VECTORM2C, VECTORMV, VECTORSL.
<2> For SERVO and VECTOR.

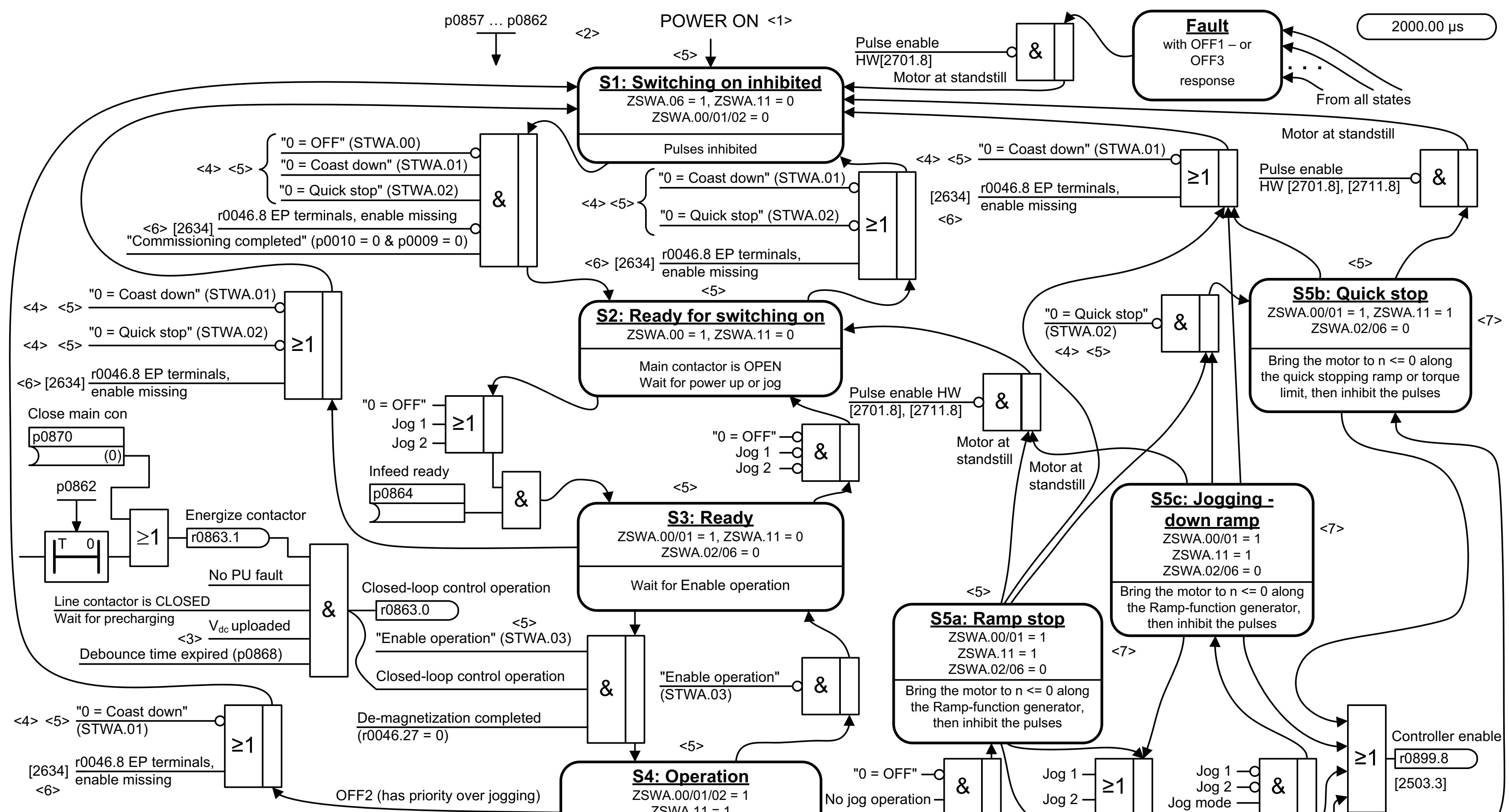
1	2	3	4	5	6	7	8

DO: All objects	fp_2548_51_eng.vsd	Function diagram	- 2548 -
Internal control/status words - Status word, faults/alarms 1 and 2	23.01.15 V05.01.01	SINAMICS	

3.11 Sequence control

Function diagrams

Fig. 3-105 2610 – Sequencer

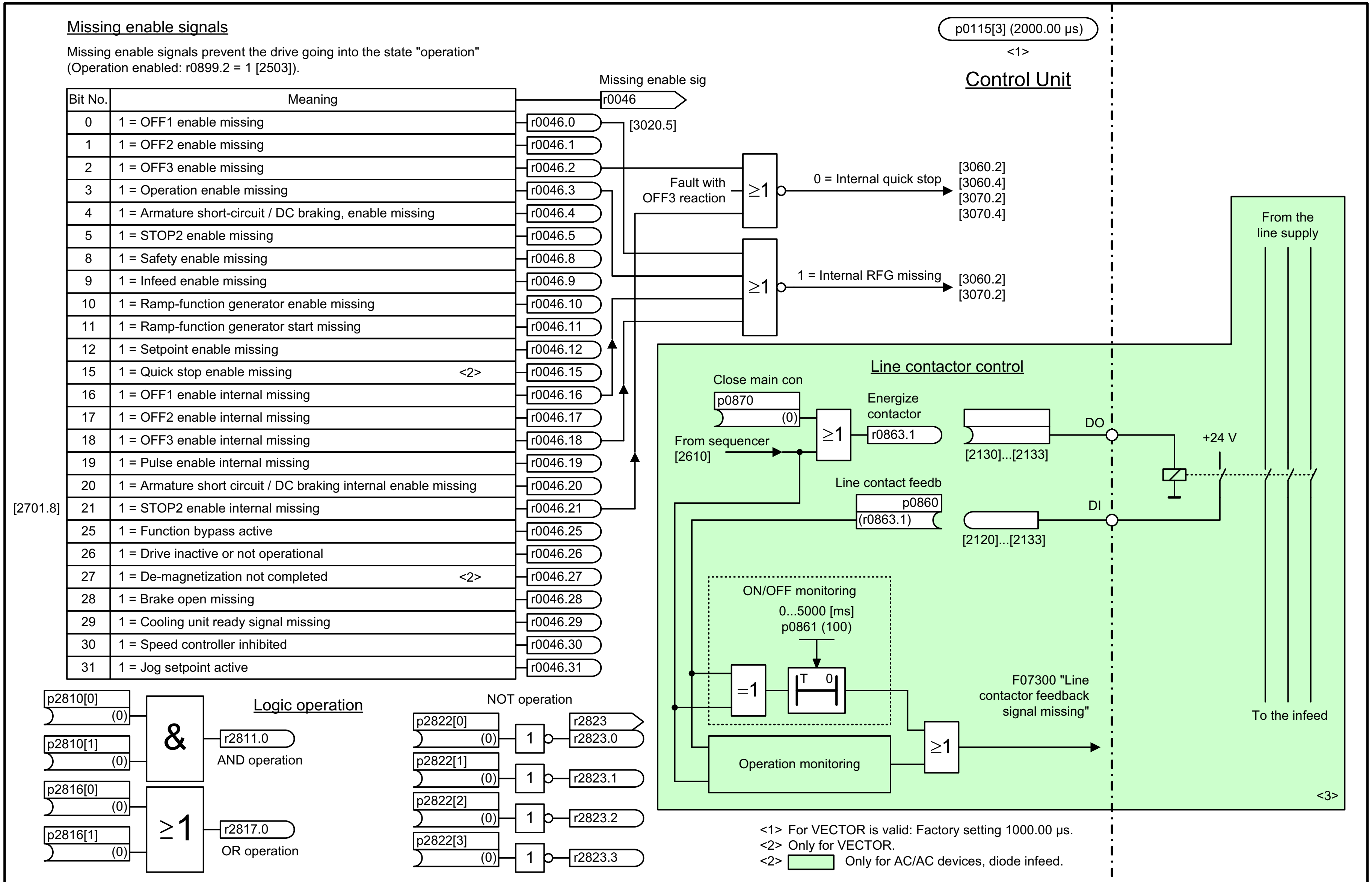


<1> POWER ON = 24 V electronics supply OFF --> ON or RESET button.
<2> The sequencer is implemented according to the PROFIdrive profile.
<3> Only for SINAMICS S120 and G150:
If a DO Infeed (A_INF, B_INF and S_INF) is used, it closes the line contactor (refer to [8732], [8832], [8932]) and not the DO SERVO/VECTOR.
<4> These control commands can also be triggered by a fault response.
<5> STWA.xx = control word, sequence control, bit xx (r0898) [2501]; ZSWA.xx = status word, sequence control bit xx (r0899) [2503].
<6> Only if "Safety Integrated" is active.
<7> The parameters p1226, p1227 and p1228 influence this status.

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_2610_54_eng.vsd	Function diagram	- 2610 -
Sequence control - Sequencer	20.02.18 V05.01.01	S120/S150/G130/G150	

Fig. 3-106 2634 – Missing enable signals, line contactor control, logic operation



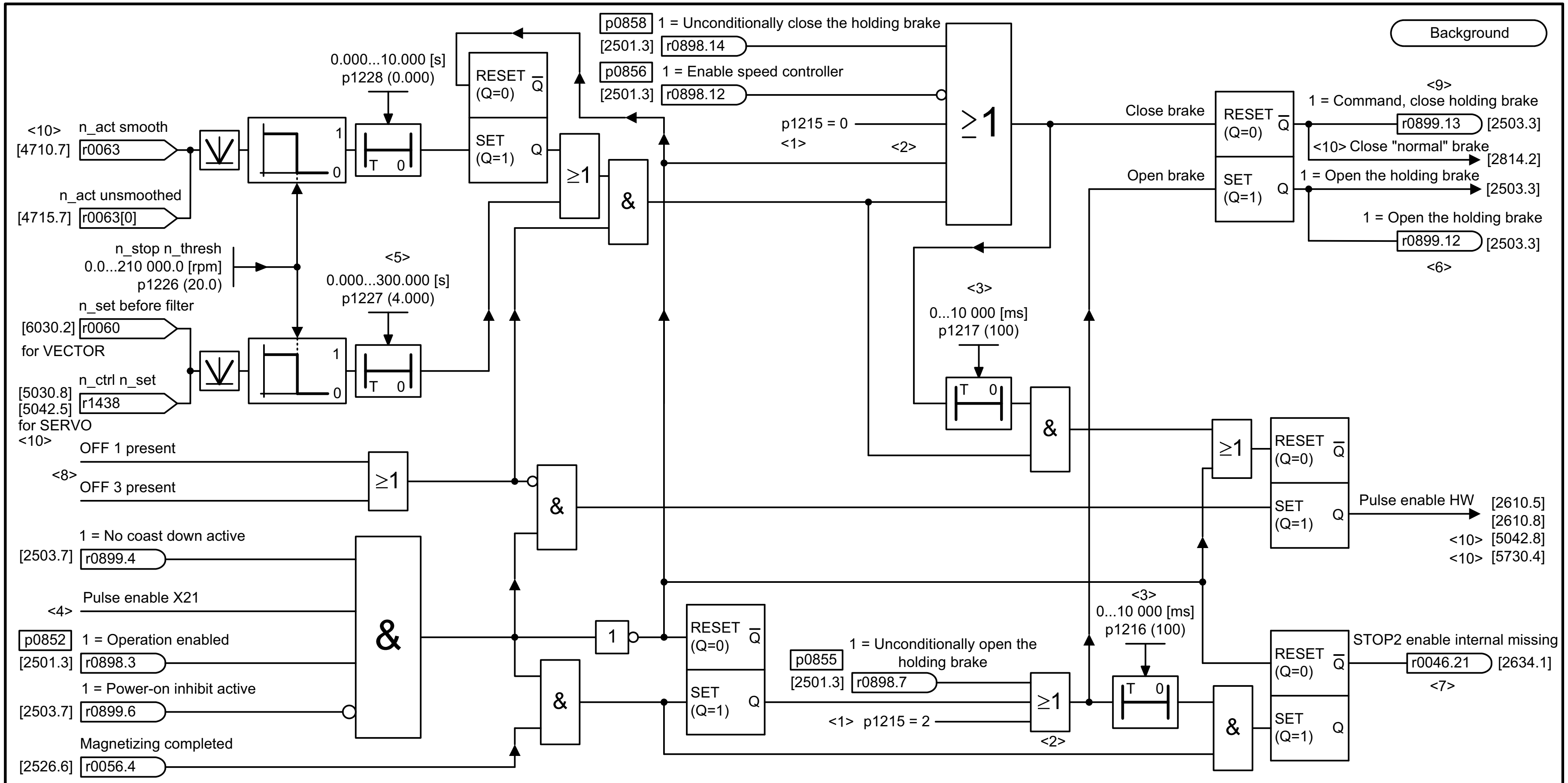
1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_2634_54_eng.vsd	Function diagram	- 2634 -
Sequence control - Missing enable signals, line contactor control, logic operation	20.02.18 V05.01.01	S120/S150/G130/G150	

3.12 Brake control

Function diagrams

Fig. 3-107 2701 – Basic brake control (r0108.14 = 0)

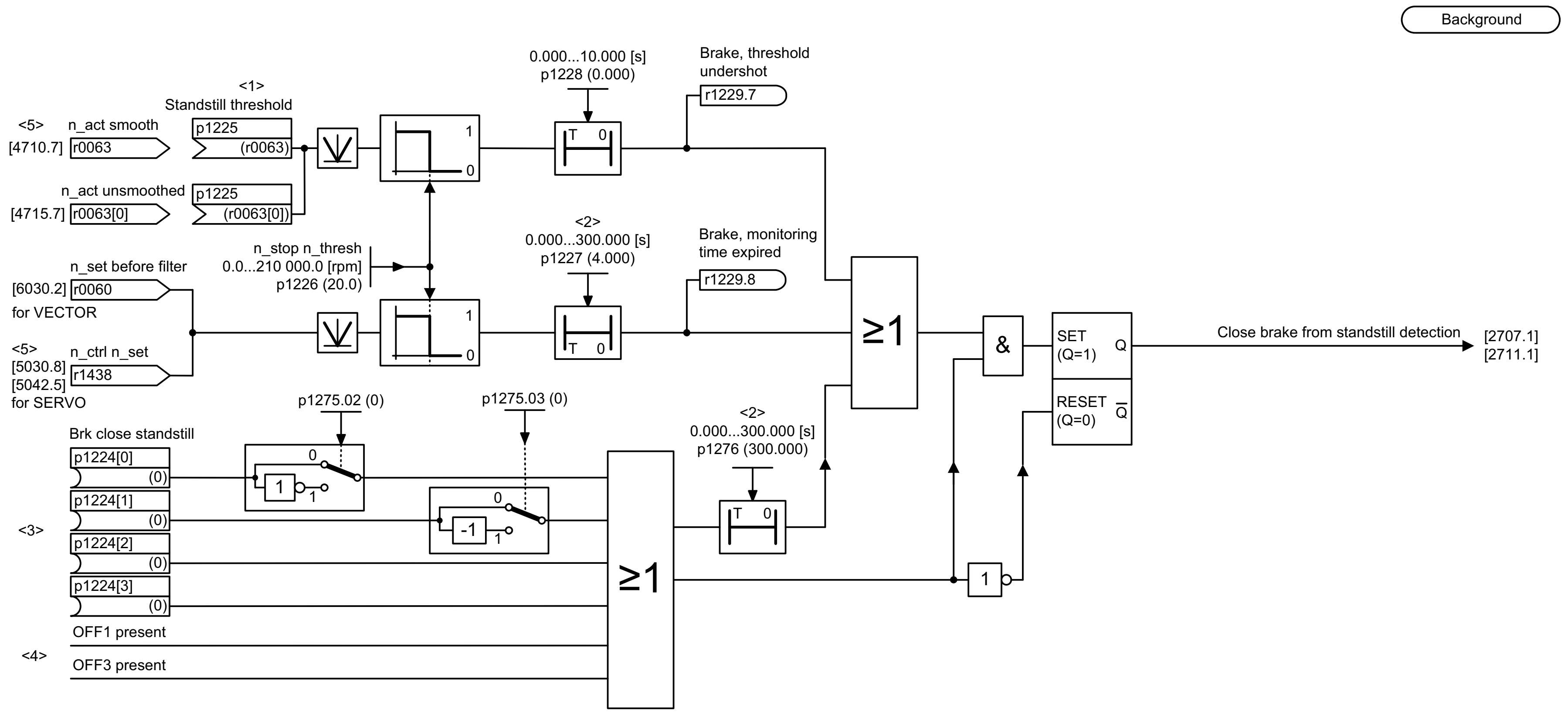


<1> Motor holding brake configuration (p1215)
0 = No motor holding brake being used.
1 = Motor holding brake acc. to sequence control.
2 = Motor holding brake always released.
3 = Motor holding brake like sequence control, connection via BICO.
<2> Priority assignment (high -> low): p1215, p0858, p0855, p0856, sequence control.
<3> If p1215 = 0, 2 -> t = 0 ms.
<4> Only if Safety Integrated is active (Double Motor Module: X22, Chassis: X41).
<5> For p1227 = 300 s, the monitoring function is deactivated.
<6> If an external motor holding brake is used, p1215 should be set to 3 and r0899.12 should be interconnected as control signal.
<7> r0046.21 = 0, as long as r0046.0 = 1 (OFF1 enable missing or power-on inhibit).
The signal generation is shown simplified.
<8> The internal signal includes signals that lead to OFF1 or OFF3 (e.g. BICO or fault response).
<9> If the brake is permanently applied or released (p0855, p0858 or p1215), the drive does not wait while the brake is released or applied.
<10> Only for SINAMICS S120.

Note: Braking signal diagnostic evaluation (p1278) only applies for SBC (Safe Brake Control) (controls the Safe Brake Relay). <10>
Note: With VECTOR with activated "parallel circuit" Function Module (r0108.15 = 1), the holding brake may only be connected to a power unit (p7015).

1	2	3	4	5	6	7	8
DO: SERVO, VECTOR					fp_2701_54_eng.vsd	Function diagram	- 2701 -
Brake control - Basic brake control (r0108.14 = 0)					14.03.16 V05.01.01	S120/S150/G130/G150	

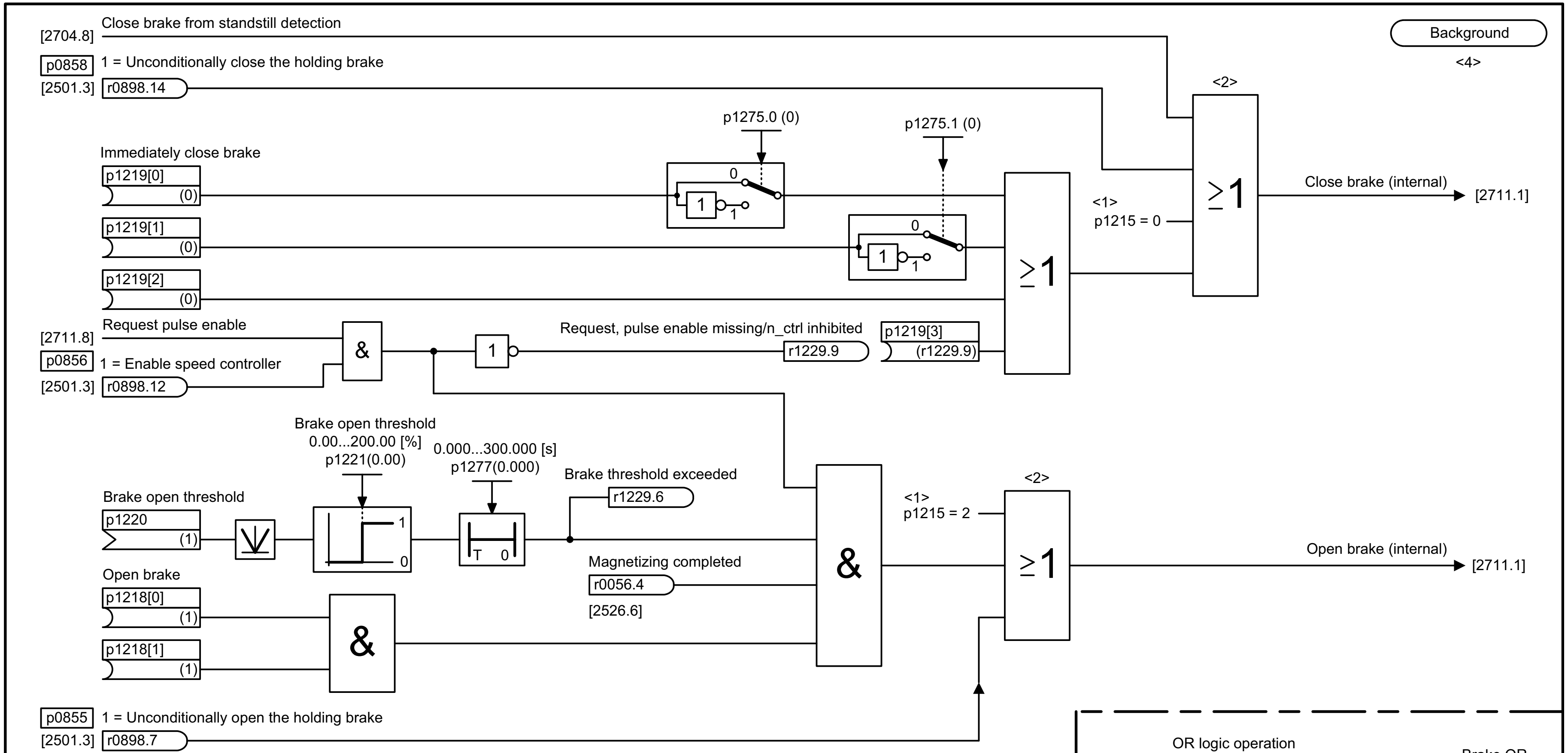
Fig. 3-108 2704 – Extended brake control, zero-speed detection (r0108.14 = 1)

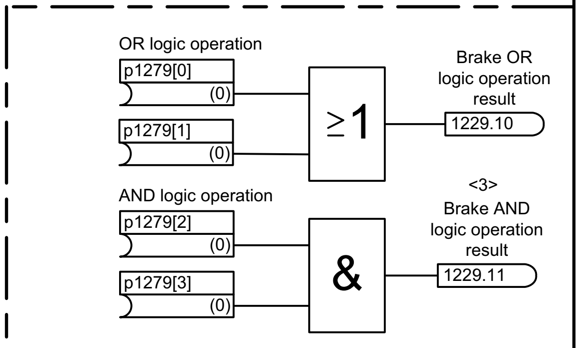


<1> Shutdown threshold of the standstill detection. In this case (e.g. when using a brake), another criterion than the speed actual value can be selected to clear the pulses. Otherwise, we recommend to keep the factory setting.
<2> For p1276 = 300.000 s, the timer is deactivated, i.e. the timer output is always 0. Note: When operating a motor with a brake which must not be applied while the motor is rotating, the monitoring time of both timers must be set to 300 s.
<3> For operation without brake, p1224[0...3] must be 0 (factory setting) in order to avoid undesirable interaction with the sequence control.
<4> The internal signal comprises signals that lead to OFF1 or OFF3 (e.g. BICO or fault response).
<5> Only for SINAMICS S120.

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_2704_54_eng.vsd	Function diagram	- 2704 -
Brake control - Extended brake control, zero-speed detection (r0108.14 = 1)	27.06.13 V05.01.01	S120/S150/G130/G150	





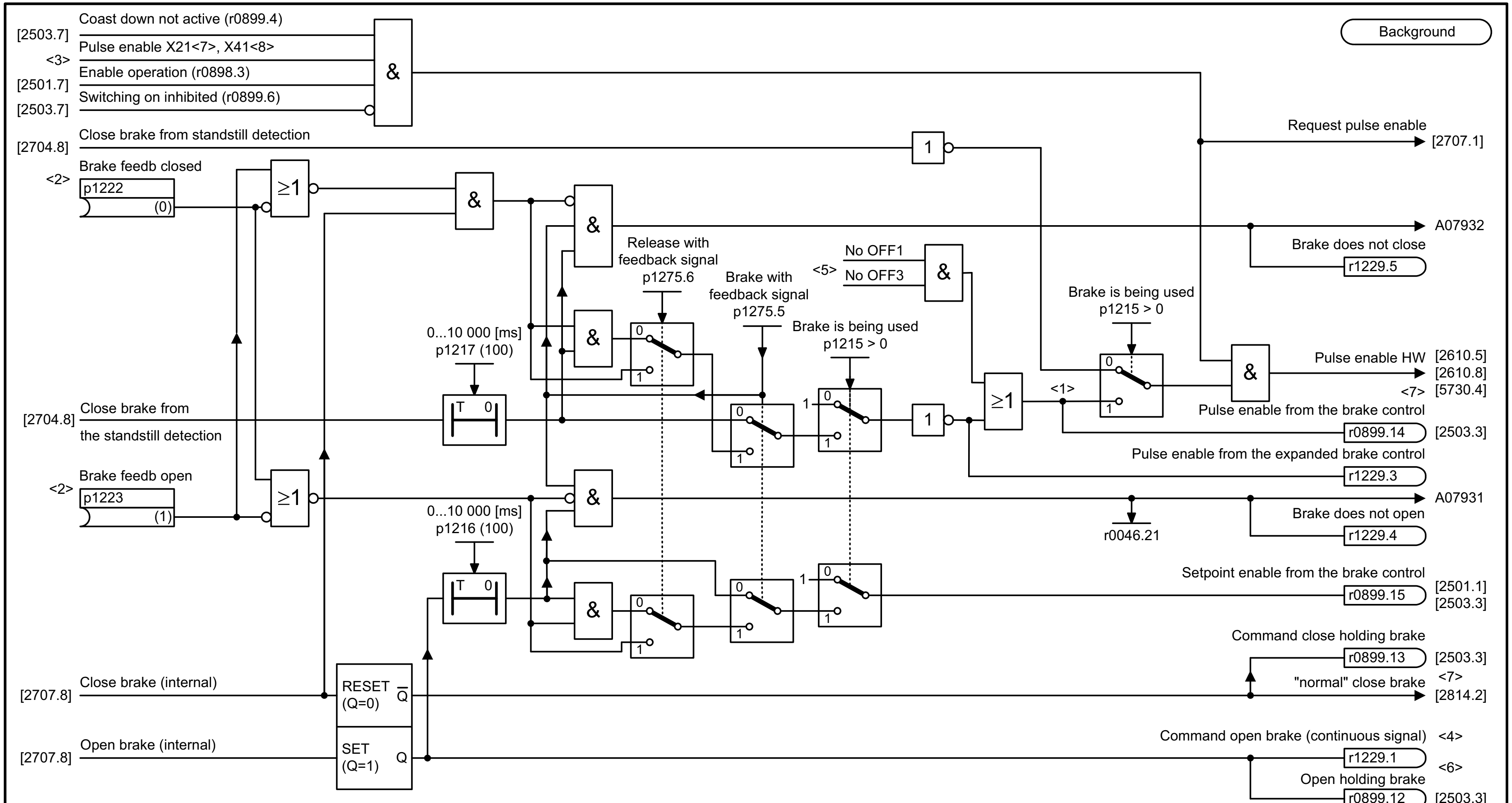
<1> Motor holding brake configuration
0 = No brake or brake always applied (brake connected to the power unit)
1 = Brake control active (brake connected to the power unit)
2 = Brake always released (brake connected to the power unit)
3 = Brake control active (brake connection can be interconnected using BICO)
Note:
A motor brake cannot be connected to all power units. p1215 is set to 3 and the brake is controlled via a digital output (e.g. TM31).
<2> Priority assignment (high -> low): p1215, p0858, p0855, p0856/p1219, apply brake from standstill detection, p1218.
<3> These blocks/modules are evaluated with the same sampling rate as the brake control and therefore may only be used to individually adapt the brake control.
<4> If the brake is permanently applied or released (p0855, p0858 or p1215), the drive does not wait until the brake is released or applied.

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR | fp_2707_54_eng.vsd | Function diagram | - 2707 -
Brake control - Extended brake control, open/close brake (r0108.14 = 1) | 18.12.13 V05.01.01 | S120/S150/G130/G150

Fig. 3-109 2707 – Extended brake control, open/close brake (r0108.14 = 1)

Fig. 3-110 2711 – Extended brake control, signal outputs (r0108.14 = 1)



<1> This pulse enable path only works for operation with brake (p1215 > 0).
<2> For brakes with one single checkback signal, the inverted signal has to be interconnected to the BICO input for the second checkback. The switching times of the brake are set in p1216 and p1217.
<3> Only if Safety Integrated is active (Double Motor Module: X22, Chassis: X41).
<4> If an external motor holding brake is used, p1215 should be set to 3 and r1229.1 should be used as control signal.
<5> The internal signal comprises signals that lead to OFF1 or OFF3 (e.g. BICO or fault response).
<6> If the function module "extended brake control" is active (r0108.14 = 1), r1229.1 should be interconnected as control signal.
<7> Only for SINAMICS S120 booksize.
<8> Only for SINAMICS S120 Chassis/S150/G130/G150.
Note: Braking signal diagnostic evaluation (p1278) is only relevant for SBC (Safe Brake Control) (controls the Safe Brake Relay). <7>

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_2711_54_eng.vsd	Function diagram	- 2711 -
Brake control - Extended brake control, signal outputs (r0108.14 = 1)	14.03.16 V05.01.01	S120/S150/G130/G150	

3.13 Safety Integrated Basic Functions

Function diagrams

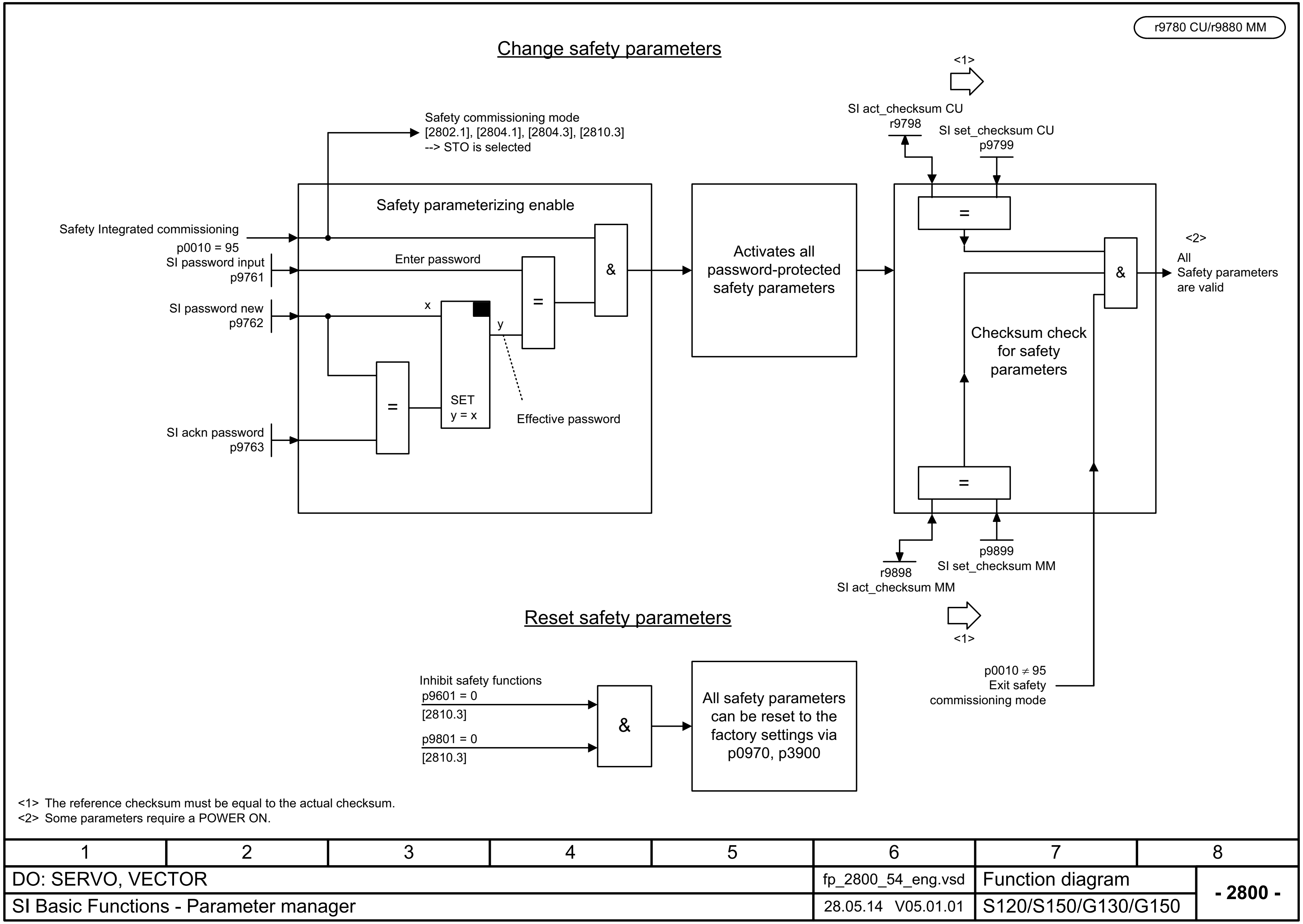
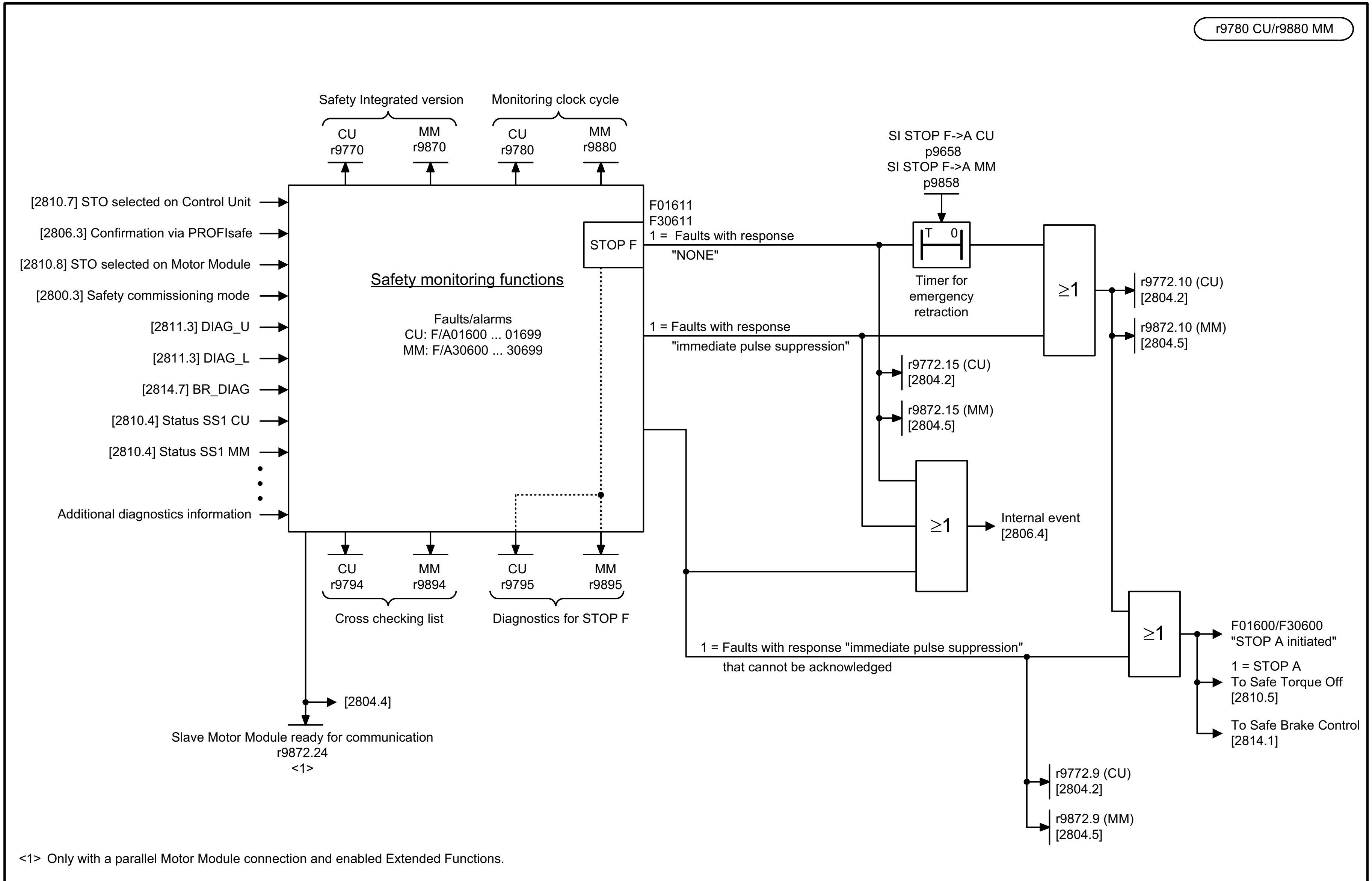


Fig. 3-111 2800 – Parameter manager

Fig. 3-112 2802 – Monitoring functions and faults/alarms



1	2	3	4	5	6	7	8
DO: SERVO, VECTOR					fp_2802_54_eng.vsd	Function diagram	- 2802 -
SI Basic Functions - Monitoring functions and faults/alarms					28.05.14 V05.01.01	S120/S150/G130/G150	

Fig. 3-113 2804 – SI status CU, MM, CU + MM, group STO

r9780 CU/r9880 MM

SI status Control Unit (r9772) → SI status CU r9772

Input	Bit No.	Meaning
[2810.7]	0	1 = STO selected on Control Unit
[2811.6]	1	1 = STO active on Control Unit
[2810.5]	2	1 = SS1 delay time active on the Control Unit
	...	Reserved
[2814.3]	4	1 = SBC requested
[2814.4]	5	1 = SS1 selected on the Control Unit (Basic Functions)
[2814.5]	6	1 = SS1 active on the Control Unit (Basic Functions)
[2810.4]	7	1 = STO Terminal state on the Motor Module (Basic Functions)
	...	Reserved
[2802.7]	9	1 = STOP A cannot be acknowledged, active
[2802.8]	10	1 = STOP A active
	...	Reserved
[2802.5]	15	1 = STOP F active
[2810.6]	16	1 = STO cause Safety comm. mode
[2810.5]	17	1 = STO cause selection via terminal (Basic Functions)
[2810.4]	18	1 = STO cause selection via SMM
[2819.8]	19	1 = STO cause actual value or safe torque off missing
[2810.6]	20	1 = STO cause selection PROFIsafe (Basic Functions)
	...	Reserved
[2810.4]	22	1 = SS1 cause selection terminal (Basic Functions)
[2810.4]	23	1 = SS1 cause selection PROFIsafe (Basic Functions)
	...	Reserved

SI status Motor Module (r9872) → SI status MM r9872

Input	Bit No.	Meaning
[2810.7]	0	1 = STO on Motor Module selected
[2811.3]	1	1 = STO on Motor Module active
[2810.5]	2	1 = SS1 delay time on Motor Module active
	3	1 = Safe Brake Adapter feedback signal
[2814.3]	4	1 = SBC requested
[2814.4]	5	1 = SS1 selected on the Motor Module (Basic Functions)
[2814.5]	6	1 = SS1 active on the Motor Module (Basic Functions)
[2810.4]	7	1 = STO Terminal state on the MM (Basic Functions)
	...	Reserved
[2802.7]	9	1 = STOP A cannot be acknowledged, active
[2802.8]	10	1 = STOP A active
	...	Reserved
[2802.5]	15	1 = STOP F active
[2810.6]	16	1 = STO cause: Safety comm. mode
[2810.5]	17	1 = STO cause selection via terminal (Basic Functions)
[2810.4]	18	1 = STO cause: selection via SMM
	...	Reserved
[2810.6]	20	1 = STO cause selection PROFIsafe (Basic Functions)
	...	Reserved
[2810.3]	22	1 = SS1 cause selection terminal (Basic Functions)
[2810.4]	23	1 = SS1 cause selection PROFIsafe (Basic Functions)
[2802.3]	24	1 = Slave Motor Module ready for communication
	...	Reserved

SI status Control Unit + Motor Module (r9773) → SI status CU+MM r9773

Input	Bit No.	Meaning
&	0	1 = STO selected in drive
&	1	1 = STO active in drive
&	2	1 = SS1 delay time active in the drive
	...	Reserved
&	4	1 = SBC requested
&	5	1 = SS1 selected in the drive (Basic Functions)
&	6	1 = SS1 active in the drive (Basic Functions)
	...	Reserved
[2810.5]	31	1 = Shutdown paths must be tested

Status Safe Torque Off group (r9774) → SI stat group STO r9774

Input	Bit No.	Meaning
r9773.0 Group n &	0	1 = STO selected in group
r9773.1 Group n &	1	1 = STO active in group
r9773.2 Group n &	2	1 = SS1 delay time active in group
	...	Reserved
r9773.4 Group n &	4	1 = SBC requested in group
r9773.5 Group n &	5	1 = SS1 selected in group (Basic Functions)
r9773.6 Group n &	6	1 = SS1 active in group (Basic Functions)
	...	Reserved
r9773.31 Group n &	31	1 = Shutdown paths of the group must be tested

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR

SI Basic Functions - SI status CU, MM, CU + MM, group STO

fp_2804_54_eng.vsd 12.05.16 V05.01.01

Function diagram S120/S150/G130/G150

- 2804 -

2 x r9780

S_STW1 Safety control word 1

Bit No.	Meaning	
0	**1 = De-select STO**	→ [2810.2]
1	**1 = De-select SS1**	→ [2810.2]
2	Reserved	
...	...	
6	Reserved	
7	**1/0 = Acknowledgment**	→ [2802.2]
8	Reserved	
...	...	
15	Reserved	

S_ZSW1 Safety status word 1

	Bit No.	Meaning
[2804.7] →	0	**1 = STO active**
[2804.7] →	1	**1 = SS1 active**
	2	Reserved
	...	...
	6	Reserved
[2802.6] →	7	**1 = Internal event**
	8	Reserved
	...	...
	15	Reserved

S_STW2 Safety control word 2

Bit No.	Meaning	
0	**1 = De-select STO**	→ [2810.2]
1	**1 = De-select SS1**	→ [2810.2]
2	Reserved	
...	...	
6	Reserved	
7	**1/0 = Acknowledgment**	→ [2802.2]
8	Reserved	
...	...	
31	Reserved	

S_ZSW2 Safety status word 2

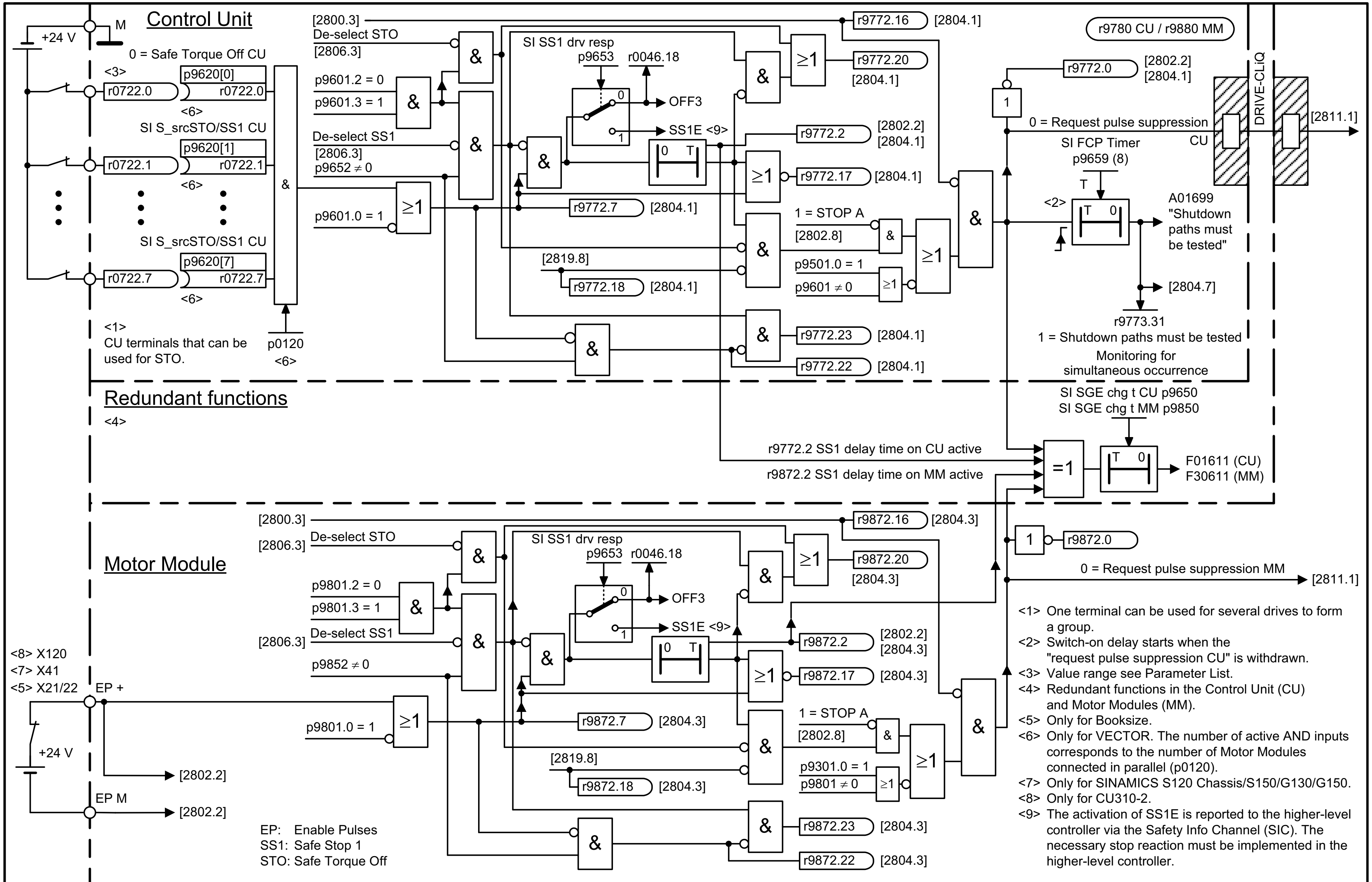
	Bit No.	Meaning
[2804.7] →	0	**1 = STO active**
[2804.7] →	1	**1 = SS1 active**
	2	Reserved
	...	...
	6	Reserved
[2802.6] →	7	**1 = Internal event**
	8	Reserved
	...	...
	31	Reserved

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_2806_54_eng.vsd	Function diagram	**- 2806 -**
SI Basic Functions - S_STW1/2 Safety control word 1/2, S_ZSW1/2 Safety status word 1/2	31.07.14 V05.01.01	S120/S150/G130/G150	

Fig. 3-114 2806 – S_STW1/2 Safety control word 1/2, S_ZSW1/2 Safety status word 1/2

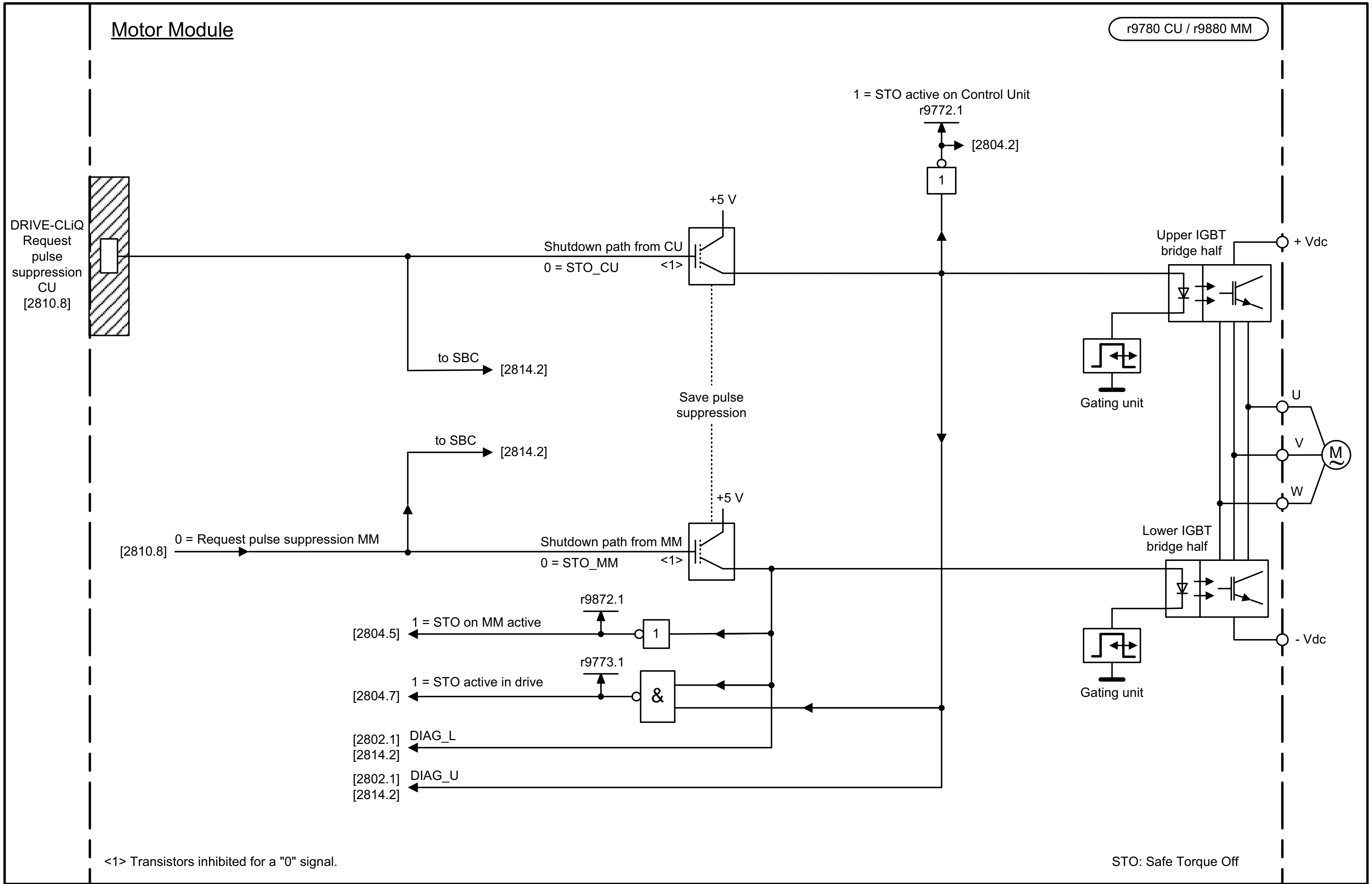
Fig. 3-115 2810 – STO (Safe Torque Off), SS1 (Safe Stop 1)



<1> One terminal can be used for several drives to form a group.
<2> Switch-on delay starts when the "request pulse suppression CU" is withdrawn.
<3> Value range see Parameter List.
<4> Redundant functions in the Control Unit (CU) and Motor Modules (MM).
<5> Only for Booksize.
<6> Only for VECTOR. The number of active AND inputs corresponds to the number of Motor Modules connected in parallel (p0120).
<7> Only for SINAMICS S120 Chassis/S150/G130/G150.
<8> Only for CU310-2.
<9> The activation of SS1E is reported to the higher-level controller via the Safety Info Channel (SIC). The necessary stop reaction must be implemented in the higher-level controller.

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_2810_54_eng.vsd	Function diagram	- 2810 -
SI Basic Functions - STO (Safe Torque Off), SS1 (Safe Stop 1)	18.05.15 V05.01.01	S120/S150/G130/G150	

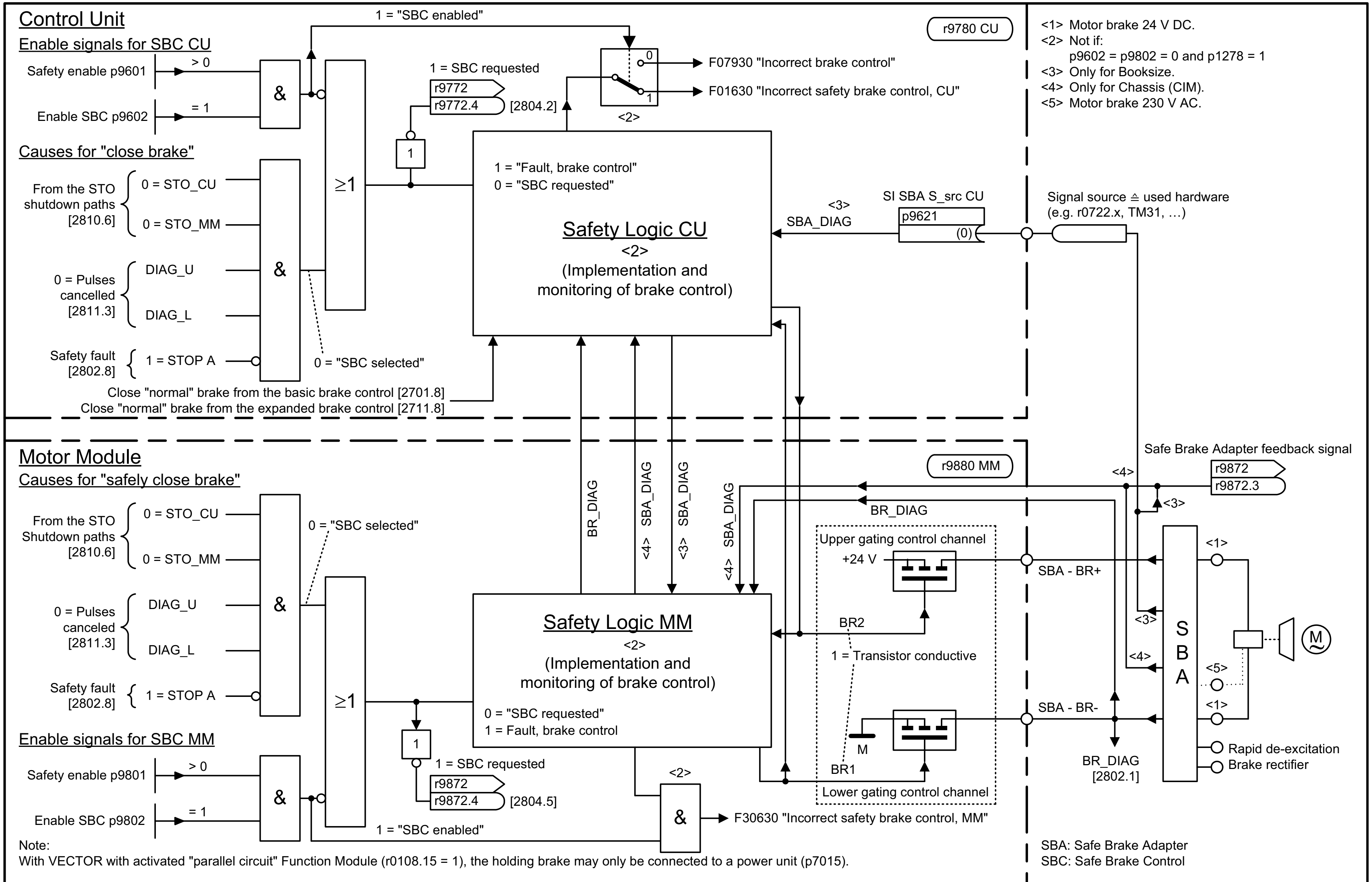


1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_2811_54_eng.vsd	Function diagram	- 2811 -
SI Basic Functions - STO (Safe Torque Off), safe pulse suppression	17.01.12 V05.01.01	S120/S150/G130/G150	

Fig. 3-116 2811 – STO (Safe Torque Off), safe pulse suppression

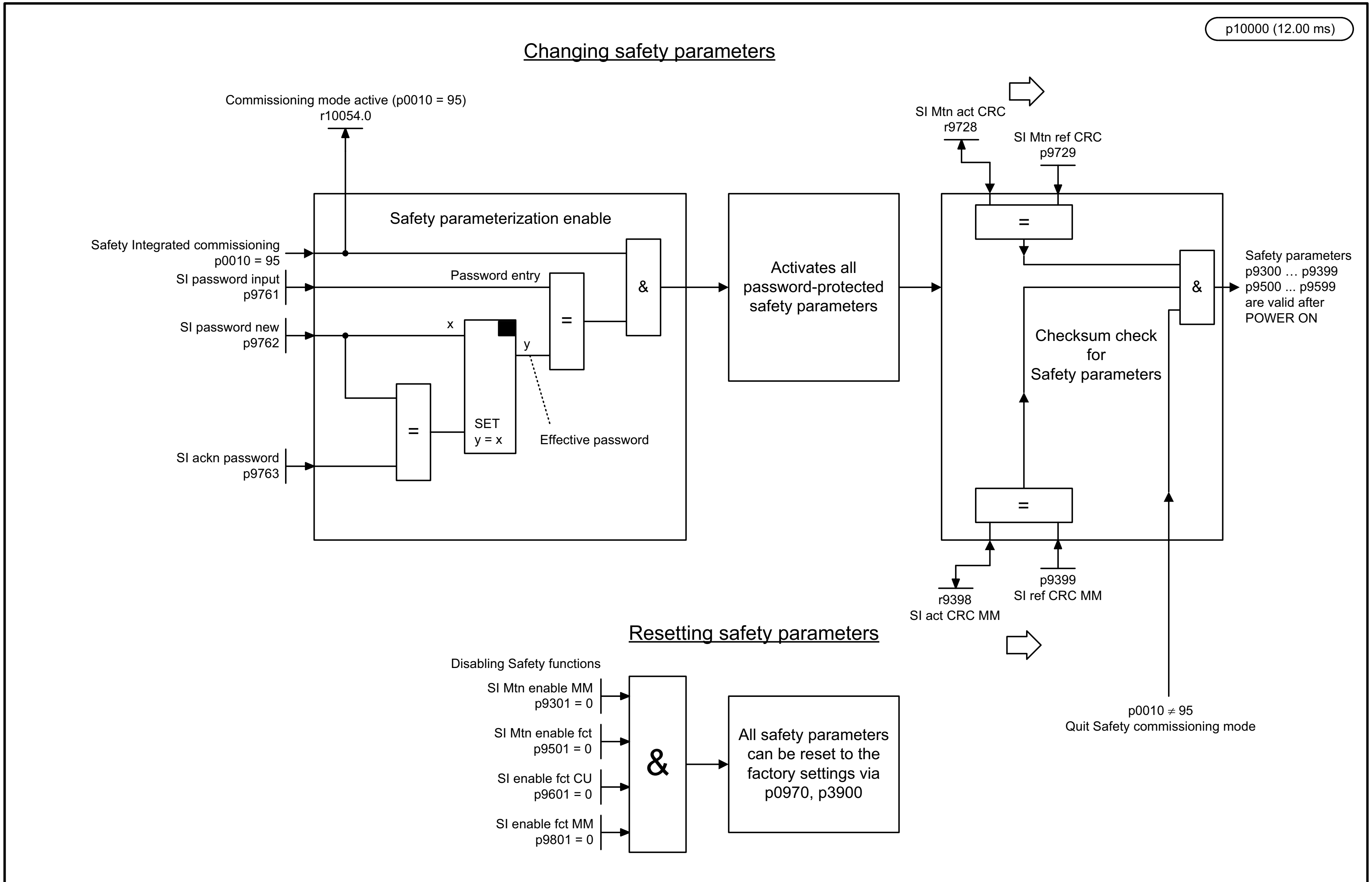
Fig. 3-117 2814 – SBC (Safe Brake Control), SBA (Safe Brake Adapter)



1	2	3	4	5	6	7	8
DO: SERVO, VECTOR					fp_2814_54_eng.vsd	Function diagram	- 2814 -
SI Basic Functions - SBC (Safe Brake Control), SBA (Safe Brake Adapter)					07.05.15 V05.01.01	S120/S150/G130/G150	

3.14 Safety Integrated Extended Functions

Function diagrams

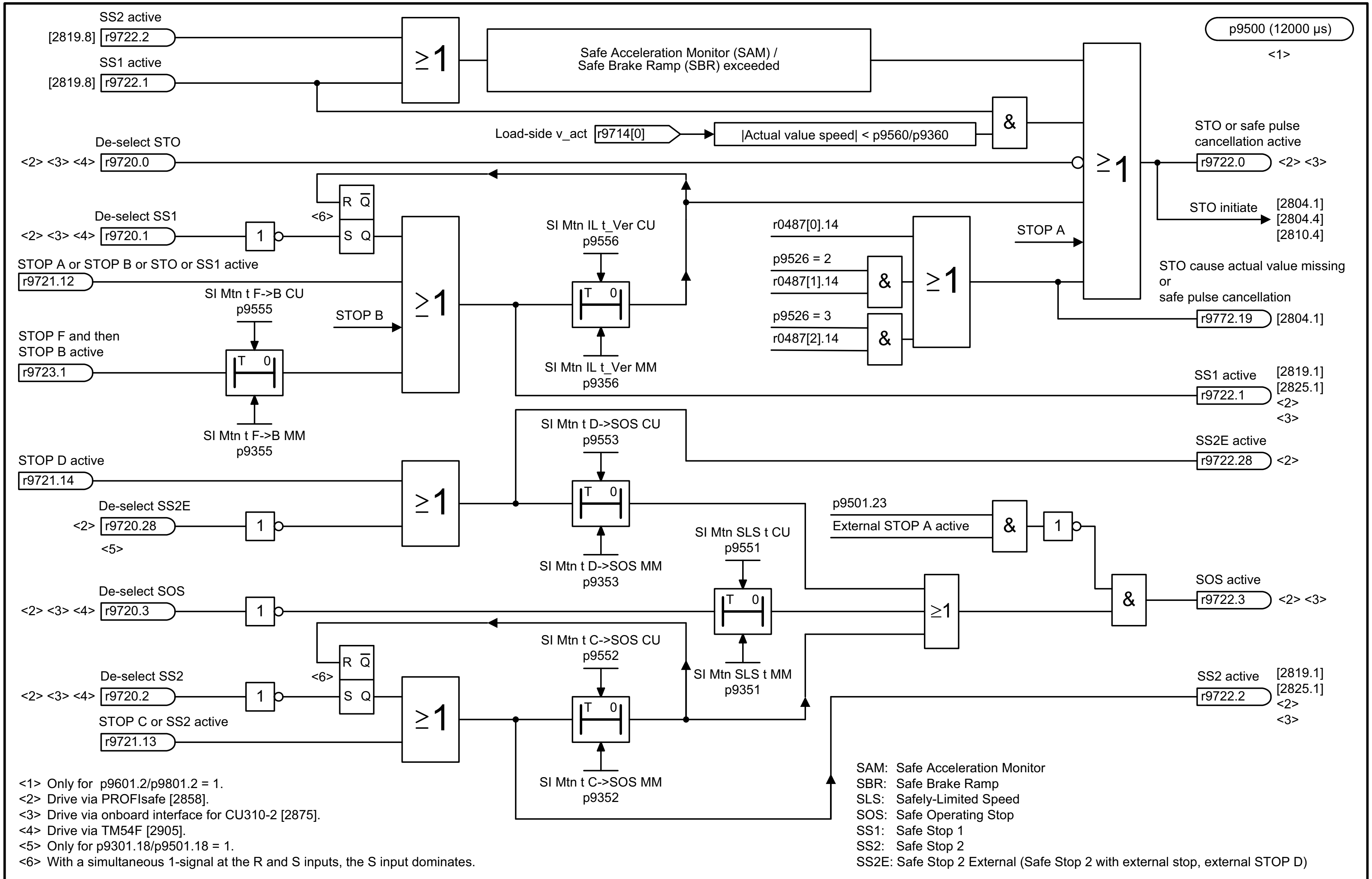


1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_2818_54_eng.vsd	Function diagram	- 2818 -
SI Extended Functions - Parameter manager	28.05.14 V05.01.01	S120/S150/G130/G150	

Fig. 3-118 2818 – Parameter manager

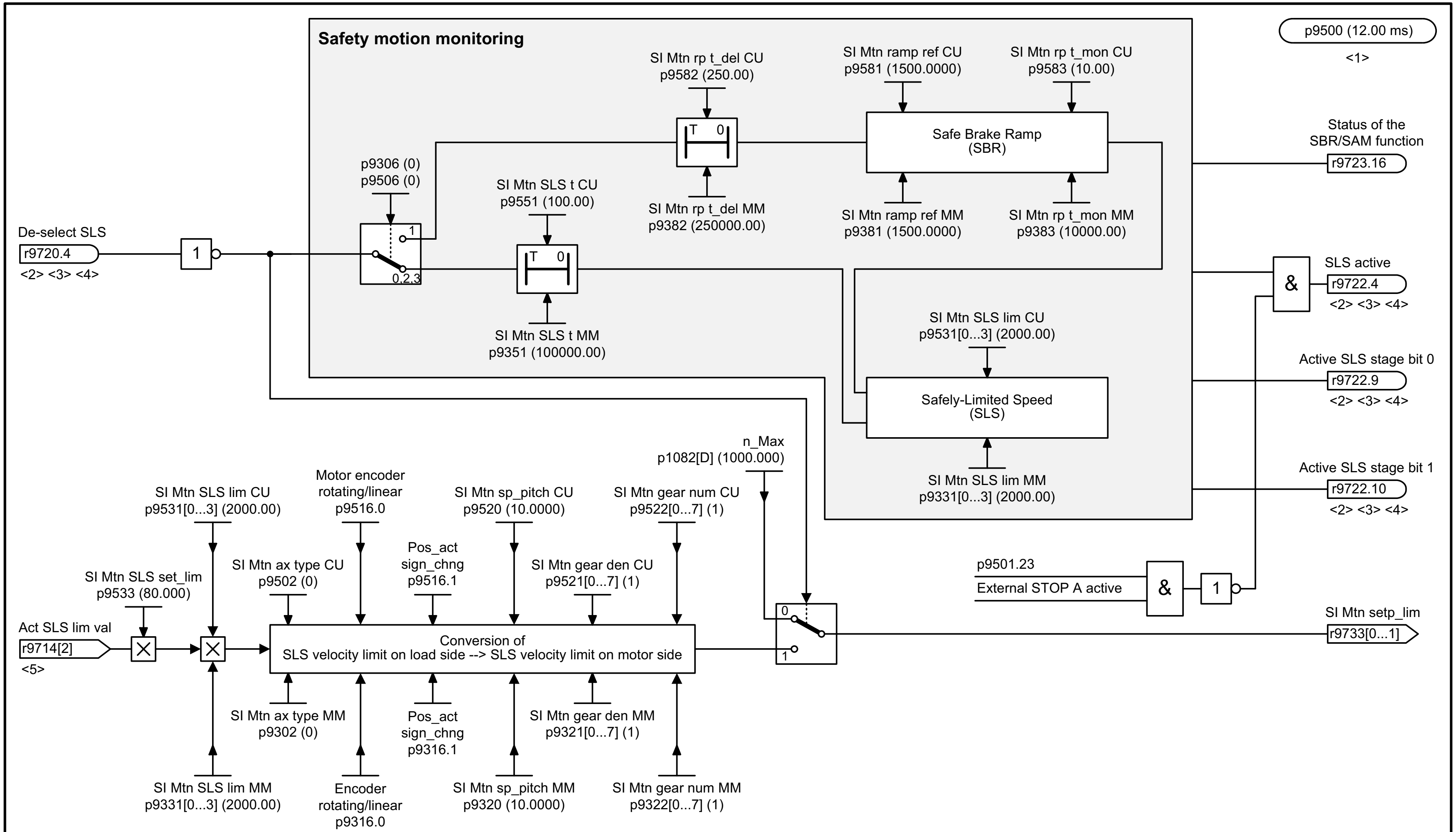
Fig. 3-119 2819 – SS1, SS2, SOS, internal STOP B, C, D, F



1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_2819_54_eng.vsd	Function diagram	- 2819 -
SI Extended Functions - SS1, SS2, SOS, Internal STOP B, C, D, F	14.09.17 V05.01.01	S120/S150/G130/G150	

Fig. 3-120 2820 – SLS (Safely-Limited Speed)



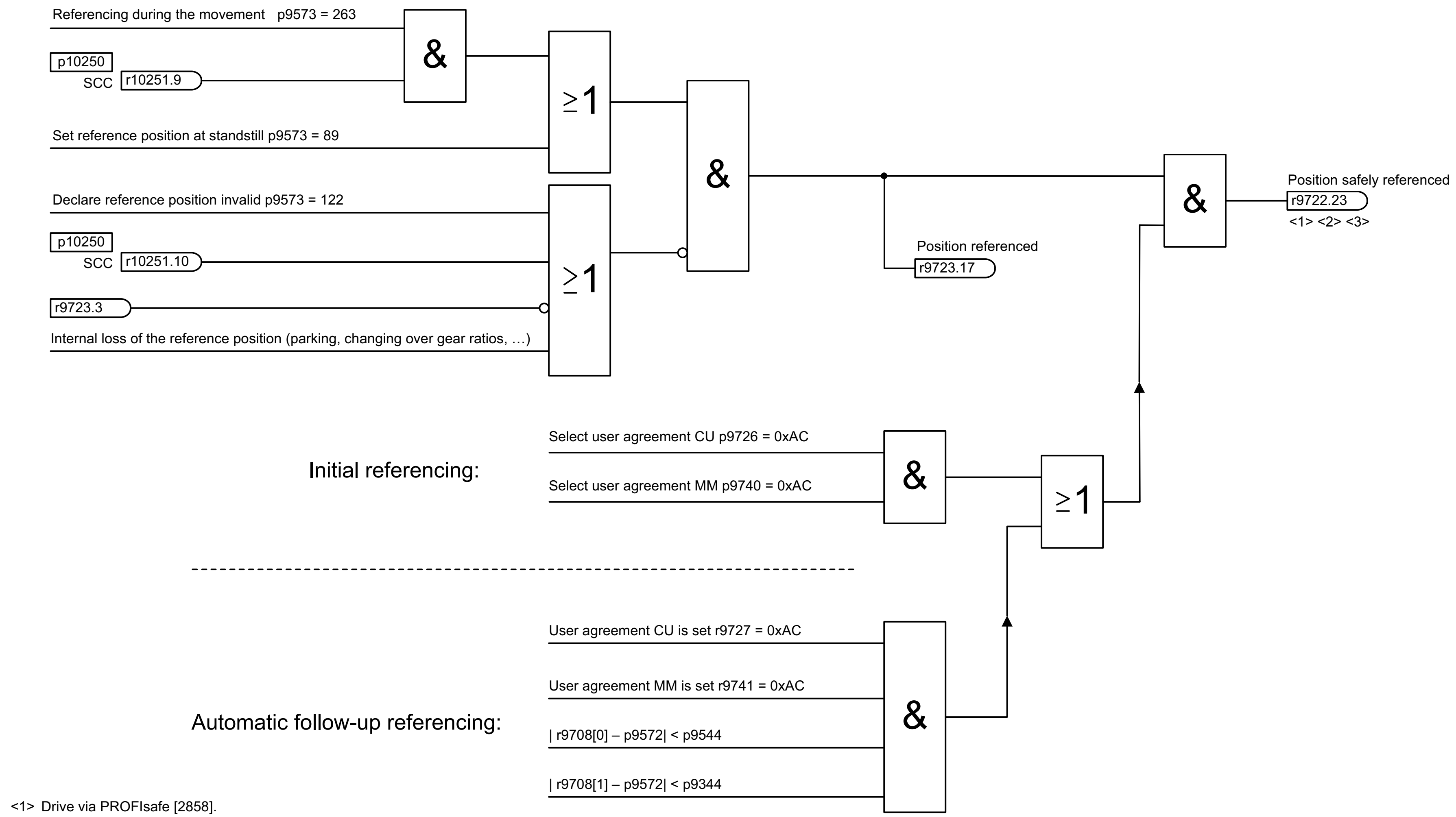
<1> Only for p9601.2/p9801.2 = 1.
<2> Drive via PROFIsafe [2858].
<3> Drive via onboard interface for CU310-2 [2875].
<4> Drive viaTM54F [2905].
<5> The actual SLS velocity limit is chosen with r9720.9 and r9720.10.

SAM: Safe Acceleration Monitor
SBR: Safe Brake Ramp
SLS: Safely-Limited Speed

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_2820_54_eng.vsd	Function diagram	- 2820 -
SI Extended Functions - SLS (Safely-Limited Speed)	06.07.17 V05.01.01	S120/S150/G130/G150	

Fig. 3-121 2821 – Safe referencing



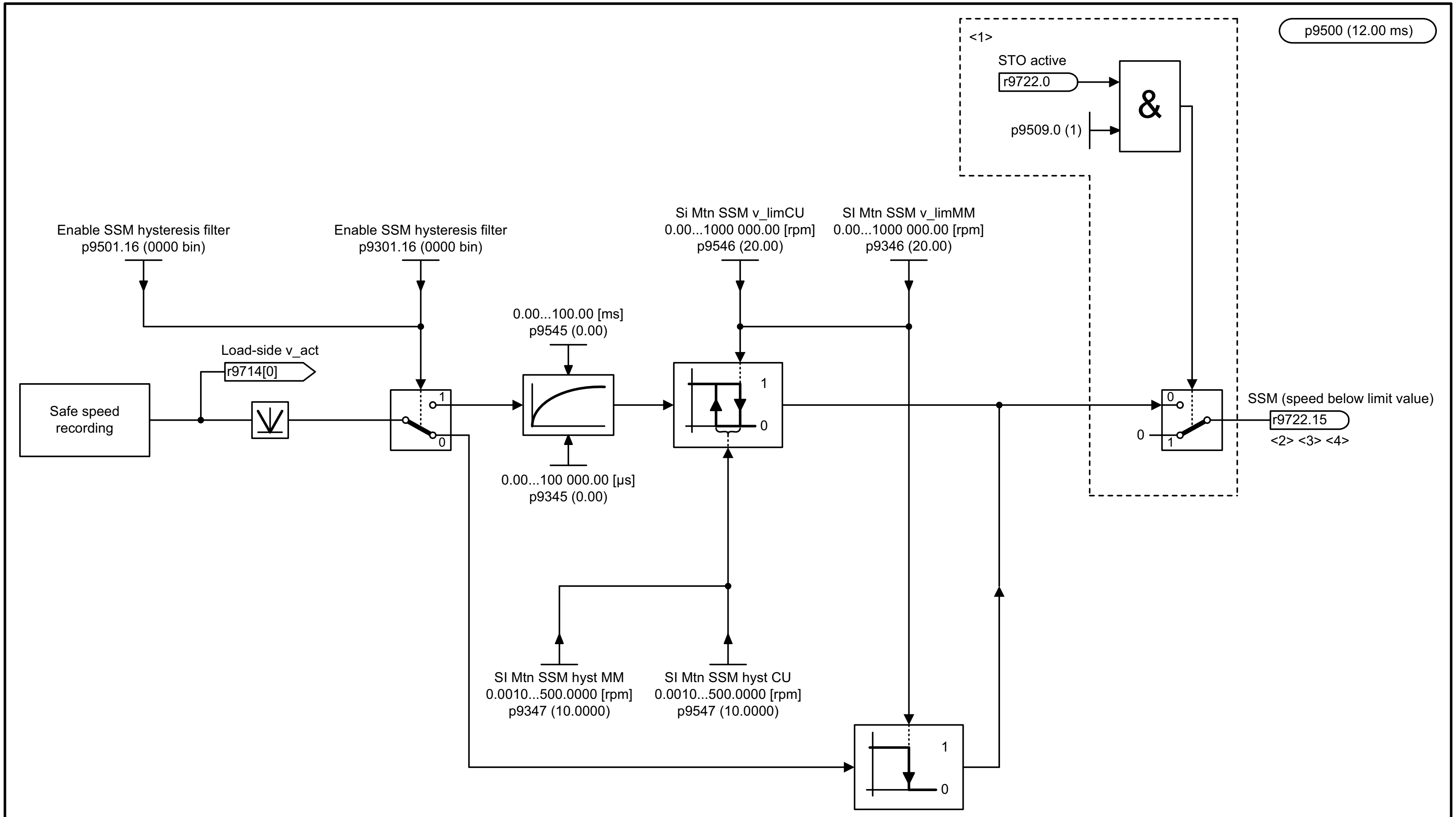
<1> Drive via PROFIsafe [2858].
<2> Drive via onboard interface for CU310-2 [2875].
<3> Drive via TM54F [2905].

SCC: Safety Control Channel

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_2821_54_eng.vsd	Function diagram	- 2821 -
SI Extended Functions - Safely referencing	17.05.13 V05.01.01	S120/S150/G130/G150	

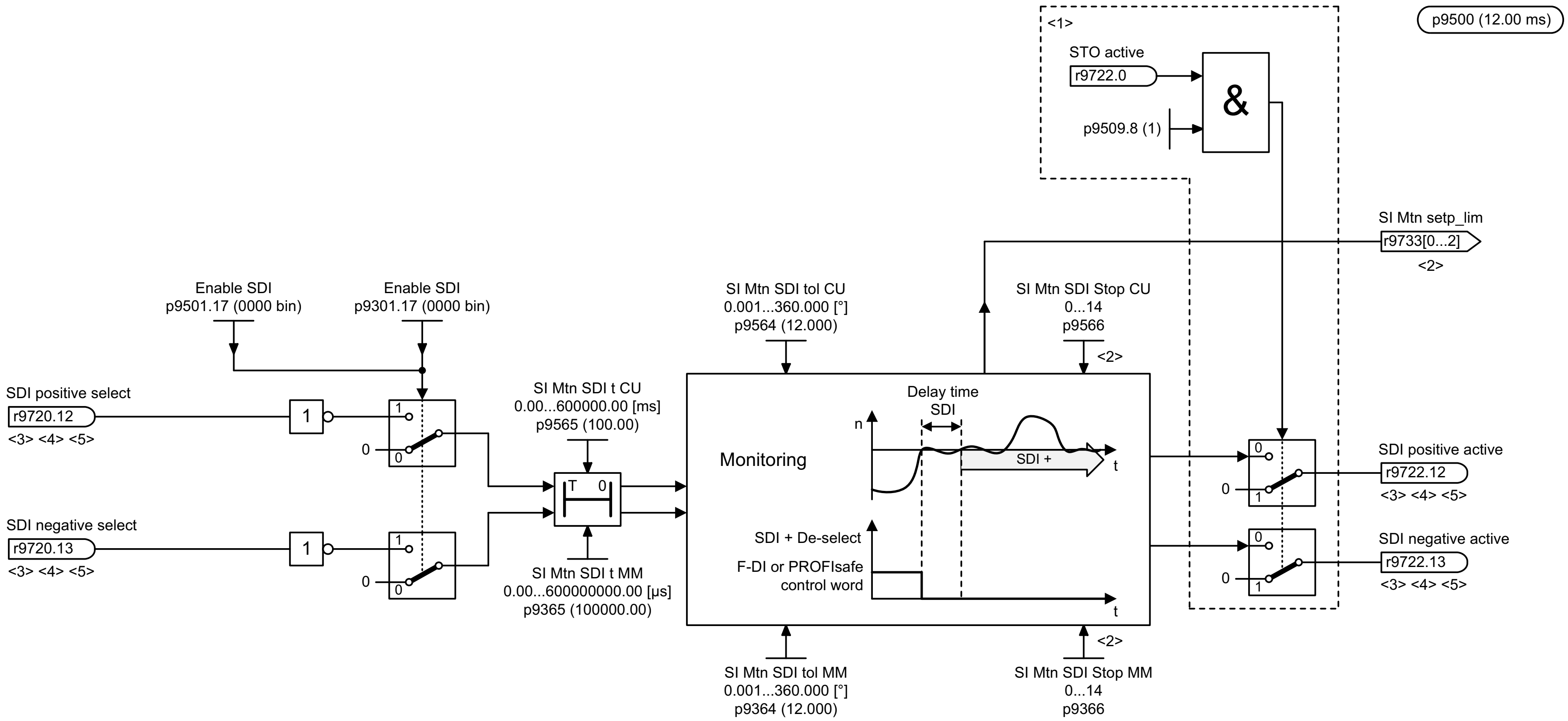
Fig. 3-122 2823 – SSM (Safe Speed Monitor)



<1> Only for p9506 = 1 or 3 "Safety without encoder".
<2> Drive via PROFIsafe [2858].
<3> Drive via onboard interface for CU310-2 [2875].
<4> Drive via TM54F [2905].

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_2823_54_eng.vsd	Function diagram	- 2823 -
SI Extended Functions - SSM (Safe Speed Monitor)	07.11.12 V05.01.01	S120/S150/G130/G150	



<1> Only for p9506 = 1 or 3 "Safety without encoder".

<2>

Selected SI-Function	r9733[0] Setpoint limiting positive	r9733[1] Setpoint limiting negative	r9733[2] Setpoint limit absolute
SDI positive	p1082	0	|p1082|
SDI negative	0	−p1082	|p1082|
SDI positive + SLSx	p9531[x] x p9533	0	|p9531[x] x p9533|
SDI negative + SLSx	0	−p9531[x] x p9533	|p9531[x] x p9533|

<3> Drive via PROFIsafe [2858].
<4> Drive via onboard interface for CU310-2 [2875].
<5> Drive viaTM54F [2905].

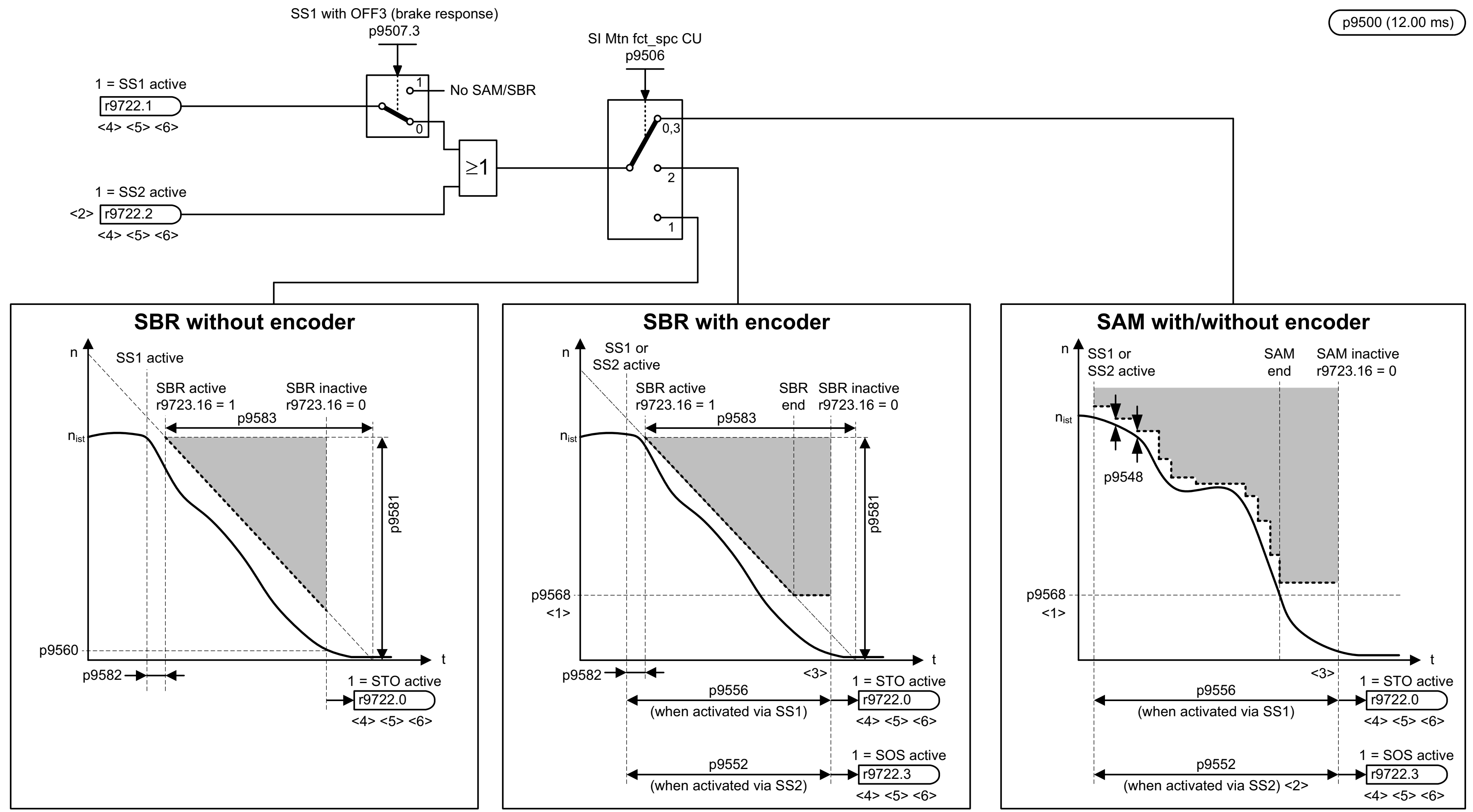
SDI: Safe Direction
SLS: Safely-Limited Speed

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_2824_54_eng.vsd	Function diagram	- 2824 -
SI Extended Functions - SDI (Safe Direction)	02.06.14 V05.01.01	S120/S150/G130/G150	

Fig. 3-123 2824 – SDI (Safe Direction)

Fig. 3-124 2825 – SAM (Safe Acceleration Monitor), SBR (Safe Brake Ramp)



<1> If p9568 = 0, p9546 will be used.
<2> With encoder only.
<3> Shortening of transition time to SOS/STO is possible, see function SS1 and SS2.
<4> Drive via PROFIsafe [2858].
<5> Drive via onboard interface for CU310-2 [2875].
<6> Drive viaTM54F [2905].

SAM: Safe Acceleration Monitor
SBR: Safe Brake Ramp

1	2	3	4	5	6	7	8
DO: SERVO, VECTOR					fp_2825_54_eng.vsd	Function diagram	- 2825 -
SI Extended Functions - SAM (Safe Acceleration Monitor), SBR (Safe Brake Ramp)					30.03.16 V04.08.00	S120/S150/G130/G150	

Fig. 3-125 2836 – SBT (Safe Brake Test)

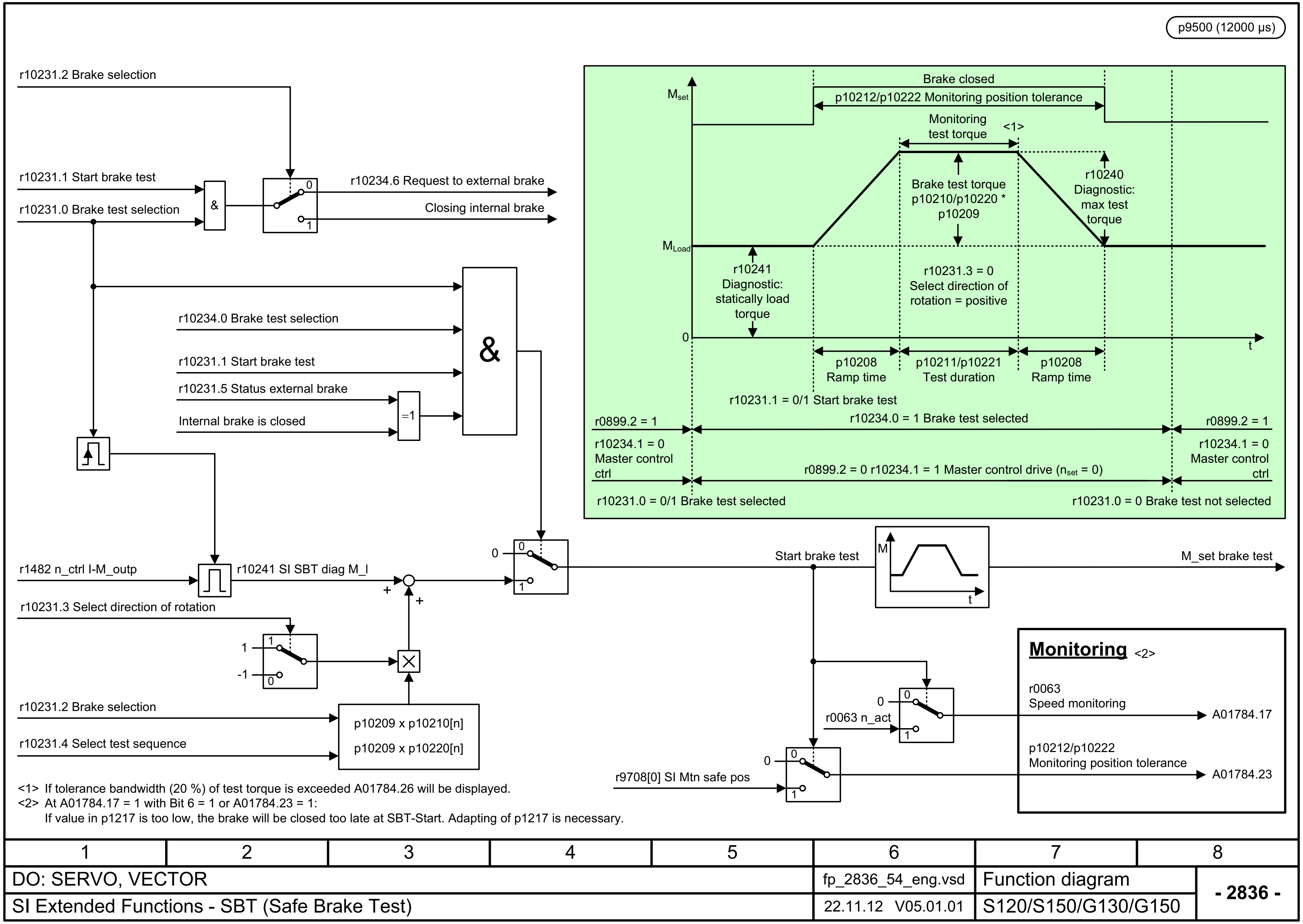
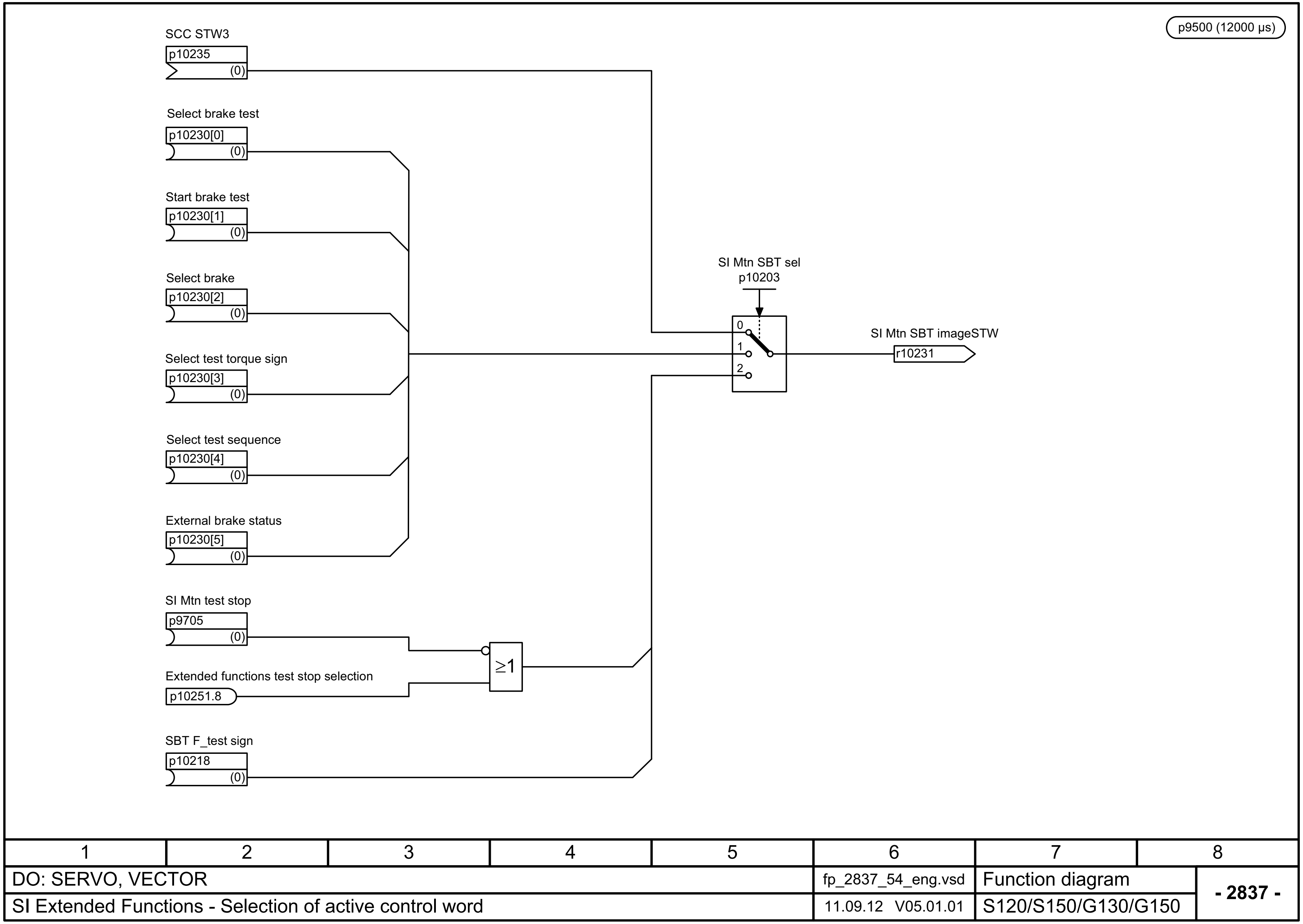
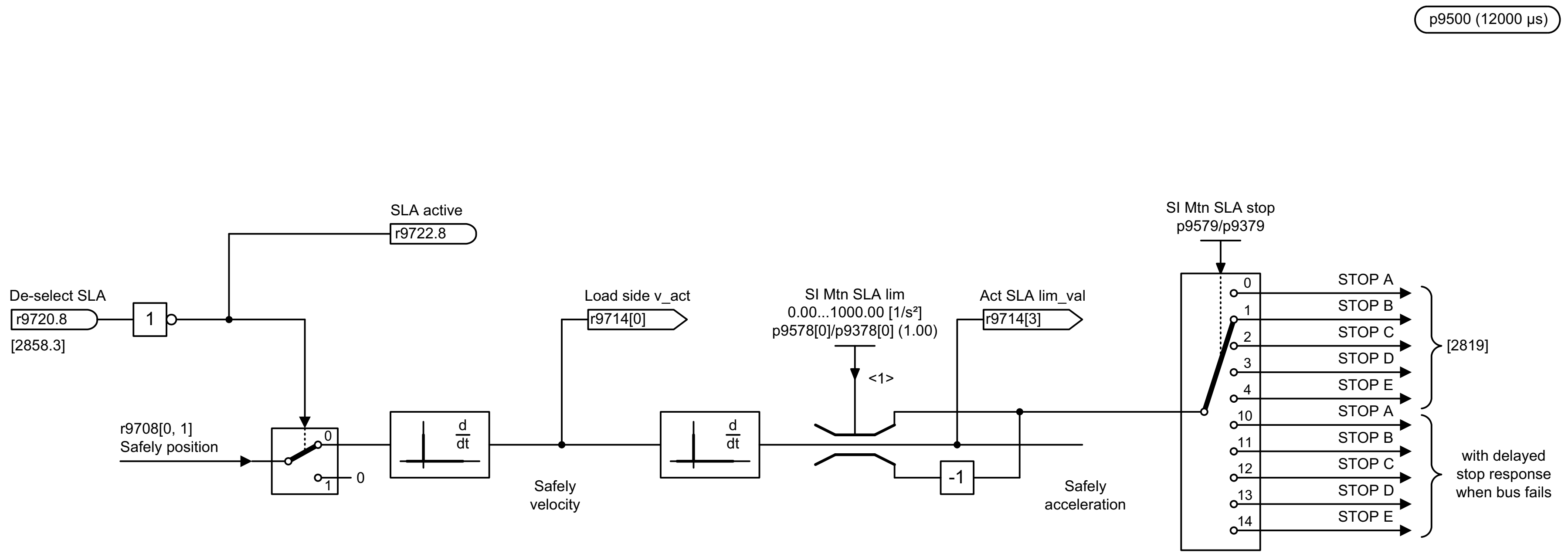


Fig. 3-126 2837 – Select active control word





<1> The limit is only effective when accelerating, not when decelerating. Braking processes with steeper speed ramps are also permissible.

SLA: Safely-Limited Acceleration

1	2	3	4	5	6	7	8
DO: SERVO, VECTOR					fp_2838_54_eng.vsd	Function diagram	- 2838 -
SI Extended Functions - SLA (Safely-Limited Acceleration)					10.10.17 V05.01.01	S120/S150/G130/G150	

Fig. 3-127 2838 – SLA (Safely-Limited Acceleration)

Fig. 3-128 2840 – SI Motion drive-integrated control signals/status signals

p9500 (12.00 ms)

SI Motion drive-integrated control signals

SI Mtn integ STW r9720

<1> [2858.3] <2> [2875.4] <3> [2905.3] (bits 0–19)

Bit No.	Meaning	
0	**1 = De-select STO**	
1	**1 = De-select SS1**	
2	**1 = De-select SS2**	
3	**1 = De-select SOS**	
4	**1 = De-select SLS**	
...	Reserved	
6	**1 = De-select SLP**	
7	**1/0 = Acknowledgment**	
8	**1 = De-select SLA**	
9	**1 = Select SLS bit 0**	
10	**1 = Select SLS bit 1**	
...	Reserved	
12	**1 = De-select SDI positive**	
13	**1 = De-select SDI negative**	
...	Reserved	
19	**1 = Select SLP position range**	0 = SLP1 1 = SLP2
...	Reserved	
23	**1 = De-select SCA** (<1> [2858.3])	
...	Reserved	
28	**1 = De-select SS2E** (<1> [2858.3])	

SI Motion drive-integrated status signals

SI Mtn integ stat r9722

<1> [2858.6] <2> [2875.7] <3> [2905.5] (bits 0–23)

Bit No.	Meaning	
0	**1 = STO or safe pulse cancellation active**	
1	**1 = SS1 active**	
2	**1 = SS2 active**	
3	**1 = SOS active**	
4	**1 = SLS active**	
...	Reserved	
6	**1 = SLP active**	
7	**1 = Internal event no**	
8	**1 = SLA active**	
9	**Active SLS stage bit 0**	0 = SLS1 1 = SLS2 2 = SLS3 3 = SLS4
10	**Active SLS stage bit 1**	
11	**1 = SOS selected** <4>	
12	**1 = SDI positive active**	
13	**1 = SDI negative active**	
...	Reserved	
15	**SSM (speed below limit value)**	
...	Reserved	
19	**SLP active position area**	0 = SLP1 1 = SLP2
...	Reserved	
22	**1 = SP valid**	
23	**1 = Safely referenced**	
...	Reserved	
28	**1 = SS2E active** (<1> [2858.6])	
...	Reserved	
30	**1 = SLP limit upper maintained**	
31	**1 = SLP limit lower maintained**	

<1> [2858.6] <2> [2875.7] <3> [2905.5] (bits 30–31)

<1> Only at drive of the Extended Functions via PROFIsafe.
<2> Only at drive of the Extended Functions via onboard interface for CU310-2.
<3> Only at drive of the Extended Functions via TM54F.
<4> S_ZSW1.11 or S_ZSW2.29 depending on the telegram number selected in p9611/p9811 when actuating the Extended Functions via PROFIsafe.

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_2840_54_eng.vsd	Function diagram	- 2840 -
SI Extended Functions - SI Motion drive-integrated control signals/status signals	16.10.17 V05.01.01	S120/S150/G130/G150	

2 x p9500 (24.00 ms)

S_STW1 Safety control word 1

[2858.2] → S_STW1 [2858.3]

Bit No.	Meaning
0	**1 = De-select STO**
1	**1 = De-select SS1**
2	**1 = De-select SS2**
3	**1 = De-select SOS**
4	**1 = De-select SLS**
5	**Reserved**
6	**1 = De-select SLP**
7	**1/0 = Acknowledgment**
8	**1 = De-select SLA**
9	**1 = Select SLS bit 0**
10	**1 = Select SLS bit 1**
11	**Reserved**
12	**1 = De-select SDI positive**
13	**1 = De-select SDI negative**
14	**Reserved**
15	**Reserved**

S_ZSW1 Safety status word 1

S_ZSW1 [2858.7]

Input	Bit No.	Meaning	
[2858.6]	0	**1 = STO or safe pulse cancellation active**	
[2858.6]	1	**1 = SS1 active**	
[2858.6]	2	**1 = SS2 active**	
[2858.6]	3	**1 = SOS active**	
[2858.6]	4	**1 = SLS active**	
	5	**Reserved**	
[2858.6]	6	**1 = SLP active**	
r9722.7 [2858.6] → 1 (inverted)	7	**1 = Internal event**	
[2858.6]	8	**1 = SLA active**	
[2858.6]	9	**Active SLS stage bit 0**	0 = SLS1 1 = SLS2 2 = SLS3 3 = SLS4
[2858.6]	10	**Active SLS stage bit 1**	
[2858.6]	11	**1 = SOS selected**	
[2858.6]	12	**1 = SDI positive active**	
[2858.6]	13	**1 = SDI negative active**	
	14	**Reserved**	
[2858.6]	15	**SSM (speed below limit value)**	

1	2	3	4	5	6	7	8
DO: SERVO, VECTOR					fp_2842_54_eng.vsd	Function diagram	- 2842 -
SI Extended Functions - S_STW1 Safety control word 1, S_ZSW1 Safety status word 1					16.10.17 V05.01.01	S120/S150/G130/G150	

Fig. 3-129 2842 – S_STW1 Safety control word 1, S_ZSW1 Safety status word 1

2 x p9500 (24.00 ms)

S_STW2 Safety control word 2

Input: [2858.2] → S_STW2 [2858.3]

Bit No.	Meaning		
0	1 = De-select STO		
1	1 = De-select SS1		
2	1 = De-select SS2		
3	1 = De-select SOS		
4	1 = De-select SLS		
5	Reserved		
6	1 = De-select SLP		
7	1/0 = Acknowledgment		
8	1 = De-select SLA		
9	1 = Select SLS bit 0		
10	1 = Select SLS bit 1		
11	Reserved		
12	1 = De-select SDI positive		
13	1 = De-select SDI negative		
. . .	Reserved		
19	SLP position area	0 = SLP1	1 = SLP2
. . .	Reserved		
23	1 = De-select SCA		
24	Select gearbox stage bit 0		
25	Select gearbox stage bit 1		
26	Select gearbox stage bit 2		
27	Gearbox stage switchover		
28	1 = De-select SS2E		
. . .	Reserved		

S_ZSW2 Safety status word 2

Output: S_ZSW2 [2858.7]

Source	Bit No.	Meaning		
	0	1 = STO or safe pulse cancellation active		
[2858.6]	1	1 = SS1 active		
[2858.6]	2	1 = SS2 active		
[2858.6]	3	1 = SOS active		
[2858.6]	4	1 = SLS active		
	5	Reserved		
[2858.6]	6	1 = SLP active		
r9722.7, [2858.6] (OR 1, inverted)	7	1 = Internal event		
[2858.6]	8	1 = SLA active		
[2858.6]	9	Active SLS stage bit 0	0 = SLS1	1 = SLS2
[2858.6]	10	Active SLS stage bit 1	2 = SLS3	3 = SLS4
	11	Reserved		
[2858.6]	12	1 = SDI pos active		
[2858.6]	13	1 = SDI neg active		
	14	Reserved		
[2858.6]	15	SSM (speed below limit value)		
	. . .	Reserved		
[2858.6]	19	SLP active position area	0 = SLP1	1 = SLP2
	. . .	Reserved		
[2858.6]	22	1 = SP valid		
[2858.6]	23	1 = Safety referenced		
[2070.8]	24	1 = F-DI 0 inactive	<1>	
[2070.8]	25	1 = F-DI 1 inactive	<1>	
[2070.8]	26	1 = F-DI 2 inactive	<1>	
	27	Reserved		
[2858.6]	28	1 = SS2E active		
[2858.6]	29	1 = SOS selected		
[2858.6]	30	1 = SLP limit upper maintained		
[2858.6]	31	1 = SLP limit lower maintained		

<1> Only for CU310-2.

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_2843_54_eng.vsd	Function diagram	- 2843 -
SI Extended Functions - S_STW2 Safety control word 2, S_ZSW2 Safety status word 2	16.10.17 V05.01.01	S120/S150/G130/G150	

Fig. 3-130 2843 – S_STW2 Safety control word 2, S_ZSW2 Safety status word 2

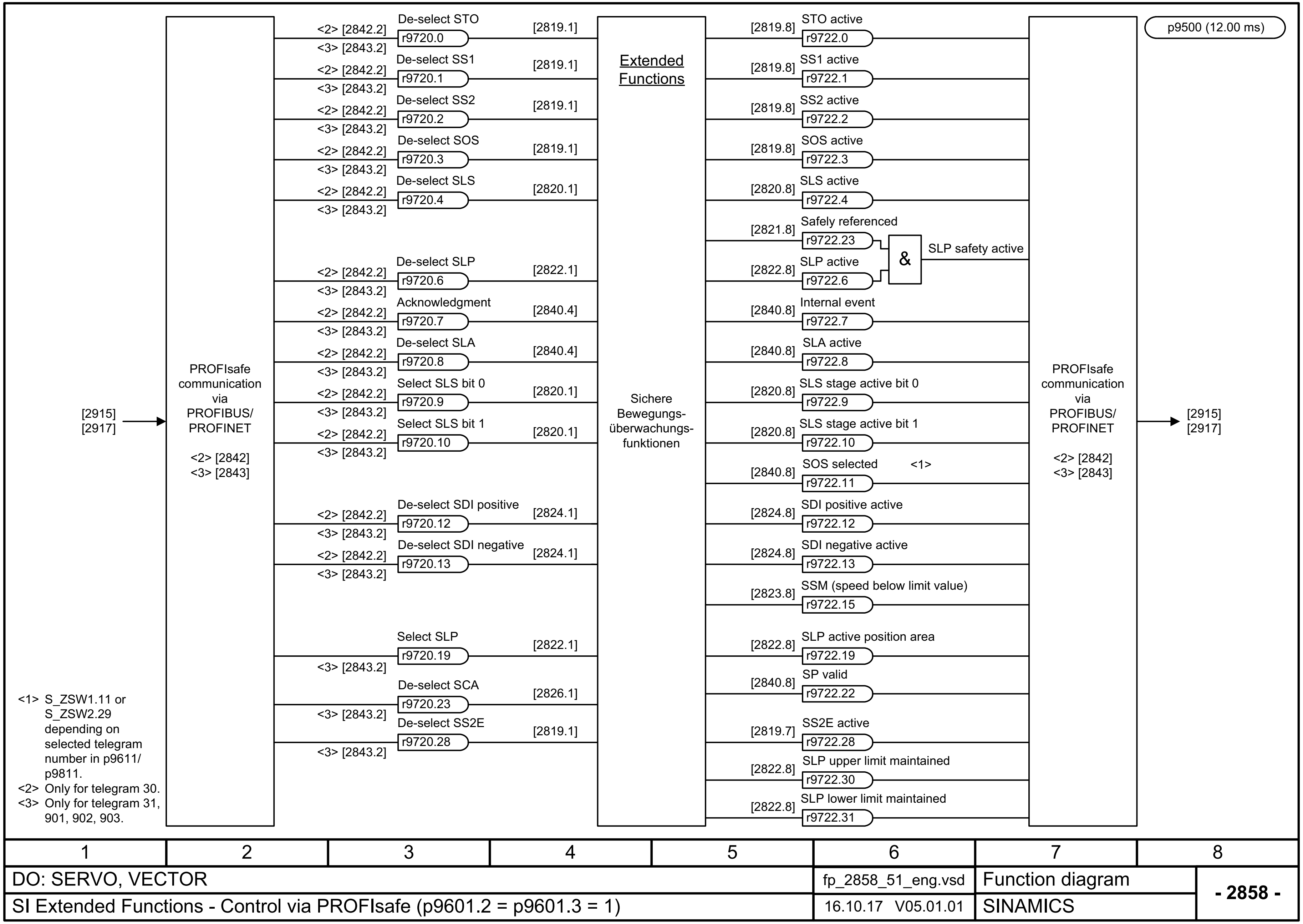
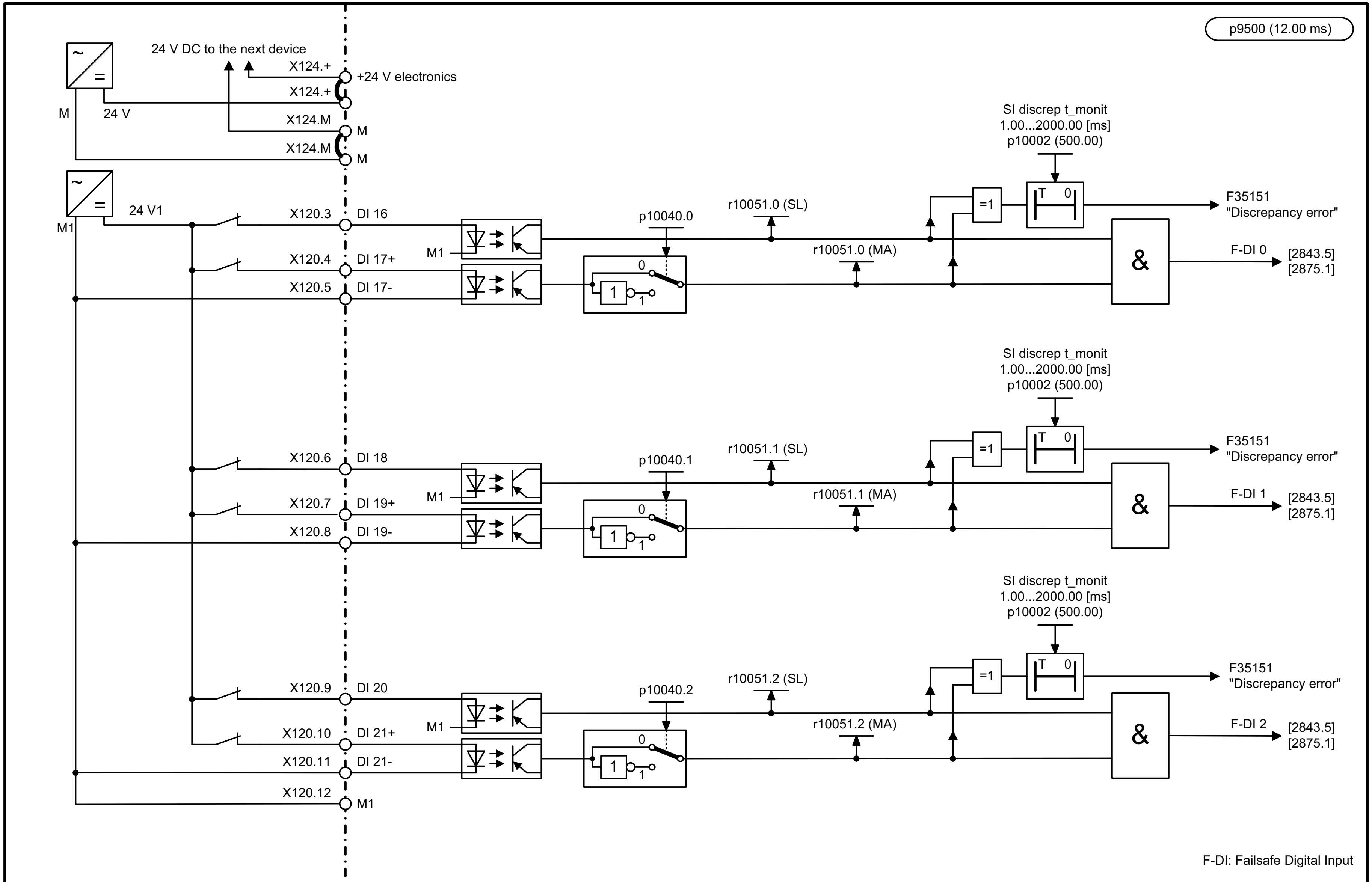


Fig. 3-131 2858 – Control via PROFIsafe (p9601.2 = p9601.3 = 1)

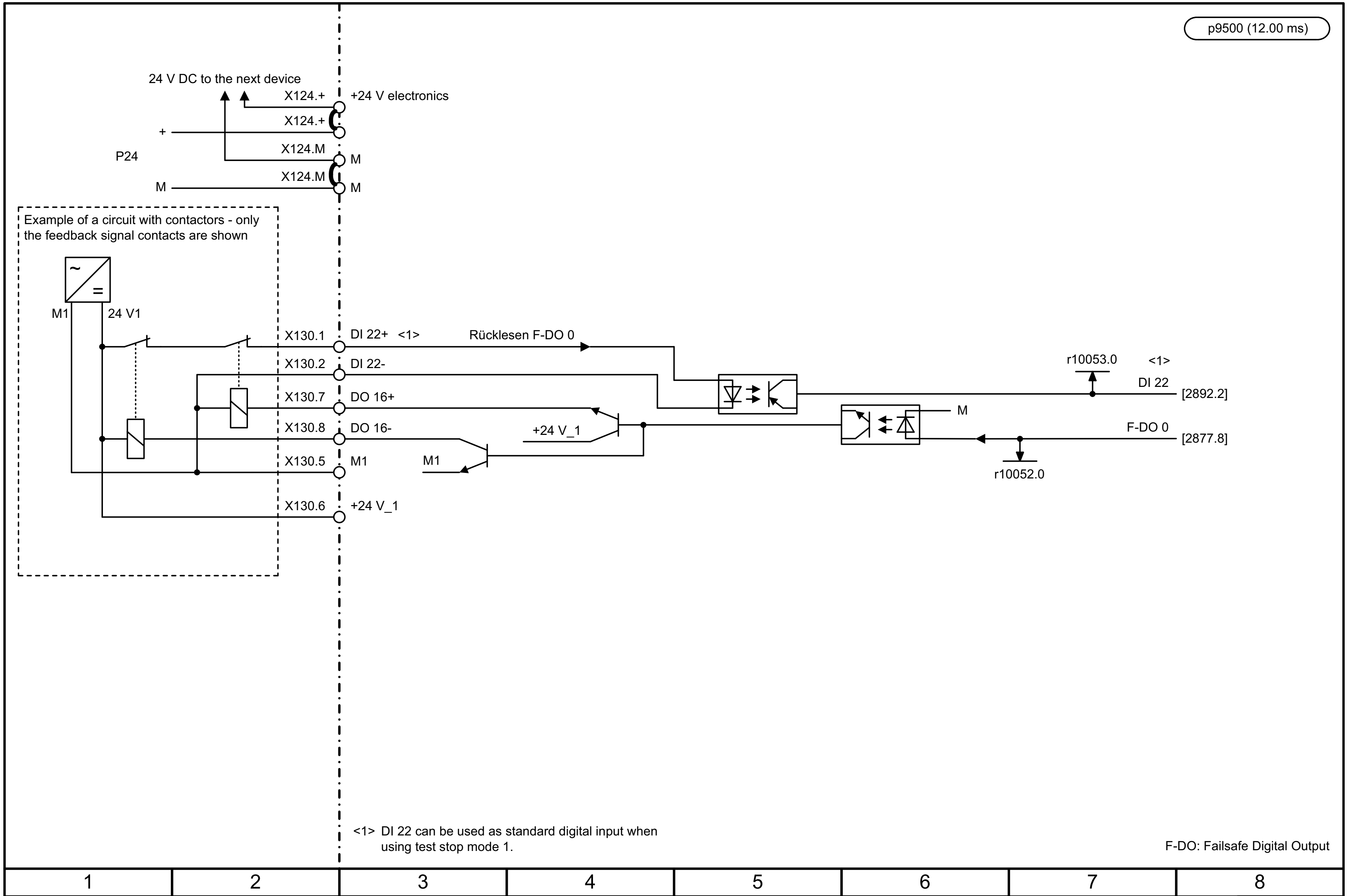
Fig. 3-132 2870 – CU310-2 (F-DI 0 ... F-DI 2)



1	2	3	4	5	6	7	8

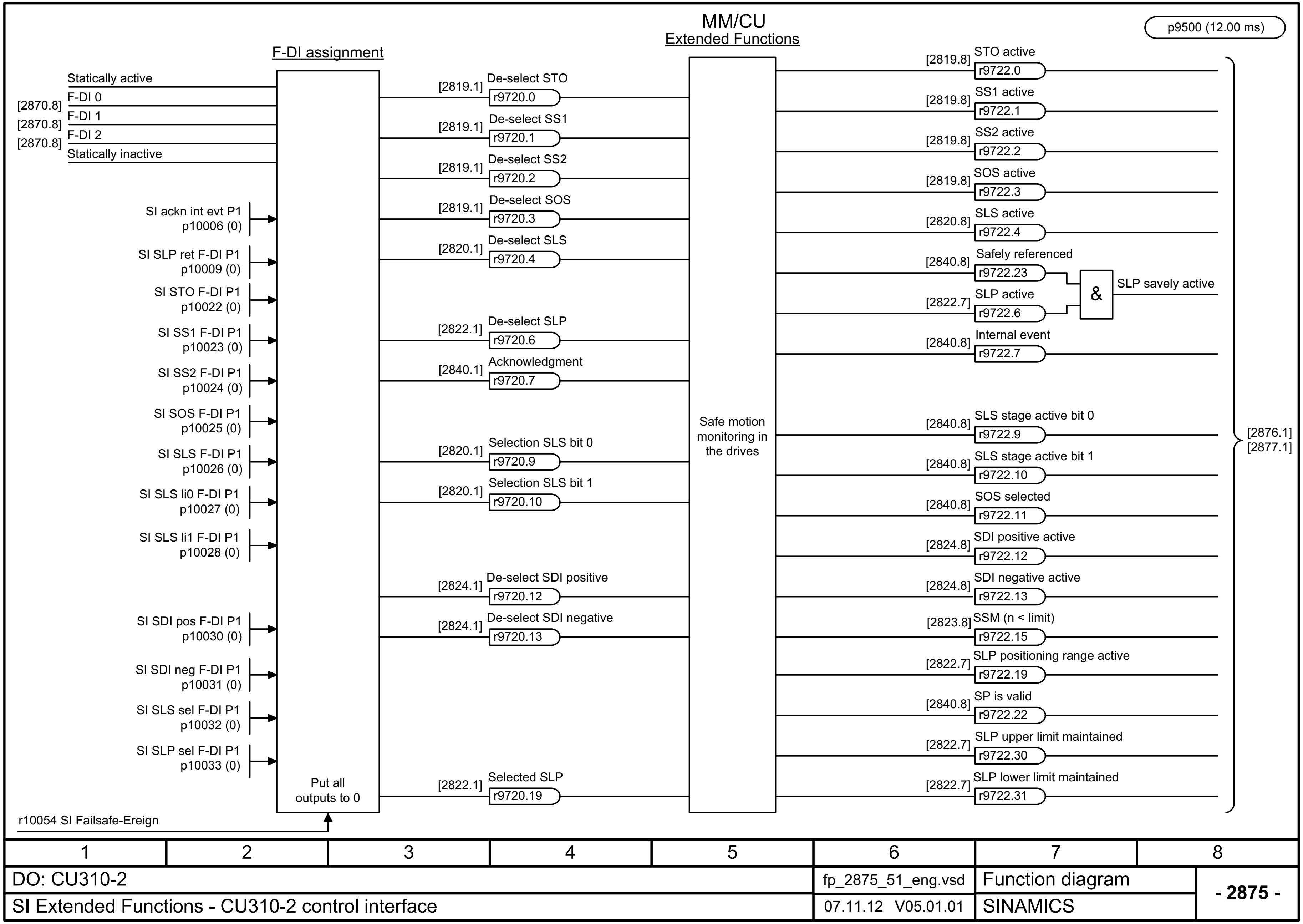
DO: CU310-2	fp_2870_51_eng.vsd	Function diagram	- 2870 -
SI Extended Functions - CU310-2 (F-DI 0 ... F-DI 2)	05.04.12 V05.01.01	SINAMICS	

Fig. 3-133 2873 – CU310-2 fail-safe digital output (F-DO 0)

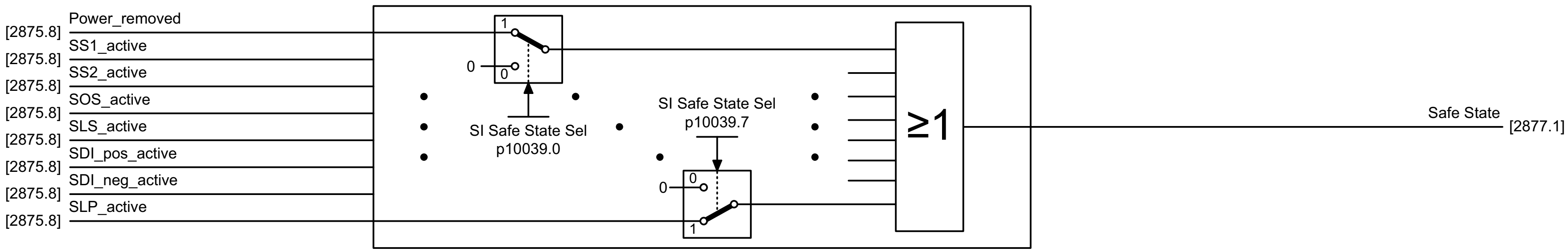


DO: CU310-2	fp_2873_51_eng.vsd	Function diagram	- 2873 -
SI Extended Functions - CU310-2 fail-safe digital output (F-DO 0)	22.11.11 V05.01.01	SINAMICS	

Fig. 3-134 2875 – CU310-2 control interface



p9500 (12.00 ms)

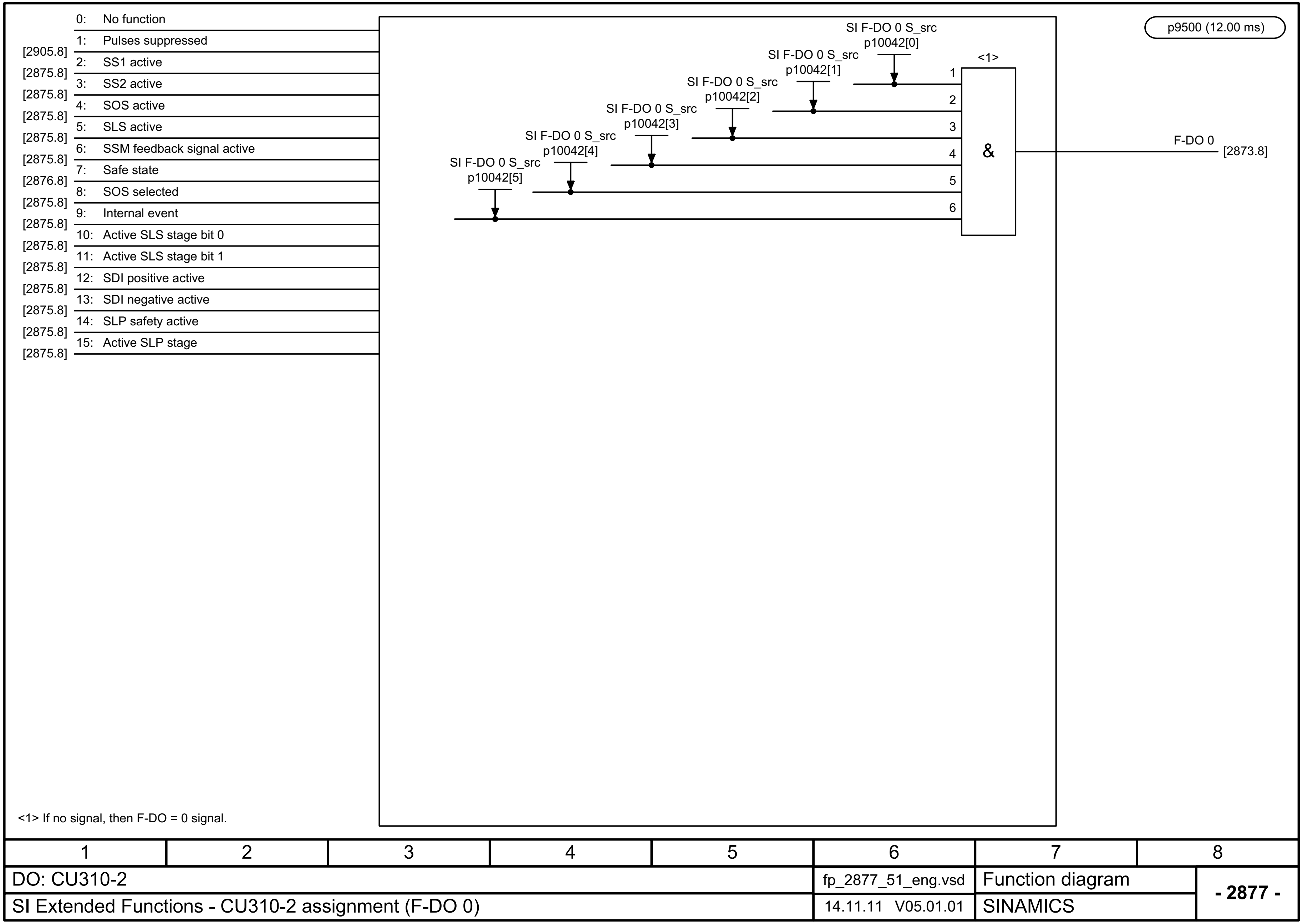


1	2	3	4	5	6	7	8

DO: CU310-2	fp_2876_51_eng.vsd	Function diagram	**- 2876 -**
SI Extended Functions - CU310-2 Safe State selection	21.09.12 V05.01.01	SINAMICS	

Fig. 3-135 2876 – CU310-2 safe state selection

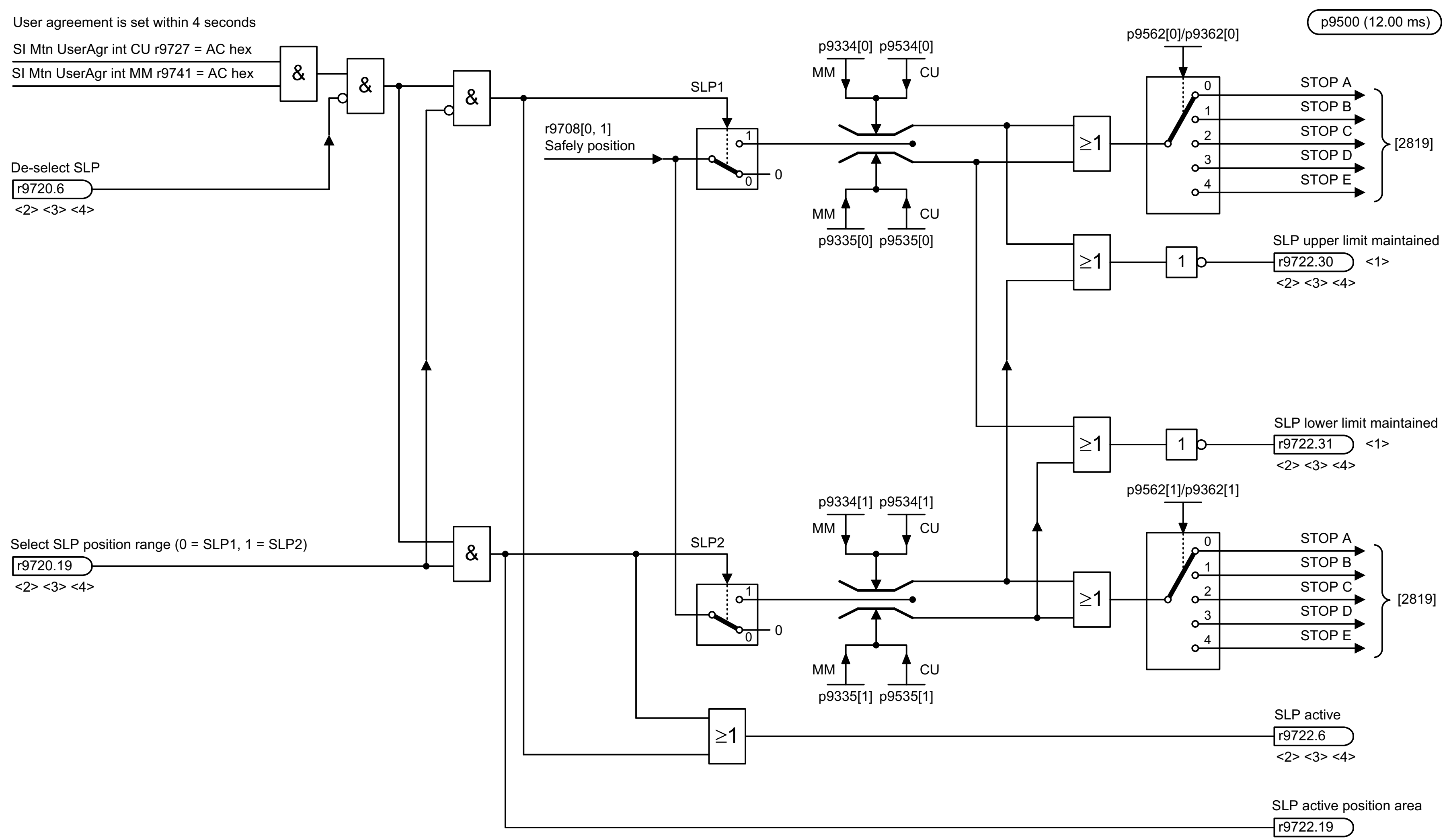
Fig. 3-136 2877 – CU310-2 assignment (F-DO 0)



3.15 Safety Integrated Advanced Functions

Function diagrams

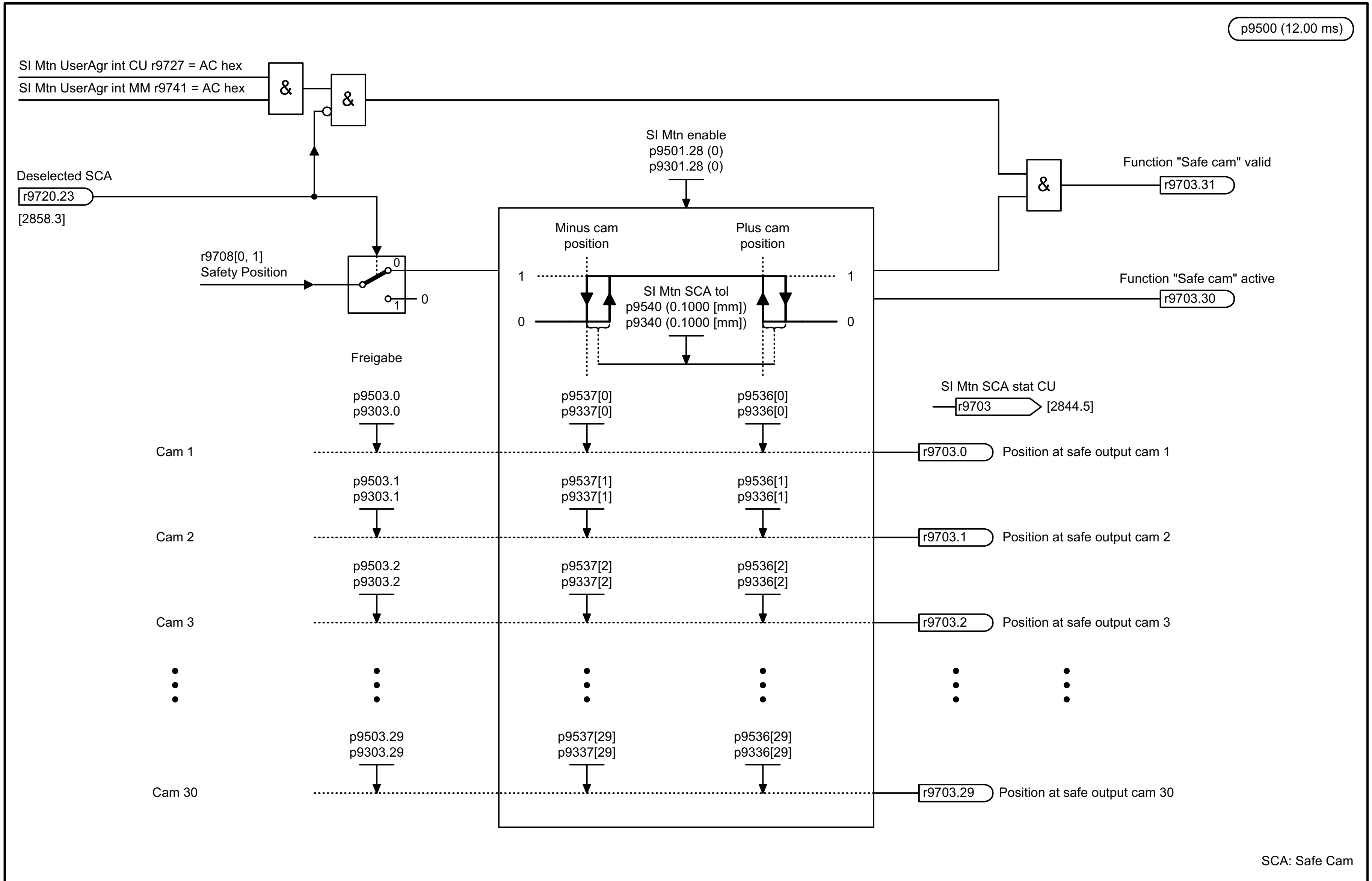
Fig. 3-137 2822 – SLP (Safely-Limited Position)



<1> When violating an SLP limit (r9722.30 or r9722.31 = 0), the user must activate the retraction logics in order to return to the permissible traversing range. Further information regarding the retraction logics is provided in the "SINAMICS Safety Integrated Function Manual".
<2> Drive via PROFIsafe [2858].
<3> Drive via onboard interface for CU310-2 [2875].
<4> Drive via TM54F [2905].

SLP: Safely-Limited Position

1	2	3	4	5	6	7	8
DO: SERVO, VECTOR					fp_2822_54_eng.vsd	Function diagram	- 2822 -
SI Advanced Functions - SLP (Safely-Limited Position)					10.10.17 V05.01.01	S120/S150/G130/G150	



1	2	3	4	5	6	7	8
DO: SERVO, VECTOR					fp_2826_54_eng.vsd	Function diagram	- 2826 -
SI Advanced Functions - SCA (Safe Cam)					10.10.17 V05.01.01	S120/S150/G130/G150	

Fig. 3-138 2826 – SCA (Safe Cam)

Fig. 3-139 2844 – S_ZSW_CAM1 safety status word Safe Cam 1

2 x p9500 (24.00 ms)

S_ZSW_CAM1 Safety status word Safe Cam 1

SI Mtn SCA stat CU r9703 → S_ZSW_CAM1 [2917.6]

Input	Bit No.	Bedeutung	Output
[2826.6]	0	**1 = Position at safe output cam 1**	r9703.0
	1	**1 = Position at safe output cam 2**	r9703.1
	2	**1 = Position at safe output cam 3**	r9703.2
	3	**1 = Position at safe output cam 4**	r9703.3
	4	**1 = Position at safe output cam 5**	
	5	**1 = Position at safe output cam 6**	
	6	**1 = Position at safe output cam 7**	
...	7	**1 = Position at safe output cam 8**	
	8	**1 = Position at safe output cam 9**	
	9	**1 = Position at safe output cam 10**	
	10	**1 = Position at safe output cam 11**	
	11	**1 = Position at safe output cam 12**	
	12	**1 = Position at safe output cam 13**	
	13	**1 = Position at safe output cam 14**	
	14	**1 = Position at safe output cam 15**	
[2826.6]	15	**1 = Position at safe output cam 16**	...
[2826.6]	16	**1 = Position at safe output cam 17**	
	17	**1 = Position at safe output cam 18**	
	18	**1 = Position at safe output cam 19**	
	19	**1 = Position at safe output cam 20**	
	20	**1 = Position at safe output cam 21**	
...	21	**1 = Position at safe output cam 22**	
	22	**1 = Position at safe output cam 23**	
	23	**1 = Position at safe output cam 24**	
	24	**1 = Position at safe output cam 25**	
	25	**1 = Position at safe output cam 26**	
	26	**1 = Position at safe output cam 27**	
[2826.6]	27	**1 = Position at safe output cam 28**	
[2826.6]	28	**1 = Position at safe output cam 29**	r9703.28
[2826.6]	29	**1 = Position at safe output cam 30**	r9703.29
[2826.8]	30	**1 = Function "Safe cam" active**	r9703.30
[2826.8]	31	**1 = Function "Safe cam" valid**	r9703.31

SCA: Safe Cam

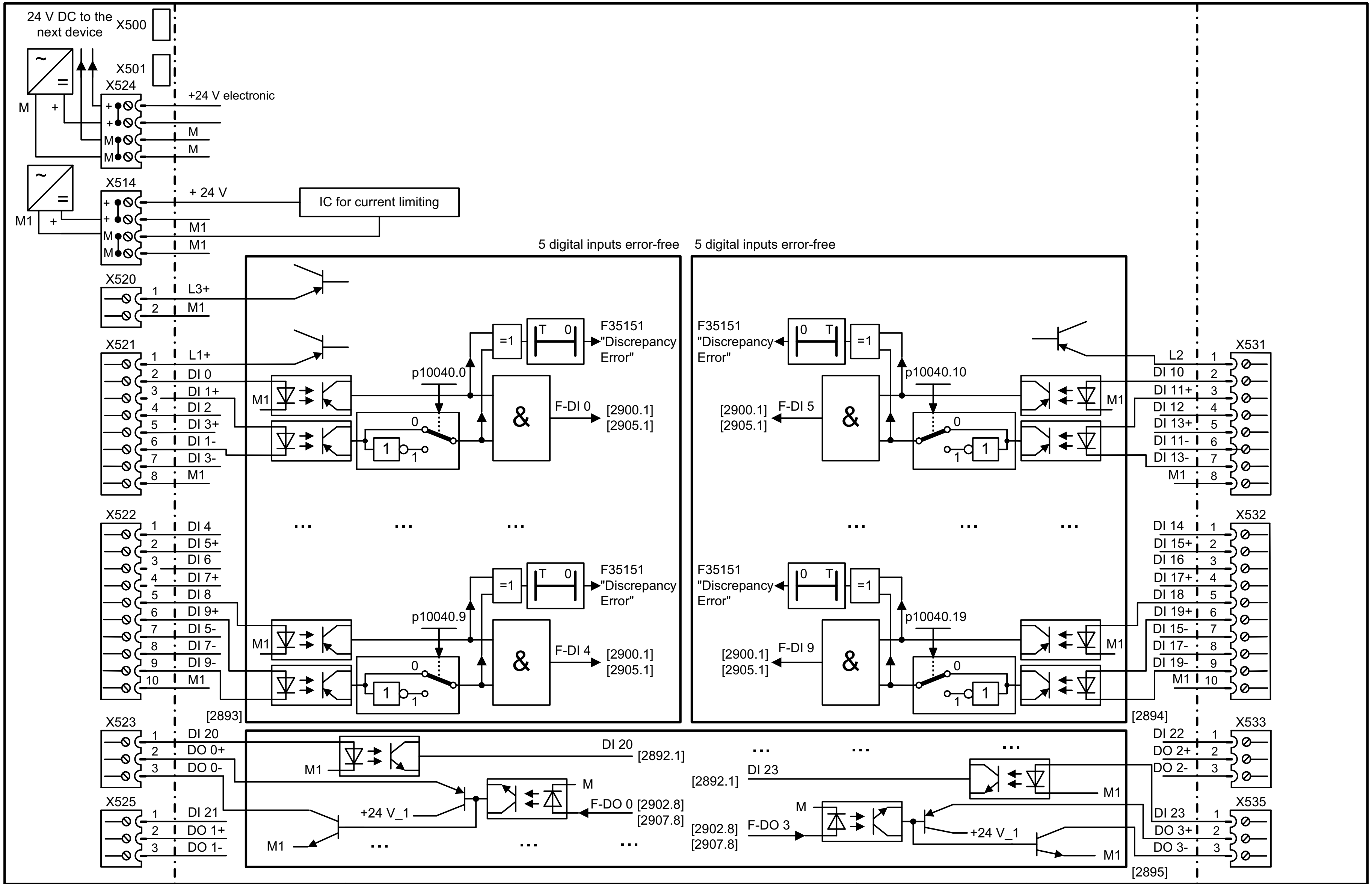
1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_2844_54_eng.vsd	Function diagram	**- 2844 -**
SI Advanced Functions - S_ZSW_CAM1 Safety status word Safe Cam 1	24.10.17 V05.01.01	S120/S150/G130/G150	

3.16 Safety Integrated TM54F

Function diagrams

Fig. 3-140 2890 – Overview



1	2	3	4	5	6	7	8

DO: TM54F_MA, TM54F_SL | fp_2890_51_eng.vsd | Function diagram | - 2890 -

SI TM54F - Overview | 06.07.15 V05.01.01 | SINAMICS

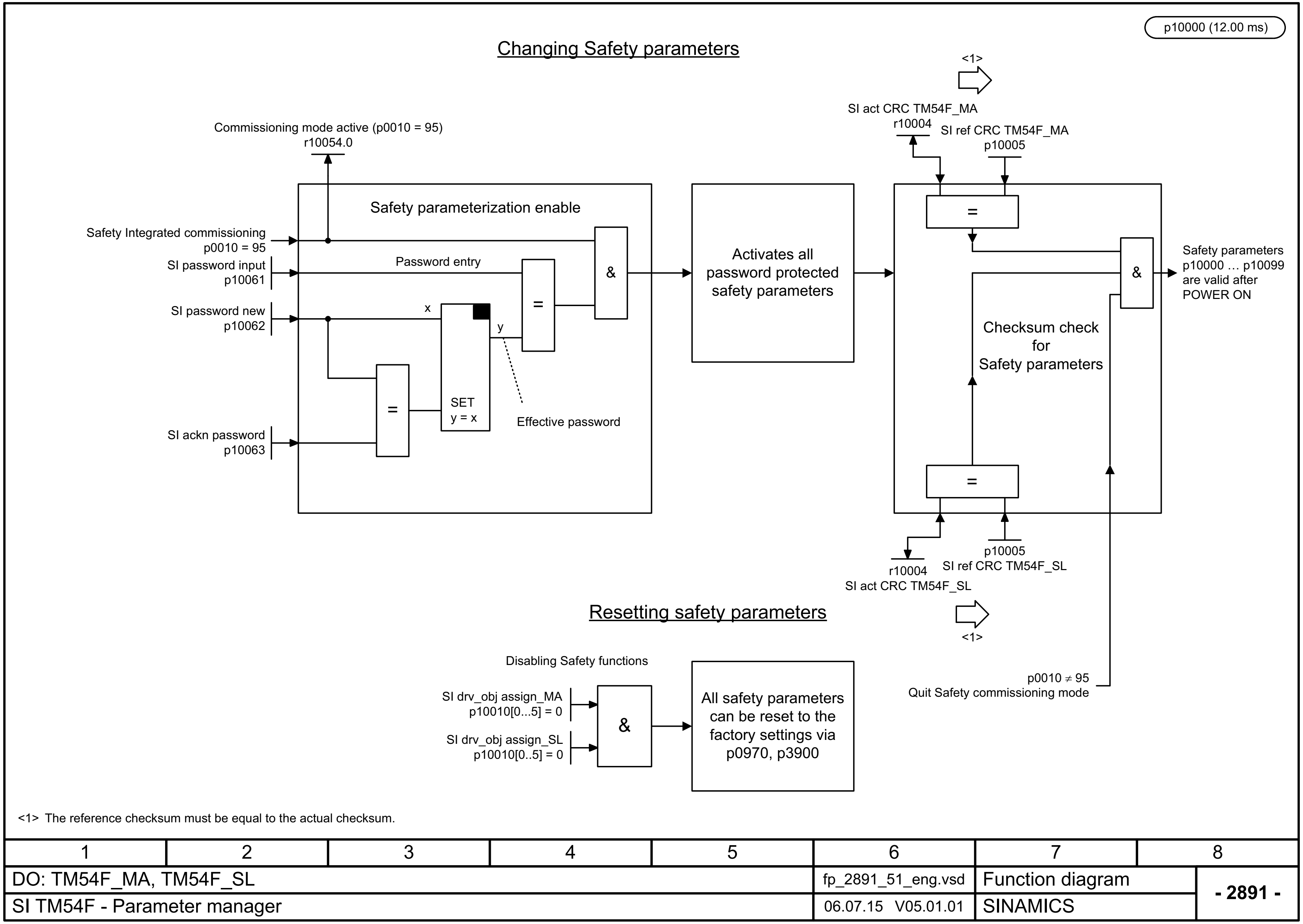
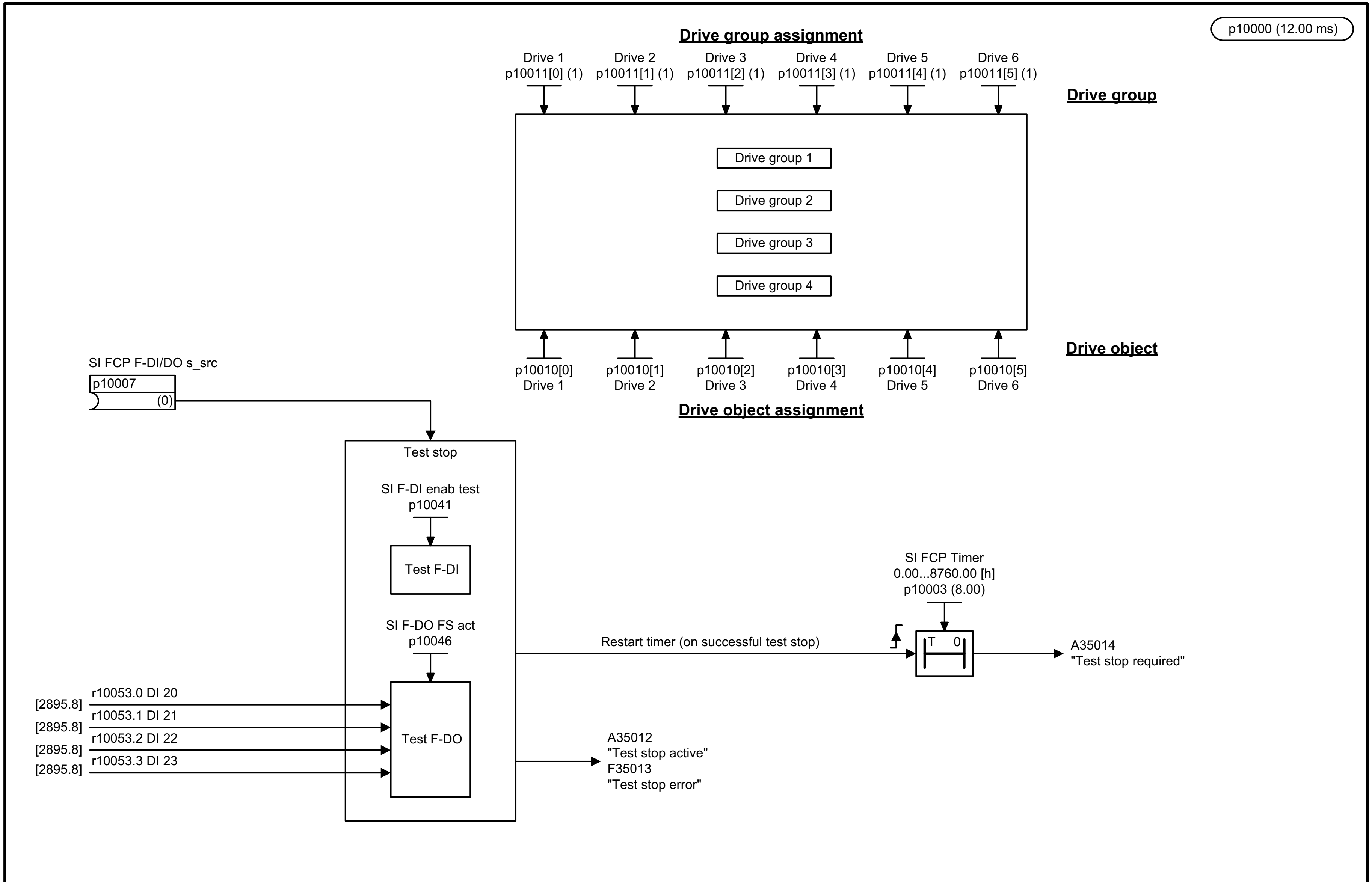
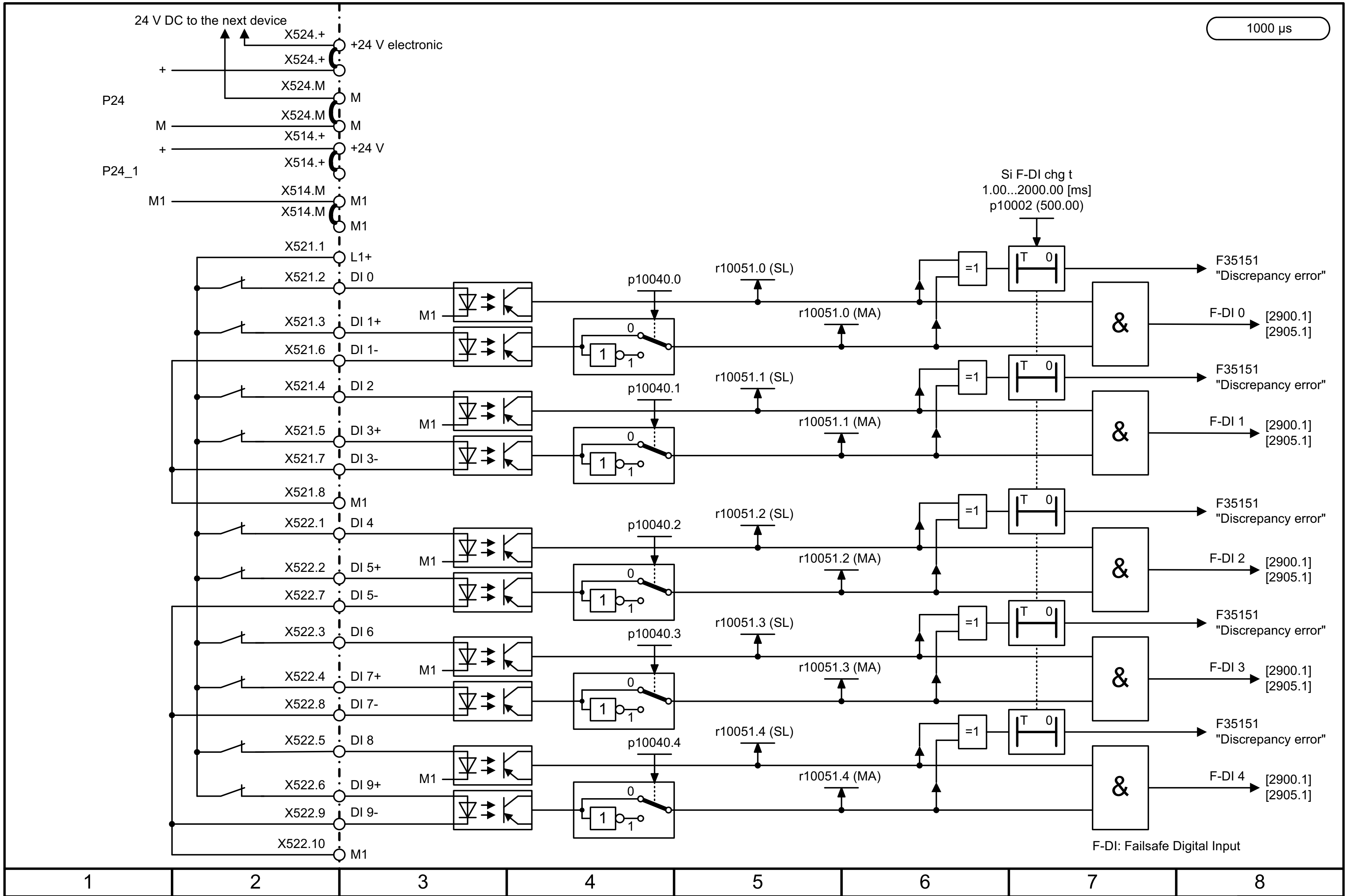


Fig. 3-141 2891 – Parameter manager

Fig. 3-142 2892 – Configuration, F-DI/F-DO test



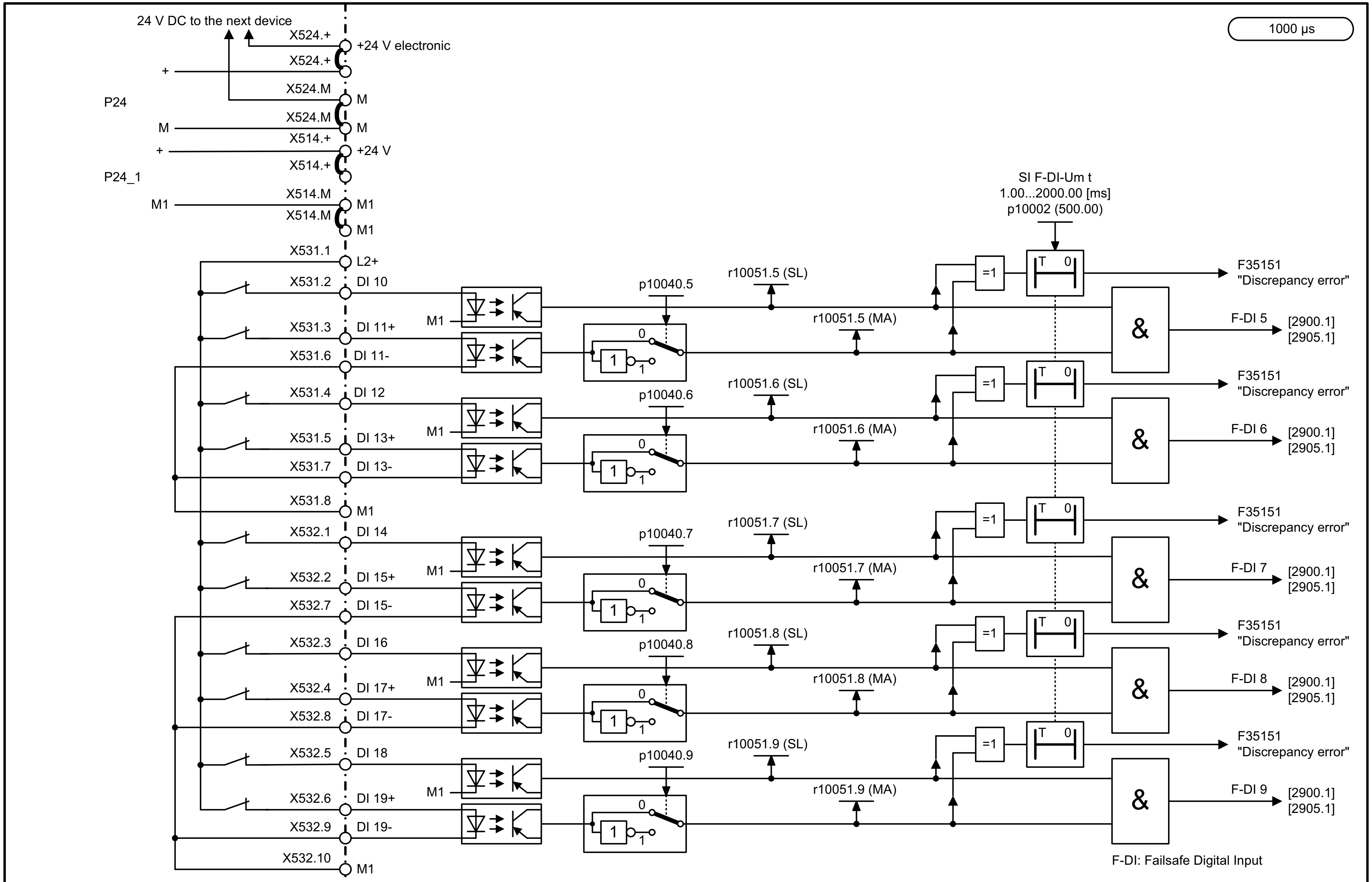
1	2	3	4	5	6	7	8
DO: TM54F_MA, TM54F_SL					fp_2892_51_eng.vsd	Function diagram	- 2892 -
SI Extended Functions - TM54F configuration, F-DI/F-DO test					06.07.15 V05.01.01	SINAMICS	



DO: TM54F_MA, TM54F_SL	fp_2893_51_eng.vsd	Function diagram	- 2893 -
SI TM54F - Failsafe Digital Input (F-DI 0 ... F-DI 4)	06.07.15 V05.01.01	SINAMICS	

Fig. 3-143 2893 – Fail-safe digital inputs (F-DI 0 ... F-DI 4)

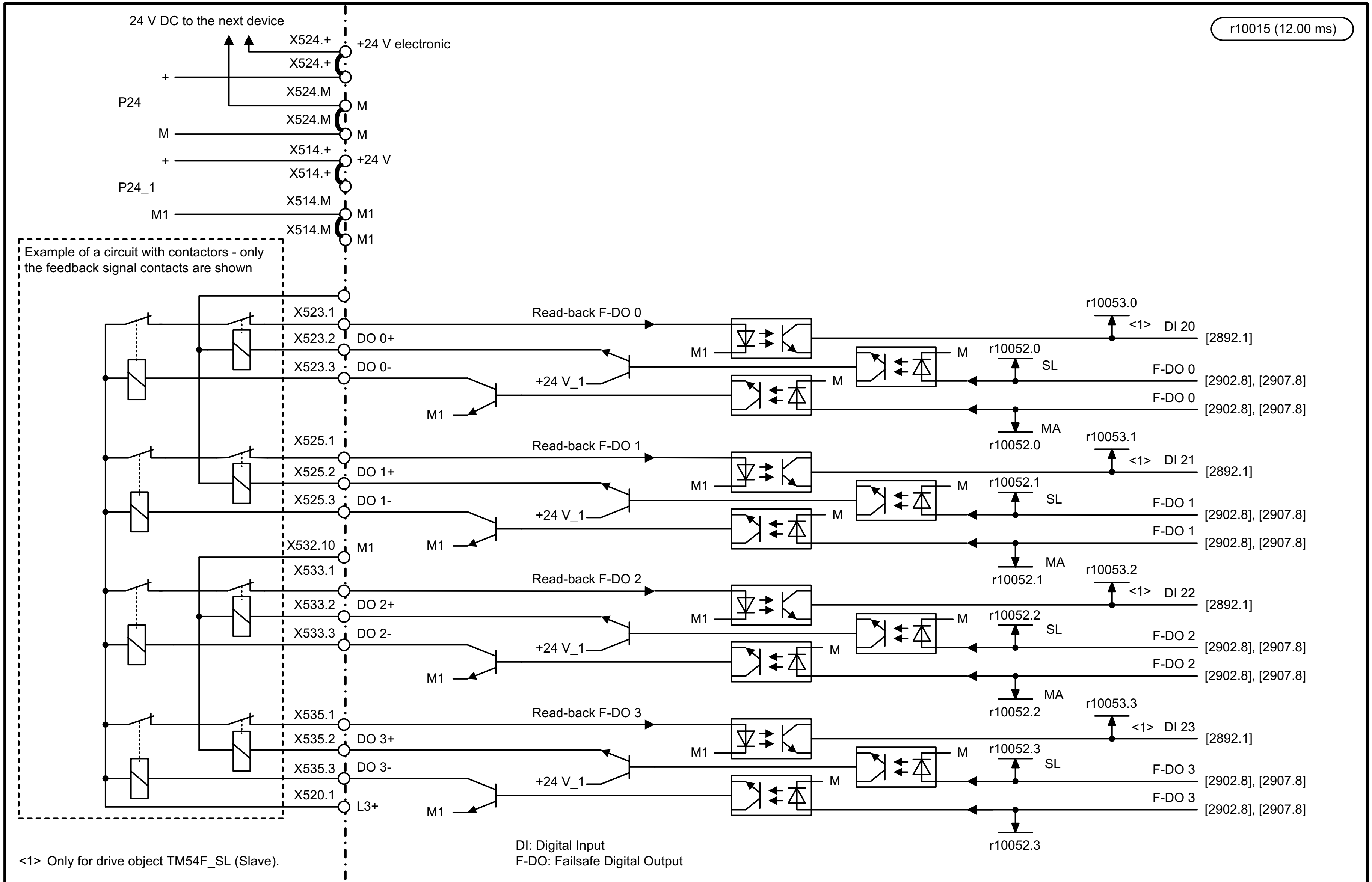
Fig. 3-144 2894 – Fail-safe digital inputs (F-DI 5 ... F-DI 9)



1	2	3	4	5	6	7	8

DO: TM54F_MA, TM54F_SL	fp_2894_51_eng.vsd	Function diagram	- 2894 -
SI TM54F - Failsafe Digital Input (F-DI 5 ... F-DI 9)	06.07.15 V05.01.01	SINAMICS	

r10015 (12.00 ms)



1	2	3	4	5	6	7	8

DO: TM54F_MA, TM54F_SL	fp_2895_51_eng.vsd	Function diagram	- 2895 -
SI TM54F - Failsafe Digital Output (F-DO 0 ... F-DO 3), Digital Input (DI 20 ... DI 23)	06.07.15 V05.01.01	SINAMICS	

Fig. 3-145 2895 – Fail-safe digital outputs (F-DO 0 ... F-DO 3), digital inputs (DI 20 ... DI 23)

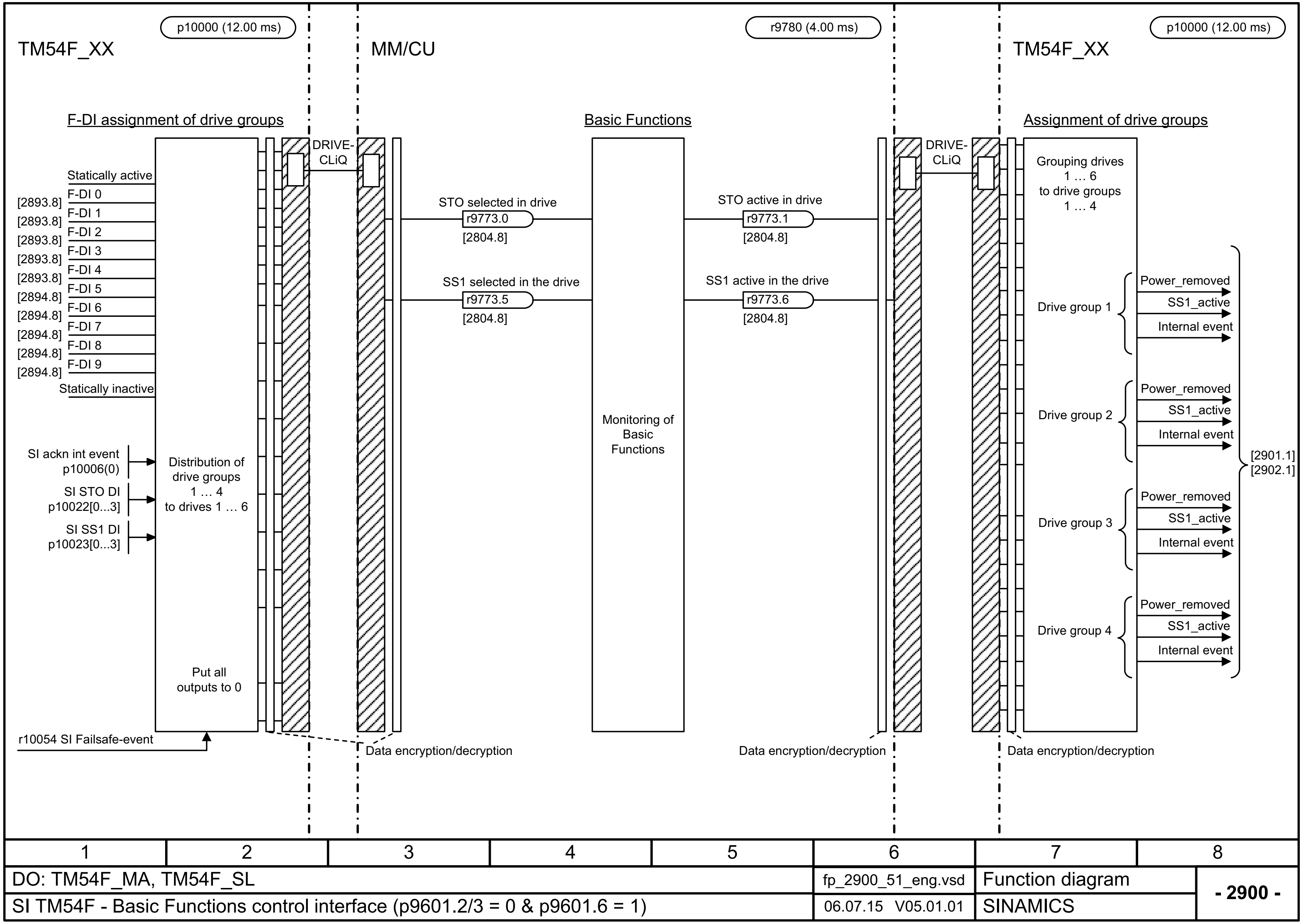


Fig. 3-146 2900 – Basic Functions control interface (p9601.2/3 = 0 & p9601.6 = 1)

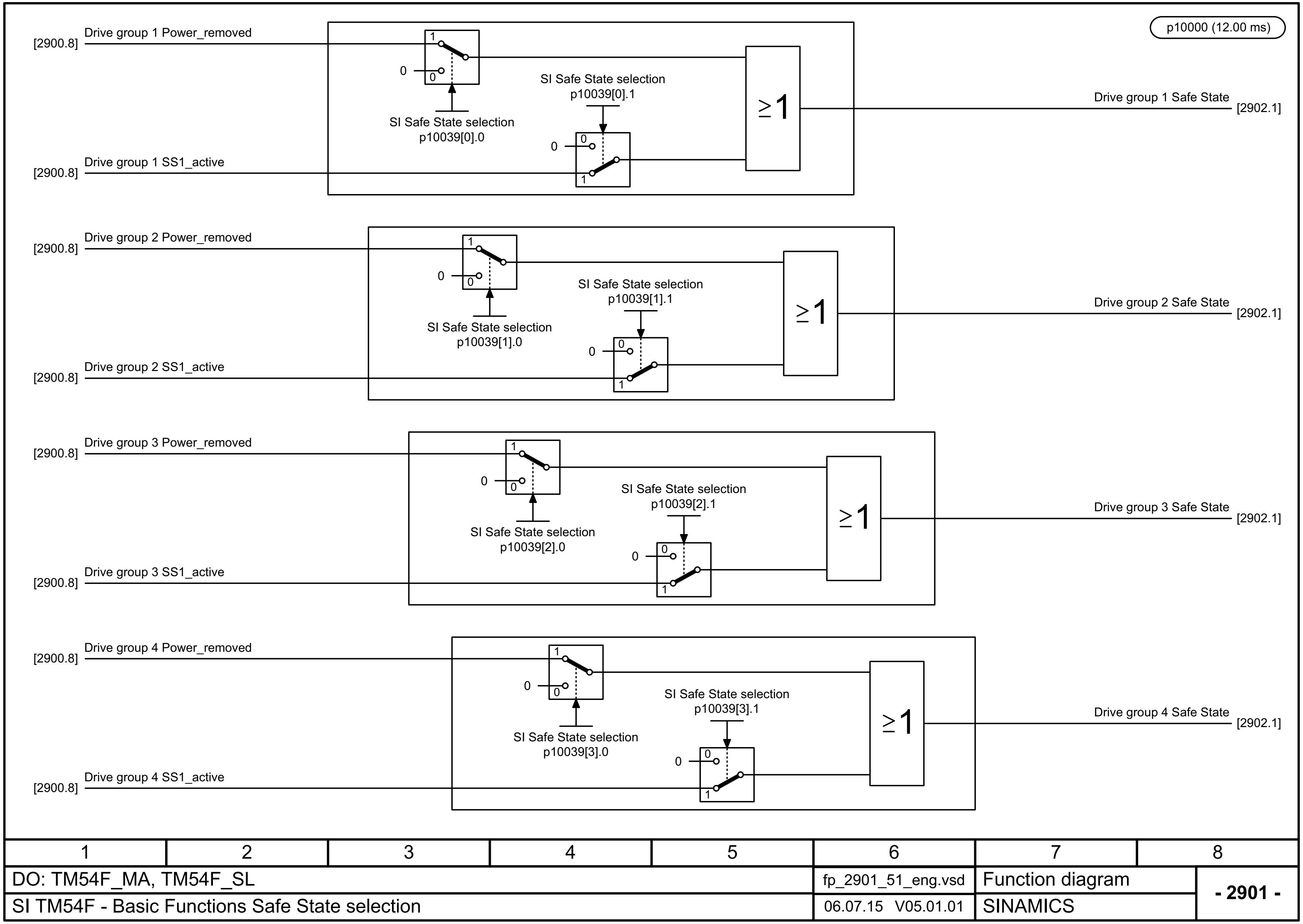
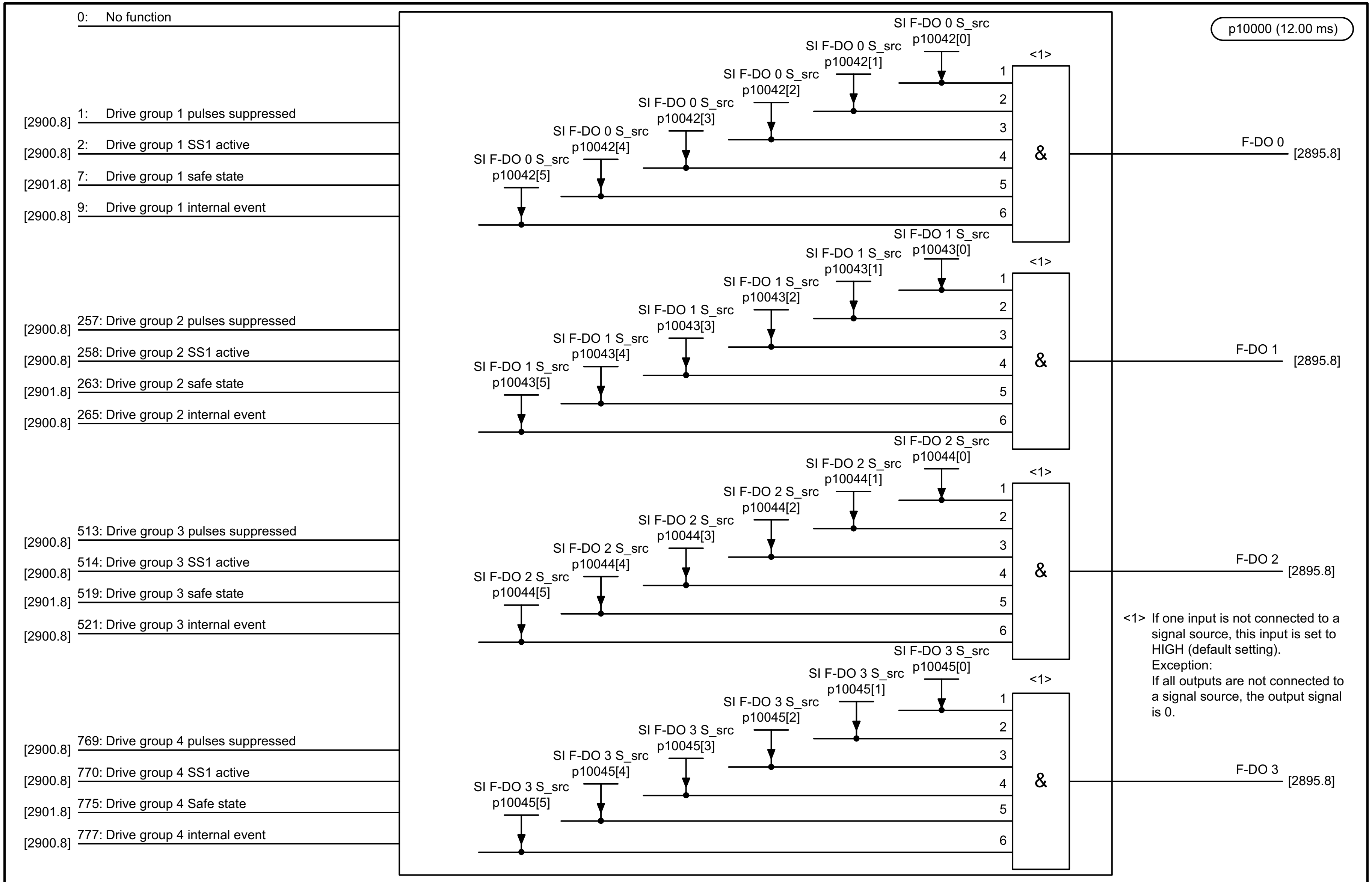


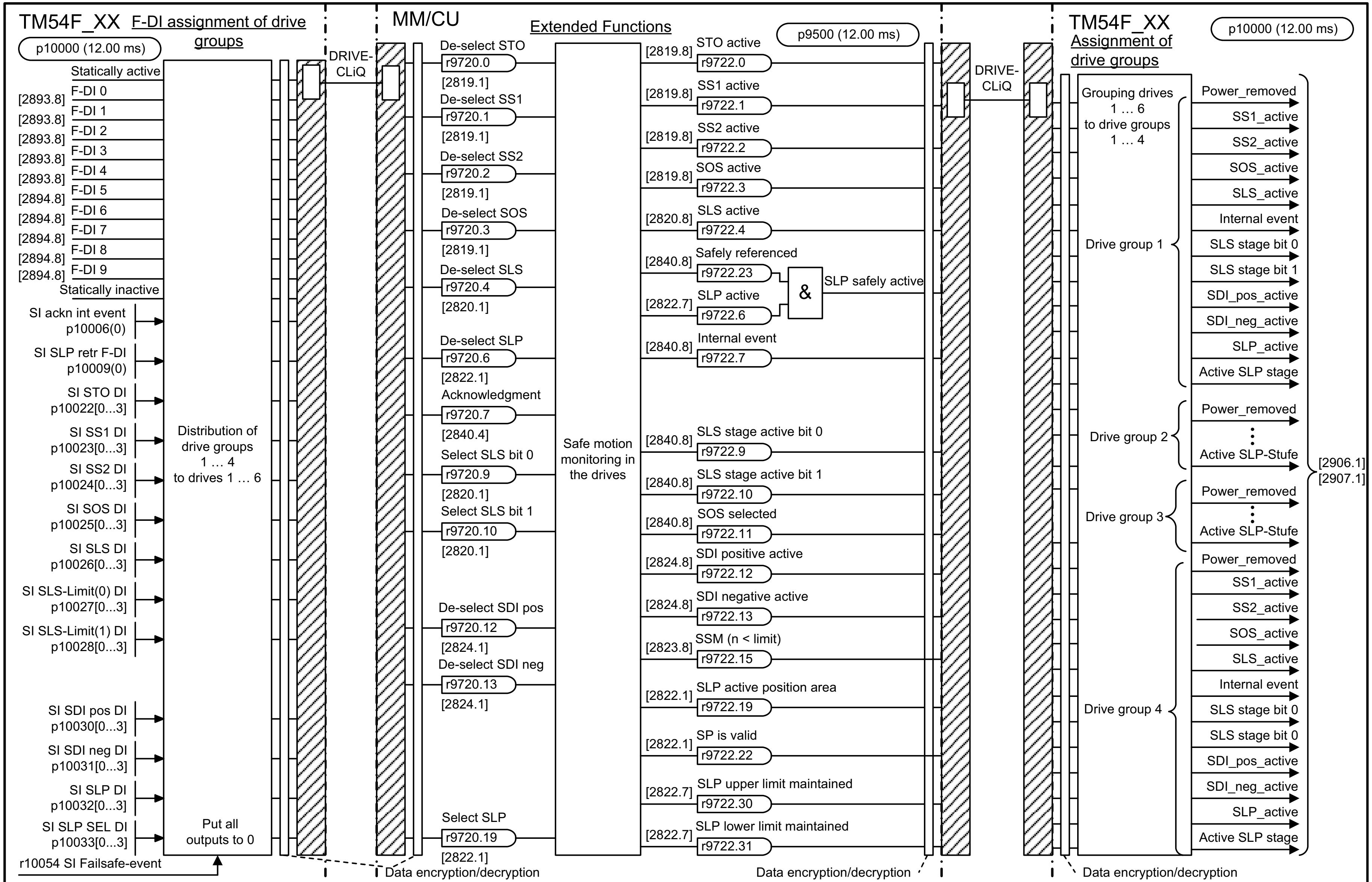
Fig. 3-147 2901 – Basic Functions safe state selection

Fig. 3-148 2902 – Basic Functions assignment (F-DO 0 ... F-DO 3)



1	2	3	4	5	6	7	8

DO: TM54F_MA, TM54F_SL	fp_2902_51_eng.vsd	Function diagram	- 2902 -
SI TM54F - Basic Safety assignment (F-DO 0 ... F-DO 3)	06.07.15 V05.01.01	SINAMICS	

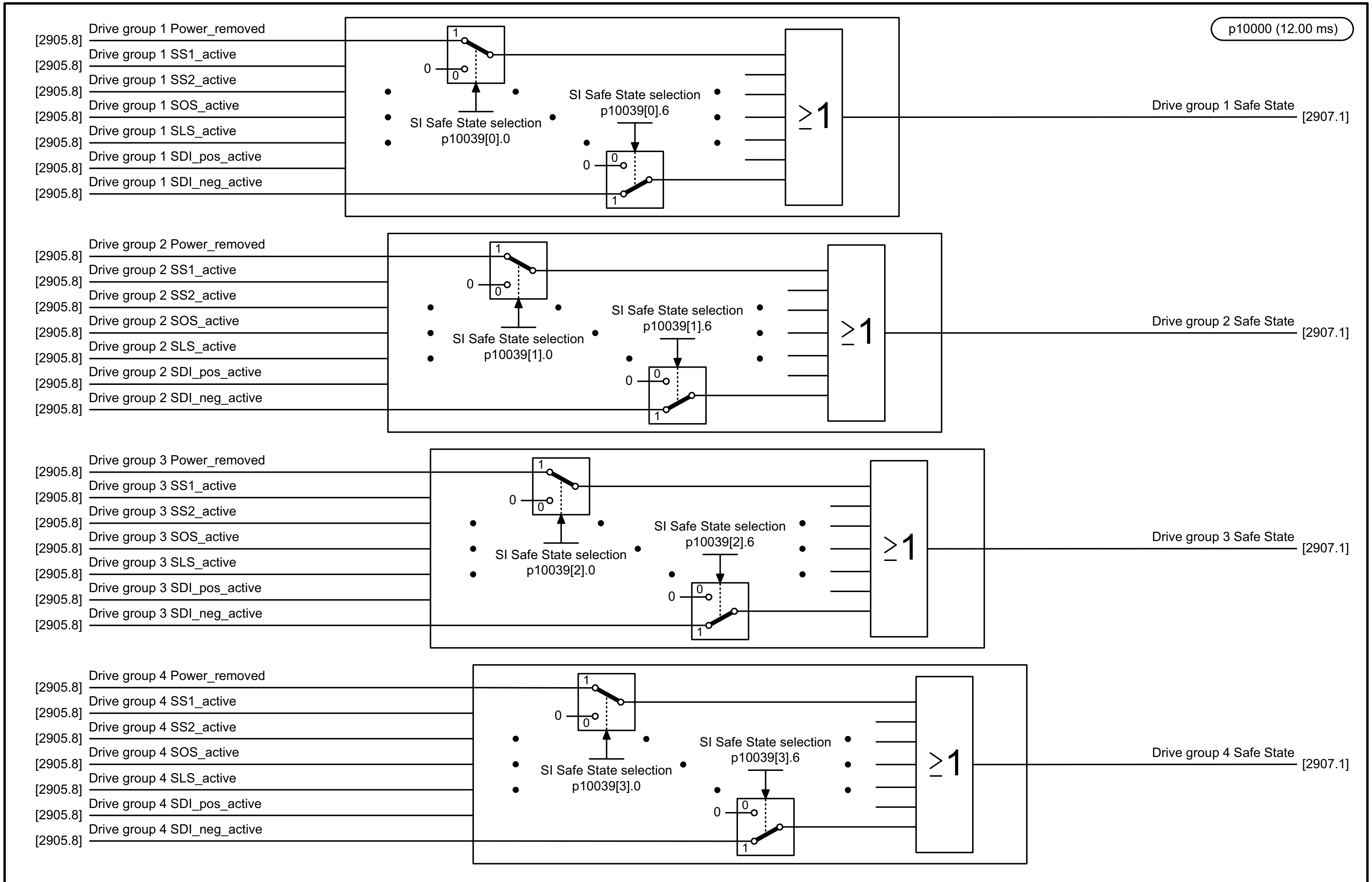


1	2	3	4	5	6	7	8

DO: TM54F_MA, TM54F_SL	fp_2905_51_eng.vsd	Function diagram	- 2905 -
SI TM54F - Extended Functions control interface (p9601.2 = 1 & p9601.3 = 0)	06.07.15 V05.01.01	SINAMICS	

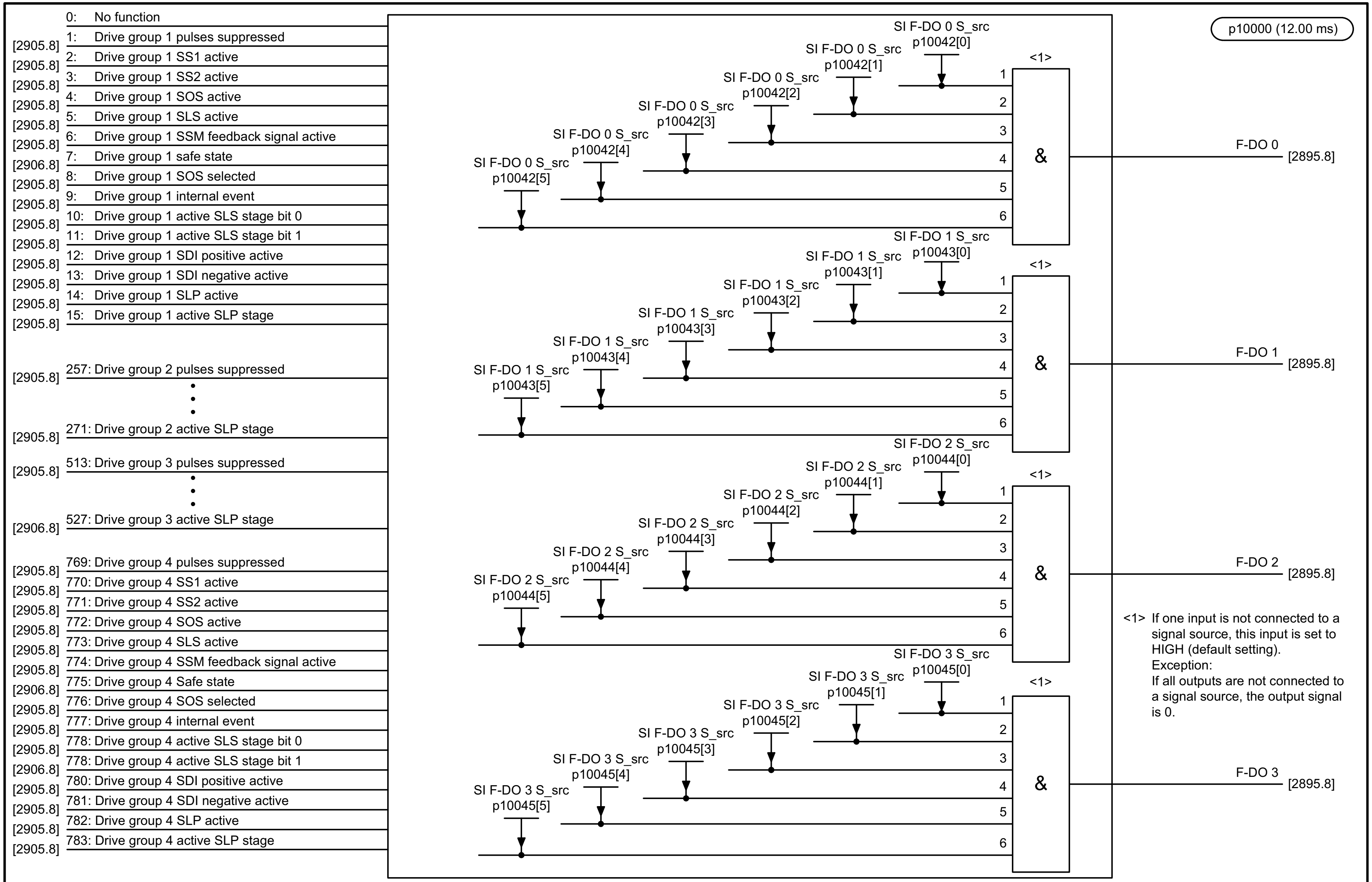
Fig. 3-149 2905 – Extended Functions control interface (p9601.2 = 1 & p9601.3 = 0)

Fig. 3-150 2906 – Extended Functions safe state selection



1	2	3	4	5	6	7	8

DO: TM54F_MA, TM54F_SL	fp_2906_51_eng.vsd	Function diagram	- 2906 -
SI TM54F - Extended Functions Safe State selection	06.07.15 V05.01.01	SINAMICS	



1	2	3	4	5	6	7	8

DO: TM54F_MA, TM54F_SL	fp_2907_51_eng.vsd	Function diagram	- 2907 -
SI TM54F - Extended Functions assignment (F-DO 0 ... F-DO 3)	06.07.15 V05.01.01	SINAMICS	

3.17 Safety Integrated PROFIsafe

Function diagrams

Fig. 3-152 2915 – Standard telegrams

SI Ps telegr par p60022 | SI Ps telegr CU p9611 | SI Ps telegr MM p9811

<1>

Only at Basic Functions: 2 x r9780
Only at Extended Functions: 2 x p9500 (24.00 ms)

Interconnection is made according to					
Telegram	30		31		
Appl. class	-		-		
PZD1	S_STW1	S_ZSW1	S_STW2	S_ZSW2	
PZD2					
PZD3					
PZD4					
PZD5					
PZD6					
PZD7					
PZD8					
PZD9					
PZD10					
PZD11					
PZD12					
PZD13					
PZD14					
PZD15					
PZD16					
PZD17					
PZD18					
PZD19					
PZD20					
PZD21					
PZD22					
PZD23					
PZD24					
PZD25					
PZD26					
PZD27					
PZD28					
PZD29					
PZD30					
PZD31					
PZD32		Receive telegram from PROFIBUS/PROFINET	Send telegram to PROFIBUS/PROFINET	Receive telegram from PROFIBUS/PROFINET	Send telegram to PROFIBUS/PROFINET

<1> Depending on the hardware and software version of the drive product used (SINAMICS G, SINAMICS S, firmware version, ...), only subsets of the Safety Integrated functions (SI functions) listed may be configured.
The current Safety Integrated Function Manual describes which SI functions are supported by which drive products.

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_2915_54_eng.vsd	Function diagram	- 2915 -
SI PROFIsafe - Standard telegrams	04.12.12 V05.01.01	S120/S150/G130/G150	

Fig. 3-153 2917 – Manufacturer-specific telegrams

Ps telegr sel p60022 | Ps telegr CU p9611 | Ps telegr MM p9811 → <1>

Only at Basic Functions: 2 x r9780

Only at Extended Functions: 2 x p9500 (24.00 ms)

Interconnection is made according to							
Telegram	901		902		903		
Application class	-		-		-		
PZD1	S_STW2	S_ZSW2	S_STW2	S_ZSW2	S_STW2	S_ZSW2	
PZD2							
PZD3	S_SLS_LIMIT_A	S_SLS_LIMIT_A_ACTIVE	S_SLS_LIMIT_A	S_SLS_LIMIT_A_ACTIVE	S_SLS_LIMIT_A	S_ZSW_CAM1	
PZD4		S_CYCLE_COUNT		S_CYCLE_COUNT			
PZD5		S_XIST16		S_XIST32		S_SLS_LIMIT_A_ACTIVE	
PZD6							
PZD7							
PZD8							
PZD9							
PZD10							
PZD11							
PZD12							
PZD13							
PZD14							
PZD15							
PZD16							
PZD17							
PZD18							
PZD19							
PZD20							
PZD21							
PZD22							
PZD23							
PZD24	Receive telegram from PROFIBUS/PROFINET	Send telegram to PROFIBUS/PROFINET	Receive telegram from PROFIBUS/PROFINET	Send telegram to PROFIBUS/PROFINET	Receive telegram from PROFIBUS/PROFINET	Send telegram to PROFIBUS/PROFINET	
PZD25							
PZD26							
PZD27							
PZD28							
PZD29							
PZD30							
PZD31							
PZD32							

<1> Depending on the hardware and software version of the drive product used (SINAMICS G, SINAMICS S, firmware version, ...), only subsets of the Safety Integrated functions (SI functions) listed may be configured.
The current Safety Integrated Function Manual describes which SI functions are supported by which drive products.

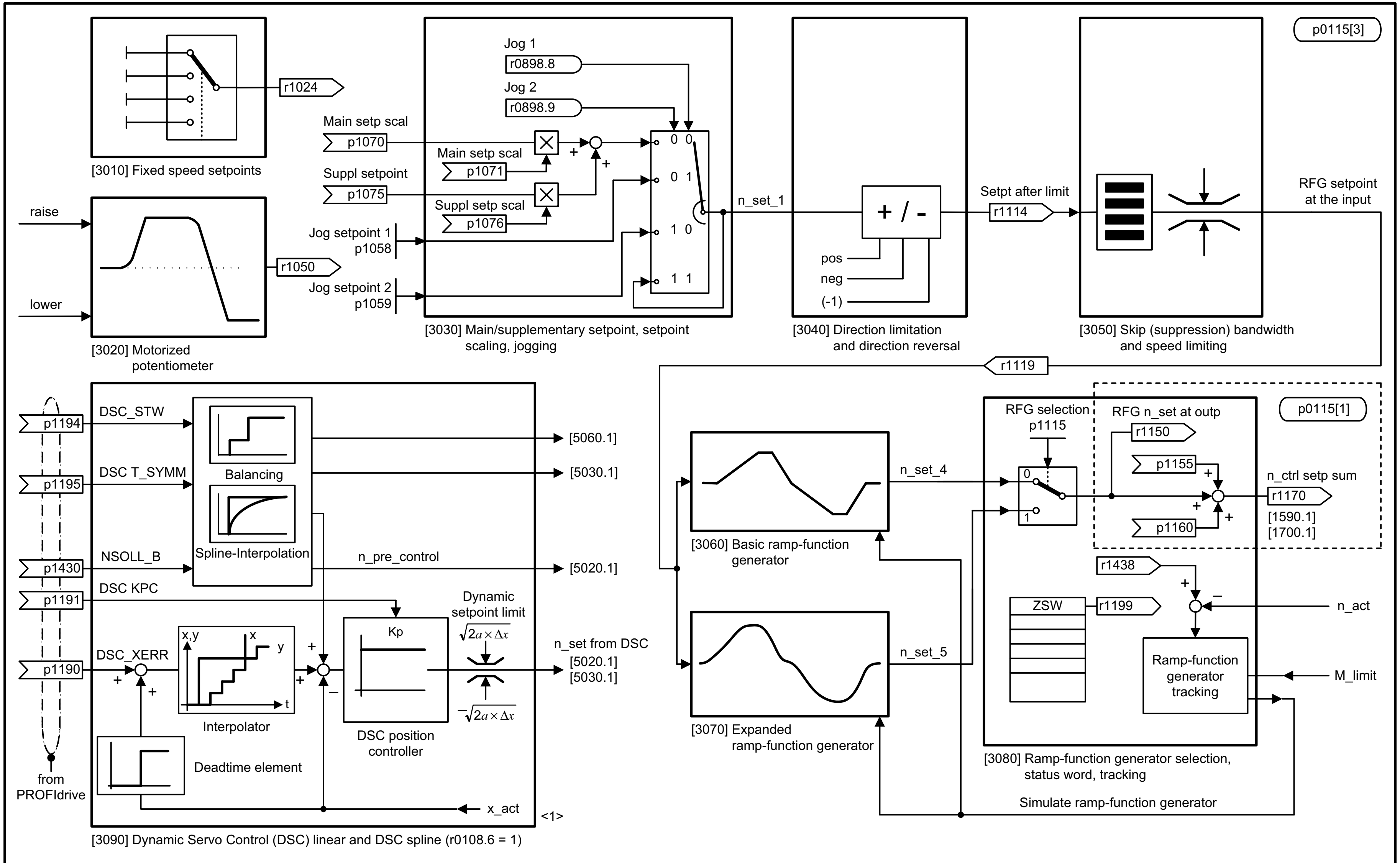
1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_2917_54_eng.vsd	Function diagram	- 2917 -
SI PROFIsafe - Manufacturer-specific telegrams	12.10.16 V05.01.01	S120/S150/G130/G150	

3.18 Setpoint channel

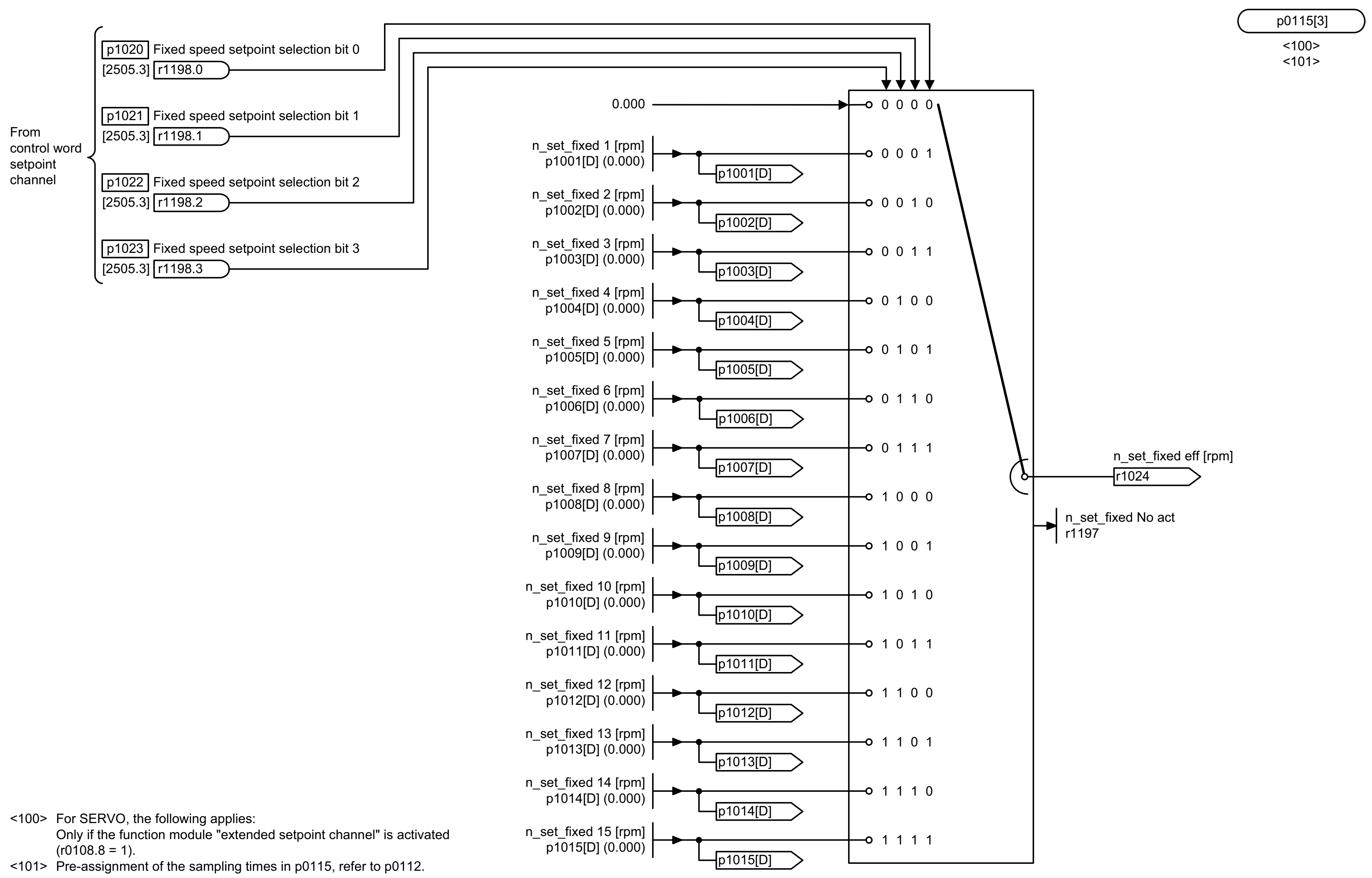
Function diagrams

Fig. 3-154 3001 – Overview



<1> Only for SERVO.

1	2	3	4	5	6	7	8
DO: SERVO, VECTOR, VECTOR3P, VECTORGL, VECTORM2C, VECTORMV, VECTORSL					fp_3001_51_eng.vsd	Function diagram	- 3001 -
Setpoint channel - Overview					16.10.13 V05.01.01	SINAMICS	



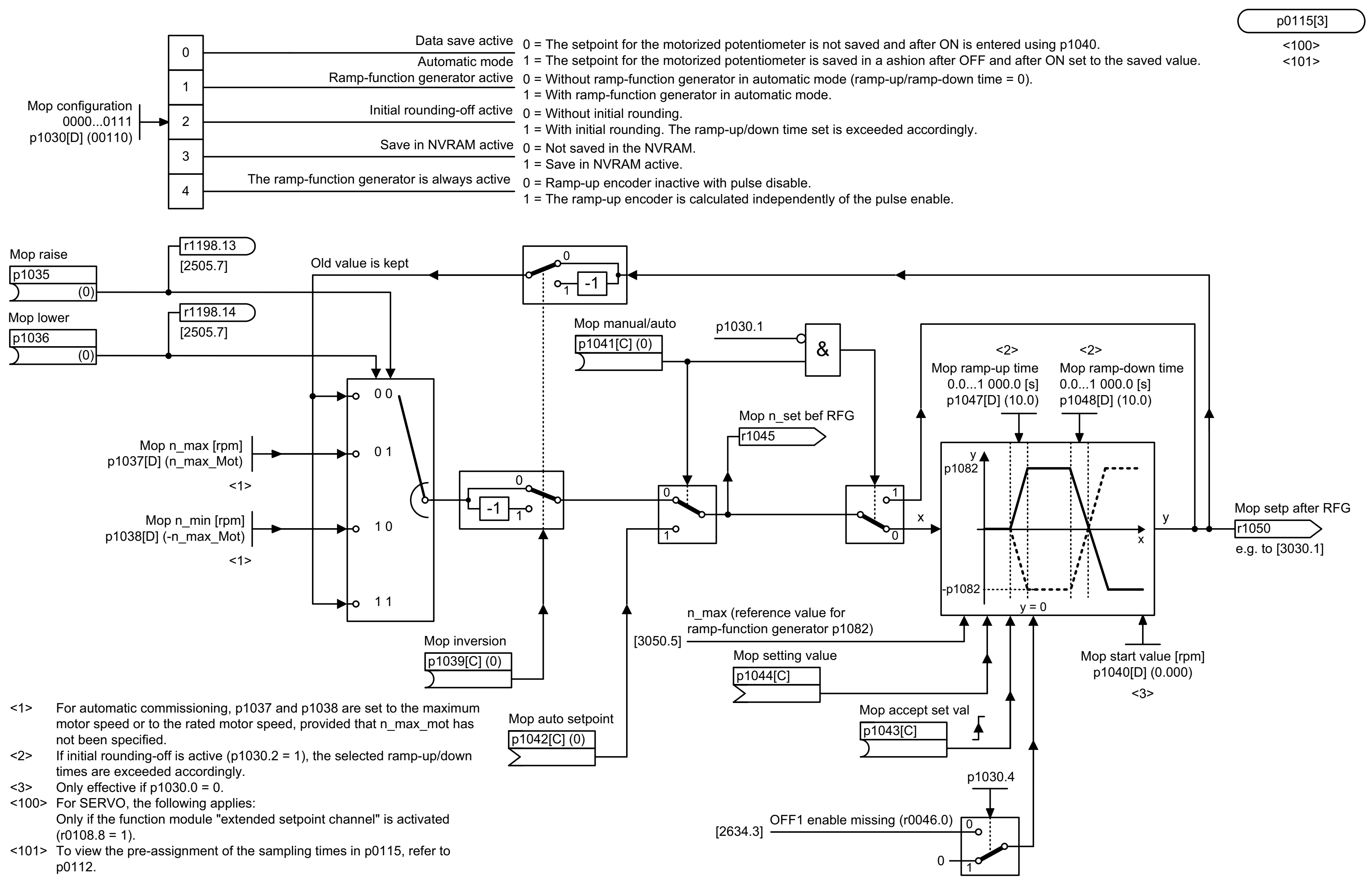
<100> For SERVO, the following applies:
Only if the function module "extended setpoint channel" is activated (r0108.8 = 1).

<101> Pre-assignment of the sampling times in p0115, refer to p0112.

1	2	3	4	5	6	7	8
DO: SERVO, VECTOR, VECTOR3P, VECTORGL, VECTORM2C, VECTORMV, VECTORSL					fp_3010_51_eng.vsd	Function diagram	- 3010 -
Setpoint channel - Fixed speed setpoints					16.10.13 V05.01.01	SINAMICS	

Fig. 3-155 3010 – Fixed speed setpoints

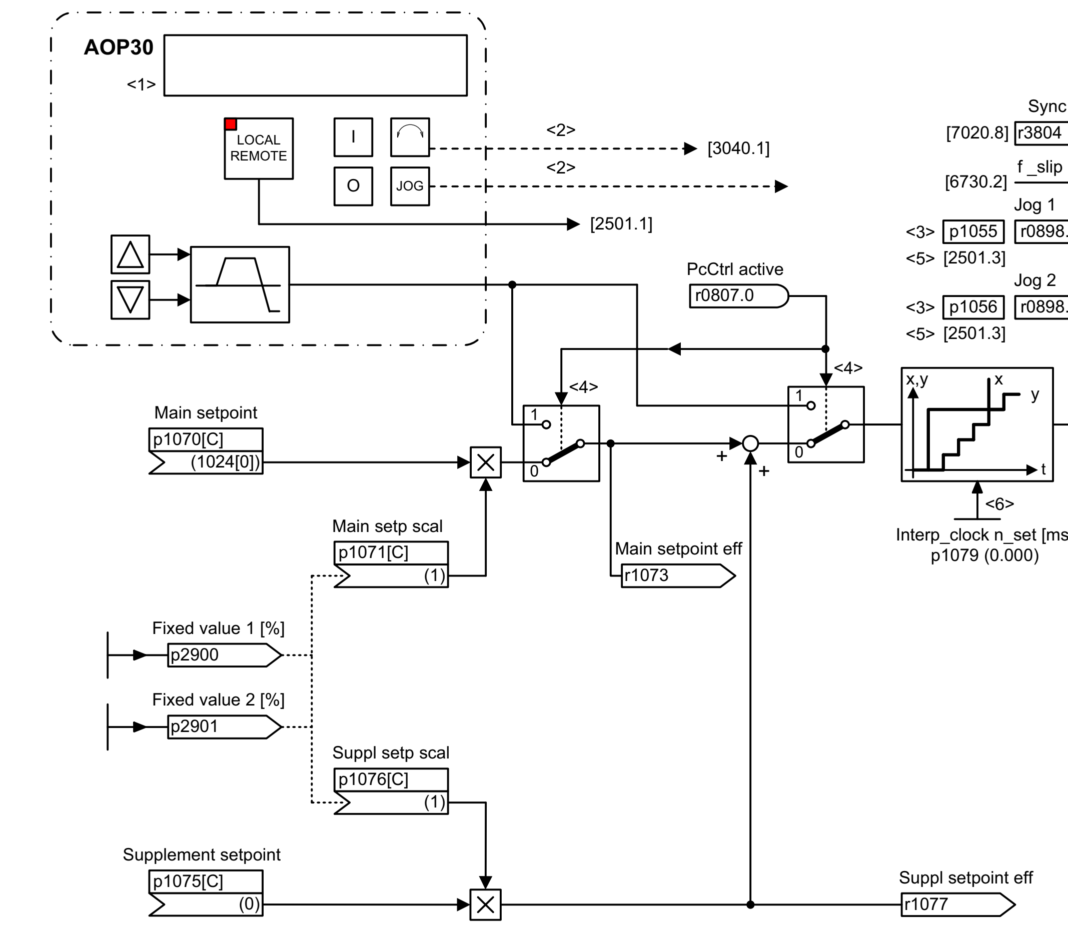
Fig. 3-156 3020 – Motorized potentiometer

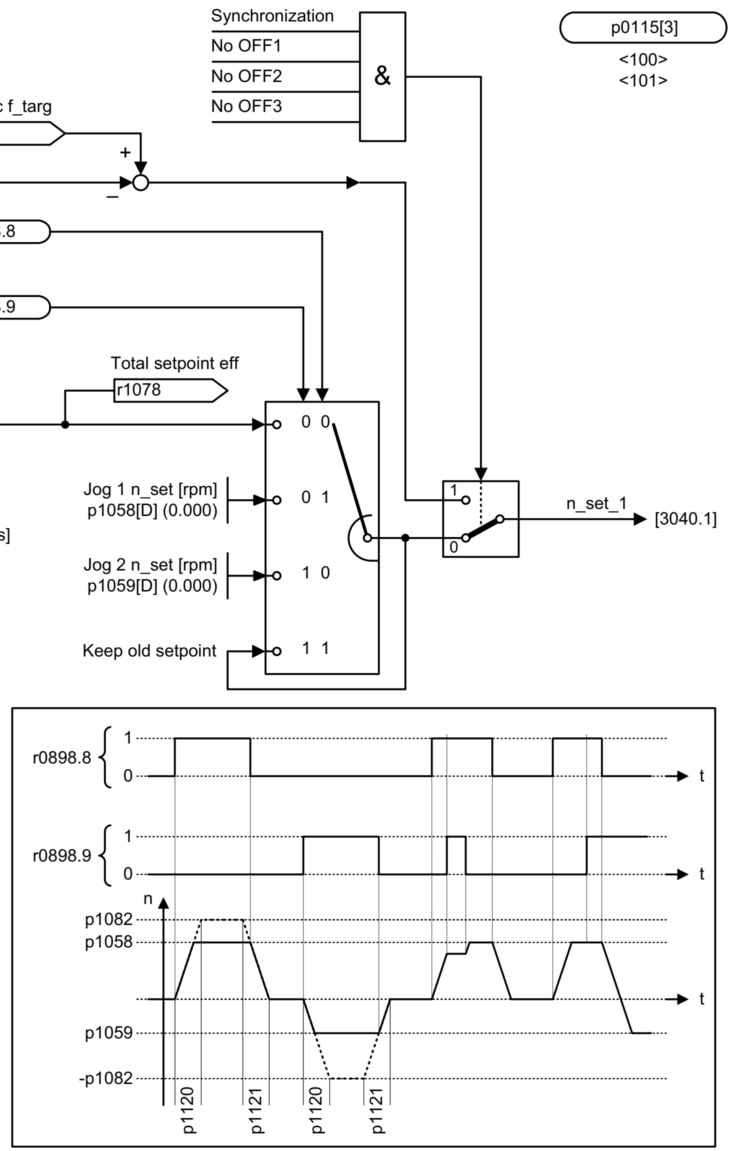


<1> For automatic commissioning, p1037 and p1038 are set to the maximum motor speed or to the rated motor speed, provided that n_max_mot has not been specified.
<2> If initial rounding-off is active (p1030.2 = 1), the selected ramp-up/down times are exceeded accordingly.
<3> Only effective if p1030.0 = 0.
<100> For SERVO, the following applies:
Only if the function module "extended setpoint channel" is activated (r0108.8 = 1).
<101> To view the pre-assignment of the sampling times in p0115, refer to p0112.

1	2	3	4	5	6	7	8
DO: SERVO, VECTOR, VECTOR3P, VECTORGL, VECTORM2C, VECTORMV, VECTORSL					fp_3020_51_eng.vsd	Function diagram	- 3020 -
Setpoint channel - Motorized potentiometer					16.10.13 V05.01.01	SINAMICS	

Fig. 3-157 3030 – Main/supplementary setpoint, setpoint scaling, jogging



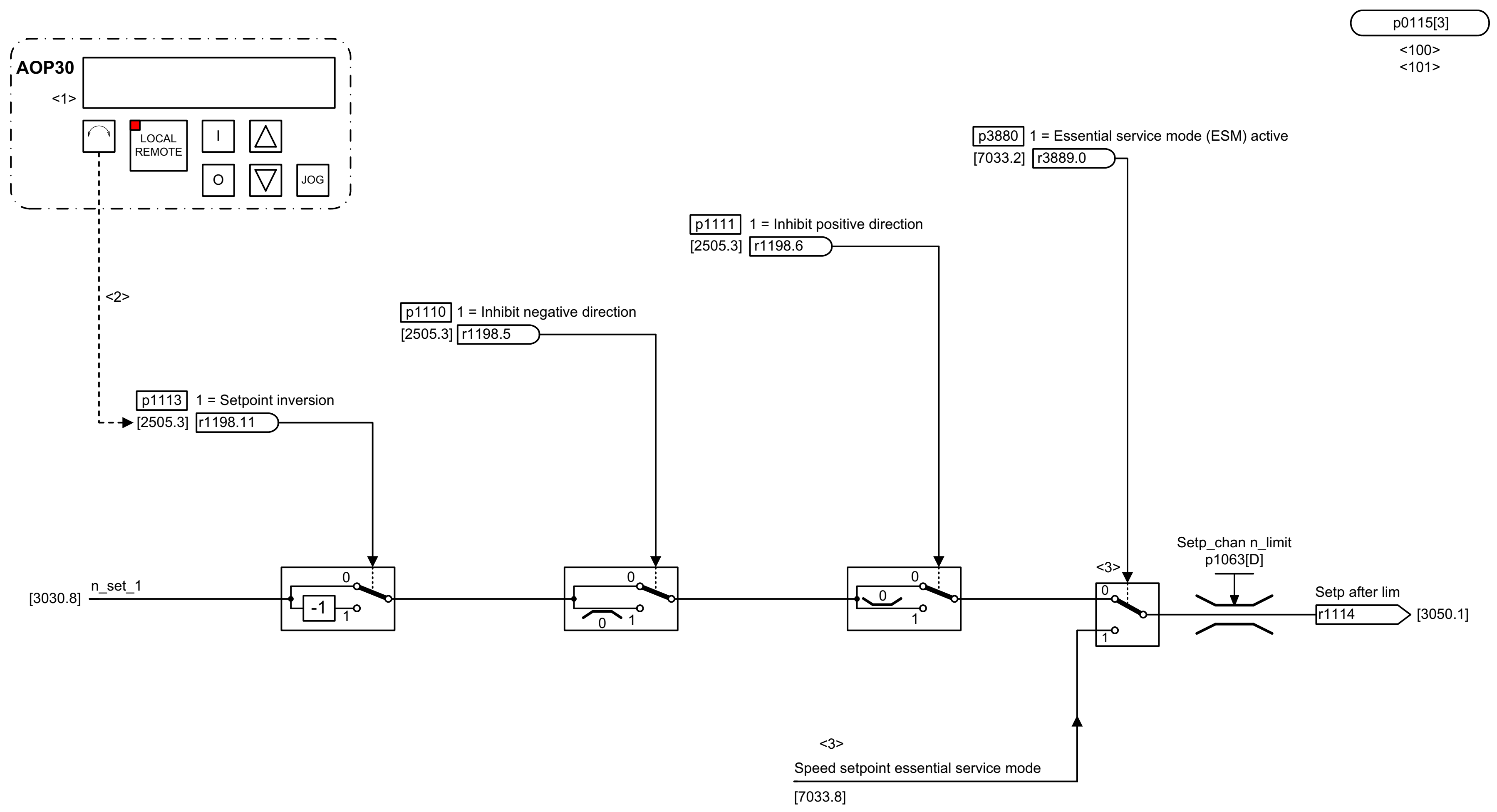


<1> AOP30 not at SINAMICS SM150.
<2> Only active in LOCAL mode (r0807.0 = 1) [2501.2].
<3> Jogging can only be activated in the following operating states (sequencer see [2610]):
- For SERVO and VECTOR: In the "Ready for switching on (S2)" operating state.
- For VECTORGL and VECTORMV: In the "Operation (S4)" operating state.
<4> Only if control priority is with control panel with speed setpoint input.
<5> With simultaneous jog 1 and 2 (p1055 = p1056 = 1) the last setpoint remains effective (Freeze ramp-function generator).
<6> Interpolation only for VECTOR.
<100> For SERVO, the following applies: Only if the function module "extended setpoint channel" is activated (r0108.8 = 1).
<101> To view the pre-assignment of the sampling times in p0115, refer to p0112.

1	2	3	4	5	6	7	8

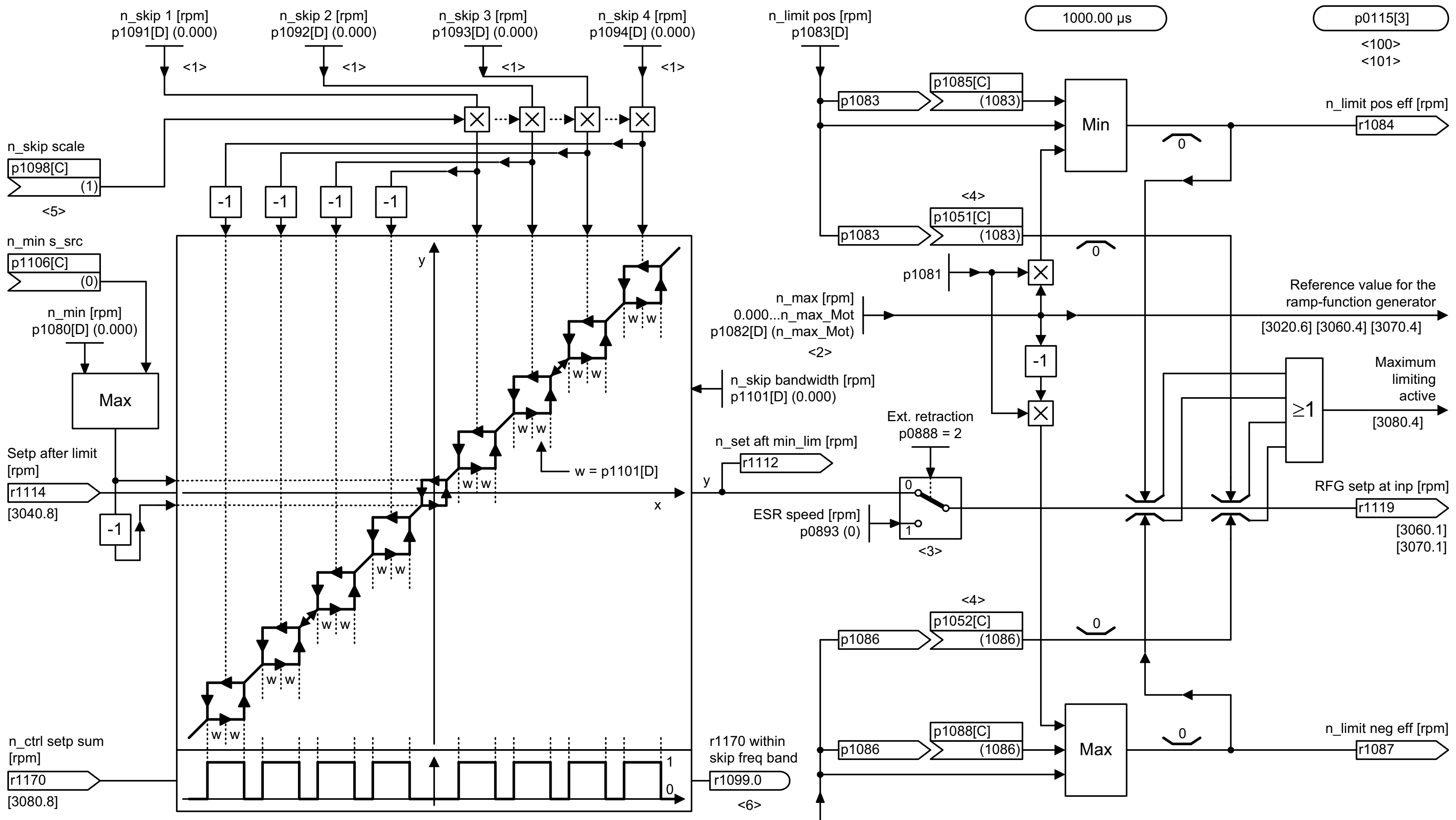
DO: SERVO, VECTOR, VECTOR3P, VECTORGL, VECTORM2C, VECTORMV, VECTORSL	fp_3030_51_eng.vsd	Function diagram	- 3030 -
Setpoint channel - Main/supplementary setpoint, setpoint scaling, jogging	25.04.17 V05.01.01	SINAMICS	

Fig. 3-158 3040 – Direction limitation and direction reversal



<1> AOP30 not at SINAMICS SM150.
<2> Only active in LOCAL mode (r0807.0 = 1) [2501.2].
<3> Only for SINAMICS G130/G150/S150 and SINAMICS S120 AC Drive (CU310-2 with PM240-2).
<100> For SERVO, the following applies: Only if the function module "Extended setpoint channel" is activated (r0108.8 = 1).
<101> To view the pre-assignment of the sampling times in p0115, refer to p0112.

1	2	3	4	5	6	7	8
DO: SERVO, VECTOR, VECTOR3P, VECTORGL, VECTORM2C, VECTORMV, VECTORSL					fp_3040_51_eng.vsd	Function diagram	- 3040 -
Setpoint channel - Direction limitation and direction reversal					08.09.17 V05.01.01	SINAMICS	



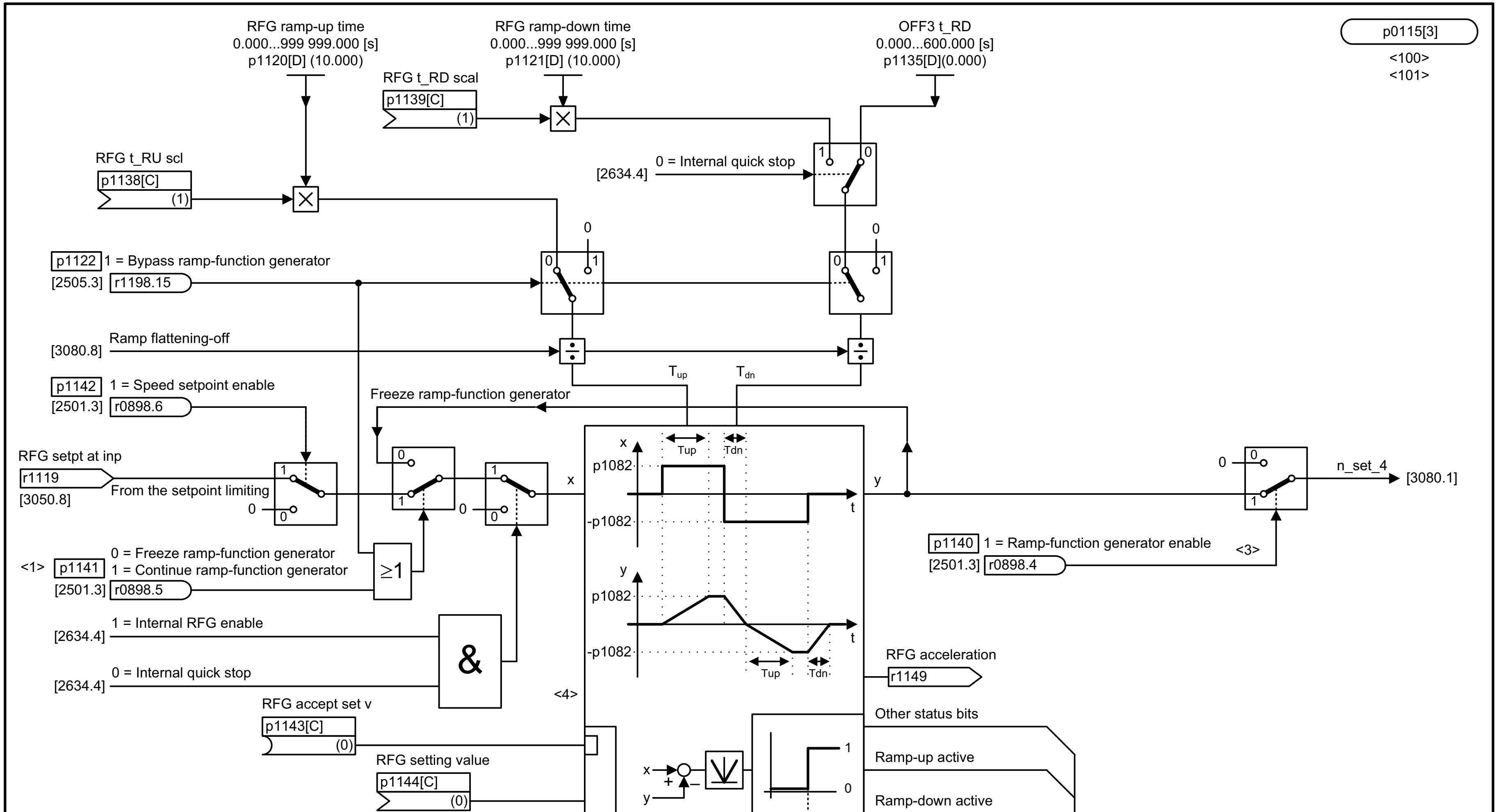
<1> A skip speed of "0" deactivates the skip frequency band.
<2> n_max_Mot: Value is appropriately pre-assigned after quick commissioning (p0010 = 1).
<3> Only for SERVO and activated "Extended stop and retract" function module (r0108.9 = 1).
<4> When the limit is being reduced the OFF3 ramp-down time (p1135) is effective.
<5> For VECTORGL the following interconnection allows tracking corresponding to line frequency: CI: p1098[C] = r6310.
<6> BO: r1099.0 may be used for DDS changeover.

<100> For SERVO, the following applies: Only if the function module "Extended setpoint channel" is activated (r0108.8 = 1). For r0108.8 = 0, [3095] applies for the generation of the speed limits.
<101> To view the pre-assignment of the sampling times in p0115, refer to p0112.

1	2	3	4	5	6	7	8
DO: SERVO, VECTOR, VECTOR3P, VECTORGL, VECTORM2C, VECTORMV, VECTORSL					fp_3050_51_eng.vsd	Function diagram	- 3050 -
Setpoint channel - Skip frequency bands and speed limitations					16.10.13 V05.01.01	SINAMICS	

Fig. 3-159 3050 – Skip frequency bands and speed limitations

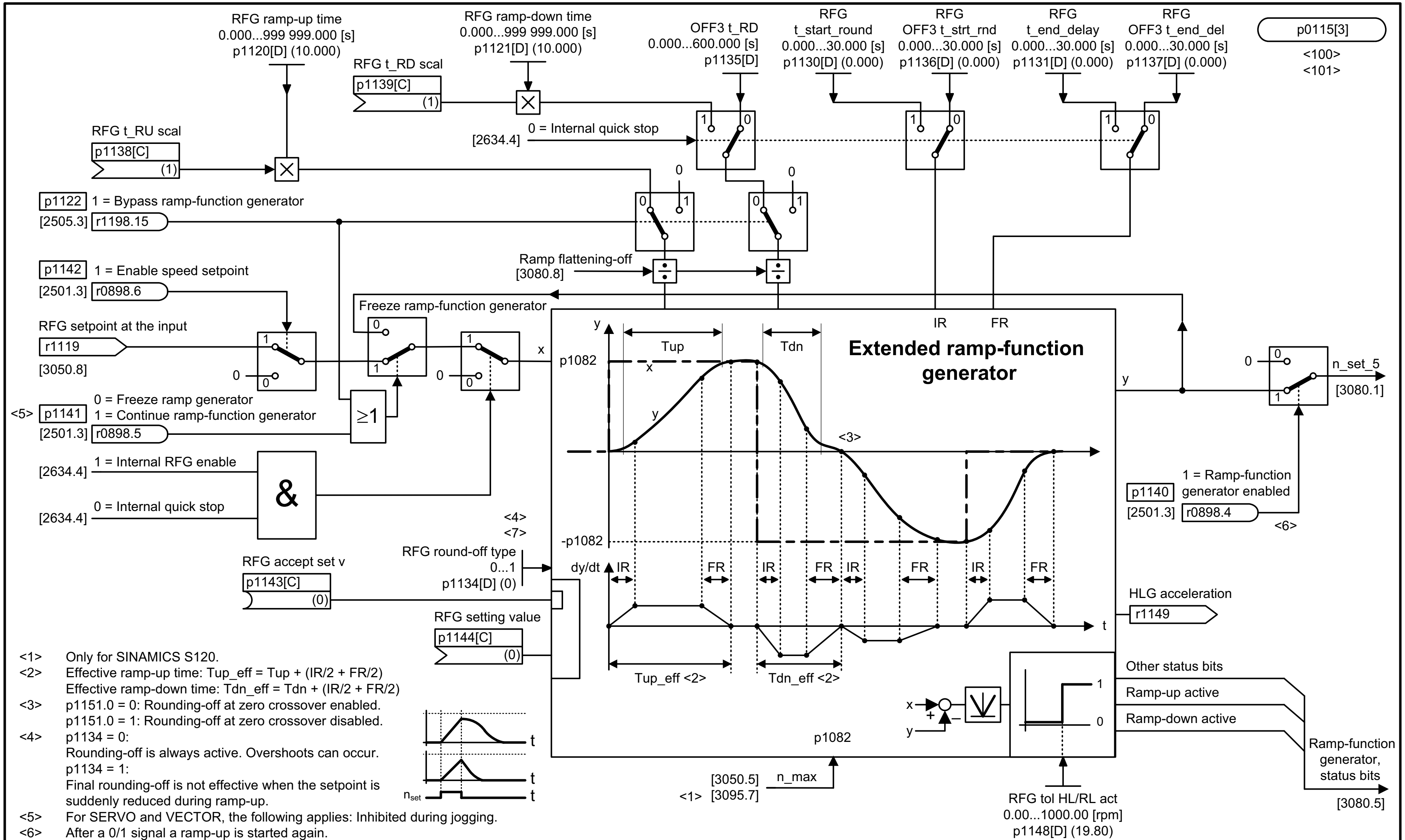
Fig. 3-160 3060 – Basic ramp-function generator



<1> For SERVO and VECTOR, the following applies: Inhibited during jogging.
<2> Only for SINAMICS S120.
<3> After a 0/1 signal a ramp-up is started again.
<4> With simultaneous jog 1 and 2 (p1055 = p1056 = 1) the last setpoint remains effective (Freeze ramp-function generator).
<100> For SERVO, the following applies: Only if the function module "Extended setpoint channel" is activated (r0108.8 = 1).
<101> To view the pre-assignment of the sampling times in p0115, refer to p0112.

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR, VECTOR3P, VECTORGL, VECTORM2C, VECTORMV, VECTORSL	fp_3060_51_eng.vsd	Function diagram	- 3060 -
Setpoint channel - Basic ramp-function generator	28.08.14 V05.01.01	SINAMICS	

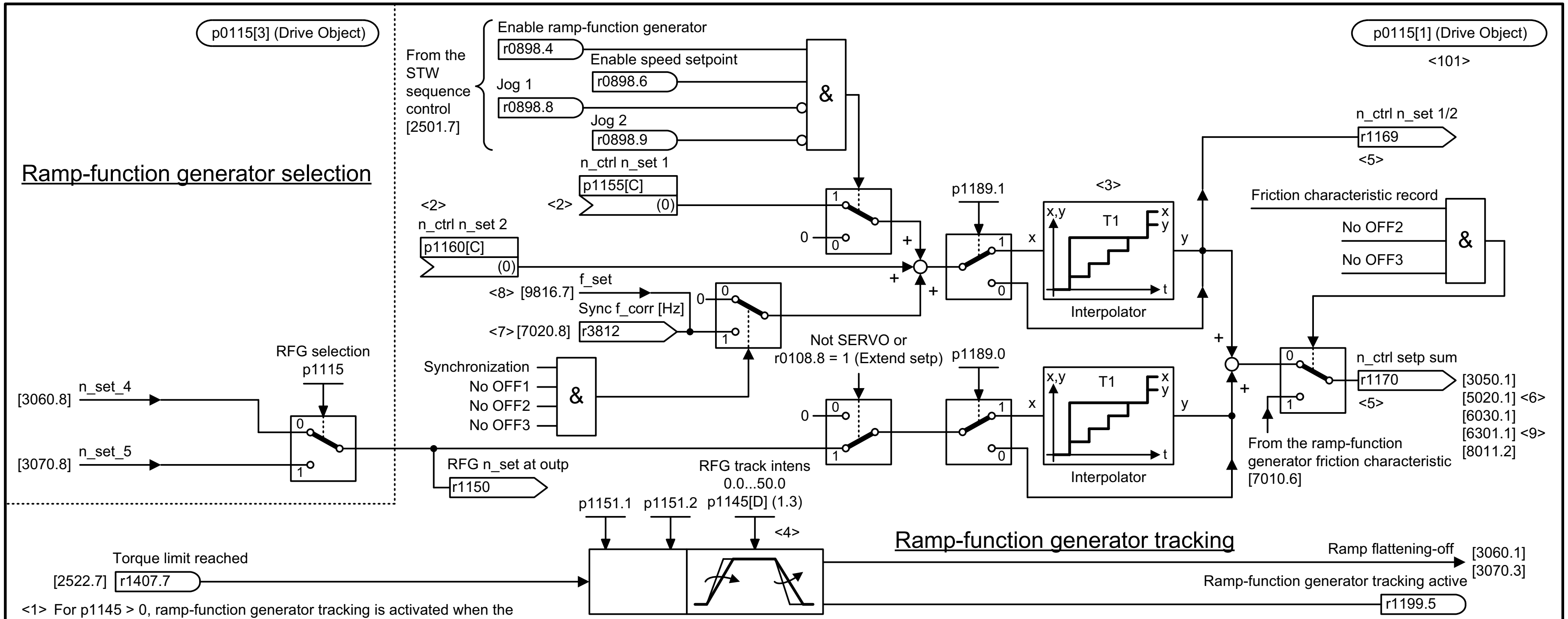


<1> Only for SINAMICS S120.
<2> Effective ramp-up time: Tup_eff = Tup + (IR/2 + FR/2)
Effective ramp-down time: Tdn_eff = Tdn + (IR/2 + FR/2)
<3> p1151.0 = 0: Rounding-off at zero crossover enabled.
p1151.0 = 1: Rounding-off at zero crossover disabled.
<4> p1134 = 0:
Rounding-off is always active. Overshoots can occur.
p1134 = 1:
Final rounding-off is not effective when the setpoint is suddenly reduced during ramp-up.
<5> For SERVO and VECTOR, the following applies: Inhibited during jogging.
<6> After a 0/1 signal a ramp-up is started again.
<7> With simultaneous jog 1 and 2 (p1055 = p1056 = 1) the last setpoint remains effective (Freeze ramp-function generator).
<100> For SERVO, the following applies: Only if the function module "extended setpoint channel" is activated (r0108.8 = 1).
<101> To view the pre-assignment of the sampling times in p0115, refer to p0112.

1	2	3	4	5	6	7	8
DO: SERVO, VECTOR, VECTOR3P, VECTORGL, VECTORM2C, VECTORMV, VECTORSL					fp_3070_51_eng.vsd	Function diagram	- 3070 -
Setpoint channel - Extended ramp-function generator					28.08.14 V05.01.01	SINAMICS	

Fig. 3-161 3070 – Extended ramp-function generator

Fig. 3-162 3080 – Ramp-function generator selection, status word, tracking



<1> For p1145 > 0, ramp-function generator tracking is activated when the torque limiting responds. This means that the speed controller output only exceeds the torque limit by a deviation that can be set via p1145.

<2> For OFF1/OFF3, the ramp-function generator ramp is active. The ramp-function generator is set (SERVO: to the actual value, VECTOR, VECTOR3P, VECTORGL, VECTORMV, VECTORSL: to the setpoint (r1170)) and stops the drive with the ramp-downtime (p1121 or p1135). STW1.4 (enable ramp-function generator) is effective while the drive is stopped via the ramp-function generator. Depending on the p1115, the basic ramp-function generator [3060] or the extended ramp-function generator [3070] is effective.
For SERVO is valid: When the function module "extended setpoint channel" is not active (r0108.8 = 0), for OFF1/OFF3 the down ramp of the basic ramp-function generator is effective (refer to n_set_4 on [3060.8]).

<3> The interpolator is only active with activated "basic positioner" Function Module or with isochronous PROFIdrive mode and sign of life received by the master (STW2.12 ... STW2.15).

<4> Behavior of the response ramp of the torque limiting:
p1145 = 0.0: No ramp-function generator tracking. The ramp-function generator ramp is no longer in the range of the speed actual value.
p1145 = 1.0: The ramp-function generator ramp remains as close as possible to the speed actual value.
p1145 > 1.0: The ramp-function generator ramp is steeper than for p1145 = 1.0 (higher "speed following error").

<5> The value is displayed correctly only with r0899.2 = 1 (Operation enabled).

<6> For SERVO only.

<7> For VECTOR, VECTOR3P, VECTORMV only.

<8> For VECTORGL only.

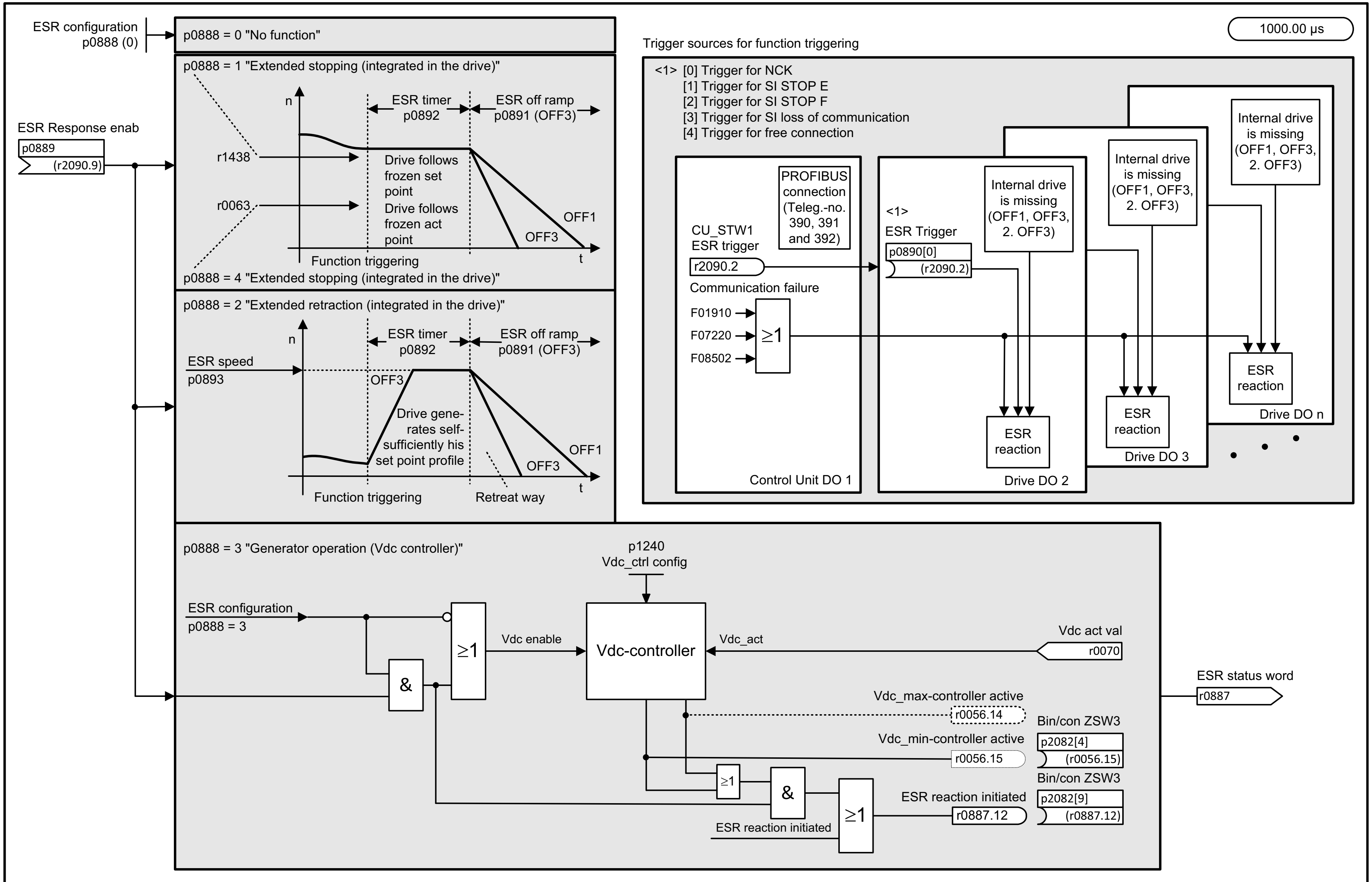
<9> For VECTOR3P, VECTORM2C, VECTORMV, VECTORSL only.

Ramp-function generator status word

RFG ZSW r1199

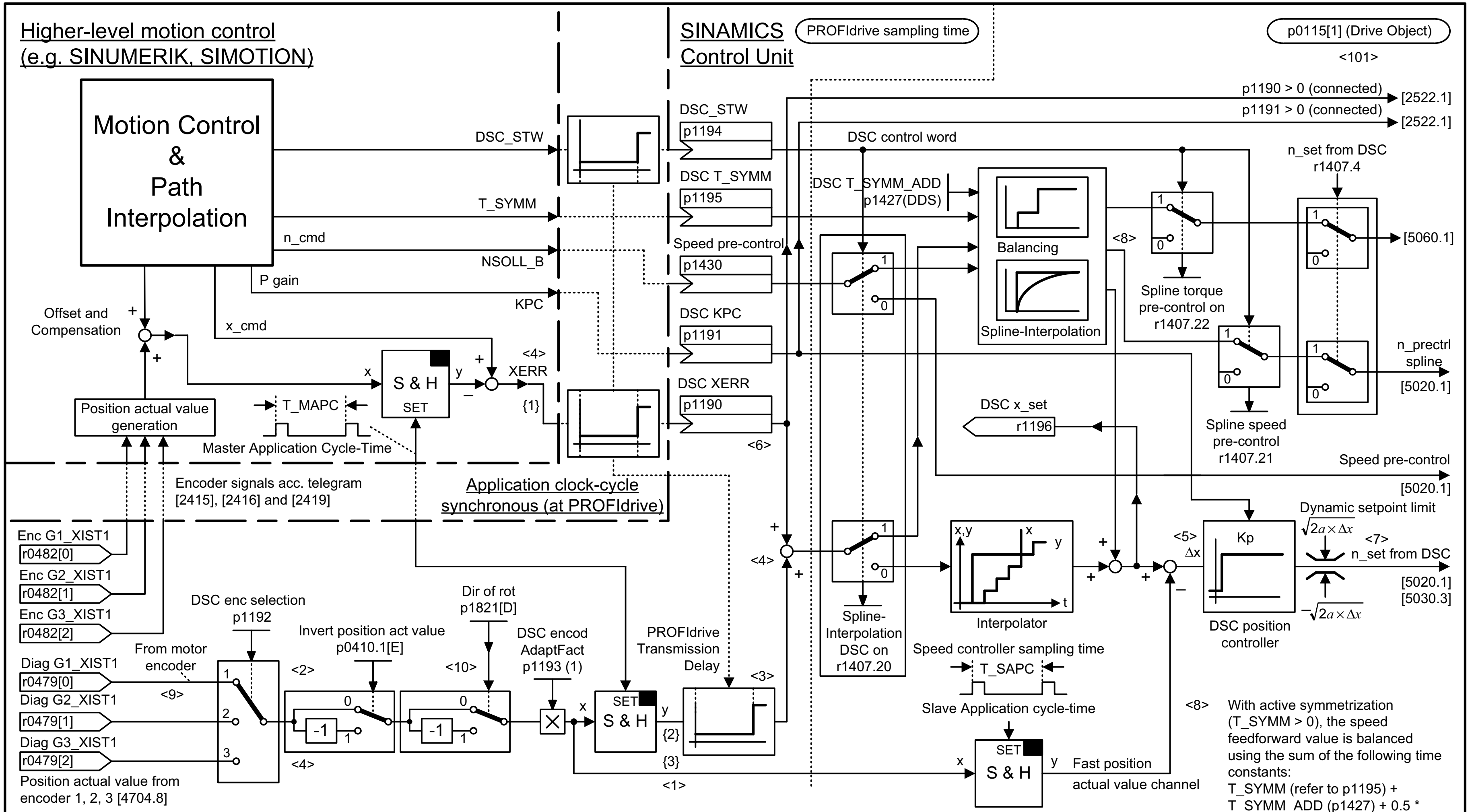
Input	Bit	Meaning	Output
[3060.8] [3070.8]	0	Ramp-up active	r1199.0 [6301.1]
[3060.8] [3070.8]	1	Ramp-down active	
≥1	2	Ramp-function generator active	r1199.2 [6726.4]
	3	Ramp-function generator set	r1199.3 [6031.1]
	4	Ramp-function generator held	
[3080.8]	5	Ramp-function generator tracking active	<1> r1199.5 [6031.1]
[3050.8]	6	Maximum limiting active	
	7	Ramp-function generator speedup positiv	
	8	Ramp-function generator speedup negativ	
	9	Reserved	
	...	...	
	15	Reserved	

<101> To view the pre-assignment of the sampling times in p0115, refer to p0112.



1	2	3	4	5	6	7	8
DO: SERVO					fp_3082_51_eng.vsd	Function diagram	- 3082 -
Setpoint channel - Extended Stop and Retract (ESR, r0108.9 = 1)					20.11.13 V05.01.01	SINAMICS	

Fig. 3-163 3082 – Extended Stop and Retract (ESR, r0108.9 = 1)



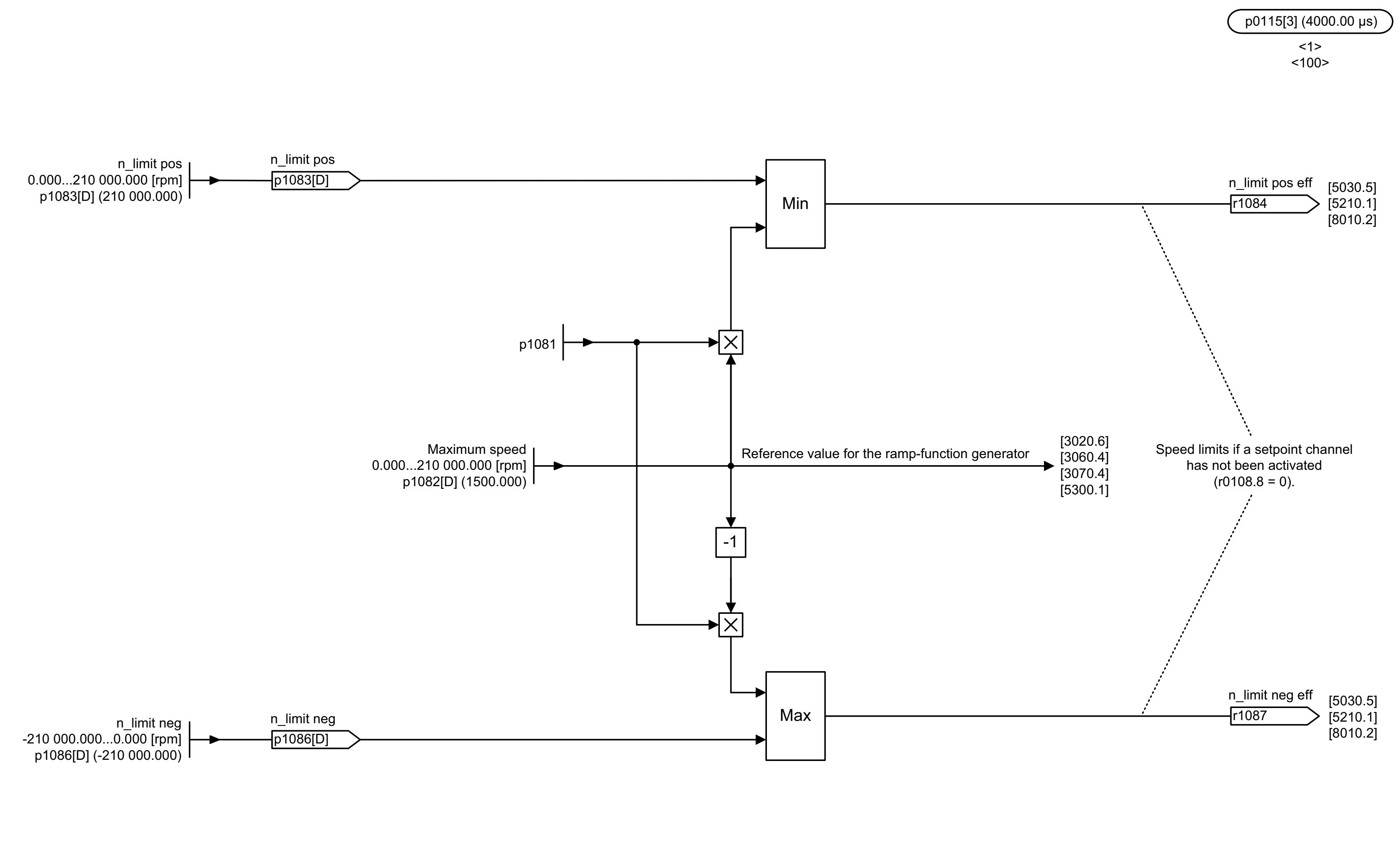
<1> Principle of operation of Dynamic Servo Control (DSC): The feedback branch {2} completely compensates the feedback coupling branch {1} in respect of the position actual value sent from the drive. The fast actual value channel {3} allows for a high dynamic performance and high Kv factors.
<2> For the motor encoder (p1192 = 1) p1193 = 1 is effective.
When using encoder 2 or 3 (p1192 = 2, 3), p1193 corresponds to the "Increments per motor encoder revolution/increments of the encoder selected (2, 3) during one motor rotation" (considering gear ratios and also different encoder lines and fine resolutions).
<3> The deadtime for the PROFIdrive data transfer is set automatically.
<4> The position deviation must be referred to the increments of the motor including the fine resolution.
<5> Normalization of KPC: If signal Δx = 1 motor revolution and KPC = 1, then "n_set from DSC" = 0.001 motor revolutions/s.
<6> Clock-synchronous operation must be active for DSC.
<7> Only for p1400.17 = 1 and at limitation becomes p1407.19 = 1.
<8> With active symmetrization (T_SYMM > 0), the speed feedforward value is balanced using the sum of the following time constants:
T_SYMM (refer to p1195) +
T_SYMM_ADD (p1427) + 0.5 *
T_Speed controller (p0115[1]).
<9> It is actualised with every DRIVE-CLiQ base tact.
<10> Not for drive object ENC.
<101> To view the pre-assignment of the sampling times in p0115, refer to p0112.

1	2	3	4	5	6	7	8
DO: SERVO					fp_3090_01_eng.vsd	Function diagram	- 3090 -
Setpoint channel - Dynamic Servo Control (DSC) linear and DSC spline (r0108.6 = 1)					11.02.16 V05.01.01	SINAMICS S120	

Fig. 3-164 3090 – Dynamic Servo Control (DSC) linear and DSC spline (r0108.6 = 1)

3.19 Setpoint channel not activated

Function diagrams



<1> With OFF1/OFF3, the deceleration ramp of the basic ramp-function generator is active (p1135 or p1121).

<100> Applies only if the function module "extended setpoint channel" (r0108.8 = 0) is not active. For r0108.8 = 1, [3050] applies instead of [3095].

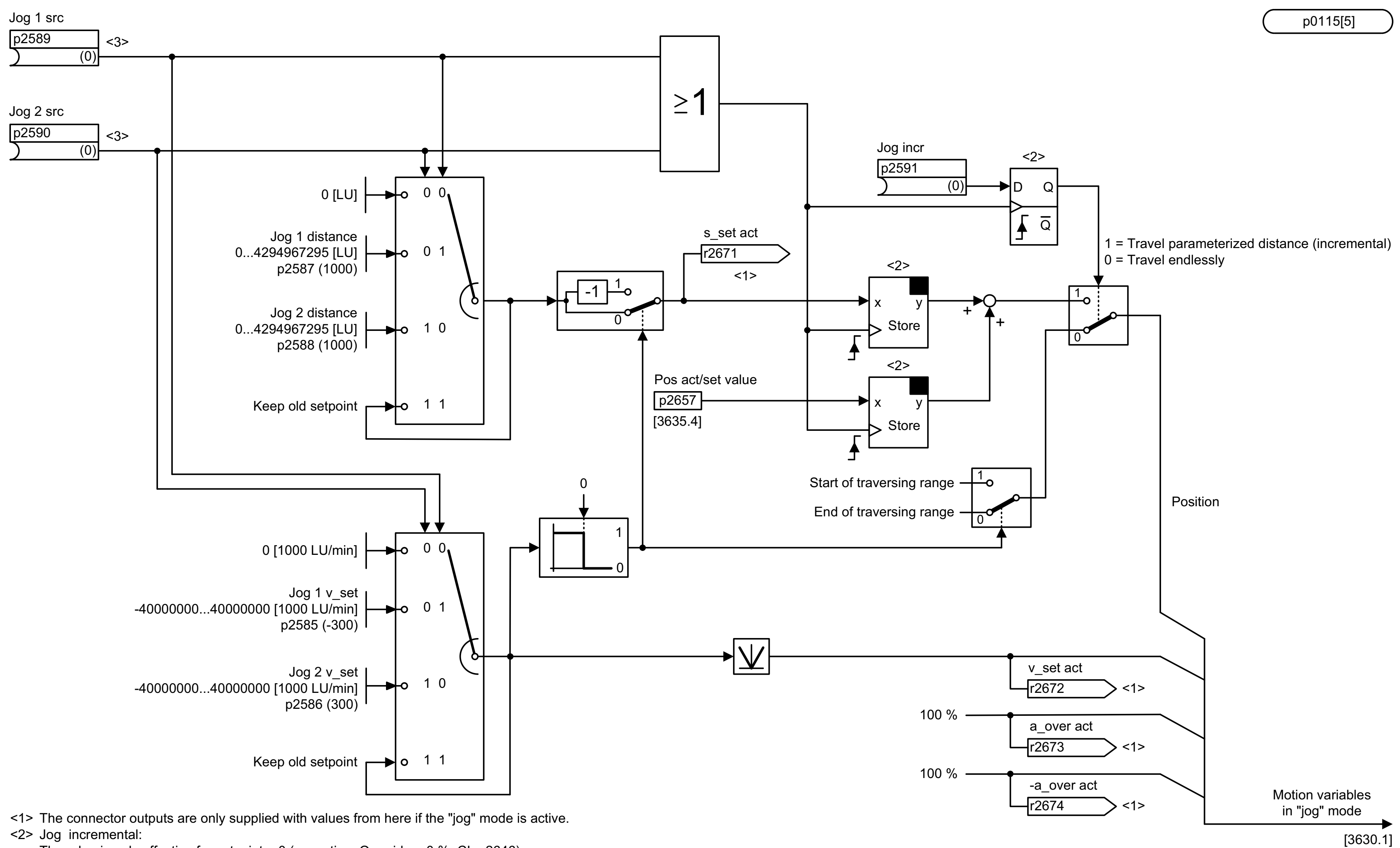
1	2	3	4	5	6	7	8
DO: SERVO					fp_3095_01_eng.vsd	Function diagram	- 3095 -
Setpoint channel not activated - Generation of the speed limits (r0108.8 = 0)					01.08.13 V05.01.01	SINAMICS S120	

Fig. 3-165 3095 – Generation of the speed limits (r0108.8 = 0)

3.20 Basic positioner (EPOS)

Function diagrams

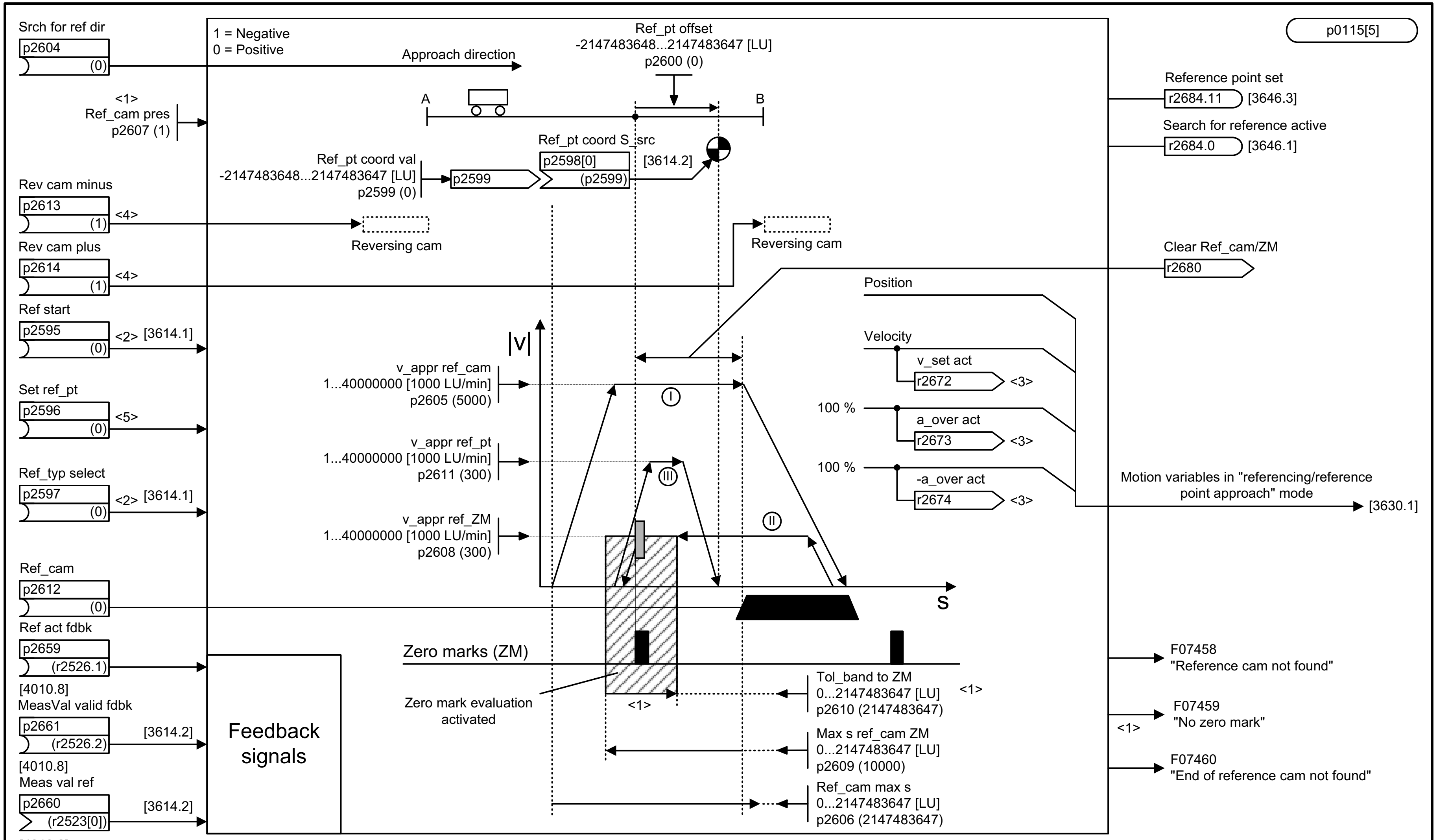
Fig. 3-166 3610 – Jog mode (r0108.4 = 1)



<1> The connector outputs are only supplied with values from here if the "jog" mode is active.
<2> Jog incremental:
The edge is only effective for setpoint = 0 (exception: Override = 0 %, CI: p2646).
--> Renewed jogging can only be activated after the jog motion has been completed (0/1 edge).
<3> The second "jog" is not evaluated while "incremental jogging" is running.

1	2	3	4	5	6	7	8
DO: SERVO, VECTOR					fp_3610_55_eng.vsd	Function diagram	- 3610 -
EPOS - Jog mode (r0108.4 = 1)					15.04.08 V05.01.01	SINAMICS S120/S150	

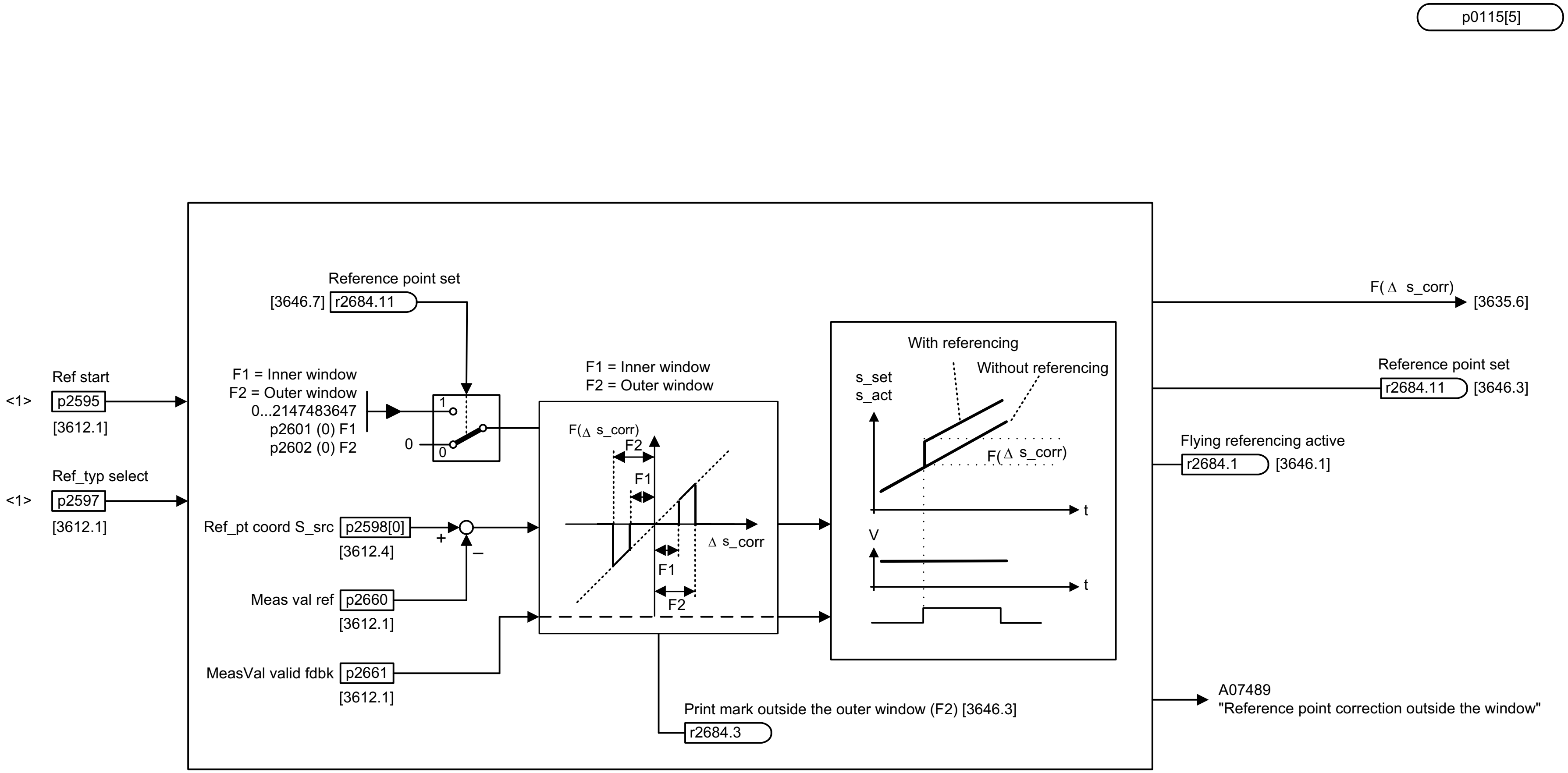
Fig. 3-167 3612 – Referencing/reference point approach mode (r0108.4 = 1) (p2597 = 0 signal)



<1> If no reference cam exists, the axis directly moves to the zero mark (in the defined start direction). Without a reference cam, the tolerance bandwidth is not evaluated.
<2> When "flying referencing" is selected (passive referencing, p2597 = 1 signal), this function diagram is of no significance => refer to [3614].
<3> The connector outputs are only supplied with values from here if the “referencing“ mode is active.
<4> The reversing cams are low active. When a cam is actuated, motion (reference cam search) is continued in the opposite direction.
<5> Reference point setting is only effective in the initial state [3625].

1	2	3	4	5	6	7	8
DO: SERVO, VECTOR					fp_3612_55_eng.vsd	Function diagram	- 3612 -
EPOS - Referencing/reference point approach mode (r0108.4 = 1) (p2597 = 0 signal)					15.04.08 V05.01.01	SINAMICS S120/S150	

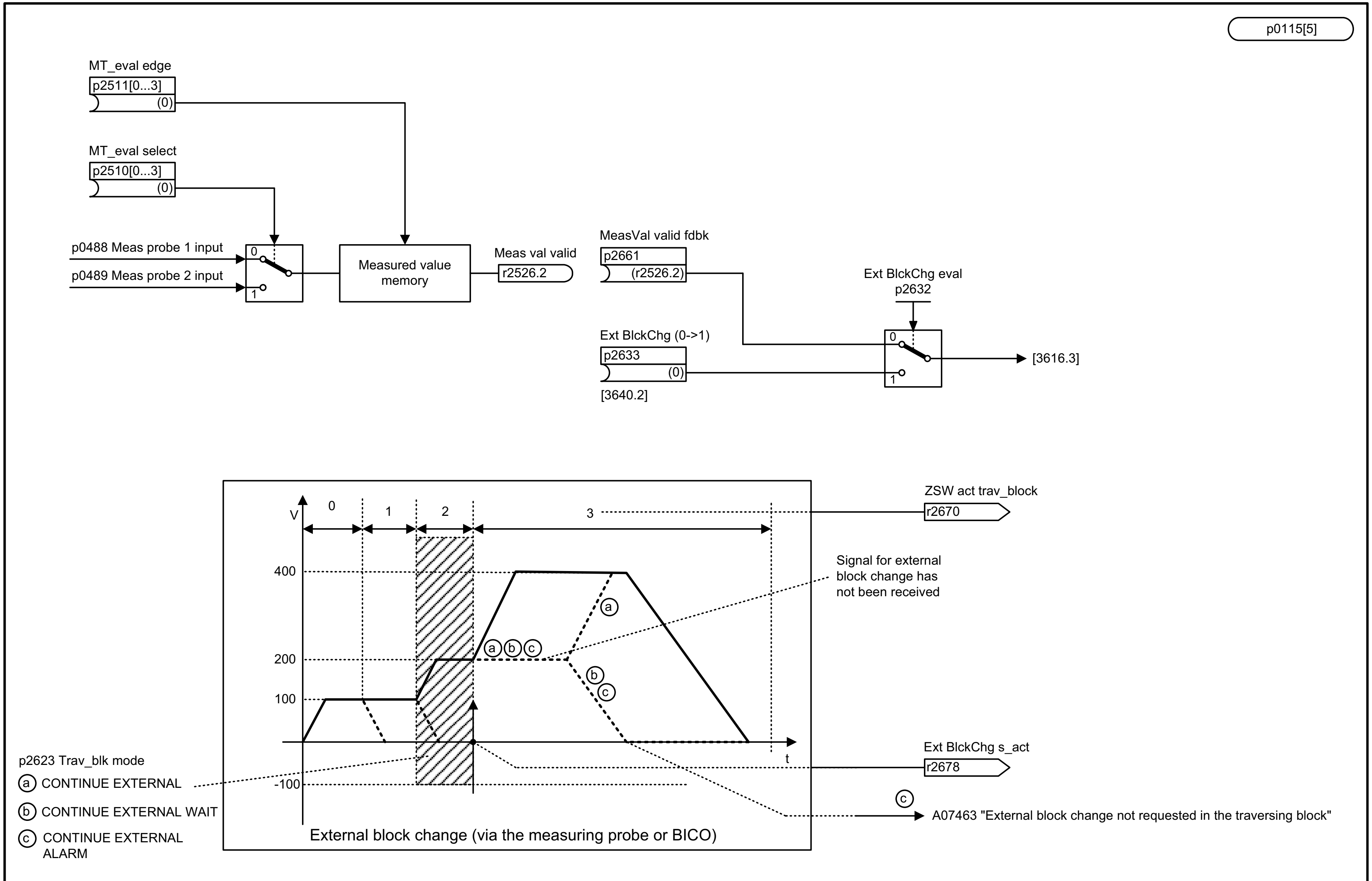
Fig. 3-168 3614 – Flying referencing mode (r0108.4 = 1) (p2597 = 1 signal)



<1> When "reference point approach" is selected (active referencing p2597 = 0 signal), this function diagram is of no significance => refer to [3612].
Active traversing is not directly associated with the "flying referencing" mode (passive referencing, p2597 = 1 signal).
The mode can be superimposed on the "jog" [3610], "traversing blocks" [3614] and "direct setpoint input/MDI" [3618] modes!

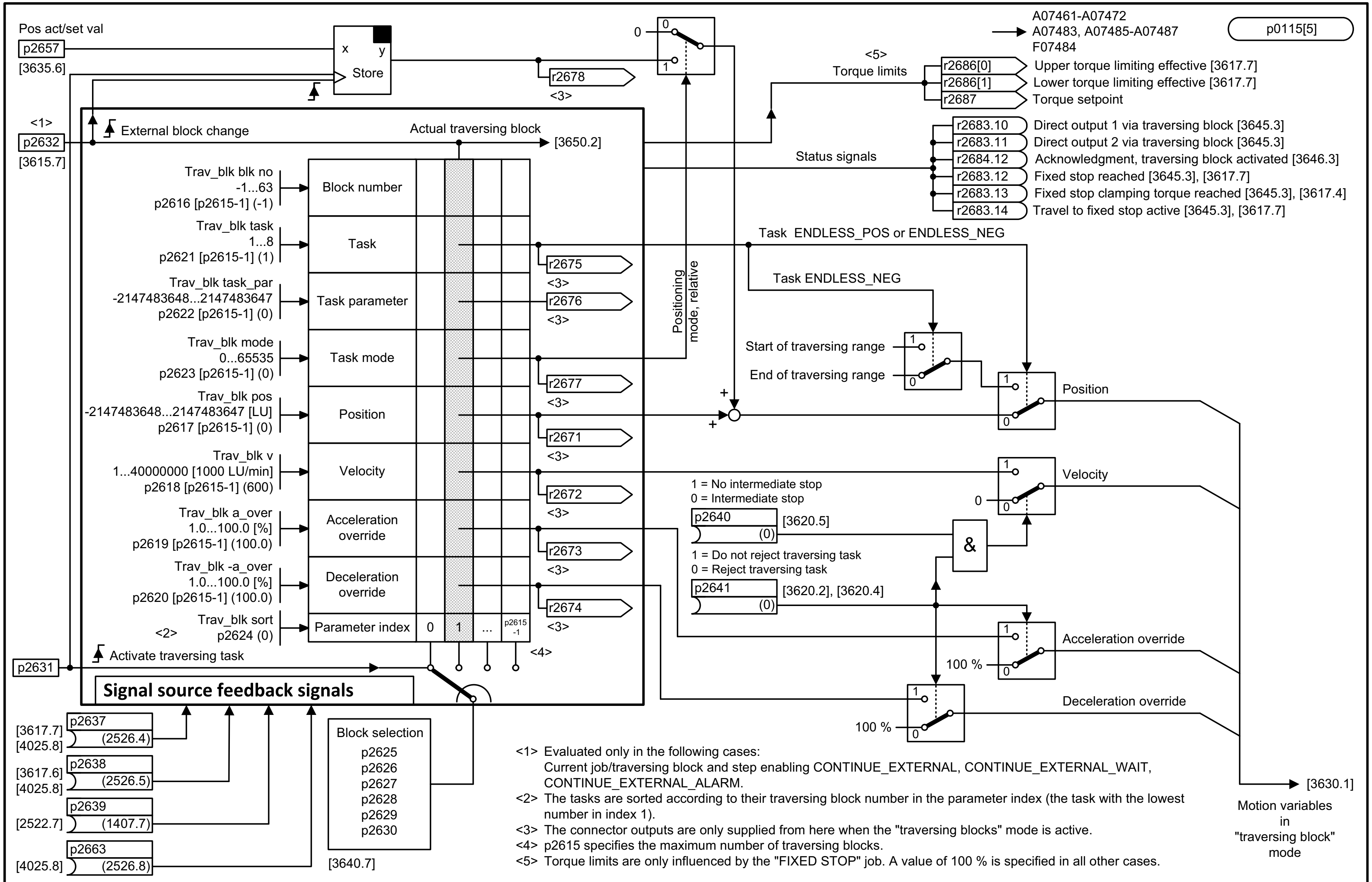
1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_3614_55_eng.vsd	Function diagram	- 3614 -
EPOS - Flying referencing mode (r0108.4 = 1) (p2597 = 1 signal)	11.09.17 V05.01.01	SINAMICS S120/S150	



1	2	3	4	5	6	7	8
DO: SERVO, VECTOR					fp_3615_55_eng.vsd	Function diagram	- 3615 -
EPOS - Traversing block mode, external block change (r0108.4 = 1)					15.04.08 V05.01.01	SINAMICS S120/S150	

Fig. 3-169 3615 – Traversing block mode, external block change (r0108.4 = 1)



<1> Evaluated only in the following cases:
Current job/traversing block and step enabling CONTINUE_EXTERNAL, CONTINUE_EXTERNAL_WAIT, CONTINUE_EXTERNAL_ALARM.
<2> The tasks are sorted according to their traversing block number in the parameter index (the task with the lowest number in index 1).
<3> The connector outputs are only supplied from here when the "traversing blocks" mode is active.
<4> p2615 specifies the maximum number of traversing blocks.
<5> Torque limits are only influenced by the "FIXED STOP" job. A value of 100 % is specified in all other cases.

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_3616_55_eng.vsd	Function diagram	- 3616 -
EPOS - Traversing block mode (r0108.4 = 1)	15.04.08 V05.01.01	SINAMICS S120/S150	

Fig. 3-170 3616 – Traversing block mode (r0108.4 = 1)

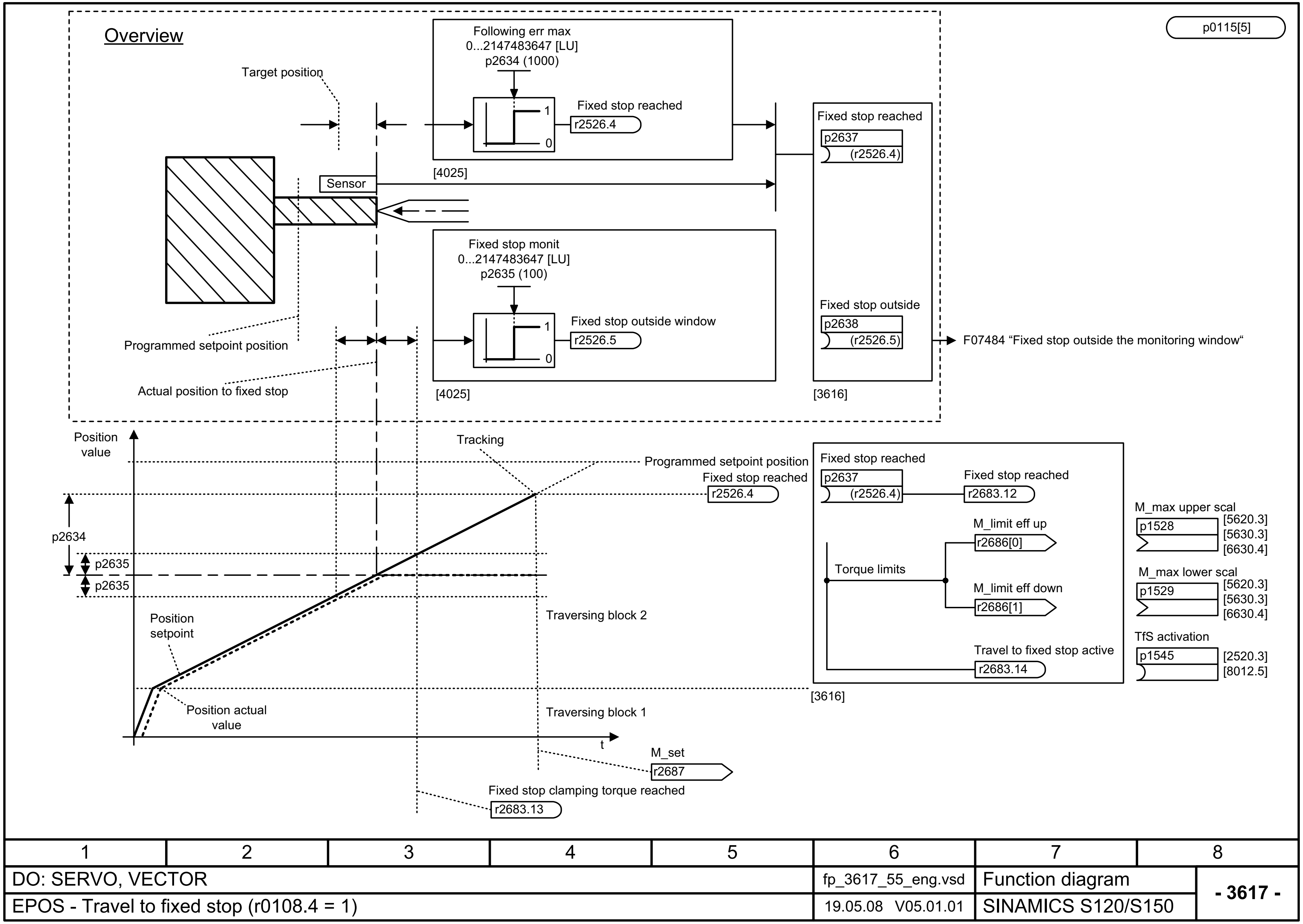
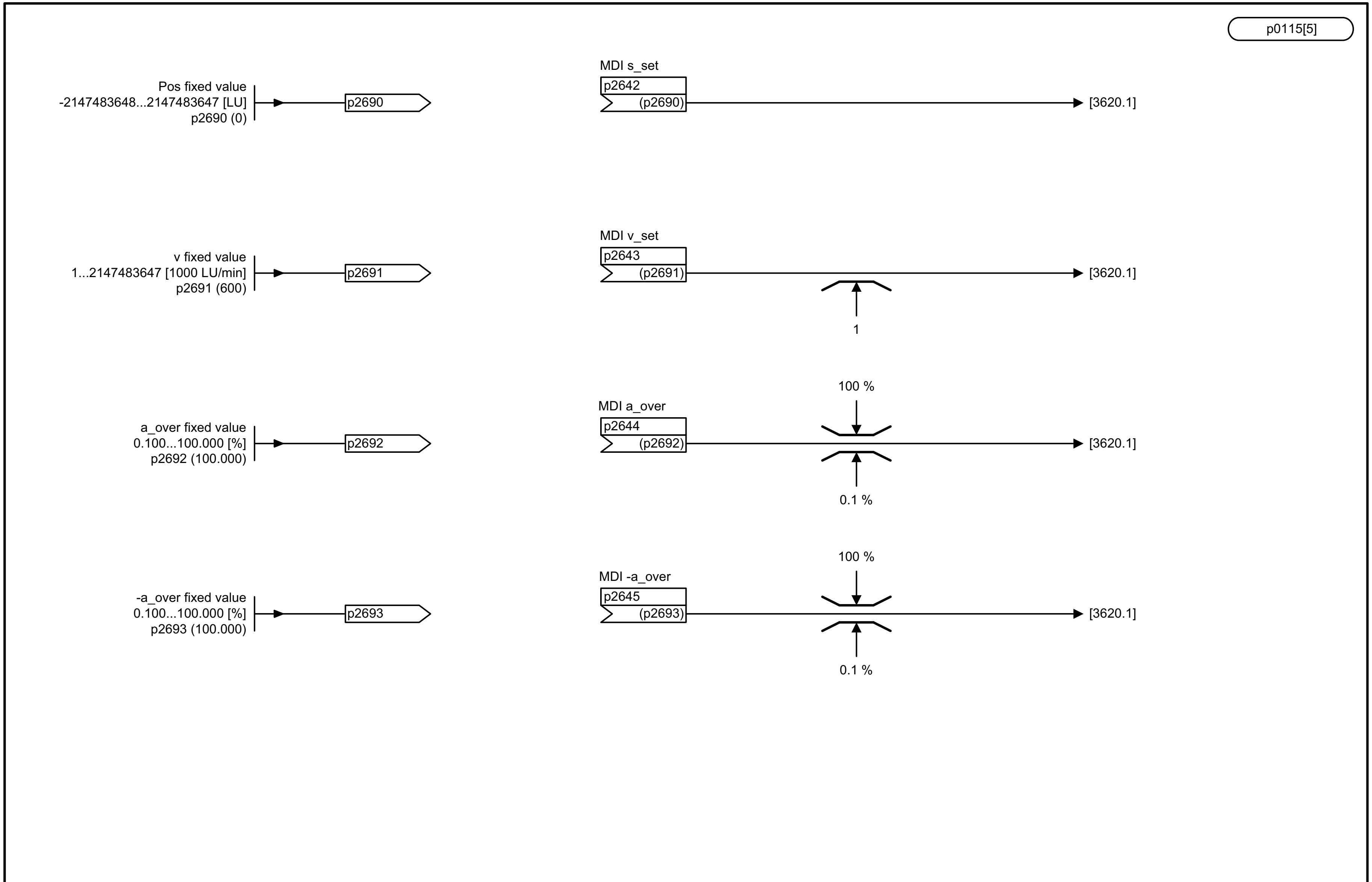


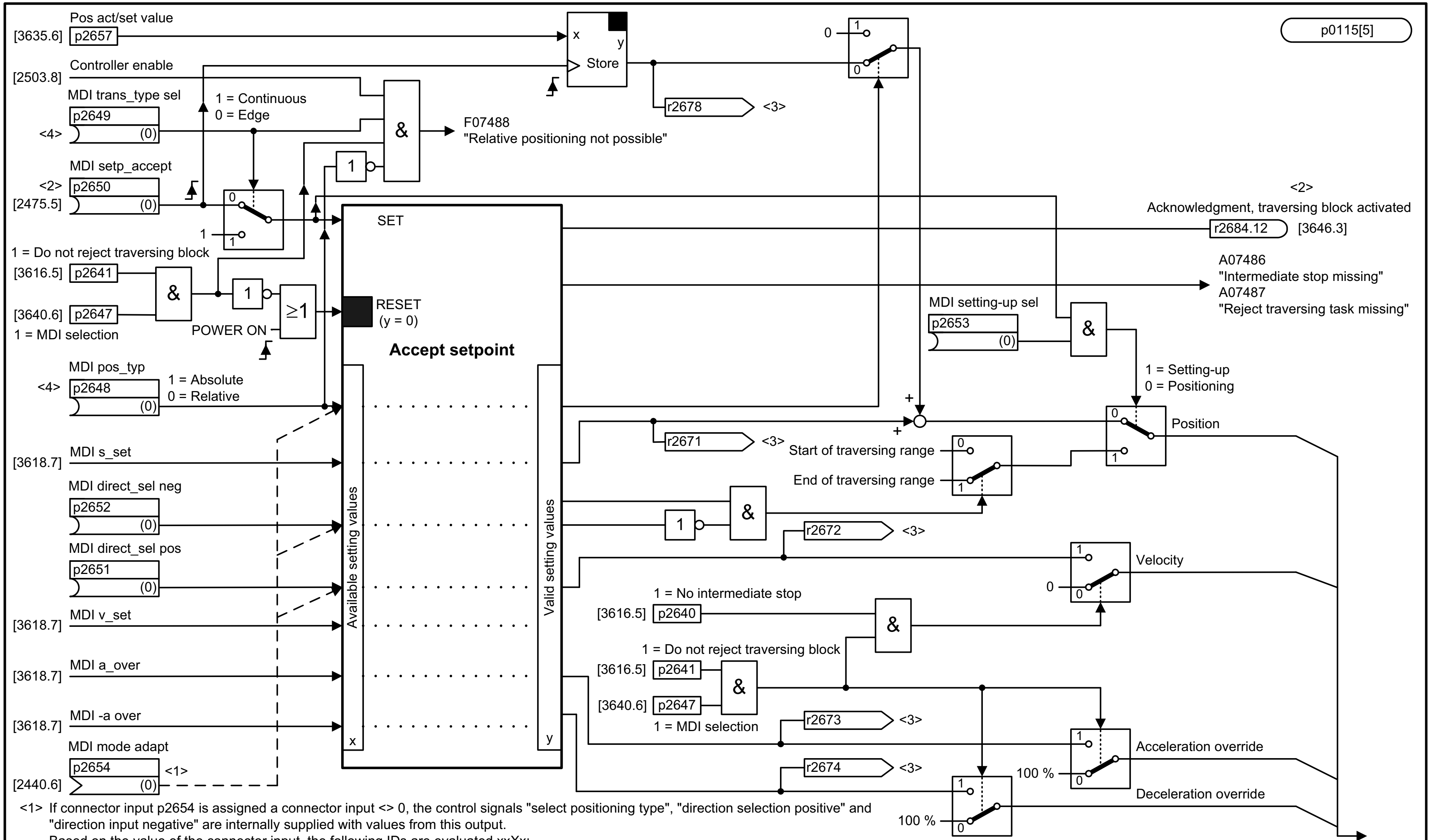
Fig. 3-171 3617 – Travel to fixed stop (r0108.4 = 1)



1	2	3	4	5	6	7	8
DO: SERVO, VECTOR					fp_3618_55_eng.vsd	Function diagram	- 3618 -
EPOS - Direct setpoint input/MDI mode, dynamic values (r0108.4 = 1)					15.04.08 V05.01.01	SINAMICS S120/S150	

Fig. 3-172 3618 – Direct setpoint input/MDI mode, dynamic values (r0108.4 = 1)

Fig. 3-173 3620 – Direct setpoint input/MDI mode (r0108.4 = 1)



<1> If connector input p2654 is assigned a connector input <> 0, the control signals "select positioning type", "direction selection positive" and "direction input negative" are internally supplied with values from this output.
Based on the value of the connector input, the following IDs are evaluated xxXx:
xx0x = absolute => p2648; xx1x = relative => p2648; xx2x = ABS_POS => p2648, p2651; xx3x = ABS_NEG => p2648, p2652.

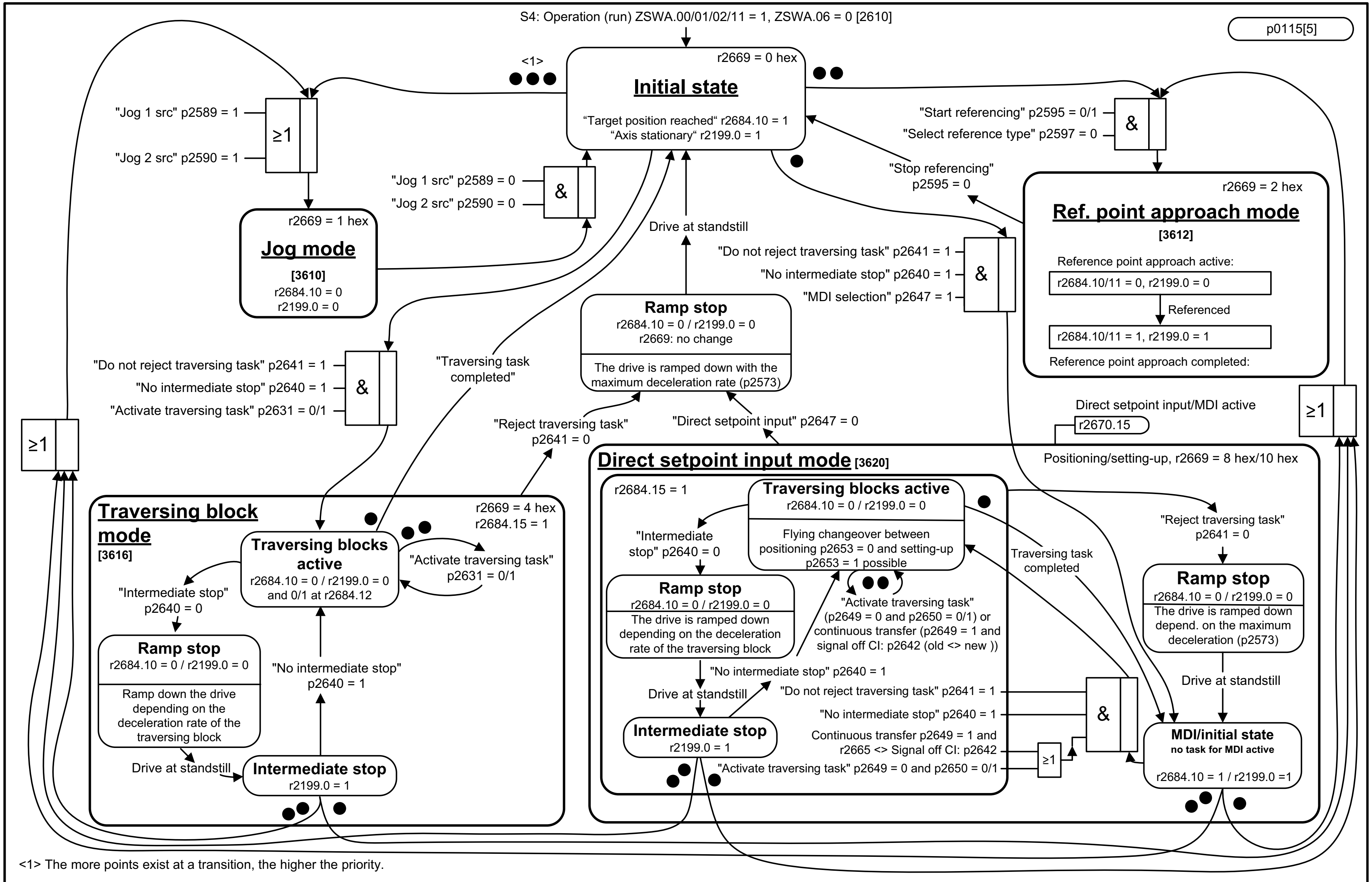
<2> Only evaluated with transfer type "edge evaluation" (BI: p2649 = 0 signal).

<3> The connector outputs are only supplied with values from here if the "direct setpoint input MDI" mode is active.

<4> For the transfer type "continuous transfer" (BI: p2649 = 1 signal), relative positioning is not permissible.

1	2	3	4	5	6	7	8

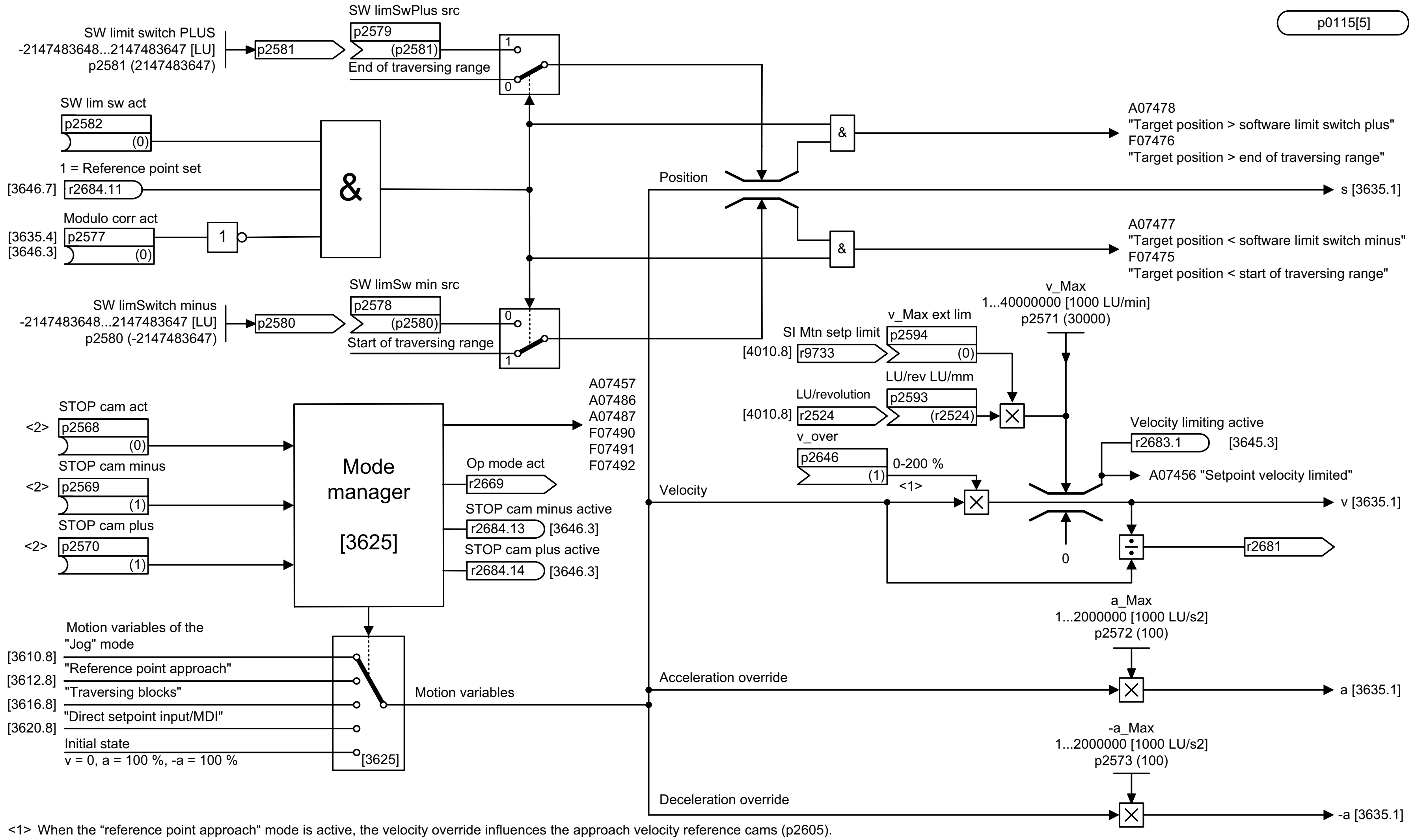
DO: SERVO, VECTOR	fp_3620_55_eng.vsd	Function diagram	- 3620 -
EPOS - Direct setpoint input/MDI mode (r0108.4 = 1)	15.04.08 V05.01.01	SINAMICS S120/S150	



1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_3625_55_eng.vsd	Function diagram	- 3625 -
EPOS - Mode control (r0108.4 = 1)	15.04.08 V05.01.01	SINAMICS S120/S150	

Fig. 3-174 3625 – Mode control (r0108.4 = 1)



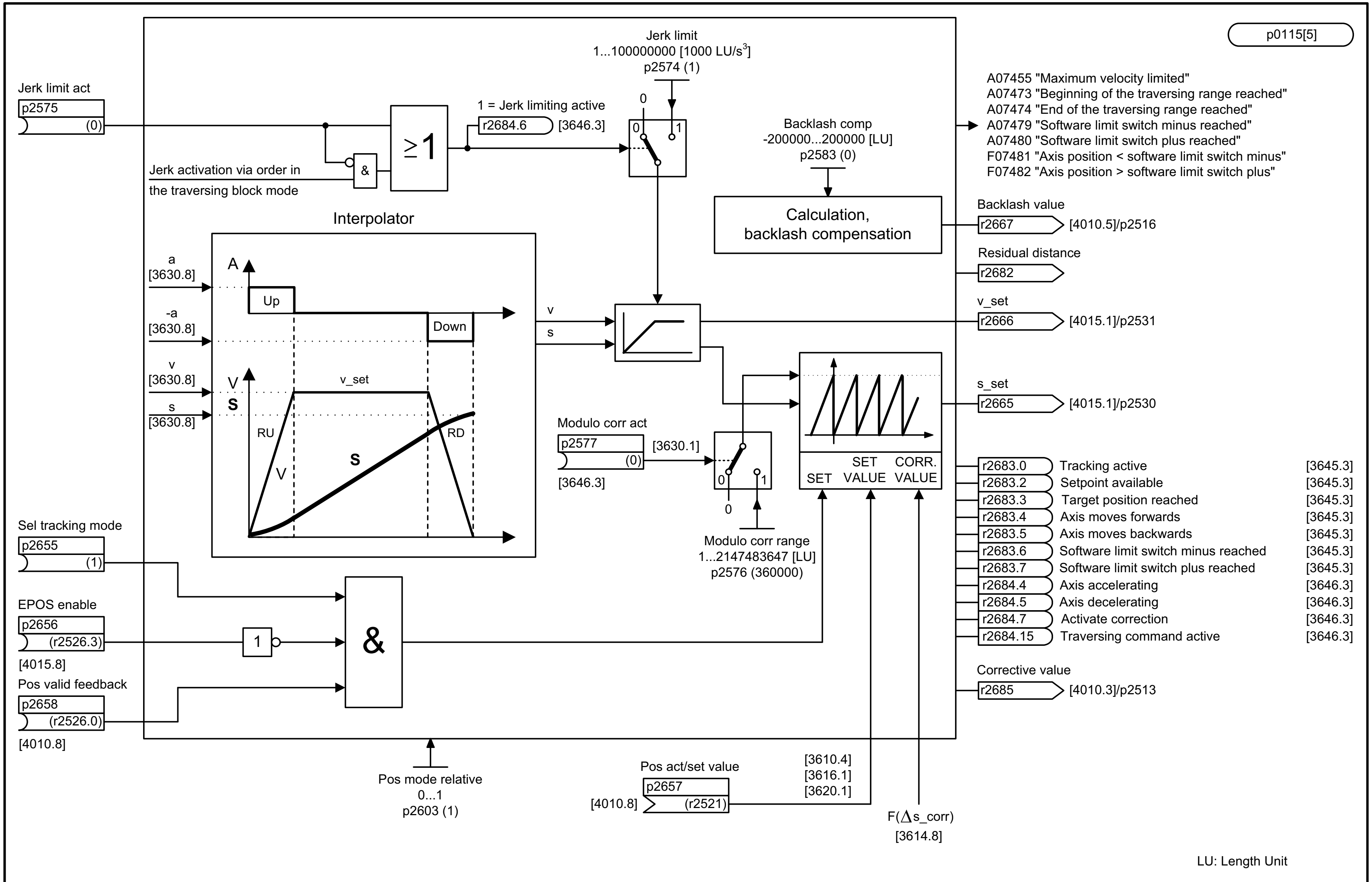
<1> When the “reference point approach“ mode is active, the velocity override influences the approach velocity reference cams (p2605). However, the approach velocity reference zero mark (p2608) and the approach velocity reference point (p2611) are not influenced.

<2> The STOP cams are low active. When a cam responds, the drive brakes with maximum deceleration along the ramp. After the fault has been acknowledged, only movements away from the STOP cam are permitted.

1	2	3	4	5	6	7	8
DO: SERVO, VECTOR					fp_3630_55_eng.vsd	Function diagram	- 3630 -
EPOS - Traversing range limits (r0108.4 = 1)					08.09.09 V05.01.01	SINAMICS S120/S150	

Fig. 3-175 3630 – Traversing range limits (r0108.4 = 1)

Fig. 3-176 3635 – Interpolator (r0108.4 = 1)



1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_3635_55_eng.vsd	Function diagram	- 3635 -
EPOS - Interpolator (r0108.4 = 1)	27.11.08 V05.01.01	SINAMICS S120/S150	

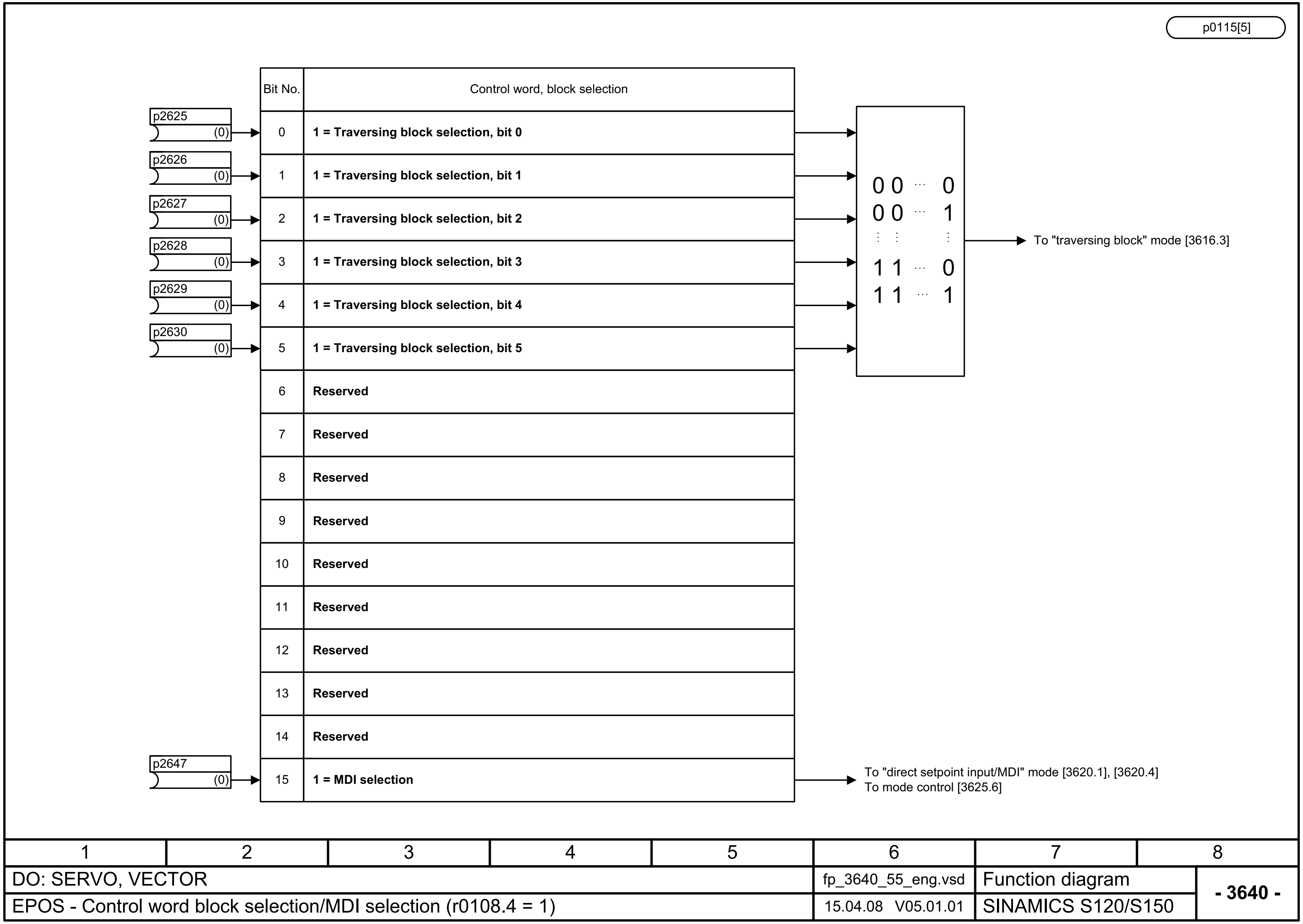


Fig. 3-177 3640 – Control word, block selection/MDI selection (r0108.4 = 1)

Fig. 3-178 3645 – Status word 1 (r0108.3 = 1, r0108.4 = 1)

POS_ZSW1 r2683

p0115[4]

Source	Bit No.	Status word, positioning mode 1	Output
From interpolator [3635.7]	0	**1 = Tracking mode active**	r2683.0 [4020.1]
From traversing range limits [3630.7]	1	**1 = Velocity limiting active**	r2683.1
From interpolator [3635.7]	2	**1 = Setpoint static**	r2683.2 [4020.1]/p2551
From interpolator [3635.7]	3	**1 = Target position reached**	r2683.3
From interpolator [3635.7]	4	**1 = Axis moves forwards** 0 = Axis stand still or moves backwards	r2683.4
From interpolator [3635.7]	5	**1 = Axis moves backwards** 0 = Axis stand still or moves forwards	r2683.5
From interpolator [3635.7]	6	**1 = Software limit switch minus reached**	r2683.6
From interpolator [3635.7]	7	**1 = Software limit switch plus reached**	r2683.7
From dynamic following error monitoring, cam controllers [4025.8]	8	**1 = Position actual value <= cam switching position 1** 0 = Overrun cam switching position 1	r2683.8
From dynamic following error monitoring, cam controllers [4025.8]	9	**1 = Position actual value <= cam switching position 2** 0 = Overrun cam switching position 2	r2683.9
From “traversing block“ mode [3616.7]	10	**1 = Direct output 1 via the traversing block**	r2683.10
From “traversing block“ mode [3616.7]	11	**1 = Direct output 2 via the traversing block**	r2683.11
From “traversing block“ mode [3616.7]	12	**1 = Fixed stop reached**	r2683.12 [4025.1]/p2553
From “traversing block“ mode [3616.7]	13	**1 = Fixed stop, clamping torque reached**	r2683.13
From “traversing block“ mode [3616.7]	14	**1 = Travel to fixed stop active**	r2683.14 [4025.6]/p2552
	15	**Reserved**	

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_3645_55_eng.vsd	Function diagram	- 3645 -
EPOS - Status word 1 (r0108.3 = 1, r0108.4 = 1)	27.11.08 V05.01.01	SINAMICS S120/S150	

p0115[4]

POS_ZSW2 r2684

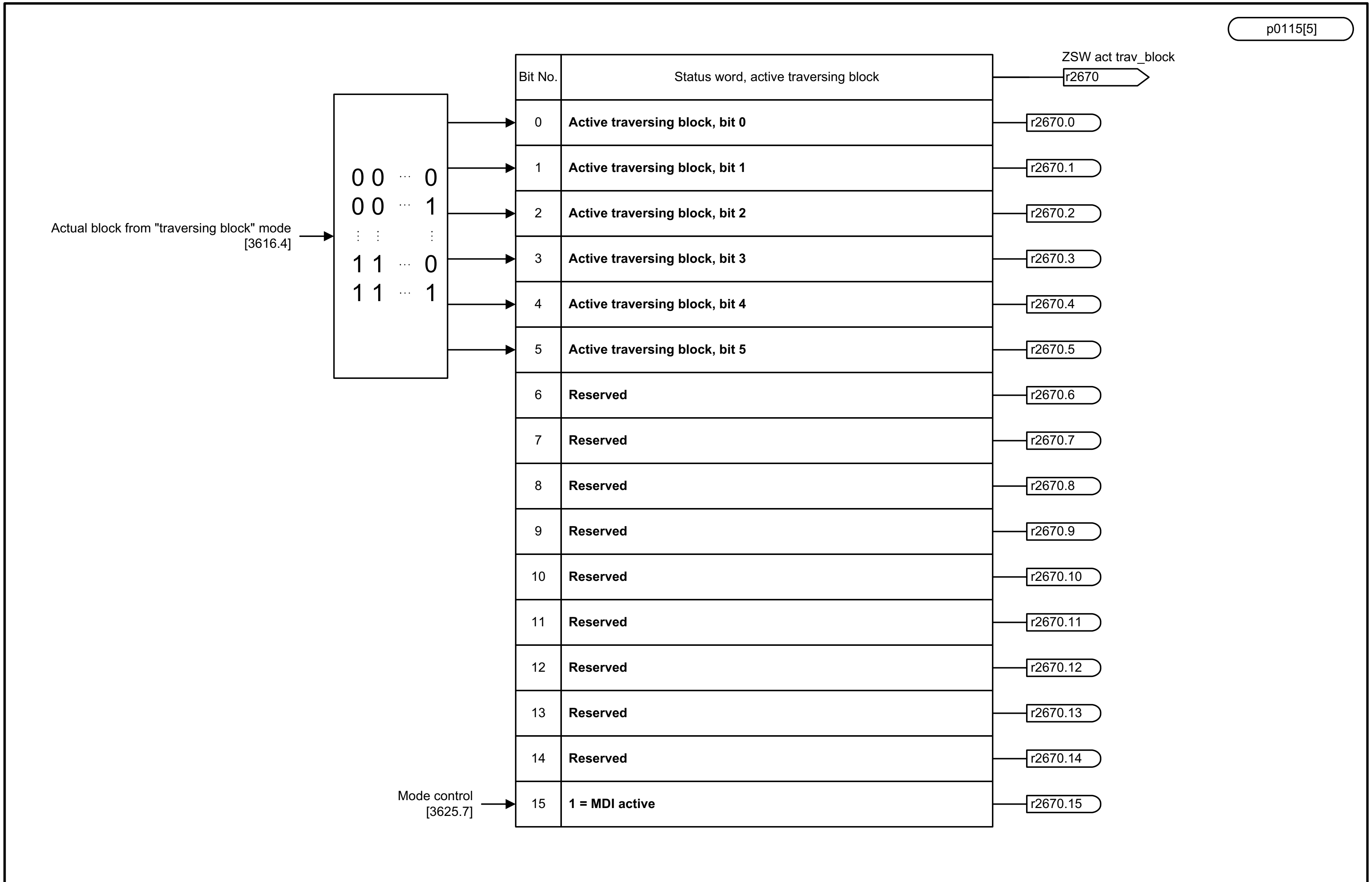
Source	Bit No.	Status word, positioning mode 2	Output
Reference point approach active [3612.7] r2684.0	0	**1 = Reference point approach active**	r2684.0 [4010.1]/p2508
Flying referencing [3614.7] r2684.1	1	**1 = Flying referencing active**	r2684.1 [4010.1]/p2509
≥1 (r2684.0, r2684.1)	2	**1 = Referencing active**	r2684.2
From "referencing/flying referencing" mode [3614.4]	3	**1 = Print mark outside the outer window**	r2684.3
From interpolator [3635.7]	4	**1 = Axis is accelerating**	r2684.4
From interpolator [3635.7]	5	**1 = Axis is decelerating**	r2684.5
From interpolator [3635.3]	6	**1 = Jerk limiting active**	r2684.6
From interpolator [3635.7]	7	**↑ = Activate correction**	r2684.7 [4010.3]/p2512
From dynamic following error monitoring, cam controllers [4025.8]	8	**1 = Following error within tolerance**	r2684.8
<2> From traversing range limits [3630.3] From interpolator [3635.4]	9	**1 = Modulo correction active**	r2684.9
From standstill/positioning monitoring [4020.8]	10	**1 = Target position reached**	r2684.10
From "referencing" mode [3612.7] From "referencing/flying referencing" mode [3614.8]	11	**1 = Reference point set**	r2684.11 [3614.3] [3630.1]
<1> From "traversing block" mode [3616.7] From "direct setpoint input/MDI" mode [3620.8]	12	**↑ = Acknowledgment traversing block activated**	r2684.12
From traversing range limits [3630.3]	13	**1 = STOP cam minus active**	r2684.13
From traversing range limits [3630.3]	14	**1 = STOP cam plus active**	r2684.14
From interpolator [3635.7]	15	**1 = Traversing command active**	r2684.15 [4020.1]/p2554

<1> By default, the status bit is supplied with values from the "traversing block" mode.
However, if the "direct setpoint input/MDI" mode is active, it is supplied with values from this mode.
<2> The signal is only effective when the drive has reached the "Ready for swiching on" state.

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_3646_55_eng.vsd	Function diagram	- 3646 -
EPOS - Status word 2 (r0108.3 = 1, r0108.4 = 1)	07.10.08 V05.01.01	SINAMICS S120/S150	

Fig. 3-179 3646 – Status word 2 (r0108.3 = 1, r0108.4 = 1)

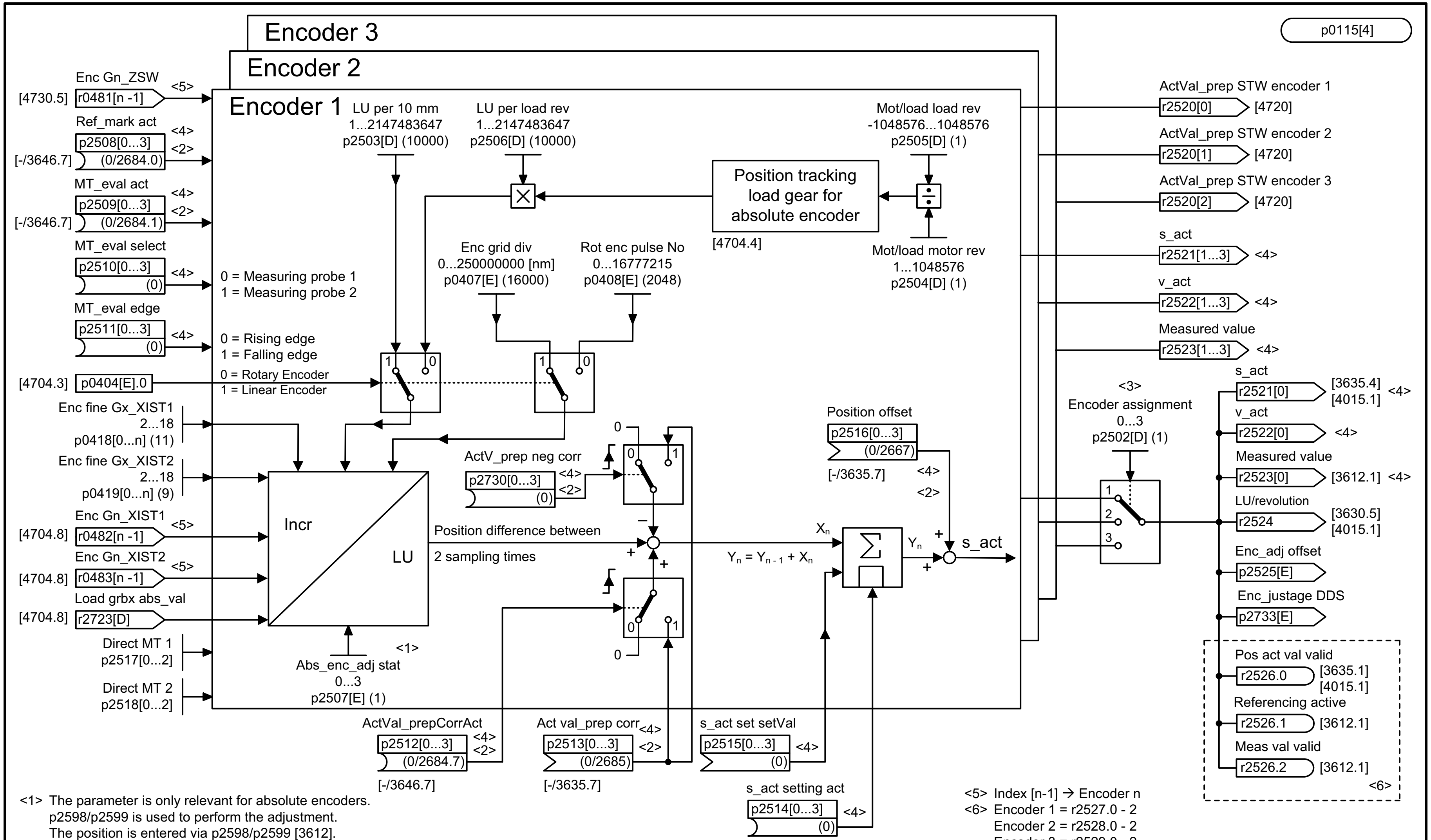


1	2	3	4	5	6	7	8
DO: SERVO, VECTOR					fp_3650_55_eng.vsd	Function diagram	- 3650 -
EPOS - Status word, active traversing block/MDI active (r0108.4 = 1)					15.04.08 V05.01.01	SINAMICS S120/S150	

Fig. 3-180 3650 – Status word, active traversing block/MDI active (r0108.4 = 1)

3.21 Position control

Function diagrams



<1> The parameter is only relevant for absolute encoders.
p2598/p2599 is used to perform the adjustment.
The position is entered via p2598/p2599 [3612].

<2> When the "basic positioner" function module (r0108.4 = 1) is active, these binector/connector inputs are supplied by default with values from this module. The second value specifies this assignment.

<3> p2502 = 0: Position actual value preprocessing is not assigned to any encoder.

<4> [0] for position control; [1...3] for encoders 1 … 3.

LU: Length Unit

<5> Index [n-1] → Encoder n

<6> Encoder 1 = r2527.0 - 2
Encoder 2 = r2528.0 - 2
Encoder 3 = r2529.0 - 2

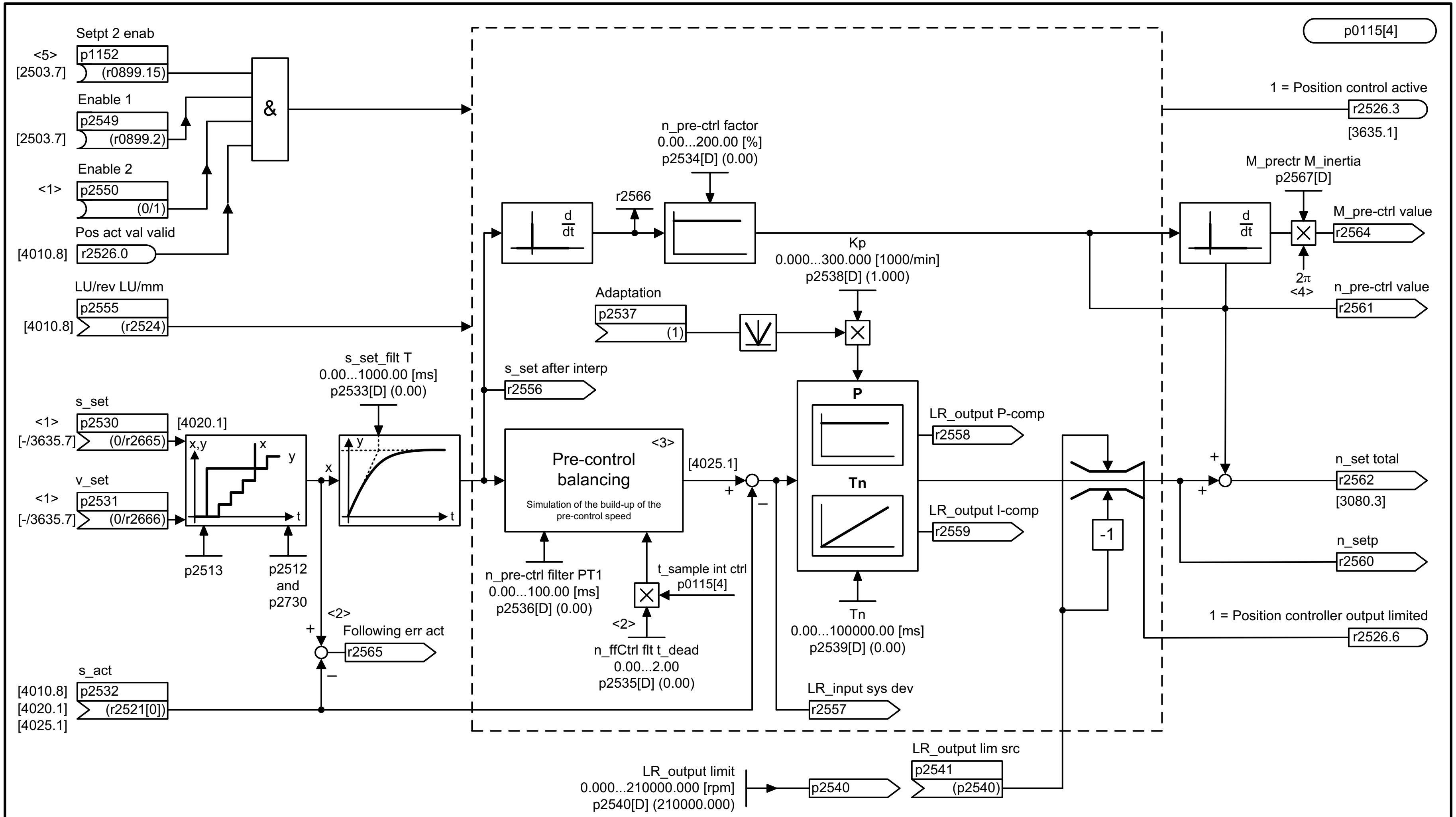
→ Position controller: A07454, A07495, F07453, F07493, F07494
Encoder 1: A07587, A07596, A07581, A07593, A07590
Encoder 2: A07588, A07597, A07582, A07594, A07591
Encoder 3: A07589, A07598, A07583, A07595, A07592

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_4010_55_eng.vsd	Function diagram	- 4010 -
Position control - Position actual value preprocessing (r0108.3 = 1)	15.05.14 V05.01.01	SINAMICS S120/S150	

Fig. 3-181 4010 – Position actual value preprocessing (r0108.3 = 1)

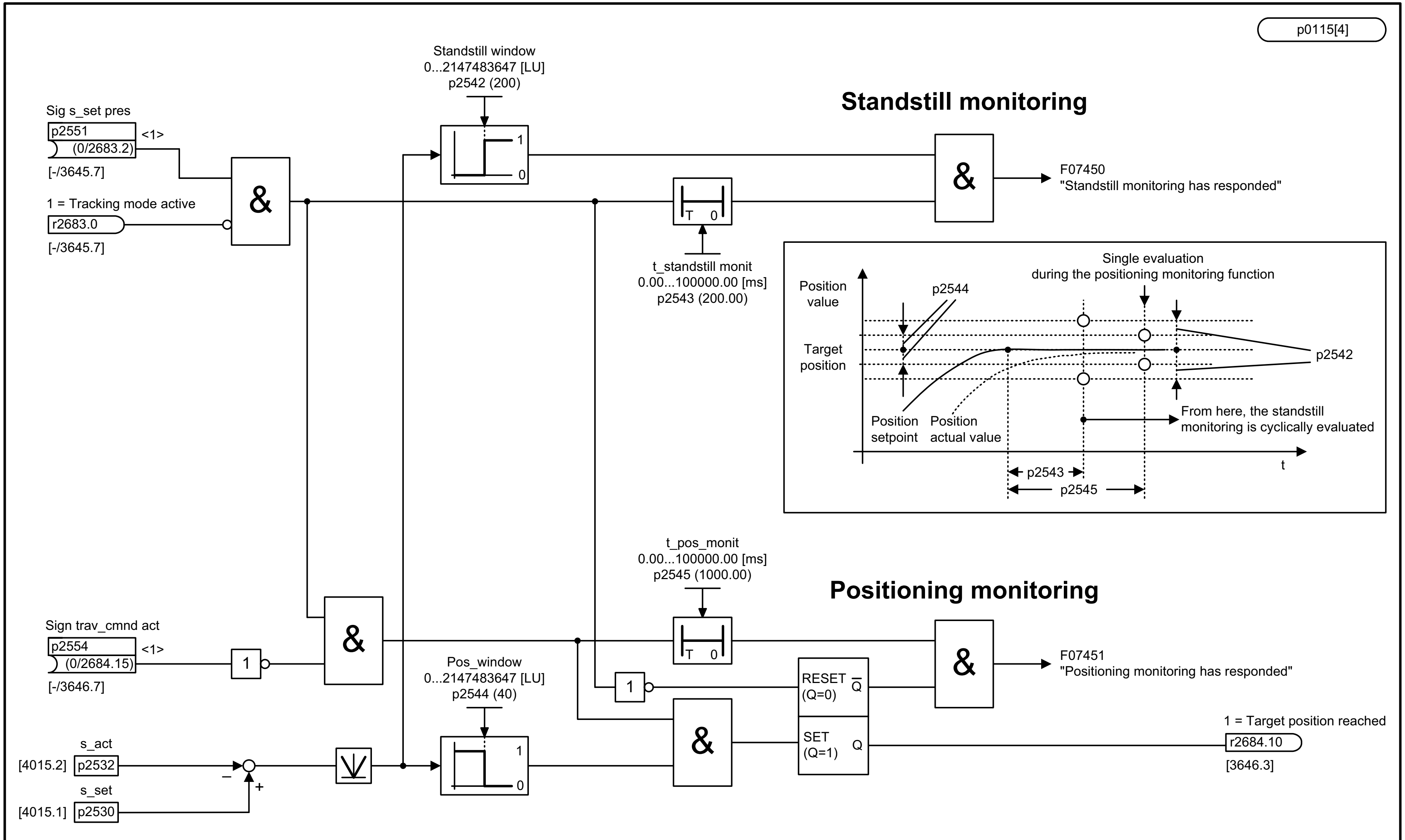
Fig. 3-182 4015 – Position controller (r0108.3 = 1)



<1> When the "basic positioner" function module (r0108.4 = 1) is active, these binector/connector inputs are supplied by default with values from this module. The second value specifies this assignment.
<2> For p2534 > 0 % the following applies: A deadtime of two position controller clock cycles is additionally effective.
<3> For p2534 = 0 % the following applies: Pre-control balancing is not effective.
<4> Not applicable if the "linear motor" function module is active (r0108.12 = 1).
<5> Only if the "extended brake control" function module is active (r0108.14 = 1).

1	2	3	4	5	6	7	8
DO: SERVO, VECTOR					fp_4015_55_eng.vsd	Function diagram	- 4015 -
Position control - Position controller (r0108.3 = 1)					11.04.12 V05.01.01	SINAMICS S120/S150	

Fig. 3-183 4020 – Standstill monitoring / positioning monitoring (r0108.3 = 1)



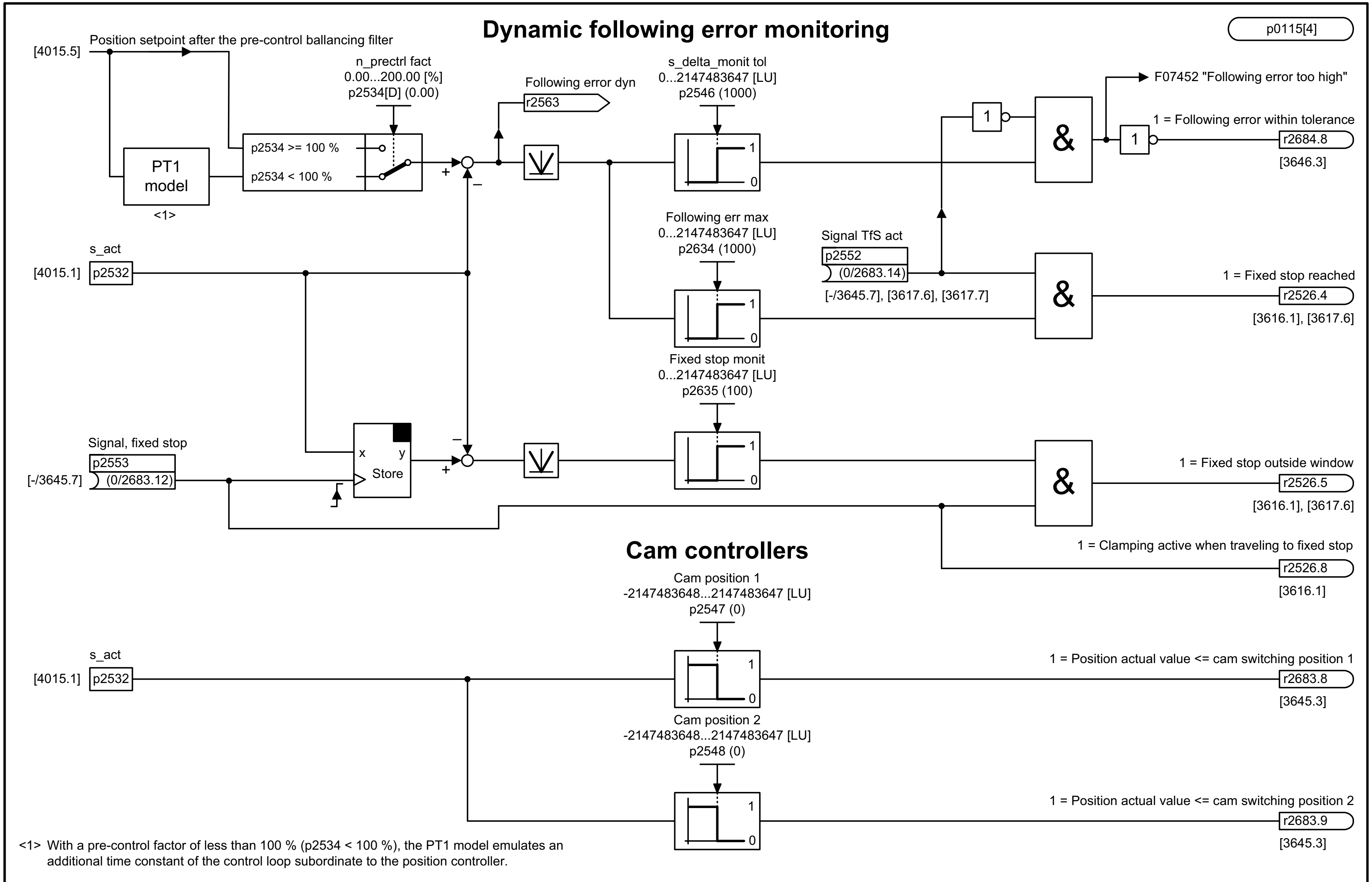
<1> When the "basic positioner" function module (r0108.4 =1) is active, these binector inputs are supplied by default with values from this module. The second value specifies the assignment.

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR | fp_4020_55_eng.vsd | Function diagram | - 4020 -

Position control - Standstill monitoring/positioning monitoring (r0108.3 = 1) | 14.11.11 V05.01.01 | SINAMICS S120/S150

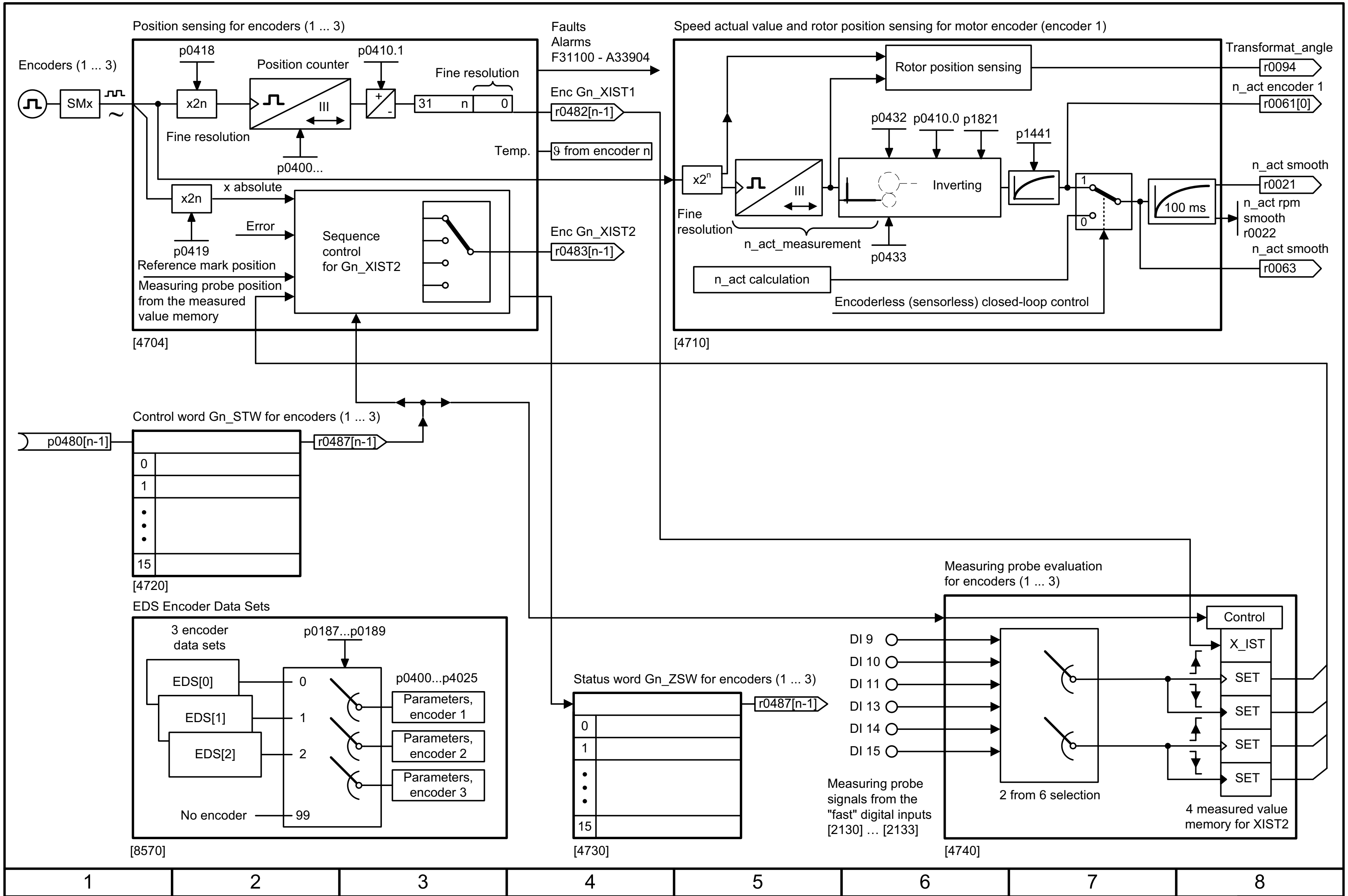
Fig. 3-184 4025 – Dynamic following error monitoring, cam controllers (r0108.3 = 1)



1	2	3	4	5	6	7	8
DO: SERVO, VECTOR					fp_4025_55_eng.vsd	Function diagram	- 4025 -
Position control - Dynamic following error monitoring, cam controllers (r0108.3 = 1)					15.04.08 V05.01.01	SINAMICS S120/S150	

3.22 Encoder evaluation

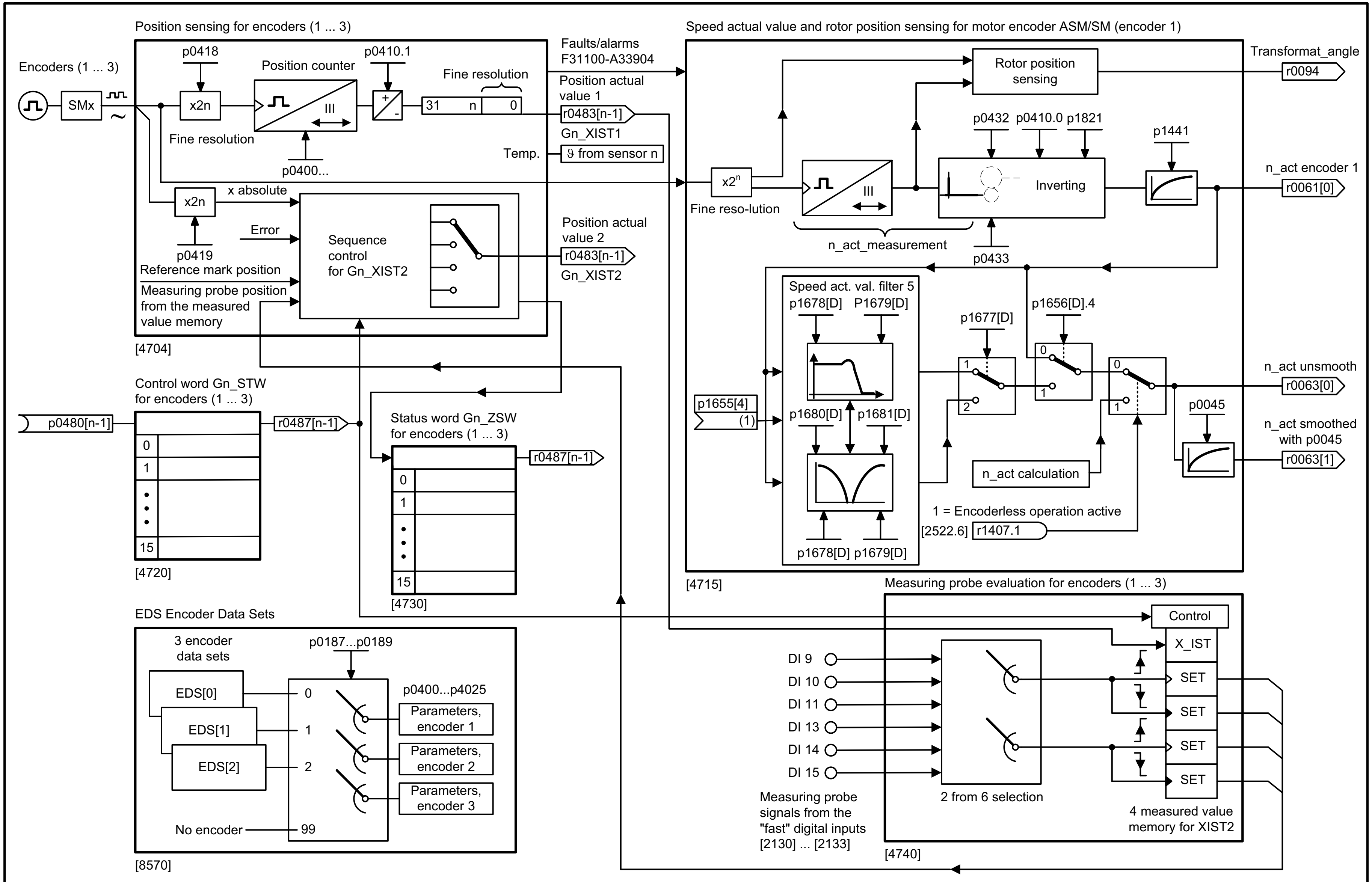
Function diagrams



DO: ENC, SERVO	fp_4700_55_eng.vsd	Function diagram	- 4700 -
Encoder evaluation - Servo control, overview	11.06.13 V05.01.01	SINAMICS S120/S150	

Fig. 3-185 4700 – Servo control, overview

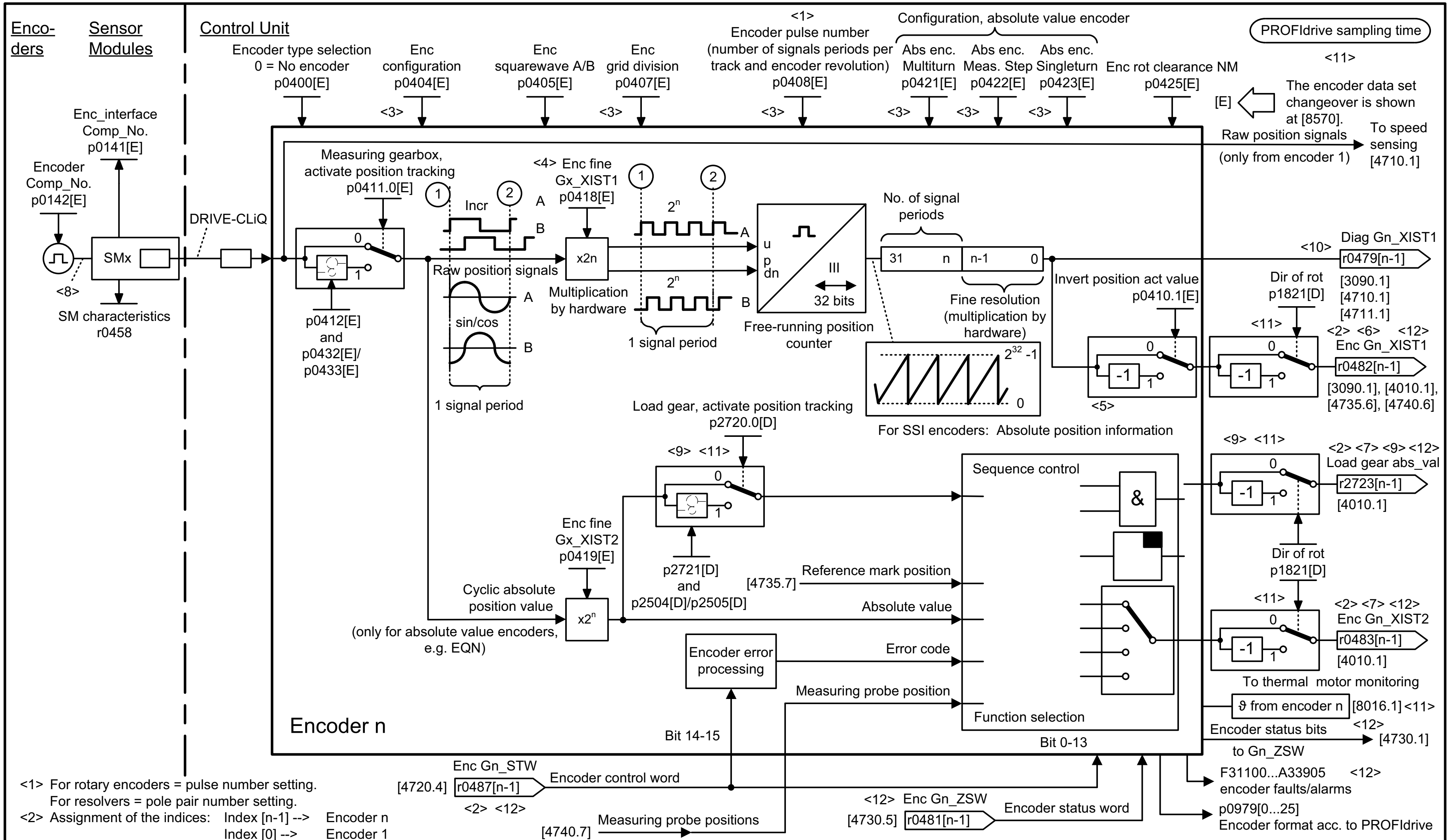
Fig. 3-186 4702 – Vector control, overview



1	2	3	4	5	6	7	8

DO: VECTOR	fp_4702_55_eng.vsd	Function diagram	- 4702 -
Encoder evaluation - Vector control, overview	26.04.13 V05.01.01	SINAMICS S120/S150	

Fig. 3-187 4704 – Position and temperature sensing, encoders 1 … 3

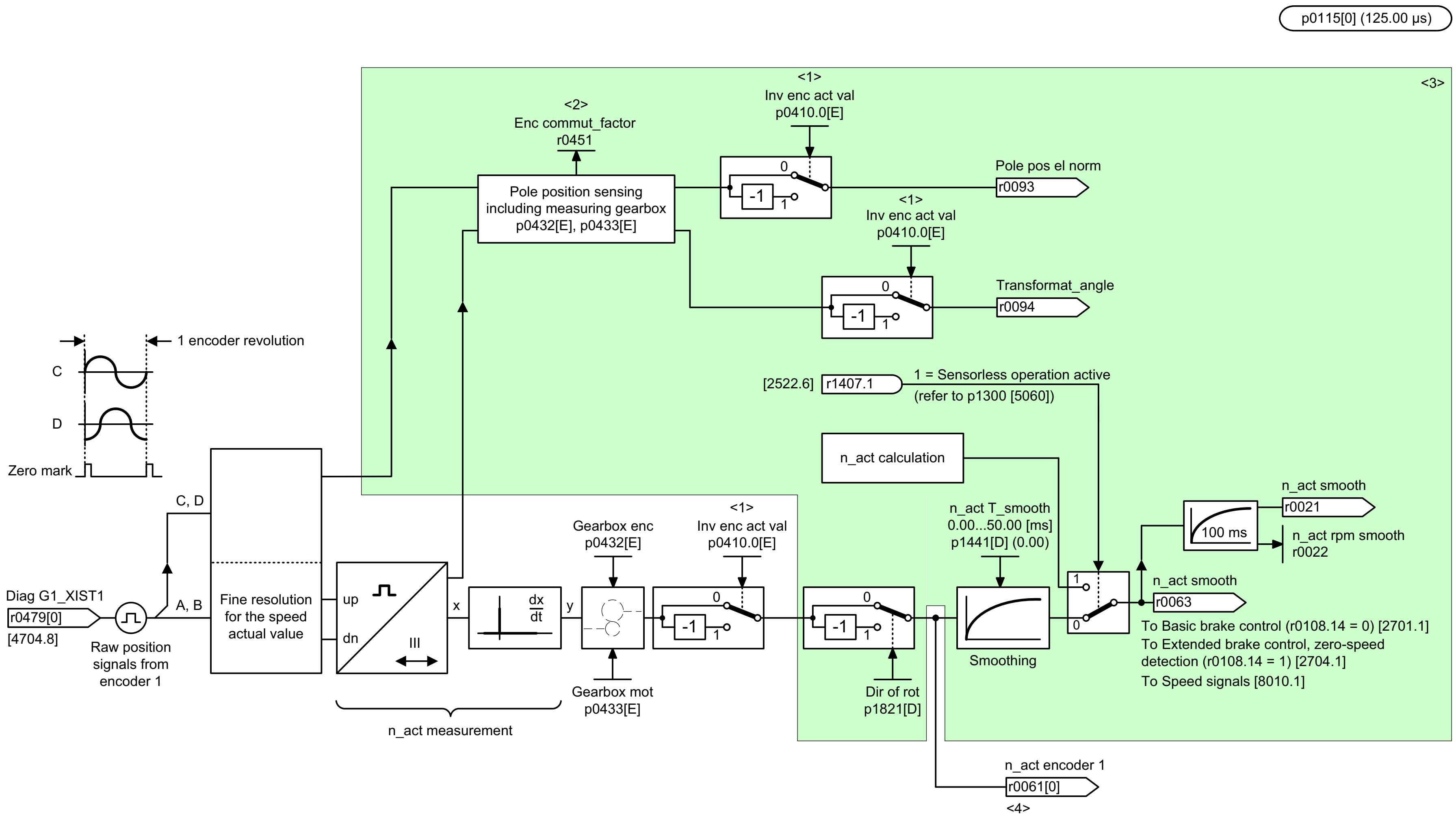


<1> For rotary encoders = pulse number setting.
For resolvers = pole pair number setting.
<2> Assignment of the indices: Index [n-1] --> Encoder n
Index [0] --> Encoder 1
Index [1] --> Encoder 2
Index [2] --> Encoder 3
<3> For "EnDat encoders", these parameters are read out automatically.
<4> For SIMODRIVE-compatible functions: Set p0418 = 11.
<5> Generating the two's complement.
<6> Gn_XIST1 is a free-running position value.
The external control must process the overflows.
<7> The contents of r0483/r2723 are determined by the encoder status word/control word. Refer to [4720] and [4730].
<8> Interface EnDat or SSI.
<9> Only of significance when the "Position control" function module is activated (r0108.3 = 1) and with encoder 1.
<10> Updated in each DRIVE-CLiQ basic cycle.
<11> Not for DO ENC.
<12> DO ENC only encoder 1 acc. Index = 0.

1	2	3	4	5	6	7	8

DO: ENC, SERVO, VECTOR	fp_4704_55_eng.vsd	Function diagram	- 4704 -
Encoder evaluation - Position and temperature sensing, encoders 1 … 3	17.07.13 V05.01.01	SINAMICS S120/S150	

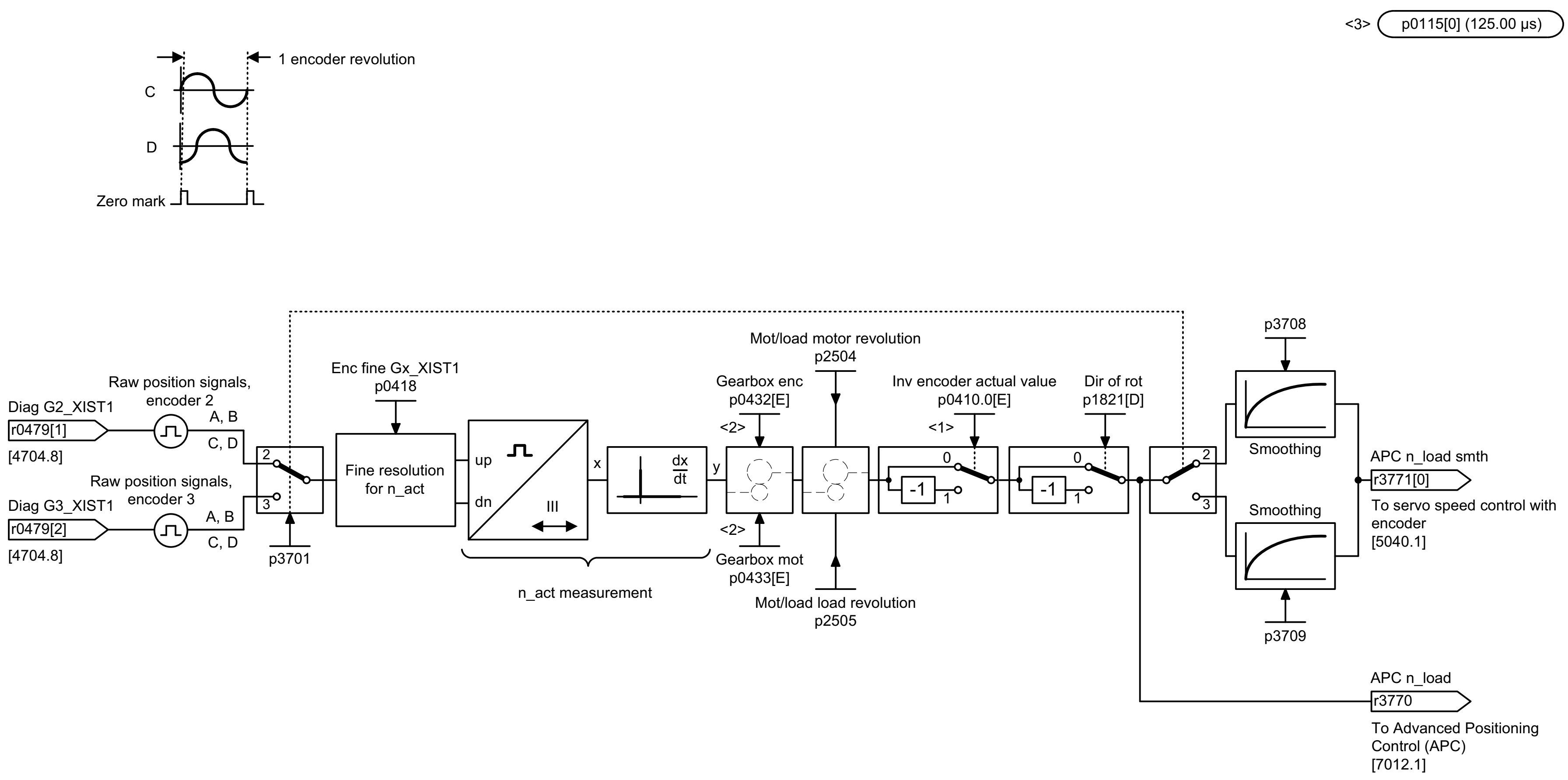
Fig. 3-188 4710 – Speed actual value and pole position sensing, encoder 1



<1> The [E]ncoder data set changeover is represented at [8570].
<2> Ratio between the electrical and mechanical pole position (= motor pole pair number).
<3> Not for drive object ENC.
<4> Drive object ENC smoothed with 1 ms.

1	2	3	4	5	6	7	8

DO: ENC, SERVO	fp_4710_01_eng.vsd	Function diagram	- 4710 -
Encoder evaluation - Speed actual value and pole position sensing, encoder 1	21.06.16 V05.01.01	SINAMICS S120	



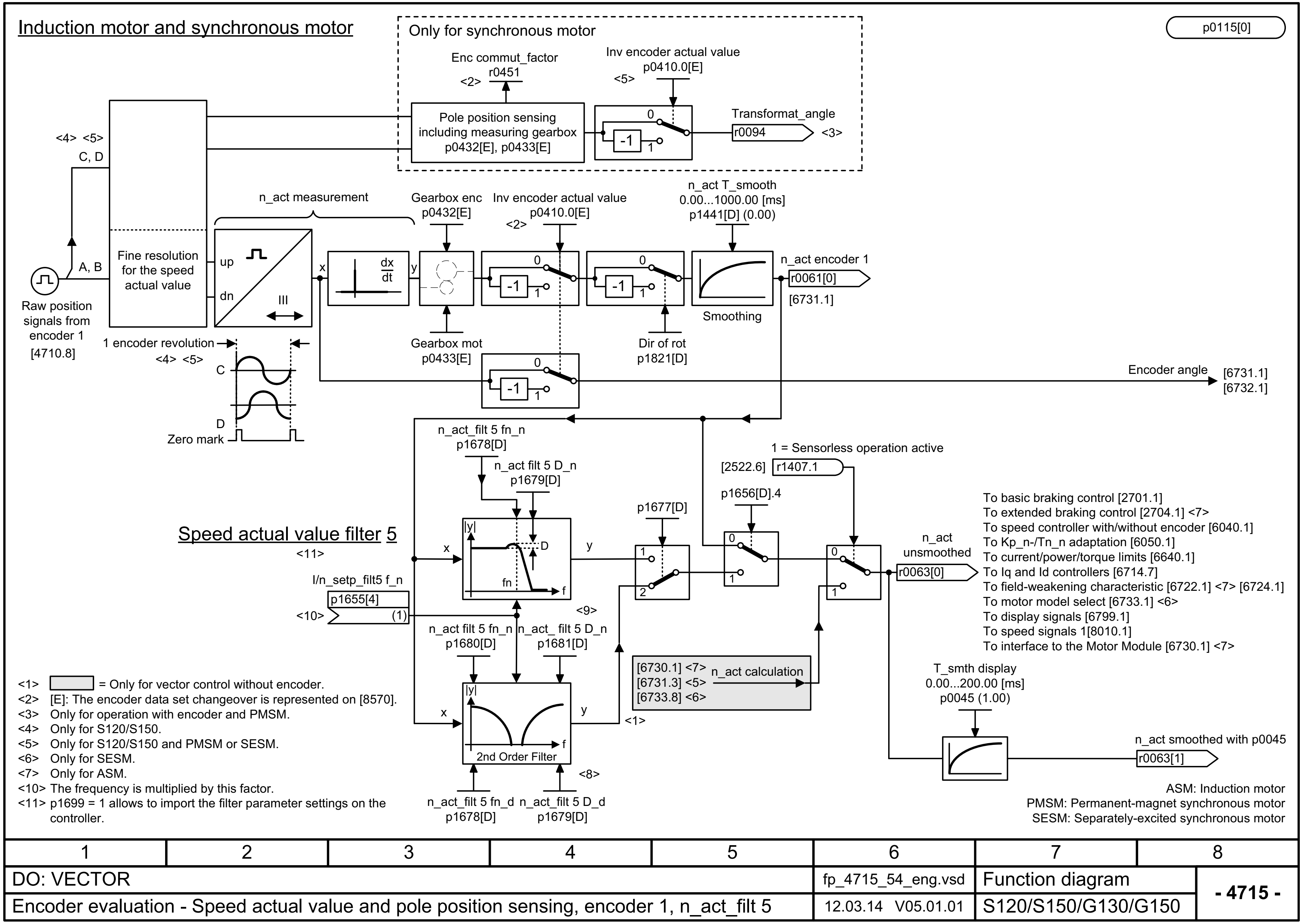
<1> The [E]ncoder data set changeover is determined by [8570].
<2> The following applies for
- motor encoders, rotary/direct measuring systems, linear
- motor encoders, linear/direct measuring system, rotary:
The parameters p2503 (LU per 10 mm) and p2506 (LU per load revolution) are also effective.
<3> The function module "Advanced Position Control (APC, r0108.7)" is only available for SINUMERIK controllers with integrated SINAMICS functions.

1	2	3	4	5	6	7	8

DO: SERVO	fp_4711_01_eng.vsd	Function diagram	- 4711 -
Encoder evaluation - Speed actual value sensing, encoders 2, 3 (r0108.7 = 1, APC activated)	10.11.11 V05.01.01	SINAMICS S120	

Fig. 3-189 4711 – Speed actual value sensing, encoders 2, 3 (r0108.7 = 1, APC activated)

Fig. 3-190 4715 – Actual speed value and pole position sensing, encoder 1, n_act_filt 5



PROFIdrive sampling time

PROFIdrive bit

<1> <5> <6>
p0480[n-1]
(0)

<1> <6>
Enc Gn_STW
r0487[n-1]
To the position sensing, encoder n
[4704.3]

Bit No.	Control word for encoder n (n = 1, 2 or 3) <6>		
	Selects the function to be activated (with bit value = 1)		
	Function No.	Function for bit 7 = 0 (search for reference mark)	Function for bit 7 = 1 (flying measurement)
0	1	Reference mark 1	Measuring probe 1
1	2	Reference mark 2	Measuring probe 1
2	3	Reference mark 3	Measuring probe 2
3	4	Reference mark 4	Measuring probe 2
	Start/stop/read selected function		
4	0 1 0 1		
5	0 0 1 1		
6	0 0 0 0		
	Interrupt function / Read generated value / Activate selected function / No function		
7	Mode of the function to be activated 1 = flying measurement 0 = Search for reference mark (zero mark or BERO)		
8...12	Reserved part		
13	1 = Request cyclic transfer of the absolute position value in Gn_XIST2 (e.g. EQN absolute track; acknowledgment in Gn_ZSW bit 13)		
14	1 = Request parking encoder (handshake with Gn_ZSW bit 14) <4>		
15	= acknowledge encoder fault (located in Gn_ZSW, bit 15; Handshake with Gn_ZSW bit 11)		

<3>

Bits 0...13 control what is transferred in Gn_XIST 2.
There are 3 alternatives:
- Bit 7 = 0: Position actual value at the reference mark <2>
- Bit 7 = 1: Position actual value when the measuring probe edge is received <2>
- Bit 13 = 1: Cyclic absolute position value from absolute encoder

<1> Index [n-1] --> encoder n
Index [0] --> encoder 1
Index [1] --> encoder 2
Index [2] --> encoder 3

<2> Actual position values are read out from Gn.XIST2 using a handshake procedure.
e.g.: Read position value(s) at reference mark(s)
1. Set r0487.[0-3] according to the function to be activated.
2. Set r0487.4 (activate function).
3. Reset all bits from r0487.[0-4] to 0.
4. r0481[0-3] must be active depending on the activated function.
5. Overtravel zero mark(s) until all bits in r0481.[0-3] are reset to 0.
6. Select r0487.[0-3] individually and activate with r0487.5 until r0481.[4-7] is equal to 1 and read out the position values in r0483.
7. Reset all bits, starting with r0487.5 followed by r0487.[0-3].

Select function 1 [Bit 3...0] ("search for reference mark 1")

Start function [Bit 6...4]

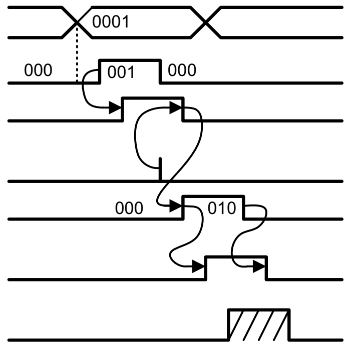
Function active [Gn_ZSW Bit 0]

Actual value save at the reference mark

Read generated value [Bit 6...4]

Value from function 1 available [Gn_ZSW Bit 4]

Position actual value at reference mark 1 in Gn_XIST2



Further reference marks can be read according to the PROFIdrive profile.

<3> The bits are processed with the following priority sequence (highest priority --> lowest priority bit): Bit 14 --> Bit 15 --> Bit 4-7 --> Bit 12 --> Bit 13.
<4> The checkback signal is provided in Gn_ZSW bit 14, but the encoder is not actually parked.
<5> If the "position module" function module (r0108.3 = 1) is activated, the interconnection is established via r2520[0...2] from [4010.8].
If a standard telegram (PROFIdrive) is selected, the interconnection is performed according to the specifications of the standard telegrams [2415] and [2416].
<6> DO ENC only encoder 1 acc. Index = 0.

1	2	3	4	5	6	7	8
DO: ENC, SERVO, VECTOR					fp_4720_55_eng.vsd	Function diagram	- 4720 -
Encoder evaluation - Encoder interface, receive signals, encoders 1 ... 3					07.06.16 V05.01.01	SINAMICS S120/S150	

Fig. 3-191 4720 – Encoder interface, receive signals, encoders 1 ... 3

PROFIdrive sampling time

PROFIdrive bit

Encoder status bits from the position sensing, encoder n [4704.8] → Bit No.: Status word from encoder n (n = 1, 2 or 3) <2>

Enc Gn_ZSW r0481[n-1] <1> <2> → to the sequence control for Gn_XIST2 [4704.5]

Bit No.	Status word from encoder n (n = 1, 2 or 3) <2>	
Bit 0	Feedback signal of the active function (1 = function active)	
Bit 1		
Bit 2		
Bit 3		
Bit 4	1 = Position actual value from function 1	Generated value in Gn_XIST2 (and can be read)
Bit 5	1 = Position actual value from function 2	
Bit 6	1 = Position actual value from function 3	
Bit 7	1 = Position actual value from function 4	
Bit 8	1 = Measuring probe 1 deflected (high signal)	
Bit 9	1 = Measuring probe 2 deflected (high signal)	
Bit 10	Reserved	
Bit 11	1 = Acknowledge encoder fault active	
Bit 12	Reserved (for reference point offset)	
Bit 13	Absolute value is cyclically transferred	
Bit 14	Parking encoder active (i.e. the encoder is not operational)	
Bit 15	Encoder fault, the fault is in Gn_XIST2 (r0483)	

Bits 0 ... 3: Feedback signal of the active function (1 = function active)

Function No.	For reference number and flying measurement
1	reference mark 1 or measuring probe 1 (rising edge)
2	reference mark 2 or measuring probe 1 (falling edge)
3	reference mark 3 or measuring probe 2 (rising edge)
4	reference mark 4 or measuring probe 2 (falling edge)

From the measuring probe evaluation [4740.4] → Bit 8, Bit 9

Position value 2 from encoder n <2>

The contents of position actual value 2 (Gn_XIST2) at [4704] depends on Gn_STW and Gn_ZSW.
This can be done as follows:

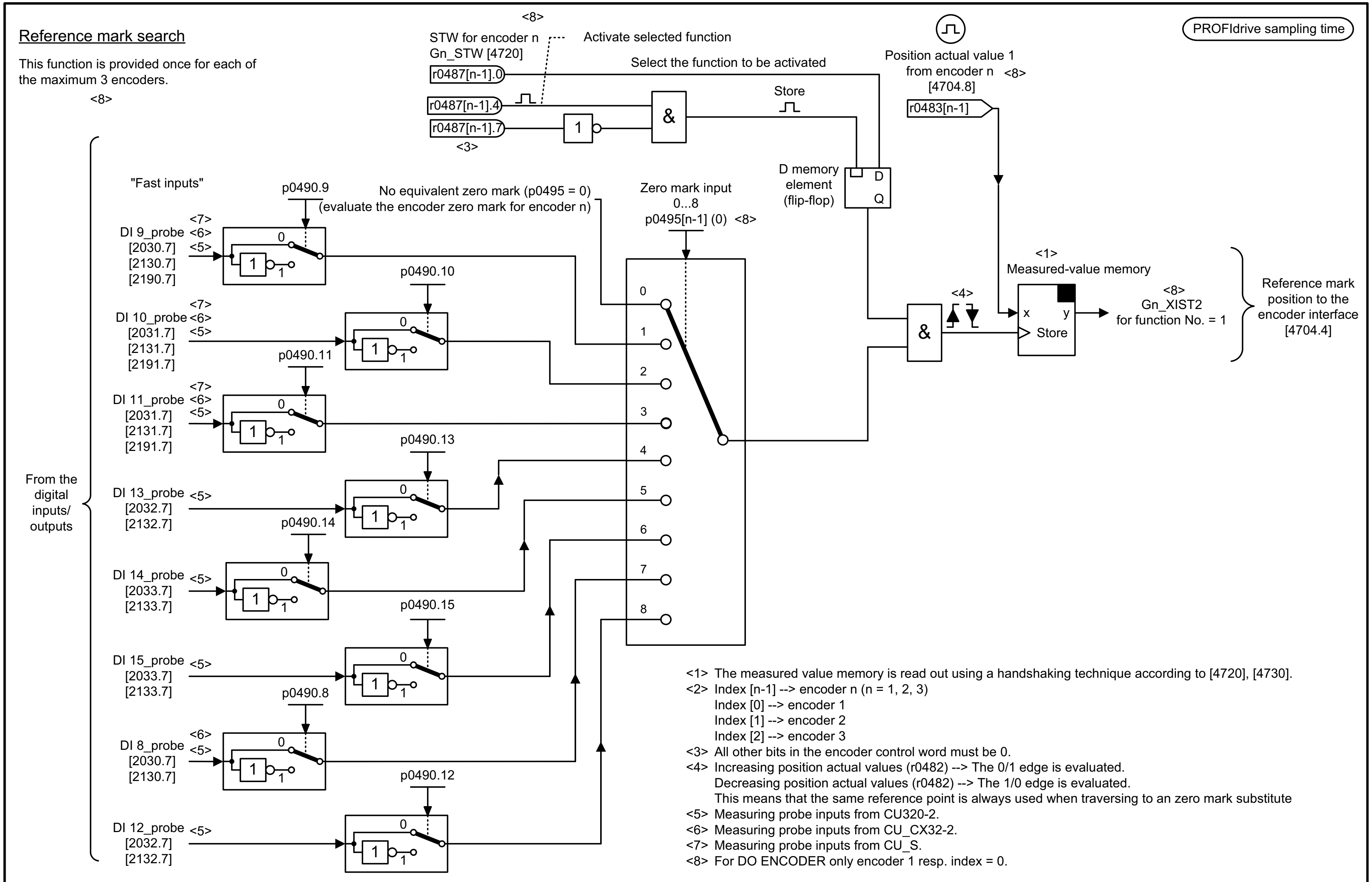
- Undefined for a parking encoder (Gn_ZSW.14 = 1).
- For Gn_ZSW.15 = 1 the fault code for encoder faults is located here.
- Position actual value at the reference mark (for Gn_STW.7 = 0 and Gn_ZSW.4-7 > 0; with handshake).
- Position actual value due to flying measurement (for Gn_STW.7 = 1 and Gn_ZSW.4.7 > 0; with handshake).
- Cyclic absolute position value (free-running value, e.g. from the EQN absolute track (for Gn_ZSW.13 = 1).

<1> Index [n-1] --> encoder n
Index [0] --> encoder 1
Index [1] --> encoder 2
Index [2] --> encoder 3
<2> DO ENC only encoder 1 acc. Index = 0.

1	2	3	4	5	6	7	8

DO: ENC, SERVO, VECTOR	fp_4730_55_eng.vsd	Function diagram	- 4730 -
Encoder evaluation - Encoder interface, send signals, encoders 1 ... 3	17.07.13 V05.01.01	SINAMICS S120/S150	

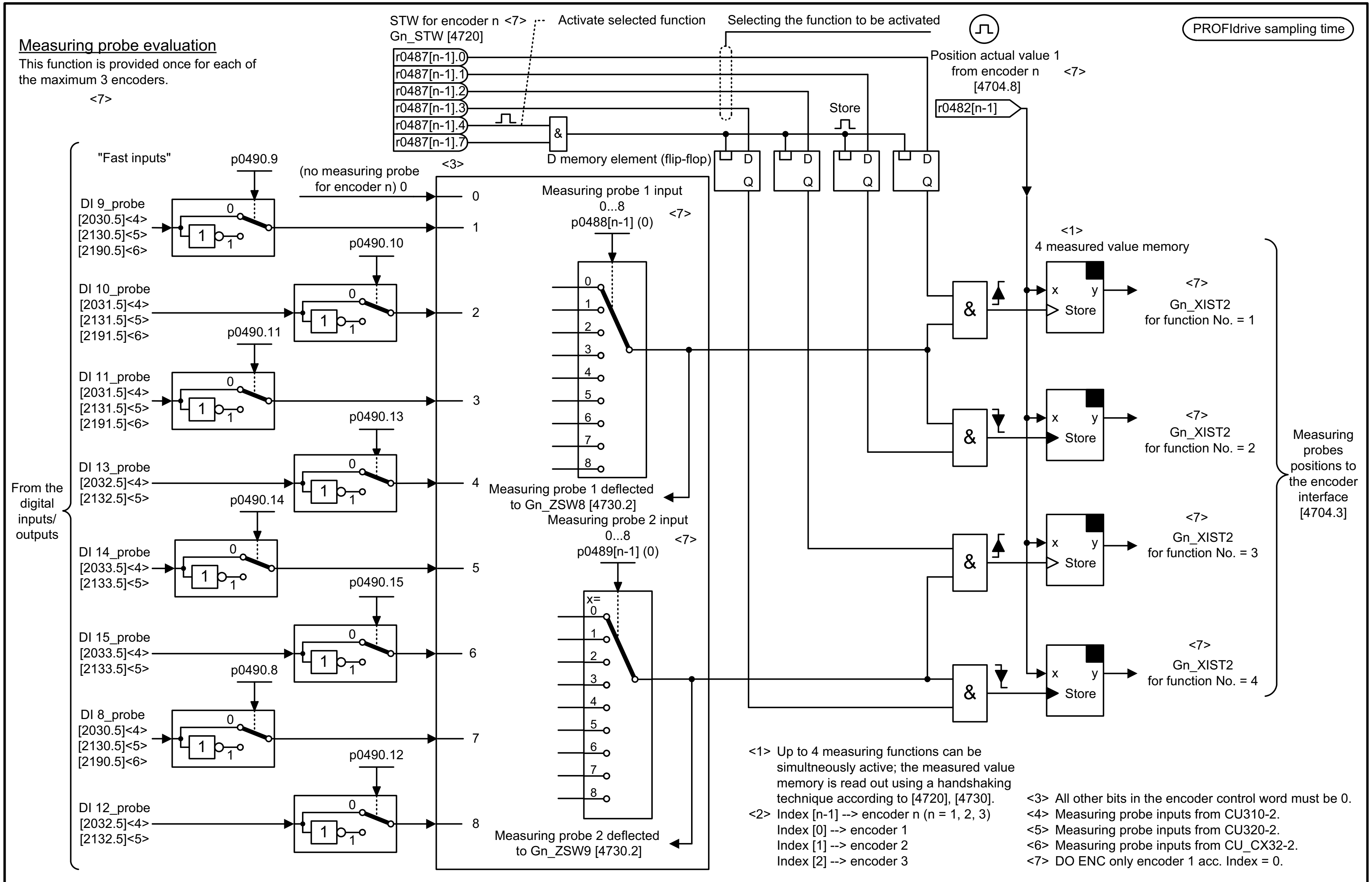
Fig. 3-192 4730 – Encoder interface, send signals, encoders 1 ... 3



<1> The measured value memory is read out using a handshaking technique according to [4720], [4730].
<2> Index [n-1] --> encoder n (n = 1, 2, 3)
Index [0] --> encoder 1
Index [1] --> encoder 2
Index [2] --> encoder 3
<3> All other bits in the encoder control word must be 0.
<4> Increasing position actual values (r0482) --> The 0/1 edge is evaluated.
Decreasing position actual values (r0482) --> The 1/0 edge is evaluated.
This means that the same reference point is always used when traversing to an zero mark substitute
<5> Measuring probe inputs from CU320-2.
<6> Measuring probe inputs from CU_CX32-2.
<7> Measuring probe inputs from CU_S.
<8> For DO ENCODER only encoder 1 resp. index = 0.

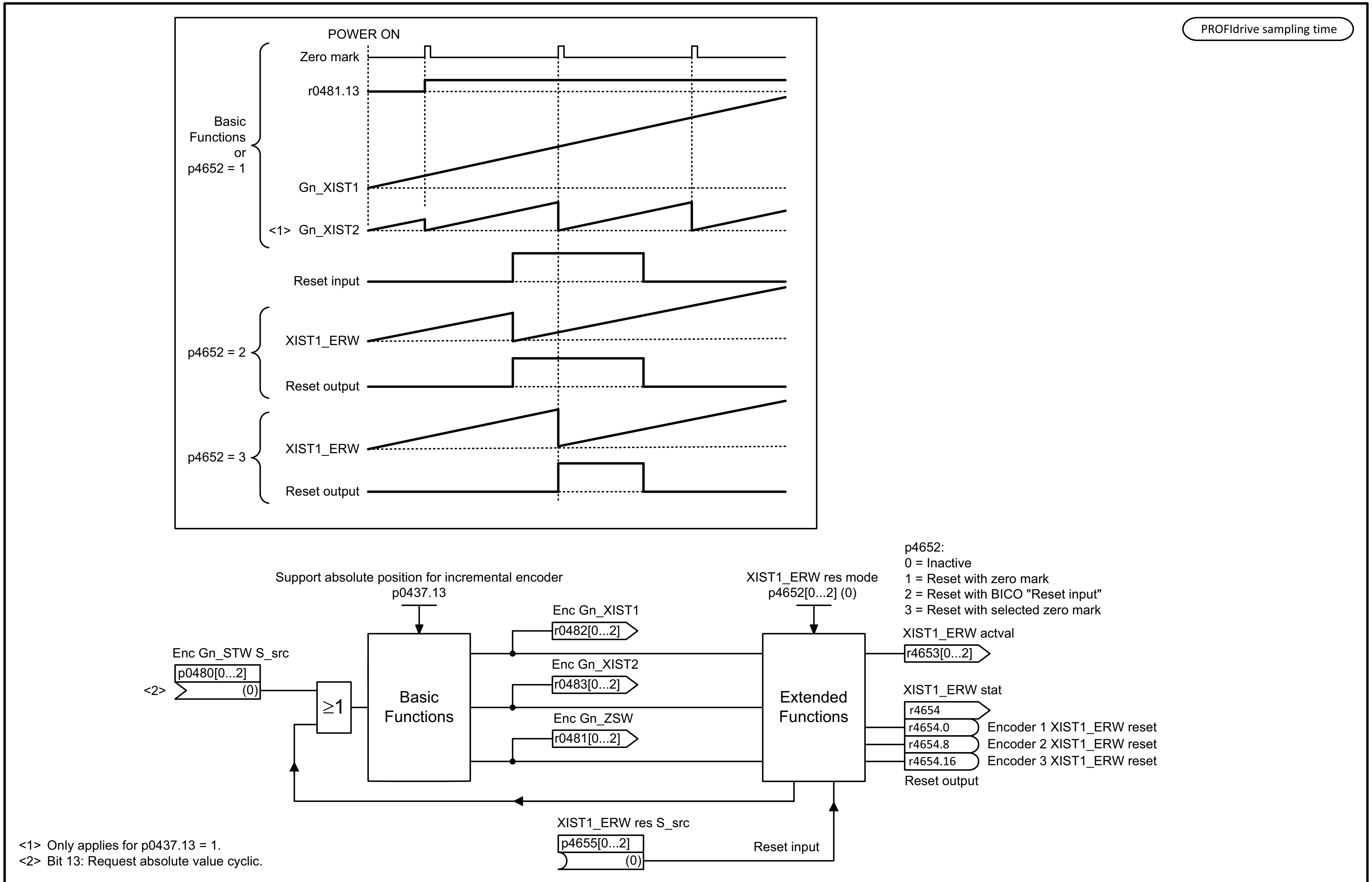
1	2	3	4	5	6	7	8
DO: ENC, SERVO, VECTOR					fp_4735_55_eng.vsd	Function diagram	- 4735 -
Encoder evaluation - Reference mark search with external zero mark, encoders 1 ... 3					23.03.17 V05.01.01	SINAMICS S120/S150	

Fig. 3-193 4735 – Reference mark search with external zero mark, encoders 1 ... 3



1	2	3	4	5	6	7	8
DO: ENC, SERVO, VECTOR					fp_4740_55_eng.vsd	Function diagram	- 4740 -
Encoder evaluation - Measuring probe evaluation, measured value memory, encoders 1 ... 3					17.07.13 V05.01.01	SINAMICS S120/S150	

Fig. 3-194 4740 – Measuring probe evaluation, measured value memory, encoders 1 ... 3



1	2	3	4	5	6	7	8

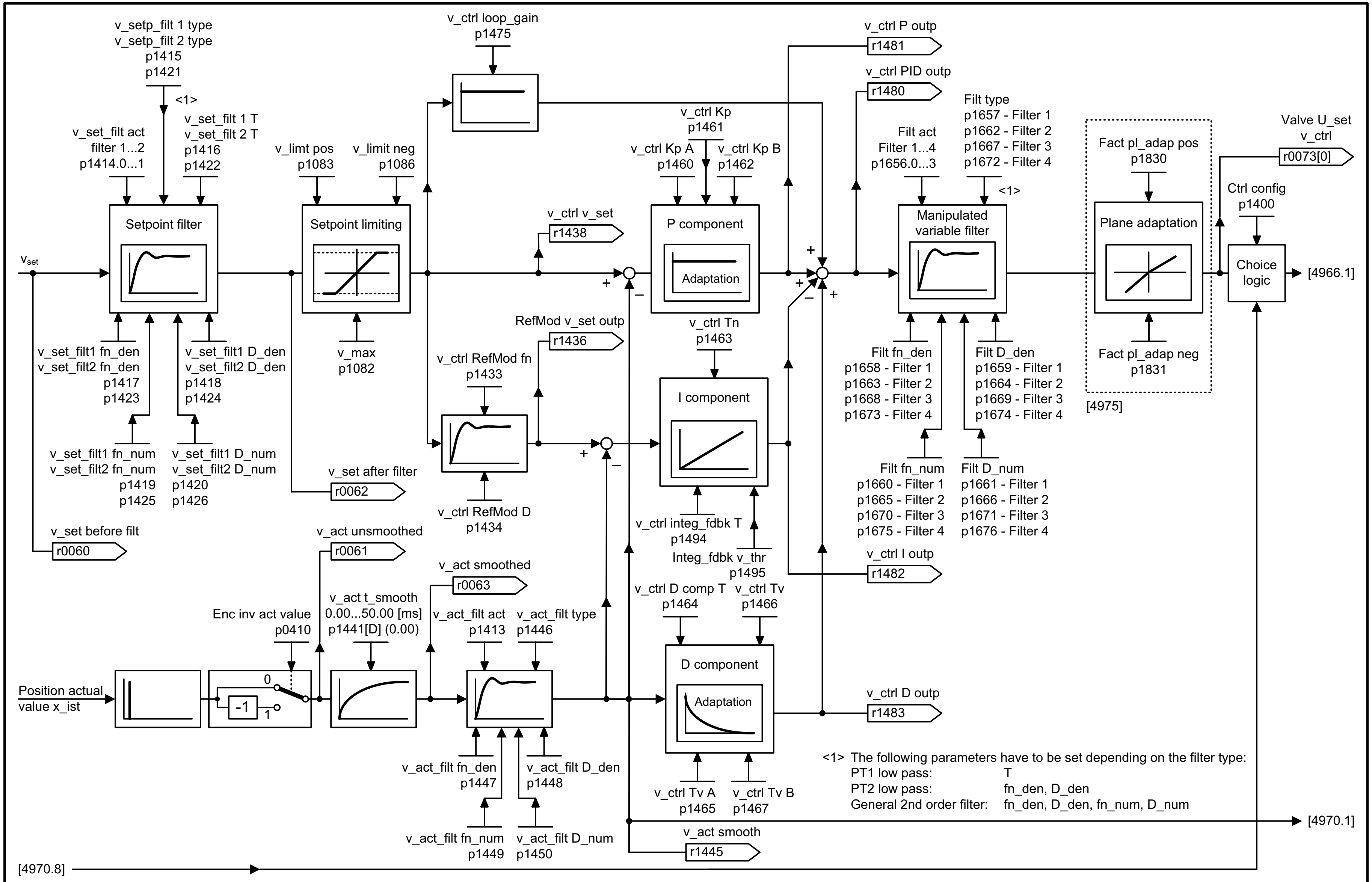
DO: ENC, SERVO, VECTOR, VECTOR3P, VECTORDM, VECTORGL, VECTORM2C, VECTORMV, VECTORSL	fp_4750_51_eng.vsd	Function diagram	- 4750 -
Encoder evaluation - Absolute value for incremental encoder	18.07.17 V05.01.01	SINAMICS	

Fig. 3-195 4750 – Absolute value for incremental encoder

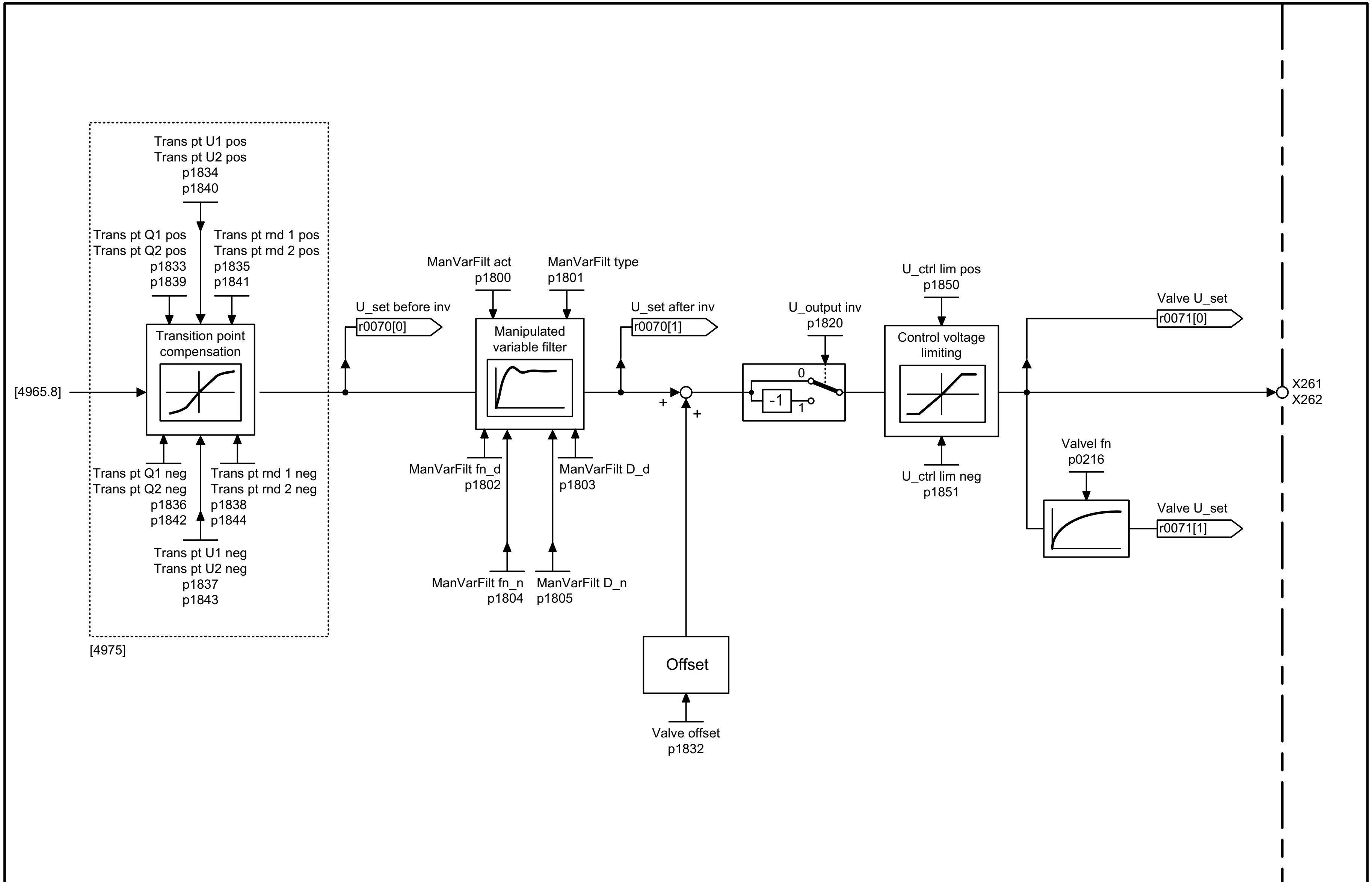
3.23 Hydraulic drive

Function diagrams

Fig. 3-196 4965 – Velocity controller



1	2	3	4	5	6	7	8
DO: HLA					fp_4965_01_eng.vsd	Function diagram	- 4965 -
Hydraulic drive - Velocity controller					10.01.18 V05.01.01	SINAMICS S120	

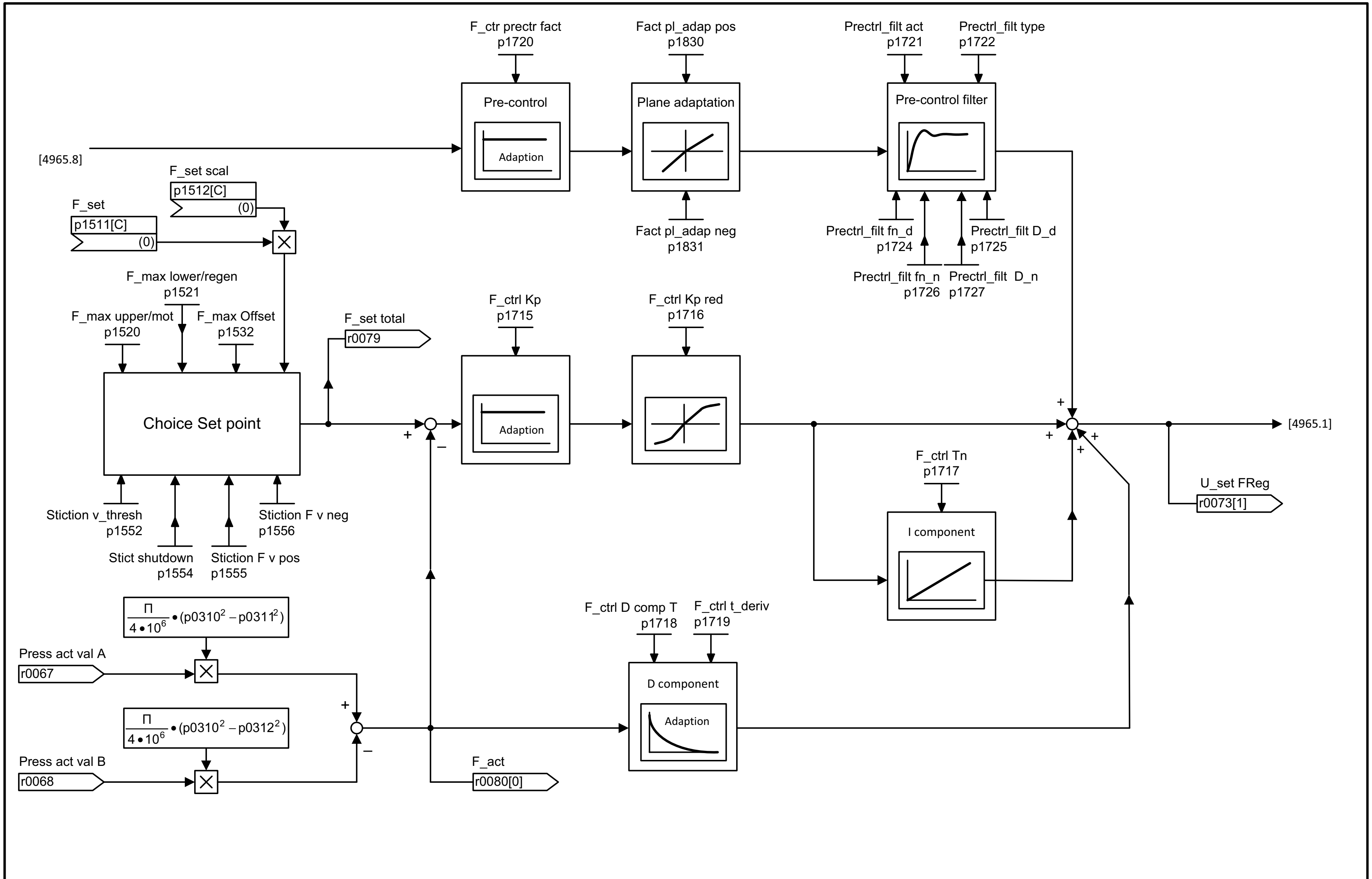


1	2	3	4	5	6	7	8

DO: HLA	fp_4966_01_eng.vsd	Function diagram	**- 4966 -**
Hydraulic drive - Transition point compensation	30.04.13 V05.01.01	SINAMICS S120	

Fig. 3-197 4966 – Transition point compensation

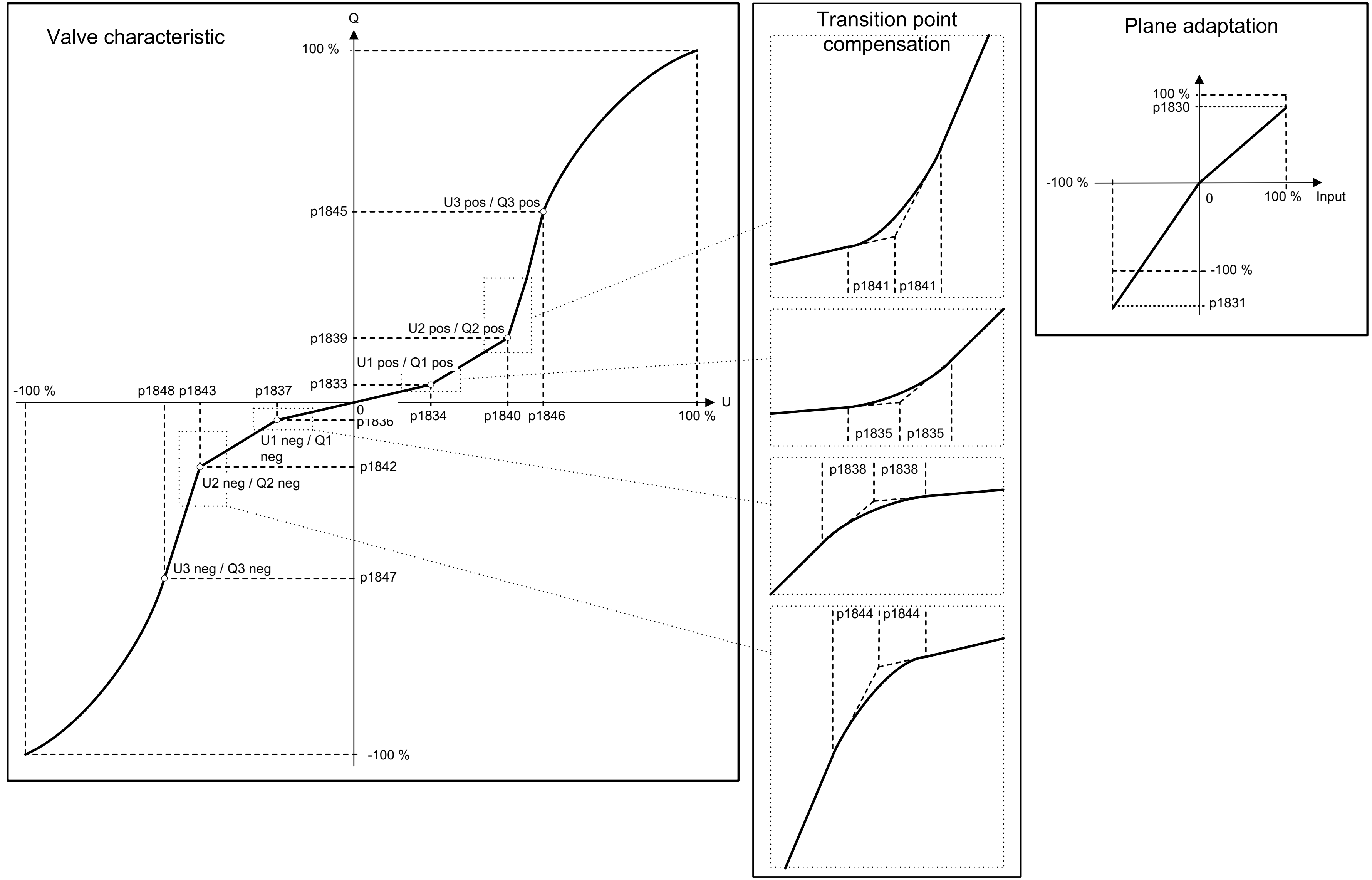
Fig. 3-198 4970 – Force controller



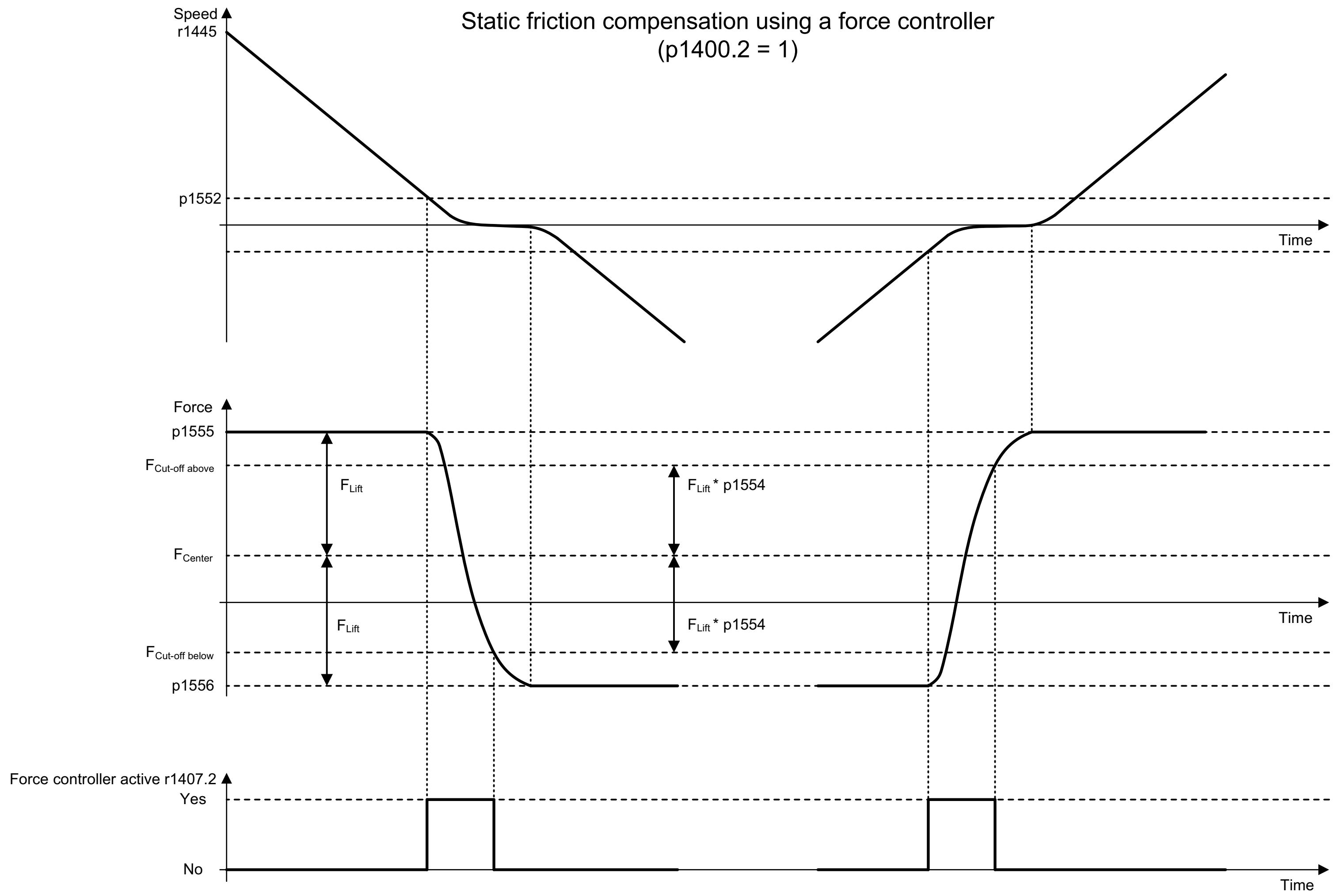
1	2	3	4	5	6	7	8

DO: HLA	fp_4970_01_eng.vsd	Function diagram	- 4970 -
Hydraulic drive - Force controller	16.09.13 V05.01.01	SINAMICS S120	

Fig. 3-199 4975 – Valve characteristic, surface adaptation



1	2	3	4	5	6	7	8
DO: HLA					fp_4975_01_eng.vsd	Function diagram	- 4975 -
Hydraulic drive - Valve characteristic, plane adaptation					18.04.13 V05.01.01	SINAMICS S120	

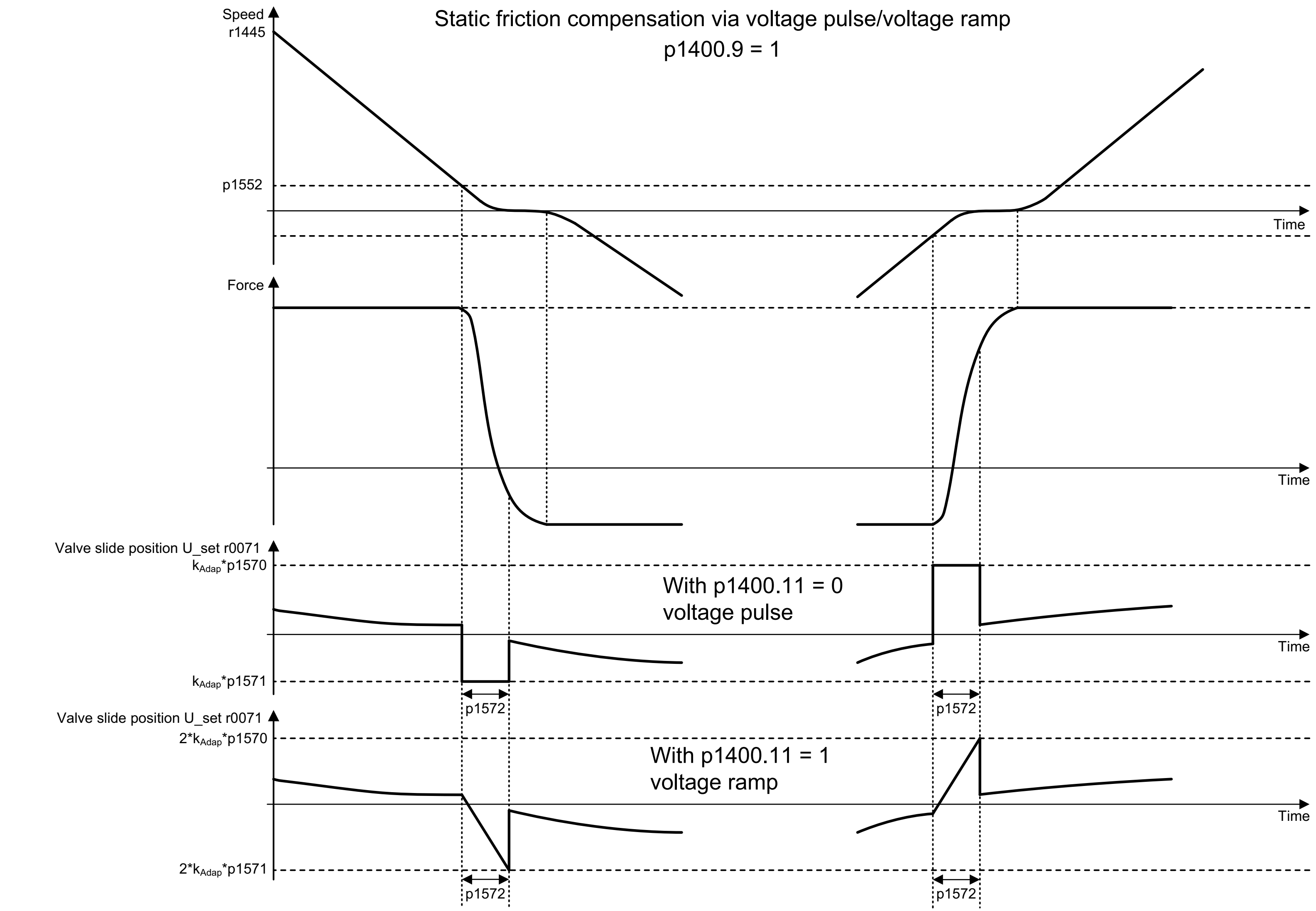


Prerequisites:
Pressure sensors are provided for pA and pB, the force controller has been commissioned.
The outer force (F_{Center}) remains unchanged.
The axis has been referenced, the piston has been adjusted (r1407.3 = 1).
The dead volume has been correctly parameterized (p0314, p0315, p0346 - p0348).

1	2	3	4	5	6	7	8
DO: HLA					fp_4977_01_eng.vsd	Function diagram	- 4977 -
Hydraulic drive - Static friction compensation using a force controller (p1400.2 = 1)					30.01.14 V05.01.01	SINAMICS S120	

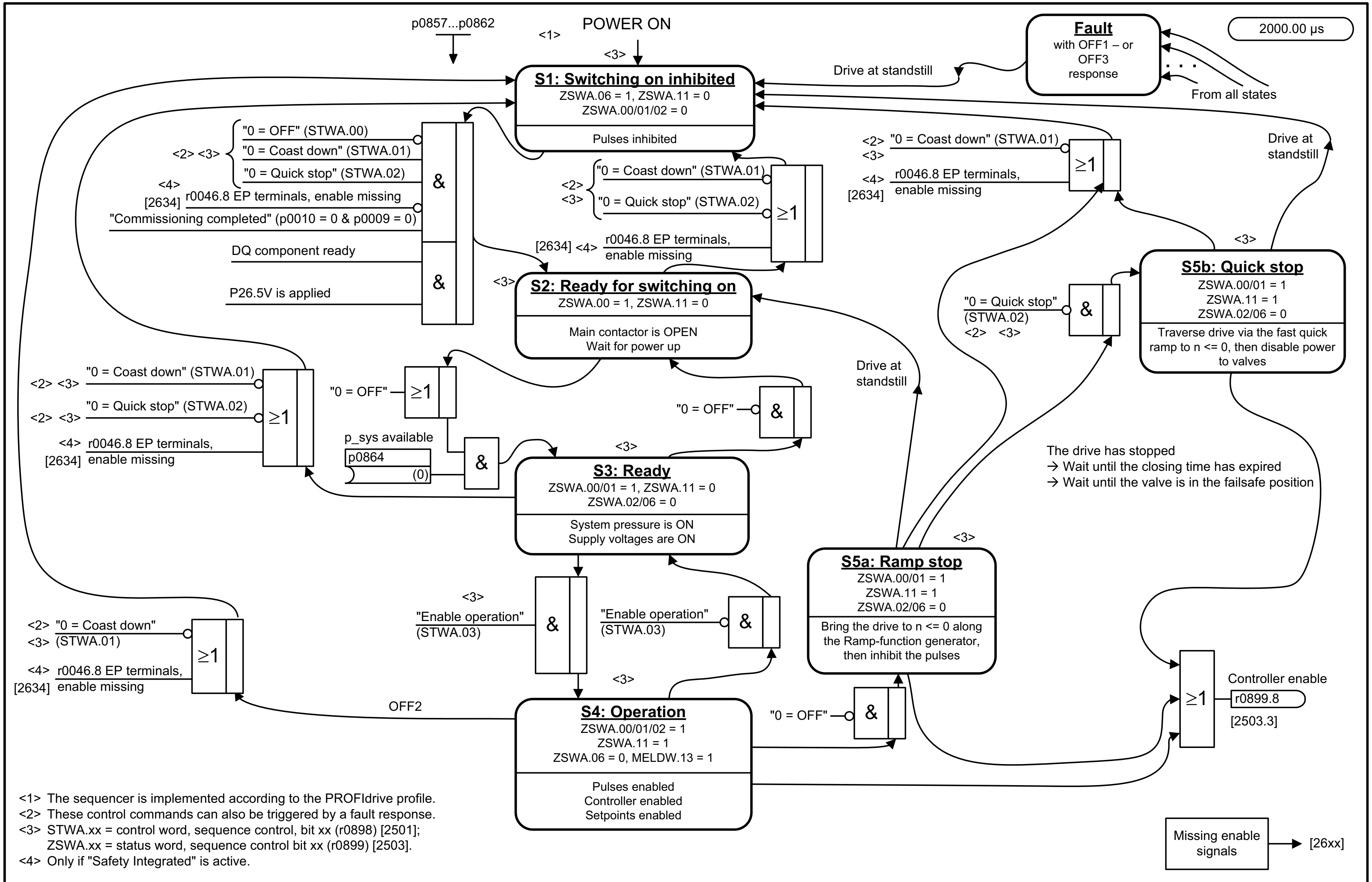
Fig. 3-200 4977 – Static friction compensation using a force controller (p1400.2 = 1)

Fig. 3-201 4978 – Static friction compensation with voltage pulse / voltage ramp



k_{Adap}: Factor for the position adaptation of the force controller. Value 1 in the center, descending towards the margin > 0.
Prerequisites: The axis has been referenced, the piston has been adjusted (p1407.3 = 1) and the dead volume has been correctly parameterized (p0314, p0315, p0346 - p0348).

1	2	3	4	5	6	7	8
DO: HLA					fp_4978_01_eng.vsd	Function diagram	- 4978 -
Hydraulic drive - Static friction compensation via voltage pulse/voltage ramp					30.01.14 V05.01.01	SINAMICS S120	



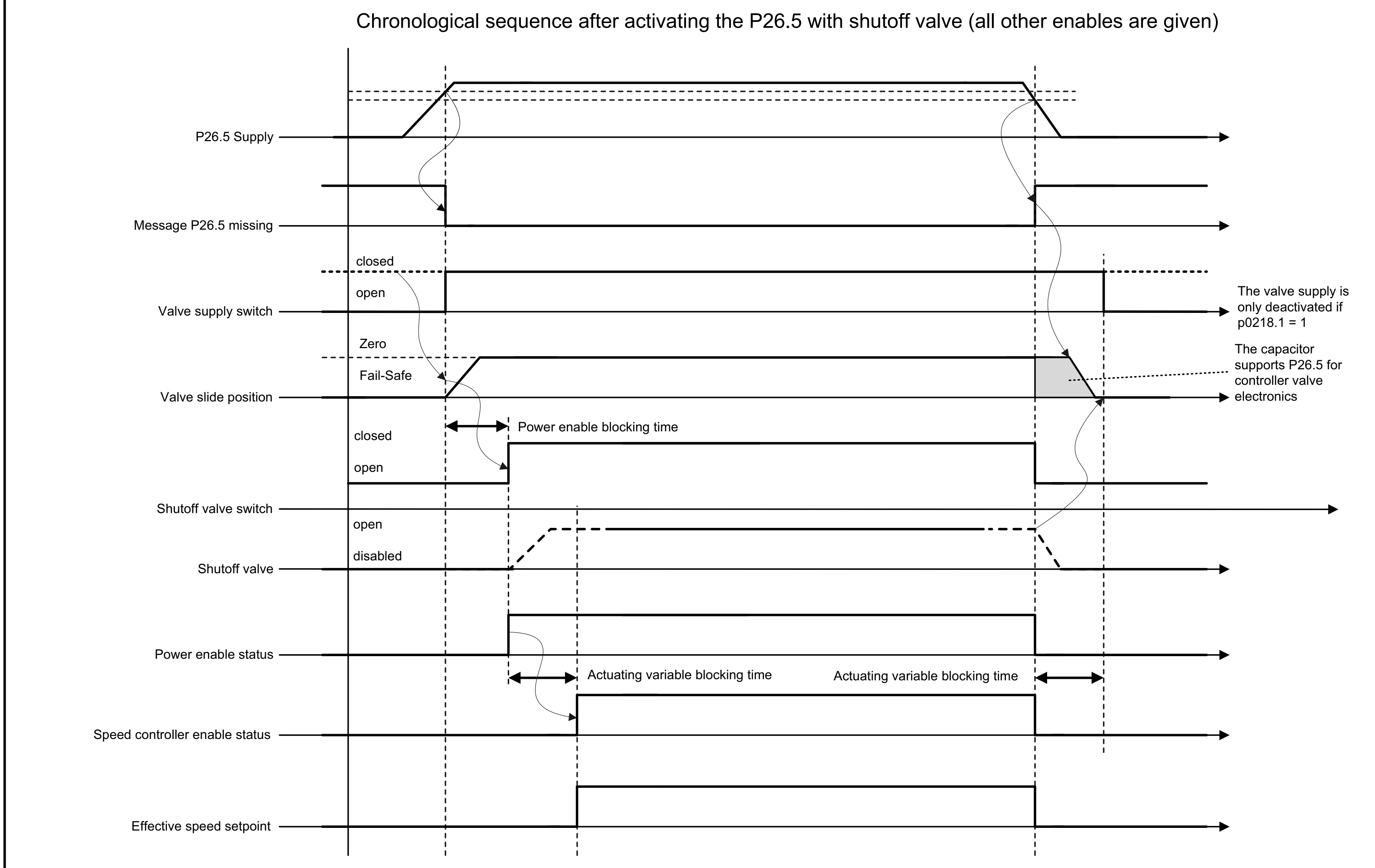
<1> The sequencer is implemented according to the PROFIdrive profile.
<2> These control commands can also be triggered by a fault response.
<3> STWA.xx = control word, sequence control, bit xx (r0898) [2501];
ZSWA.xx = status word, sequence control bit xx (r0899) [2503].
<4> Only if "Safety Integrated" is active.

1	2	3	4	5	6	7	8

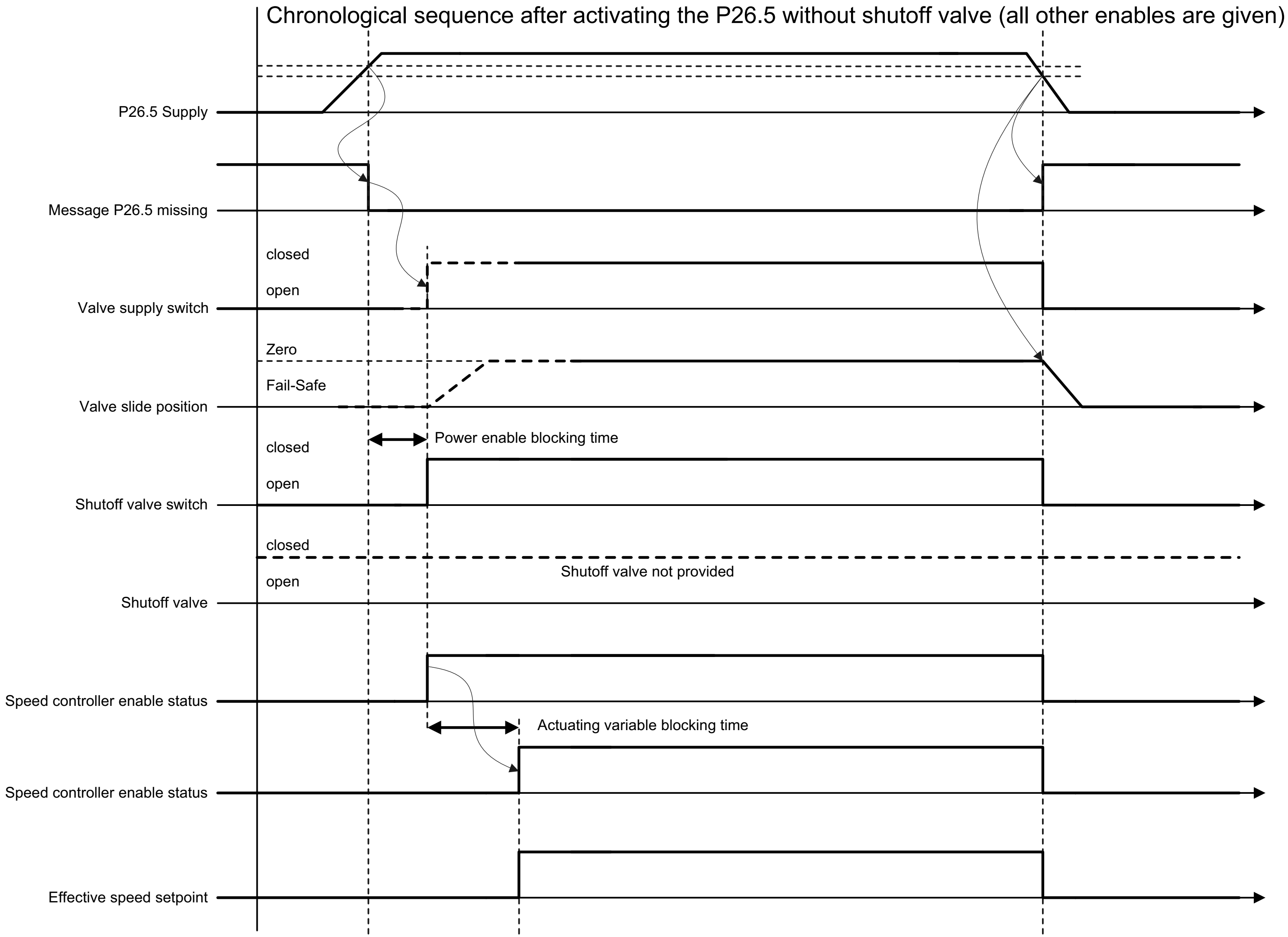
DO: HLA	fp_4985_01_eng.vsd	Function diagram	- 4985 -
Hydraulic drive - Sequencer	07.05.13 V05.01.01	SINAMICS S120	

Fig. 3-202 4985 – Sequencer

Fig. 3-203 4990 – P24 management with shutoff valve



1	2	3	4	5	6	7	8
DO: HLA					fp_4990_01_eng.vsd	Function diagram	- 4990 -
Hydraulic drive - P24 management with shutoff valve					08.05.13 V05.01.01	SINAMICS S120	



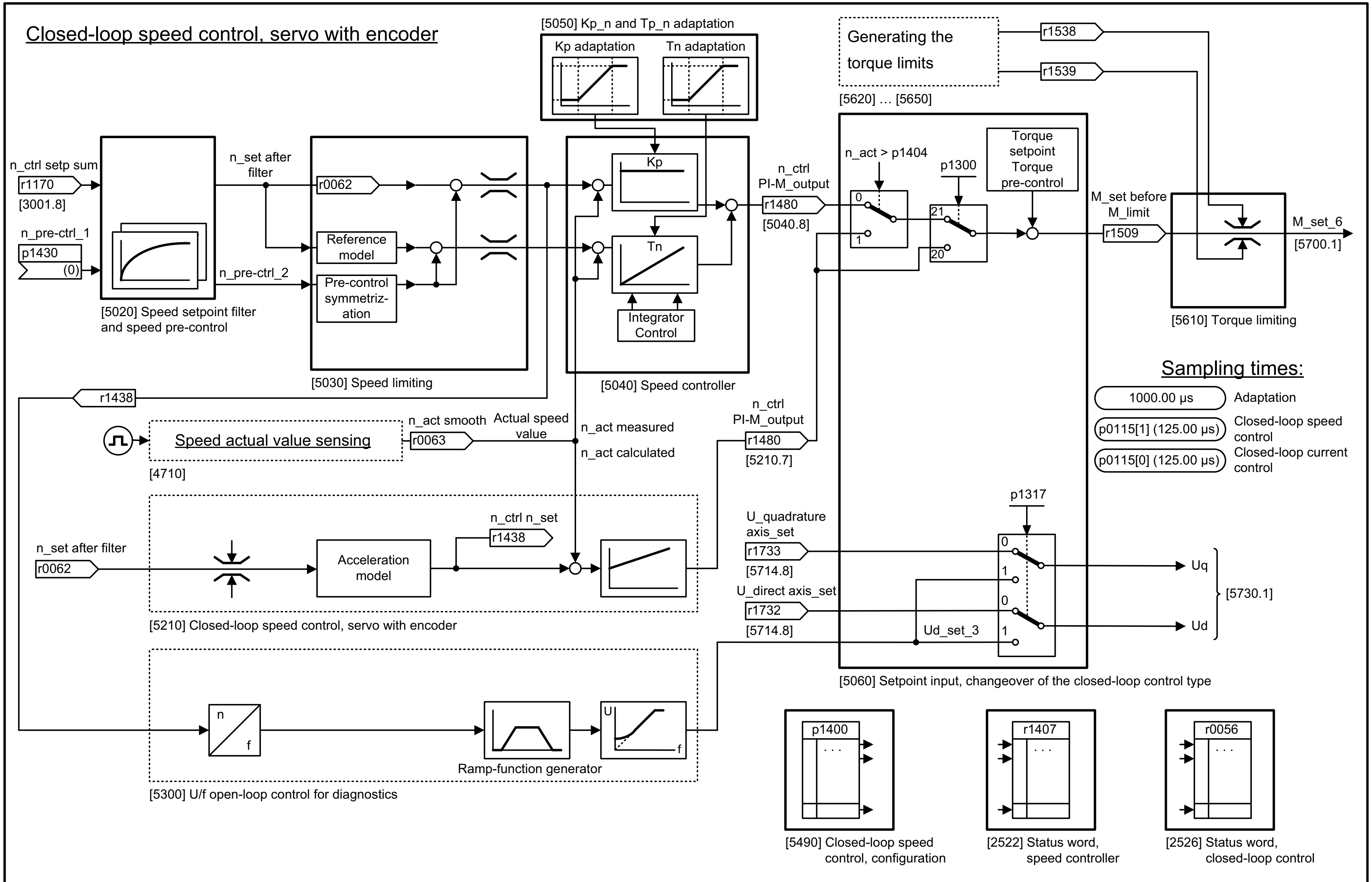
1	2	3	4	5	6	7	8
DO: HLA					fp_4991_01_eng.vsd	Function diagram	- 4991 -
Hydraulic drive - P24 management without shutoff valve					08.05.13 V05.01.01	SINAMICS S120	

Fig. 3-204 4991 – P24 management without shutoff valve

3.24 Servo control

Function diagrams

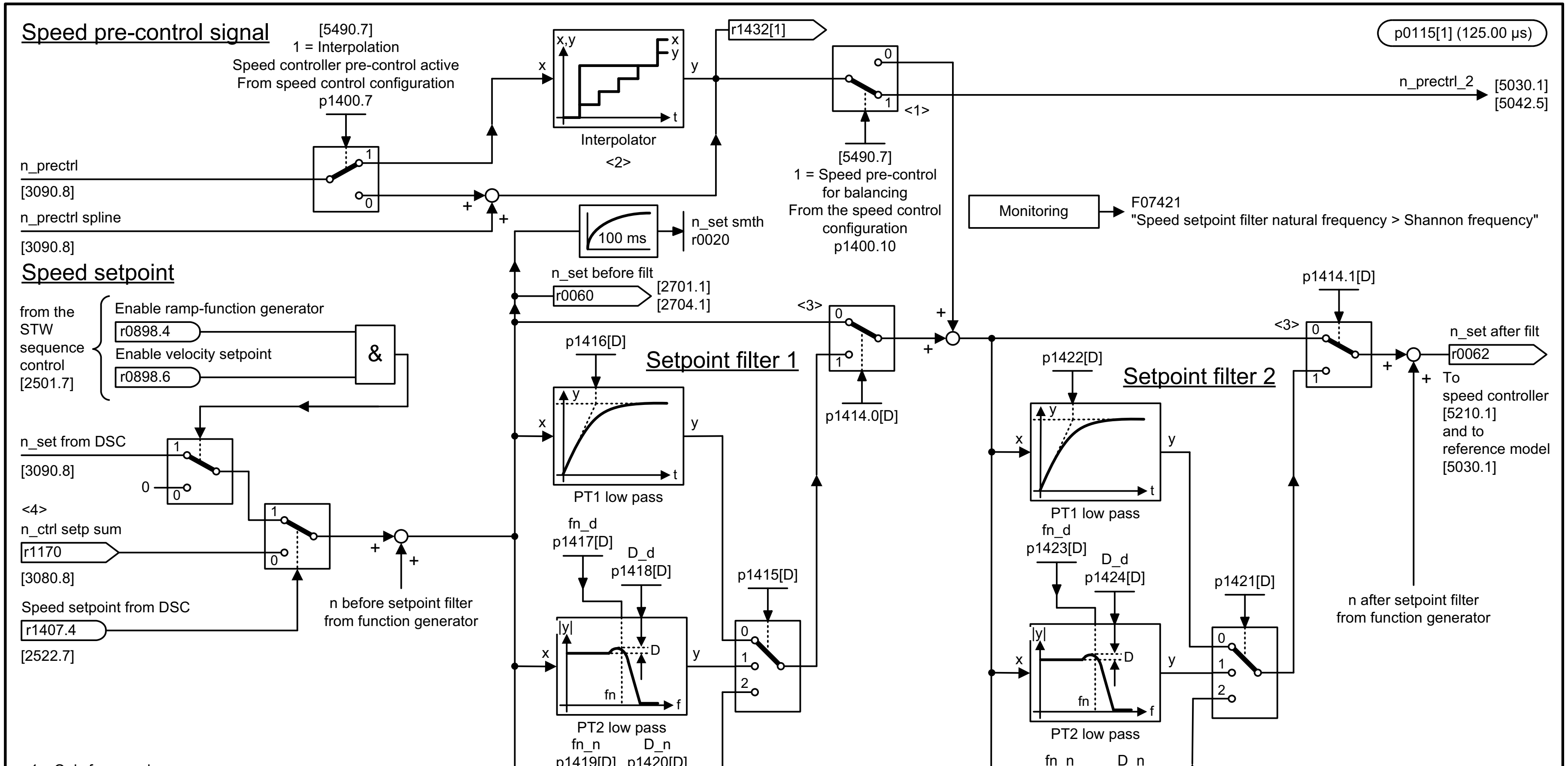
Fig. 3-205 5019 – Speed control and U/f control, overview



1	2	3	4	5	6	7	8

DO: SERVO	fp_5019_01_eng.vsd	Function diagram	- 5019 -
Servo control - Speed control and U/f control, overview	26.04.13 V05.01.01	SINAMICS S120	

Fig. 3-206 5020 – Speed setpoint filter and speed precontrol



<1> Only for encoder:
p1400.10 = 1 is recommended if a torque pre-control signal is also connected at [5060] in addition to the speed pre-control signal.

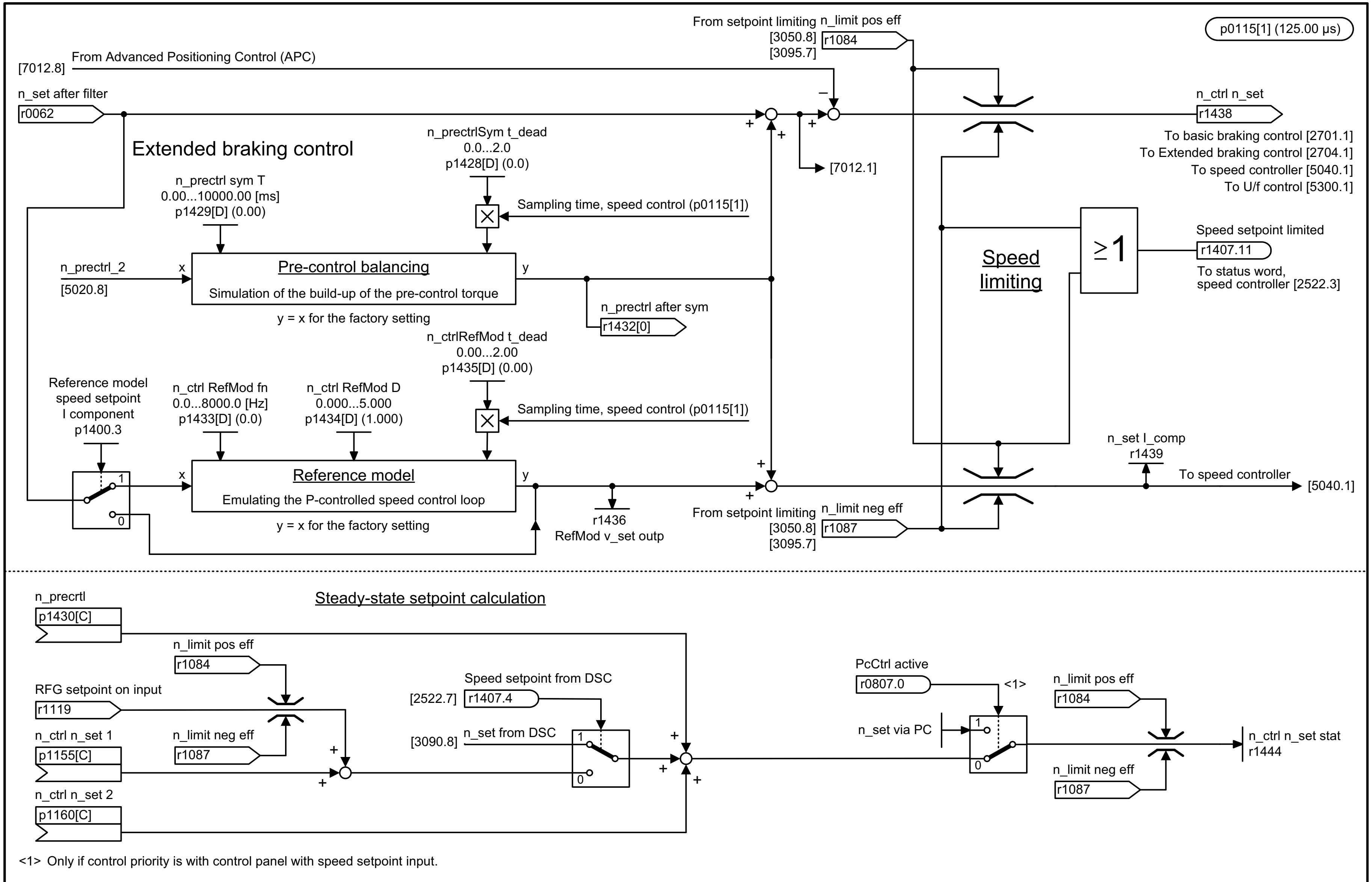
<2> The interpolator is only effective for clock-cycle synchronous PROFIdrive operation and sign-of-life received from the master (STW2.12 ... STW2.15). If the Dynamic Servo Control (DSC) is active, an additional deadtime of one speed controller sampling time is effective.

<3> For a 1/0 edge from control command STW2.8 "travel to fixed stop" [2444] the output of all filters is set to the input value for an instantaneous response to a change of the speed setpoint sign.

<4> The value is displayed correctly only with r0899.2 = 1 (Operation enabled).

1	2	3	4	5	6	7	8

DO: SERVO	fp_5020_01_eng.vsd	Function diagram	- 5020 -
Servo control - Speed setpoint filter and speed pre-control	14.07.14 V05.01.01	SINAMICS S120	

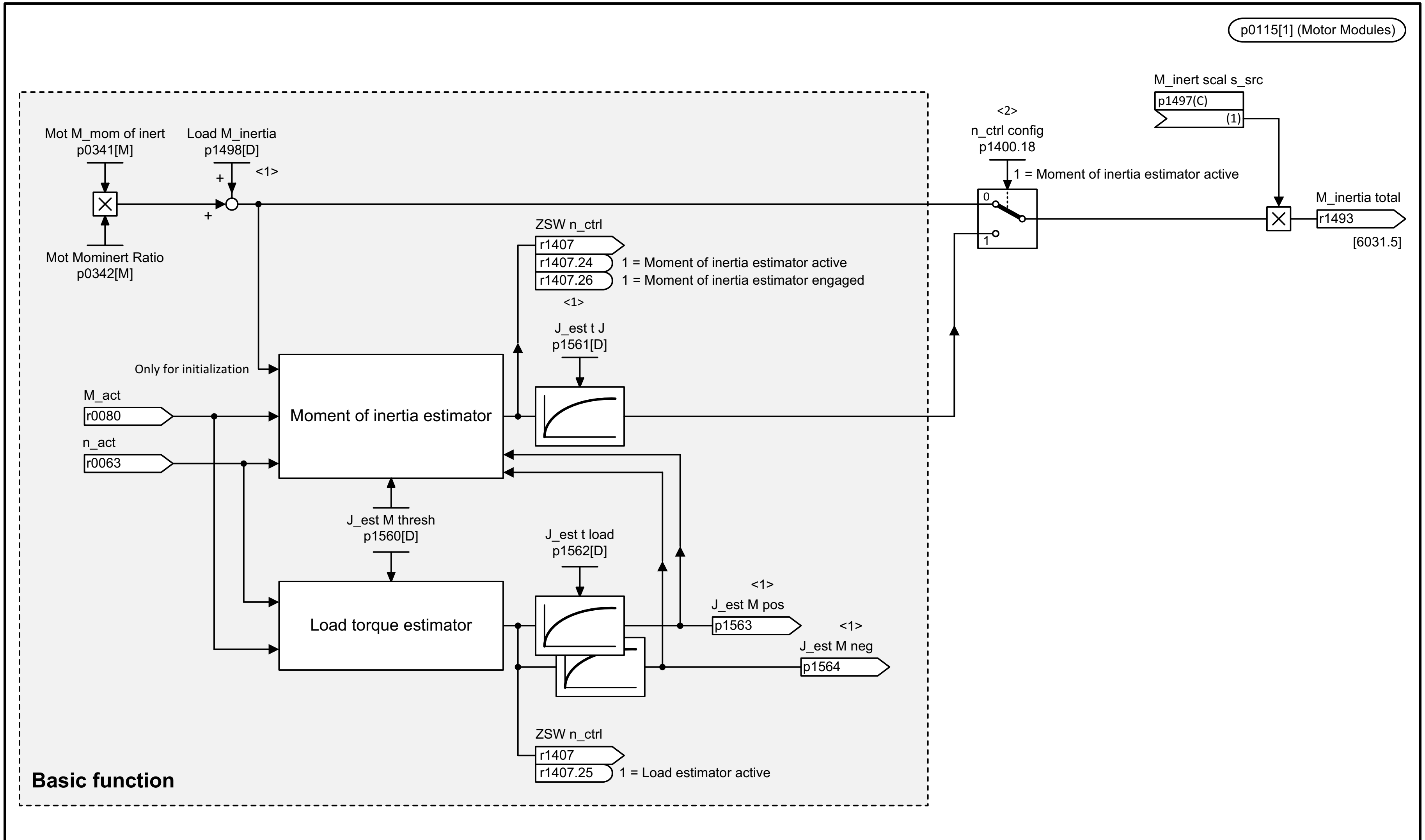


1	2	3	4	5	6	7	8

DO: SERVO	fp_5030_01_eng.vsd	Function diagram	- 5030 -
Servo control - Reference model/pre-control balancing/speed limitation	14.07.14 V05.01.01	SINAMICS S120	

Fig. 3-207 5030 – Reference model/precontrol balancing/speed limitation

Fig. 3-208 5035 – Moment of inertia estimator (r0108.10 = 1)

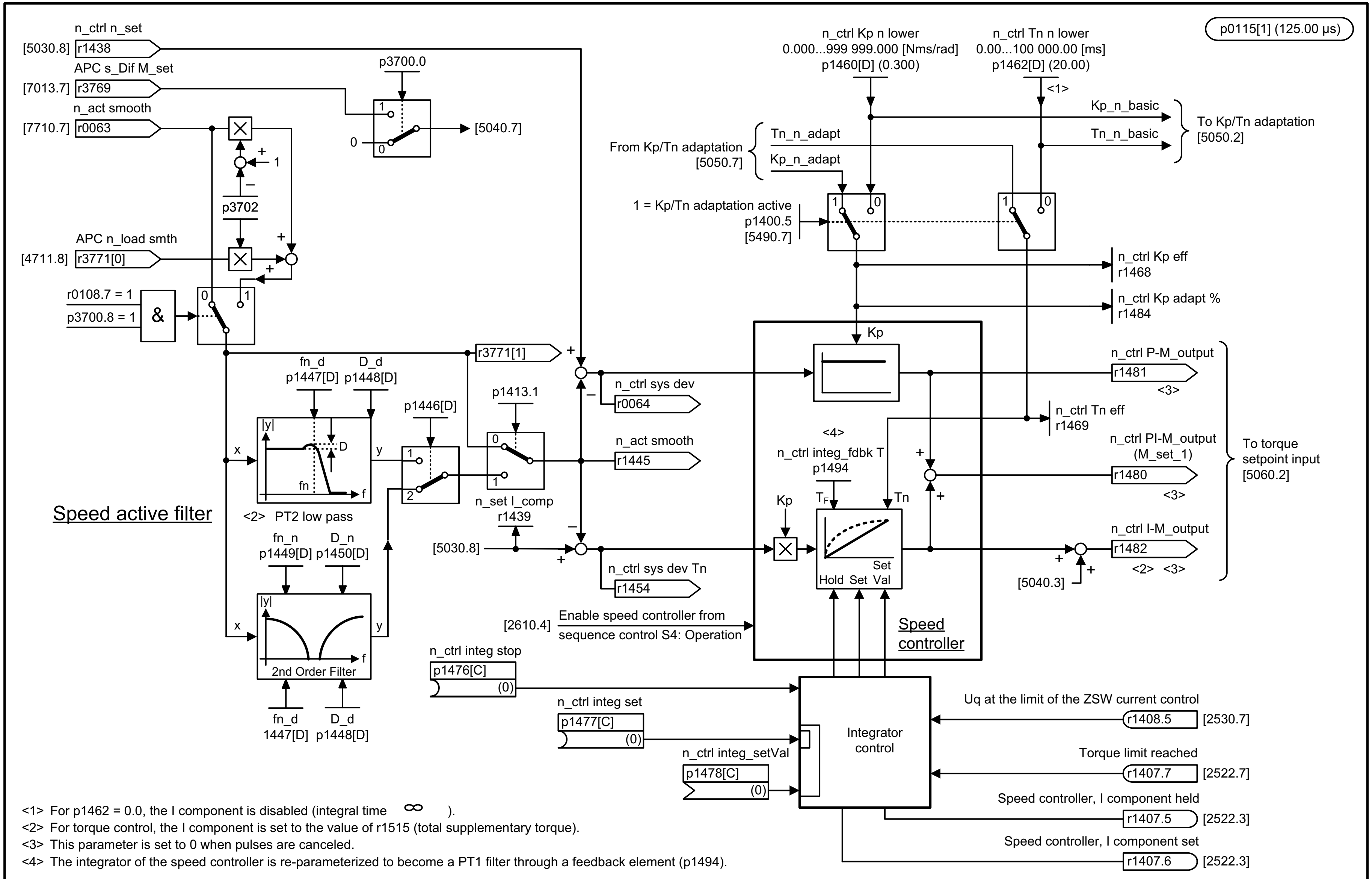


<1> On p1400.22 = 1 and r1407.26 = 1, the current values are saved in p1498, p1563 and p1564 for RAM to ROM.
<2> If p1497 is connected to a source not equal to 1, the switch always remains set to 0.

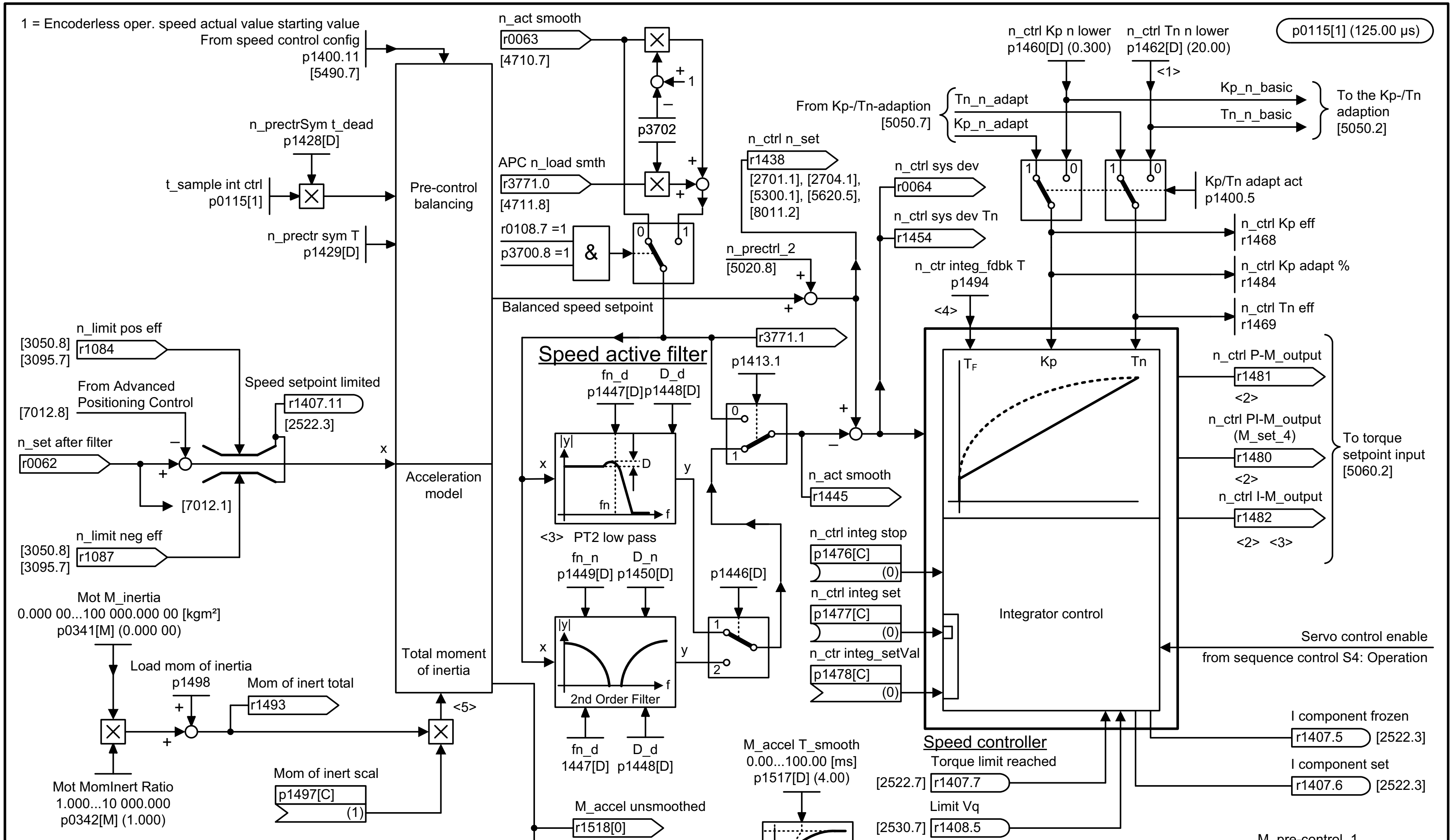
1	2	3	4	5	6	7	8

DO: SERVO	fp_5035_01_eng.vsd	Function diagram	- 5035 -
Servo control - Moment of inertia estimator (r0108.10 = 1)	23.02.15 V05.01.01	SINAMICS S120	

Fig. 3-209 5040 – Speed controller with encoder



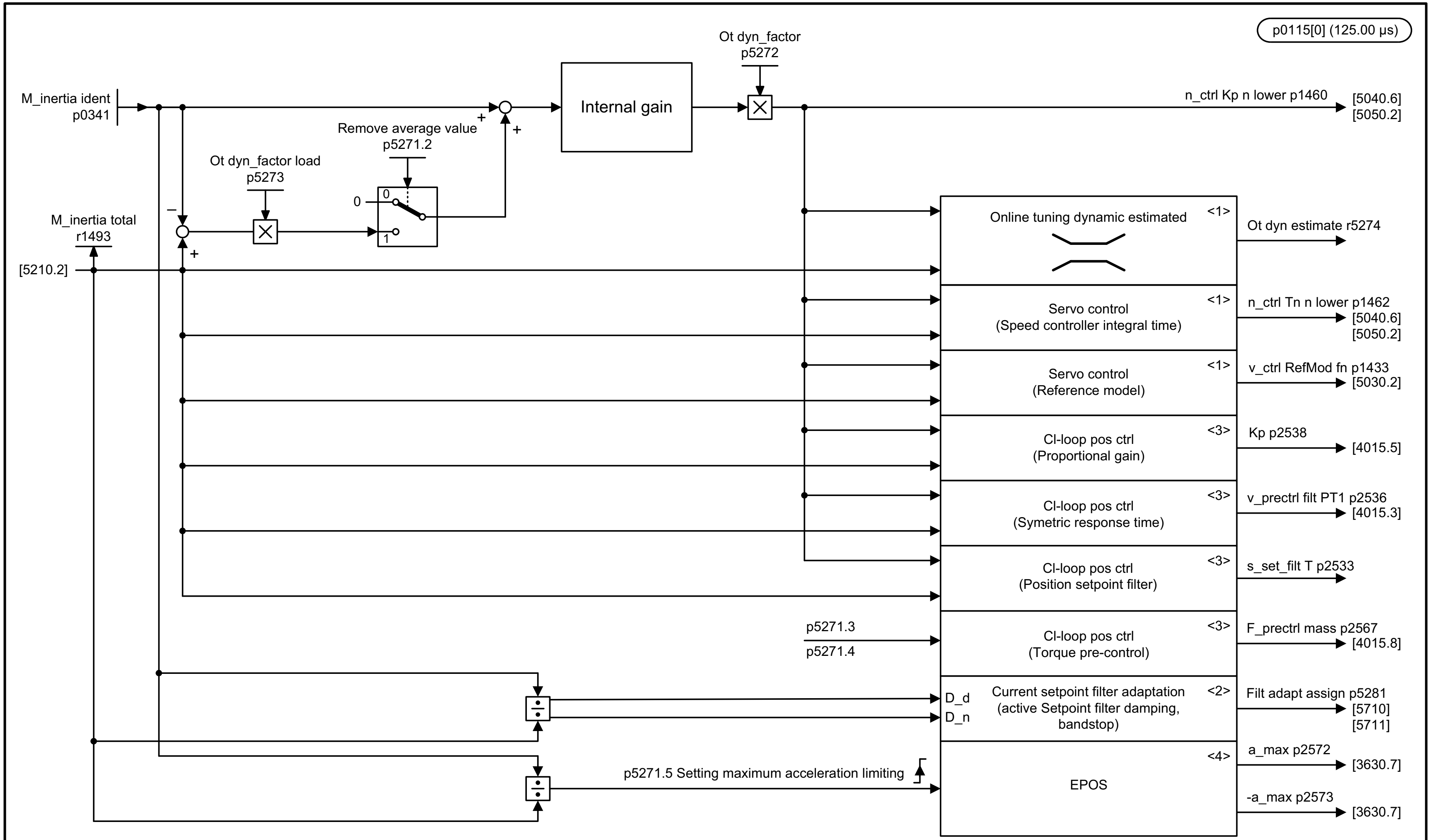
1	2	3	4	5	6	7	8
DO: SERVO					fp_5040_01_eng.vsd	Function diagram	- 5040 -
Servo control - Speed controller with encoder					26.07.13 V05.01.01	SINAMICS S120	



<1> For p1462 = 0 the I component is disabled (Integral time = ∞).
<2> This parameter is set to 0 when pulses are canceled.
<3> For torque control, the I component is set to the value of r1515 (total supplementary torque).
<4> The integrator of the speed controller is re-parameterized to become a PT1 filter through a feedback element (p1494).
<5> Adjustment instructions: Correctly set p0341, p0342 and p1498 and set p1517 to 0.00 ms to achieve dynamic pre-control.

1	2	3	4	5	6	7	8
DO: SERVO					fp_5042_01_eng.vsd	Function diagram	- 5042 -
Servo control - Speed controller, M/n pre-control with encoder (p1402.4 = 1)					11.02.16 V05.01.01	SINAMICS S120	

Fig. 3-210 5042 – Speed controller, torque/speed precontrol with encoder (p1402.4 = 1)

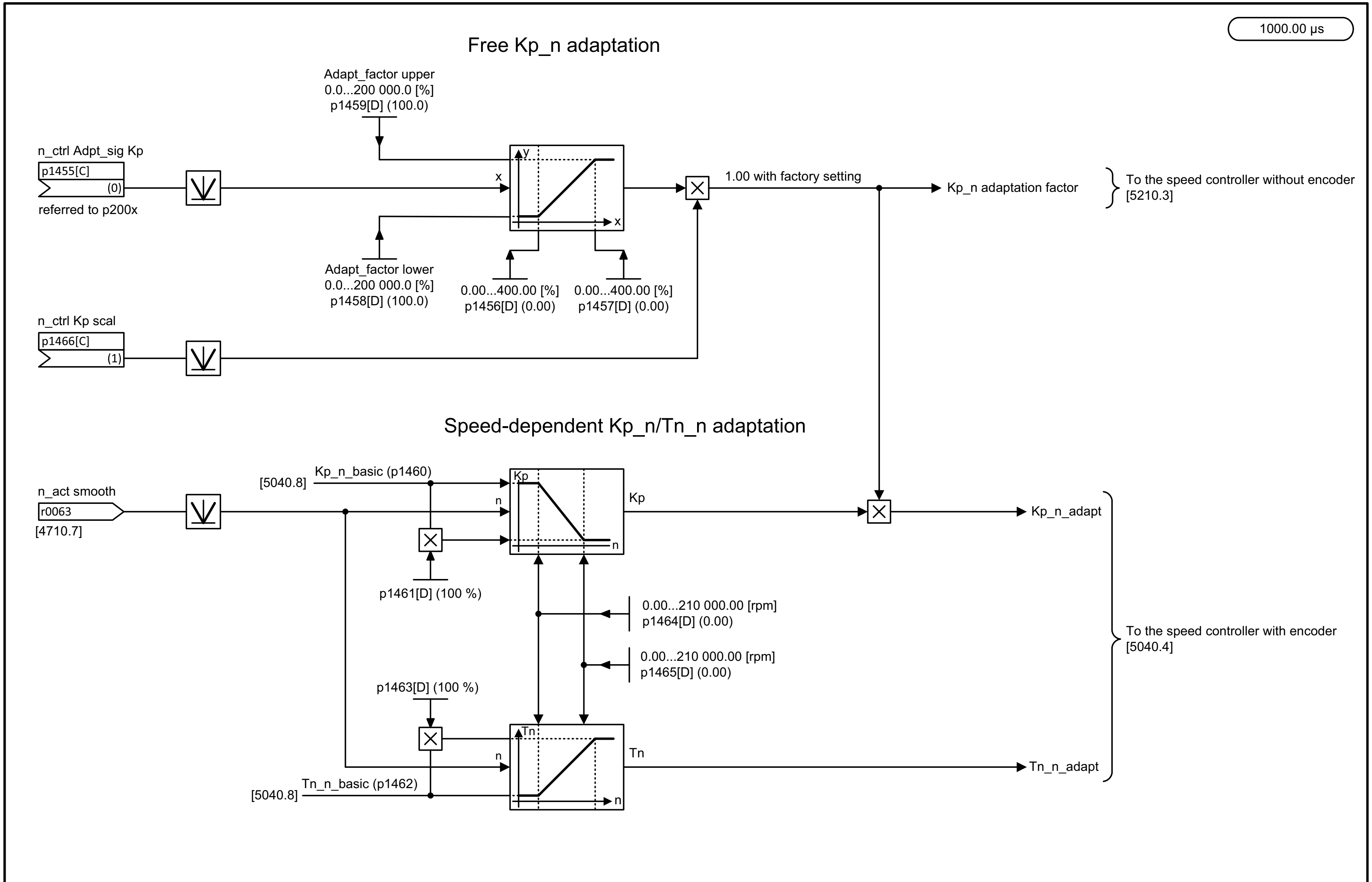


<1> It is always active.
<2> It must be activated.
<3> Only of significance when the "Position control" function module is activated (r0108.3 = 1).
<4> Only of significance when the "Basic positioner" function module is activated (r0108.4 = 1).

1	2	3	4	5	6	7	8
DO: SERVO					fp_5045_51_eng.vsd	Function diagram	- 5045 -
Servo control - Online tuning with moment of inertia estimator active (r0108.10 = 1)					11.04.14 V05.01.01	SINAMICS	

Fig. 3-211 5045 – Online tuning with activated moment of inertia estimator (r0108.10 = 1)

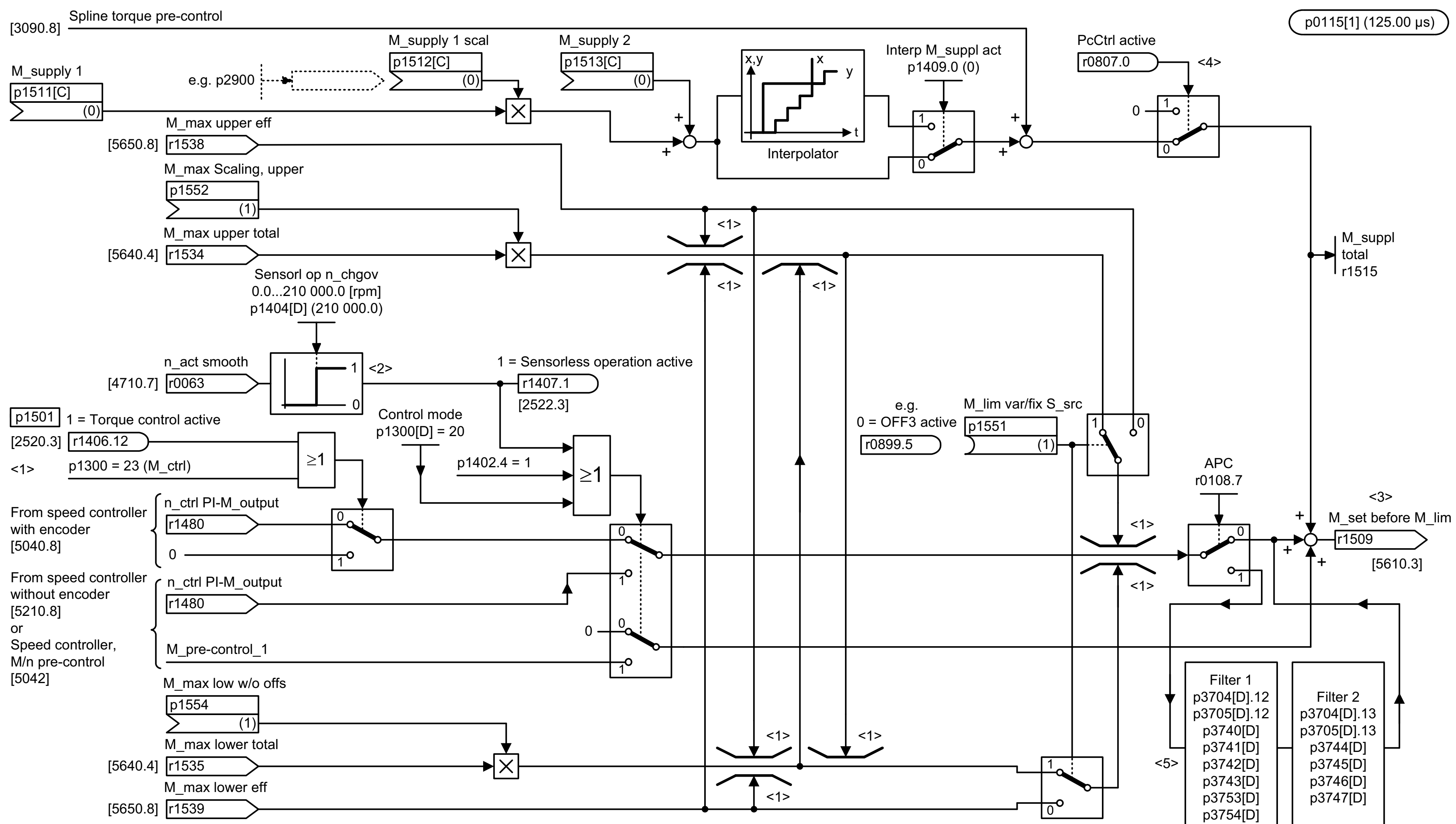
Fig. 3-212 5050 – Speed controller adaptation (Kp_n/Tn_n adaptation)



1	2	3	4	5	6	7	8

DO: SERVO	fp_5050_01_eng.vsd	Function diagram	- 5050 -
Servo control - Speed controller adaptation (Kp_n/Tn_n adaptation)	10.04.12 V05.01.01	SINAMICS S120	

Fig. 3-213 5060 – Torque setpoint, control mode changeover



<1> Torque control can only be activated for operation with encoder.
A related message is output if:
1) Sensorless operation is active and closed-loop torque control is requested (r1406.12 = 0 --> 1).
2) Torque control is active and n_act smooth > p1404.
<2> Automatic changeover to sensorless operation (e.g. for extremely high-speed spindle drives).
<3> When the pulses are canceled, r1509 is set to 0.

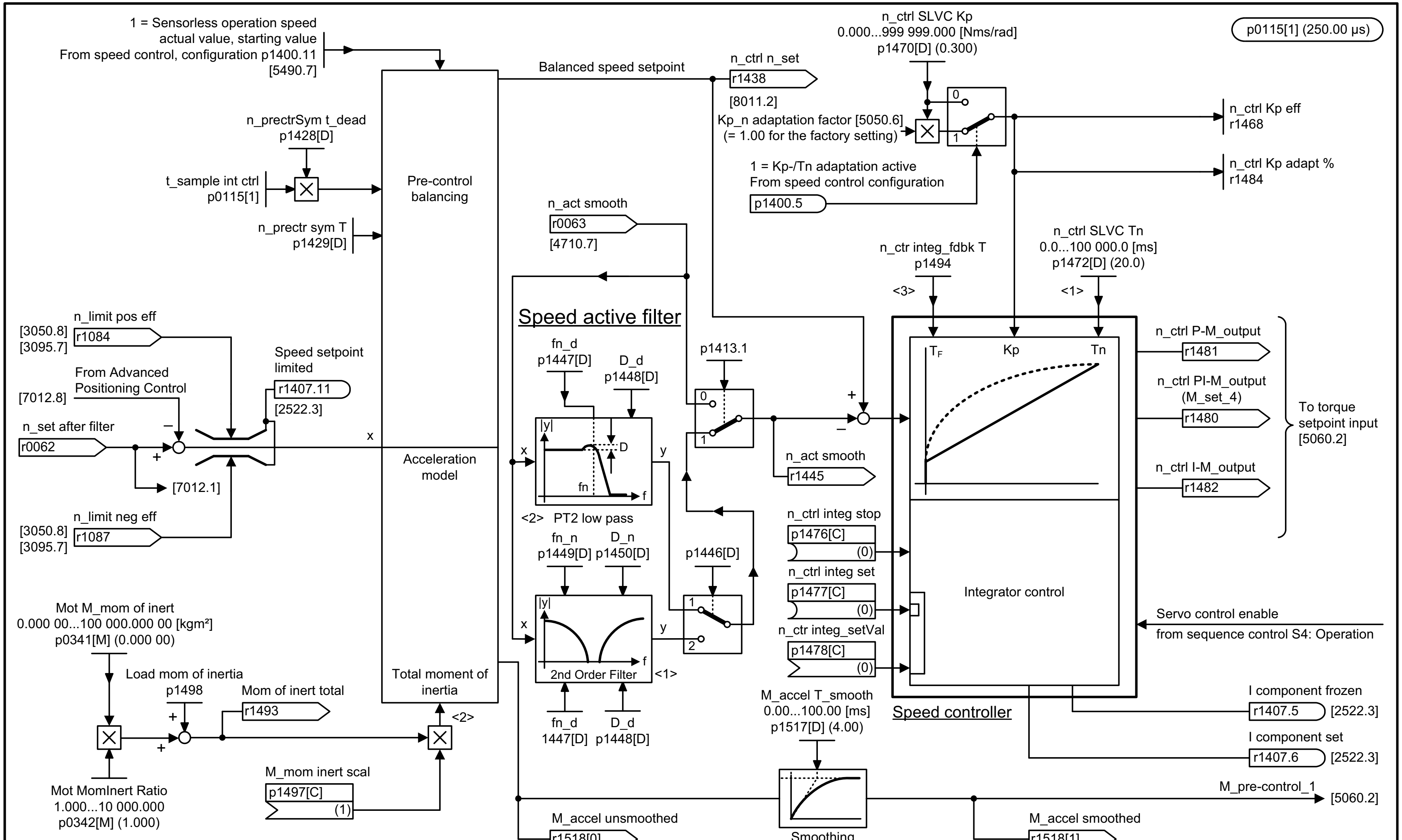
<4> Only if control priority is with control panel with speed setpoint input.
<5> The torque setpoint filters 1 and 2 are used to compensate setup oscillations and are functionally identical to the current setpoint filters. Filter 1 can be preassigned via p3753 (natural frequency) and p3754 (gain).

APC: Advanced Positioning Control

1	2	3	4	5	6	7	8

DO: SERVO	fp_5060_01_eng.vsd	Function diagram	- 5060 -
Servo control - Torque setpoint, control type changeover	11.07.17 V05.01.01	SINAMICS S120	

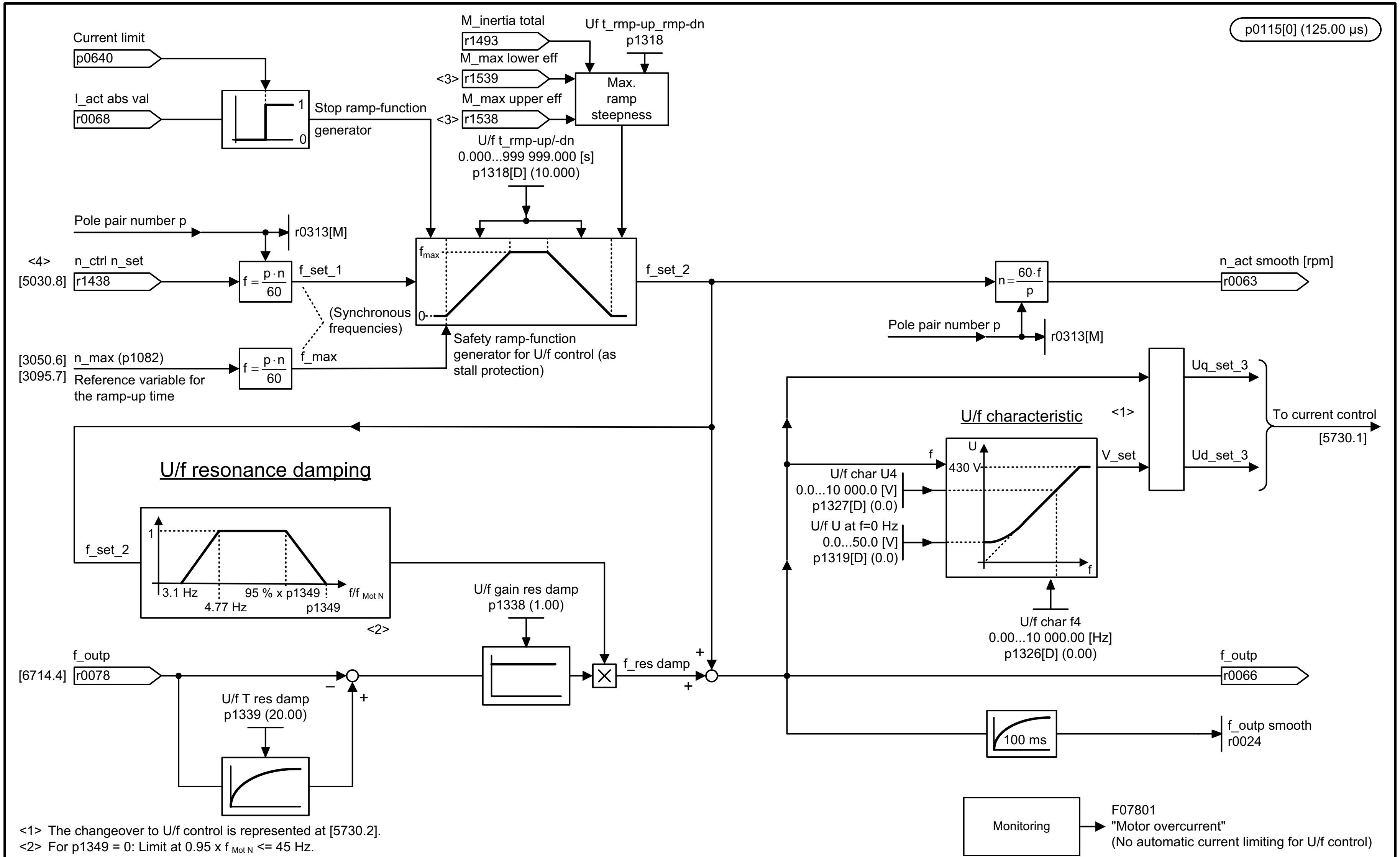
Fig. 3-214 5210 – Speed controller without encoder



<1> For p1472 = 0 the I component is disabled (Integral time = ∞).
<2> Setting rule: p0341, p0342 and p1498 are correctly set if the r1480 speed output displays values around 0 when accelerating in sensorless operation.
<3> The integrator of the speed controller is re-parameterized to become a PT1 filter through a feedback element (p1494).

1	2	3	4	5	6	7	8

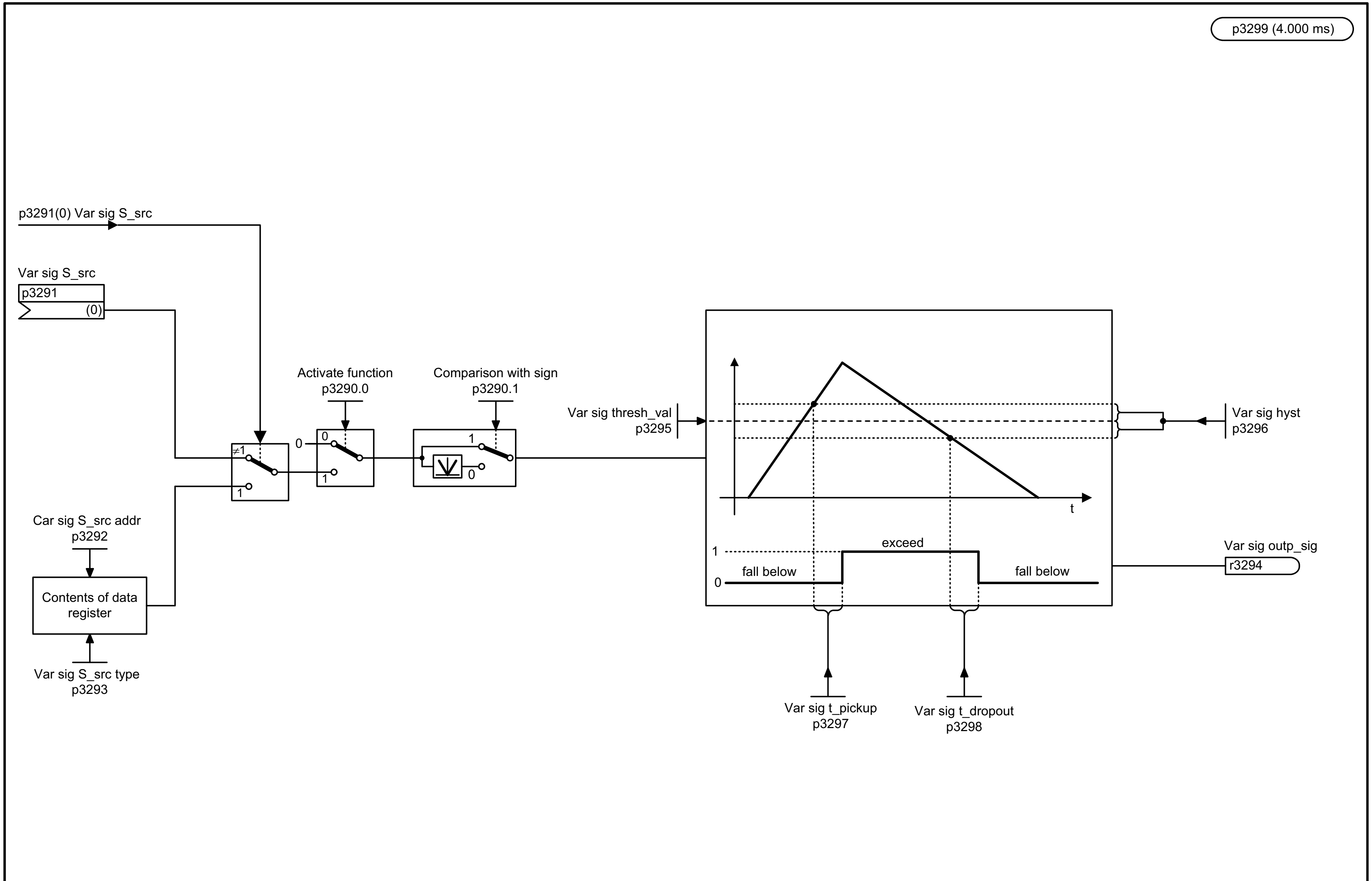
DO: SERVO	fp_5210_01_eng.vsd	Function diagram	- 5210 -
Servo control - Speed controller without encoder	26.07.13 V05.01.01	SINAMICS S120	



<1> The changeover to U/f control is represented at [5730.2].
<2> For p1349 = 0: Limit at 0.95 x $f_{Mot N}$ <= 45 Hz.
<3> Max. ramp steepness is also influenced by Vdc controller (p1240 $\neq$ 0).
<4> For synchronous motors, only speed setpoints with up to approximate 25 % of the rated speed can be used in order to prevent any risk of resonant oscillation.

1	2	3	4	5	6	7	8
DO: SERVO					fp_5300_01_eng.vsd	Function diagram	- 5300 -
Servo control - U/f control for diagnostics					14.11.13 V05.01.01	SINAMICS S120	

Fig. 3-215 5300 – U/f control for diagnostics



1	2	3	4	5	6	7	8

DO: SERVO	fp_5301_01_eng.vsd	Function diagram	- 5301 -
Servo control - Signaling function variable	05.12.08 V05.01.01	SINAMICS S120	

Fig. 3-216 5301 – Variable signaling function

1000.00 µs

p1400[D]

Speed control configuration

Bit No.	Meaning	Factory setting	n_ctrl config p1400[D]
0	**Reserved**		
1	**Reserved**		
2	**Reserved**		
3	**1 = Reference model speed setpoint I component**		[5030.1]
4	**1 = Torque limiting active in motoring/regenerative mode**		[5640.3]
5	**1 = Kp/Tn adaptation active**	1	[5040.2] [5210.5]
6	**Reserved**		
7	**1 = Interpolation speed pre-control active**	1	[5020.3]
8	**1 = Interpolation torque setpoint active**	1	[5610.6]
9	**1 = Damping for encoderless open-loop controlled oper.**	1	
10	**Speed pre-control** 0 = To setpoint filter 2; 1 = To balancing		[5020.5]
11	**Encoderless operation speed actual value starting value** 0 = 0.0; 1 = setpoint		[5210.2]
12	**Encoderless operation changeover** 0 = When accelerating, 1 = Stationary		
13	**Motoring/regenerative depending on** 0 = Speed actual value, 1 = Speed setpoint		
16	**1 = I component for limiting**		[5040.6] [5210.2]
17	**1 = DSC position controller limit active**		[3090.8]
18	**1 = Moment of inertia estimator active** <1>		
22	**1 = Obtain moment of inertia estimator value for pulse inhibit** <2>		

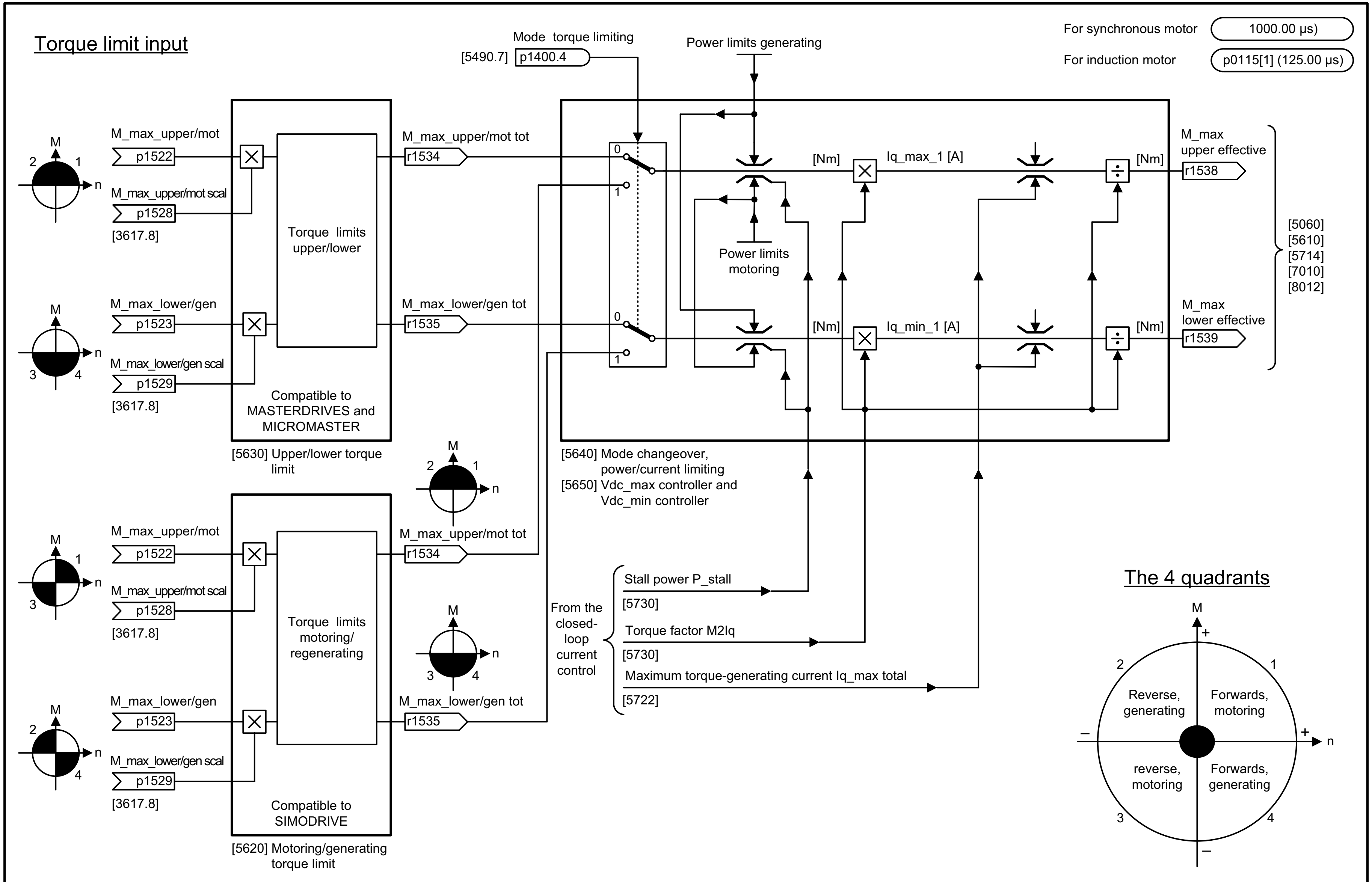
<1> Only for activated function module "Moment of inertia estimator" (r0108.10 = 1).
<2> Only for activated function module "Moment of inertia estimator" (r0108.10 = 1) and on activated moment of inertia estimator (p1400.18 = 1).

1	2	3	4	5	6	7	8

DO: SERVO	fp_5490_01_eng.vsd	Function diagram	- 5490 -
Servo control - Speed control configuration	31.03.14 V05.01.01	SINAMICS S120	

Fig. 3-217 5490 – Speed control configuration

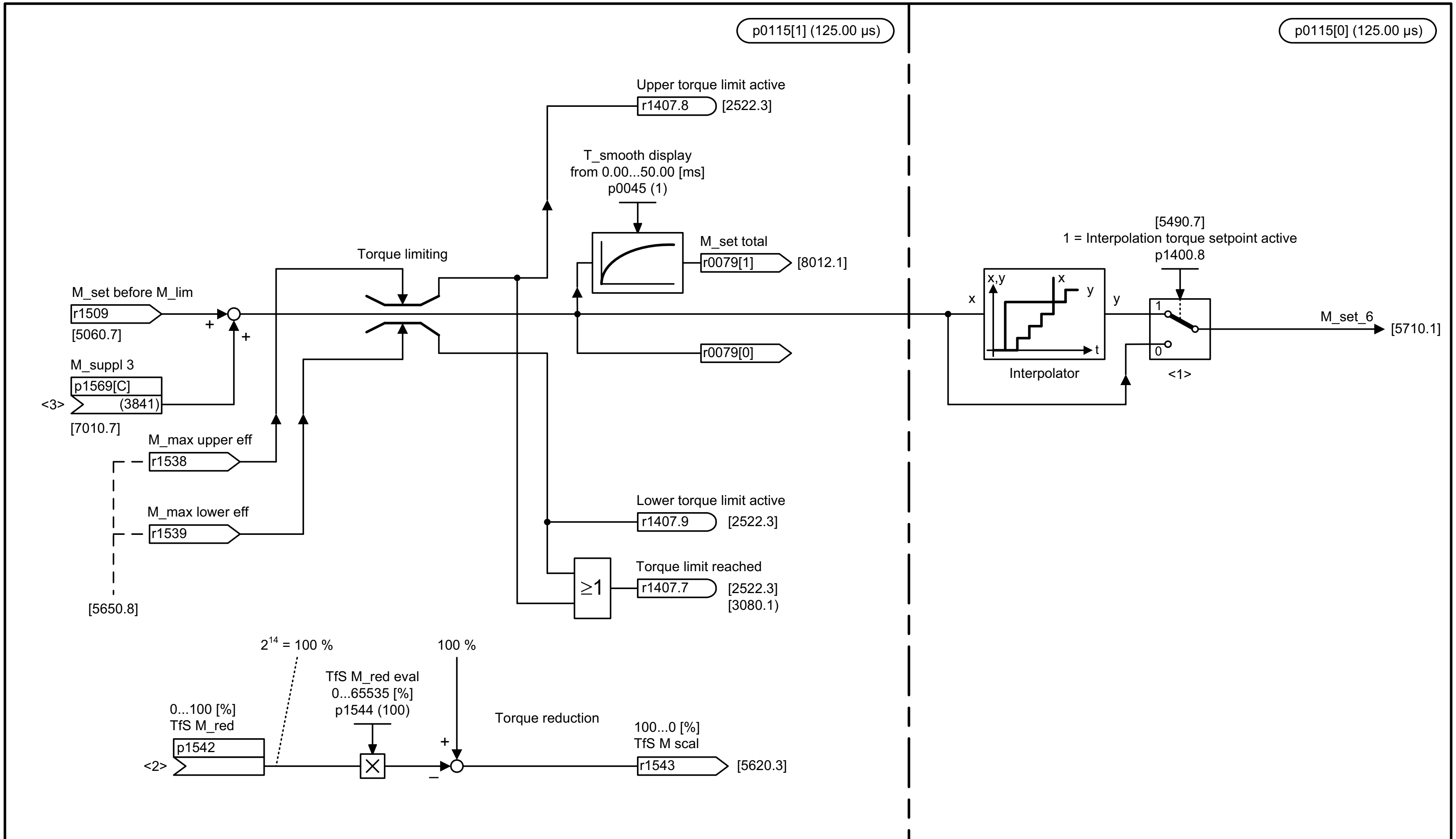
Fig. 3-218 5609 – Generation of the torque limits, overview



1	2	3	4	5	6	7	8

DO: SERVO	fp_5609_01_eng.vsd	Function diagram	- 5609 -
Servo control - Generation of the torque limits, overview	26.04.13 V05.01.01	SINAMICS S120	

Fig. 3-219 5610 – Torque limiting/reduction, interpolator

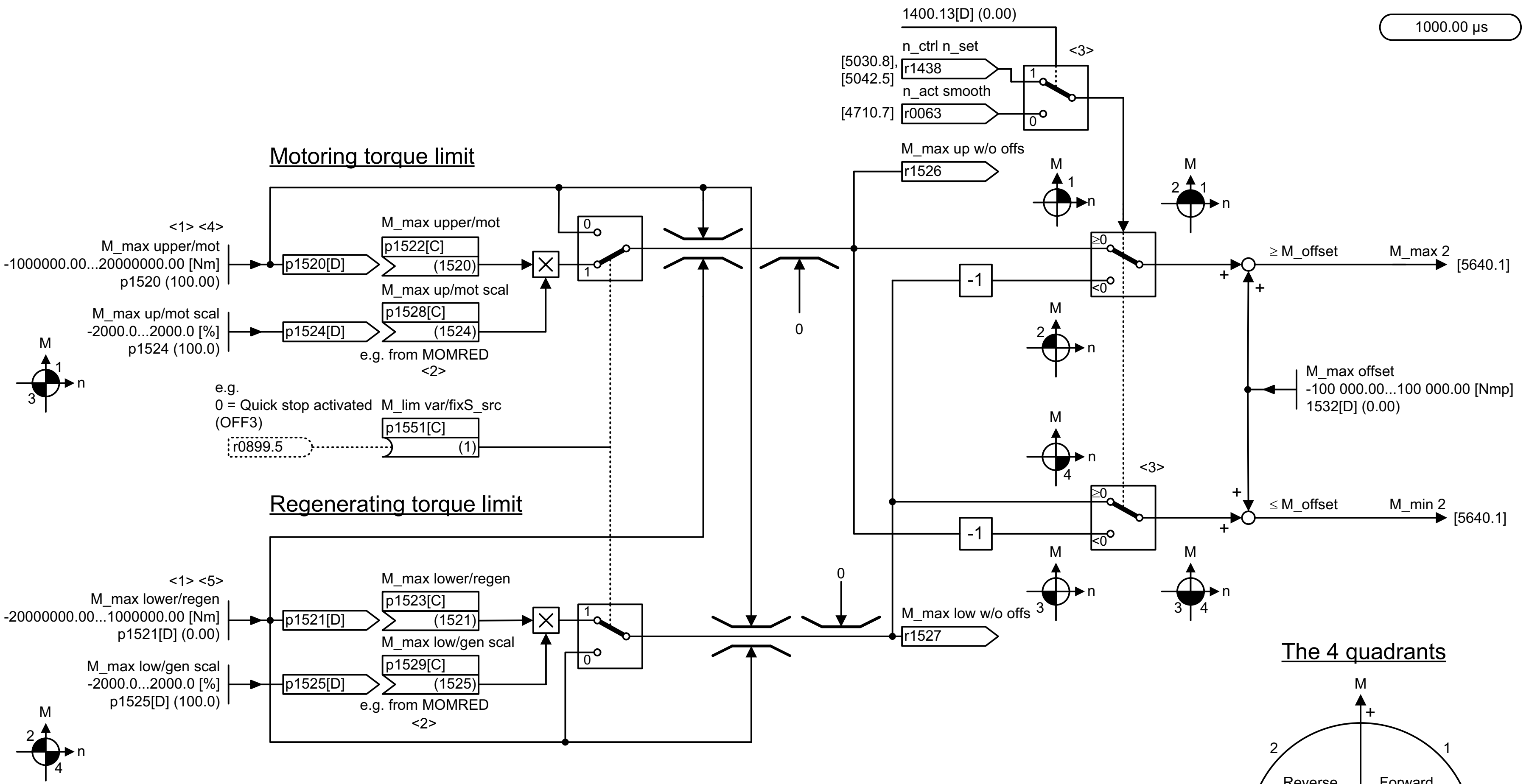


<1> For p0115[1] = p0115[0], the interpolator is automatically jumpered (bypassed) independently of the control.
<2> As for torque reduction (e.g. for "Travel to fixed stop (TfS)" with process data MOMRED), see PROFIdrive telegrams 102 ... 106 [2419].
<3> Injecting an additional torque via p1569 is to be provided only for the friction characteristic, since this torque setpoint input dynamically changes the torque limits to ensure a symmetrical control behavior (see [5650]).

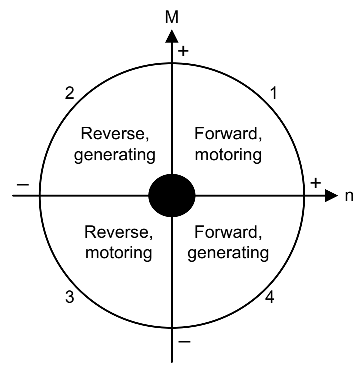
1	2	3	4	5	6	7	8

DO: SERVO	fp_5610_01_eng.vsd	Function diagram	- 5610 -
Servo control - Torque limiting/reduction, interpolator	23.11.11 V05.01.01	SINAMICS S120	

Fig. 3-220 5620 – Motoring/generating torque limit



The 4 quadrants



<1> For p1400.4 = 1, the first torque limit applies for motoring operation and the other for regenerative operation, independently of the sign of the torque and the speed (compatible with SIMODRIVE).
"Normal case": If neither dynamic limits nor offsets are required, the torque limit when motoring is entered via p1520. The torque limit when regenerating is entered via p1521 (as a negative value).

<2> For the manufacturer-specific PROFIdrive telegrams 102 … 106, r1543 is entered here [5610.4].

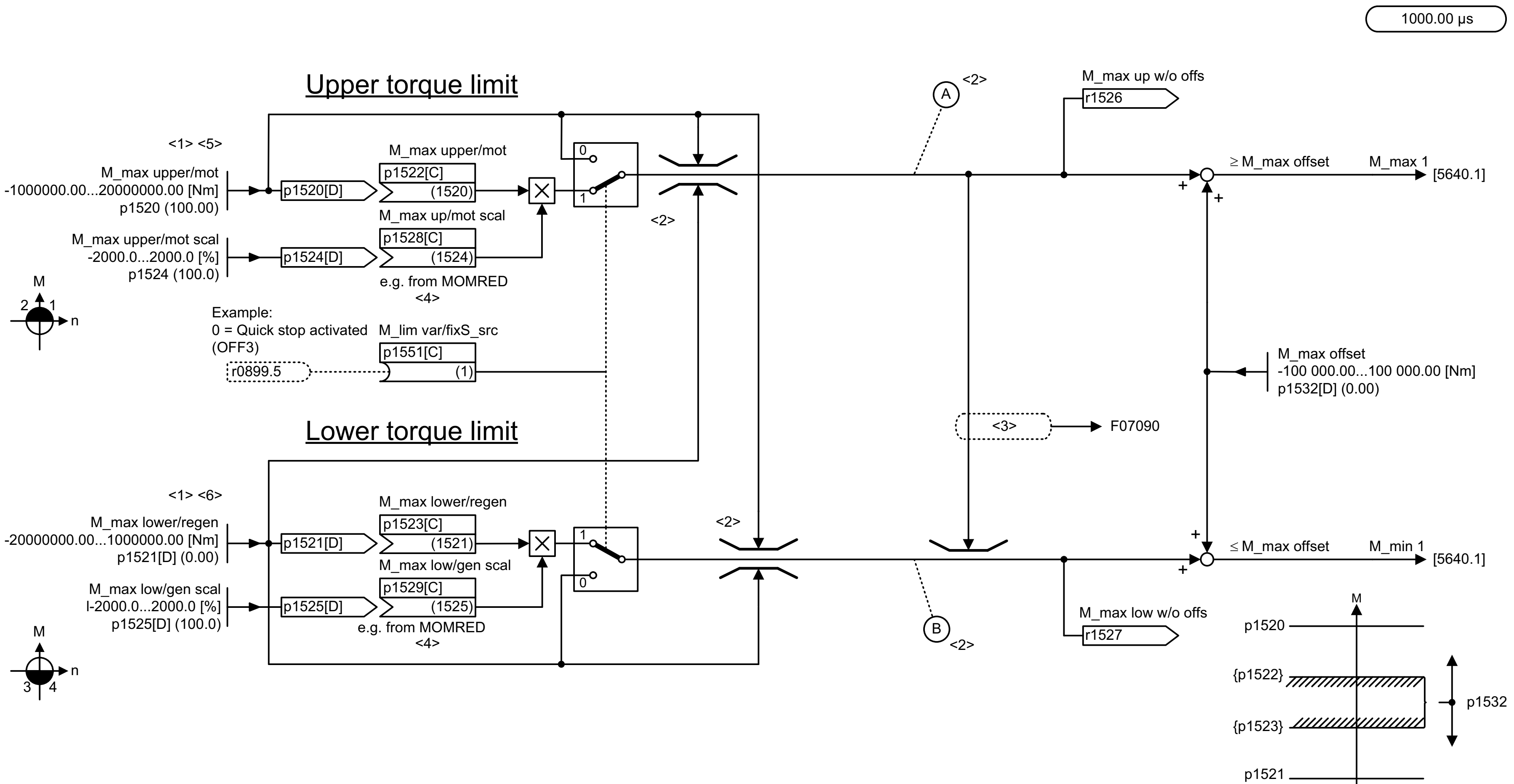
<3> With p1400.13 = 0, the following applies: if n_act < p1546, the motor limit is effective.
With p1400.13 = 1, the following applies: if n_set = 0, the regenerative limit is effective.

<4> The following applies to p0543 ≠ 0: The minimum value from p1520 and p0543 is used for further calculation.

<5> The following applies to p0543 ≠ 0: The minimum value from p1521 and negated p0543 is used for further calculation.

1	2	3	4	5	6	7	8

DO: SERVO	fp_5620_01_eng.vsd	Function diagram	- 5620 -
Servo control - Motoring/generating torque limit	09.09.15 V05.01.01	SINAMICS S120	



<1> For p1400.4 = 0 the torque limits for the positive and negative torque direction (upwards and downwards) are compatible with MASTERDRIVES and MICROMASTER 4.
"Normal case": If neither dynamic limits nor offsets are required, the upper torque limit is entered via p1520 and the lower via p1521 (as a negative value).

<2> Danger: Negative values at (A) or positive values at (B) represent a minimum torque for the other torque direction and can cause the motor to accelerate uncontrollably.

<3> The limiter ensure that the limits do not mutually "overtake" one another. With (A) < (B), Fault F07090 is initiated.

<4> For the manufacturer-specific PROFIdrive telegrams 102 ... 106, r1543 is switched in here [5610.4].

<5> The following applies to p0543 ≠ 0: The minimum value from p1520 and p0543 is used for further calculation.

<6> The following applies to p0543 ≠ 0: The minimum value from p1521 and negated p0543 is used for further calculation.

1	2	3	4	5	6	7	8
DO: SERVO					fp_5630_01_eng.vsd	Function diagram	- 5630 -
Servo control - Upper/lower torque limit					09.09.15 V05.01.01	SINAMICS S120	

Fig. 3-221 5630 – Upper/lower torque limit

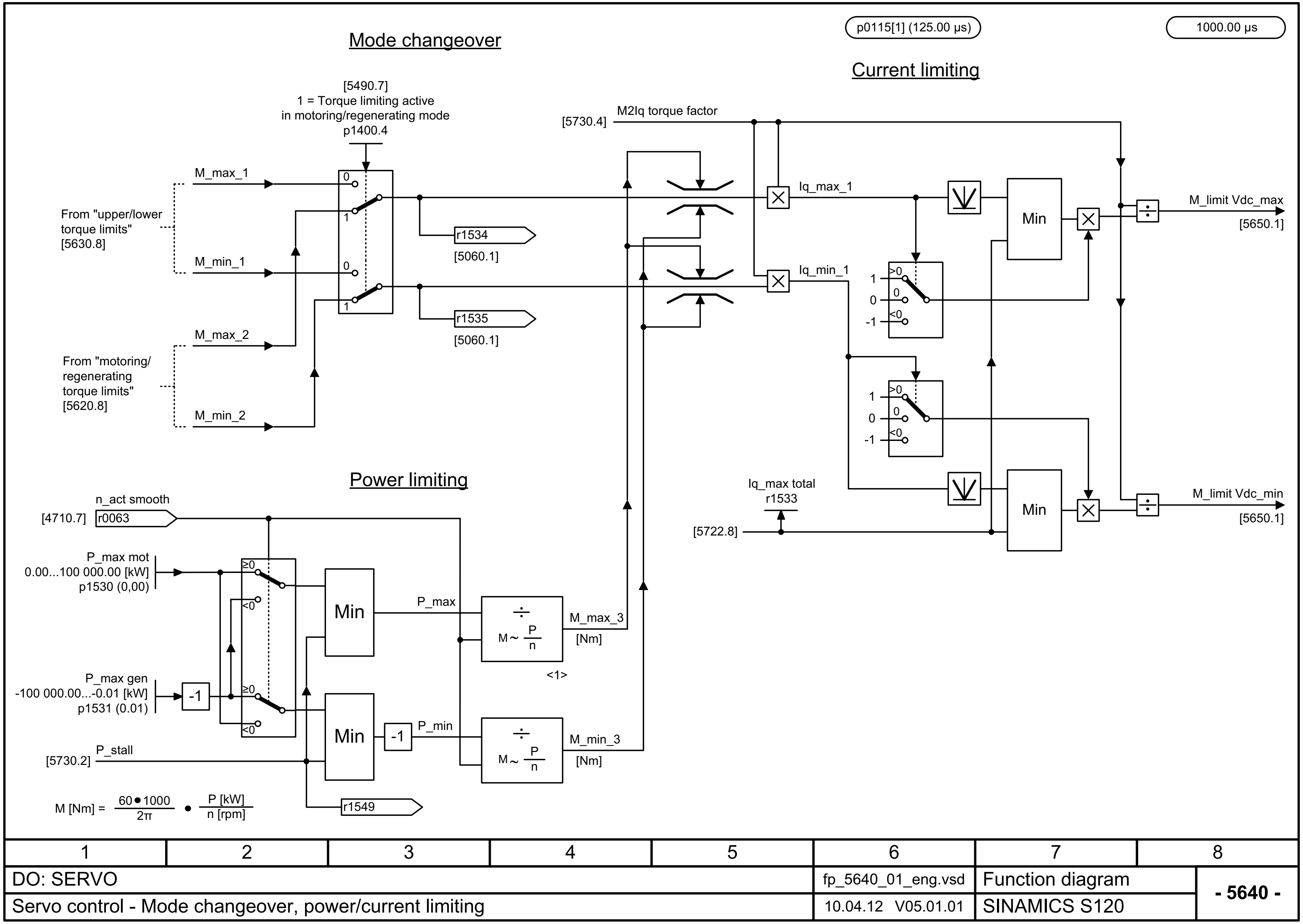
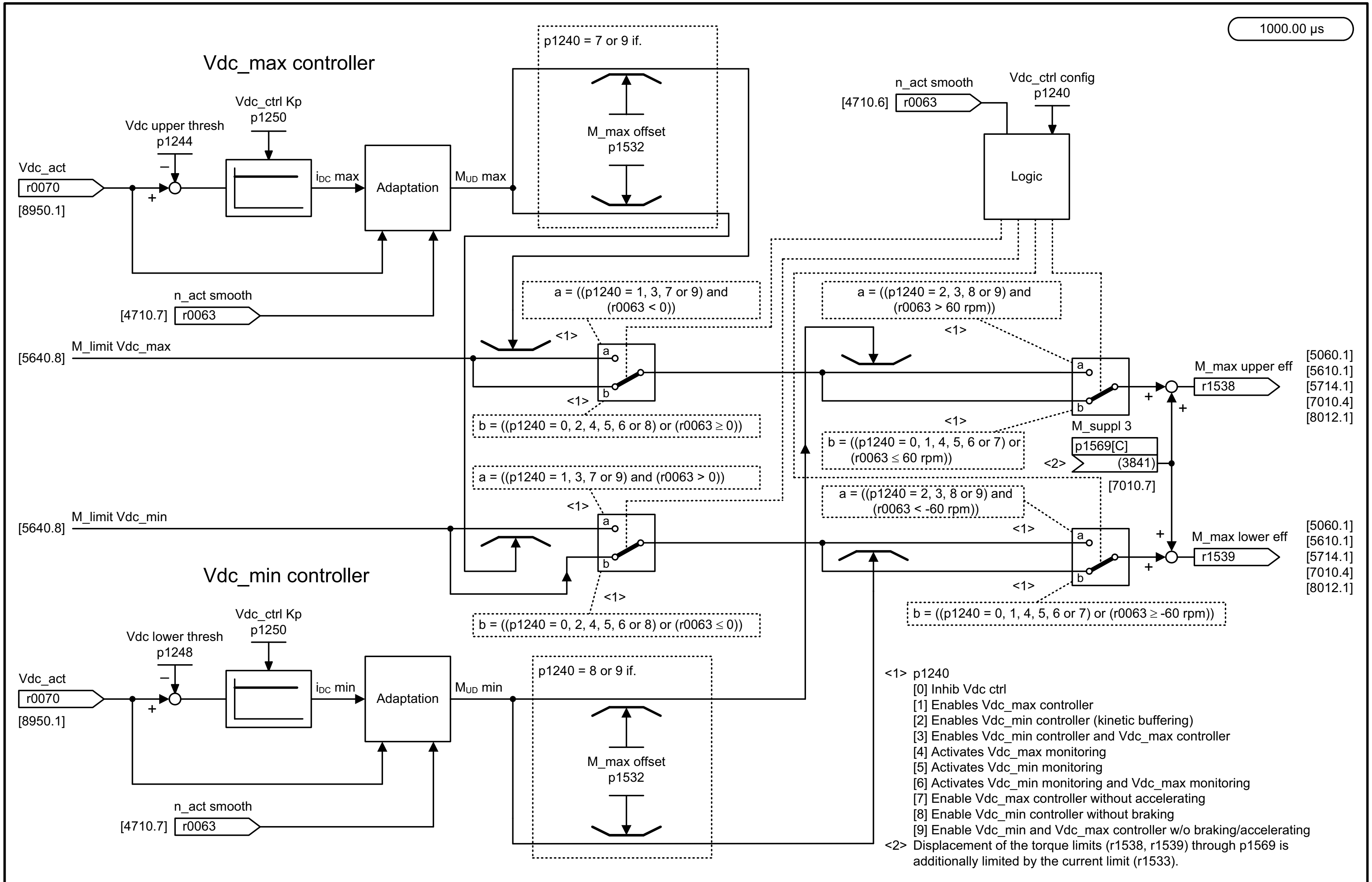


Fig. 3-222 5640 – Mode changeover, power/current limiting

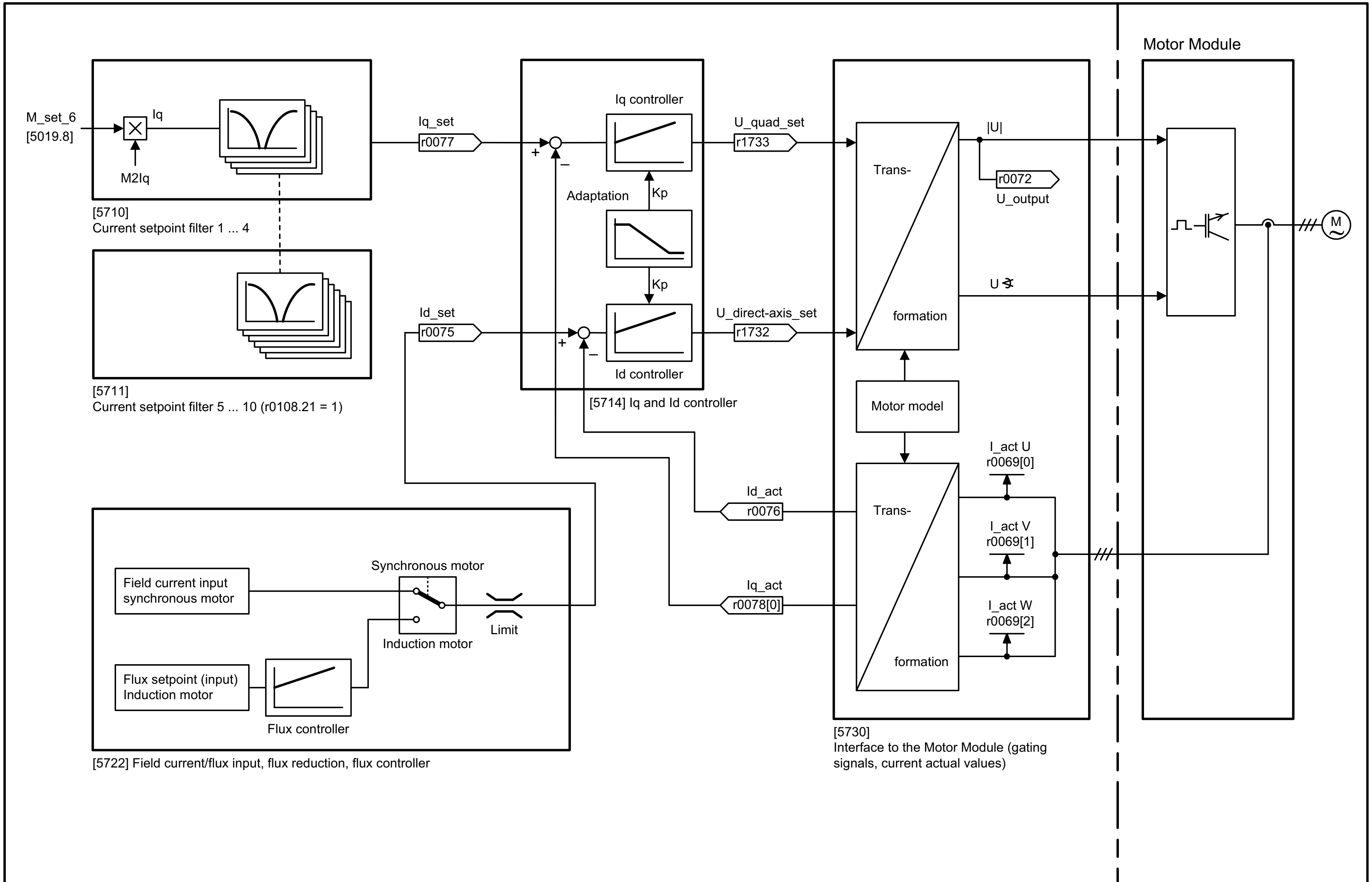


1	2	3	4	5	6	7	8

DO: SERVO	fp_5650_01_eng.vsd	Function diagram	- 5650 -
Servo control - Vdc_max controller and Vdc_min controller	19.08.10 V05.01.01	SINAMICS S120	

Fig. 3-223 5650 – Vdc_max controller and Vdc_min controller

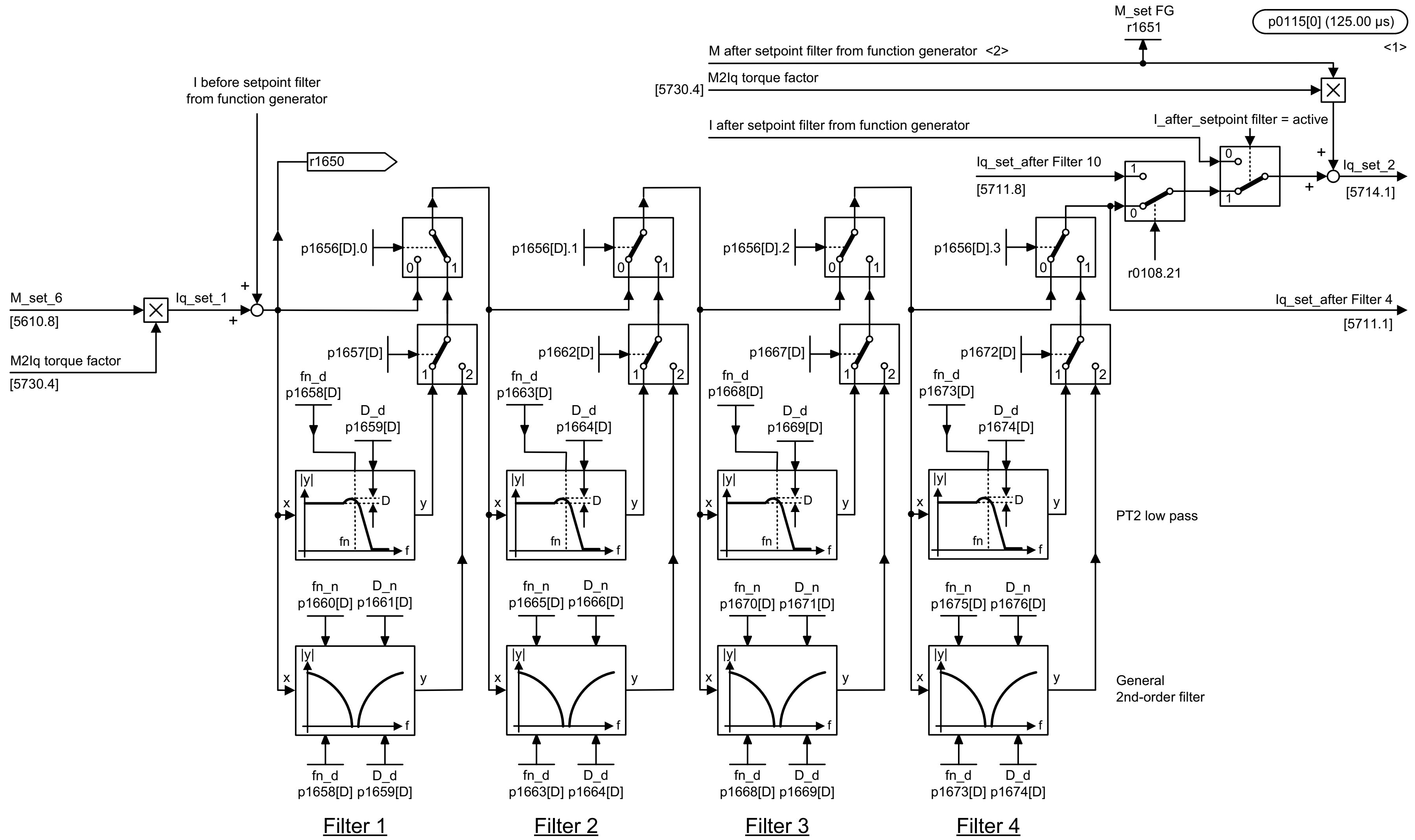
Fig. 3-224 5700 – Current control, overview



1	2	3	4	5	6	7	8

DO: SERVO	fp_5700_01_eng.vsd	Function diagram	- 5700 -
Servo control - Current control, overview	11.04.14 V05.01.01	SINAMICS S120	

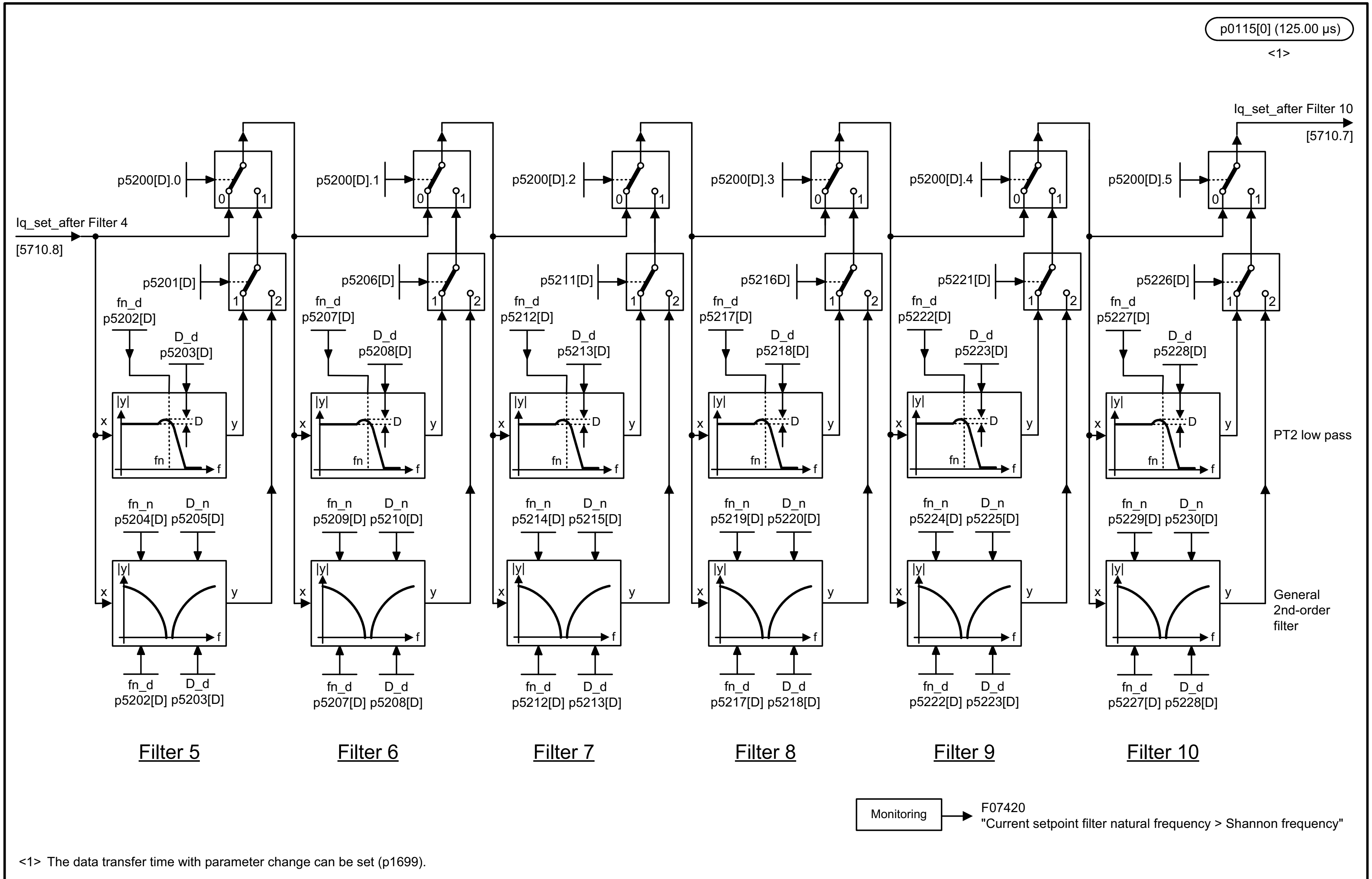
Fig. 3-225 5710 – Current setpoint filter 1 … 4



<1> The data transfer time with parameter change can be set (p1699).
<2> or input SBT test torque [2836.8] (only if r10231.0 = 1).

Monitoring → F07420
"Current setpoint filter natural frequency > Shannon frequency"

1	2	3	4	5	6	7	8
DO: SERVO					fp_5710_01_eng.vsd	Function diagram	- 5710 -
Servo control - Current setpoint filter 1 … 4					14.11.13 V05.01.01	SINAMICS S120	



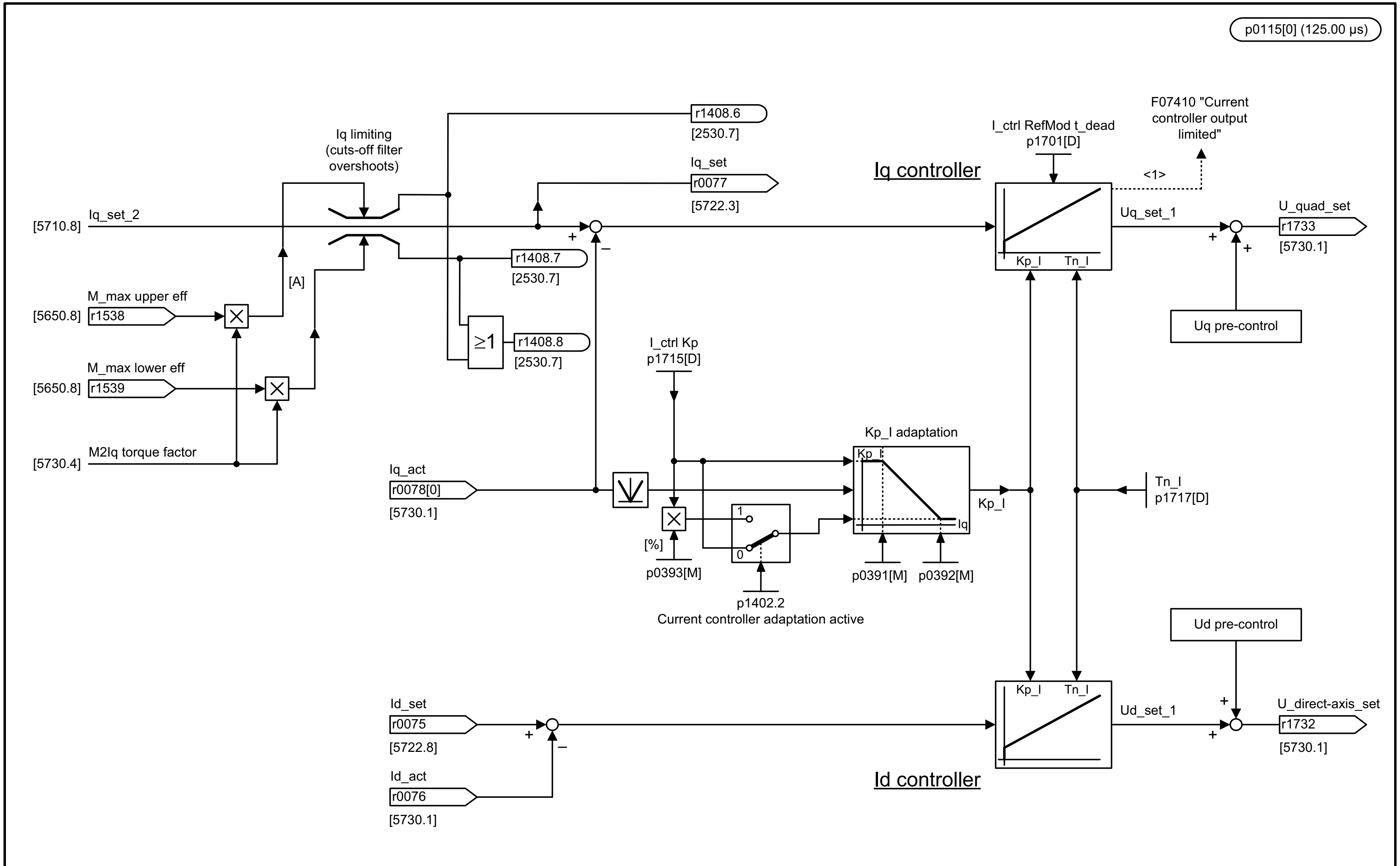
<1> The data transfer time with parameter change can be set (p1699).

1	2	3	4	5	6	7	8

DO: SERVO	fp_5711_01_eng.vsd	Function diagram	- 5711 -
Servo control - Current setpoint filter 5 … 10 (r0108.21 = 1)	26.07.13 V05.01.01	SINAMICS S120	

Fig. 3-226 5711 – Current setpoint filter 5 … 10 (r0108.21 = 1)

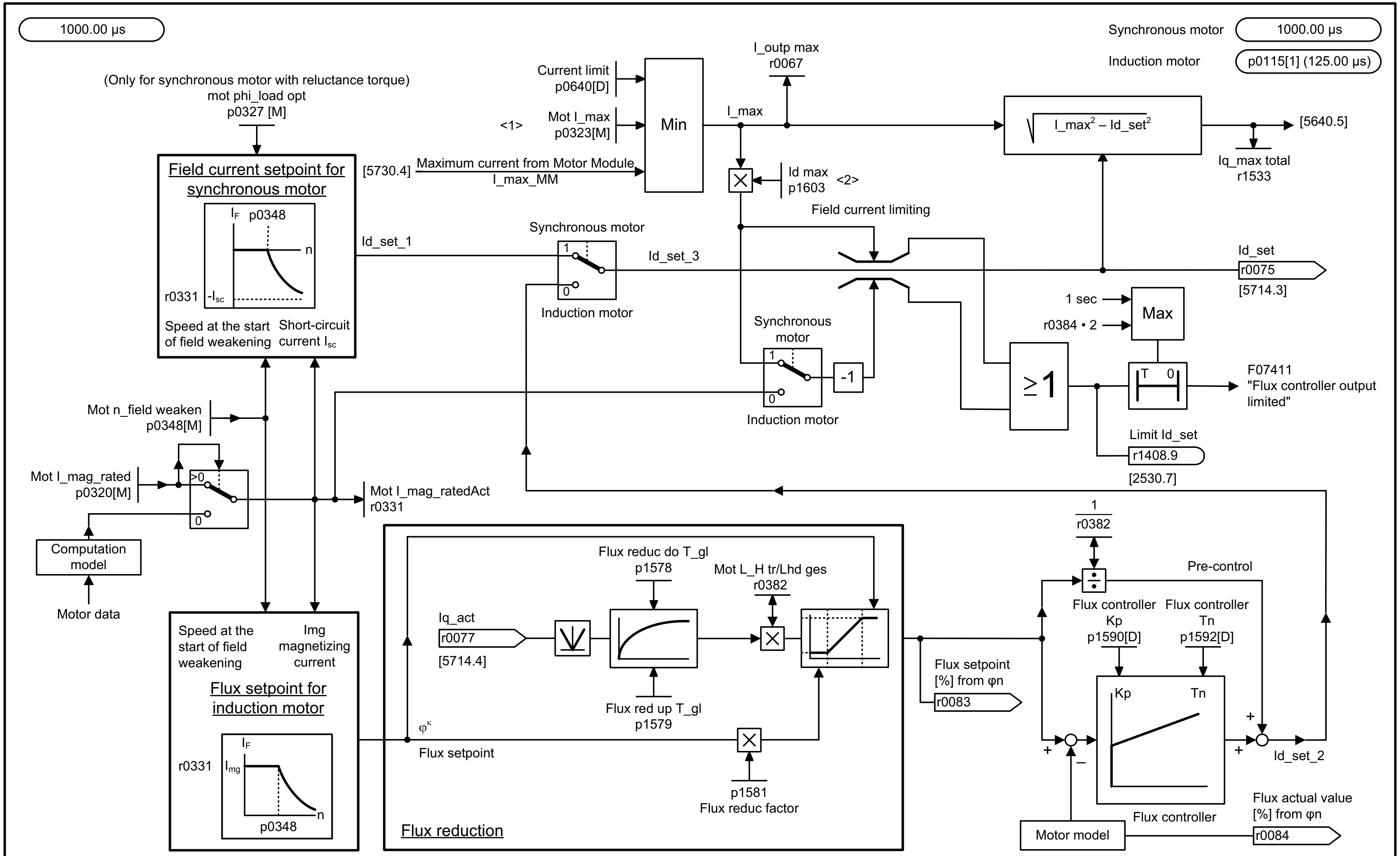
Fig. 3-227 5714 – Iq and Id controllers



<1> F07410 is output if I_act = 0 and Uq_set_1 is at the limit for more than 16 ms.

1	2	3	4	5	6	7	8
DO: SERVO					fp_5714_01_eng.vsd	Function diagram	- 5714 -
Servo control - Iq and Id controller					02.02.09 V05.01.01	SINAMICS S120	

Fig. 3-228 5722 – Field current/flux input, flux reduction, flux controller



<1> p0323 is not considerd for induction motors.
<2> If value = 0.0 %: For synchronous motors, 90 % is effective and for induction motors, 60 %.

1	2	3	4	5	6	7	8
DO: SERVO					fp_5722_01_eng.vsd	Function diagram	- 5722 -
Servo control - Field current/flux input, flux reduction, flux controller					25.04.16 V05.01.01	SINAMICS S120	

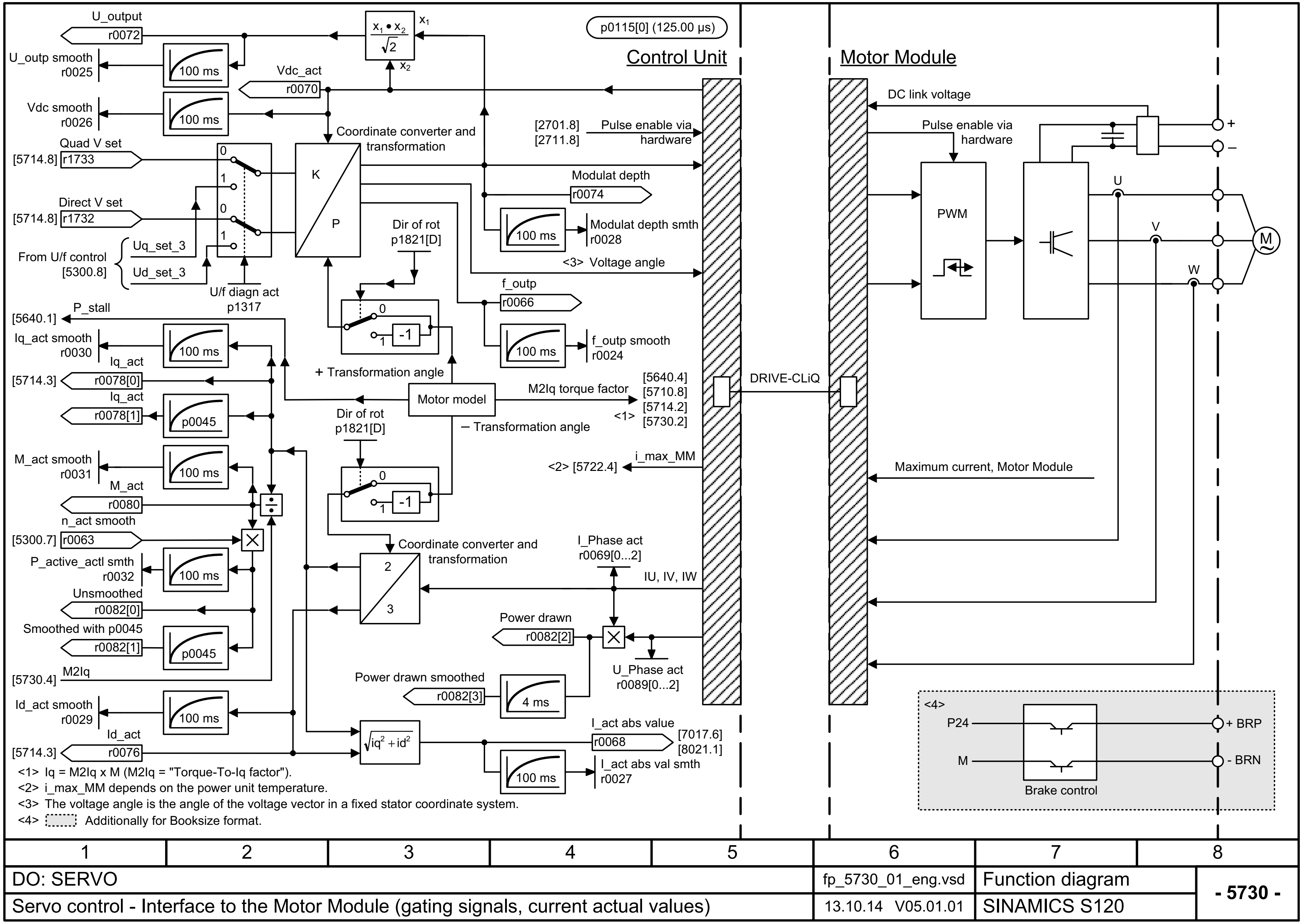
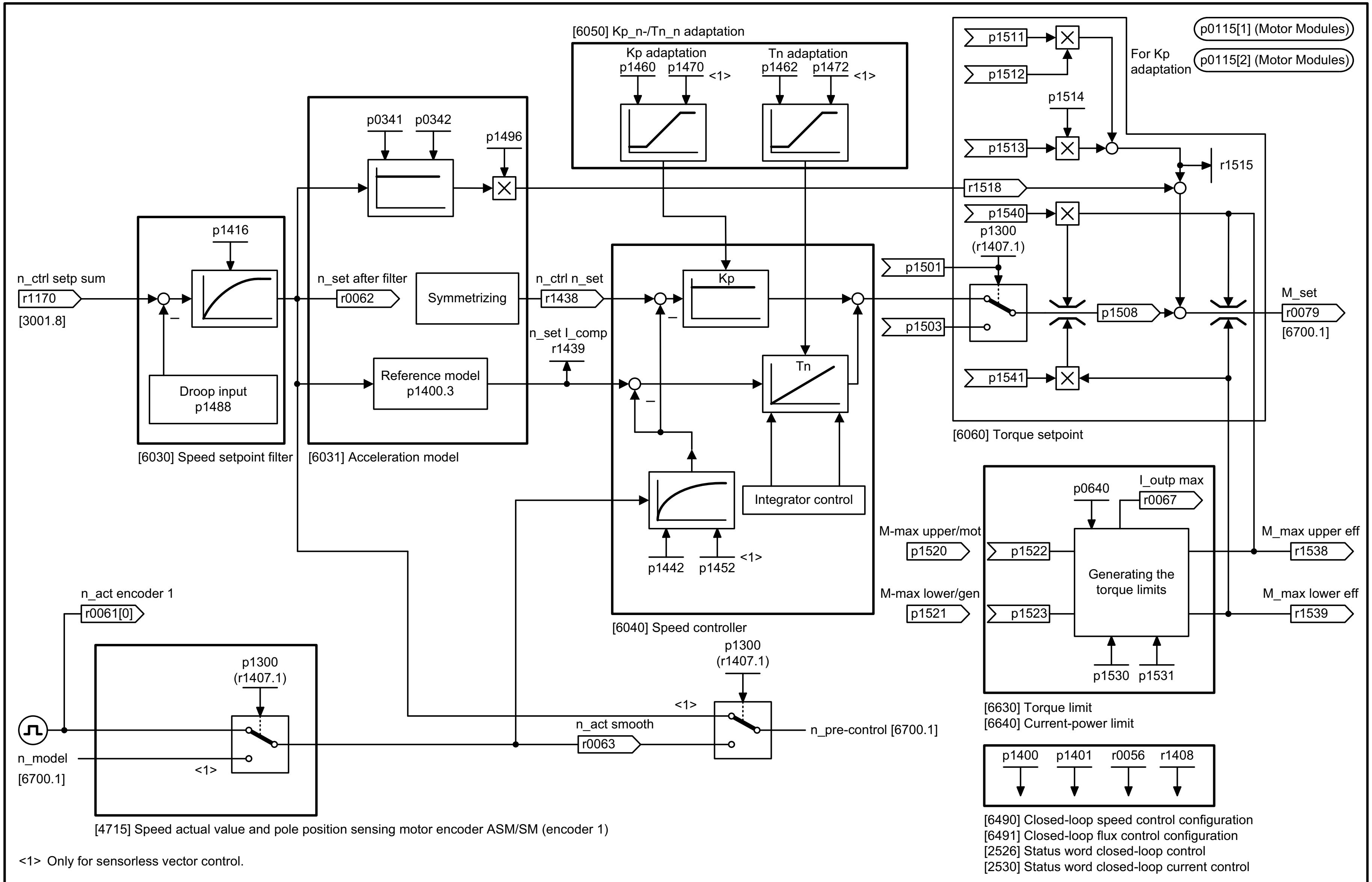


Fig. 3-229 5730 – Interface to the Motor Module (gating signals, current actual values)

3.25 Vector control

Function diagrams

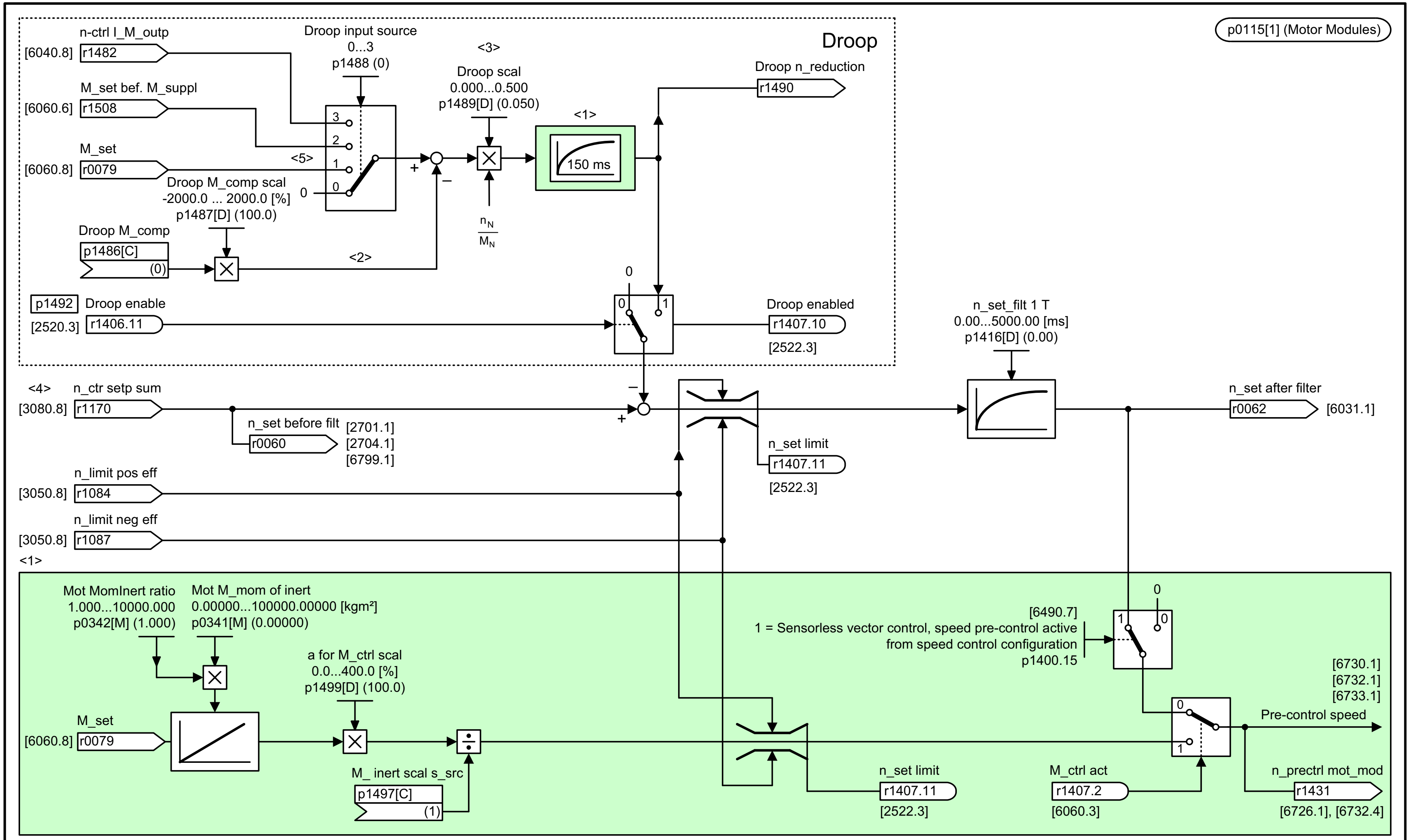
Fig. 3-230 6020 – Speed control and generation of the torque limits, overview



1	2	3	4	5	6	7	8

DO: VECTOR	fp_6020_54_eng.vsd	Function diagram	- 6020 -
Vector control - Speed control and generation of the torque limits, overview	11.04.14 V05.01.01	S120/S150/G130/G150	

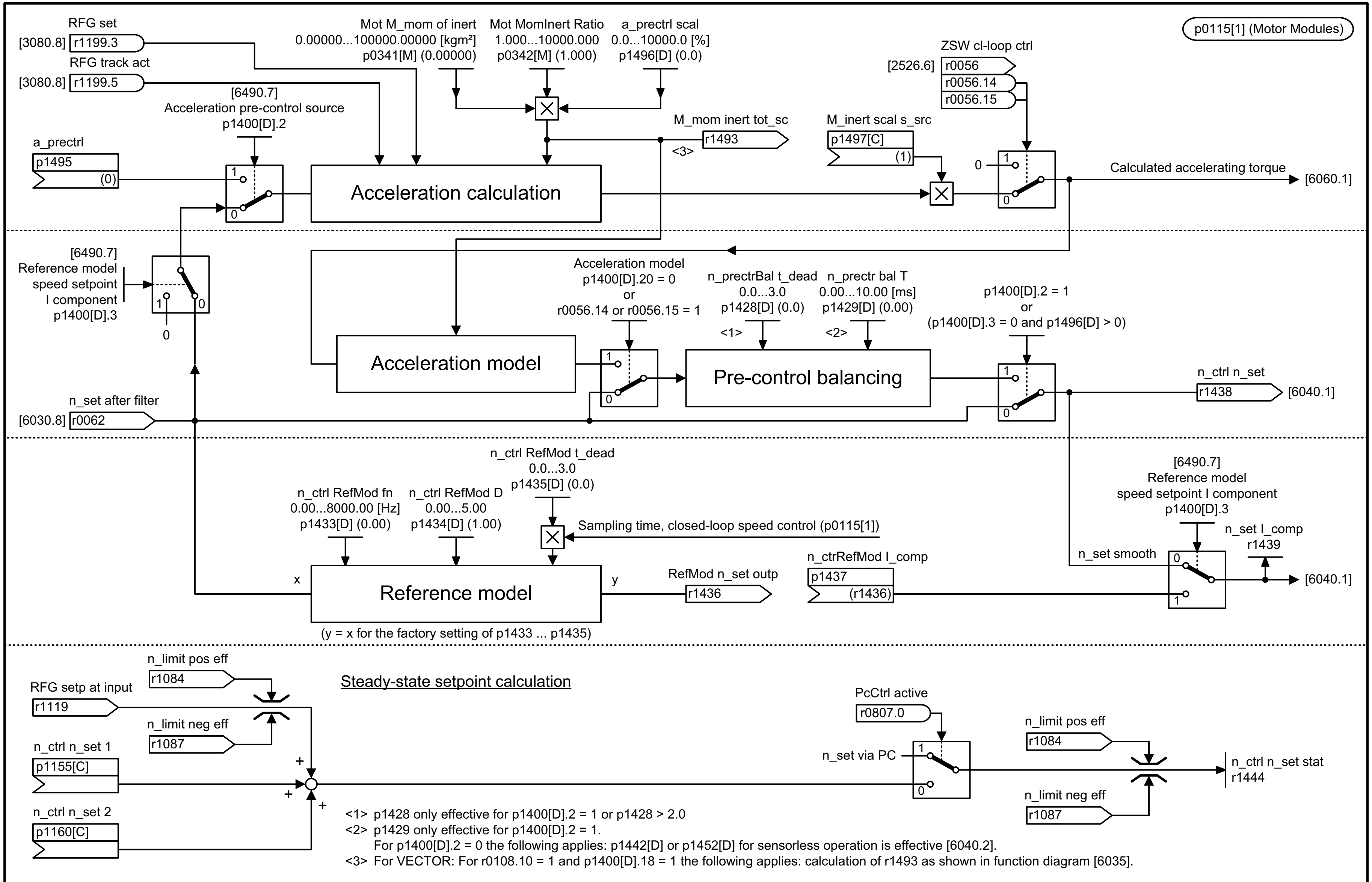
Fig. 3-231 6030 – Speed setpoint, droop



<1> = Only for vector control without encoder.
<2> Only for p1488 > 0.
<3> Scaling: p1489 = 0.100 - for a rated motor torque of r0333 - results in a speed setpoint reduction of 0.1 x p0311.
<4> The value is displayed correctly only with r0899.2 = 1 (Operation enabled).
<5> p1488 = 1 Not recommended with active acceleration calculation [6031].

1	2	3	4	5	6	7	8
DO: VECTOR					fp_6030_54_eng.vsd	Function diagram	- 6030 -
Vector control - Speed setpoint, droop					22.09.17 V05.01.01	S120/S150/G130/G150	

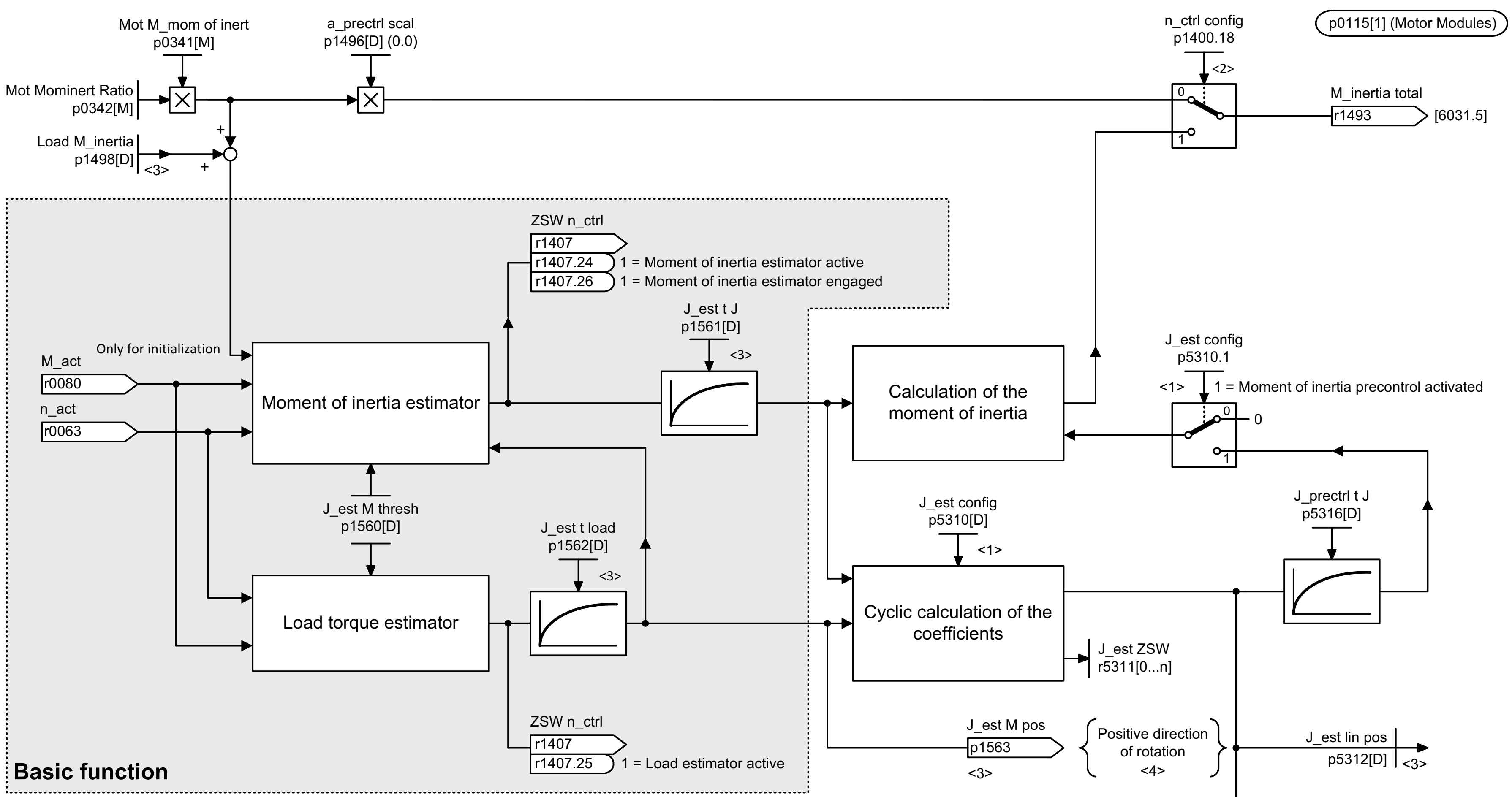
Fig. 3-232 6031 – Pre-control balancing, reference/acceleration model



1	2	3	4	5	6	7	8

DO: VECTOR, VECTOR3P, VECTORGL, VECTORM2C, VECTORMV, VECTORSL	fp_6031_51_eng.vsd	Function diagram	- 6031 -
Vector control - Pre-control balancing, reference/acceleration model	16.01.18 V05.01.01	SINAMICS	

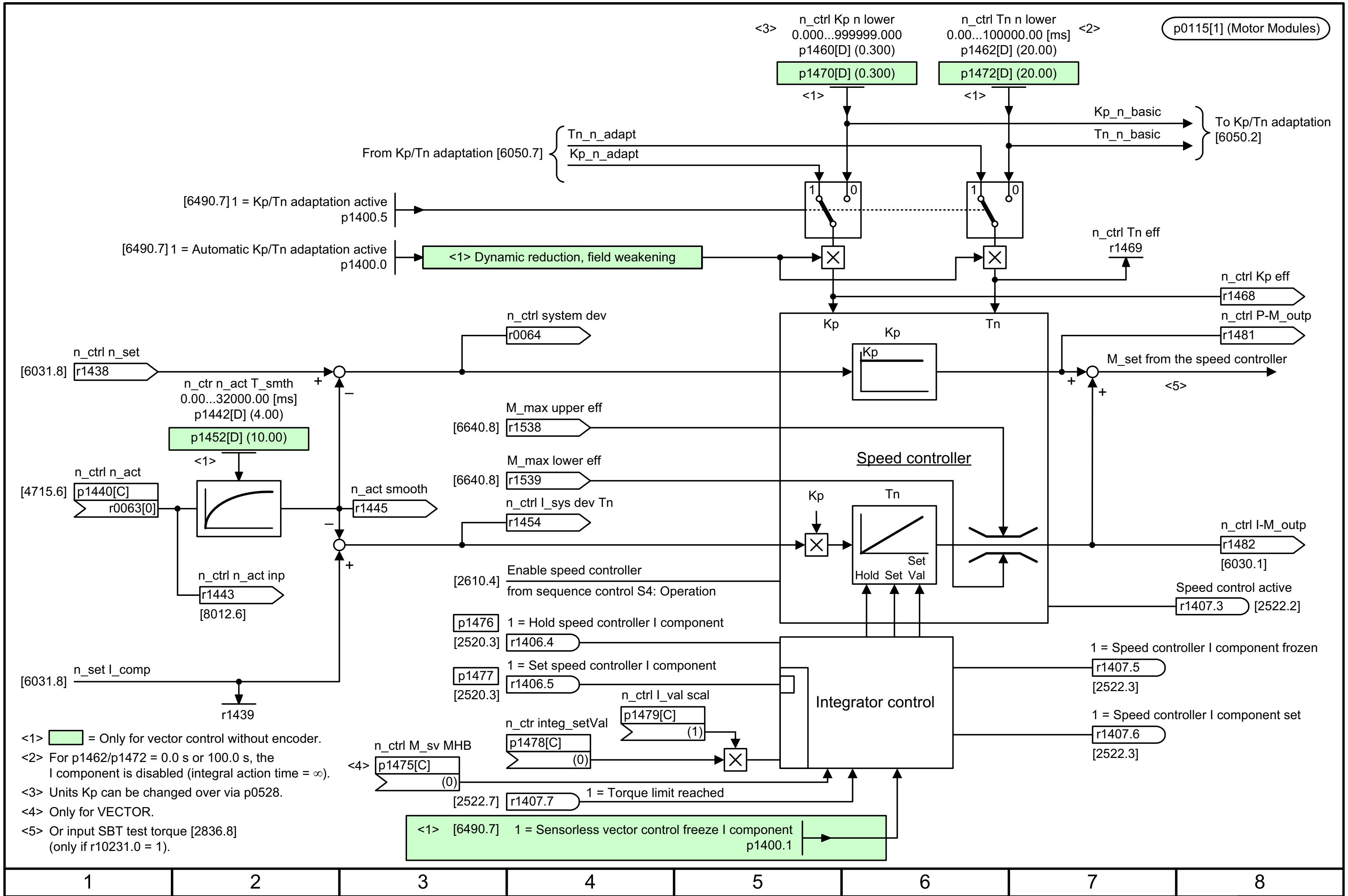
Fig. 3-233 6035 – Moment of inertia estimator (r0108.10 = 1)



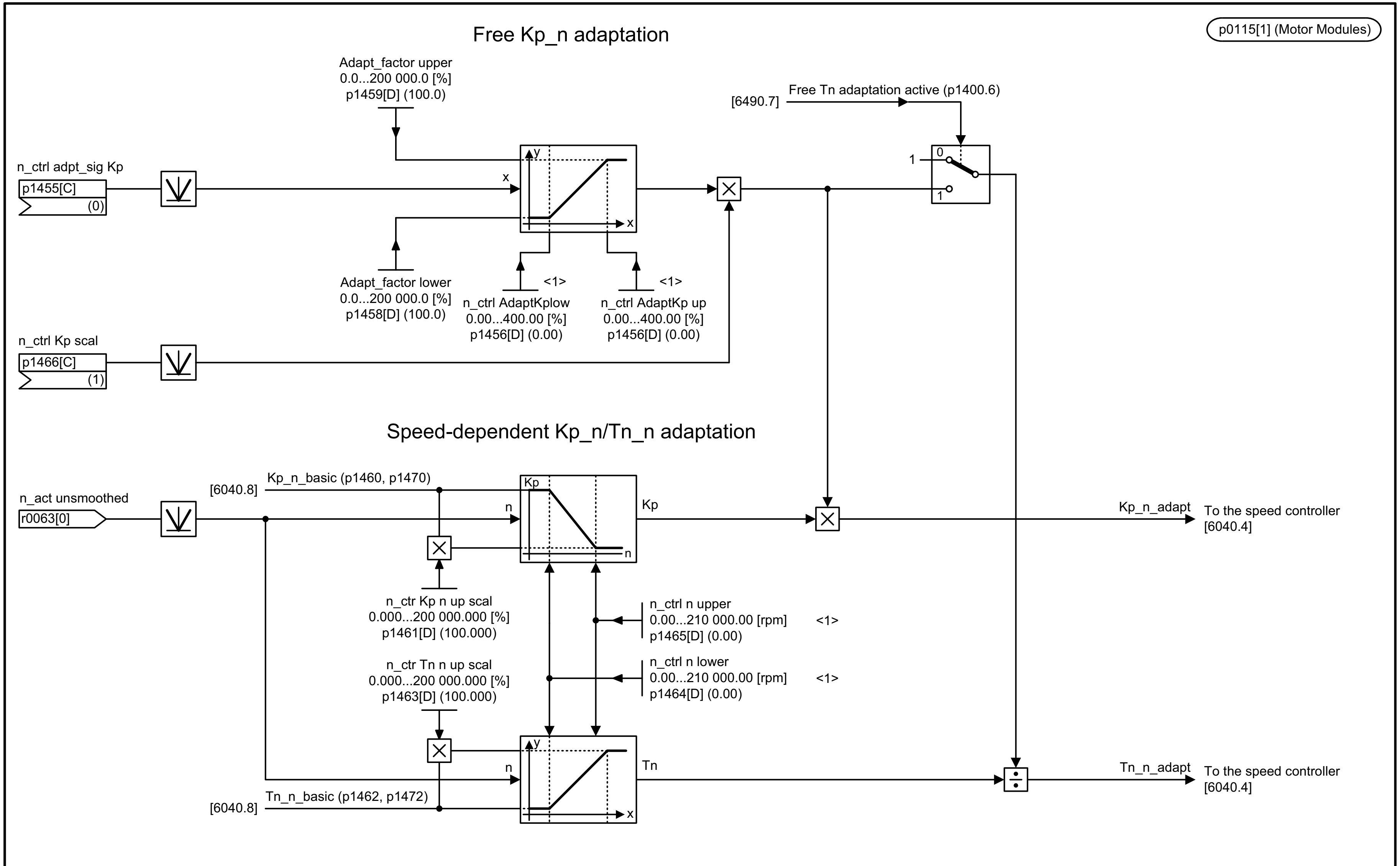
<1> Possible bit combinations p5310:
Bit 1, 0
= 0, 0 → Function inactive
= 0, 1 → Cyclic calculations of the coefficient without moment of inertia precontrol (commissioning)
= 1, 0 → Moment of inertia precontrol activated (without cyclic calculation of the coefficients)
= 1, 1 → Moment of inertia precontrol activated (with cyclic calculation of the coefficients)
<2> If p1497 is connected to a source not equal to 1, the switch always remains set to 0.
<3> On p1400.22 = 1 and r1407.26 = 1, the current values are saved in p1498, p1561 … p1564, p5312 … p5315 for RAM to ROM.
<4> p1564, p5314 and p5315 for negative direction of rotation.

1	2	3	4	5	6	7	8
DO: VECTOR					fp_6035_54_eng.vsd	Function diagram	- 6035 -
Vector control - Moment of inertia estimator (r0108.10 = 1)					11.04.17 V05.01.01	S120/S150/G130/G150	

Fig. 3-234 6040 – Speed controller with/without encoder



DO: VECTOR, VECTOR3P, VECTORGL, VECTORM2C, VECTORMV, VECTORSL	fp_6040_51_eng.vsd	Function diagram	- 6040 -
Vector control - Speed controller with/without encoder	07.01.15 V05.01.01	SINAMICS	

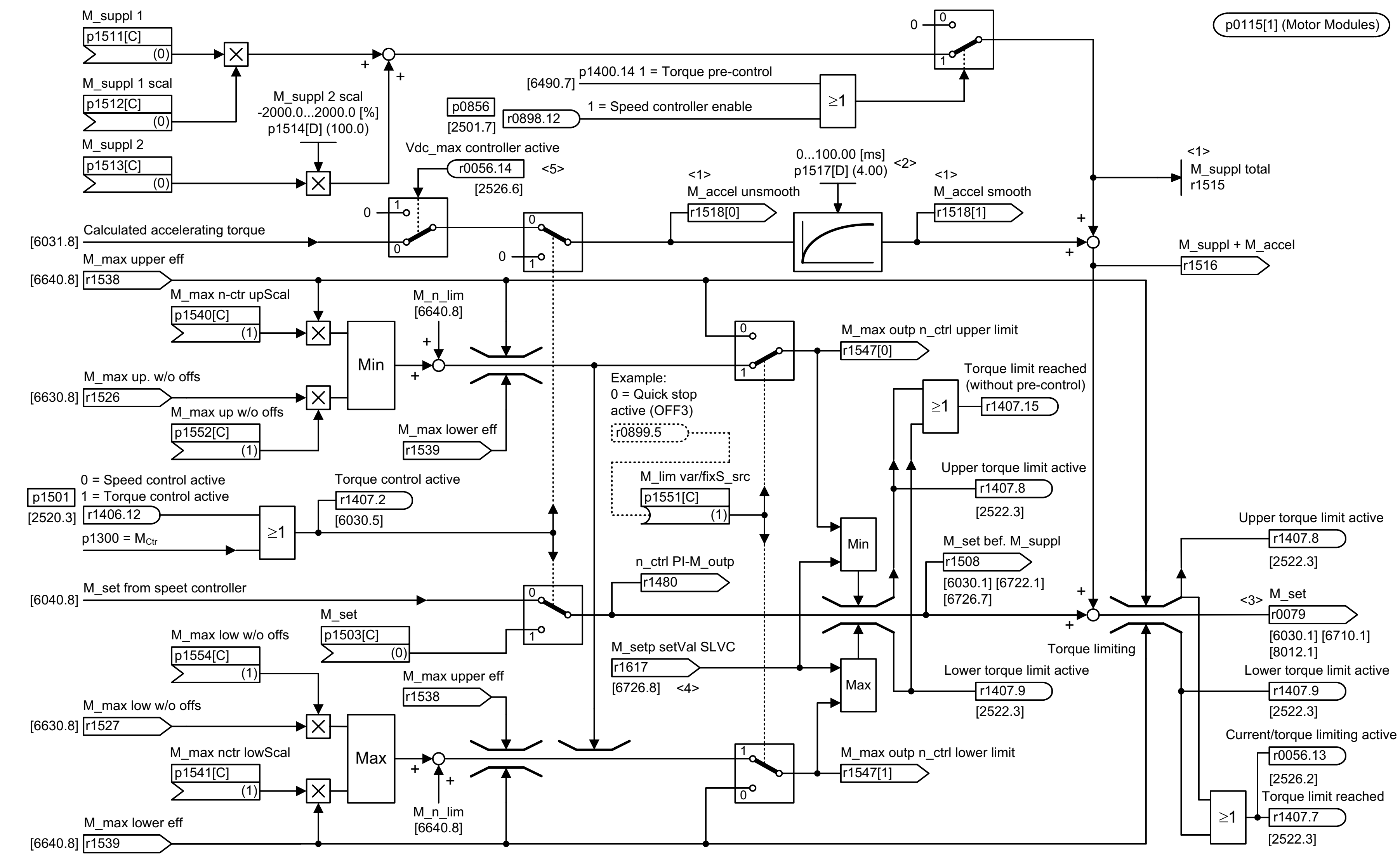


<1> If the lower transition point exceeds the upper transition point, the Kp-adaptation also changes over.

1	2	3	4	5	6	7	8
DO: VECTOR, VECTOR3P, VECTORGL, VECTORM2C, VECTORMV, VECTORSL					fp_6050_51_eng.vsd	Function diagram	- 6050 -
Vector control - Speed controller adaptation (Kp_n/Tn_n adaptation)					25.09.17 V05.01.01	SINAMICS	

Fig. 3-235 6050 – Speed controller adaptation (Kp_n/Tn_n adaptation)

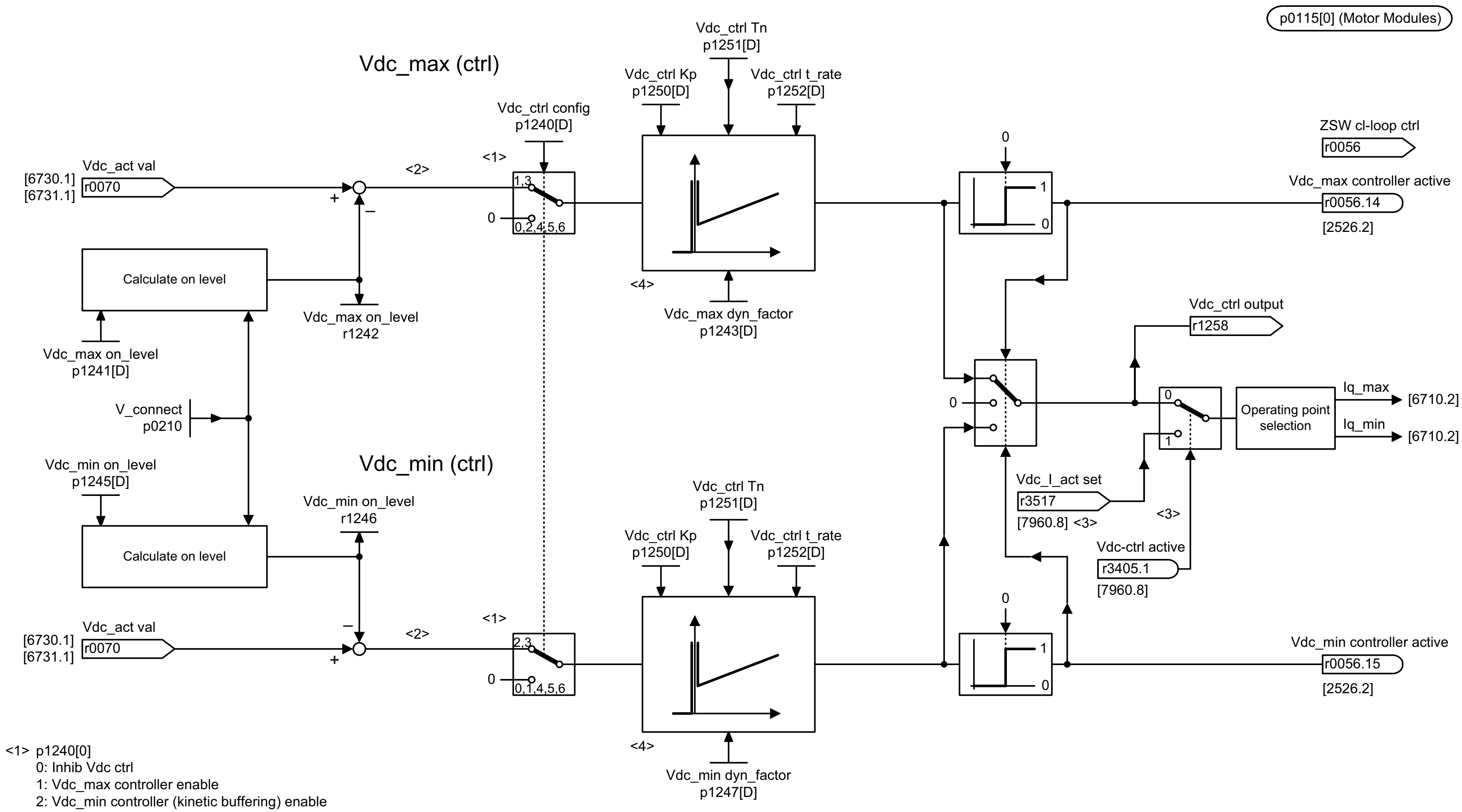
Fig. 3-236 6060 – Torque setpoint



<1> The signal is only effective after magnetization has been completed (r0056.4 = 1).
<2> Acceleration control is inhibited for p1517 = 100 ms.
<3> M_set is also influenced by the speed limit controller.
<4> Only for DO: VECTOR and sensorless SESM with speed controller inhibited r1776[4] = 0.
<5> Not for DO: VECTORGL.

1	2	3	4	5	6	7	8

DO: VECTOR, VECTOR3P, VECTORGL, VECTORM2C, VECTORMV, VECTORSL	fp_6060_51_eng.vsd	Function diagram	- 6060 -
Vector control - Torque setpoint	07.01.15 V05.01.01	SINAMICS	



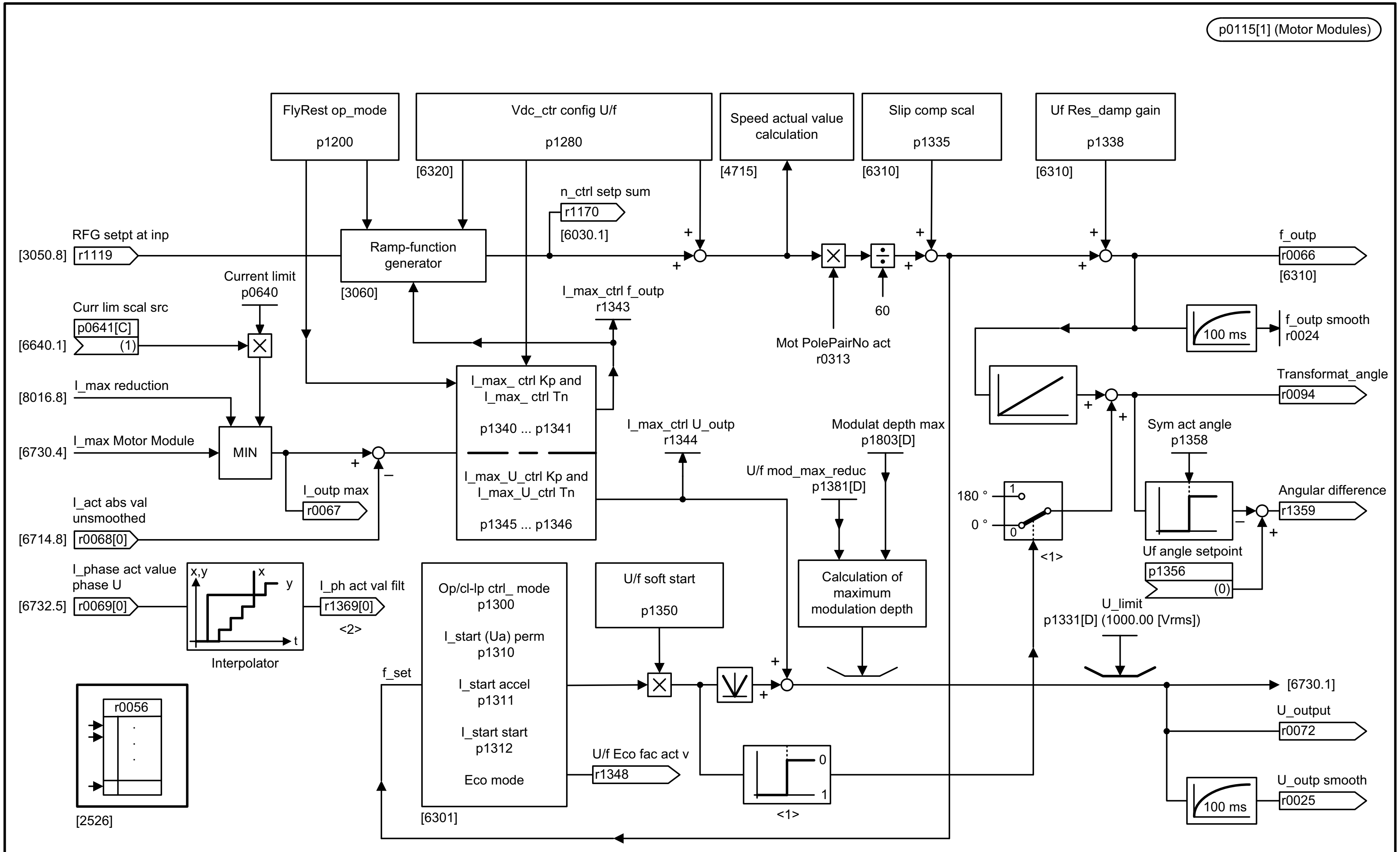
<1> p1240[0]
0: Inhib Vdc ctrl
1: Vdc_max controller enable
2: Vdc_min controller (kinetic buffering) enable
3: Vdc_min controller and Vdc_max controller enable
4: Vdc_Activates Vdc_max monitoring
5: Vdc_Activates Vdc_min monitoring
6: Vdc_Activates Vdc_min monitoring and Vdc_max monitoring
<2> The Vdc controller is switched on when reaching the threshold value. The switch-off hysteresis is 5 % of the switch-on level.
<3> Only for VECTOR and if the "technology controller" function module is active (r0108.16 = 1).
<4> As standard, the controller is designed as a P controller.

1	2	3	4	5	6	7	8

DO: VECTOR, VECTOR3P, VECTORM2C, VECTORMV	fp_6220_51_eng.vsd	Function diagram	- 6220 -
Vector control - Vdc_max controller and Vdc_min controller	30.05.17 V05.01.01	SINAMICS	

Fig. 3-237 6220 – Vdc_max controller and Vdc_min controller

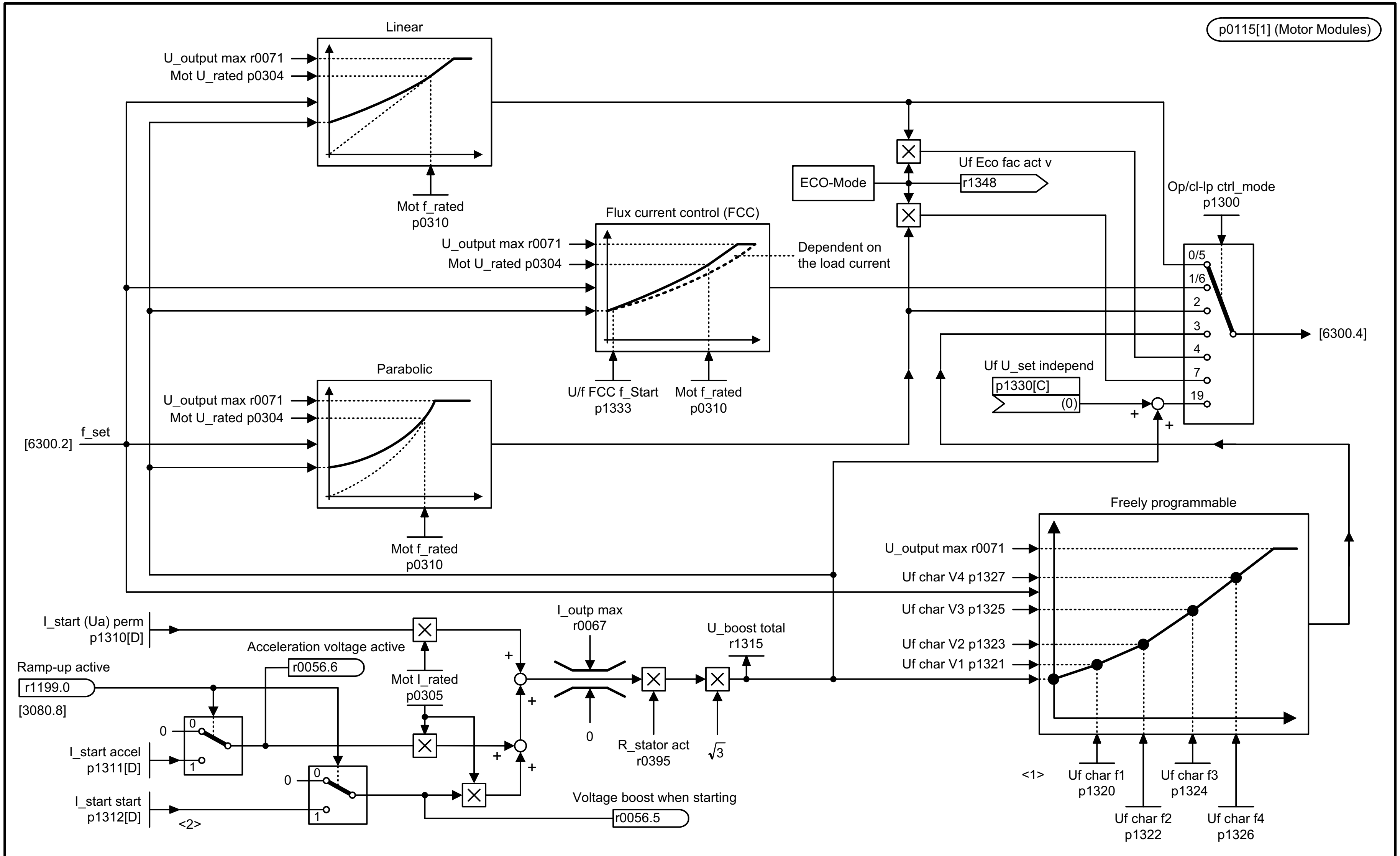
Fig. 3-238 6300 – U/f control, overview



<1> Only for p1300 = 19 and p1302.1 = 1.
<2> Only for p1300 = 19.

1	2	3	4	5	6	7	8

DO: VECTOR	fp_6300_54_eng.vsd	Function diagram	- 6300 -
Vector control - U/f control, overview	08.11.13 V05.01.01	S120/S150/G130/G150	

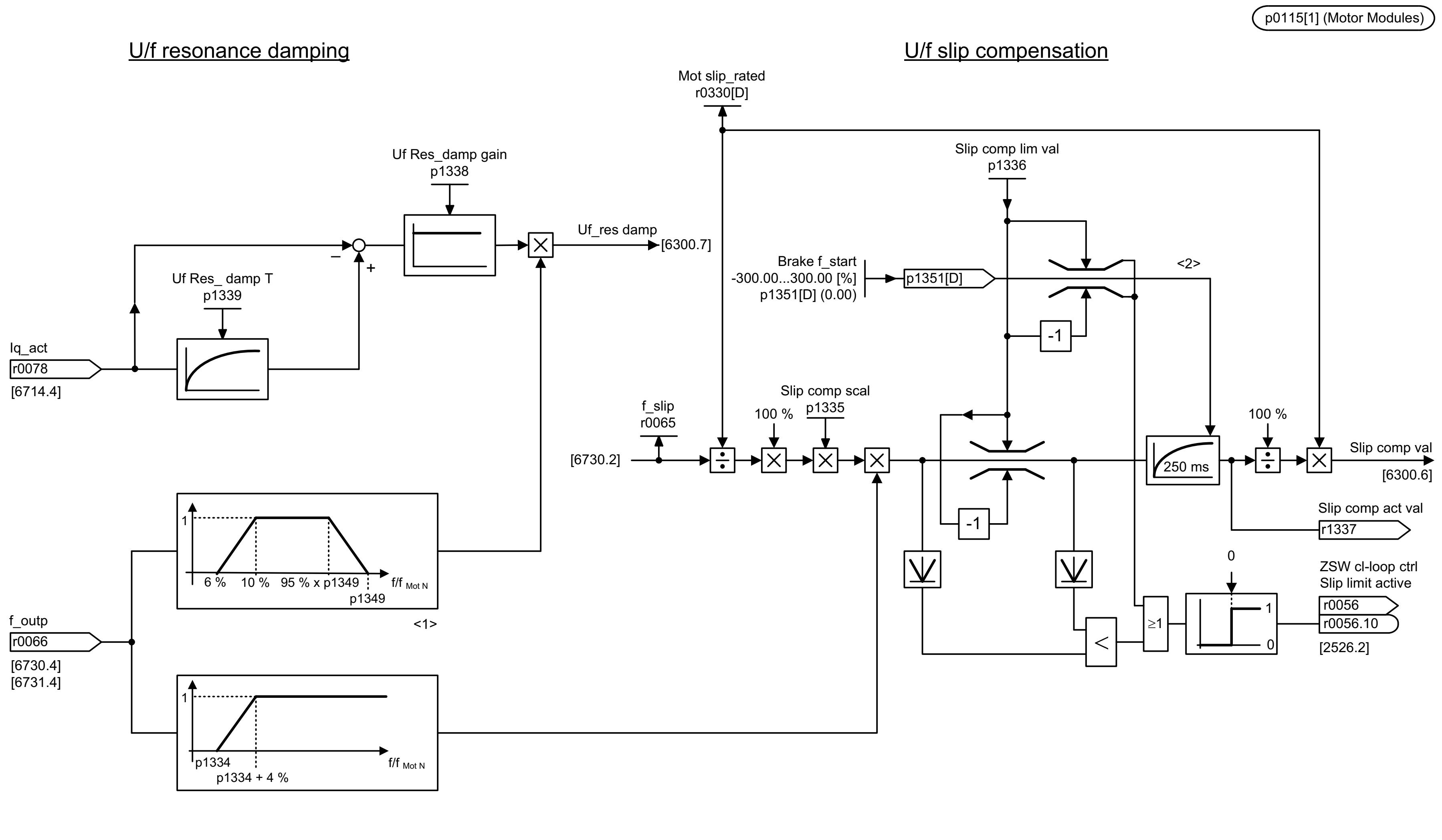


<1> For p1320 = 0, the voltage boost via p1310 is not effective.
<2> p1312 is only effective when acceleration takes place for the first time after pulse enable.

1	2	3	4	5	6	7	8
DO: VECTOR					fp_6301_54_eng.vsd	Function diagram	- 6301 -
Vector control - U/f characteristic and voltage boost					02.05.16 V05.01.01	S120/S150/G130/G150	

Fig. 3-239 6301 – U/f characteristic and voltage boost

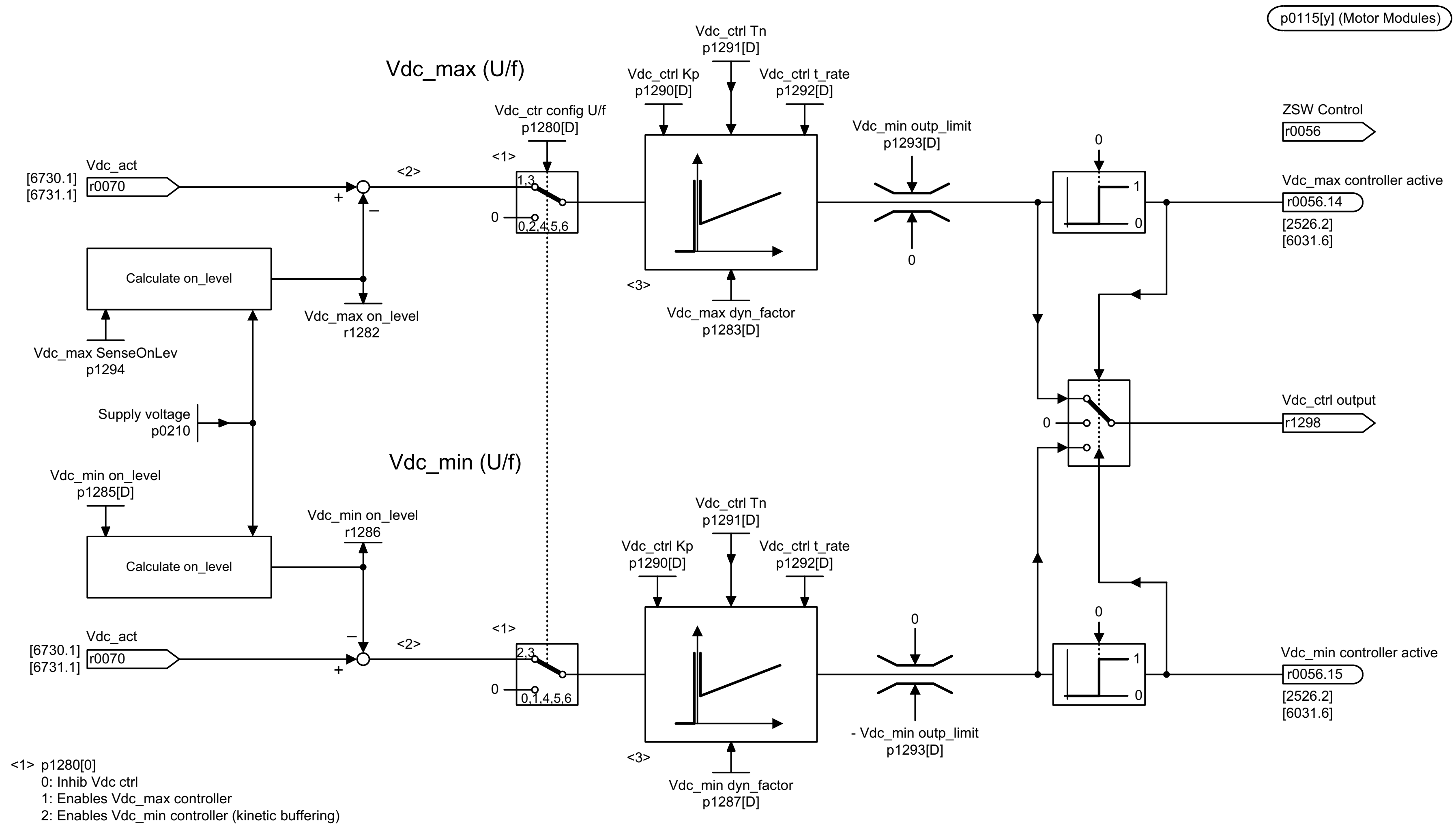
Fig. 3-240 6310 – Resonance damping and slip compensation



<1> If p1349 = 0: the limit is 0.95 x $f_{Mot\ N}$ <= 45 Hz.
<2> Preset value for r1337:
Activation with r0056.4 = 1 till r0066 >= p1334 and p1216 has expired.
100 % equal r0330 (Rated motor slip).

1	2	3	4	5	6	7	8

DO: VECTOR	fp_6310_54_eng.vsd	Function diagram	- 6310 -
Vector control - Resonance damping and slip compensation	02.12.13 V05.01.01	S120/S150/G130/G150	



<1> p1280[0]
0: Inhib Vdc ctrl
1: Enables Vdc_max controller
2: Enables Vdc_min controller (kinetic buffering)
3: Enables Vdc_min controller and Vdc_max controller
4: Activates Vdc_max monitoring
5: Activates Vdc_min monitoring
6: Activates Vdc_min monitoring and Vdc_max monitoring

<2> The Vdc controller is switched on when reaching the threshold value. The switch-off hysteresis is 5 % of the switch-on level.

<3> As standard, the controller is designed as a P controller.

1	2	3	4	5	6	7	8

DO: VECTOR	fp_6320_54_eng.vsd	Function diagram	- 6320 -
Vector control - Vdc_max controller and Vdc_min controller (U/f)	12.07.13 V05.01.01	S120/S150/G130/G150	

Fig. 3-241 6320 – Vdc_max controller and Vdc_min controller (U/f)

Fig. 3-242 6490 – Speed control configuration

p0115[1] (Motor Modules)

n_ctrl config
p1400[D]

Speed control configuration

Bit No.	Meaning	Factory setting	
0	**1 = Automatic Kp/Tn adaptation active**	1	[6040.3]
1	1 = Sensorless vector control, freeze I component	0	[6040.5]
2	**0 = Acceleration pre-control, internal source (n_set)** 1 = Acceleration pre-control, external source (p1495)	0	[6031.2]
3	**0 = Reference model, speed setpoint I component Off** 1 = Reference model, speed setpoint I component On	0	[6031.1][6031.7]
4	Reserved		
5	**1 = Kp/Tn adaptation active**	1	[6040.3]
6	1 = Free Tn adaptation active	0	[6050.6]
7...13	Reserved		
14	**0 = Torque pre-control for n_ctrl enabled** 1 = Torque pre-control always active	0	[6060.4]
15	**1 = Sensorless vector control, speed pre-control active**	1	[6030.7]
16	**0 = I component for limiting hold** 1 = I component for limiting enable	0	
17	Reserved		
18	1 = Moment of inertia estimator active	0	[6035.7]
19	1 = Anti-windup for integral component active	0	
20	**0 = Acceleration model Off** 1 = Acceleration model On	0	[6031.4]
21	1 = Free Tn reduction active <1>	0	
22	1 = Obtain moment of inertia estimator value for pulse inhibit	0	[6030.1]
23	1 = Acceleration model (with speed encoder)	0	
24	1 = Moment of inertia estimator fast estimation active	0	
25	1 = Acceleration torque instantaneous in the I/f mode	0	
26...31	Reserved		

<1> Only for VECTOR3P.

1	2	3	4	5	6	7	8

DO: VECTOR, VECTOR3P, VECTORGL, VECTORM2C, VECTORMV, VECTORSL	fp_6490_51_eng.vsd	Function diagram	**- 6490 -**
Vector control - Speed control configuration	06.10.17 V05.01.01	SINAMICS	

p0115[2] (Motor Modules)

Flux ctrl config
p1401[D]

Flux control configuration

Factory setting

Flux ctrl config
p1401[D]

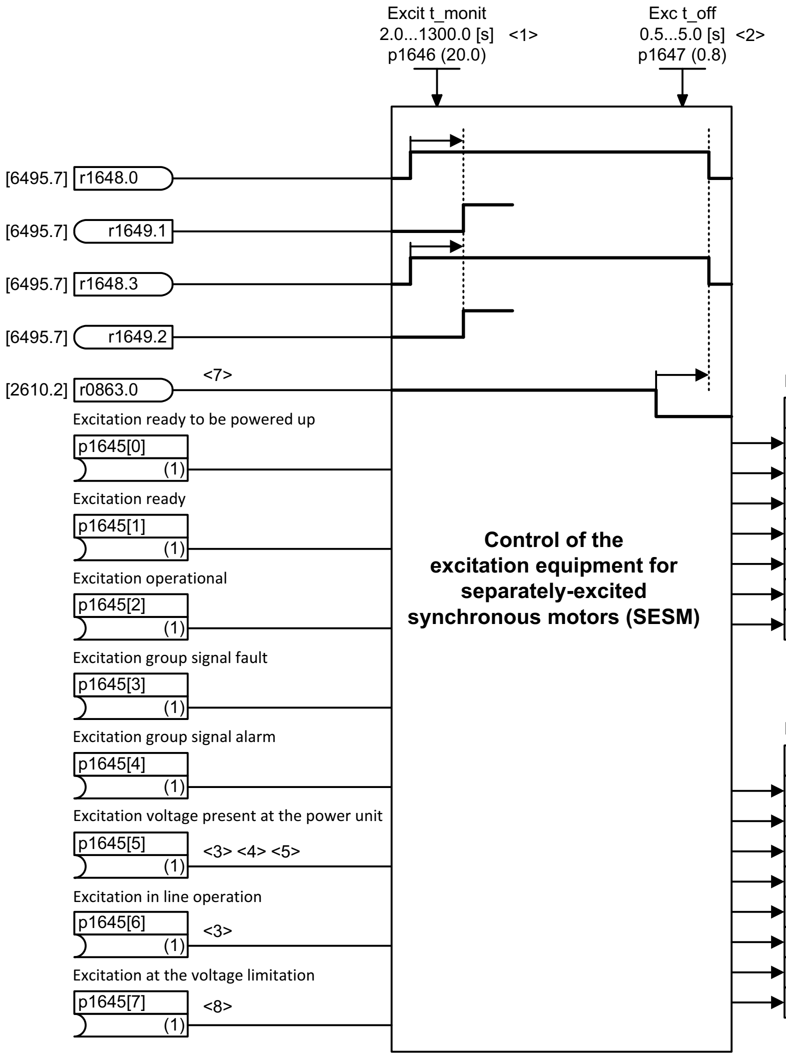
Bit No.	Meaning	Factory setting	
0	**1 = Flux setpoint soft starting active**	0	[6722.3]
1	**1 = Flux setpoint differentiation active**	1	[6723.7]
2	**1 = Flux build-up control active**	1	[6723.6]
3	**1 = Flux characteristic load-dependent**	1	[6725.2]
4	**1 = Flux controller (ASM with encoder)**	0	
5	**1 = Flux impression (ASM with encoder) with model chngov** 0 = Flux impression (ASM with encoder) from 30 % n_rated	0	
6	**1 = Quick magnetizing**	0	[6722.5]
7	**1 = Pre-control speed limitation**	0	
8	**1 = Speed limiting controller with M_limits** 0 = Speed limiting controller with I_limits	0	
9	**1 = Dynamic load-dependent flux boost**	0	
10	**1 = Flux boost low speed**	0	
11	**Reserved**		
12	**Reserved**		
13	**1 = Precontrol characteristic (PESM)**	0	
14	**1 = Efficiency optimization 2 active**	0	[6722.4]
15	**Reserved**		

1	2	3	4	5	6	7	8

DO: VECTOR	fp_6491_54_eng.vsd	Function diagram	- 6491 -
Vector control - Flux control configuration	09.08.17 V05.01.01	S120/S150/G130/G150	

Fig. 3-243 6491 – Flux control configuration

Fig. 3-244 6495 – Excitation (SESM, p0300 = 5)



Excitation control word

Bit No.	Meaning		Excitation STW: r1648	
0	**1 = Power up excitation**		r1648.0	To the excitation
1	**1 = Excitation no OFF2**		r1648.1	To the excitation
2	**1 = Excitation no OFF3**		r1648.2	To the excitation
3	**1 = Excitation operation enable**		r1648.3	To the excitation
7	**1 = Excitation acknowledge fault**		r1648.7	To the excitation
10	**1 = Master control by excitation equipment**	<6>	r1648.10	<6> To the excitation
11	**1 = ccwRFE: invert excitation current setpoint**	<3> <4>	r1648.11	<3> <4> To the excitation

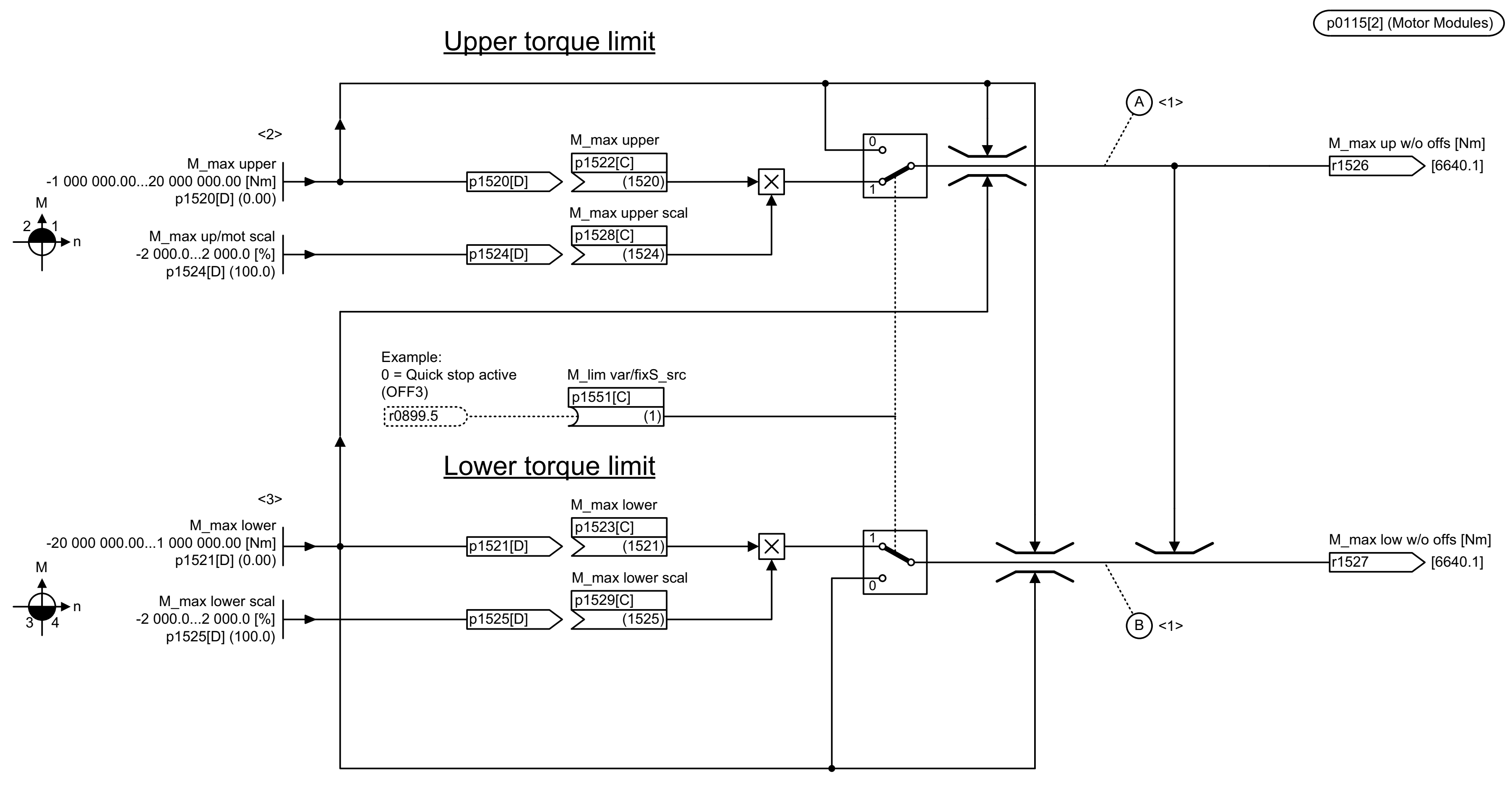
Excitation status word

Bit No.	Meaning		Excitation ZSW: r1649	
0	**Excitation ready to be powered up feedback signal**		r1649.0	To sequence control [2610]
1	**Excitation ready feedback signal**		r1649.1	To sequence control [2610]
2	**Excitation operational feedback signal**		r1649.2	To sequence control [2610]
3	**Excitation group signal fault**		r1649.3	
7	**Excitation group signal alarm**		r1649.7	
8	**Excitation at the voltage limit**	<8>	r1649.8	[6726.3] <8>
11	**Excitation voltage present at the power unit**	<3> <4>	r1649.11	<3> <4>
15	**Excitation in line operation**	<3> <5>	r1649.15	<3> <5>

<1> For VECTORGL: p1646[0] and p1646[1];
Min / Max / Factory setting: 0.1 / 60.0 / 1.0 [s].
<2> For VECTORGL:
Instead of p1647: Fixed time 0 s.
<3> Only for VECTORGL.
<4> Only for VECTOR3P, VECTORM2C, VECTORMV.
<5> Only for VECTORSL: Meaning "Excitation initiation of the brief line interruption sequence".
<6> Not for VECTOR.
<7> Not for VECTORGL.
<8> Only for SINAMICS S120/S150.

1	2	3	4	5	6	7	8

DO: VECTOR, VECTOR3P, VECTORDM, VECTORGL, VECTORM2C, VECTORMV, VECTORSL	fp_6495_51_eng.vsd	Function diagram	- 6495 -
Vector control - Excitation (SESM, p0300 = 5)	26.09.16 V05.01.01	SINAMICS	



<1> Danger: Negative values at (A) or positive values at (B) represent a minimum torque for the other torque direction and can cause the motor to accelerate uncontrollably.

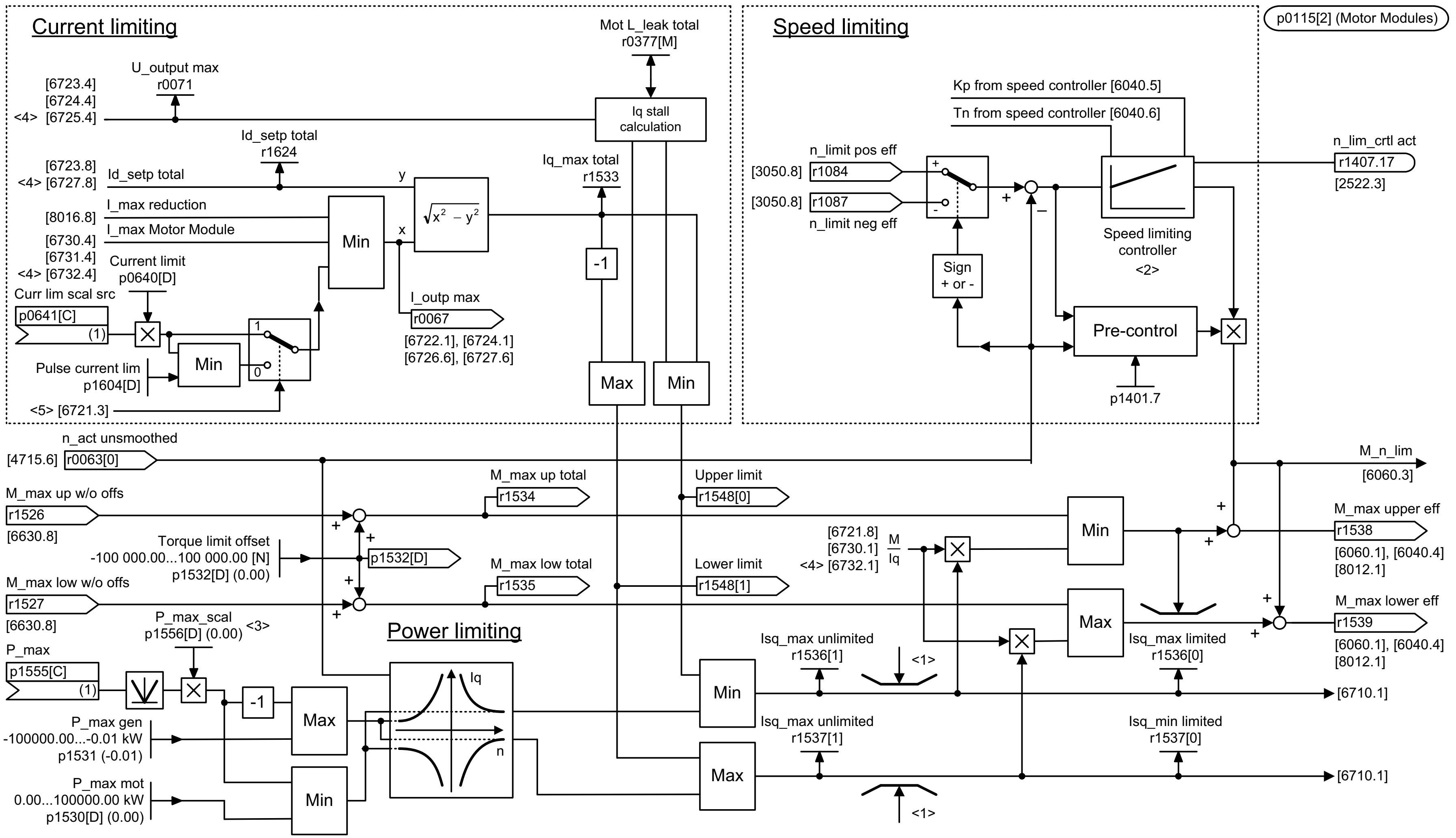
<2> Only for SINAMICS S120/S150:
The following applies to p0543 ≠ 0: The minimum value from p1520 and p0543 is used for further calculation.

<3> Only for SINAMICS S120/S150:
The following applies to p0543 ≠ 0: The minimum value from p1521 and negated p0543 is used for further calculation.

1	2	3	4	5	6	7	8
DO: VECTOR, VECTOR3P, VECTORGL, VECTORM2C, VECTORMV, VECTORSL					fp_6630_51_eng.vsd	Function diagram	- 6630 -
Vector control - Upper/lower torque limit					07.01.15 V05.01.01	SINAMICS	

Fig. 3-245 6630 – Upper/lower torque limit

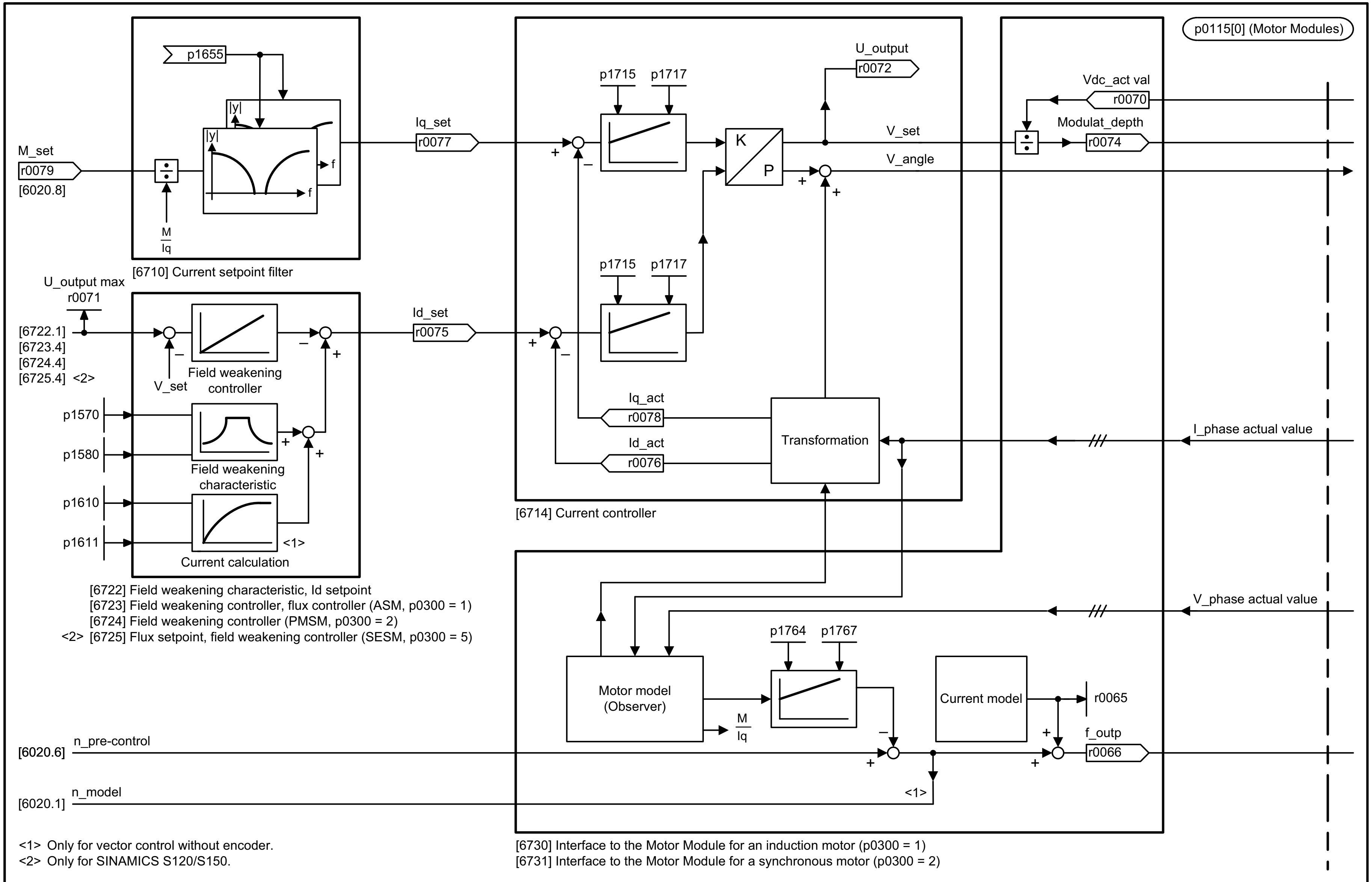
Fig. 3-246 6640 – Current/power/torque limits



<1> Intervention by the Vdc controller.
<2> Intervention when the speed limit is exceeded + 3 % n_{rated}.
<3> p1556 = 0 switches the evaluation of the connector input p1555 off.
<4> Only for SINAMICS S120/S150.
<5> Ony for PMSM.

PMSM: Permanent-magnet synchronous motor

1	2	3	4	5	6	7	8
DO: VECTOR					fp_6640_54_eng.vsd	Function diagram	- 6640 -
Vector control - Current/power/torque limits					14.03.18 V05.01.01	S120/S150/G130/G150	



1	2	3	4	5	6	7	8

DO: VECTOR	fp_6700_54_eng.vsd	Function diagram	- 6700 -
Vector control - Current control, overview	19.10.16 V05.01.01	S120/S150/G130/G150	

Fig. 3-247 6700 – Current control, overview

Fig. 3-248 6710 – Current setpoint filter

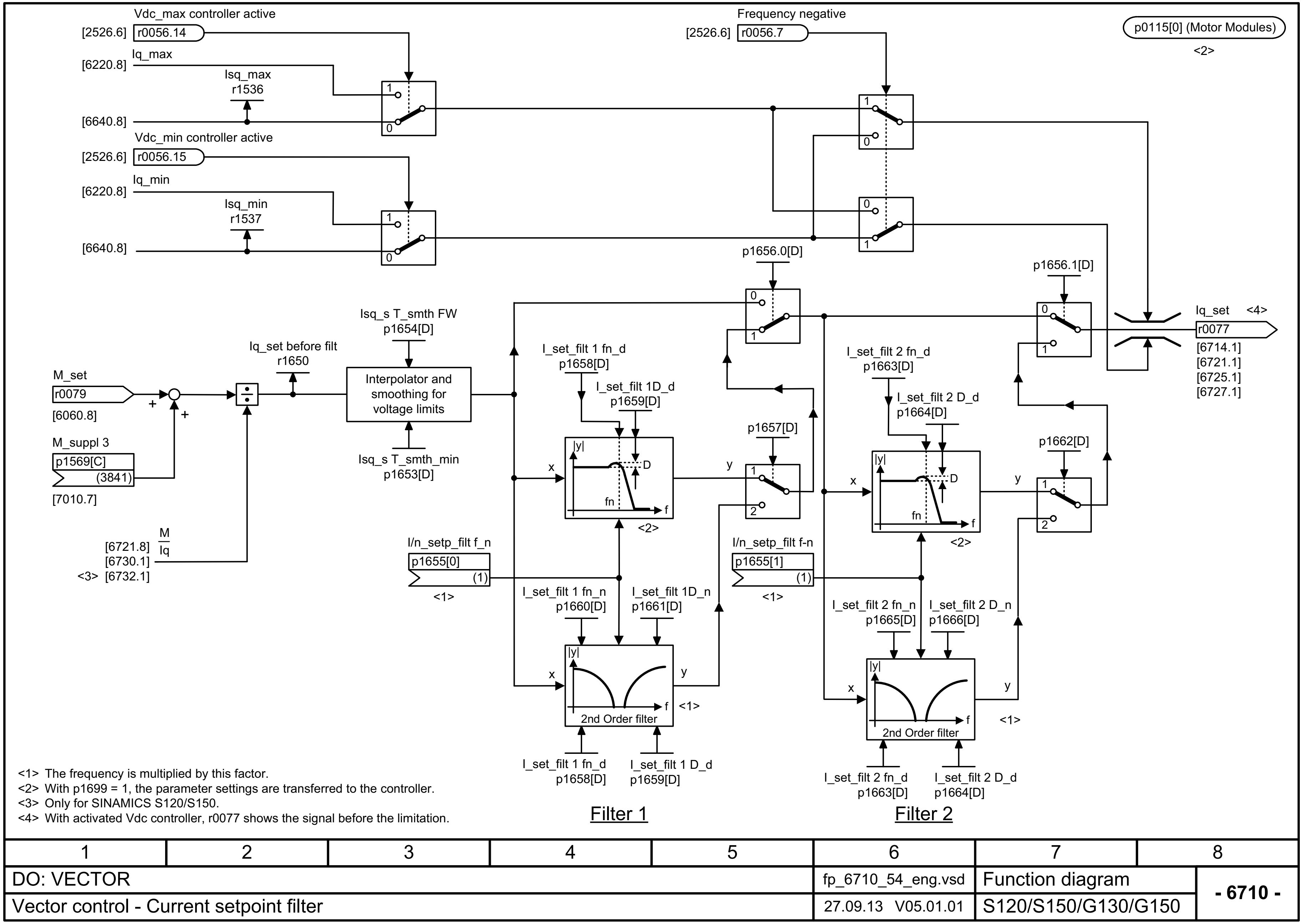
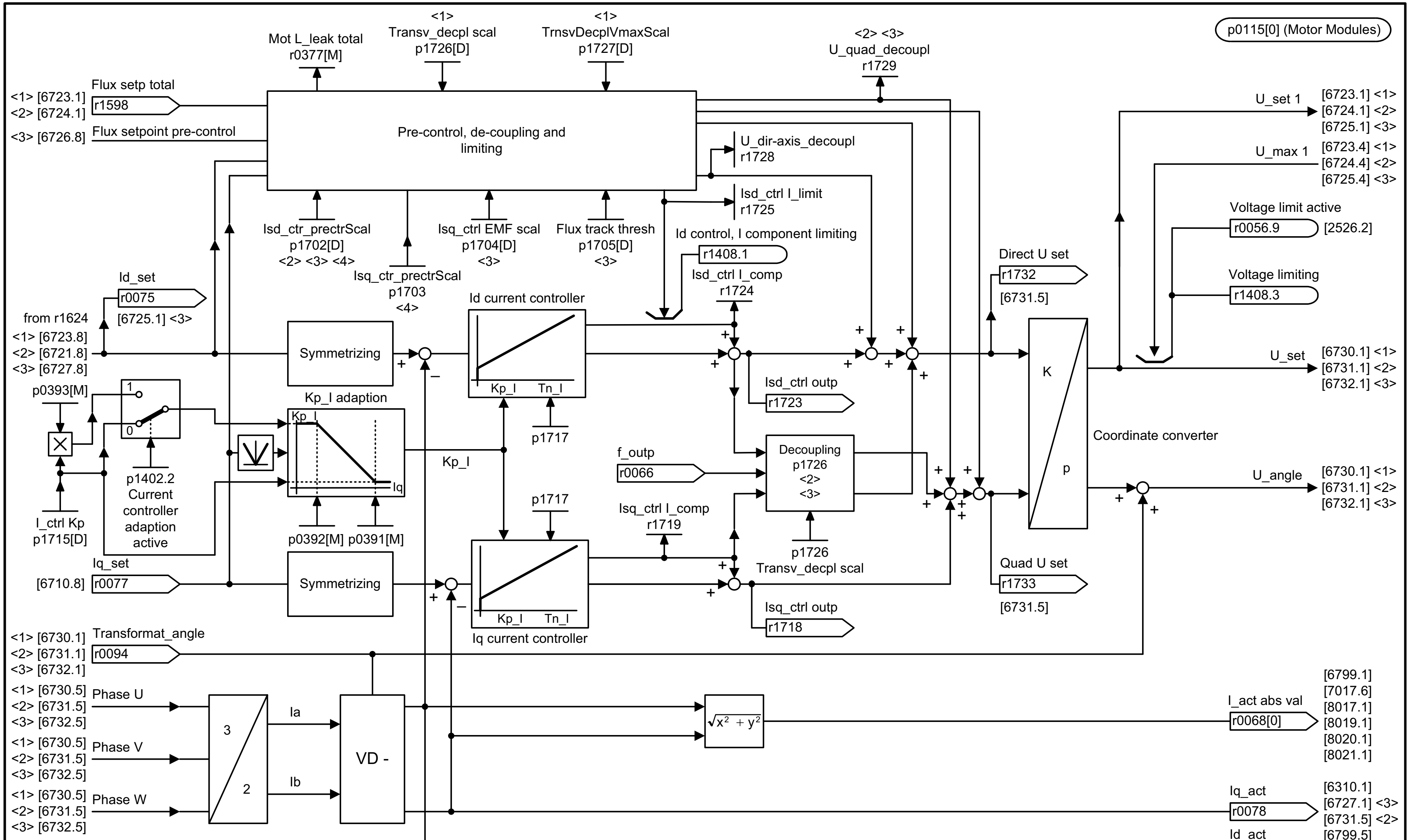


Fig. 3-249 6714 – Iq and Id controllers



<1> For induction motors.
<2> For synchronous motors.
<3> Only for SINAMICS S120/S150 and separately-excited synchronous motors.
<4> For active Vdc controller: enabled using p1402.15.

1	2	3	4	5	6	7	8
DO: VECTOR					fp_6714_54_eng.vsd	Function diagram	- 6714 -
Vector control - Iq and Id controllers					05.09.14 V05.01.01	S120/S150/G130/G150	

Fig. 3-250 6721 – Id setpoint (PMSM, p0300 = 2)

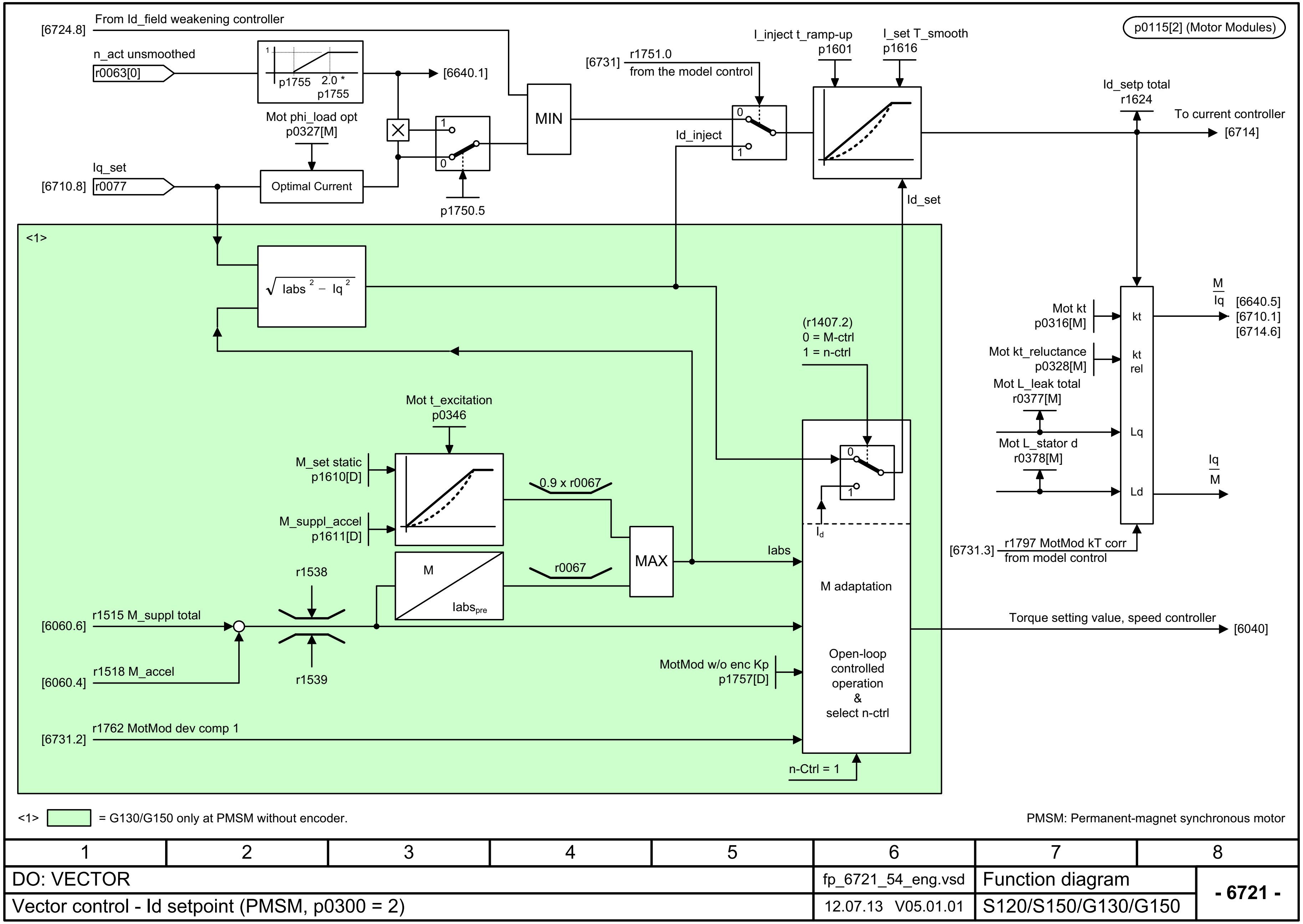
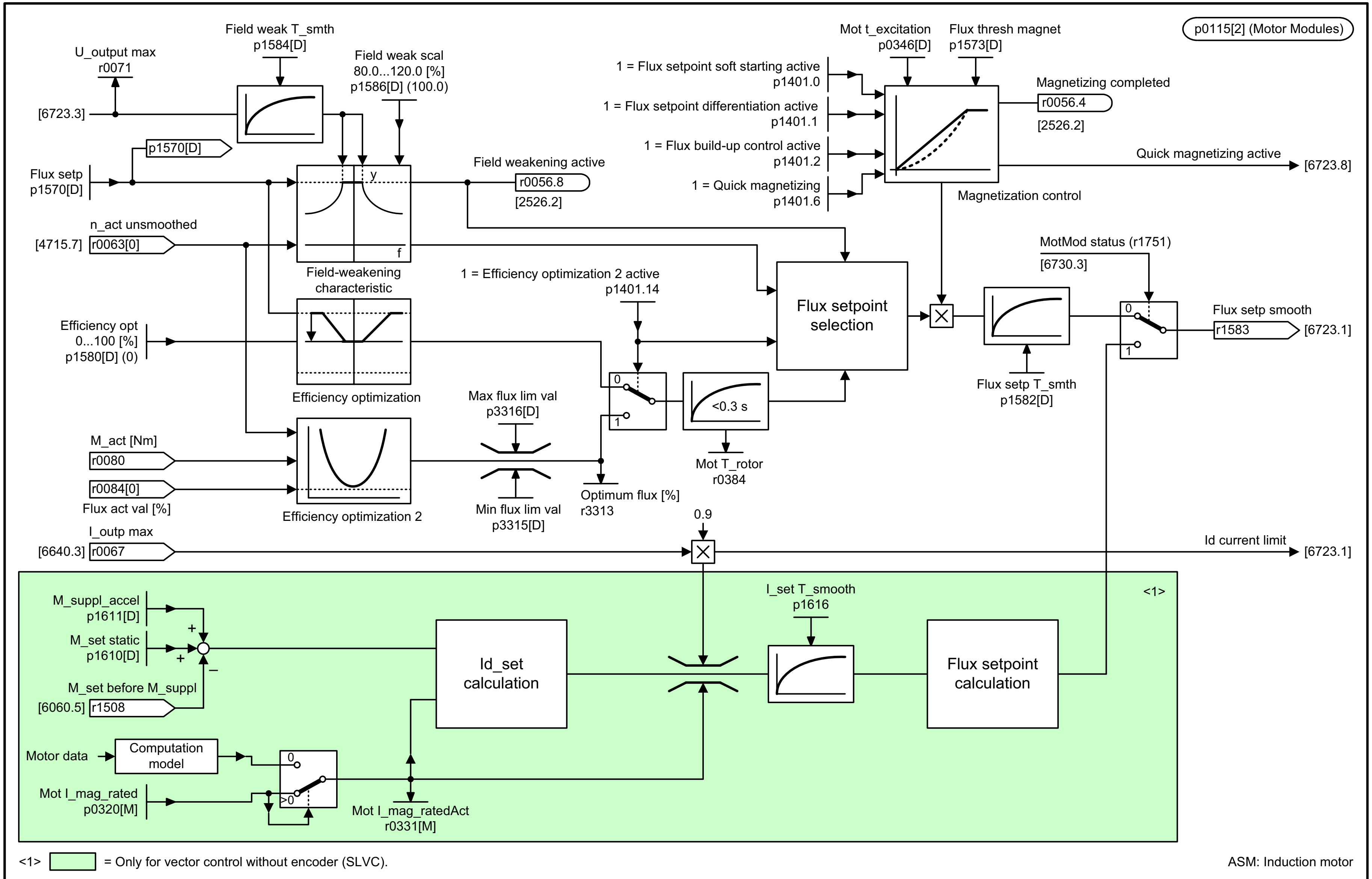


Fig. 3-251 6722 – Field weakening characteristic, Id setpoint (ASM, p0300 = 1)



1	2	3	4	5	6	7	8

DO: VECTOR	fp_6722_54_eng.vsd	Function diagram	- 6722 -
Vector control - Field weakening characteristic, Id setpoint (ASM, p0300 = 1)	09.08.17 V05.01.01	S120/S150/G130/G150	

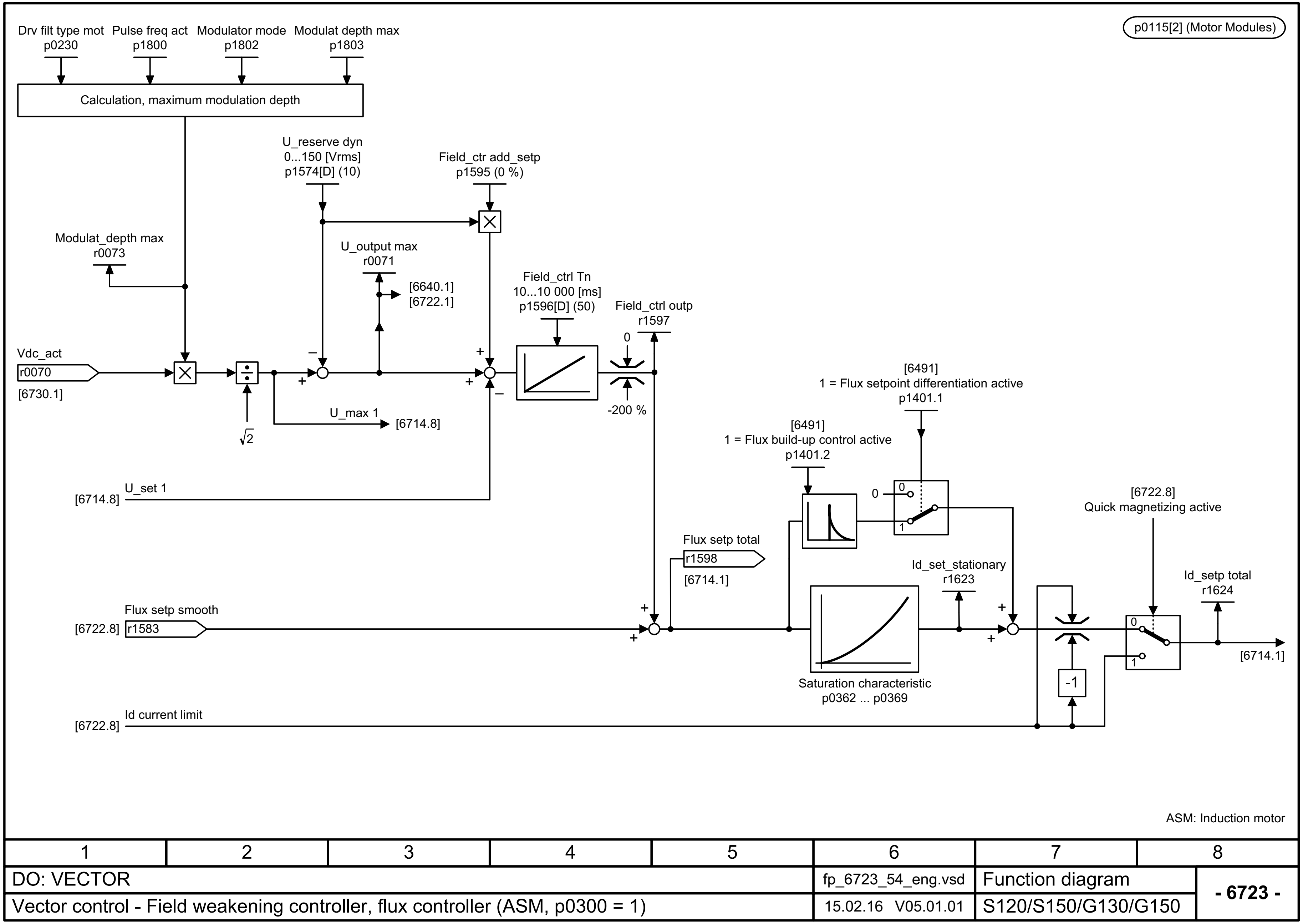
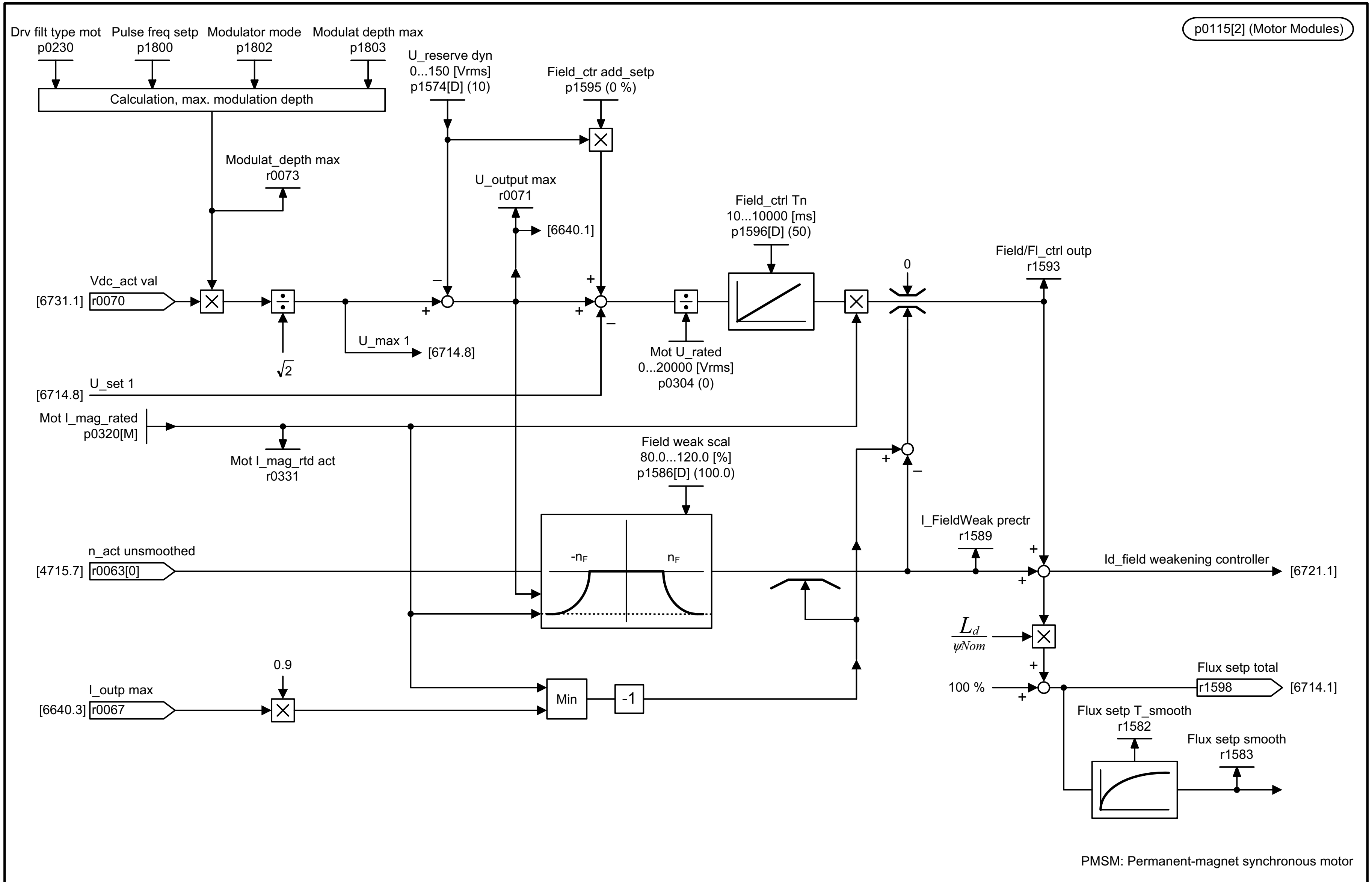
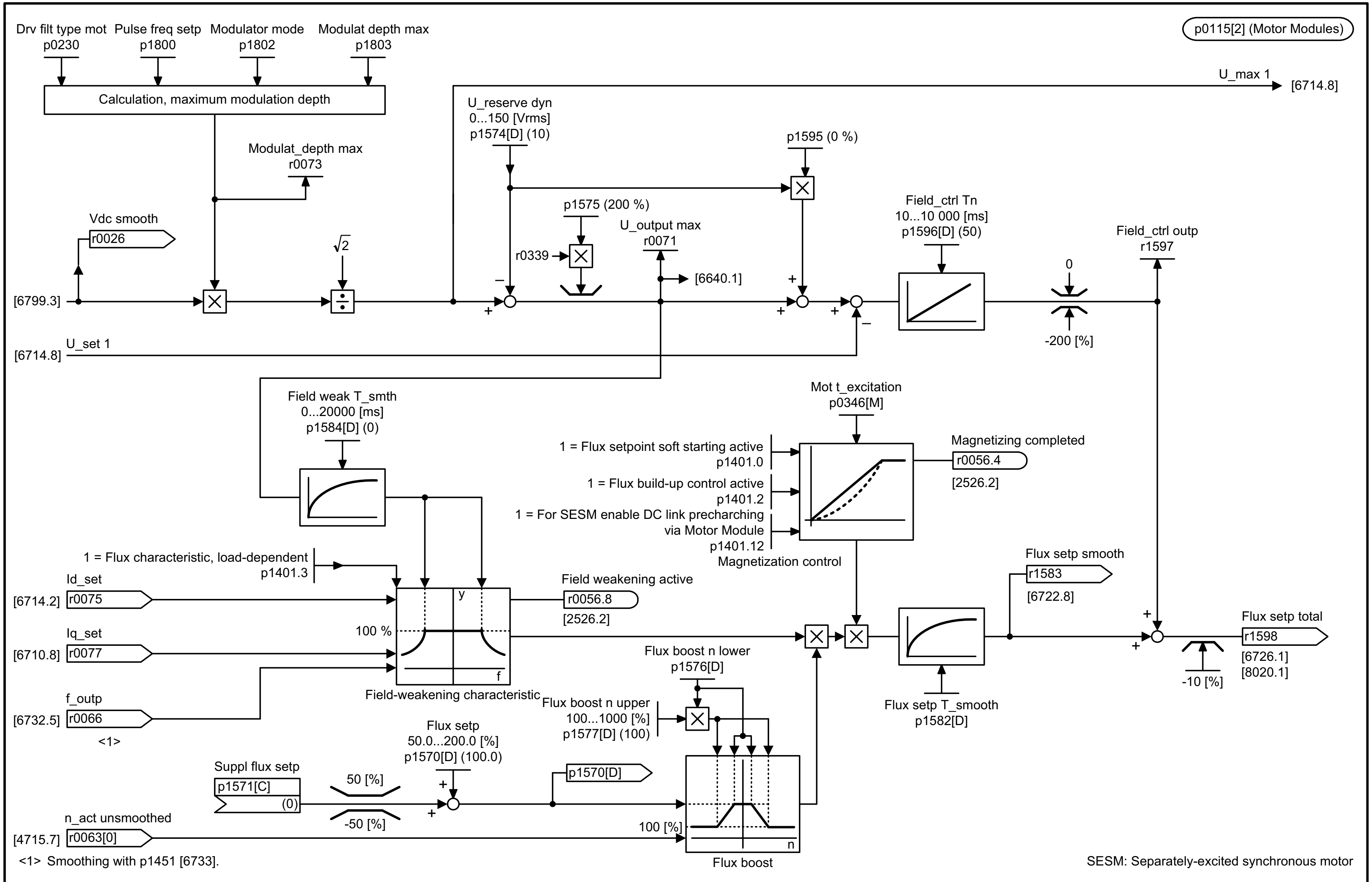


Fig. 3-252 6723 – Field weakening controller, flux controller (ASM, p0300 = 1)



1	2	3	4	5	6	7	8
DO: VECTOR					fp_6724_54_eng.vsd	Function diagram	- 6724 -
Vector control - Field weakening controller (PMSM, p0300 = 2)					15.02.16 V05.01.01	S120/S150/G130/G150	

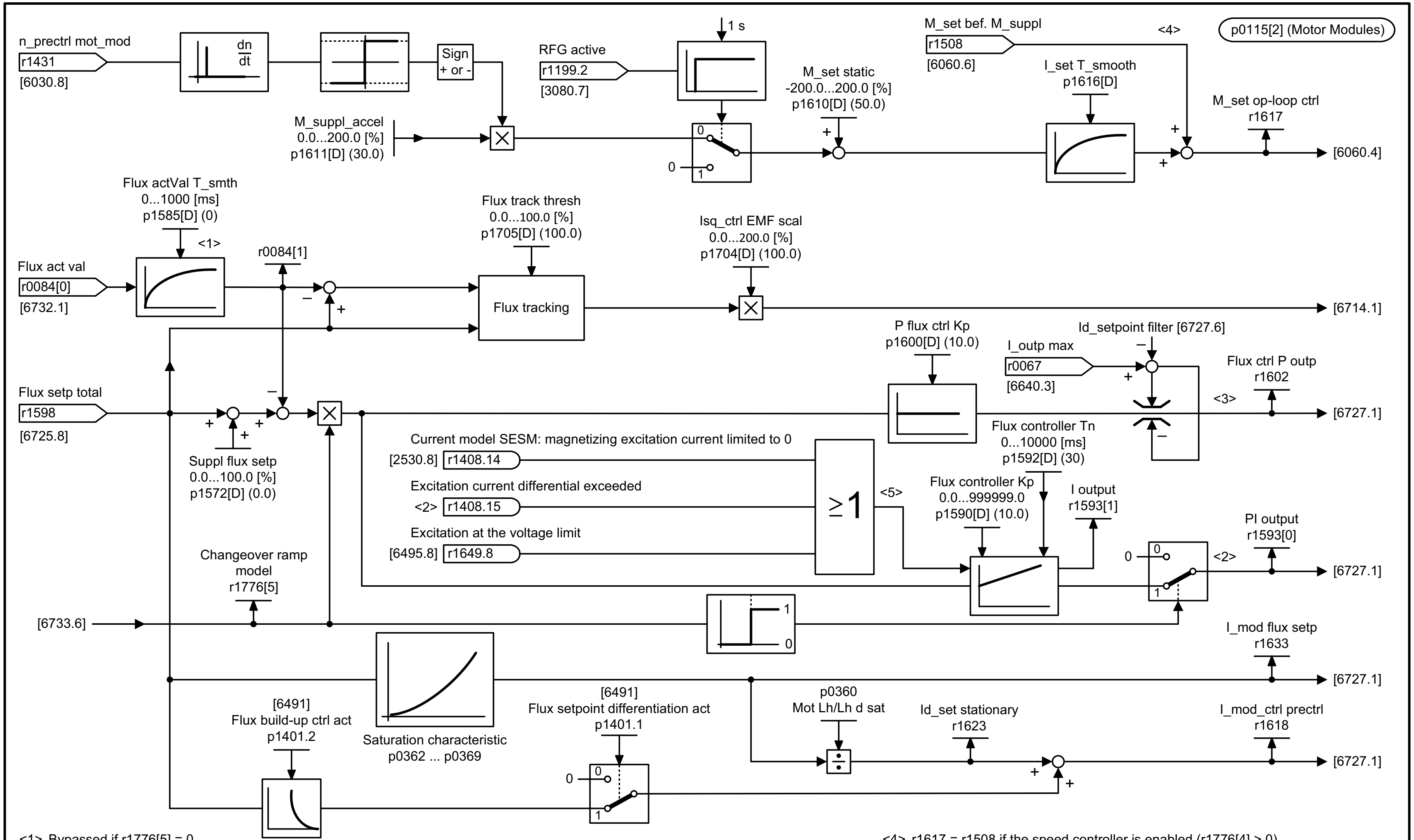
Fig. 3-253 6724 – Field weakening controller (PMSM, p0300 = 2)



1	2	3	4	5	6	7	8

DO: VECTOR	fp_6725_55_eng.vsd	Function diagram	- 6725 -
Vector control - Flux setpoint, field weakening controller (SESM, p0300 = 5)	19.03.15 V05.01.01	SINAMICS S120/S150	

Fig. 3-254 6725 – Flux setpoint, field weakening controller (SESM, p0300 = 5)



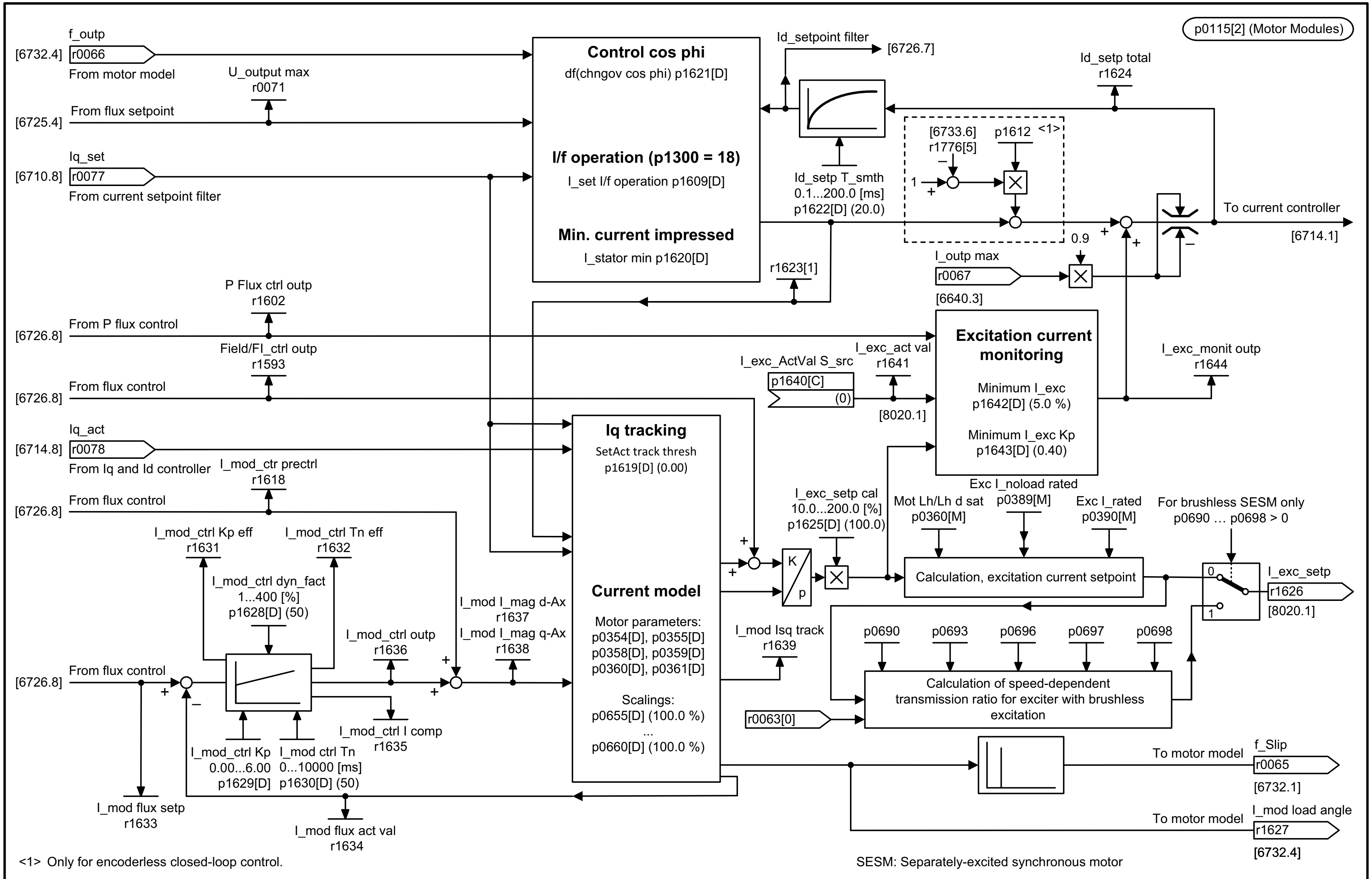
<1> Bypassed if r1776[5] = 0.
<2> Frozen if the deviation in the excitation current is > p1599. With p1599 = 100 %, the function is deactivated.
<3> If <5> is applicable, the P controller becomes the PI controller (p1592). The whole output is limited. In this case, the integral-action component is maintained. After switching back to the exciting current flux controller, the integral-action component is reduced again.
<4> r1617 = r1508 if the speed controller is enabled (r1776[4] > 0).
<5> Deactivation of the integral part.

SESM: Separately-excited synchronous motor

1	2	3	4	5	6	7	8
DO: VECTOR					fp_6726_55_eng.vsd	Function diagram	- 6726 -
Vector control - Field weakening controller, flux controller (SESM, p0300 = 5)					22.09.17 V05.01.01	SINAMICS S120/S150	

Fig. 3-255 6726 – Field weakening controller, flux controller (SESM, p0300 = 5)

Fig. 3-256 6727 – Current model, excitation current monitoring, control cos phi (SESM, p0300 = 5)

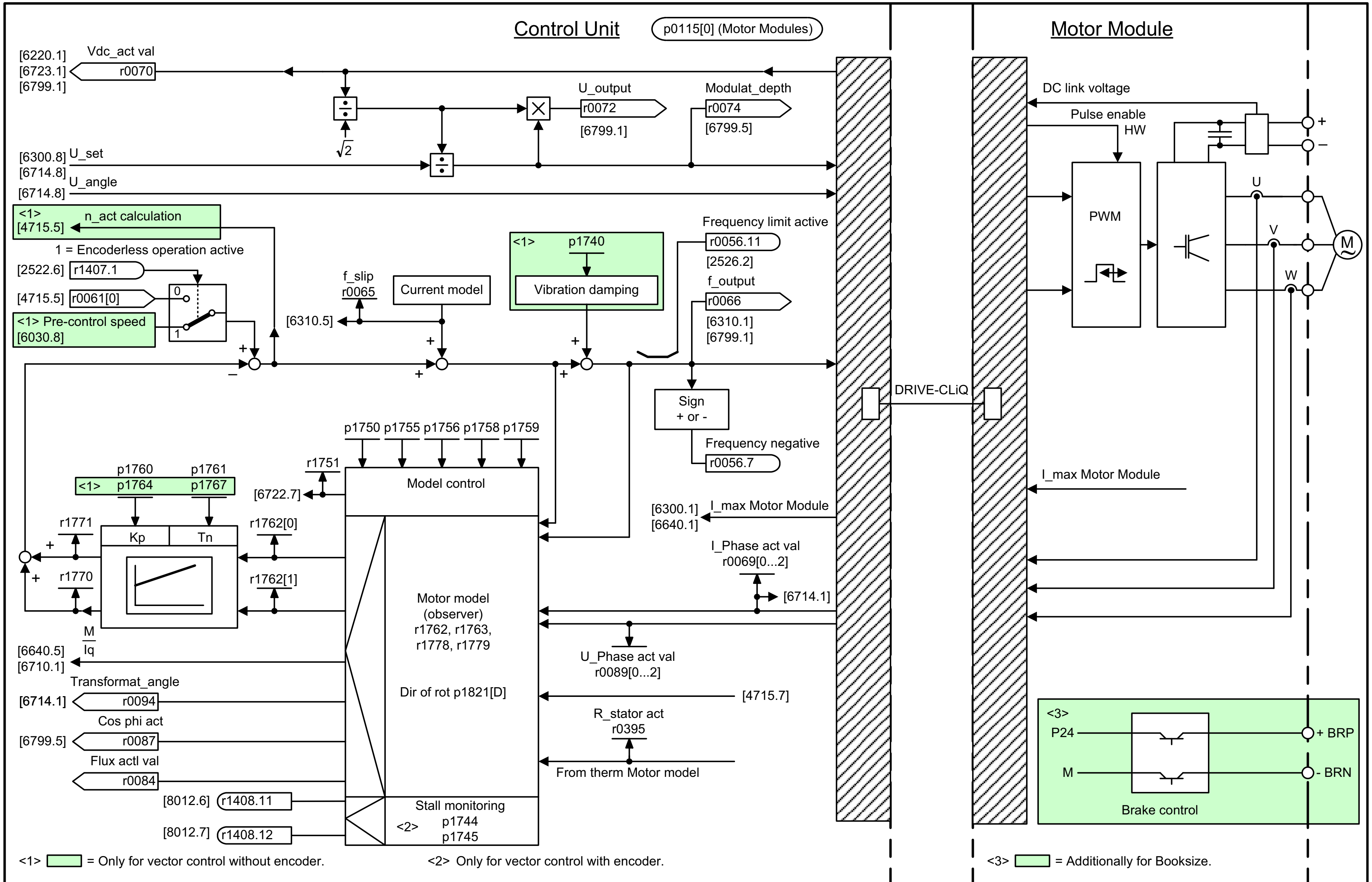


1	2	3	4	5	6	7	8

DO: VECTOR | fp_6727_55_eng.vsd | Function diagram | - 6727 -

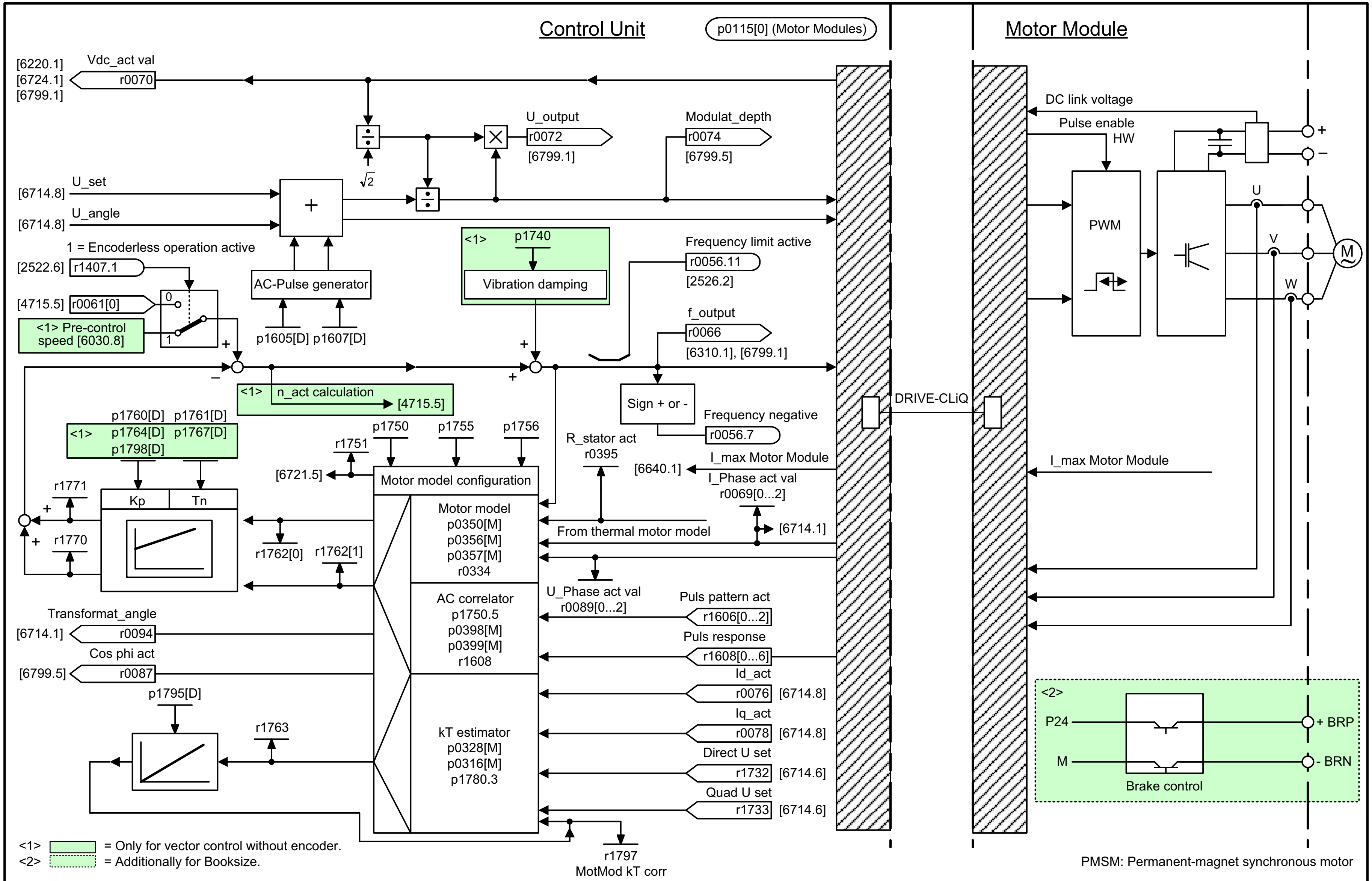
Vector control - Current model, excitation current monitoring, cos phi (SESM, p0300 = 5) | 19.03.15 V05.01.01 | SINAMICS S120/S150

Fig. 3-257 6730 – Interface to the Motor Module (ASM, p0300 = 1)



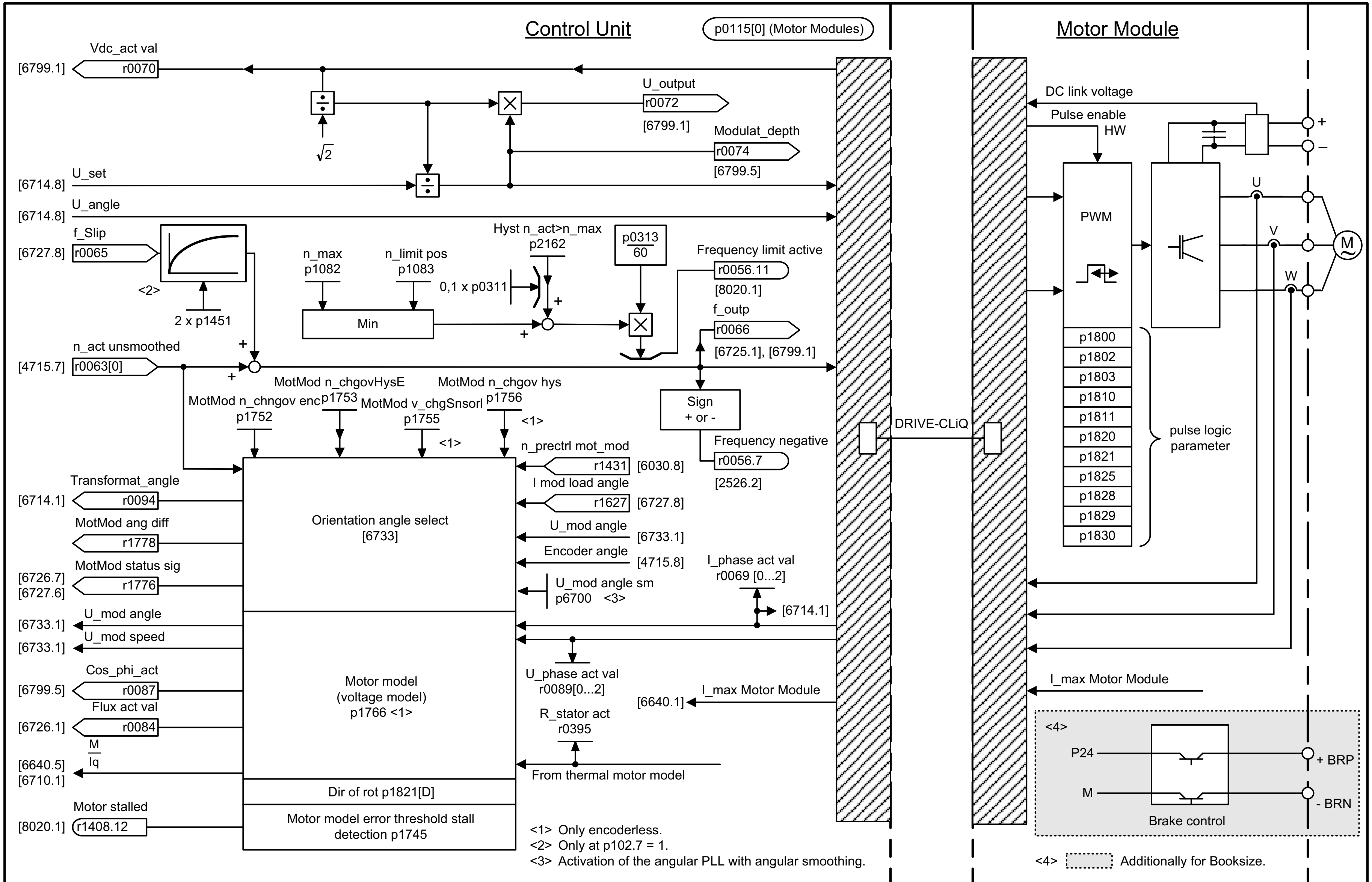
1	2	3	4	5	6	7	8
DO: VECTOR					fp_6730_54_eng.vsd	Function diagram	- 6730 -
Vector control - Interface to the Motor Module (ASM, p0300 = 1)					12.10.16 V05.01.01	S120/S150/G130/G150	

Fig. 3-258 6731 – Interface to the Motor Module (PMSM, p0300 = 2)



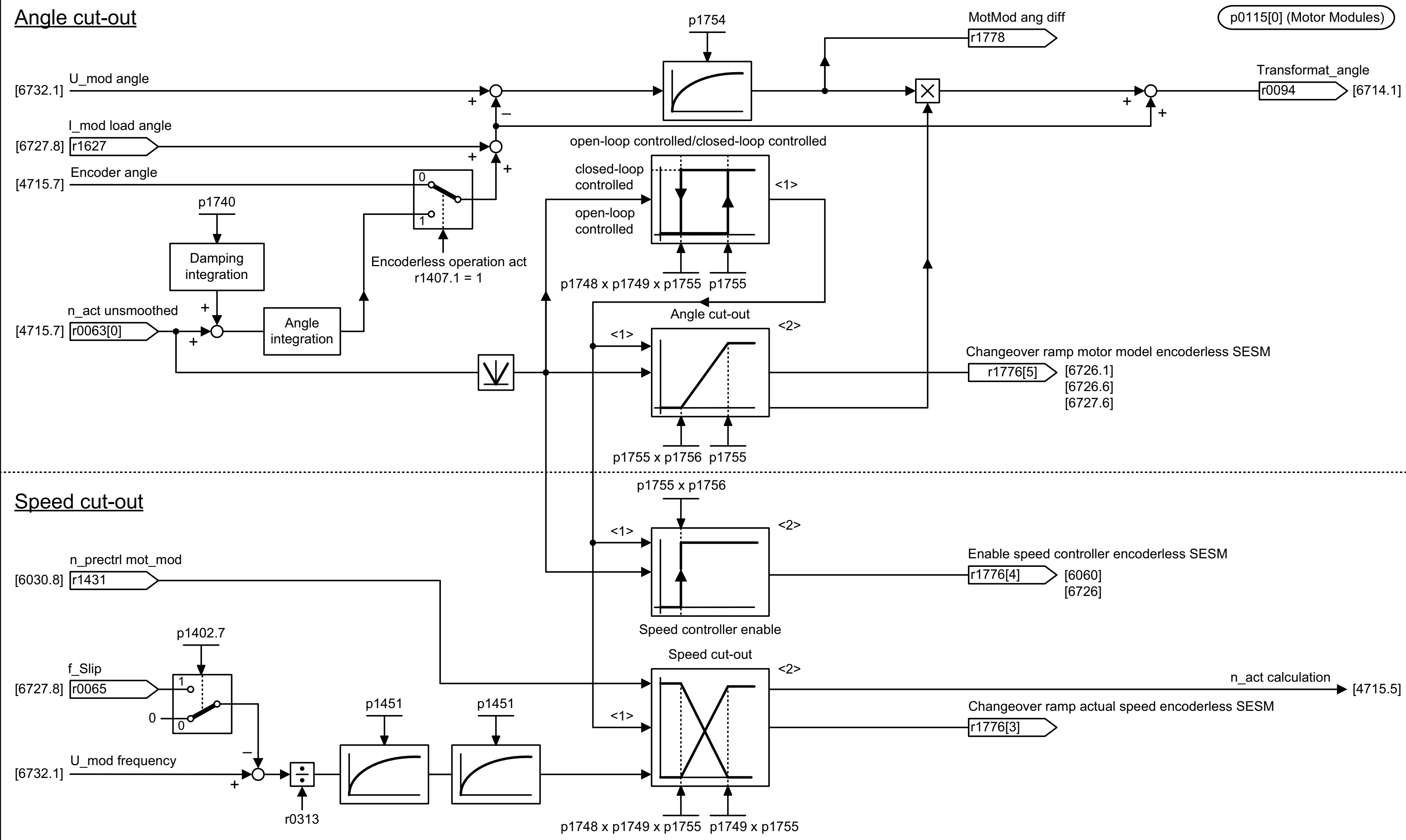
1	2	3	4	5	6	7	8
DO: VECTOR					fp_6731_54_eng.vsd	Function diagram	- 6731 -
Vector control - Interface to the Motor Module (PMSM, p0300 = 2)					12.10.16 V05.01.01	S120/S150/G130/G150	

Fig. 3-259 6732 – Interface to the Motor Module (SESM, p0300 = 5)



1	2	3	4	5	6	7	8

DO: VECTOR	fp_6732_55_eng.vsd	Function diagram	- 6732 -
Vector control - Interface to the Motor Module (SESM, p0300 = 5)	08.11.13 V05.01.01	SINAMICS S120/S150	



<1> The cut-out ramps operate in open-loop control mode. Resetting is executed when switching over from closed-loop to open-loop mode.
<2> When closed-loop control mode has been reached, ramp return is reached only in open-loop control mode.

1	2	3	4	5	6	7	8
DO: VECTOR					fp_6733_55_eng.vsd	Function diagram	- 6733 -
Vector control - Motor model selection (SESM and p1300 = 20, p0300 = 5)					08.11.13 V05.01.01	SINAMICS S120/S150	

Fig. 3-260 6733 – Motor model selection (SESM and p1300 = 20, p0300 = 5)

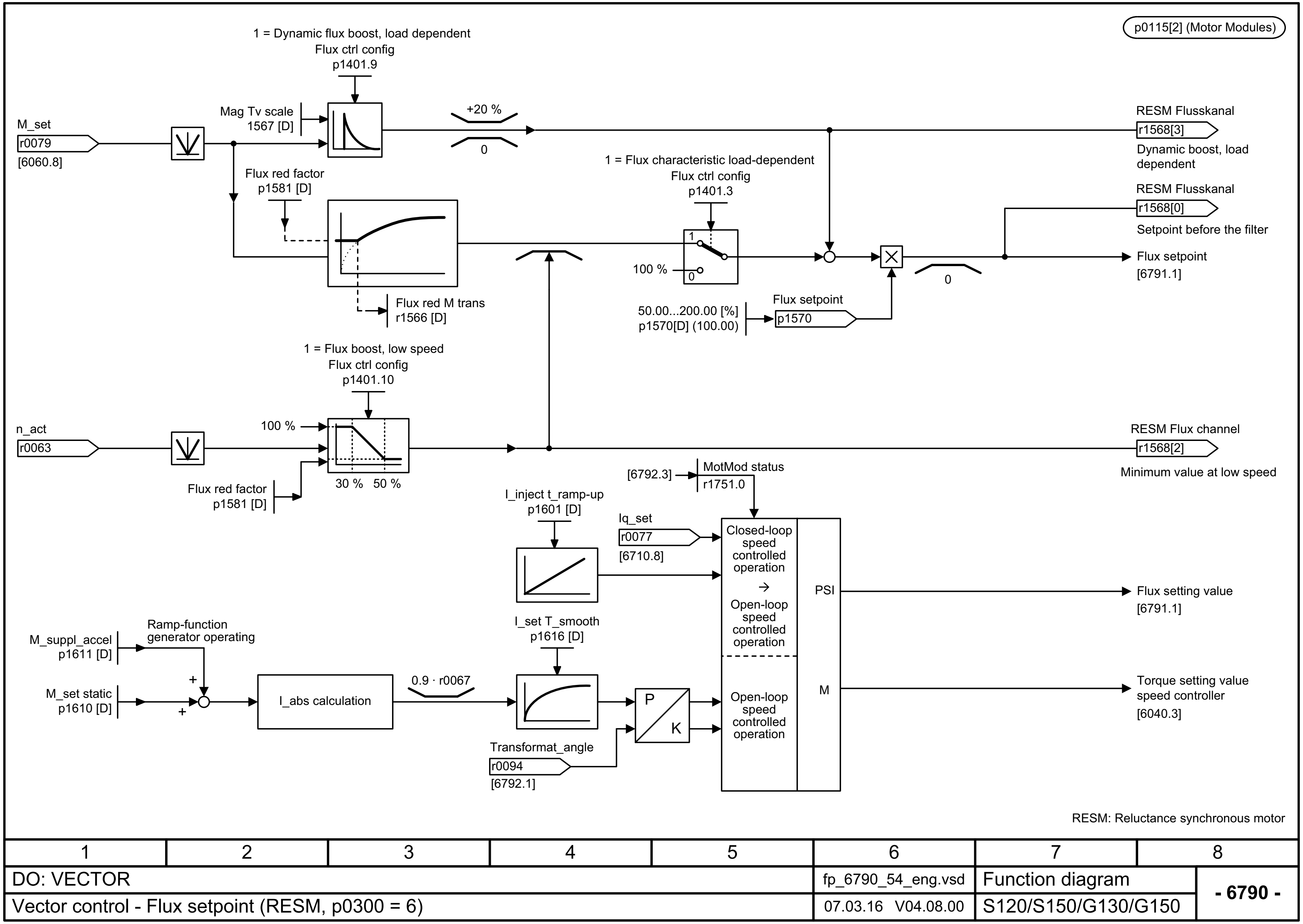
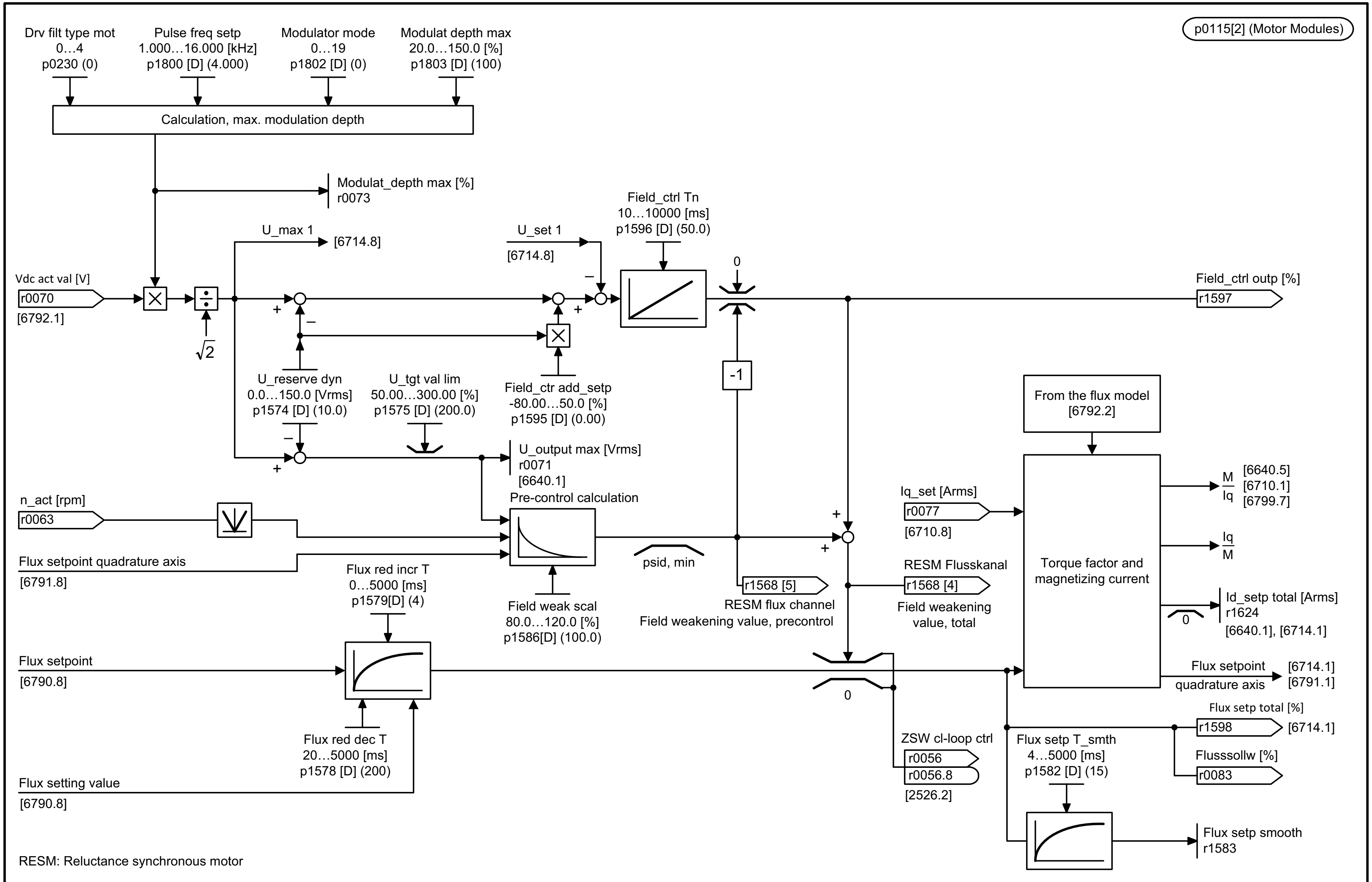


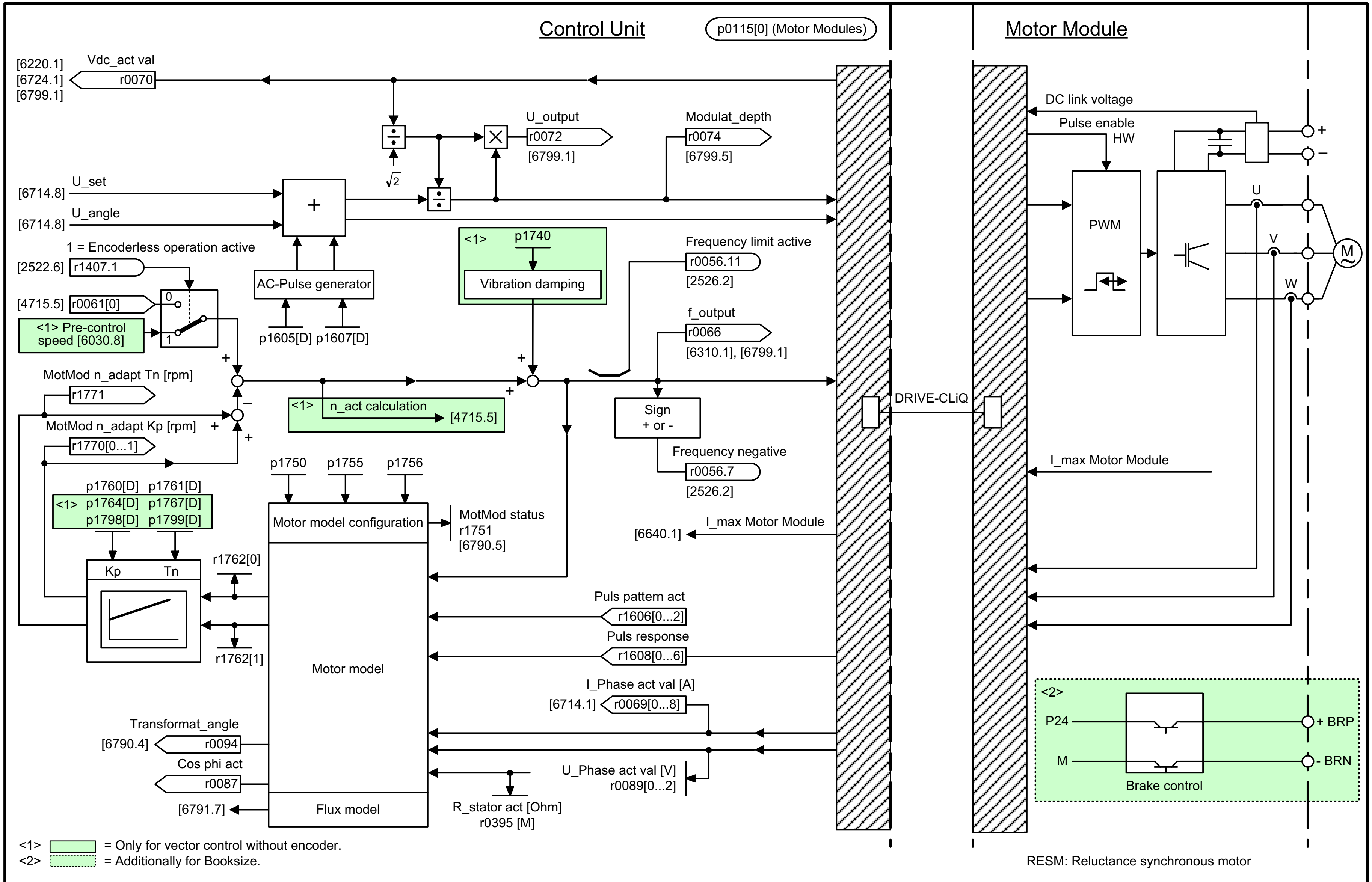
Fig. 3-261 6790 – Flux setpoint (RESM, p0300 = 6)

Fig. 3-262 6791 – Id setpoint (RESM, p0300 = 6)



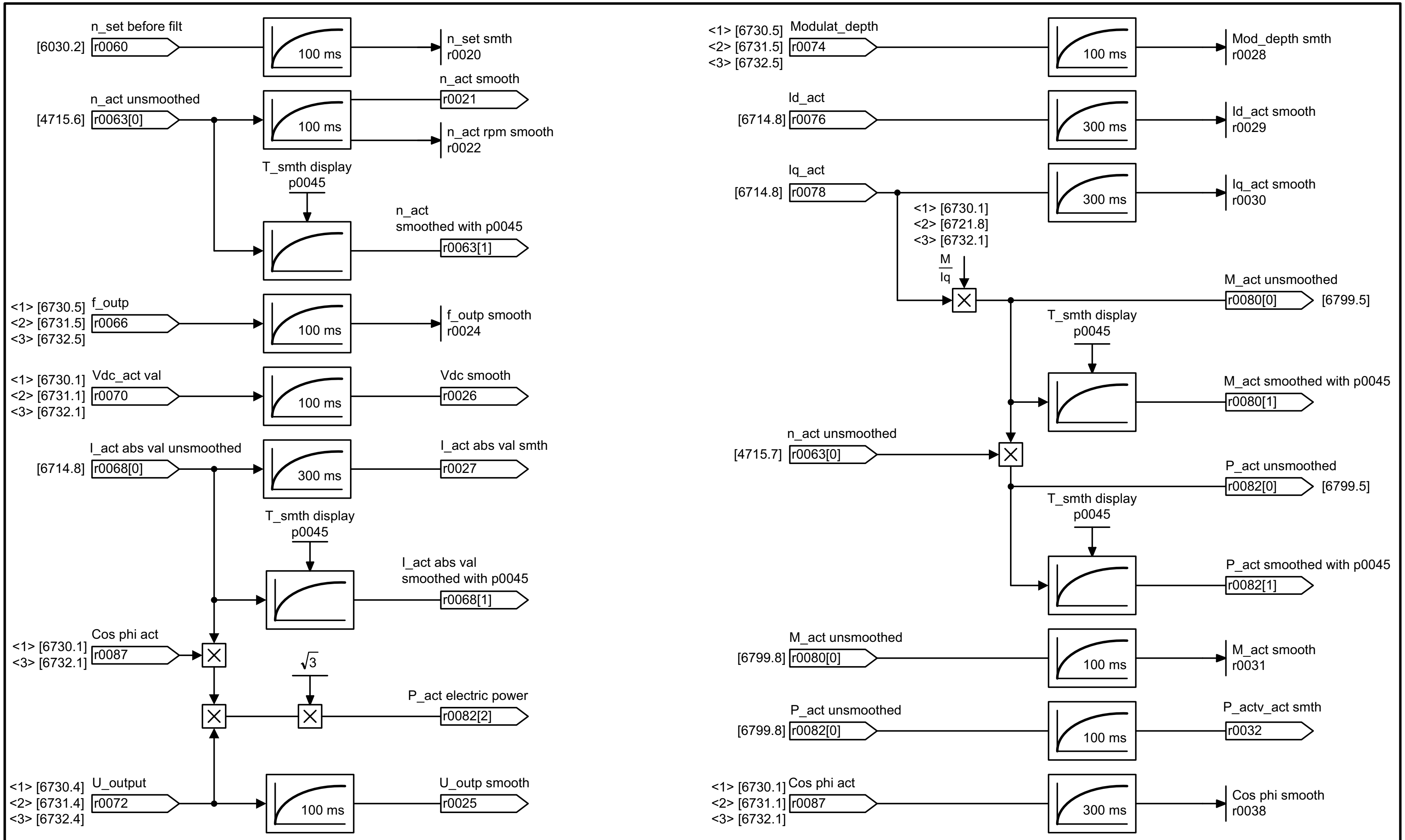
1	2	3	4	5	6	7	8
DO: VECTOR					fp_6791_54_eng.vsd	Function diagram	- 6791 -
Vector control - Id setpoint (RESM, p0300 = 6)					18.03.16 V04.08.00	S120/S150/G130/G150	

Fig. 3-263 6792 – Interface to the Motor Module (RESM, p0300 = 6)



1	2	3	4	5	6	7	8
DO: VECTOR					fp_6792_54_eng.vsd	Function diagram	- 6792 -
Vector control - Interface to the Motor Module (RESM, p0300 = 6)					25.09.17 V05.01.01	S120/S150/G130/G150	

Fig. 3-264 6799 – Display signals



<1> For induction motors.
<2> For synchronous motors.
<3> Only for SINAMICS S120/S150 and separately-excited synchronous motors.

1	2	3	4	5	6	7	8

DO: VECTOR	fp_6799_54_eng.vsd	Function diagram	- 6799 -
Vector control - Display signals	11.06.13 V05.01.01	S120/S150/G130/G150	

3.26 Technology functions

Function diagrams

Fig. 3-265 7008 – kT estimator

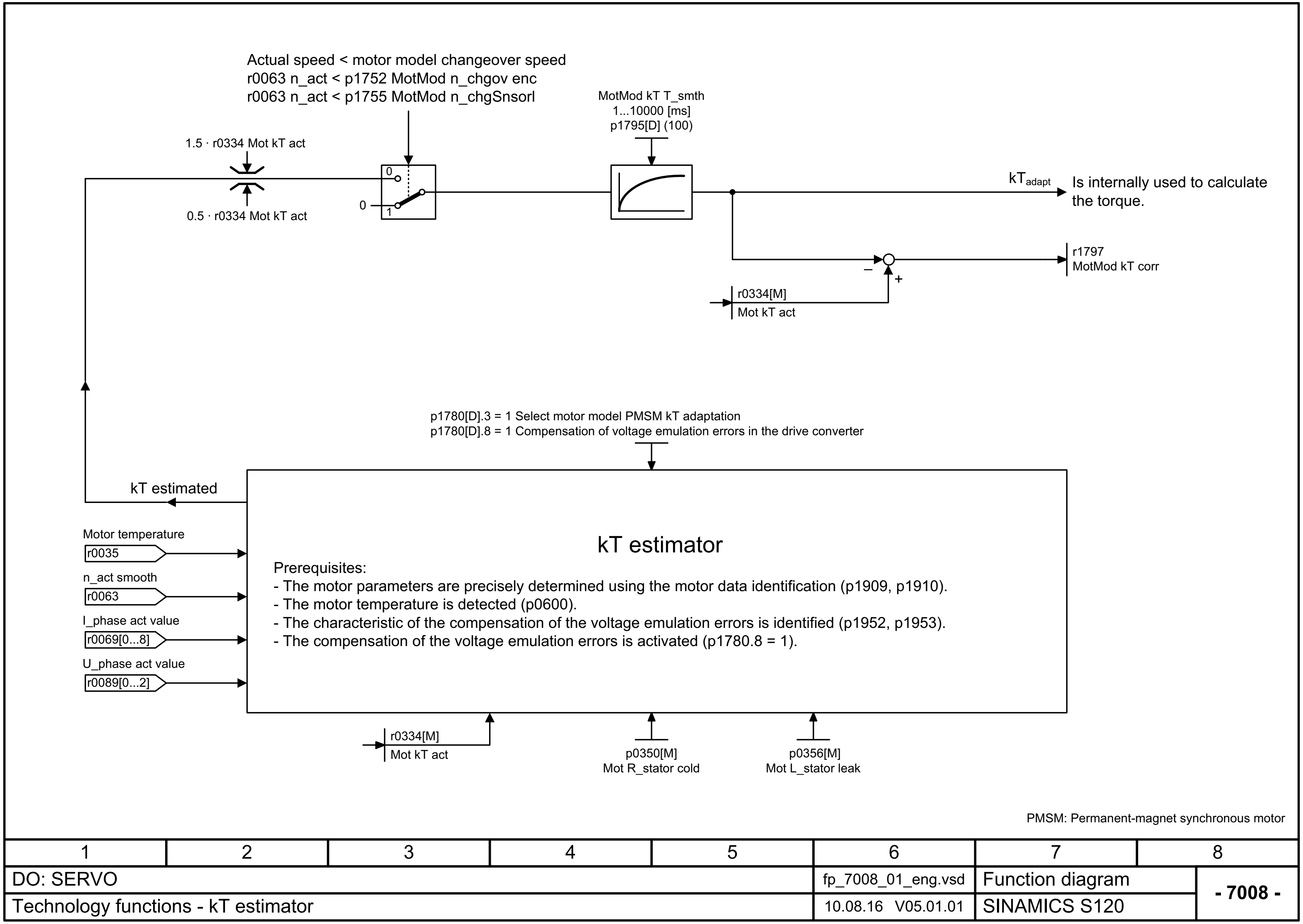
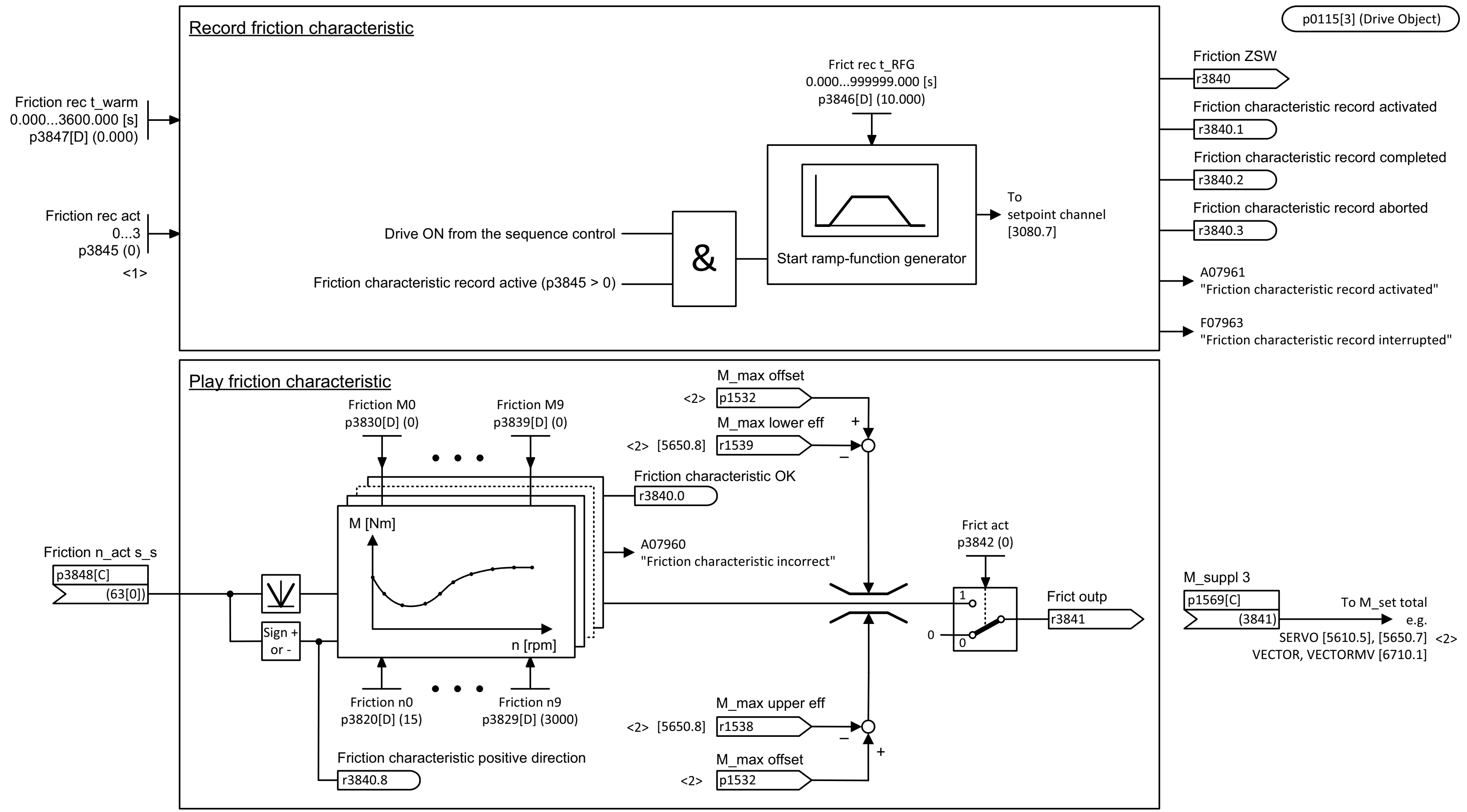


Fig. 3-266 7010 – Friction characteristic

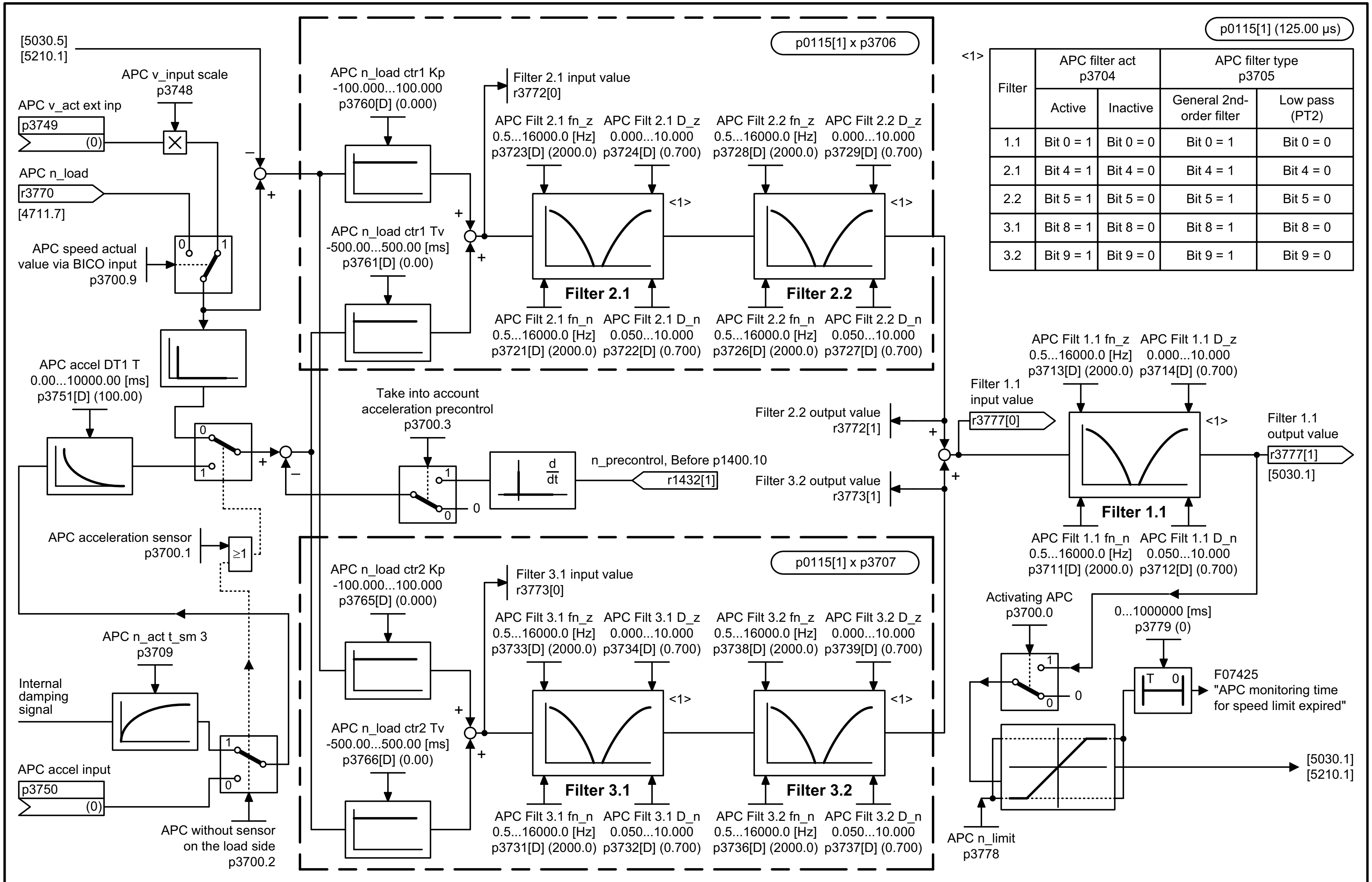


<1> p3845
= 0: Friction characteristic record deactivated
= 1: Friction char record activated for all directions
= 2: Friction char record activated for positive direction
= 3: Friction char record activated for negative direction

<2> Only for SINAMICS S120 and SERVO.

1	2	3	4	5	6	7	8
DO: SERVO, VECTOR (n/M), VECTOR3P, VECTORGL, VECTORM2C, VECTORMV, VECTORSL					fp_7010_51_eng.vsd	Function diagram	- 7010 -
Technology functions - Friction characteristic					24.04.17 V05.01.01	SINAMICS	

Fig. 3-267 7012 – Advanced Positioning Control (APC, r0108.7 = 1)

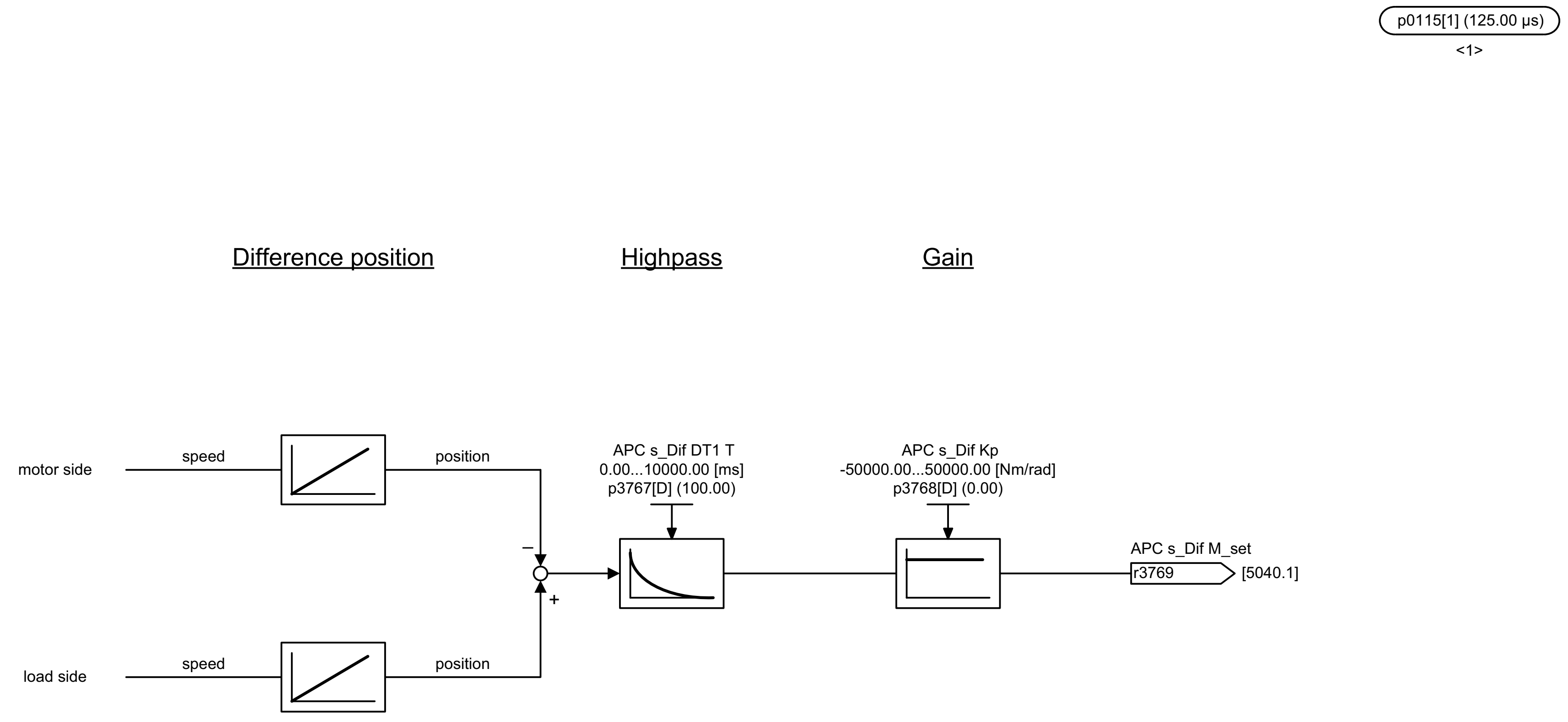


<1>

Filter	APC filter act p3704		APC filter type p3705	
	Active	Inactive	General 2nd-order filter	Low pass (PT2)
1.1	Bit 0 = 1	Bit 0 = 0	Bit 0 = 1	Bit 0 = 0
2.1	Bit 4 = 1	Bit 4 = 0	Bit 4 = 1	Bit 4 = 0
2.2	Bit 5 = 1	Bit 5 = 0	Bit 5 = 1	Bit 5 = 0
3.1	Bit 8 = 1	Bit 8 = 0	Bit 8 = 1	Bit 8 = 0
3.2	Bit 9 = 1	Bit 9 = 0	Bit 9 = 1	Bit 9 = 0

1	2	3	4	5	6	7	8

DO: SERVO	fp_7012_01_eng.vsd	Function diagram	- 7012 -
Technology functions - Advanced Positioning Control (APC, r0108.7 = 1)	02.03.17 V05.01.01	SINAMICS S120	

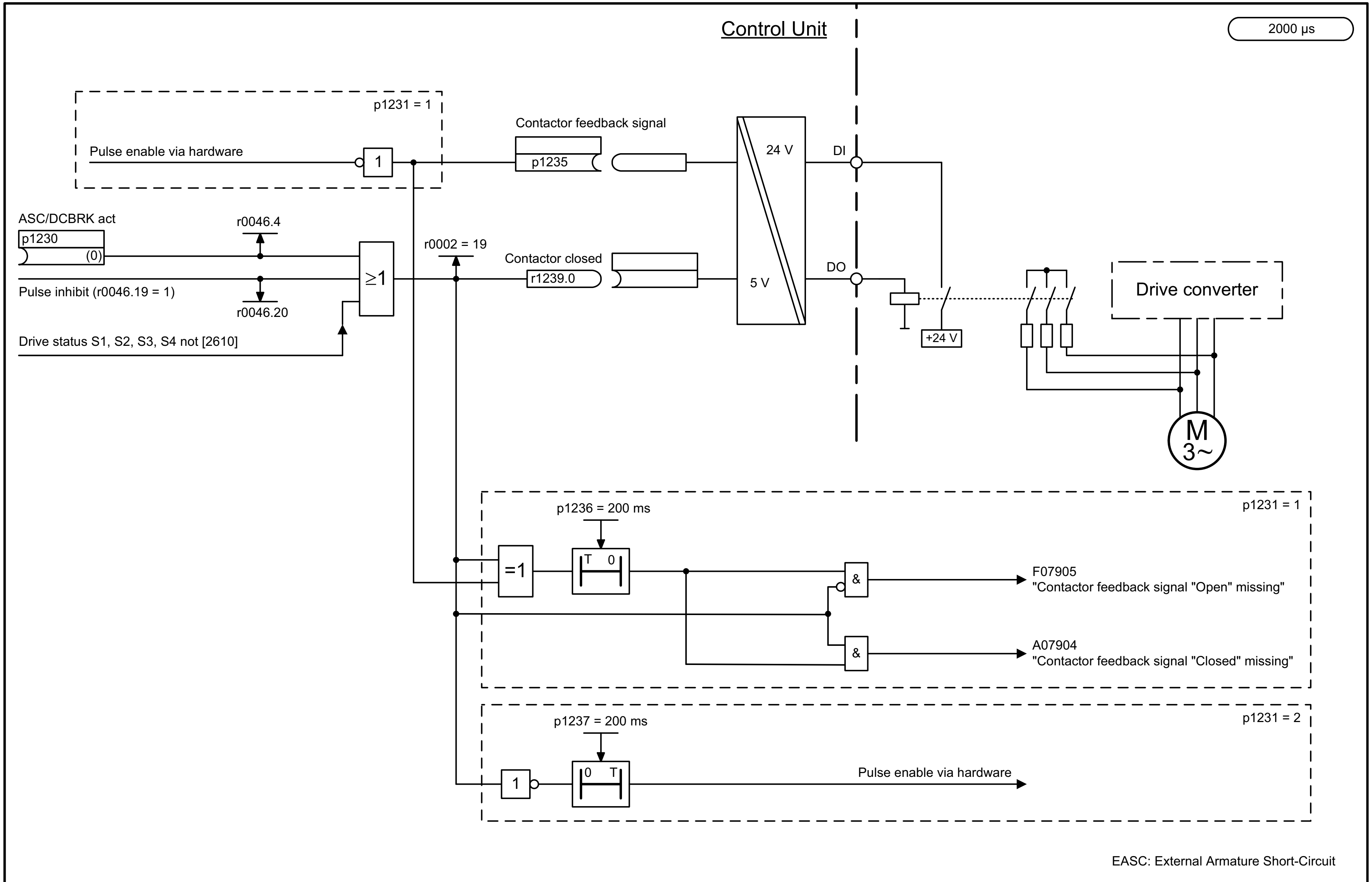


<1> The "Advanced Position Control" (APC, r0108.7) function module is only available for SINUMERIK controllers with integrated SINAMICS functions.

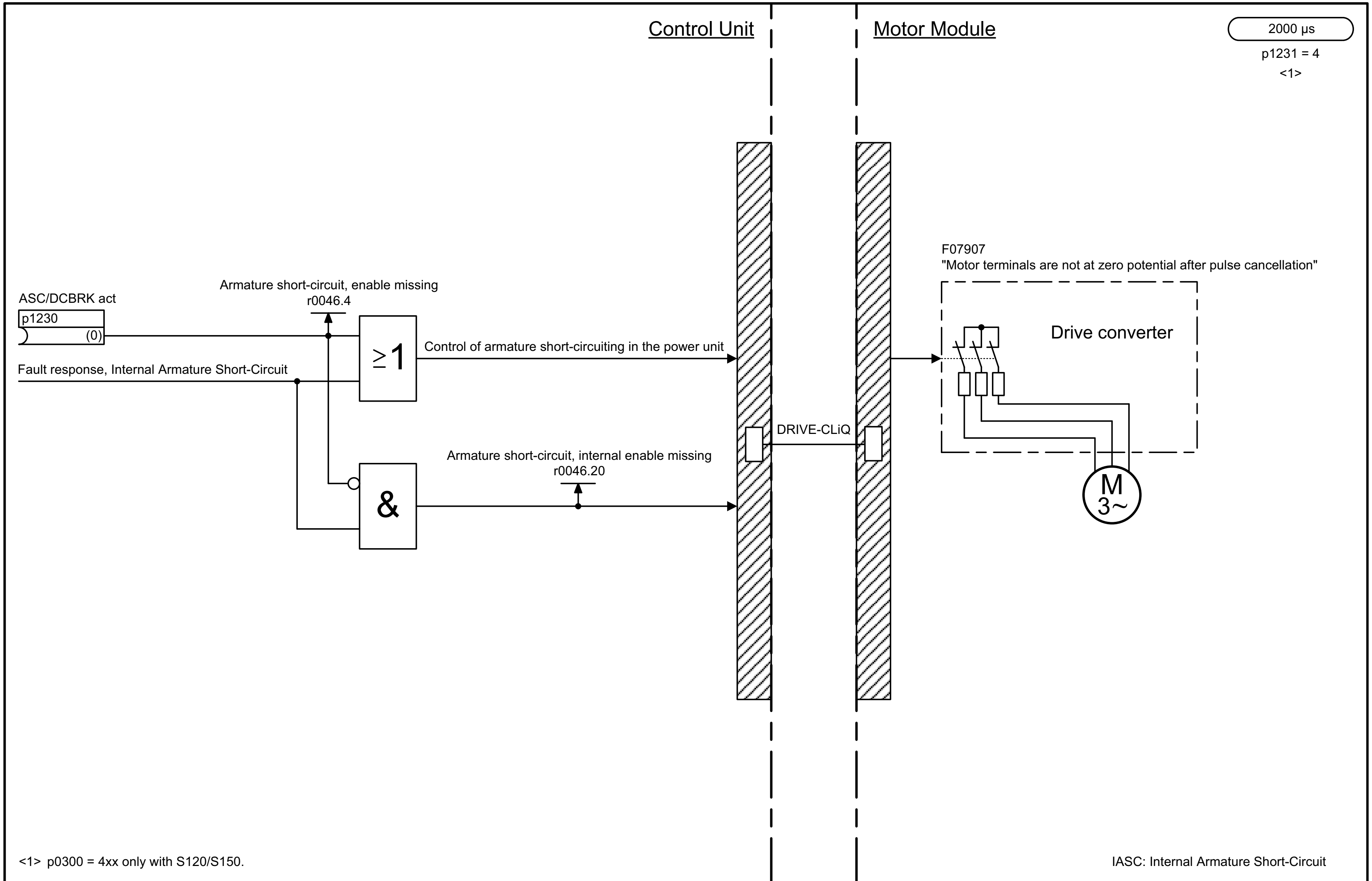
1	2	3	4	5	6	7	8
DO: SERVO					fp_7013_01_eng.vsd	Function diagram	- 7013 -
Technology functions - APC differential position gain (APC, r0108.7 = 1)					29.08.12 V05.01.01	SINAMICS S120	

Fig. 3-268 7013 – APC differential position gain (APC, r0108.7 = 1)

Fig. 3-269 7014 – External armature short circuit (EASC, p0300 = 2xx or 4xx)



1	2	3	4	5	6	7	8
DO: SERVO, VECTOR					fp_7014_54_eng.vsd	Function diagram	- 7014 -
Technology functions - External Armature Short-Circuit (EASC, p0300 = 2xx or 4xx)					04.05.16 V05.01.01	S120/S150/G130/G150	

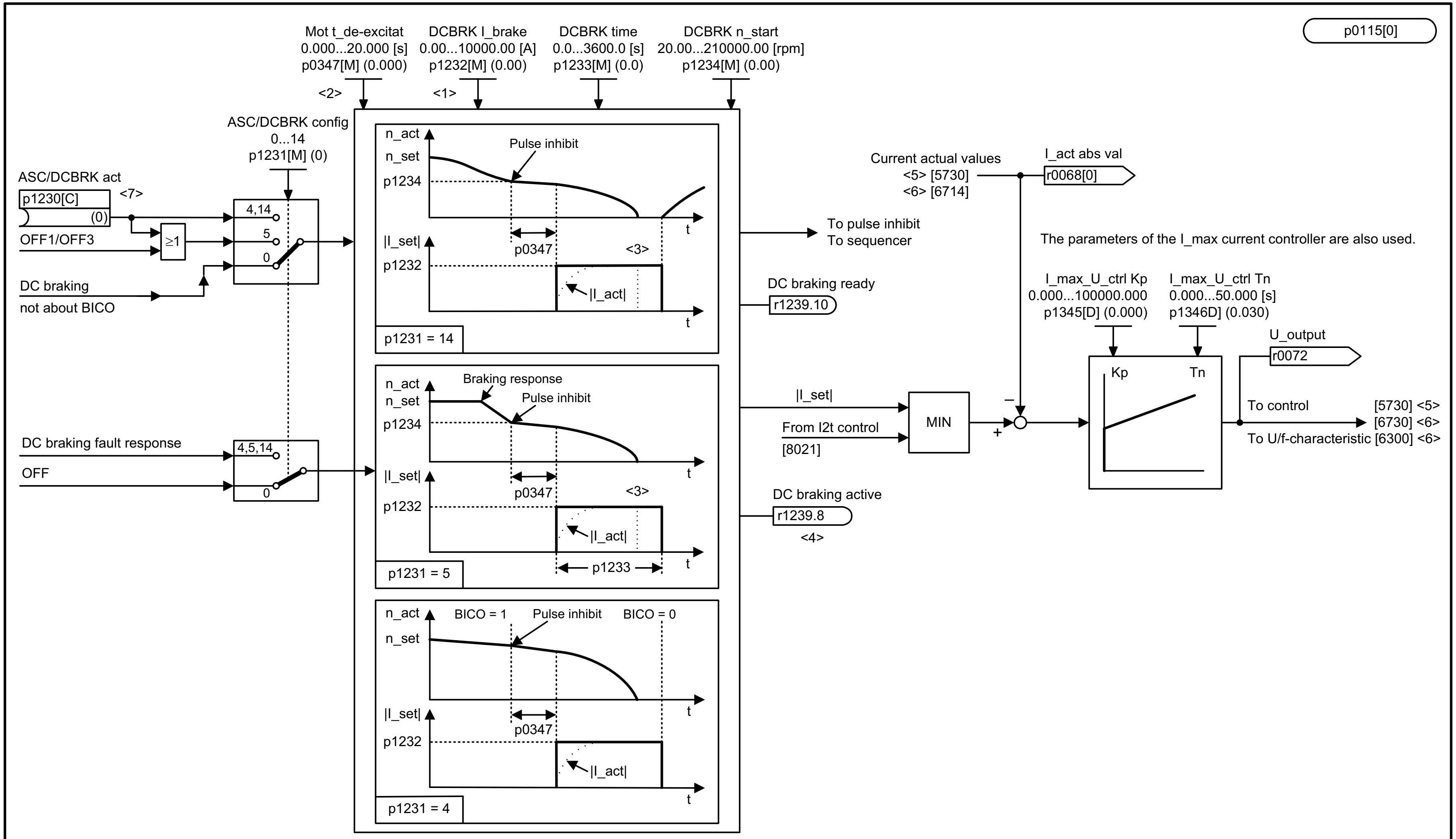


1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_7016_54_eng.vsd	Function diagram	- 7016 -
Technology functions - Internal Armature Short-Circuit (IASC, p0300 = 2xx or 4xx)	20.12.13 V05.01.01	S120/S150/G130/G150	

Fig. 3-270 7016 – Internal armature short circuit (IASC, p0300 = 2xx or 4xx)

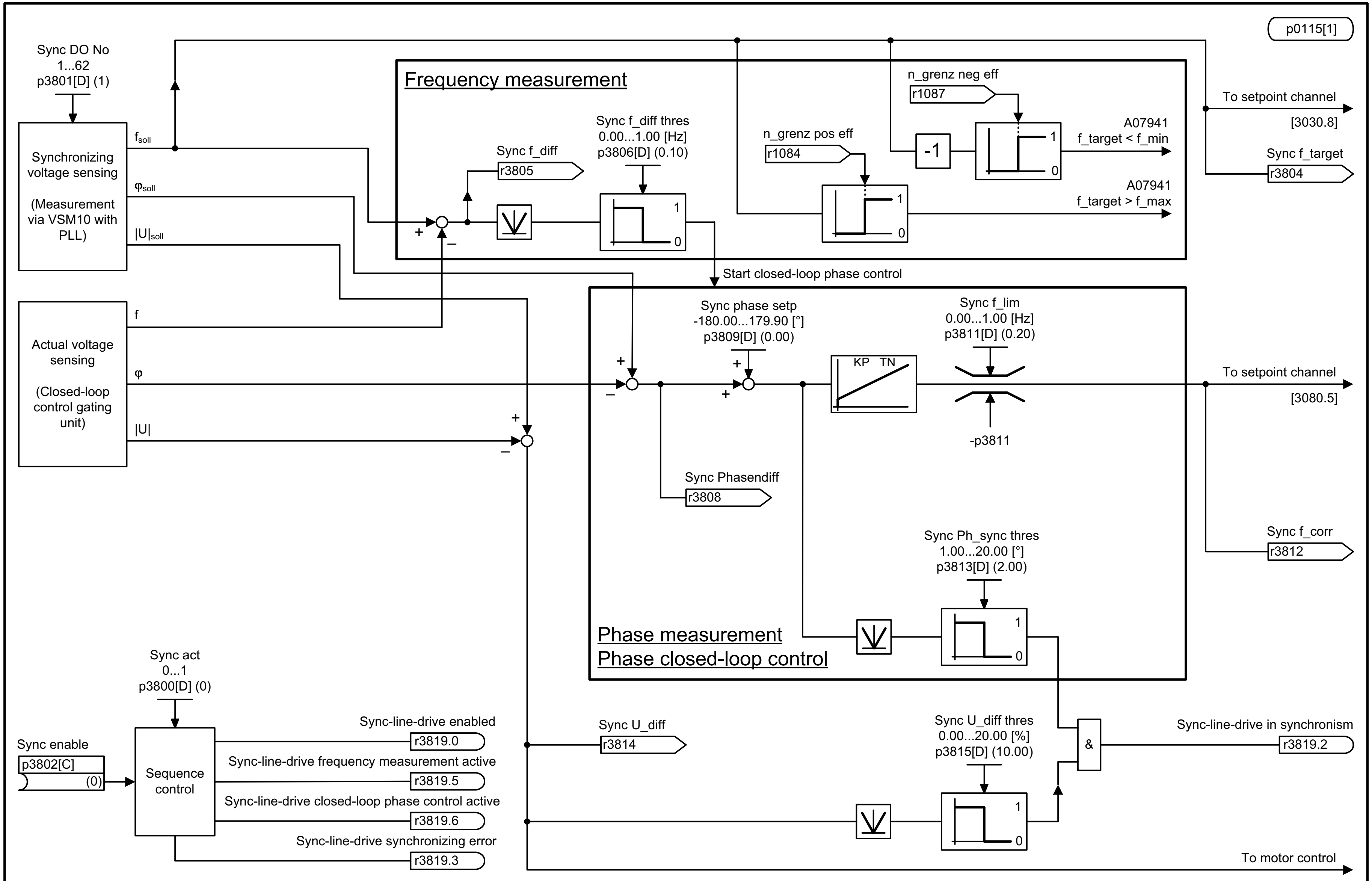
Fig. 3-271 7017 – DC braking (p0300 = 1xx)



<1> The DC brake current is determined during automatic calculation (p0340 = 1).
<2> The de-magnetization time is determined during automatic calculation (p0340 = 1, 3).
<3> As soon as the standstill threshold (p1226) has been reached, the DC current injection will be aborted prematurely.
<4> Signal r1239.8 is only set while the DC brake is active.
<5> Only for SINAMICS S120 and SERVO.
<6> Only for SINAMICS S120 and VECTOR.
<7> DC brake upon falling below the starting speed for DC brake (p1234).

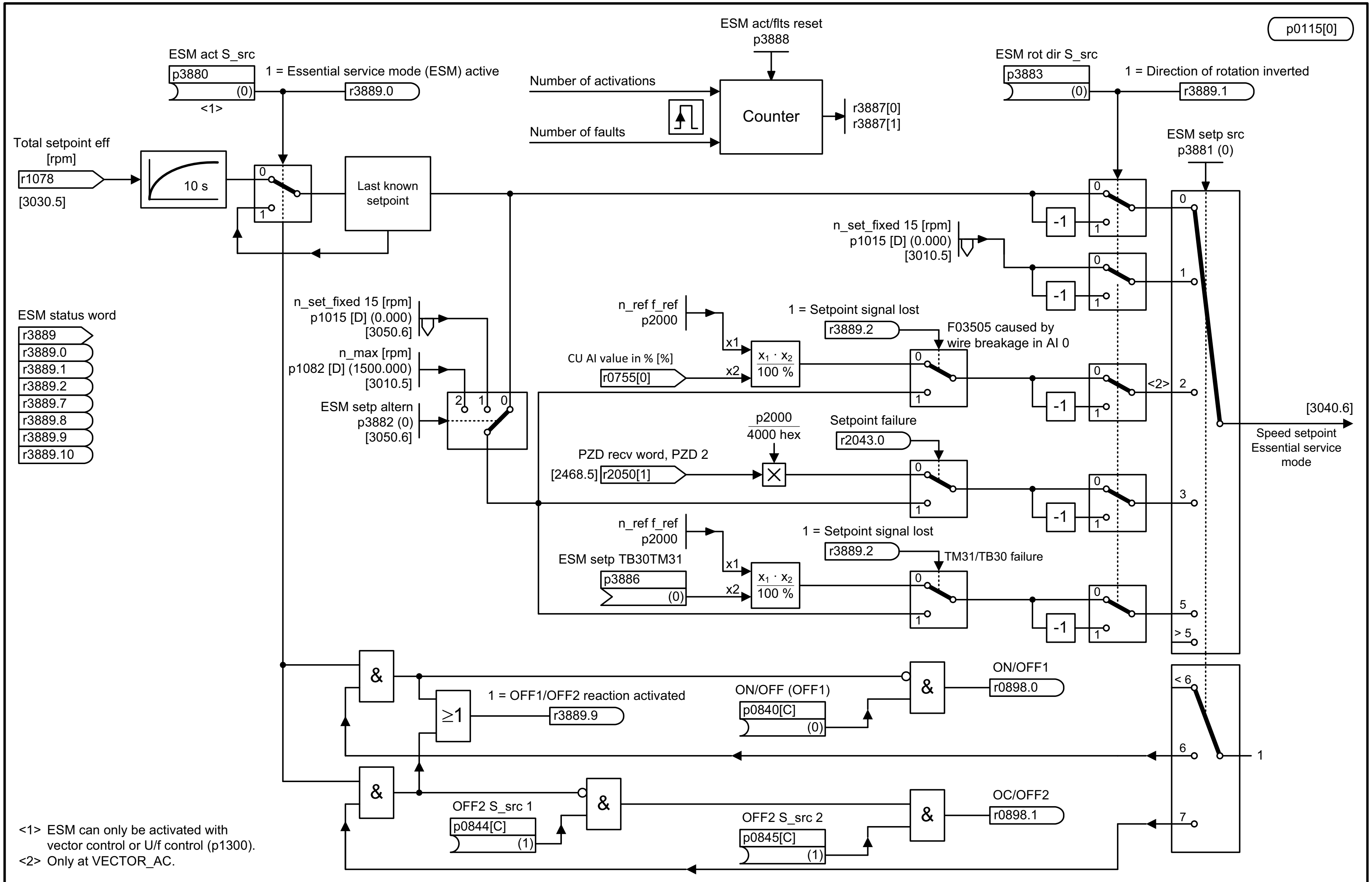
1	2	3	4	5	6	7	8
DO: SERVO, VECTOR					fp_7017_54_eng.vsd	Function diagram	- 7017 -
Technology functions - DC brake (p0300 = 1xx)					07.04.17 V05.01.01	S120/S150/G130/G150	

Fig. 3-272 7020 – Synchronization



1	2	3	4	5	6	7	8

DO: VECTOR, VECTOR3P, VECTORMV	fp_7020_51_eng.vsd	Function diagram	- 7020 -
Technology functions - Synchronization	15.05.18 V05.01.01	SINAMICS	



1	2	3	4	5	6	7	8

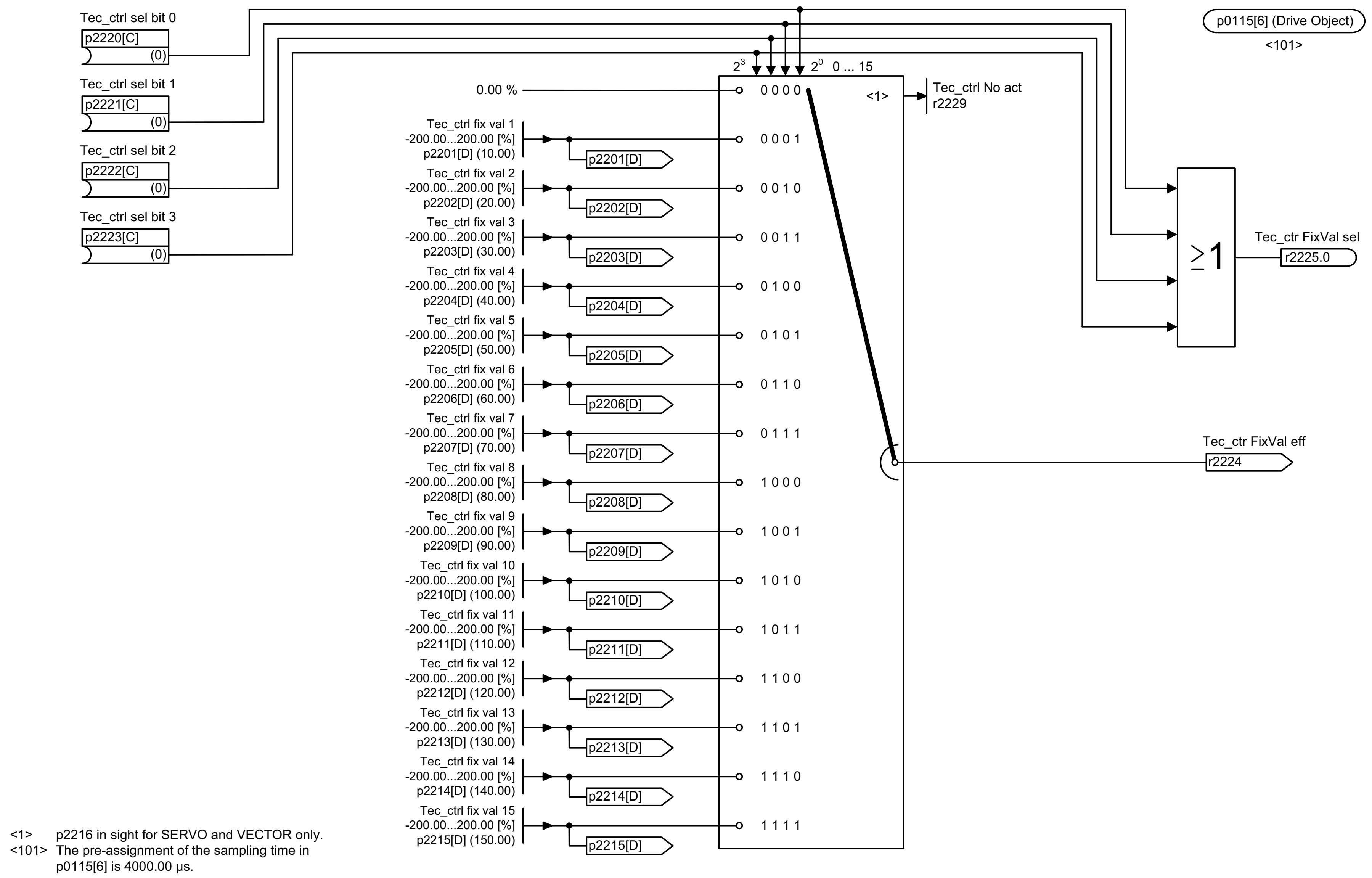
DO: VECTOR, VECTOR_AC	fp_7033_54_eng.vsd	Function diagram	- 7033 -
Technology functions - Essential Service Mode (ESM)	06.09.17 V05.01.01	S150/G130/G150	

Fig. 3-273 7033 – Essential service mode (ESM)

3.27 Technology controller

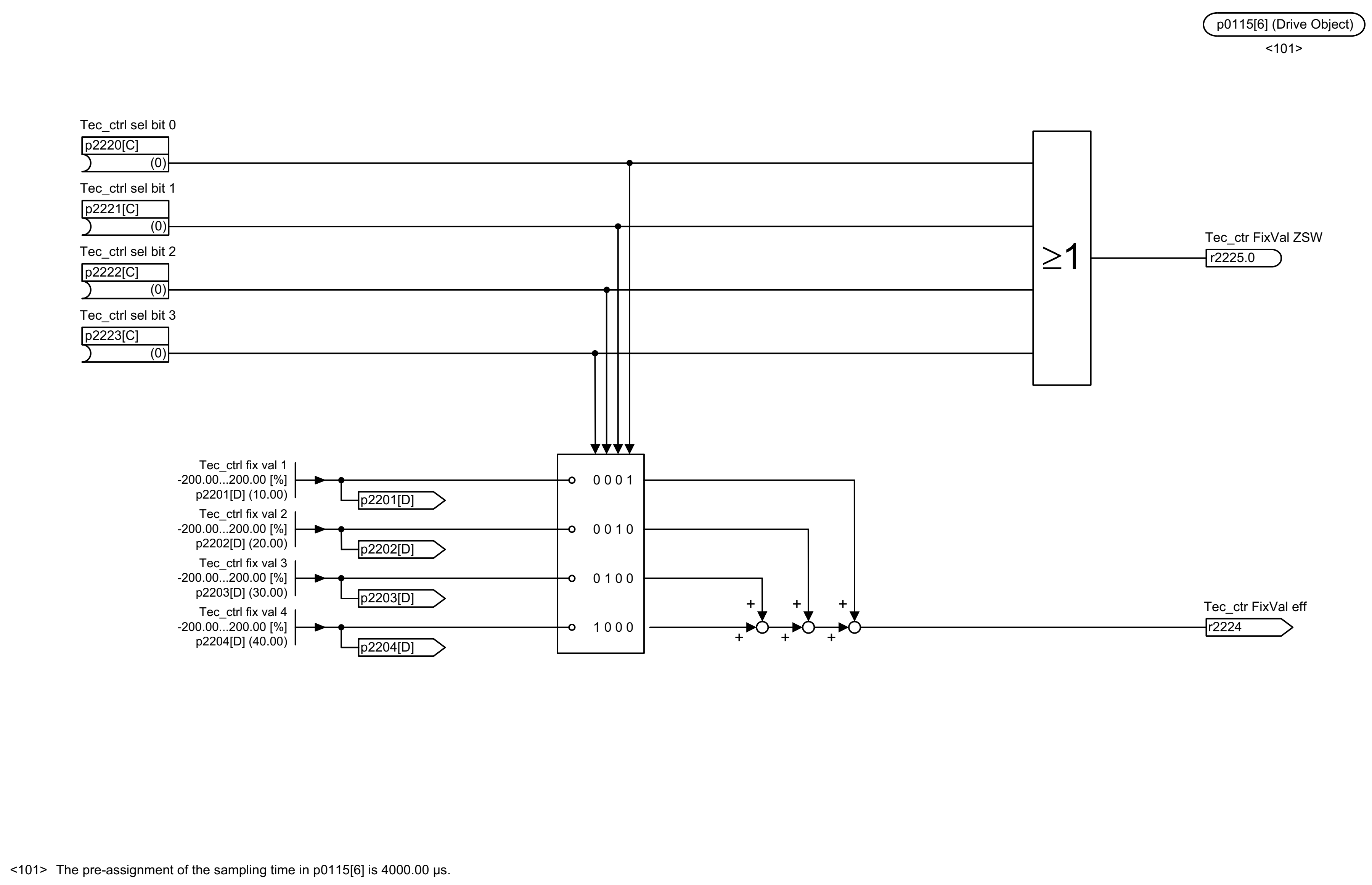
Function diagrams

Fig. 3-274 7950 – Fixed values, binary selection (r0108.16 = 1 and p2216 = 2)



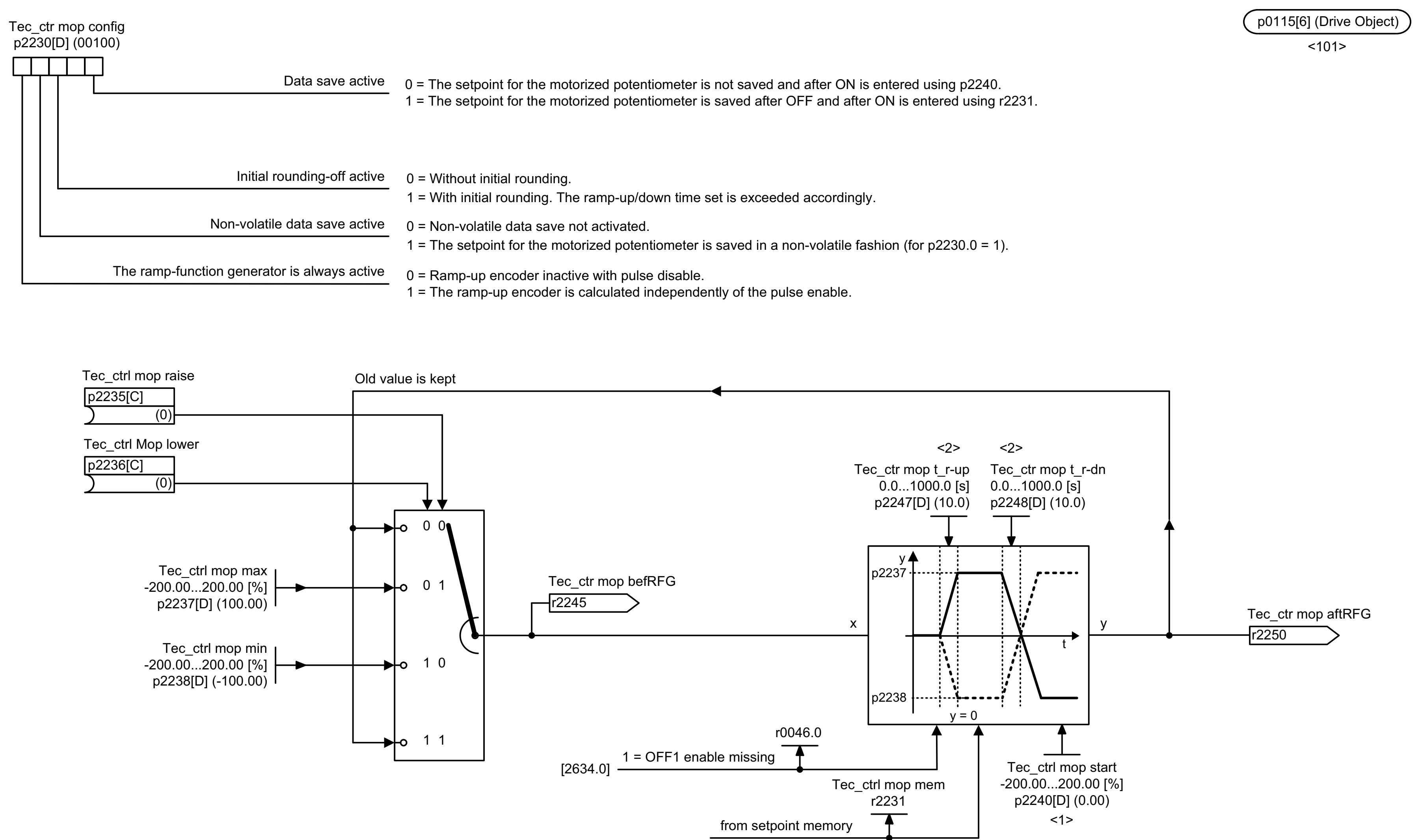
1	2	3	4	5	6	7	8

DO: SERVO, VECTOR, VECTOR3P, VECTORM2C, VECTORMV	fp_7950_51_eng.vsd	Function diagram	- 7950 -
Technology controller - Fixed value selection binary (r0108.16 = 1 and p2216 = 2)	07.01.15 V05.01.01	SINAMICS	



1	2	3	4	5	6	7	8
DO: SERVO, VECTOR					fp_7951_54_eng.vsd	Function diagram	- 7951 -
Technology controller - Fixed value selection direct (r0108.16 = 1 and p2216 = 1)					12.07.13 V05.01.01	S120/S150/G130/G150	

Fig. 3-275 7951 – Fixed values, direct selection (r0108.16 = 1 and p2216 = 1)



<1> For p2230.0 = 0, this setpoint is entered after ON.
<2> If initial rounding-off is active (p2230.2 = 1), the selected ramp-up/down times are exceeded accordingly.
<101> The pre-assignment of the sampling time in p0115[6] is 4000.00 µs.

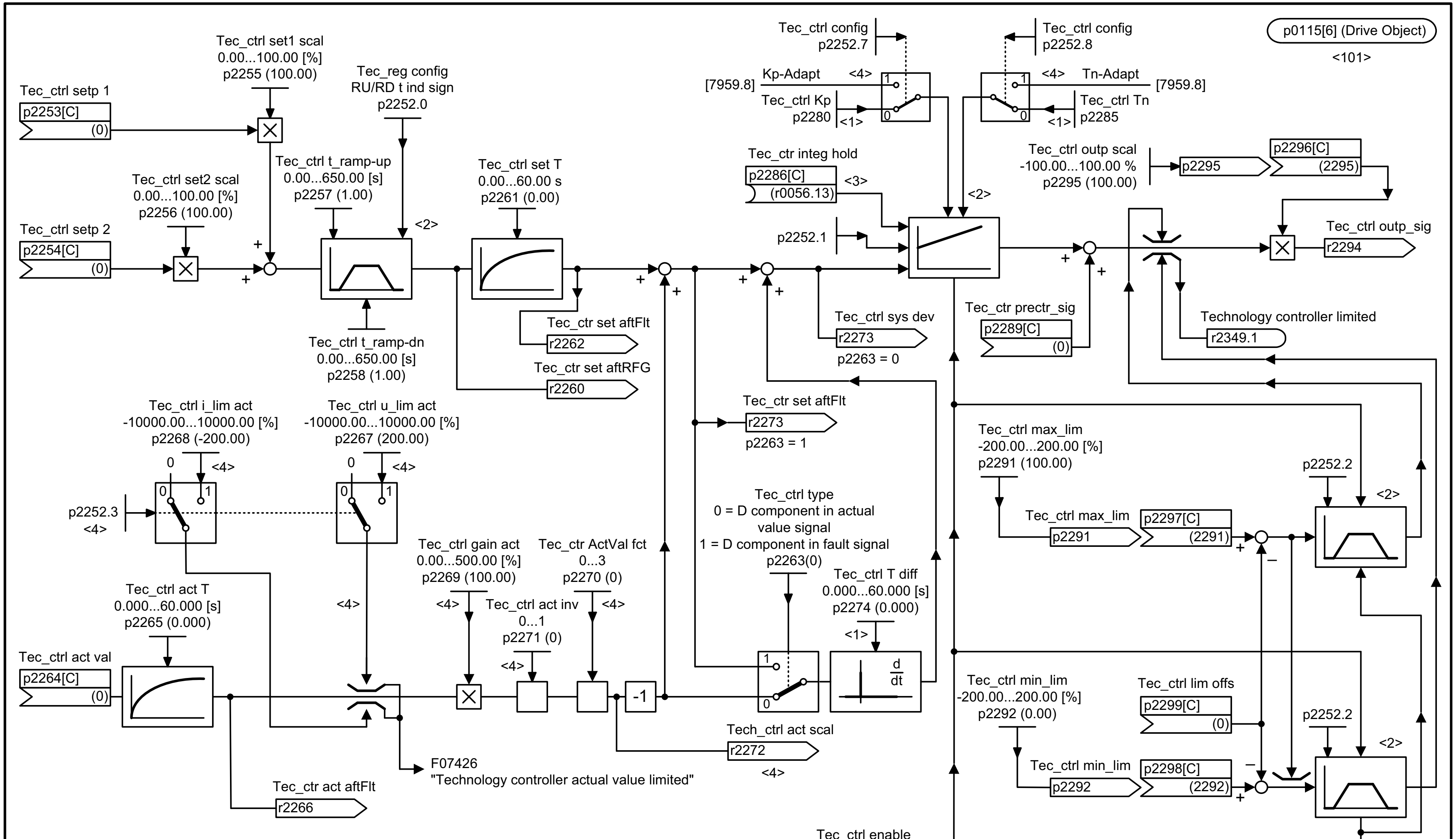
1	2	3	4	5	6	7	8

DO: SERVO, VECTOR, VECTOR3P, VECTORM2C, VECTORMV | fp_7954_51_eng.vsd | Function diagram | - 7954 -

Technology controller - Motorized potentiometer (r0108.16 = 1) | 07.01.15 V05.01.01 | SINAMICS

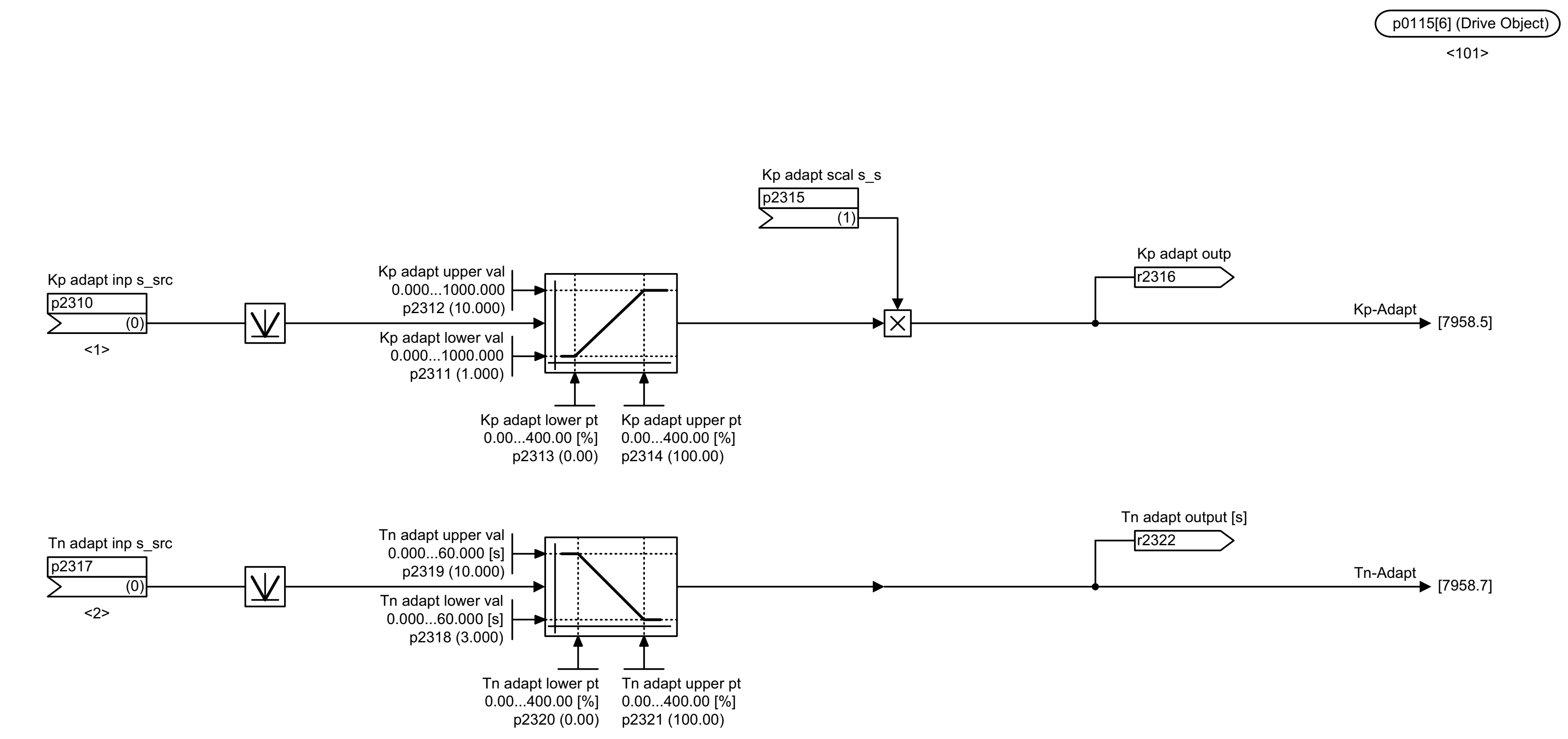
Fig. 3-276 7954 – Motorized potentiometer (r0108.16 = 1)

Fig. 3-277 7958 – Closed-loop control (r0108.16 = 1)



<1> P, I and D components can be disabled by entering a zero.
<2> Behavior can be changed via p2252.
<3> I component stop, only when r2273 and r2294 in same direction.
<4> Not for VECTOR3P, VECTORMV and VECTORM2C.
<101> The pre-assignment of the sampling time in p0115[6] is 4000.00 µs.

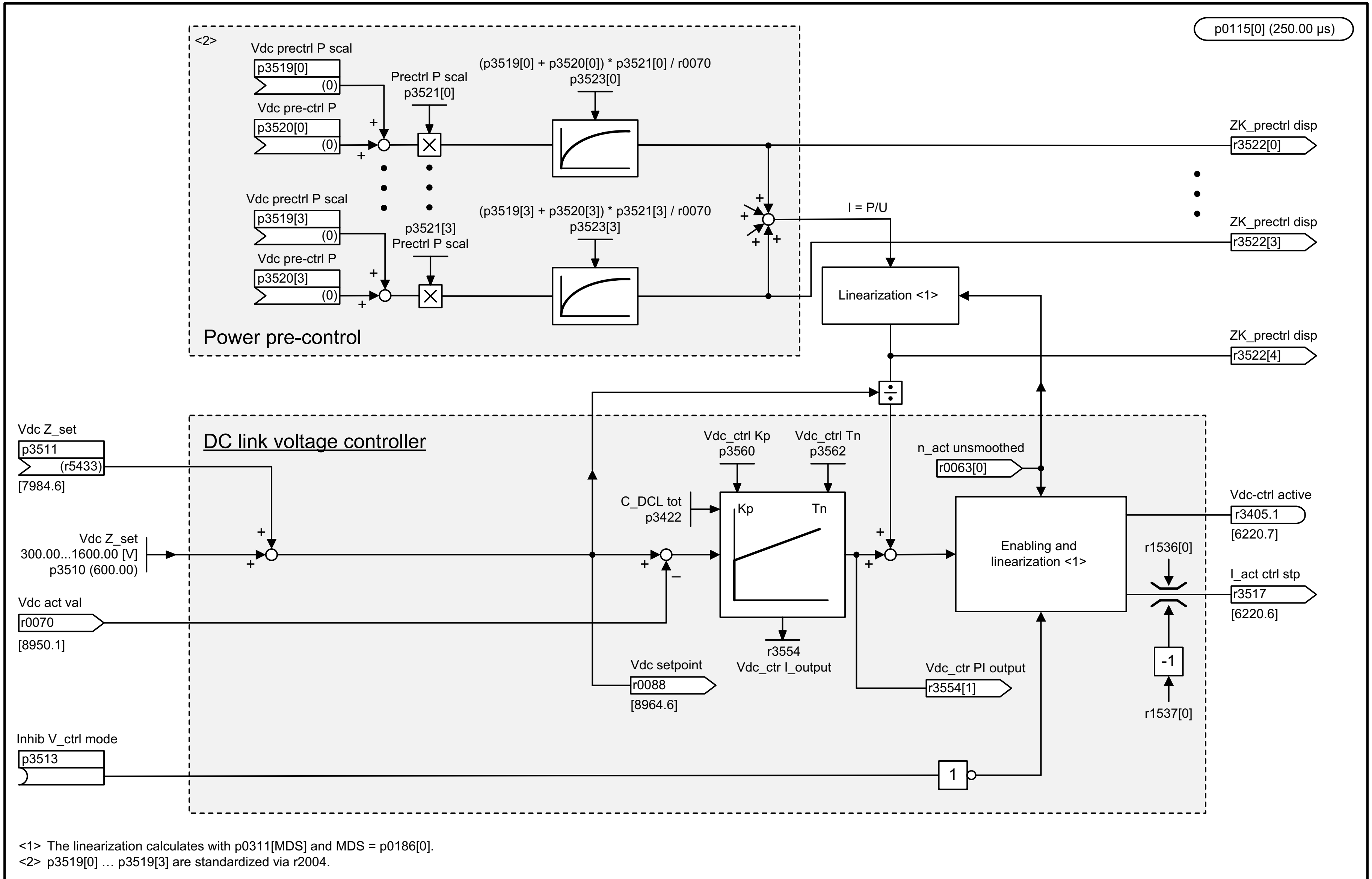
1	2	3	4	5	6	7	8
DO: SERVO, VECTOR, VECTOR3P, VECTORM2C, VECTORMV					fp_7958_51_eng.vsd	Function diagram	- 7958 -
Technology controller - Closed-loop control (r0108.16 = 1)					18.09.17 V05.01.01	SINAMICS	



<1> Kp adaptation is activated with p2252.7 = 1.
<2> Tn adaptation is activated with p2252.8 = 1.
<101> The pre-assignment of the sampling time in p0115[6] is 4000.00 µs.

1	2	3	4	5	6	7	8
DO: SERVO, VECTOR					fp_7959_54_eng.vsd	Function diagram	- 7959 -
Technology controller - Kp/Tn adaptation (r0108.16 = 1)					19.02.18 V05.01.01	S120/S150/G130/G150	

Fig. 3-278 7959 – Kp/Tn adaption (r0108.16 = 1)



<1> The linearization calculates with p0311[MDS] and MDS = p0186[0].
<2> p3519[0] … p3519[3] are standardized via r2004.

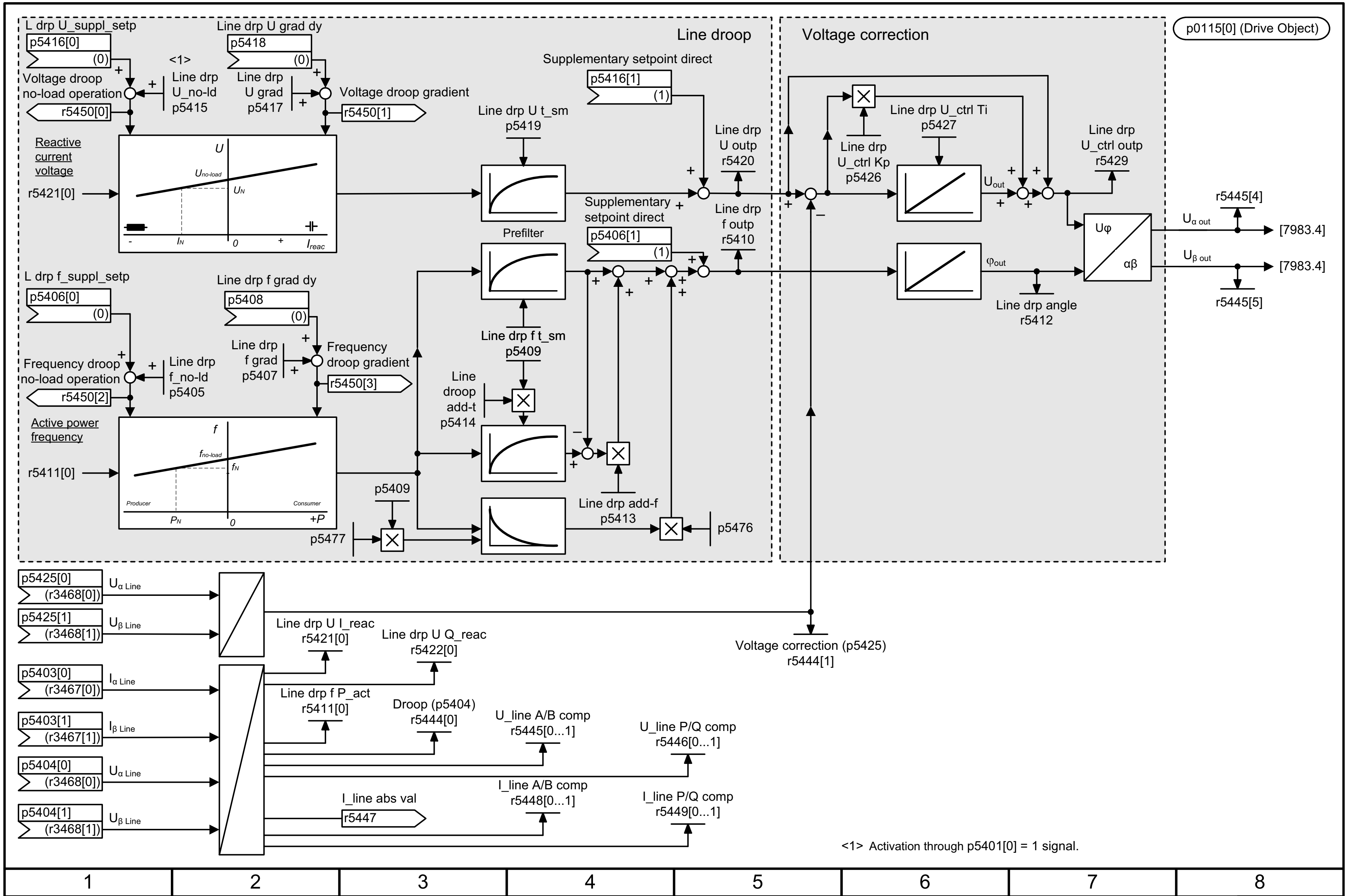
1	2	3	4	5	6	7	8

DO: VECTOR	fp_7960_54_eng.vsd	Function diagram	- 7960 -
Technology controller - DC link voltage controller (r0108.16 = 1)	05.04.16 V05.01.01	S120/S150/G130/G150	

Fig. 3-279 7960 – DC link voltage controller (r0108.16 = 1)

3.28 Line droop control (r0108.12 = 1)

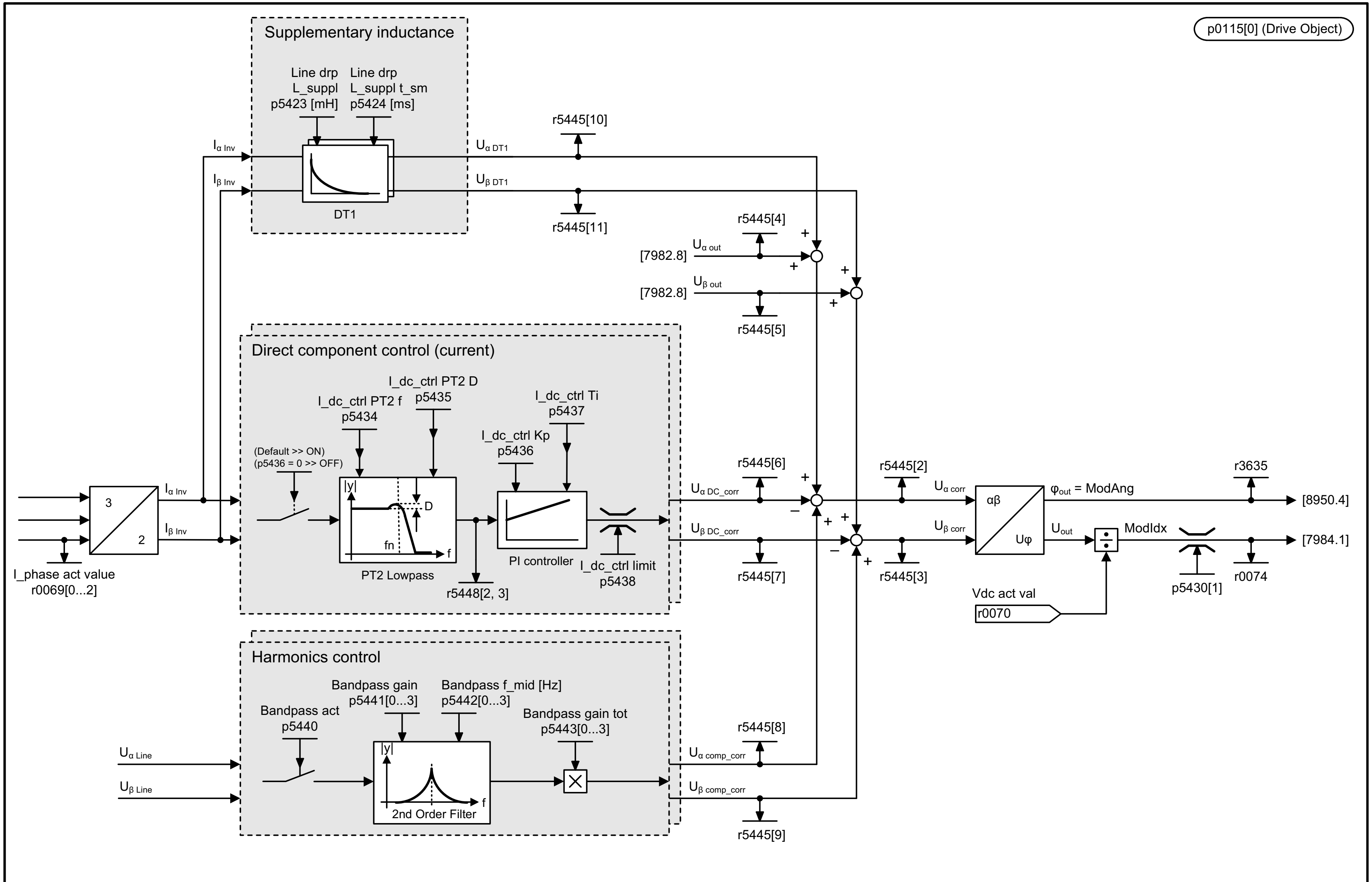
Function diagrams



DO: A_INF, R_INF	fp_7982_01_eng.vsd	Function diagram	- 7982 -
Line droop control (r0108.12 = 1) - Line droop, voltage correction	28.12.17 V05.01.01	SINAMICS S120	

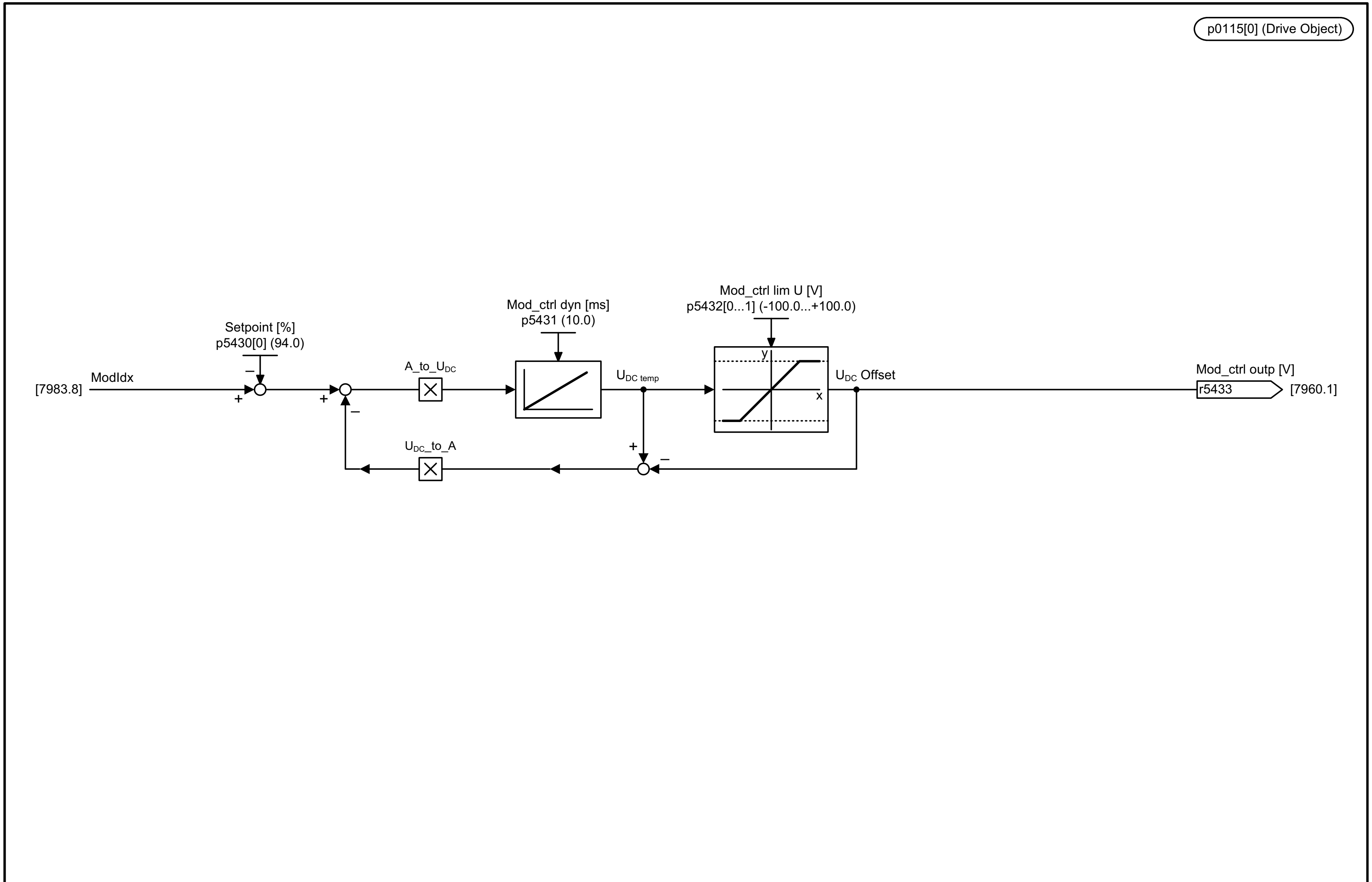
Fig. 3-280 7982 – Line droop, voltage correction control

Fig. 3-281 7983 – Direct component control, harmonics control



1	2	3	4	5	6	7	8

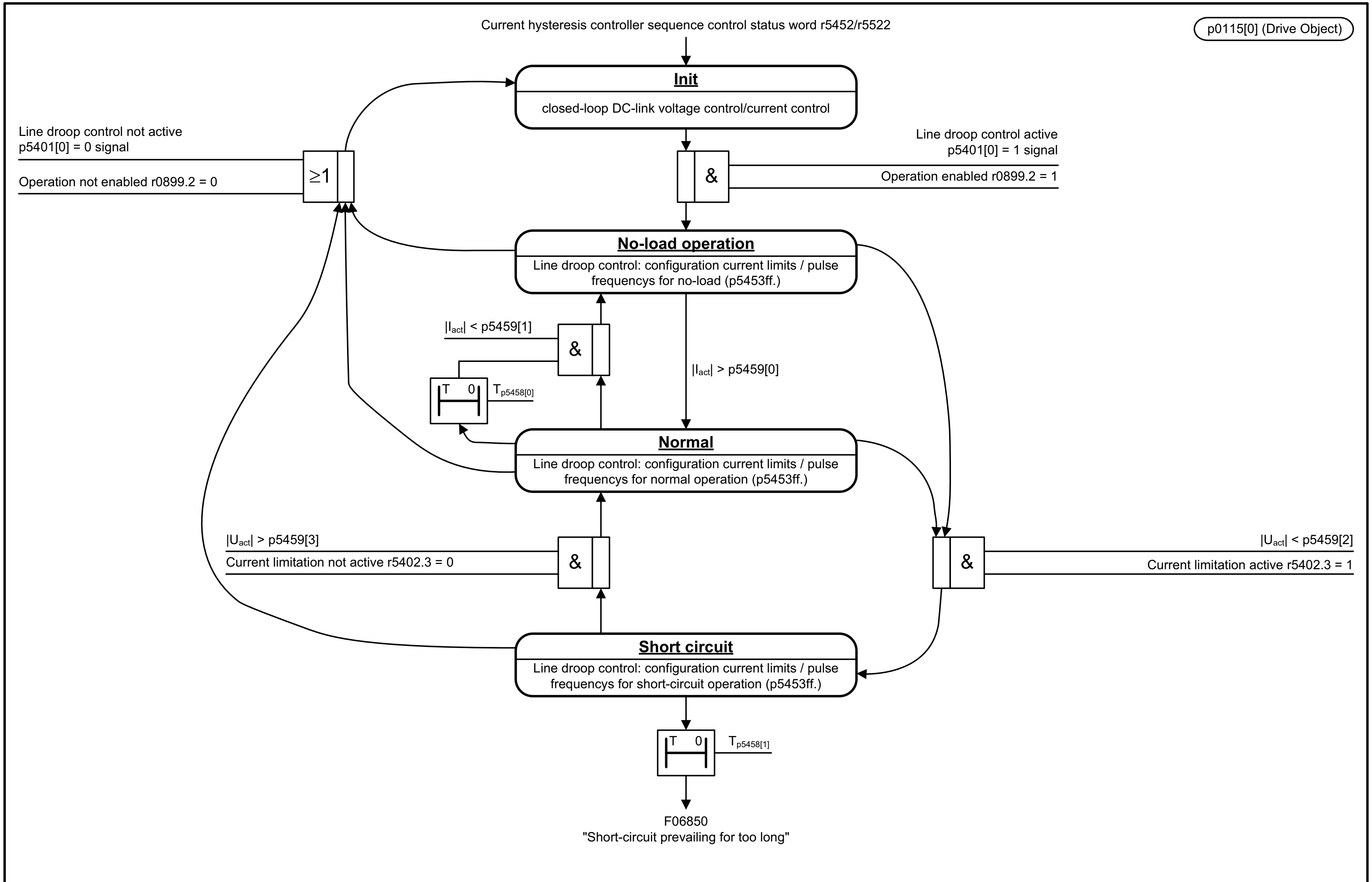
DO: A_INF, R_INF	fp_7983_01_eng.vsd	Function diagram	- 7983 -
Line droop control (r0108.12 = 1) - Direct component control, harmonics control	28.12.17 V05.01.01	SINAMICS S120	



1	2	3	4	5	6	7	8
DO: A_INF, R_INF					fp_7984_01_eng.vsd	Function diagram	- 7984 -
Line droop control (r0108.12 = 1) - Modulation depth control					28.04.15 V05.01.01	SINAMICS S120	

Fig. 3-282 7984 – Modulation depth control

Fig. 3-283 7986 – Sequence control, overcurrent



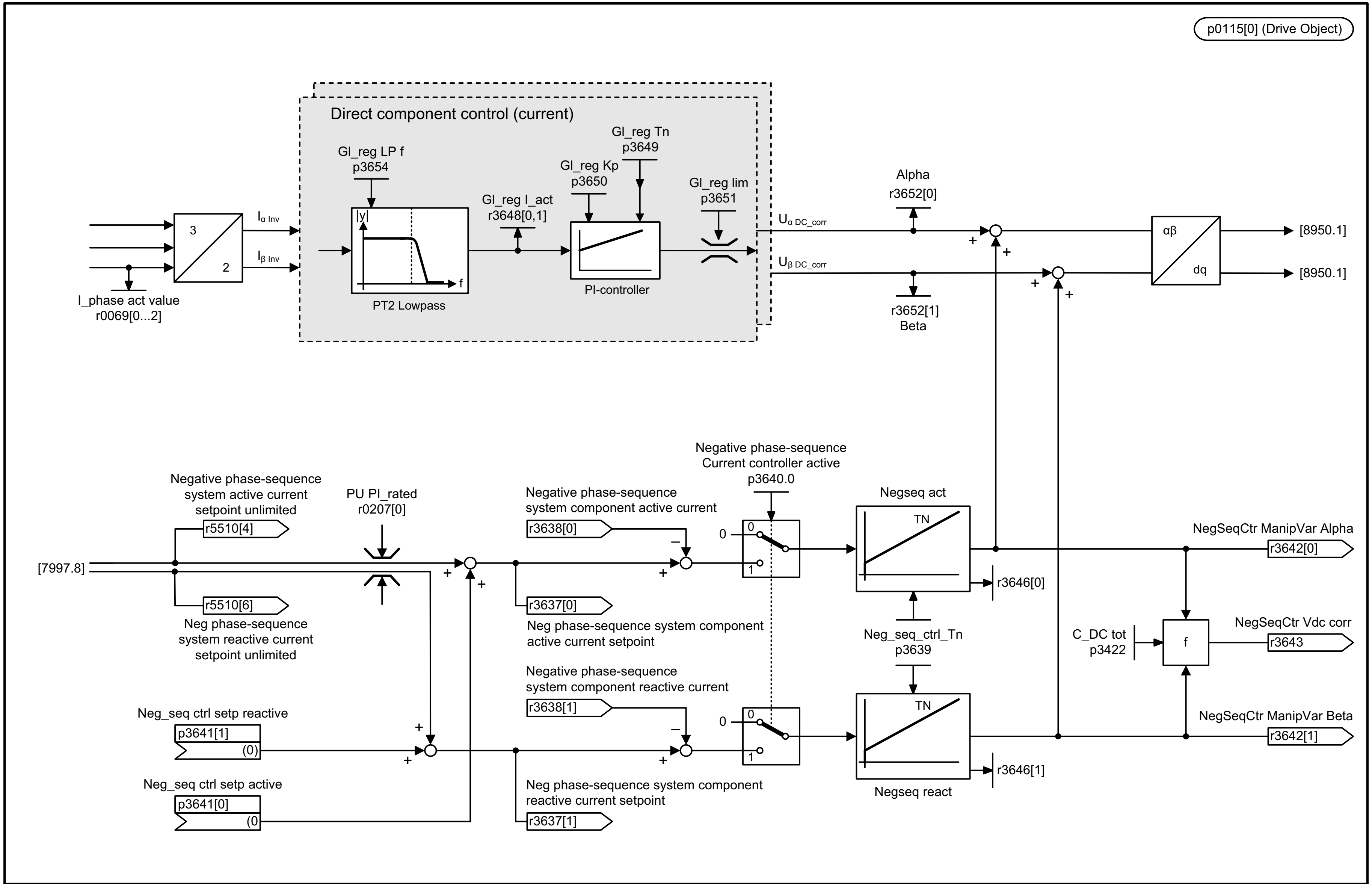
1	2	3	4	5	6	7	8

DO: A_INF, R_INF	fp_7986_01_eng.vsd	Function diagram	- 7986 -
Line droop control (r0108.12 = 1) - Sequence control, overcurrent	28.12.17 V05.01.01	SINAMICS S120	

3.29 Line transformer (r0108.4 = 1)

Function diagrams

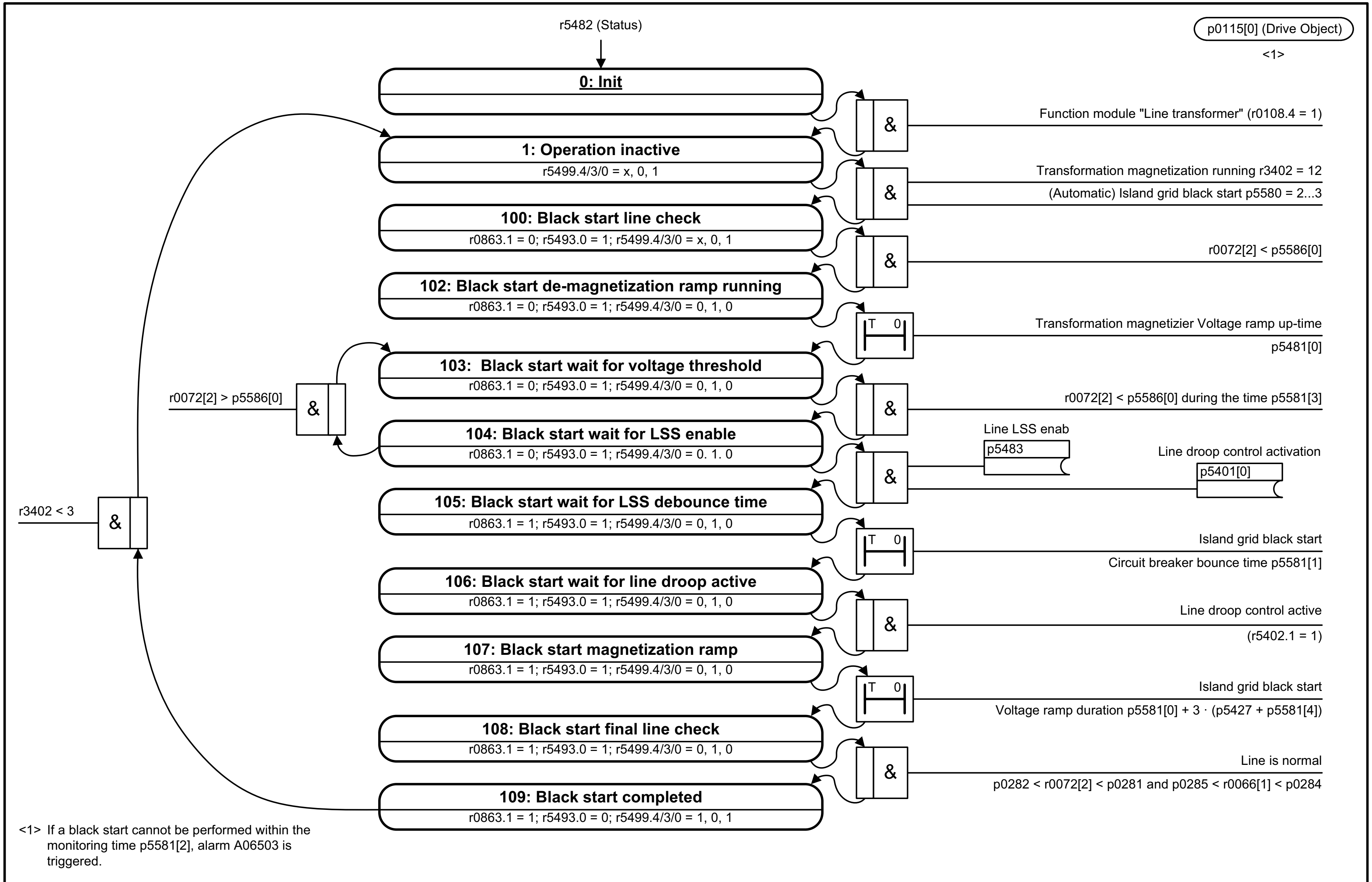
Fig. 3-284 7987 – Direct component control, negative sequence system controller



1	2	3	4	5	6	7	8

DO: A_INF, R_INF	fp_7987_01_eng.vsd	Function diagram	- 7987 -
Line transformer (r0108.4 = 1) - Direct component ctrl, negative phase-sequ. system controller	05.04.16 V05.01.01	SINAMICS S120	

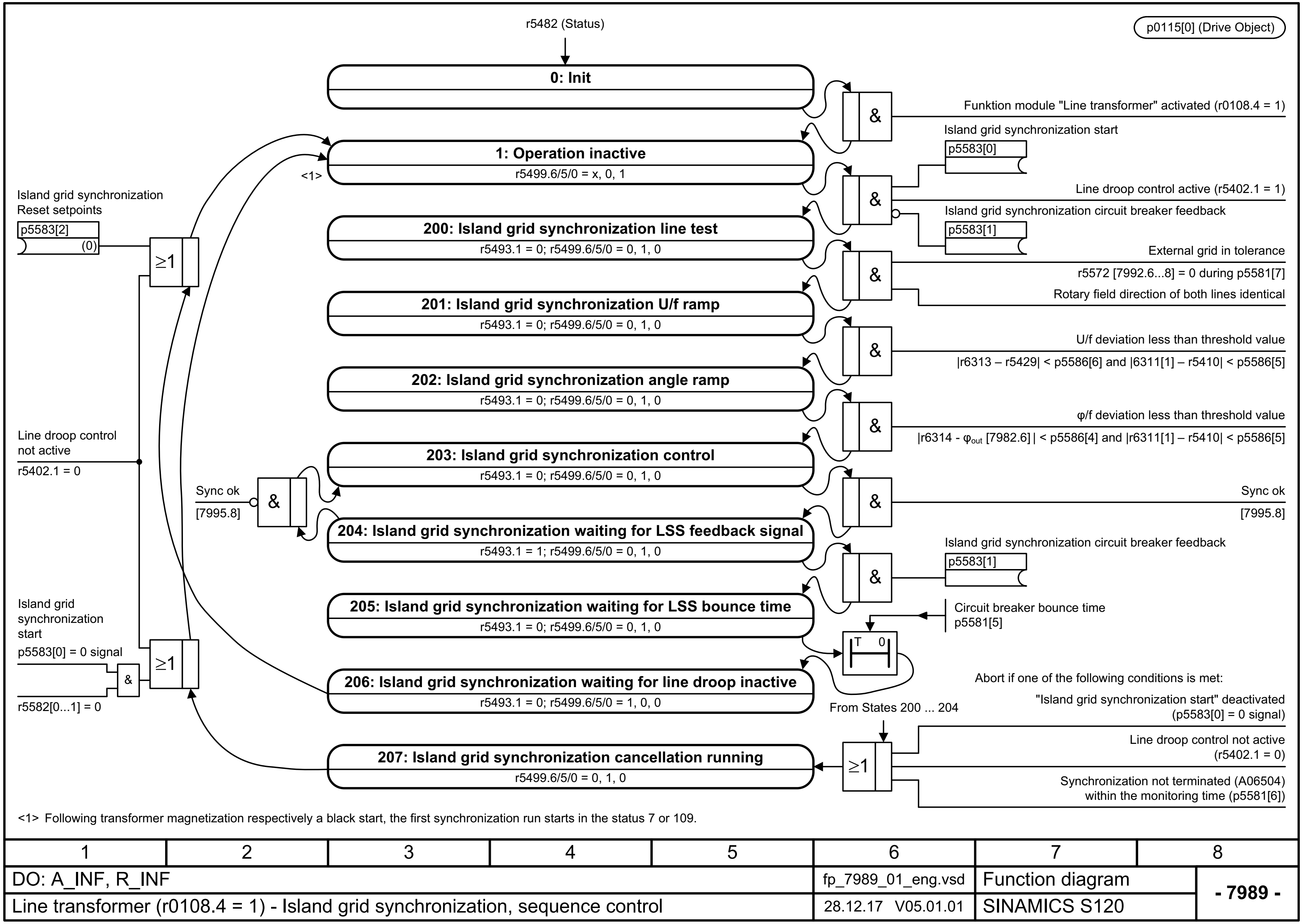
Fig. 3-285 7988 – Island grid black start sequence control



<1> If a black start cannot be performed within the monitoring time p5581[2], alarm A06503 is triggered.

1	2	3	4	5	6	7	8
DO: A_INF, R_INF					fp_7988_01_eng.vsd	Function diagram	- 7988 -
Line transformer (r0108.4 = 1) - Island grid black start, sequence control					28.12.17 V05.01.01	SINAMICS S120	

Fig. 3-286 7989 – Island grid synchronization, sequence control



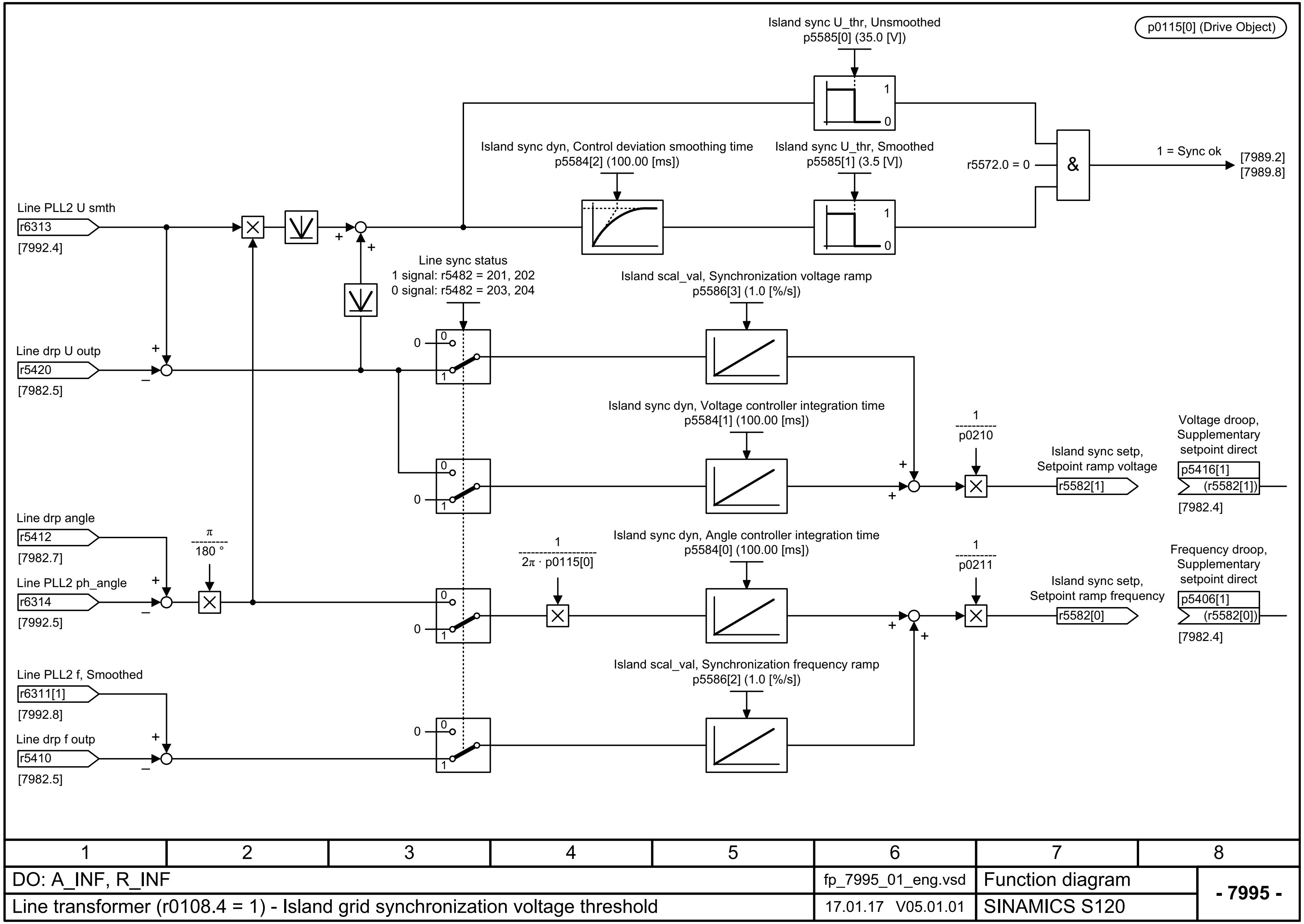
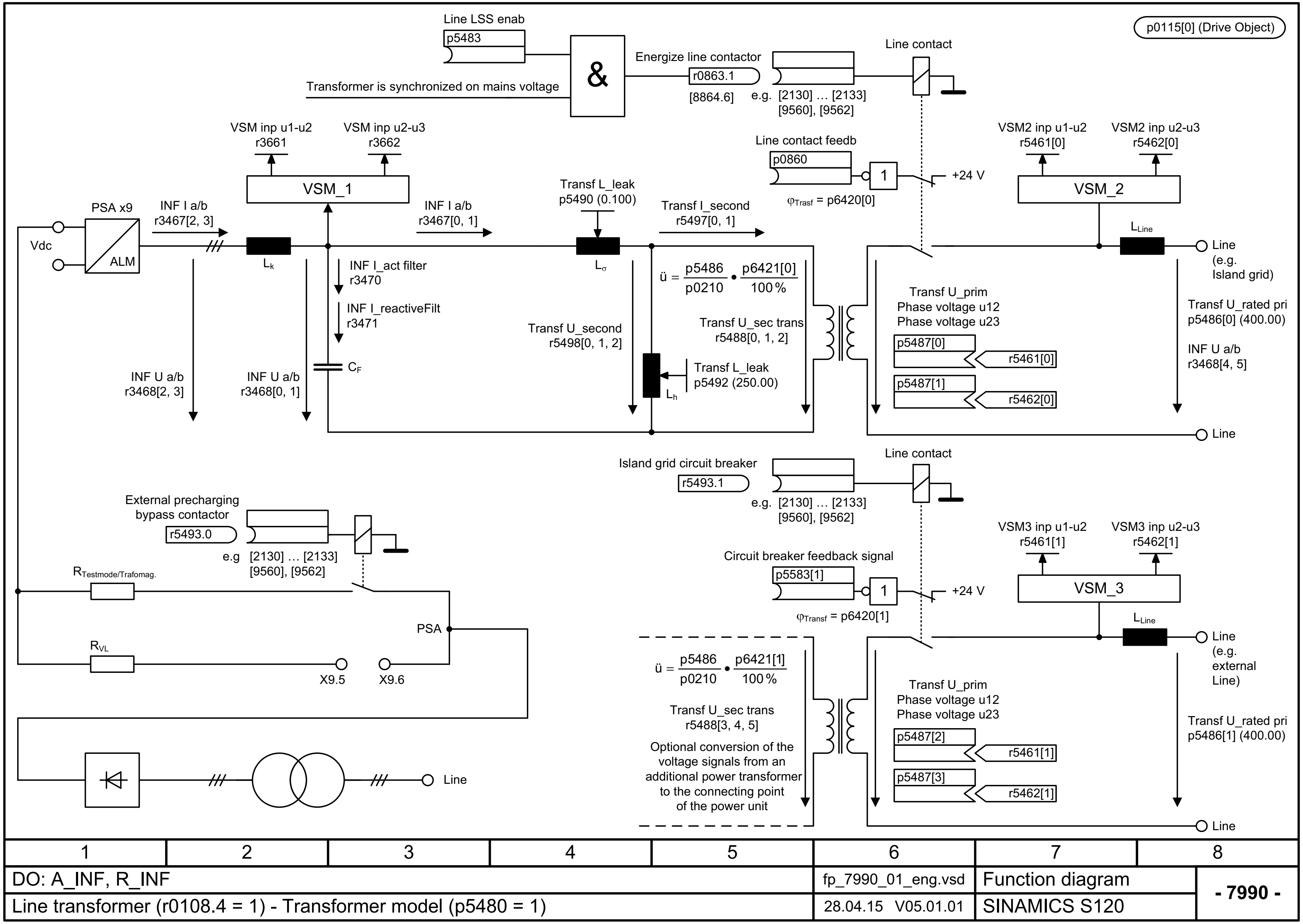
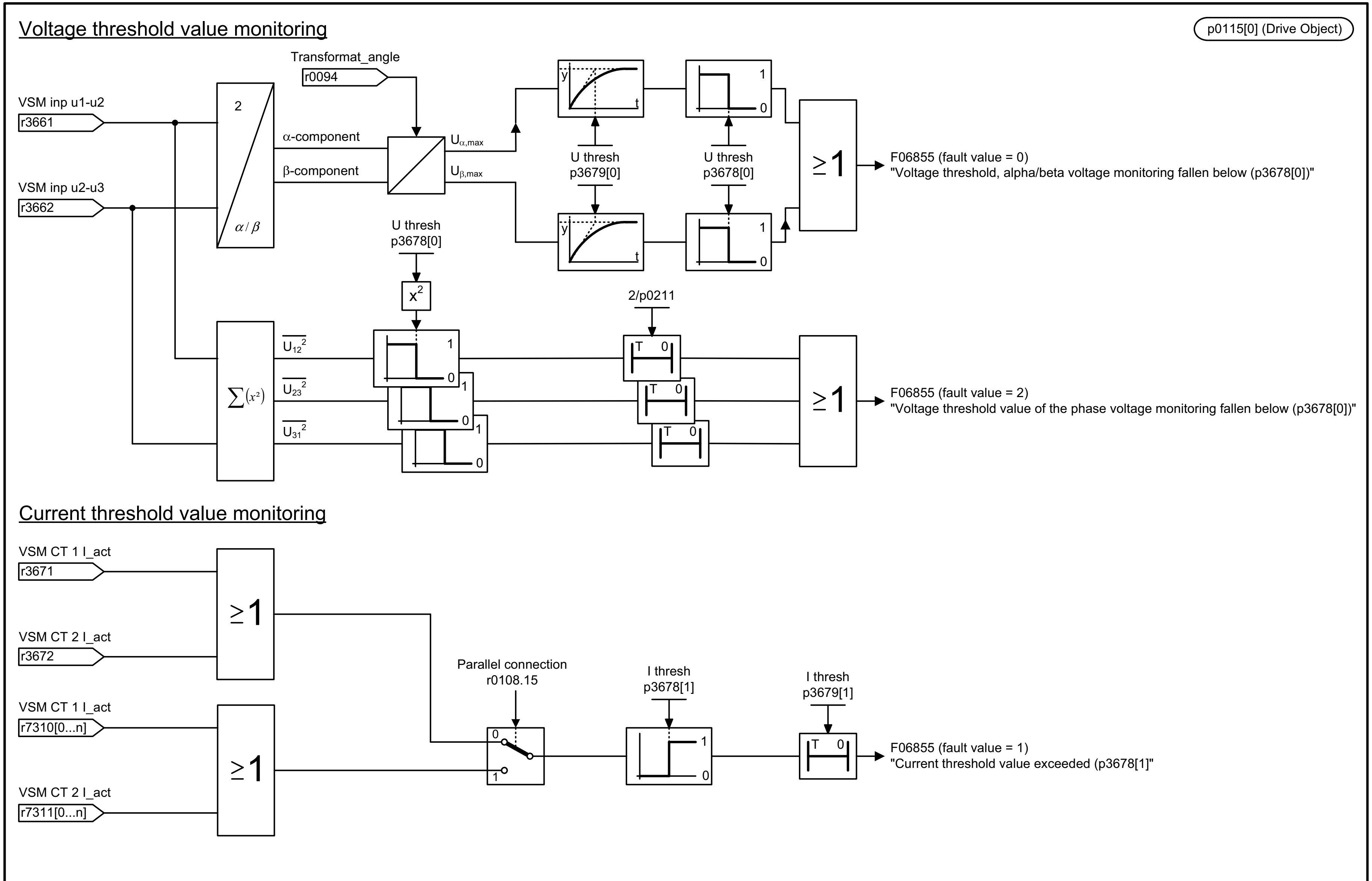


Fig. 3-287 7995 – Island grid synchronization, voltage threshold

Fig. 3-288 7990 – Transformer model (p5480 = 1)



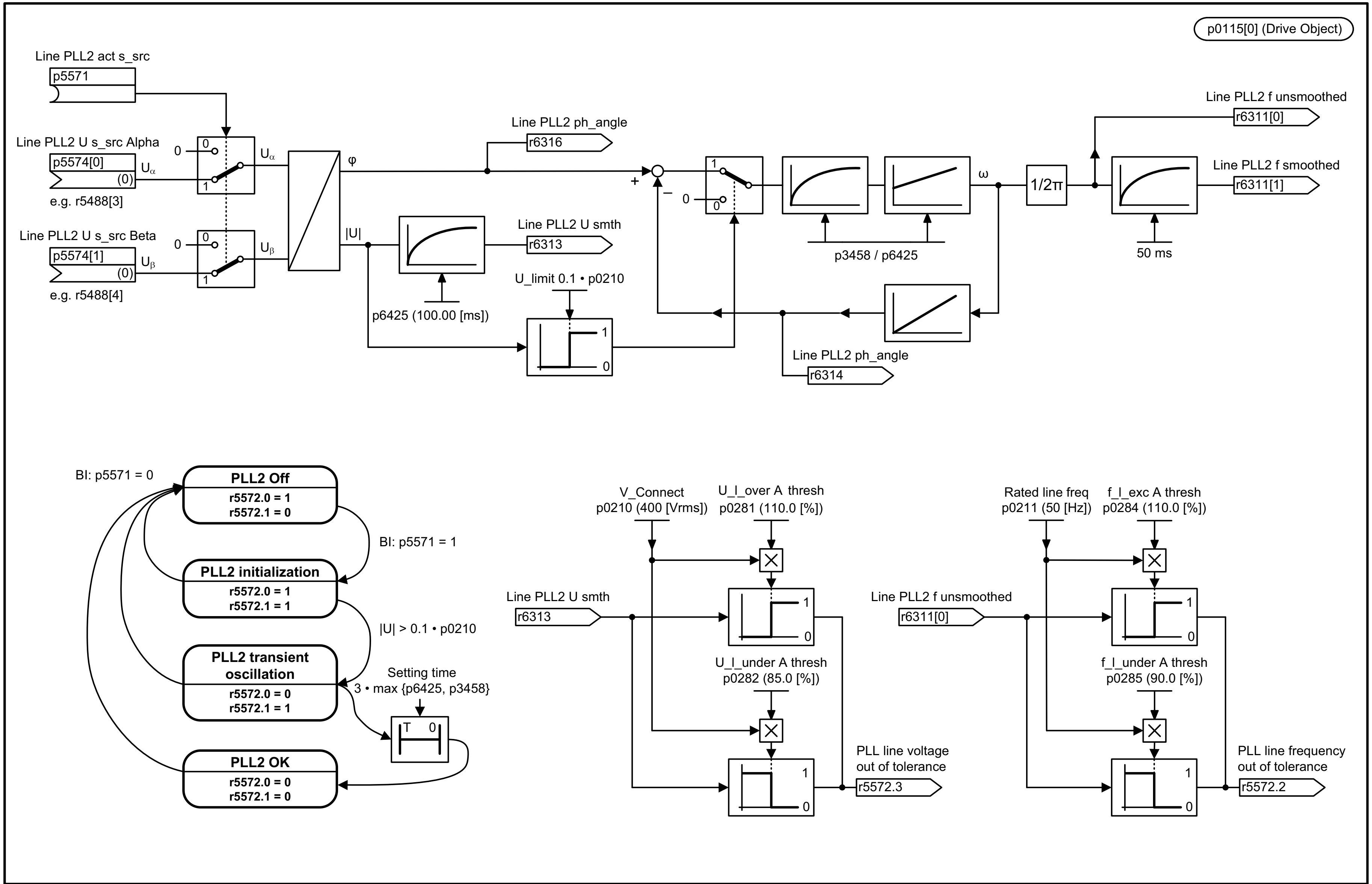


1	2	3	4	5	6	7	8

DO: A_INF, R_INF	fp_7991_01_eng.vsd	Function diagram	- 7991 -
Line transformer (r0108.4 = 1) - Line filter monitoring	28.04.15 V05.01.01	SINAMICS S120	

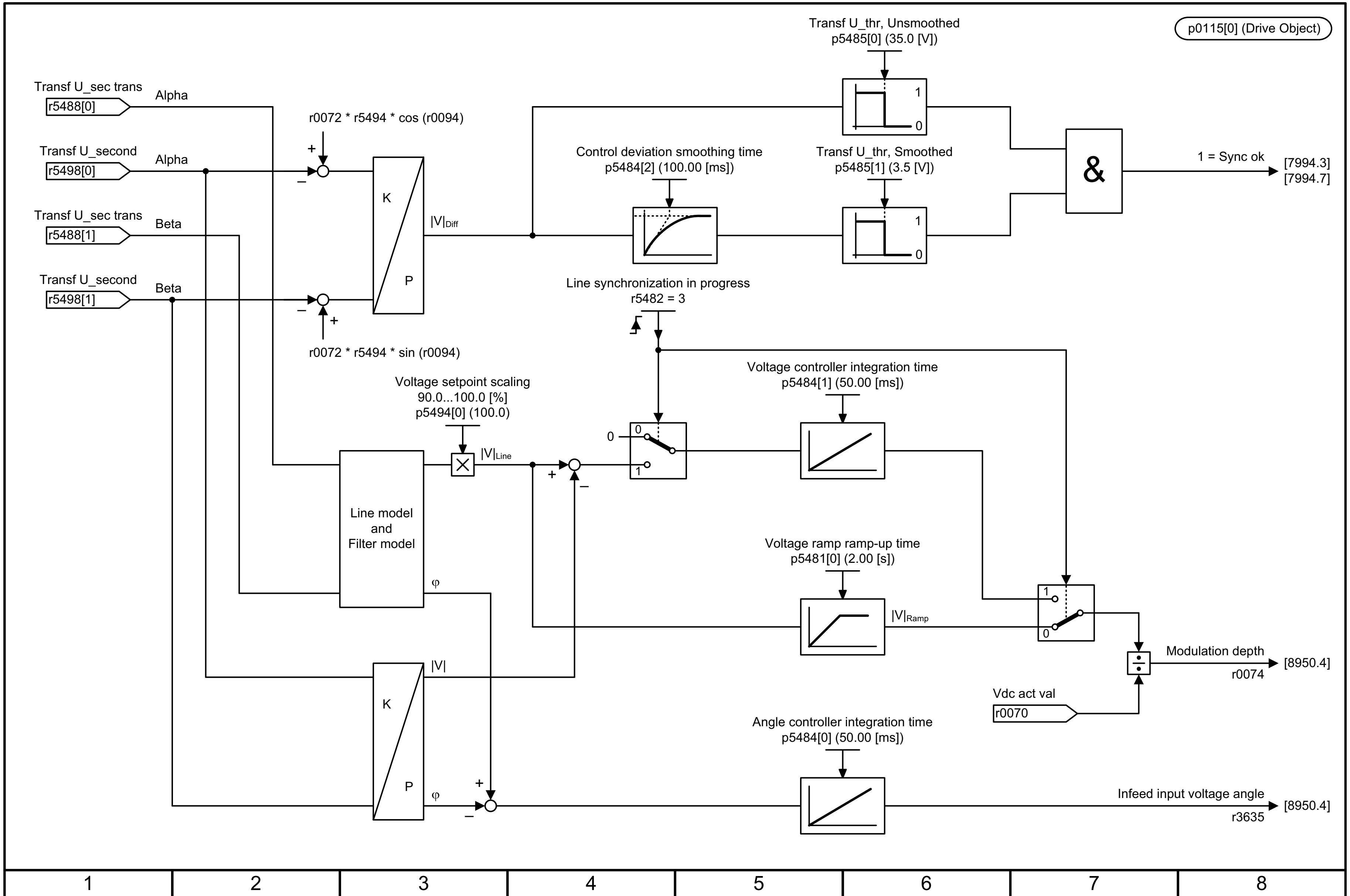
Fig. 3-289 7991 – Line filter monitoring

Fig. 3-290 7992 – PLL2 (phase locked loop 2)



1	2	3	4	5	6	7	8

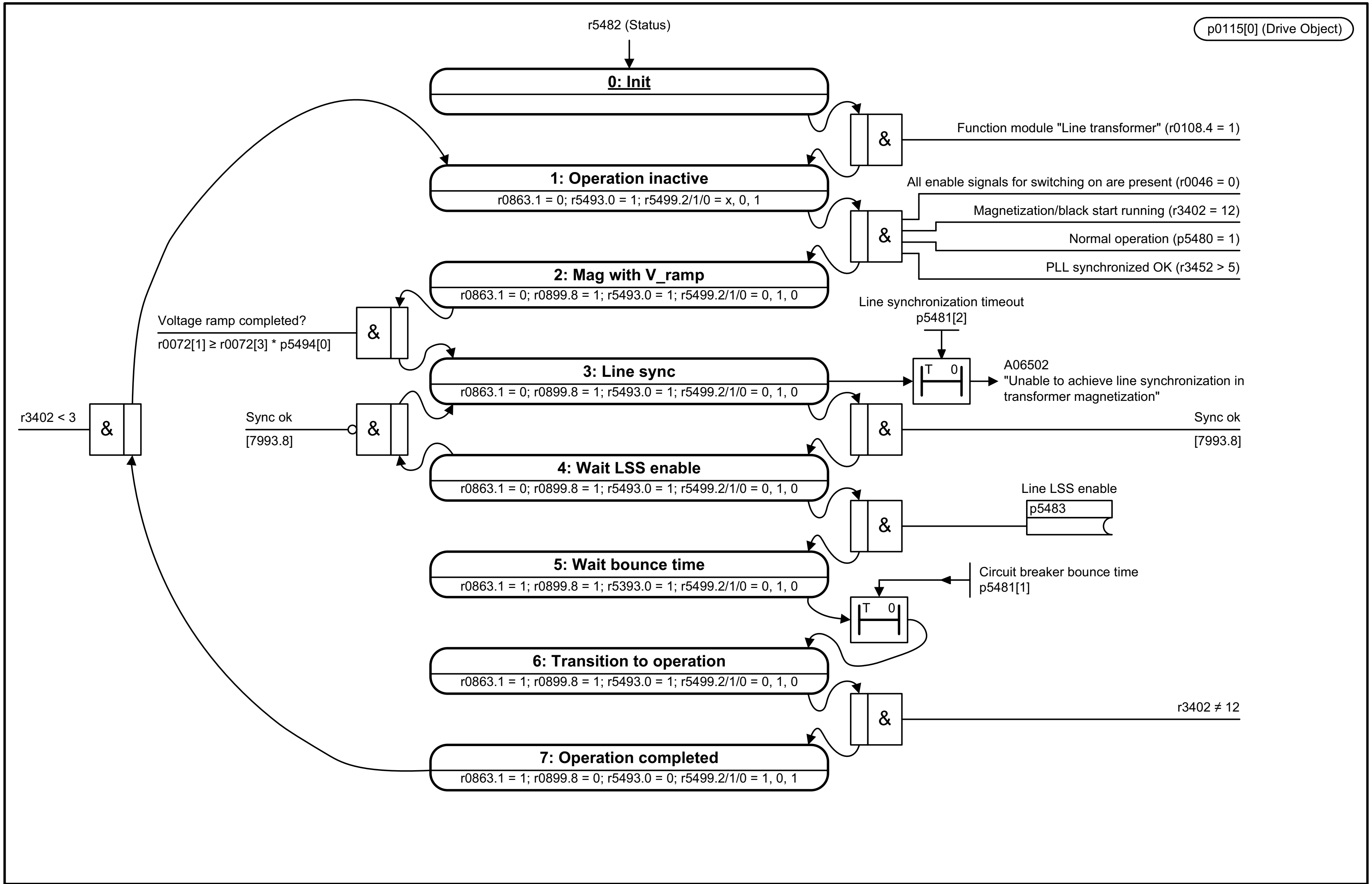
DO: A_INF, R_INF	fp_7992_01_eng.vsd	Function diagram	- 7992 -
Line transformer (r0108.4 = 1) - PLL 2 (Phase-Locked Loop 2)	28.04.15 V05.01.01	SINAMICS S120	



DO: A_INF, R_INF	fp_7993_01_eng.vsd	Function diagram	- 7993 -
Line transformer (r0108.4 = 1) - Transformer magnetization voltage threshold	03.05.17 V05.01.01	SINAMICS S120	

Fig. 3-291 7993 – Transformer magnetization, voltage threshold

Fig. 3-292 7994 – Transformer magnetization, sequence control



1	2	3	4	5	6	7	8
DO: A_INF, R_INF					fp_7994_01_eng.vsd	Function diagram	- 7994 -
Line transformer (r0108.4 = 1) - Transformer magnetization, sequence control					14.05.18 V05.01.01	SINAMICS S120	

3.30 Dynamic grid support (r0108.7 = 1)

Function diagrams

Fig. 3-293 7996 – Characteristic

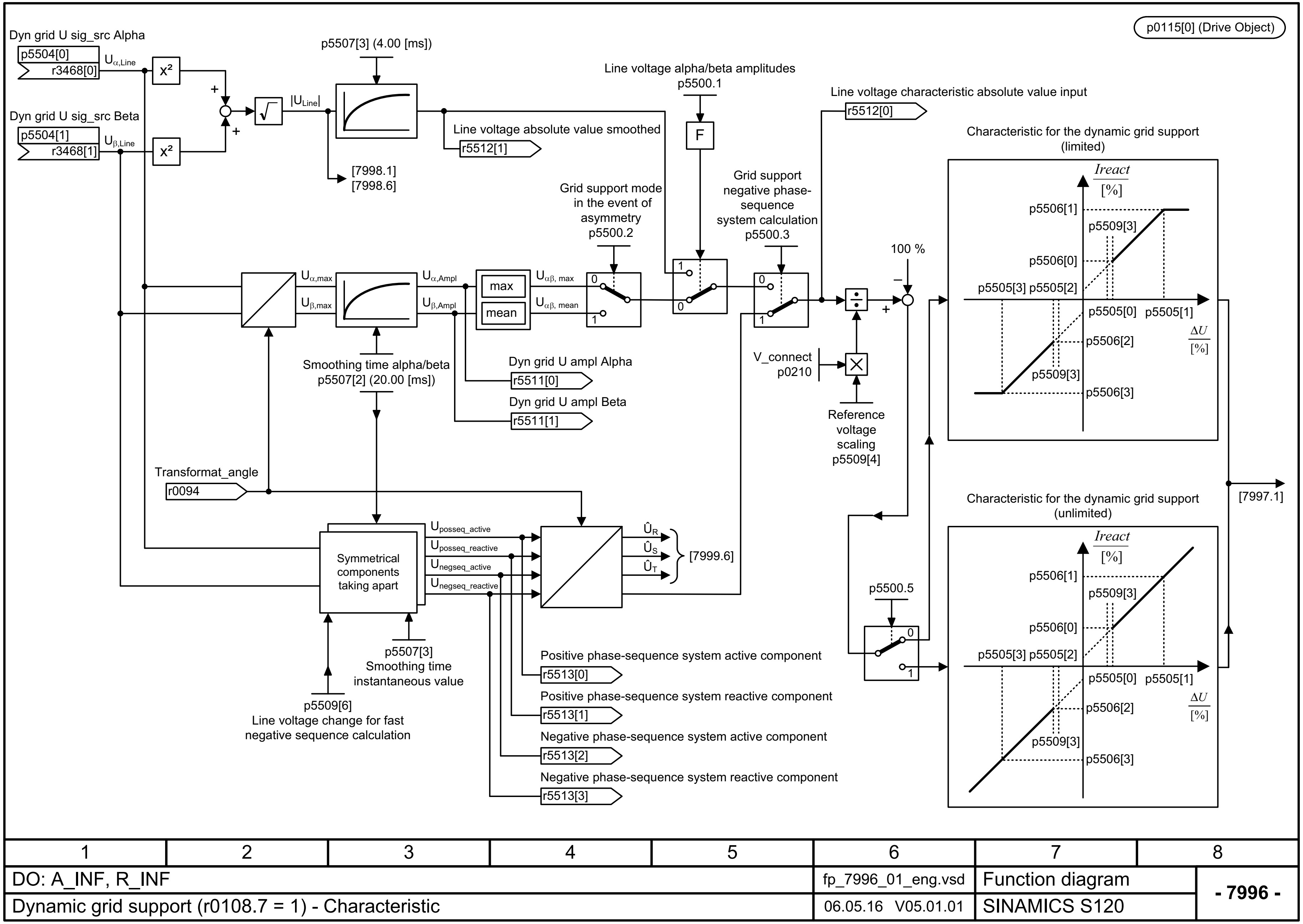
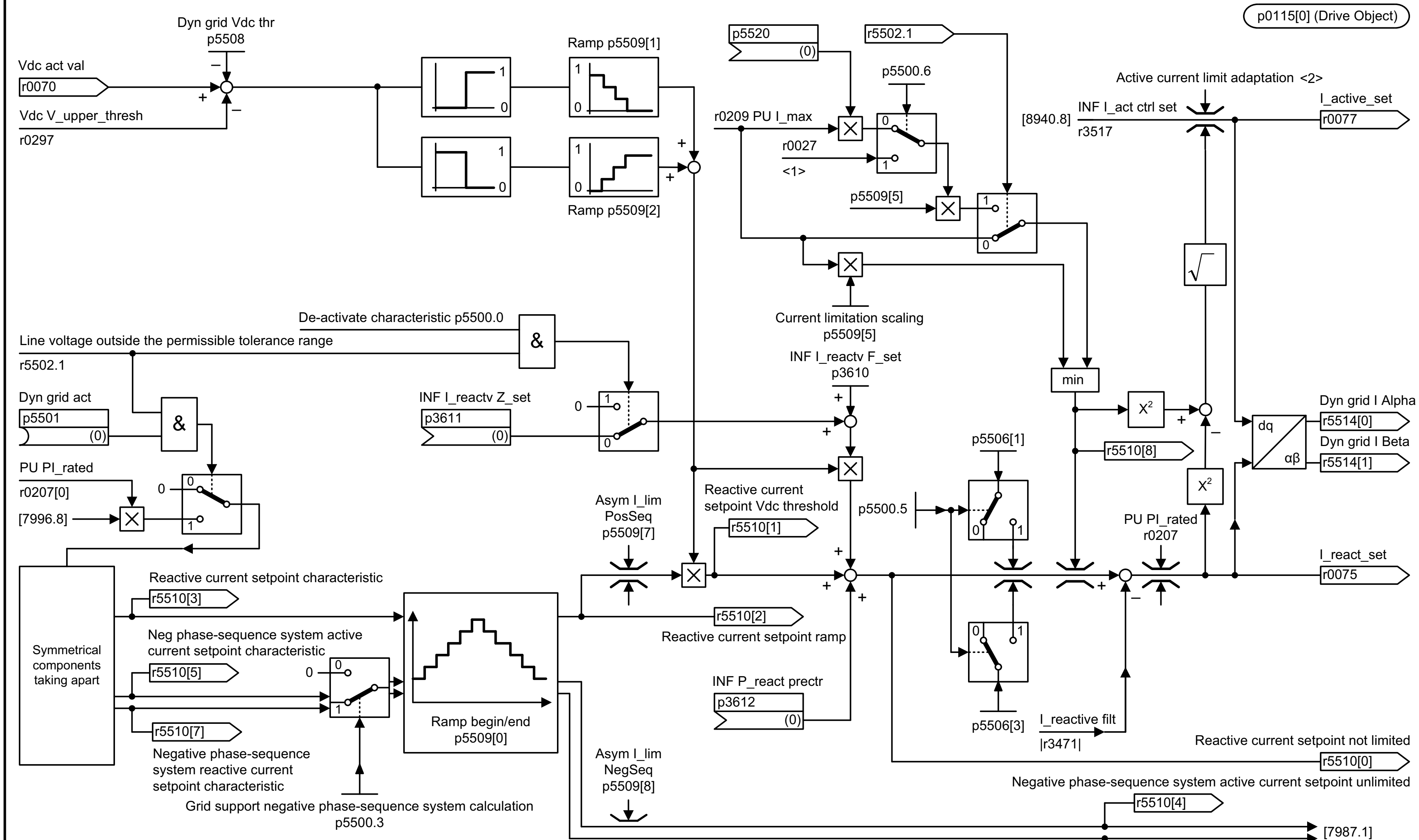


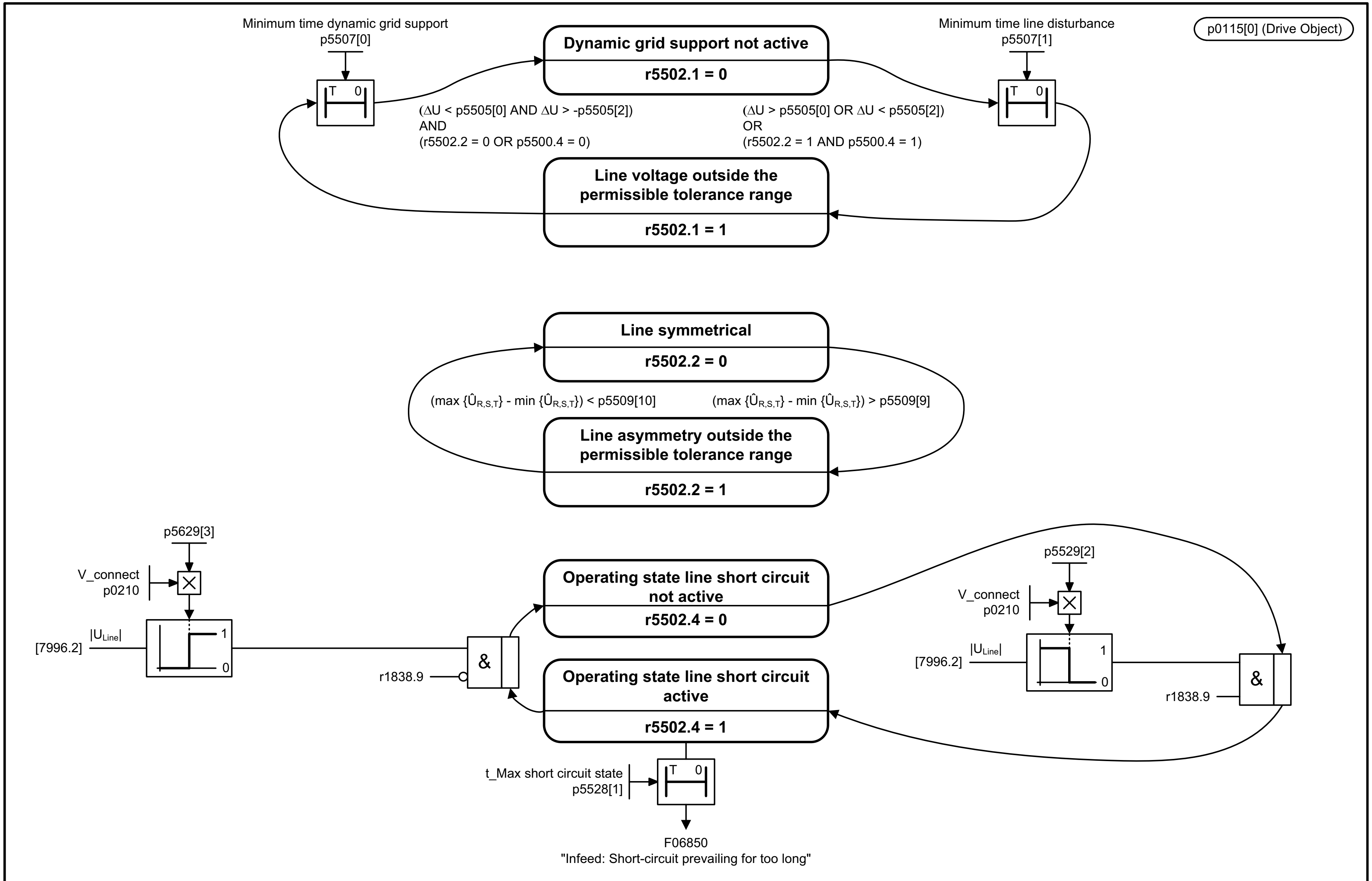
Fig. 3-294 7997 – Current limits (p5501 = 1)



<1> Instantaneous value of r0027 at the start of FRT.
<2> p5501 = 1:
Until reaching the Vdc threshold (p5508), idle current takes higher priority than active current.

1	2	3	4	5	6	7	8

DO: A_INF, R_INF	fp_7997_01_eng.vsd	Function diagram	- 7997 -
Dynamic grid support (r0108.7 = 1) - Current limitation	06.05.16 V05.01.01	SINAMICS S120	

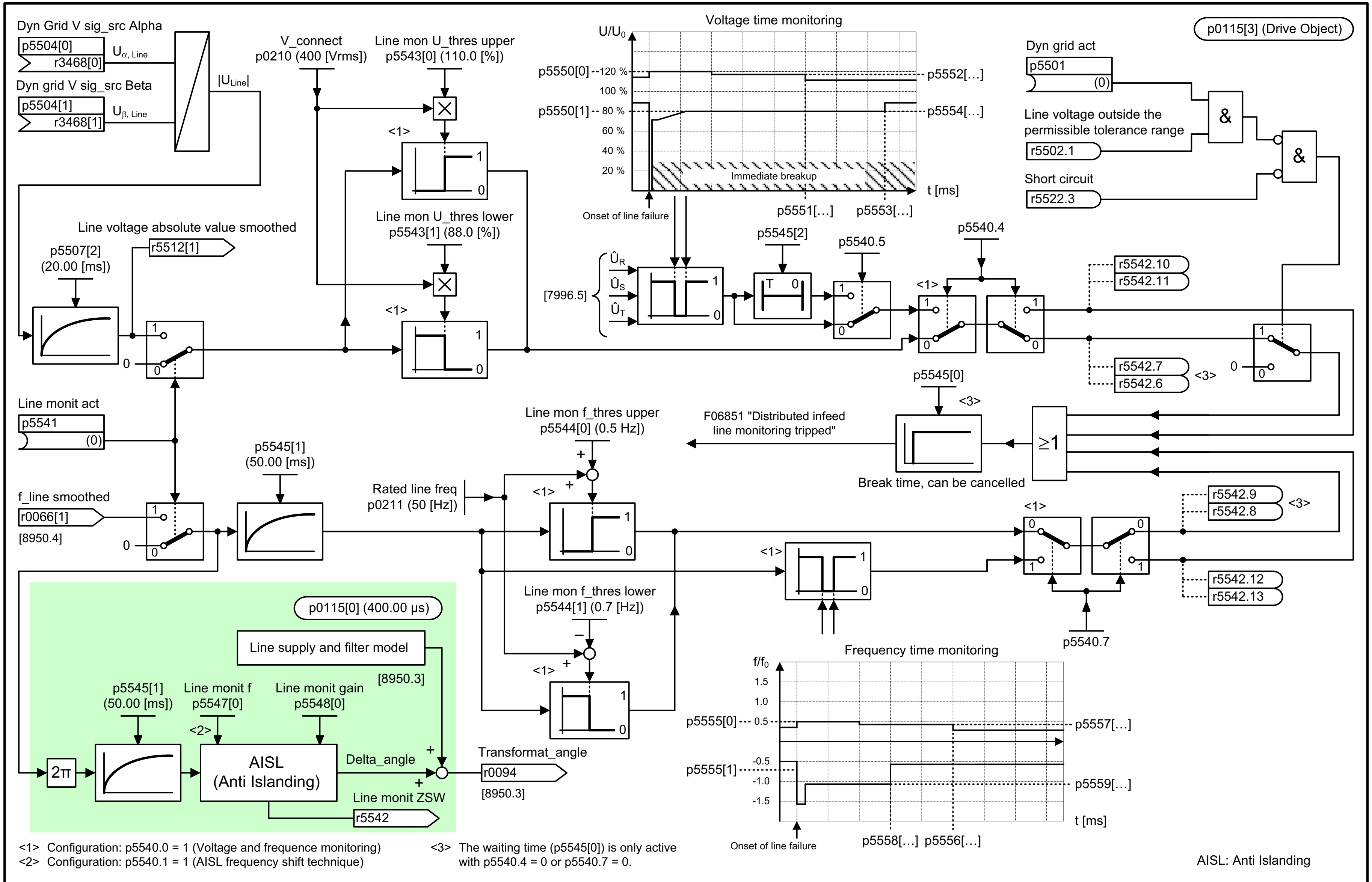


1	2	3	4	5	6	7	8

DO: A_INF, R_INF	fp_7998_01_eng.vsd	Function diagram	- 7998 -
Dynamic grid support (r0108.7 = 1) - Sequence control	04.04.16 V05.01.01	SINAMICS S120	

Fig. 3-295 7998 – Sequence control

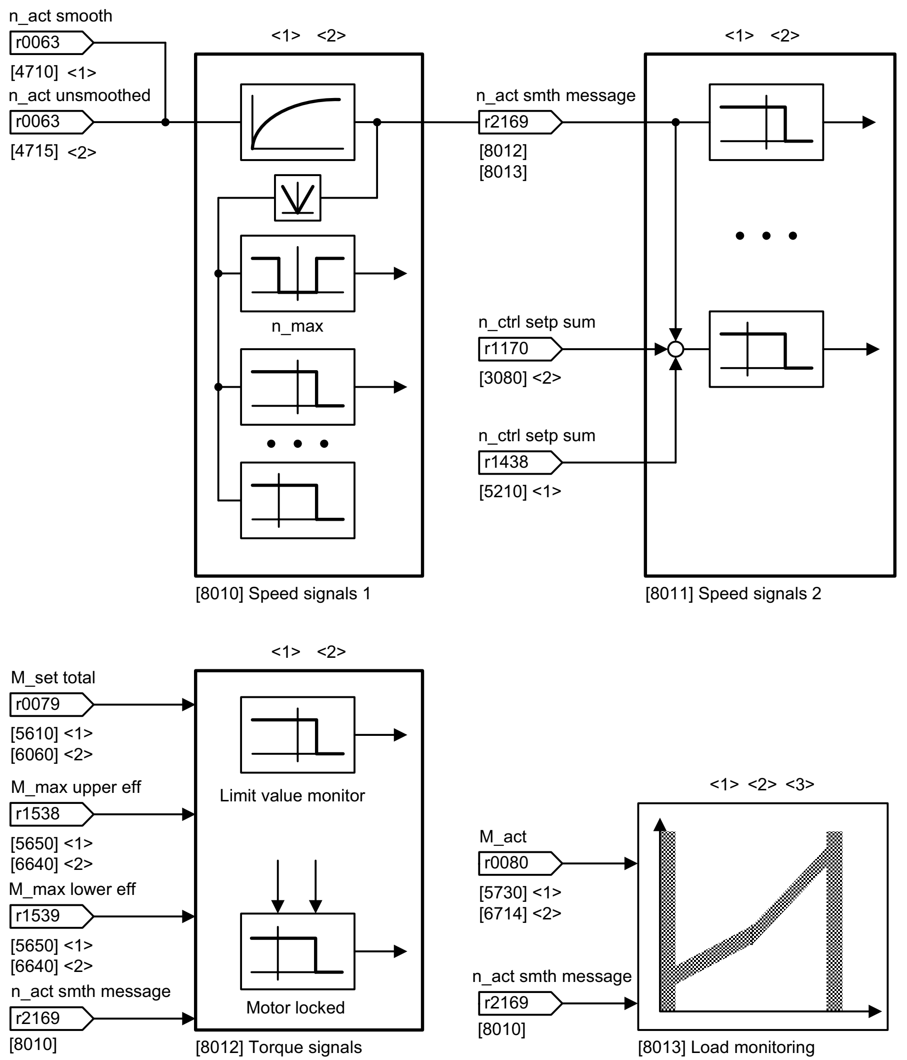
Fig. 3-296 7999 – Grid monitoring anti-islanding



1	2	3	4	5	6	7	8
DO: A_INF, R_INF					fp_7999_01_eng.vsd	Function diagram	- 7999 -
Dynamic grid support (r0108.7 = 1) - Line monitoring, anti-islanding					14.05.18 V05.01.01	SINAMICS S120	

3.31 Signals and monitoring functions

Function diagrams



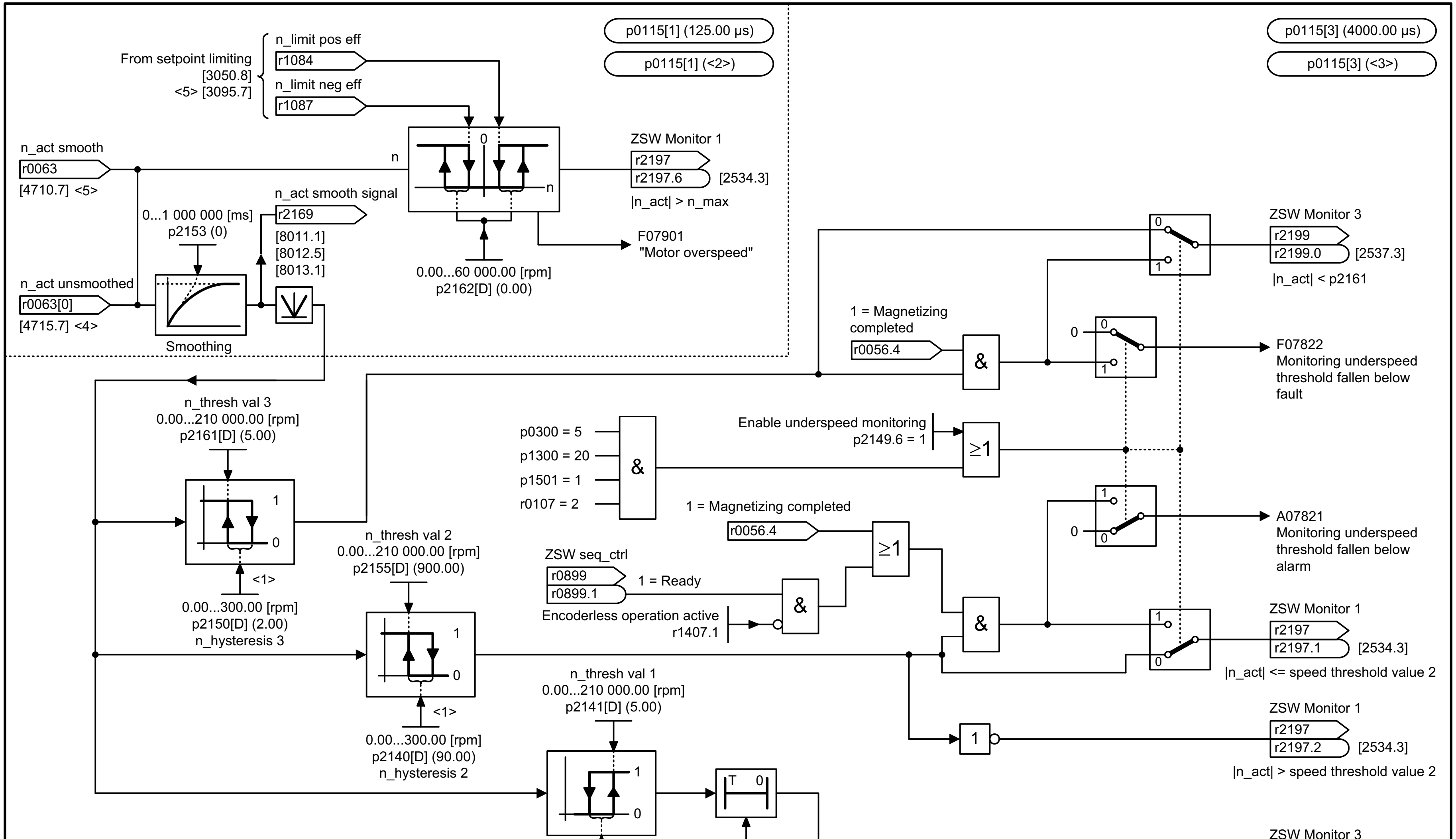
<1> Only for SERVO.
<2> Only for VECTOR.
<3> Only for r0108.17 = 1.

1	2	3	4	5	6	7	8

DO: All objects	fp_8005_51_eng.vsd	Function diagram	- 8005 -
Signals and monitoring functions - Overview	12.03.13 V05.01.01	SINAMICS	

Fig. 3-297 8005 – Overview

Fig. 3-298 8010 – Speed signals 1

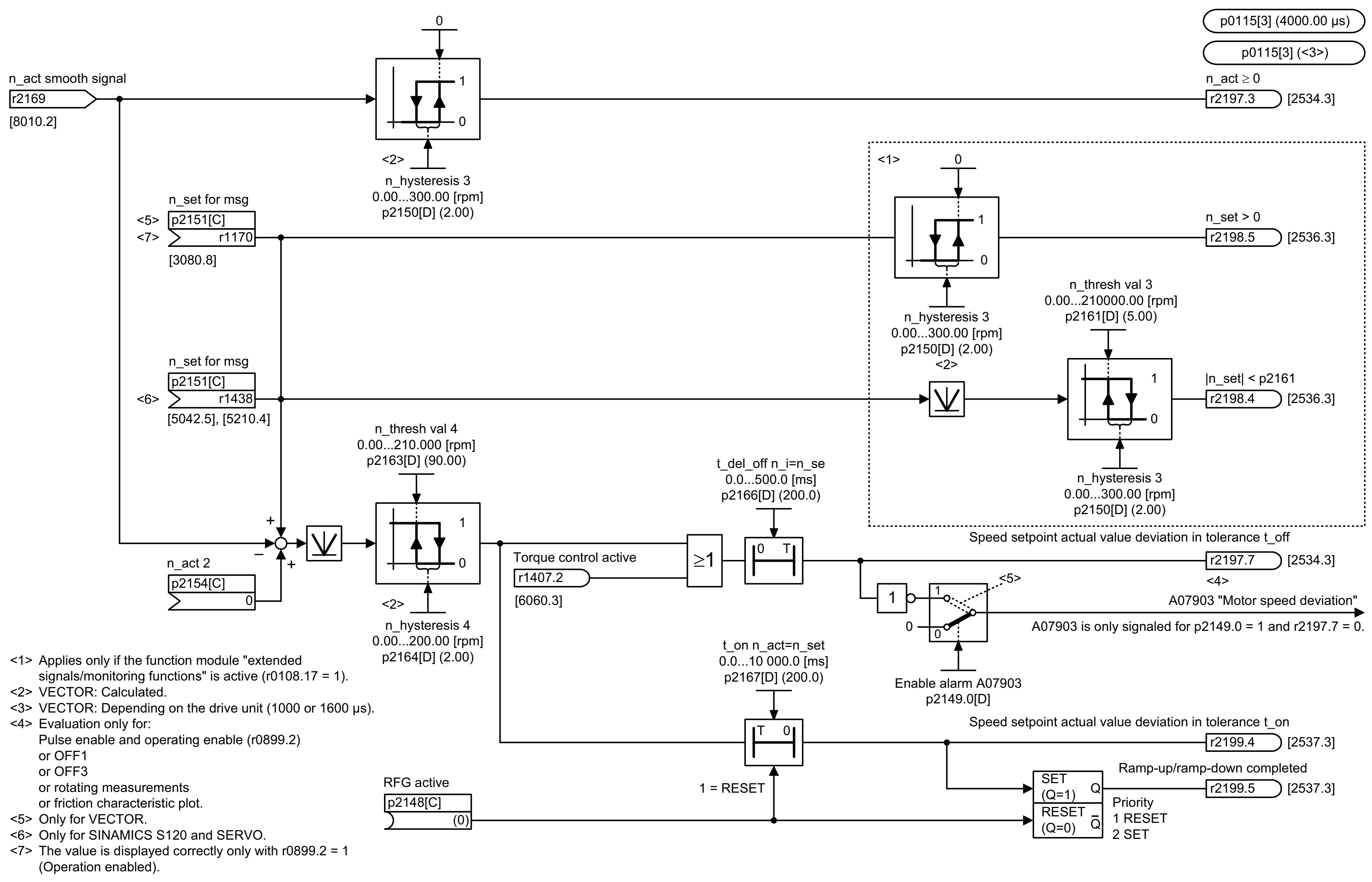


<1> VECTOR: Calculated.
<2> VECTOR: Depending on the drive unit (250 or 400 µs).
<3> VECTOR: Depending on the drive unit (1000 or 1600 µs).
<4> Only for VECTOR.
<5> Only for SINAMICS S120 and SERVO.

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_8010_54_eng.vsd	Function diagram	- 8010 -
Signals and monitoring functions - Speed signals 1	01.06.16 V05.01.01	S120/S150/G130/G150	

Fig. 3-299 8011 – Speed signals 2

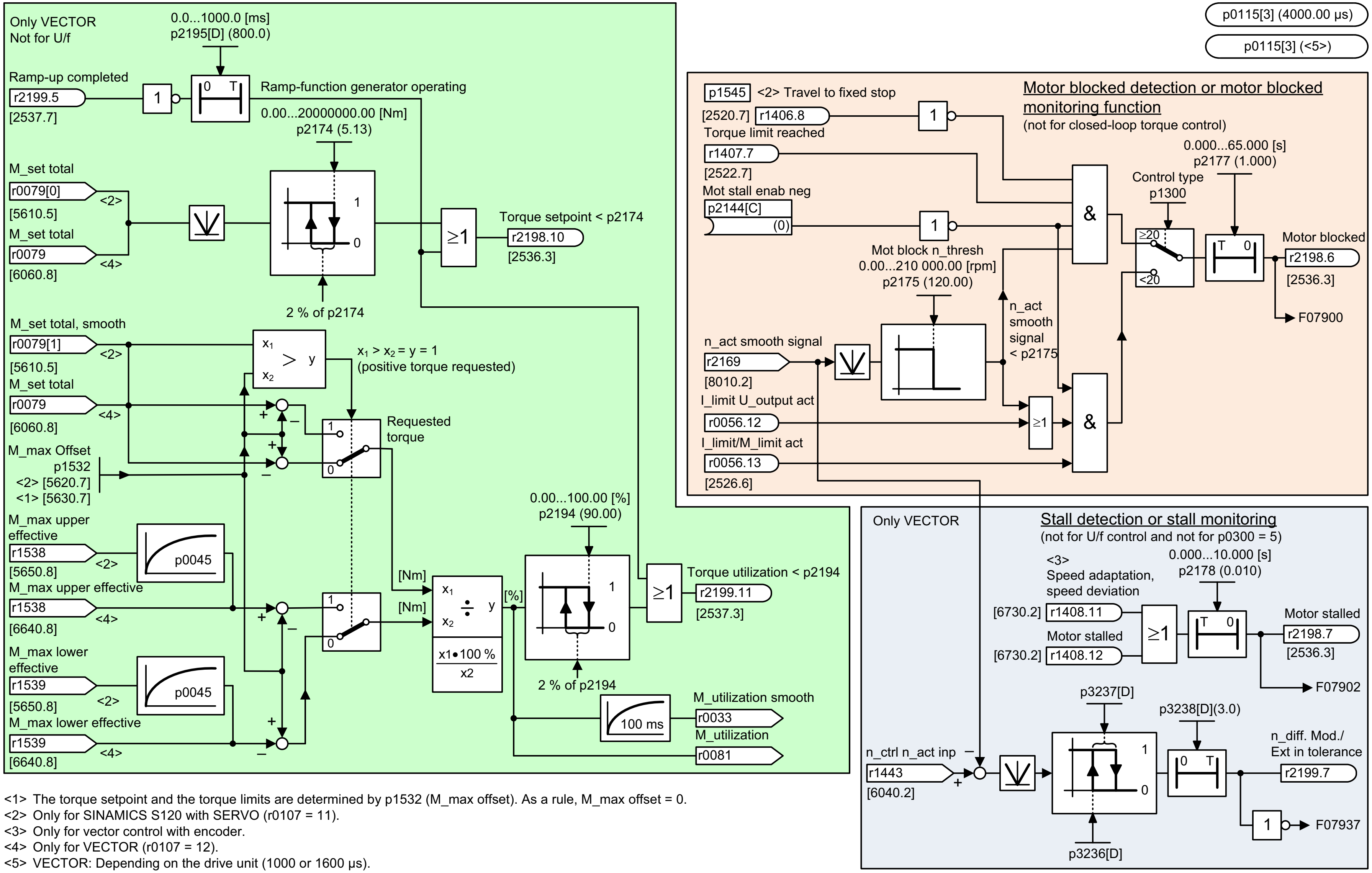


<1> Applies only if the function module "extended signals/monitoring functions" is active (r0108.17 = 1).
<2> VECTOR: Calculated.
<3> VECTOR: Depending on the drive unit (1000 or 1600 µs).
<4> Evaluation only for:
Pulse enable and operating enable (r0899.2)
or OFF1
or OFF3
or rotating measurements
or friction characteristic plot.
<5> Only for VECTOR.
<6> Only for SINAMICS S120 and SERVO.
<7> The value is displayed correctly only with r0899.2 = 1 (Operation enabled).

1	2	3	4	5	6	7	8

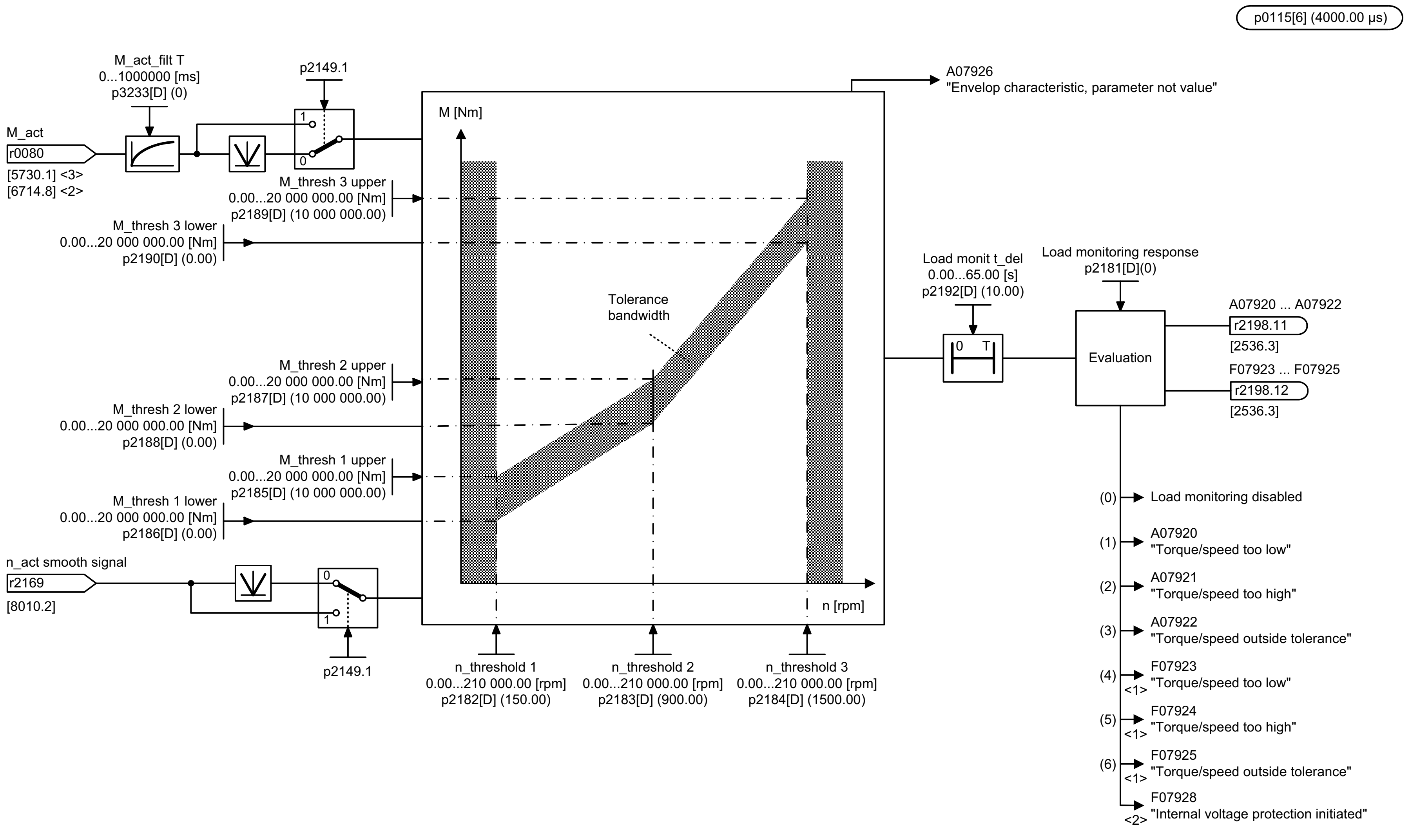
DO: SERVO, VECTOR	fp_8011_54_eng.vsd	Function diagram	- 8011 -
Signals and monitoring functions - Speed signals 2	11.04.12 V05.01.01	S120/S150/G130/G150	

Fig. 3-300 8012 – Torque signals, motor blocked/stalled



<1> The torque setpoint and the torque limits are determined by p1532 (M_max offset). As a rule, M_max offset = 0.
<2> Only for SINAMICS S120 with SERVO (r0107 = 11).
<3> Only for vector control with encoder.
<4> Only for VECTOR (r0107 = 12).
<5> VECTOR: Depending on the drive unit (1000 or 1600 µs).

1	2	3	4	5	6	7	8
DO: SERVO, VECTOR					fp_8012_54_eng.vsd	Function diagram	- 8012 -
Signals and monitoring functions - Torque signals, motor blocked/stalled					16.05.14 V05.01.01	S120/S150/G130/G150	

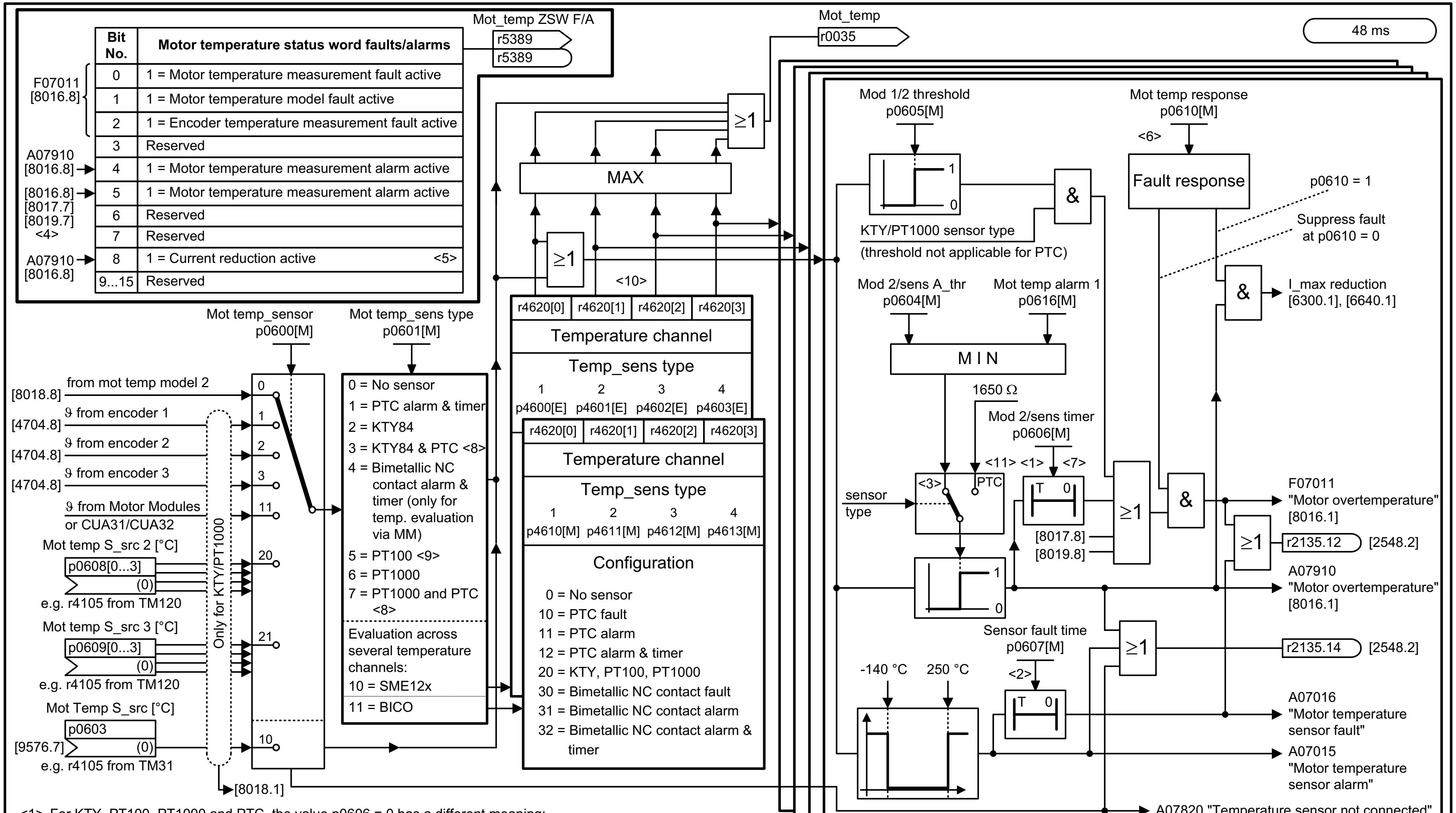


<1> The response to these faults can be defined.
<2> Only for VECTOR.
<3> Only for SERVO.

1	2	3	4	5	6	7	8
DO: SERVO, VECTOR					fp_8013_54_eng.vsd	Function diagram	- 8013 -
Signals and monitoring functions - Load monitoring (r0108.17 = 1)					11.04.12 V05.01.01	S120/S150/G130/G150	

Fig. 3-301 8013 – Load monitoring (r0108.17 = 1)

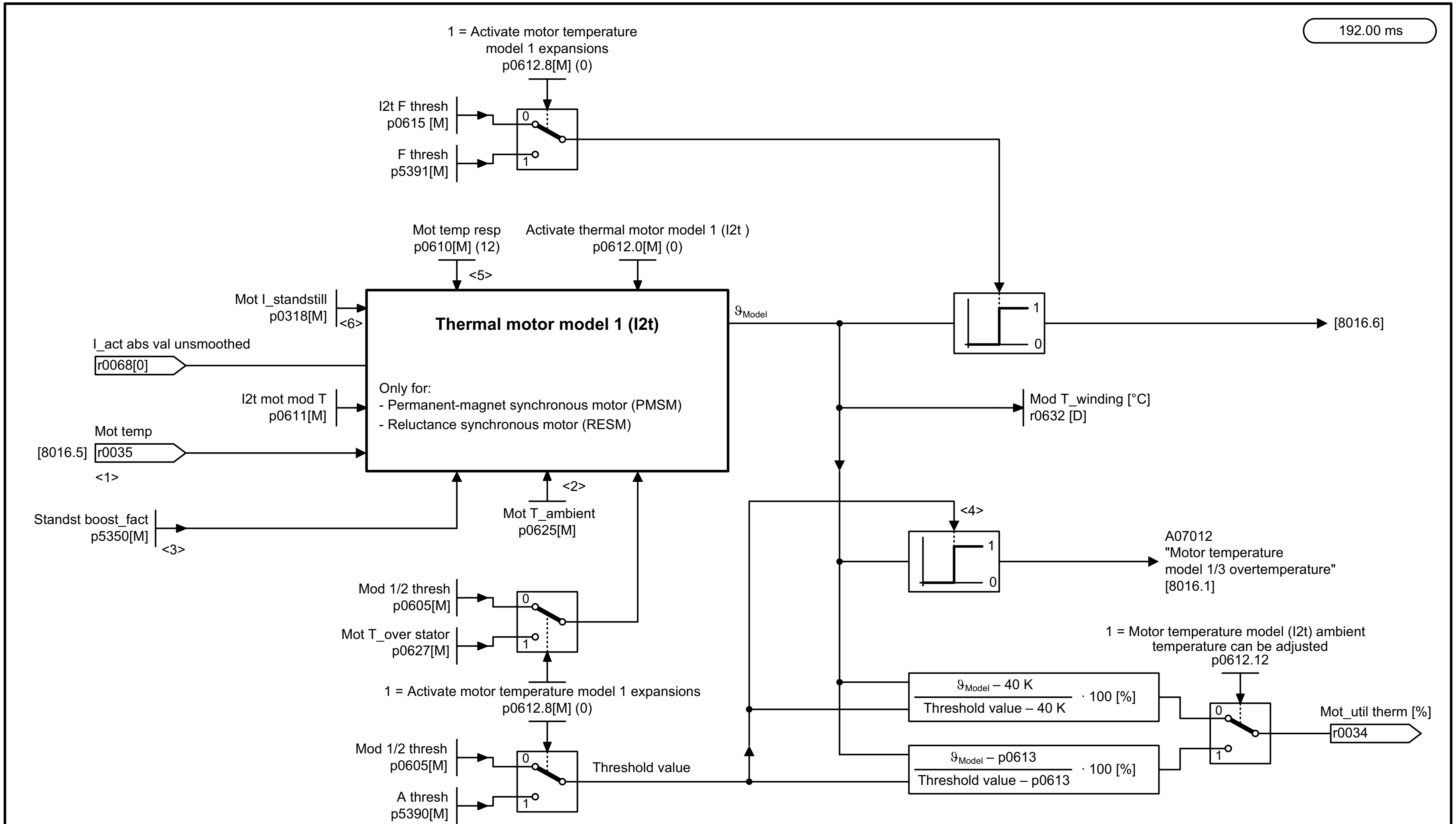
Fig. 3-302 8016 – Thermal monitoring, motor, motor temperature status word faults/alarms



<1> For KTY, PT100, PT1000 and PTC, the value p0606 = 0 has a different meaning:
KTY, PT100, PT1000: 0 ≙ The output of the timer is always switched out (logical 0)
PTC: 0 ≙ Delay time = 0 s
<2> The switch-in delay p0607 = 0 suppresses fault F07016.
<3> For KTY, PT100, PT1000 and "No sensor", temperature as defined in the model.
<4> Motor temperature model 1/3: A07012, Motor temperature model 2: A07910
<5> Only for p0610 = 1.
<6> Applies only for VECTOR.
<7> p0606 does not work for alarms via p0616.
<8> Only for motors with DRIVE-CLiQ.
<9> p0601 = 5 can only be evaluated if r0192.15 = 1 and p0600 = 11; PT100 is calibrated via p0624.
<10> The assignment of temperature channels 1 … 4 depends on the hardware used.
<11> The relevant rated response temperature (°C) depends on the temperature sensor chosen by the motor manufacturer.

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_8016_54_eng.vsd	Function diagram	- 8016 -
Signals and monitoring functions - Thermal monitoring motor, Mot_temp ZSW F/A	13.09.17 V05.01.01	S120/S150/G130/G150	

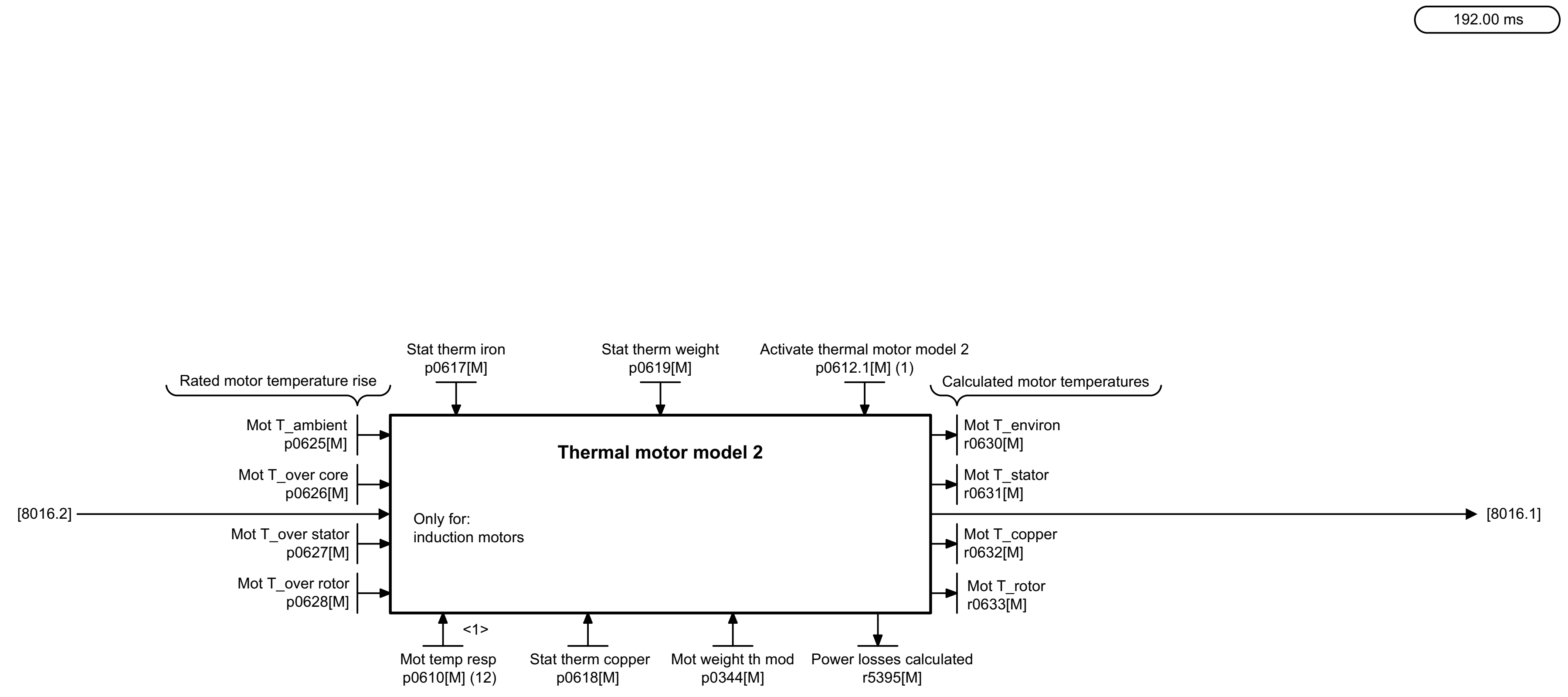


<1> Only if there is a temperature sensor (p0601 = 2).
<2> Only if <1> are not met.
<3> Only if p0610.12 = 1.
<4> p0605 also determines the target temperature at r0034 = 100 %. Thus, p0605 does not influence the time up to warning A07012.
<5> If p0610 = 12.
<6> The lower p0611 and the lower the reference current of the thermal motor model 1 (I2t), the faster A07012 is reached.

1	2	3	4	5	6	7	8
DO: SERVO, VECTOR					fp_8017_54_eng.vsd	Function diagram	- 8017 -
Signals and monitoring functions - Thermal motor model 1 (I2t)					01.09.14 V05.01.01	S120/S150/G130/G150	

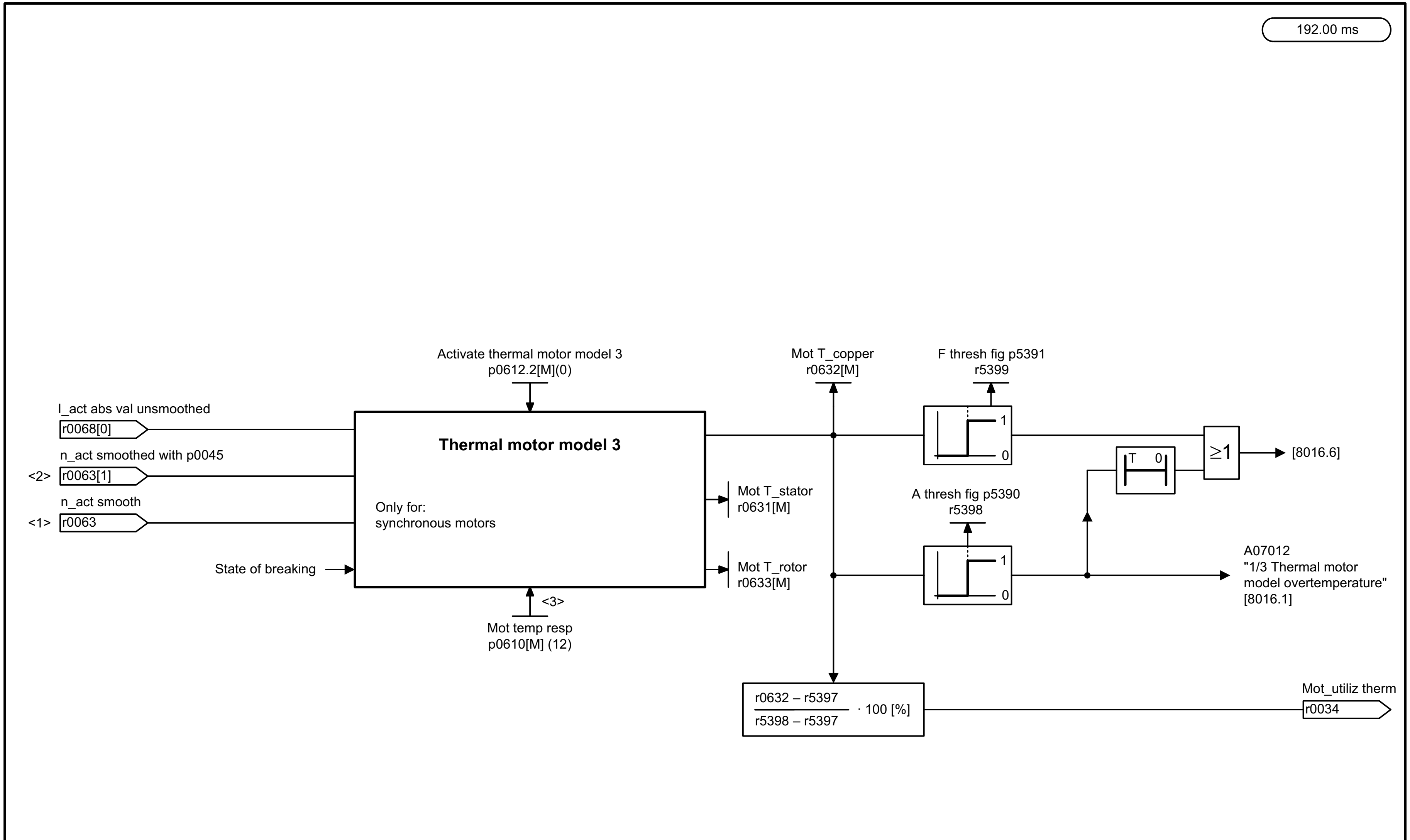
Fig. 3-303 8017 – Motor temperature model 1 (I2t)

Fig. 3-304 8018 – Motor temperature model 2



<1> Only if p0610.12 = 1.

1	2	3	4	5	6	7	8
DO: SERVO, VECTOR					fp_8018_54_eng.vsd	Function diagram	- 8018 -
Signals and monitoring functions - Thermal motor model 2					23.12.15 V05.01.01	S120/S150/G130/G150	



<1> Only for SERVO.
<2> Only for VECTOR.
<3> Only if p0610.12 = 1.

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR	fp_8019_54_eng.vsd	Function diagram	- 8019 -
Signals and monitoring functions - Thermal motor model 3	23.12.15 V05.01.01	S120/S150/G130/G150	

Fig. 3-305 8019 – Motor temperature model 3

Fig. 3-306 8020 – Separately excited synchronous motor (SESM, p0300 = 5)

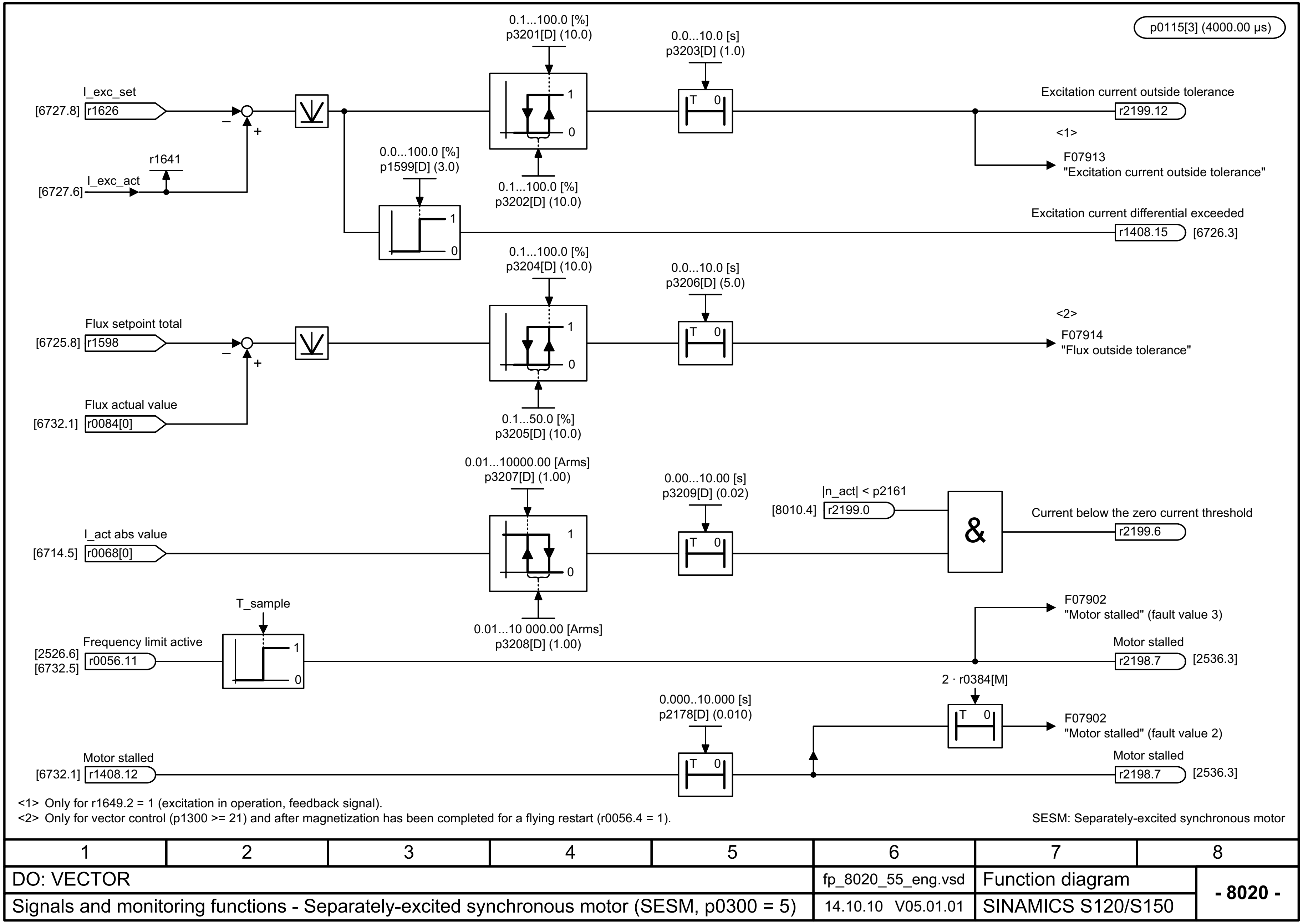
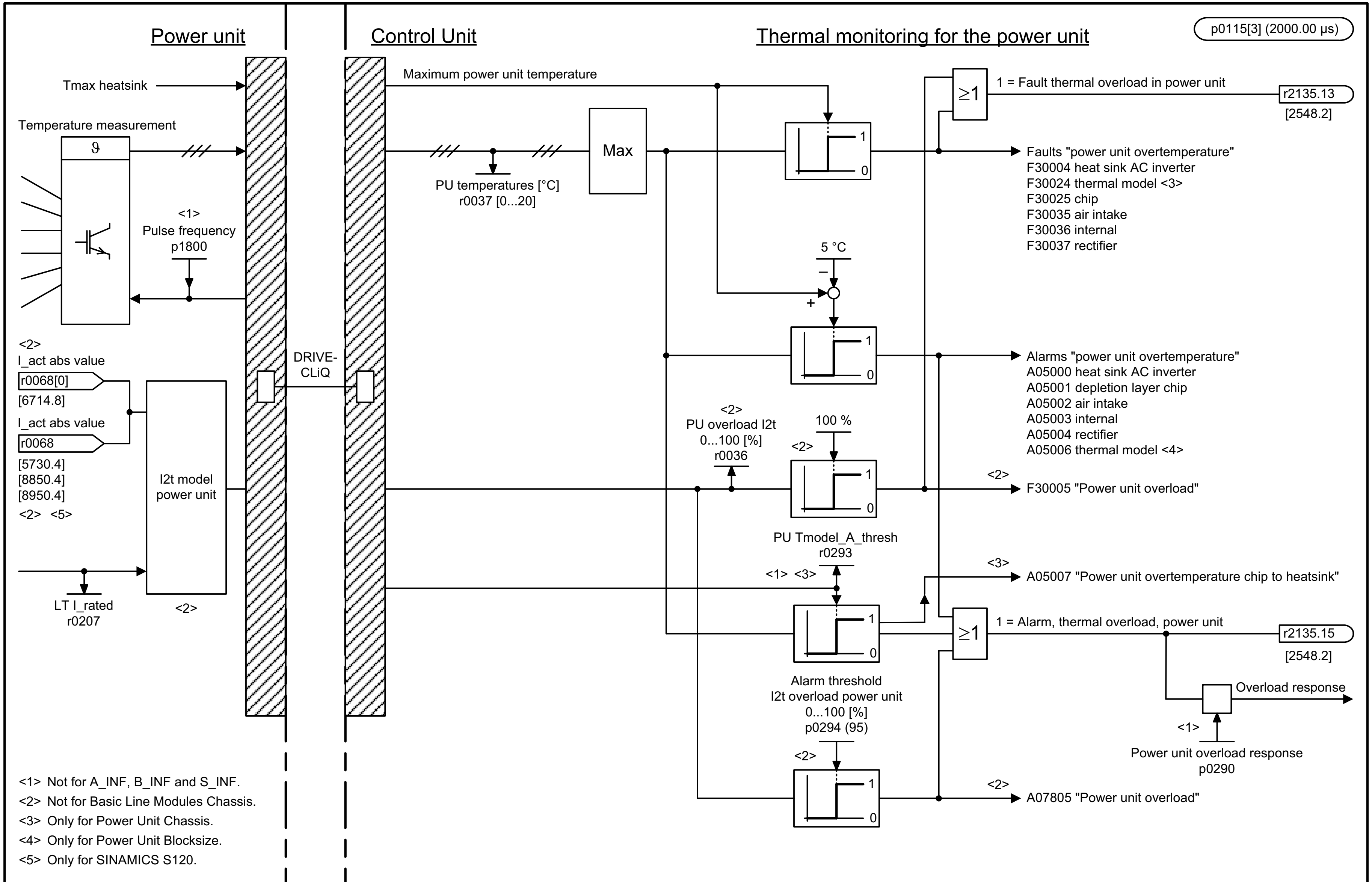


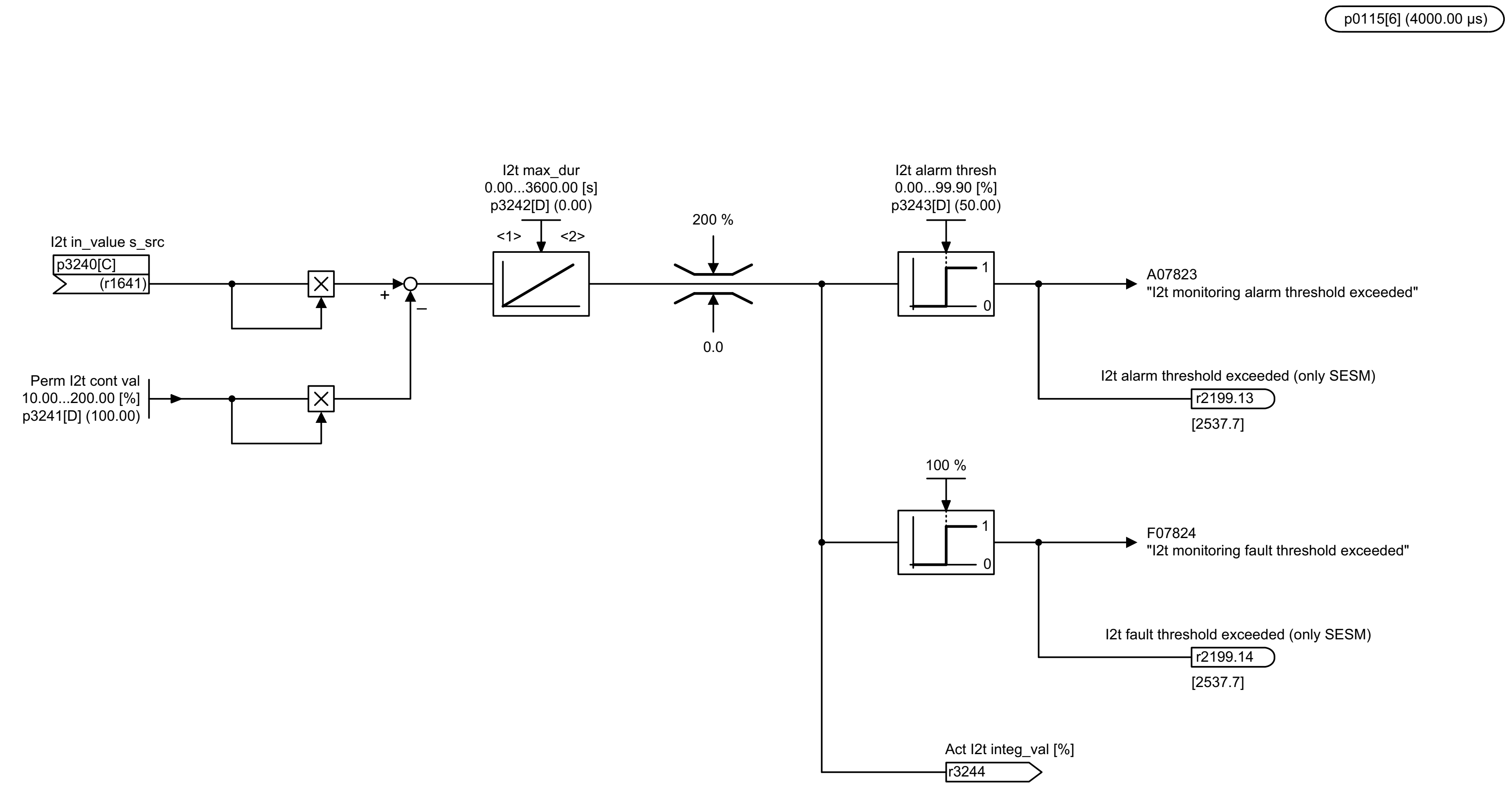
Fig. 3-307 8021 – Thermal monitoring, power unit



1	2	3	4	5	6	7	8

DO: A_INF, B_INF, S_INF, SERVO, VECTOR	fp_8021_54_eng.vsd	Function diagram	- 8021 -
Signals and monitoring functions - Thermal monitoring, power unit	21.08.17 V05.01.01	S120/S150/G130/G150	

Fig. 3-308 8022 – Freely parameterized I2t monitoring (SESM)



<1> The following is valid for activation:
The function module "Extended messages/monitoring" must be activated (r0108.17 = 1).
The maximum duration must be set to a value exceeding zero (p3242 > 0).
A separately-excited synchronous motor (SESM) is used.

<2> p3242 (setting example):
It should be possible to use 150 % of the input variable for a duration of 3 s at a permissible continuous rating of p3241 = 110 %.
→ p3242 = ((150 x 150 - 110 x 110) / ((100 + 110) x (100 + 110) - 110 + 110) x 3 s = 0.975 s

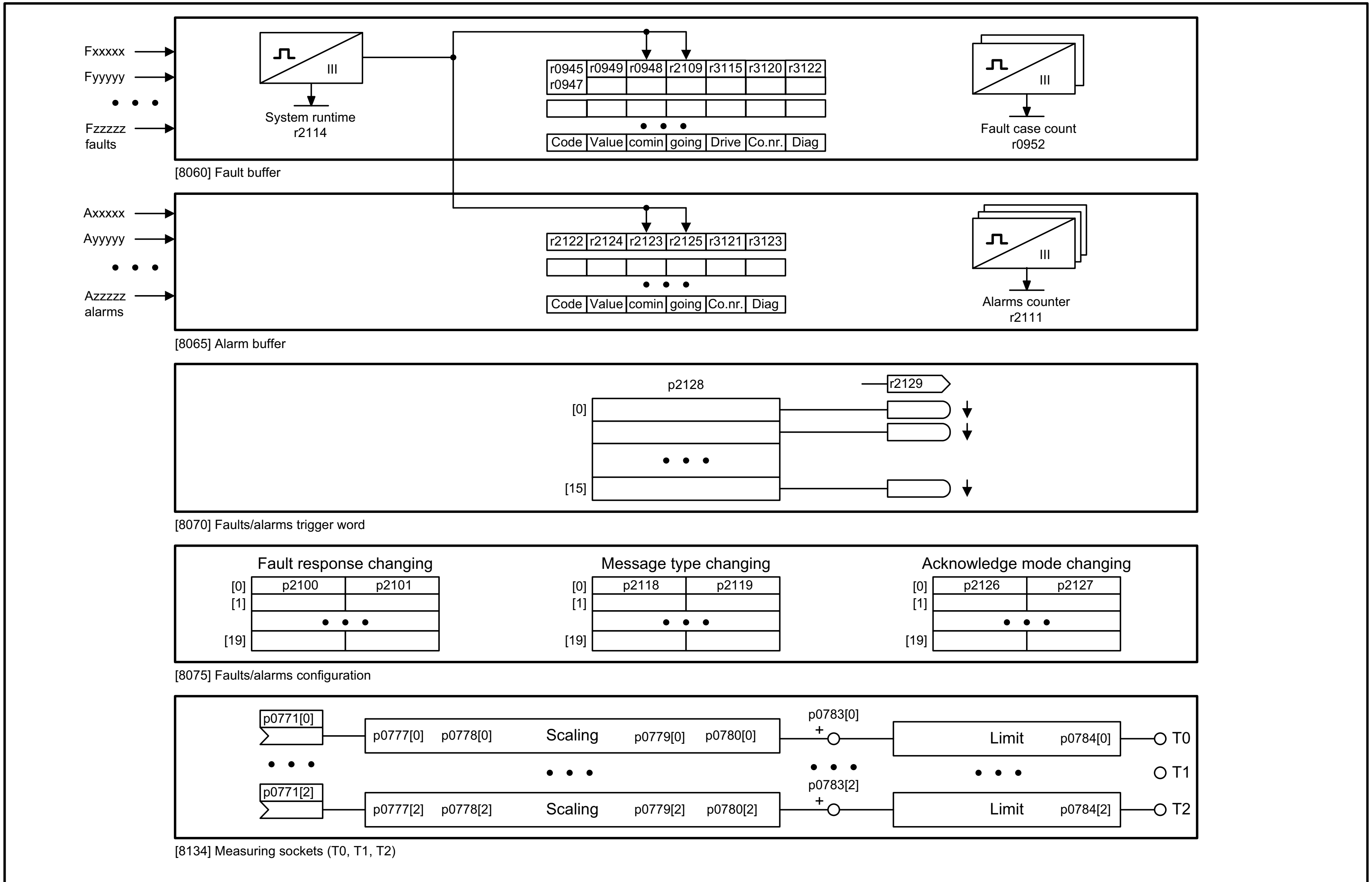
SESM: Separately-excited synchronous motor

1	2	3	4	5	6	7	8
DO: VECTOR					fp_8022_54_eng.vsd	Function diagram	- 8022 -
Signals and monitoring functions - Freely parameterizable I2t monitoring (SESM)					01.06.16 V05.01.01	S120/S150/G130/G150	

3.32 Diagnostics

Function diagrams

Fig. 3-309 8050 – Overview



1	2	3	4	5	6	7	8
DO: All objects					fp_8050_51_eng.vsd	Function diagram	- 8050 -
Diagnostics - Overview					02.02.15 V05.01.01	SINAMICS	

Fig. 3-310 8060 – Fault buffer

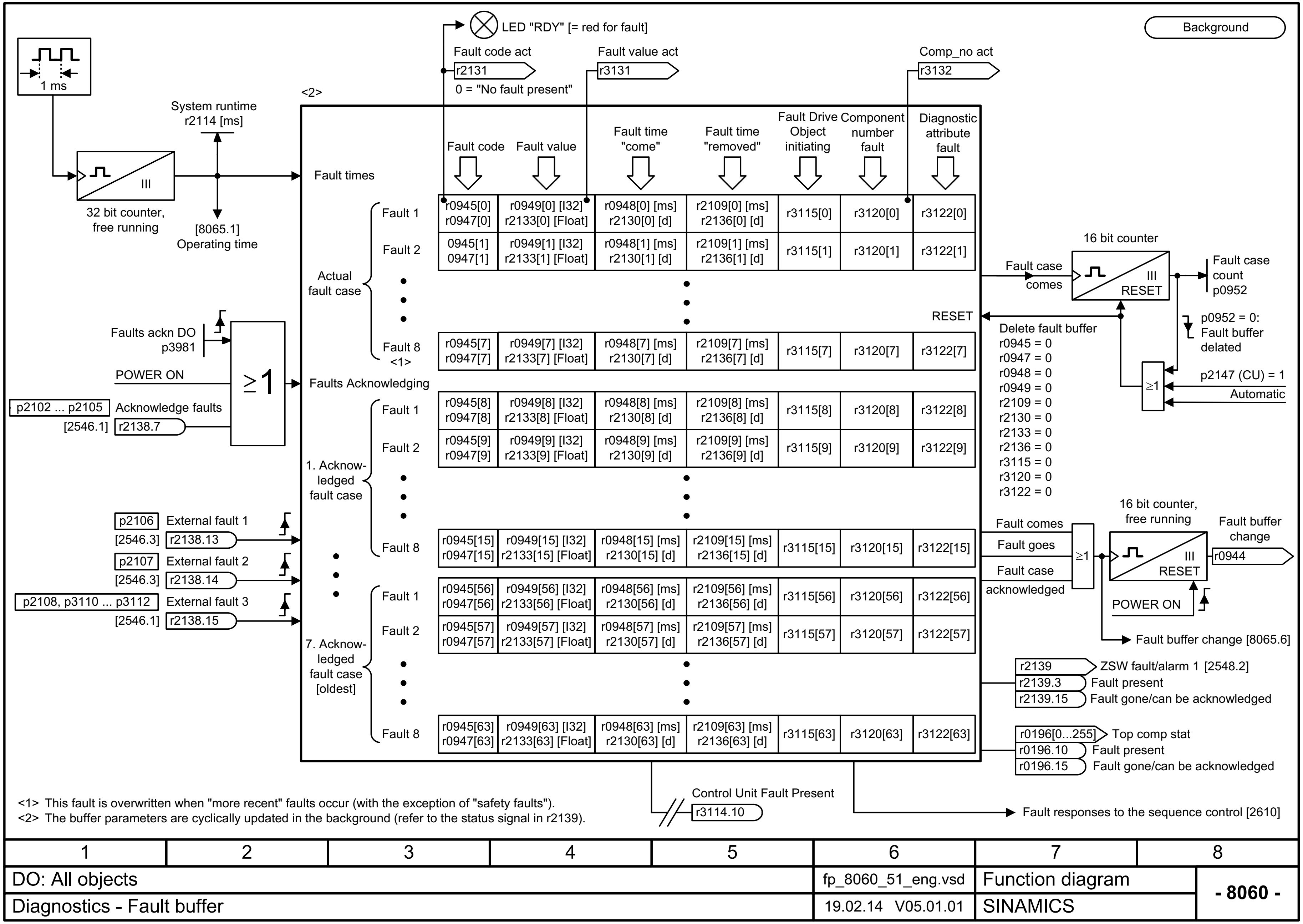
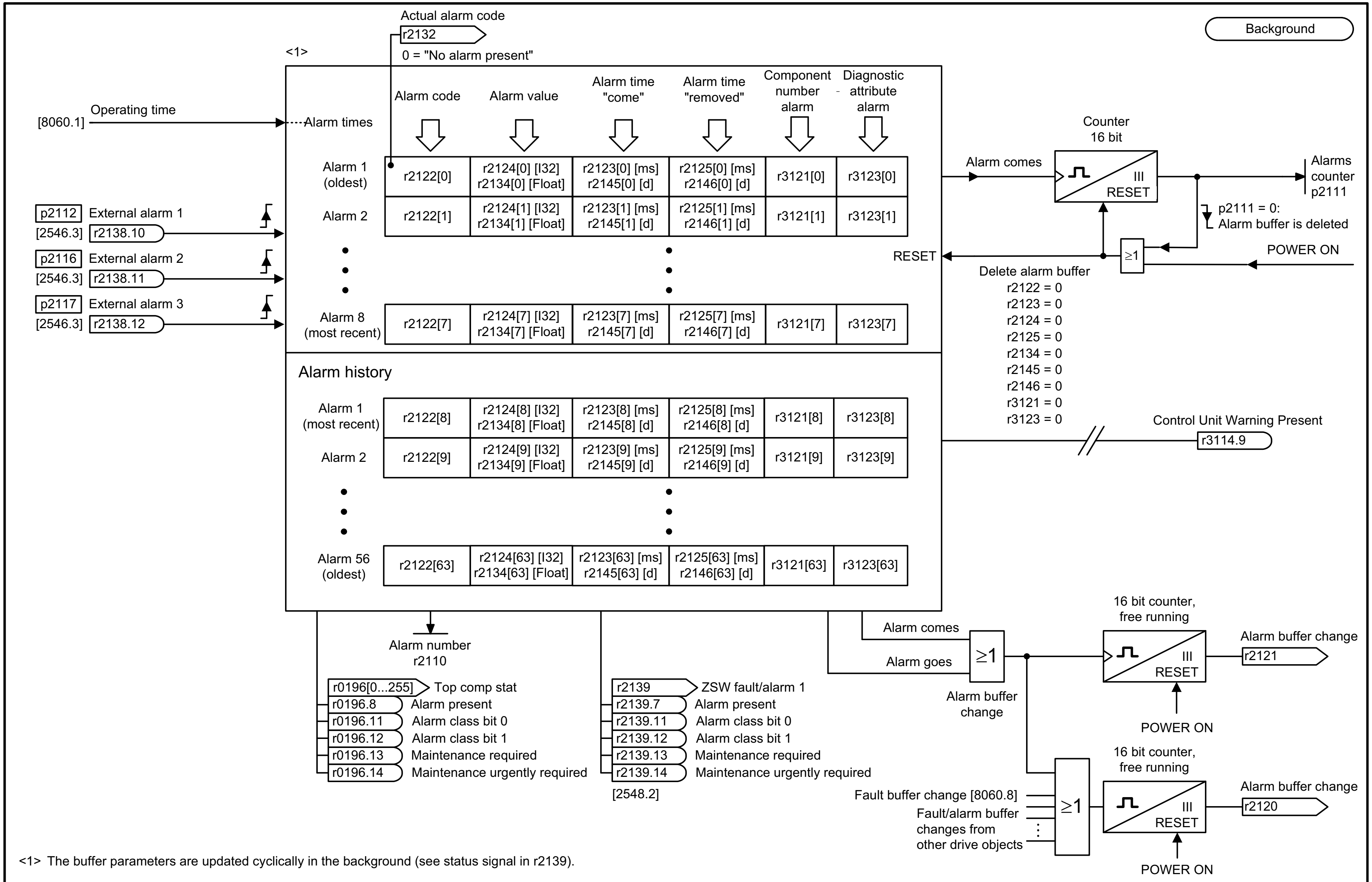
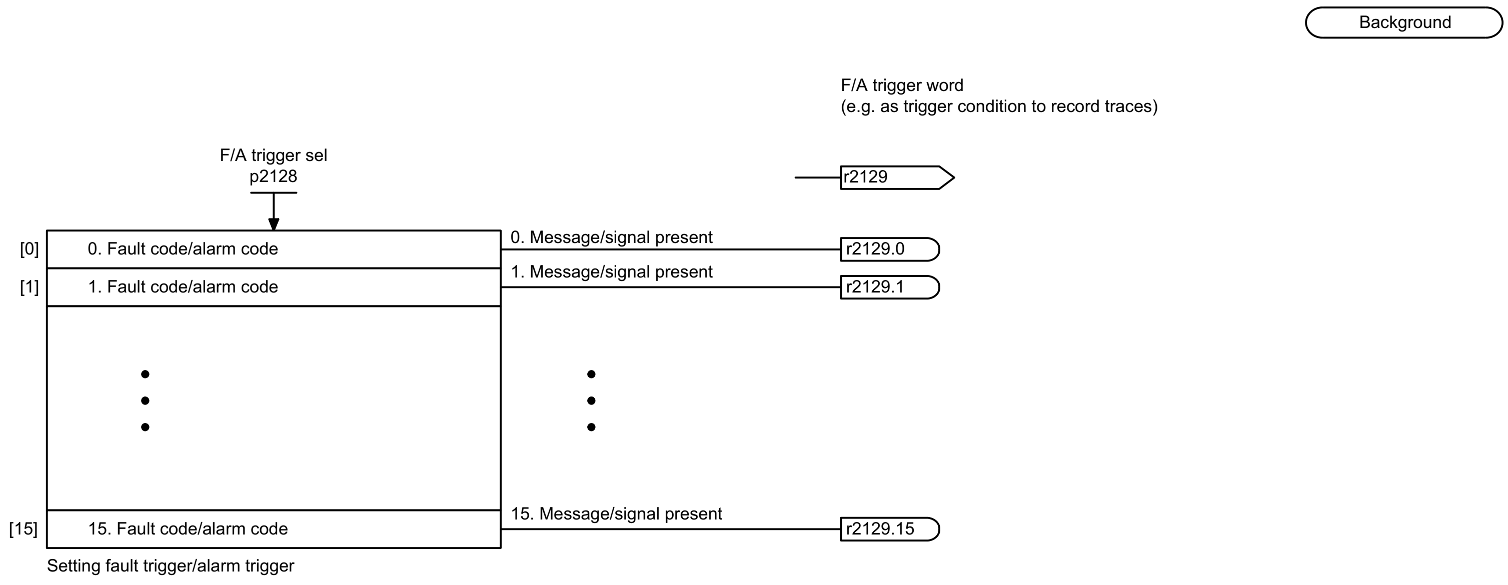


Fig. 3-311 8065 – Alarm buffer



1	2	3	4	5	6	7	8

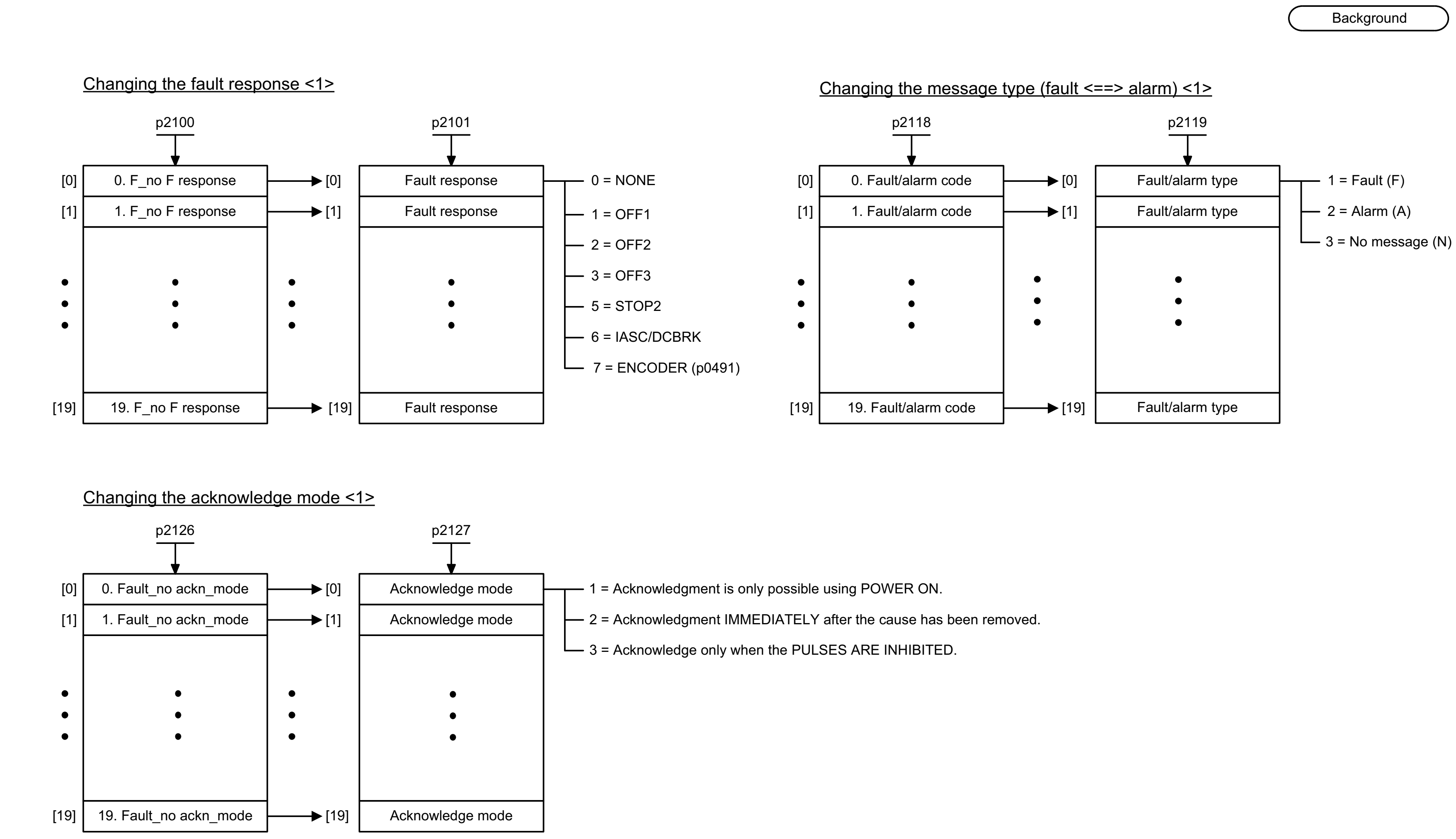
DO: All objects	fp_8065_51_eng.vsd	Function diagram	- 8065 -
Diagnostics - Alarm buffer	25.02.14 V05.01.01	SINAMICS	



1	2	3	4	5	6	7	8
DO: All objects					fp_8070_51_eng.vsd	Function diagram	- 8070 -
Diagnostics - Faults/alarms trigger word (r2129)					05.11.13 V05.01.01	SINAMICS	

Fig. 3-312 8070 – Faults/alarms trigger word (r2129)

Fig. 3-313 8075 – Faults/alarms configuration

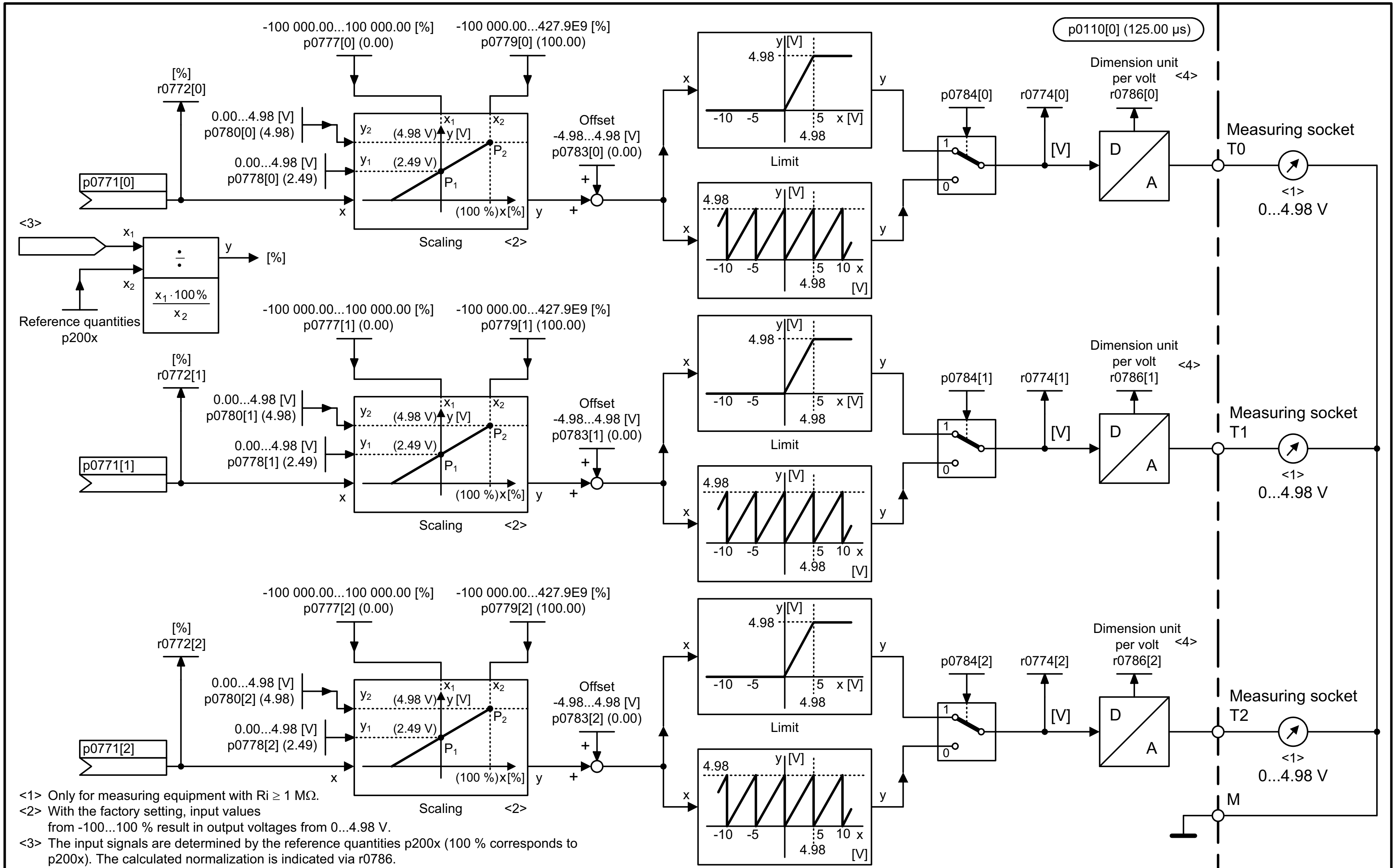


<1> The fault response, acknowledge mode and message type for all faults and alarms are set to meaningful default values in the factory setting. Changes that may be required are only possible in specific value ranges specified by SIEMENS. When the message type is changed, the supplementary information is tranferred from fault value r0949 to alarm value r2124 and vice versa.

1	2	3	4	5	6	7	8

DO: All objects	fp_8075_51_eng.vsd	Function diagram	- 8075 -
Diagnostics - Faults/alarms configuration	22.01.14 V05.01.01	SINAMICS	

Fig. 3-314 8134 – Measuring sockets (T0, T1, T2)

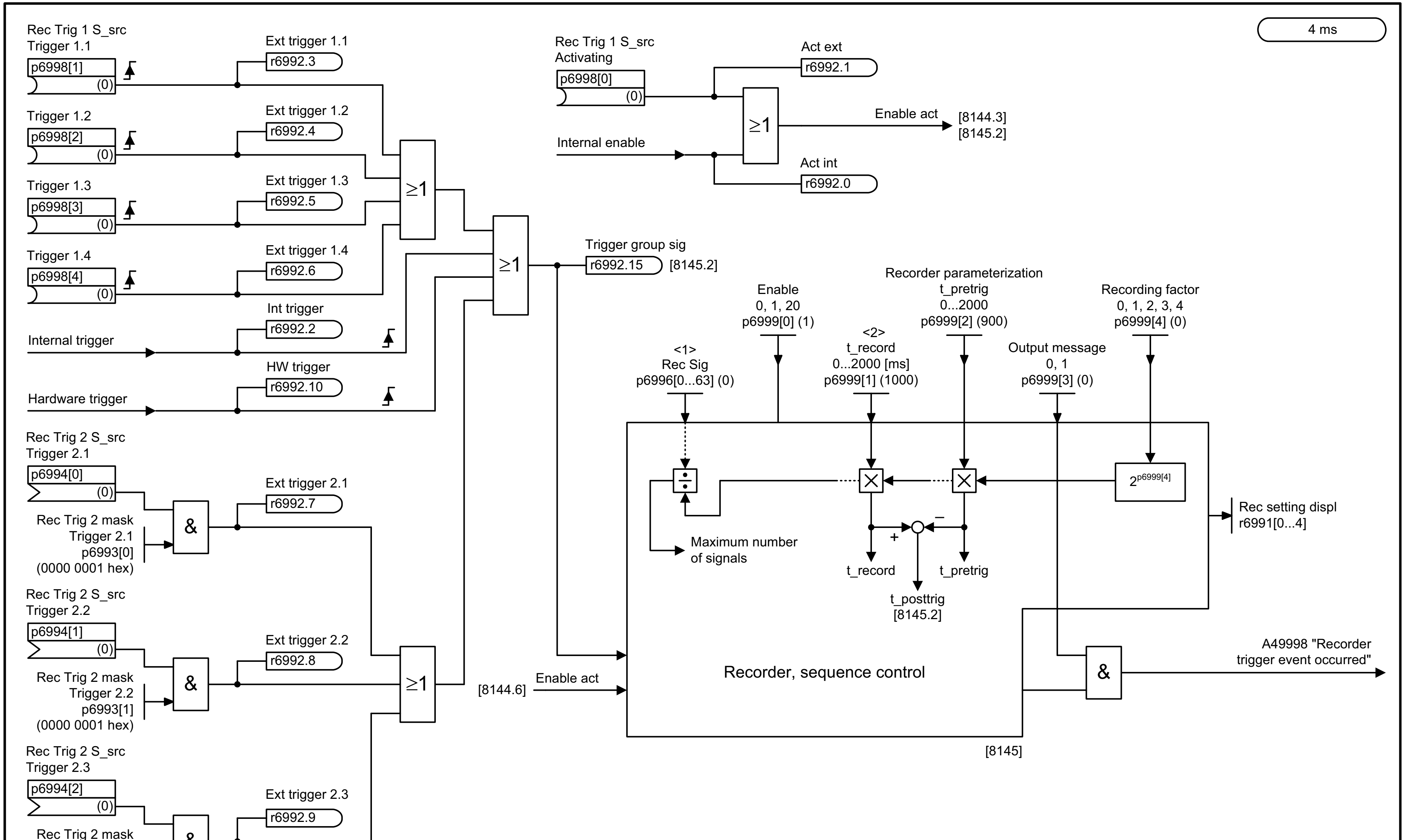


<1> Only for measuring equipment with Ri ≥ 1 MΩ.
<2> With the factory setting, input values from -100...100 % result in output voltages from 0...4.98 V.
<3> The input signals are determined by the reference quantities p200x (100 % corresponds to p200x). The calculated normalization is indicated via r0786.
<4> Example: If a speed signal is entered via p0071 and r0786 indicates 100.0, a speed change of 100 rpm results in an output voltage change of 1.0 V.

1	2	3	4	5	6	7	8

DO: CU_CX32, CU_G, CU_I, CU_MV, CU_S	fp_8134_51_eng.vsd	Function diagram	- 8134 -
Diagnostics - Measuring sockets (T0, T1, T2)	12.07.12 V05.01.01	SINAMICS	

Fig. 3-315 8144 – Recorder overview (r0108.5 = 1)

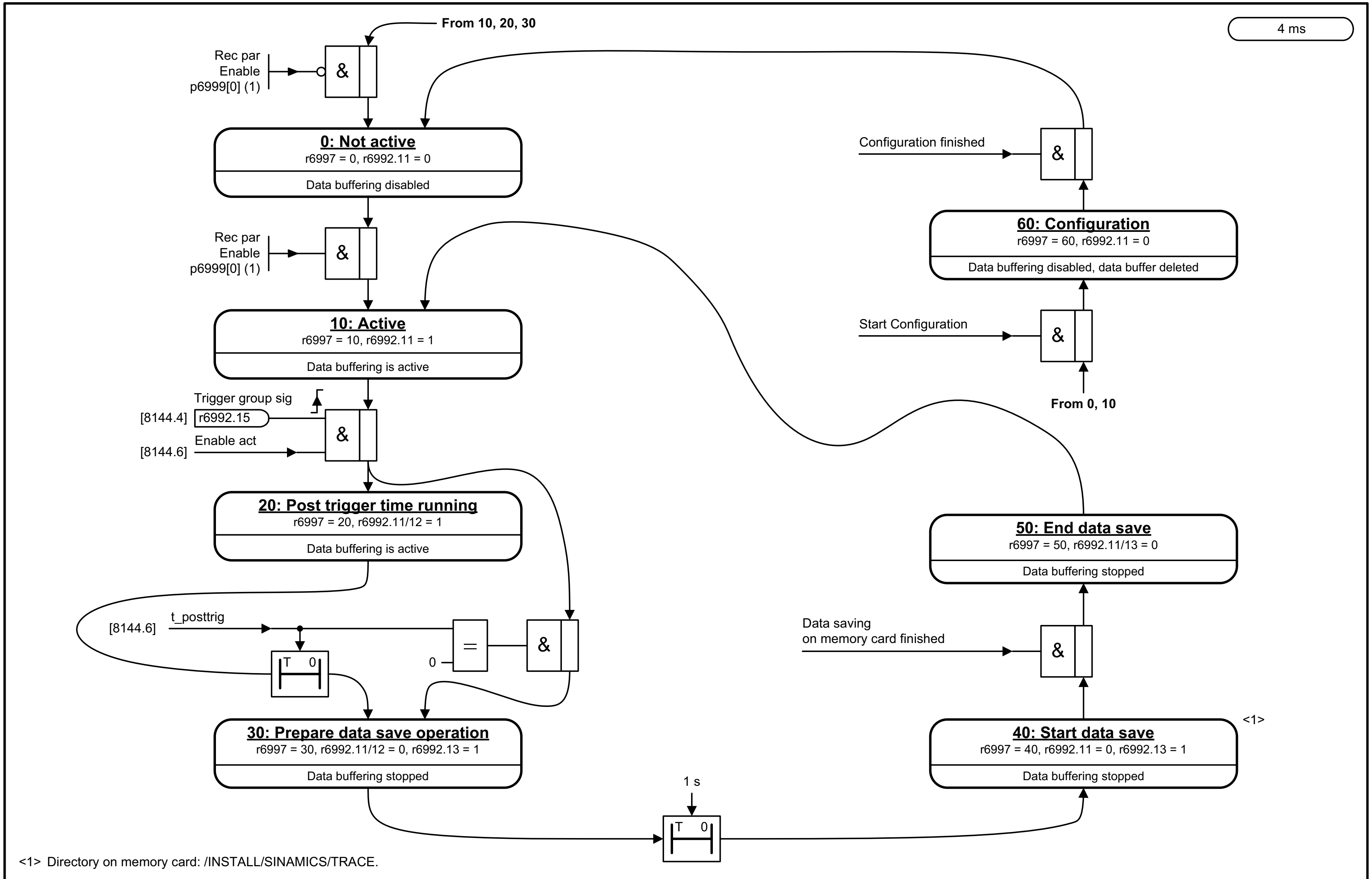


<1> Selection of signals to be recorded (parameters and internal variables).
<2> Recording time (p6999[1]) and current controller sampling time (p0115[0]) determine the size of the ring buffer.

1	2	3	4	5	6	7	8

DO: A_INF, B_INF, R_INF, S_INF, SERVO, VECTOR	fp_8144_54_eng.vsd	Function diagram	- 8144 -
Diagnostics - Recorder overview (r0108.5 = 1)	10.09.15 V05.01.01	S120/S150/G130/G150	

Fig. 3-316 8145 – Recorder sequence control (r0108.5 = 1)



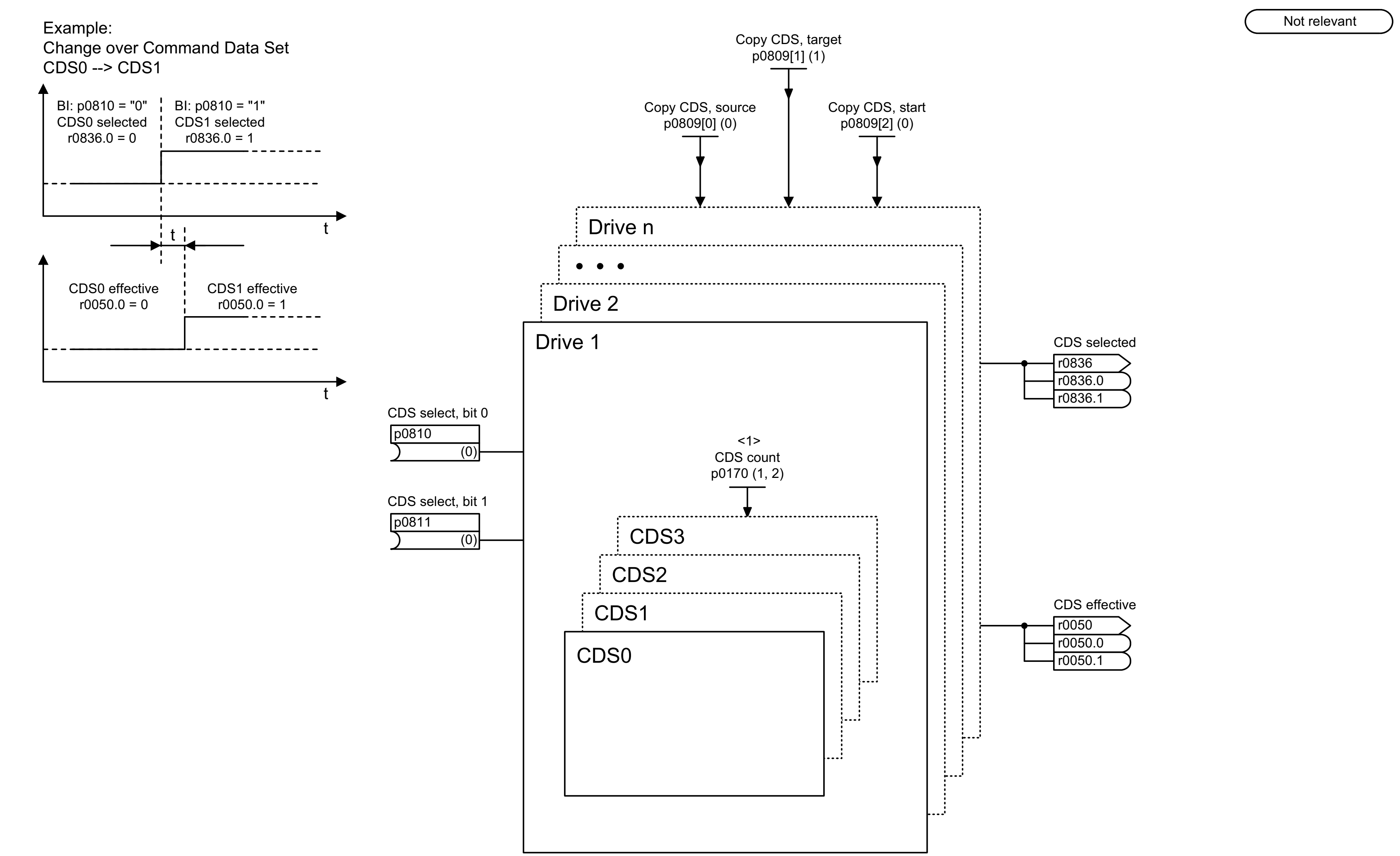
<1> Directory on memory card: /INSTALL/SINAMICS/TRACE.

1	2	3	4	5	6	7	8

DO: A_INF, B_INF, R_INF, S_INF, SERVO, VECTOR	fp_8145_54_eng.vsd	Function diagram	- 8145 -
Diagnostics - Recorder sequence control (r0108.5 = 1)	10.09.15 V05.01.01	S120/S150/G130/G150	

3.33 Data sets

Function diagrams

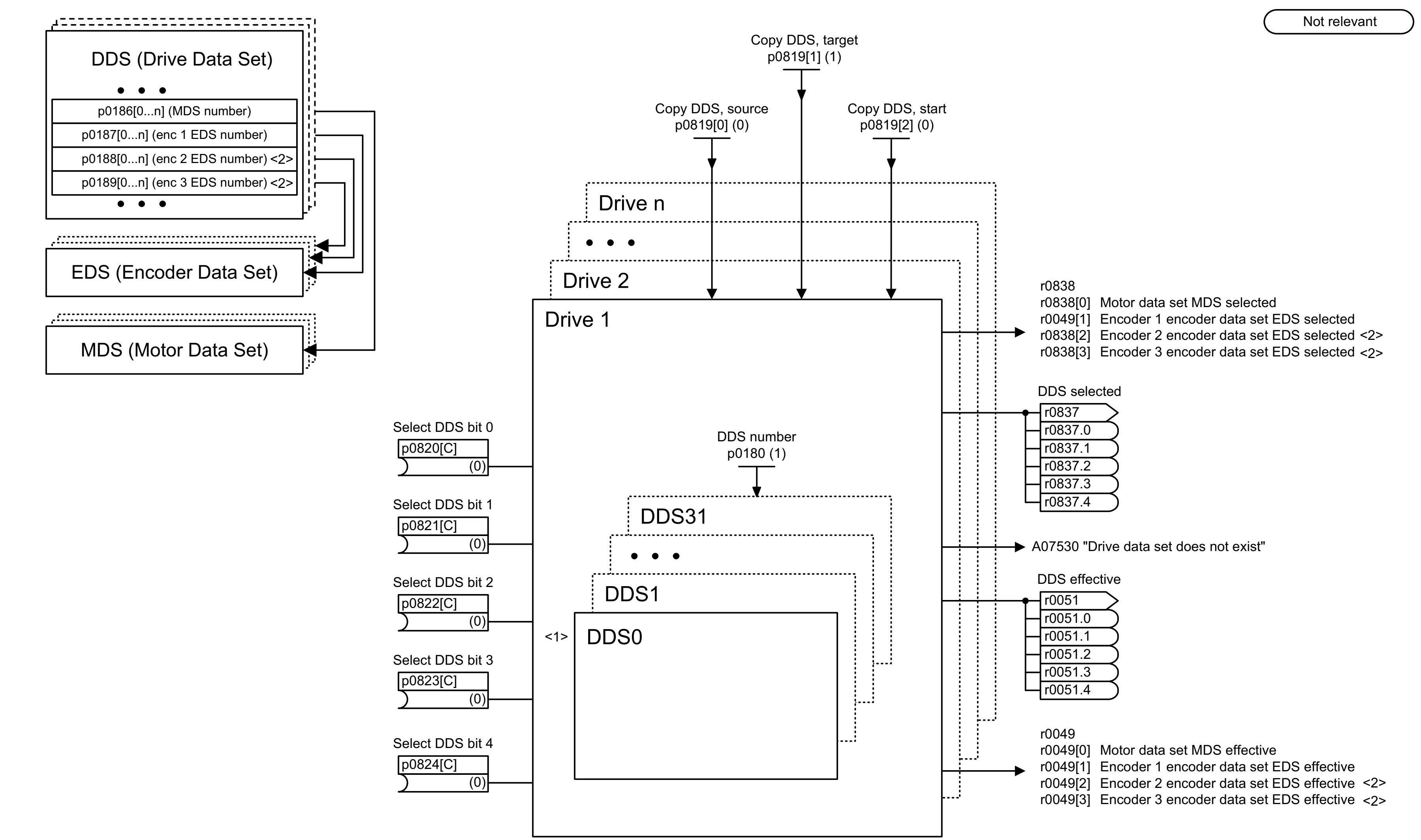


<1> For SERVO, the following applies: Min / Max / Factory setting: 1 / 2 / 2
For VECTOR, the following applies: Min / Max / Factory setting: 2 / 4 / 2

1	2	3	4	5	6	7	8
DO: SERVO, VECTOR					fp_8560_54_eng.vsd	Function diagram	- 8560 -
Data sets - Command Data Sets (CDS)					03.07.13 V05.01.01	S120/S150/G130/G150	

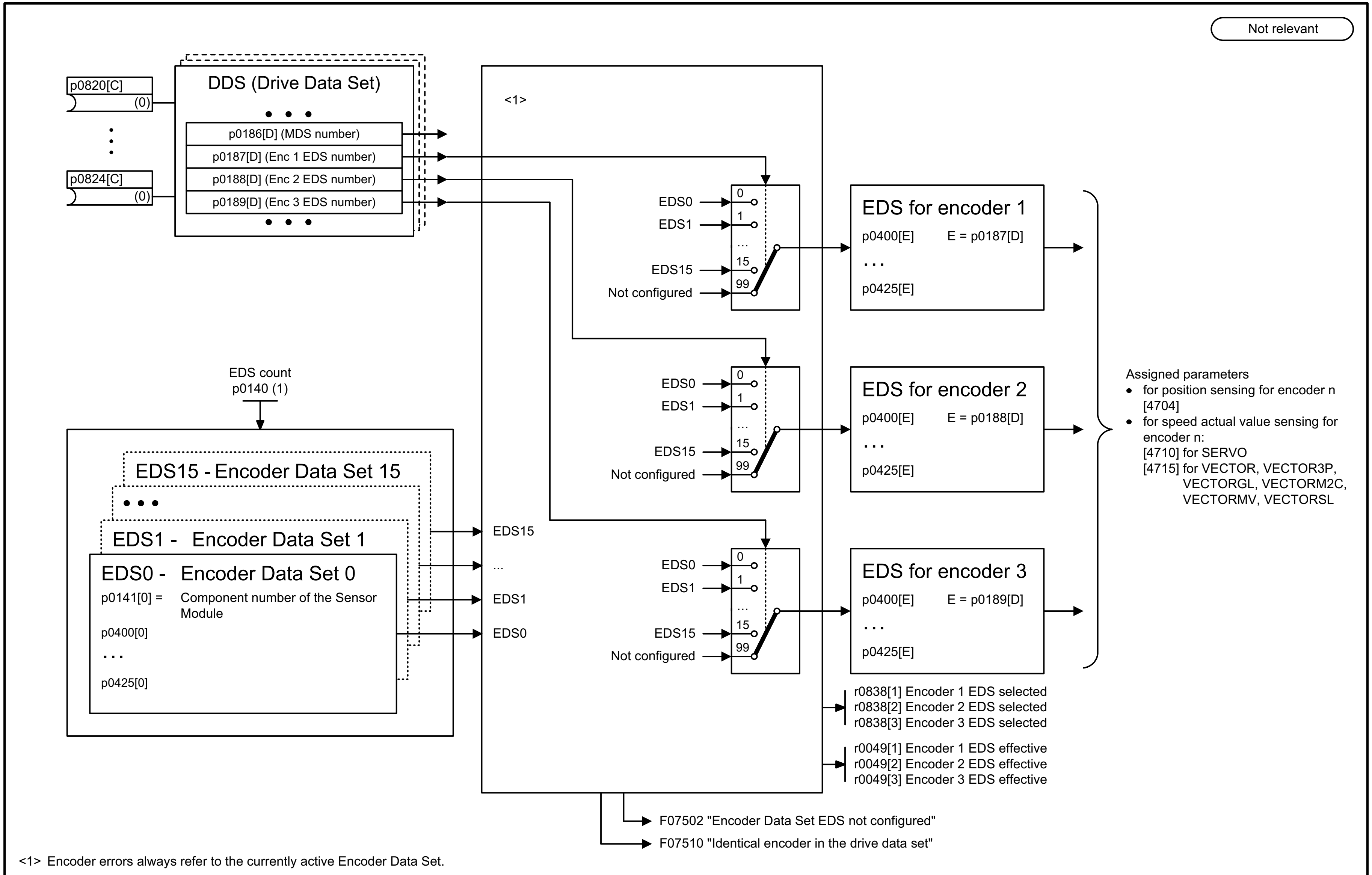
Fig. 3-317 8560 – Command data sets (CDS)

Fig. 3-318 8565 – Drive data sets (DDS)



<1> A BICO interconnection to a parameter which is part of a drive data set always influences the currently effective data set.
<2> Only for SINAMICS S120/S150.

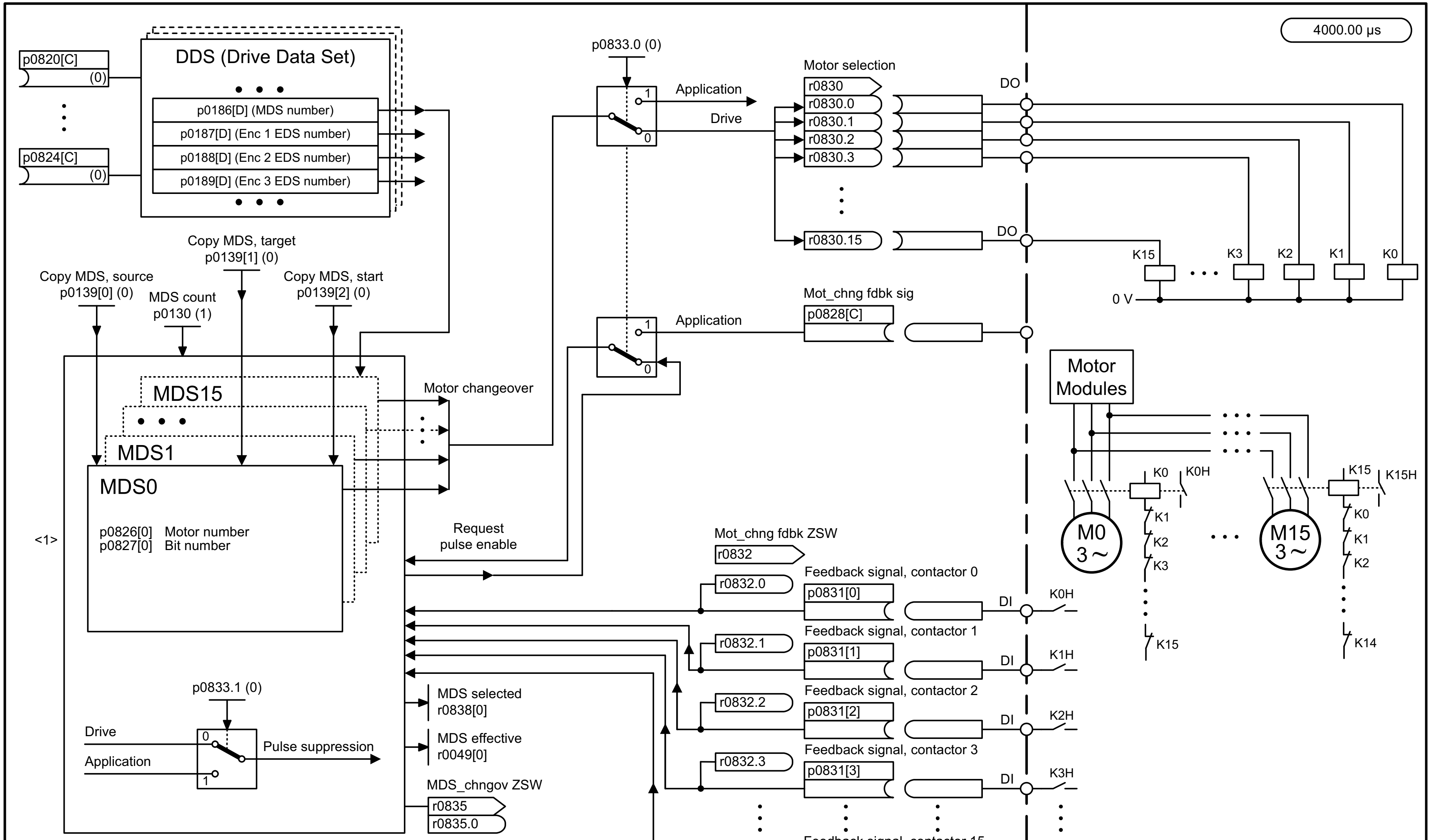
1	2	3	4	5	6	7	8
DO: SERVO, VECTOR, TM41					fp_8565_54_eng.vsd	Function diagram	- 8565 -
Data sets - Drive Data Sets (DDS)					03.07.13 V05.01.01	S120/S150/G130/G150	



1	2	3	4	5	6	7	8
DO: SERVO, VECTOR, VECTOR3P, VECTORGL, VECTORM2C, VECTORMV, VECTORSL					fp_8570_51_eng.vsd	Function diagram	- 8570 -
Data sets - Encoder Data Sets (EDS)					19.12.14 V05.01.01	SINAMICS	

Fig. 3-319 8570 – Encoder data sets (EDS)

Fig. 3-320 8575 – Motor data sets (MDS)



<1> The following applies for the changeover of motor data sets:
SERVO and VECTOR: The thermal motor model of motors with the same motor number is identical.
VECTOR3P … VECTORSL: The thermal monitoring of motors with the same motor number is identical. An unequal bit number means that the motor must be changed over.

1	2	3	4	5	6	7	8

DO: SERVO, VECTOR, VECTOR3P, VECTORM2C, VECTORMV, VECTORSL	fp_8575_51_eng.vsd	Function diagram	- 8575 -
Data sets - Motor Data Sets (MDS)	22.08.13 V05.01.01	SINAMICS	

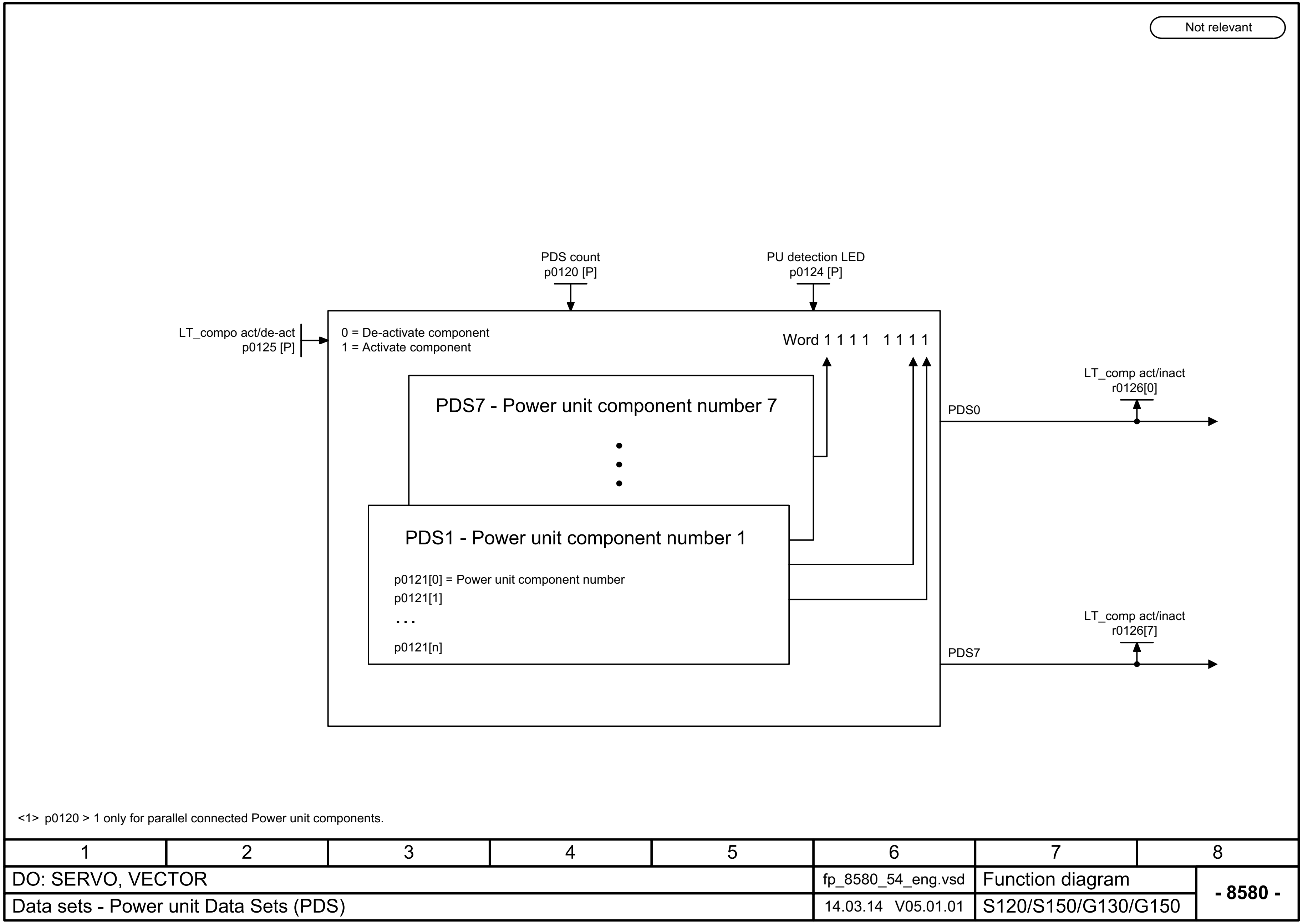
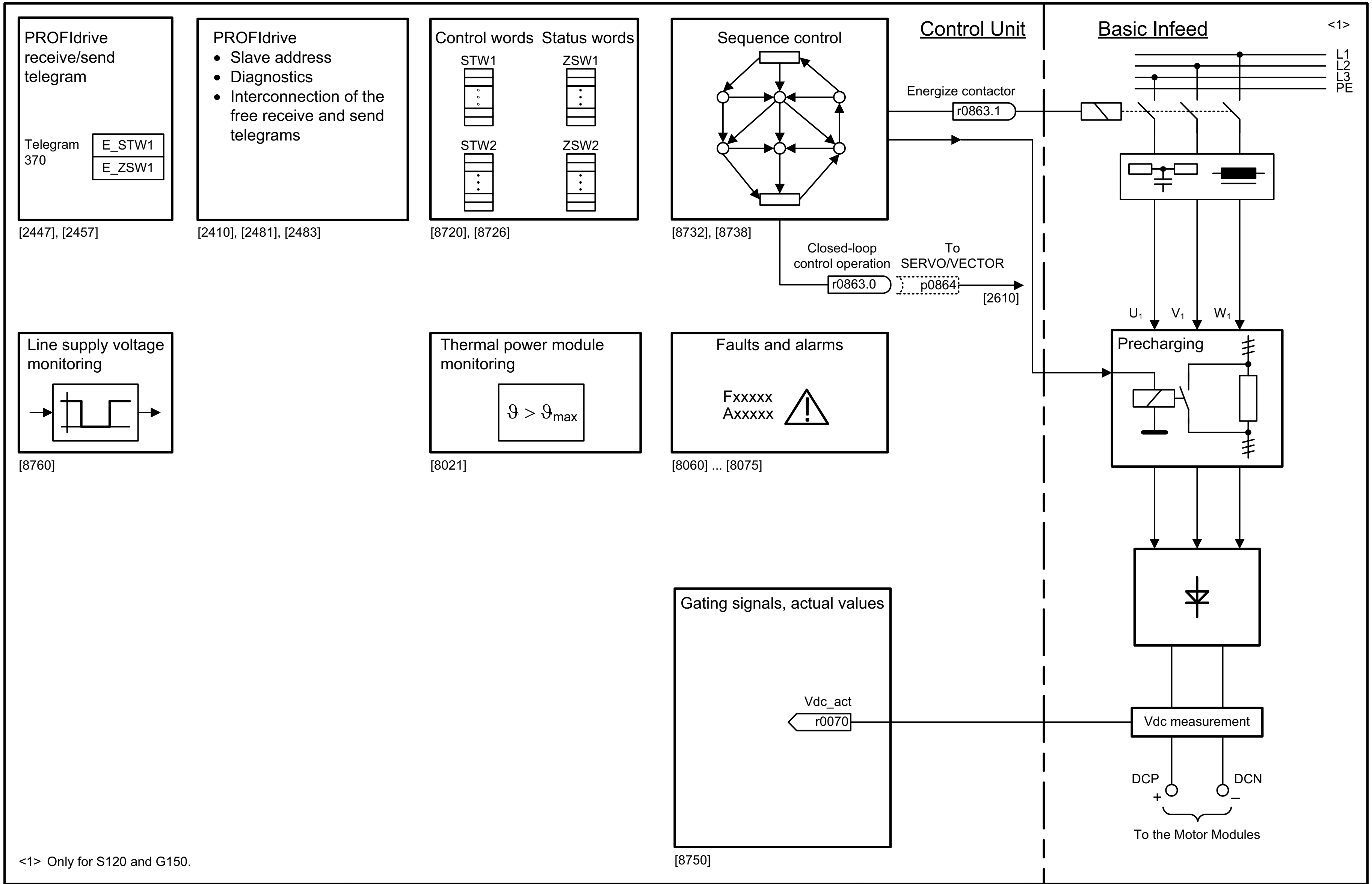


Fig. 3-321 8580 – Power unit data sets (PDS)

3.34 Basic Infeed

Function diagrams

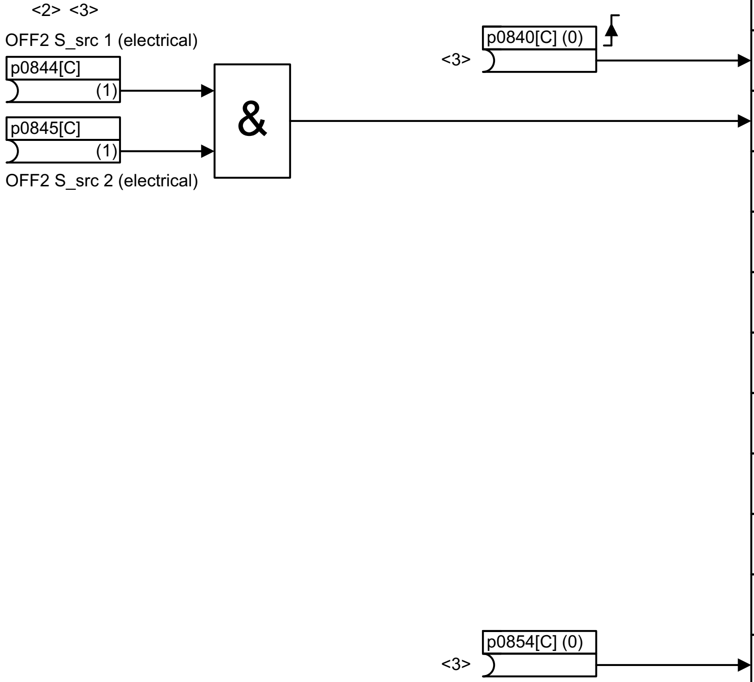


1	2	3	4	5	6	7	8
DO: B_INF					fp_8710_54_eng.vsd	Function diagram	- 8710 -
Basic Infeed - Overview					18.08.17 V05.01.01	S120/S150/G130/G150	

Fig. 3-322 8710 – Overview

Fig. 3-323 8720 – Control word, sequence control infeed

p0115[3] (2000.00 µs)
<4>



Bit No.	Control word sequence control infeed
0	**= CLOSE** (close precharging/line contactor) 0 = OFF1 (open precharging/line contactor)
1	**1 = Operating condition no OFF2** (enable is possible) 0 = OFF2 (open precharging/line contactor and power-on inhibit)
2	**Reserved**
3	**Reserved**
4	**Reserved**
5	**Reserved**
6	**Reserved**
7	**Reserved**
8	**Reserved**
9	**Reserved**
10	**1 = Control by PLC** <1>
11	**Reserved**
12	**Reserved**
13	**Reserved**
14	**Reserved**
15	**Reserved**

STW seq ctrl
r0898
r0898.0 To the sequencer [8732]
r0898.1 To the sequencer [8732]
r0898.10

<1> STW1.10 must be set to ensure that the drive object accepts the process data (PZD).
<2> PROFIBUS interconnection:
For the manufacturer-specific PROFIBUS telegram, the upper input is connected to PROFIBUS signal E_STW1 [2447].
Only applies for CDS0.
<3> Is pre-defined via the PC if the master control is retrieved.
<4> Only for S120 and G150.

1	2	3	4	5	6	7	8

DO: B_INF	fp_8720_54_eng.vsd	Function diagram	- 8720 -
Basic Infeed - Control word, sequence control, infeed	25.10.12 V05.01.01	S120/S150/G130/G150	

p0115[3] (2000.00 µs)
<2>

ZSW sequence ctrl
r0899

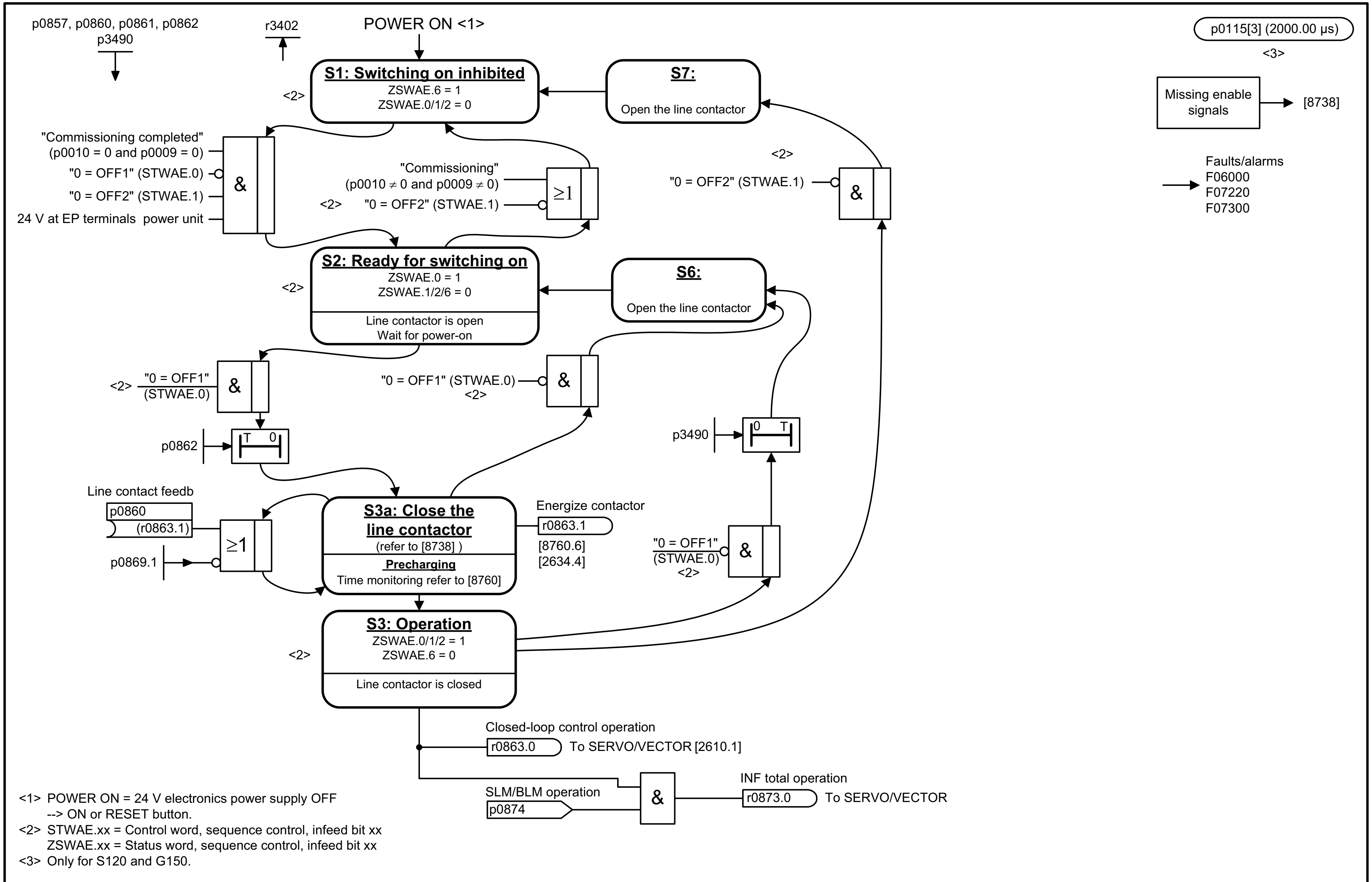
Source	Bit No.	Status word sequence control infeed	Output
[8732] From sequencer	0	**1 = Ready for switching on**	r0899.0
[8732] From sequencer	1	**1 = Ready for operation**	r0899.1
[8732] From sequencer	2	**1 = Operation enabled**	r0899.2
	3	**Reserved**	
[8732] From sequencer	4	**1 = No OFF2 active**	r0899.4
	5	**Reserved**	
[8732] From sequencer	6	**1 = Switching on inhibited**	r0899.6
	7	**Reserved**	
	8	**Reserved**	
Bit 9 = 1 --> Ready to exchange process data	9	**1 = Control requested** <1>	r0899.9
	10	**Reserved**	
[8750] From power unit	11	**1 = Precharging completed**	r0899.11 [8760.5]
[8738.4] From line contactor control	12	**1 = Line contactor closed**	r0899.12
	13	**Reserved**	
	14	**Reserved**	
	15	**Reserved**	

<1> The drive object is ready to accept data.
<2> Only for S120 and G150.

1	2	3	4	5	6	7	8

DO: B_INF	fp_8726_54_eng.vsd	Function diagram	- 8726 -
Basic Infeed - Status word, sequence control, infeed	19.06.15 V05.01.01	S120/S150/G130/G150	

Fig. 3-324 8726 – Status word, sequence control infeed



1	2	3	4	5	6	7	8
DO: B_INF					fp_8732_54_eng.vsd	Function diagram	- 8732 -
Basic Infeed - Sequencer					27.12.17 V05.01.01	S120/S150/G130/G150	

Fig. 3-325 8732 – Sequencer

Fig. 3-326 8738 – Missing enables, line contactor control

Missing enable signals

Missing enable signals prevent the infeed going into the state "operation"
(Operation enabled: r0899.2 = 1 [8926]).

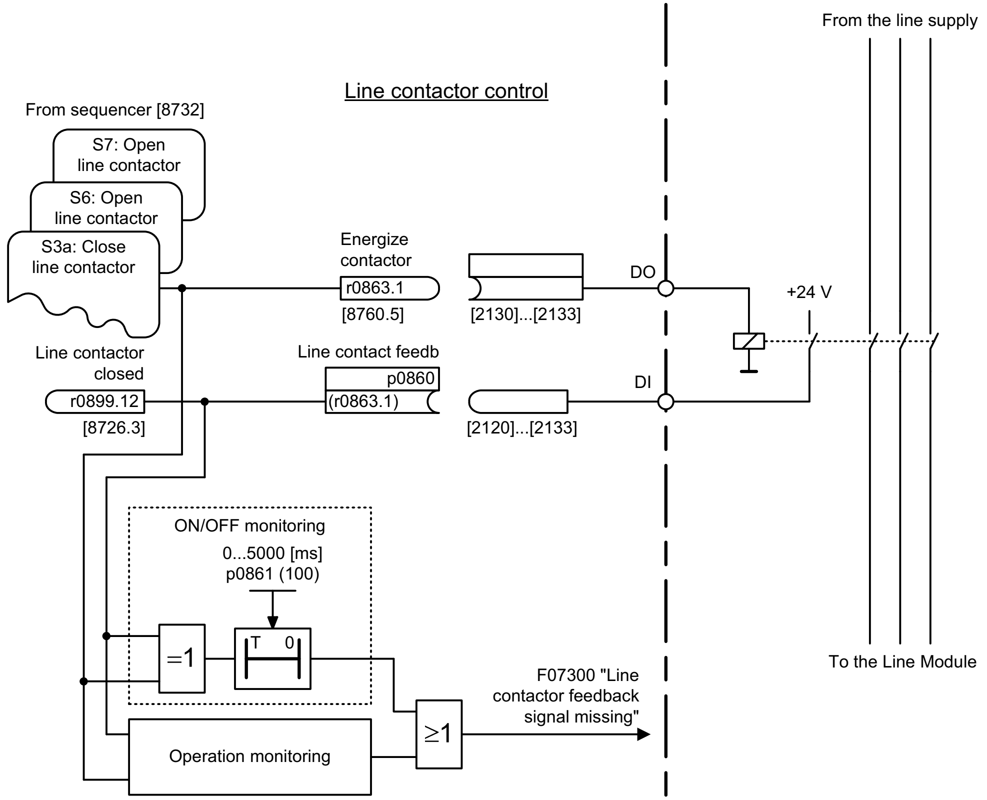
p0115[3] (4000.00 µs)
<1>

Control Unit

Missing enable sig → r0046

Bit No.	Meaning	Signal
0	**1 = OFF1 enable missing** (p0898.0 = 0 [8720] or switching on inhibited is present)	r0046.0 [3020.5]
1	**1 = OFF2 enable missing** (p0898.1 = 0 [8720])	r0046.1
2...7	**Reserved**	
8	**1 = EP terminals enable missing** (pulse enable EP terminals missing)	r0046.8
9...15	**Reserved**	
16	**1 = OFF1 enable internal missing** (OFF1 fault response is present)	r0046.16
17	**1 = OFF2 enable internal missing** (commissioning selected p0009 > 0 or p0010 > 0 or OFF2 fault response present)	r0046.17
18...25	**Reserved**	
26	**1 = Infeed inactive or not operational**	r0046.26
27, 28	**Reserved**	
29	**1 = Cooling unit ready signal missing**	r0046.29
30, 31	**Reserved**	

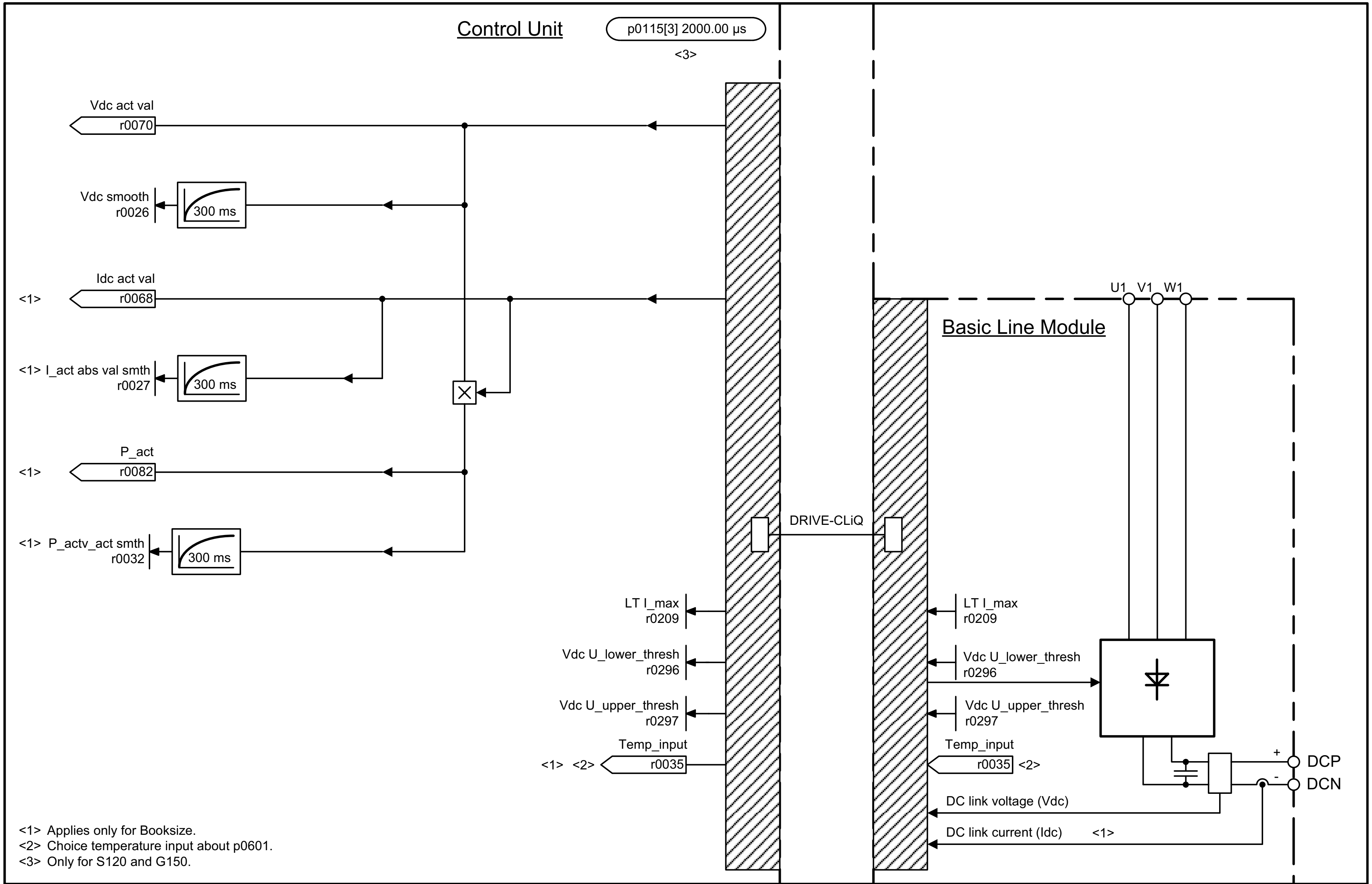
Line contactor control



<1> Only for S120 and G150.

1	2	3	4	5	6	7	8

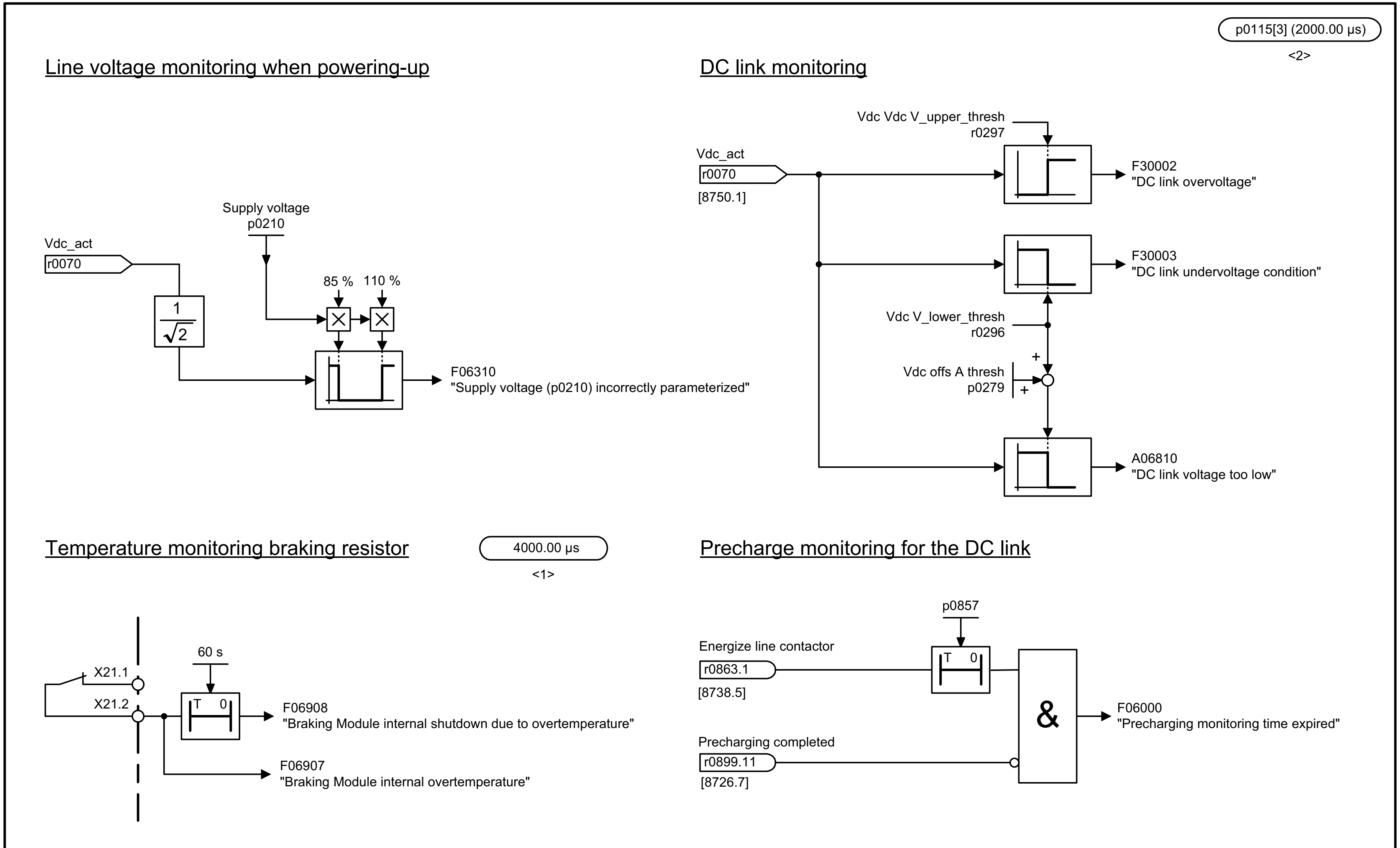
DO: B_INF	fp_8738_54_eng.vsd	Function diagram	- 8738 -
Basic Infeed - Missing enable signals, line contactor control	20.01.17 V05.01.01	S120/S150/G130/G150	



1	2	3	4	5	6	7	8

DO: B_INF	fp_8750_54_eng.vsd	Function diagram	- 8750 -
Basic Infeed - Interface to the Basic Infeed power unit (control signals, actual values)	18.12.13 V05.01.01	S120/S150/G130/G150	

Fig. 3-327 8750 – Interface to the Basic Infeed power unit (control signals, actual values)



<1> For B_INF with Braking Module internal only.
<2> Only for S120 and G150.

1	2	3	4	5	6	7	8

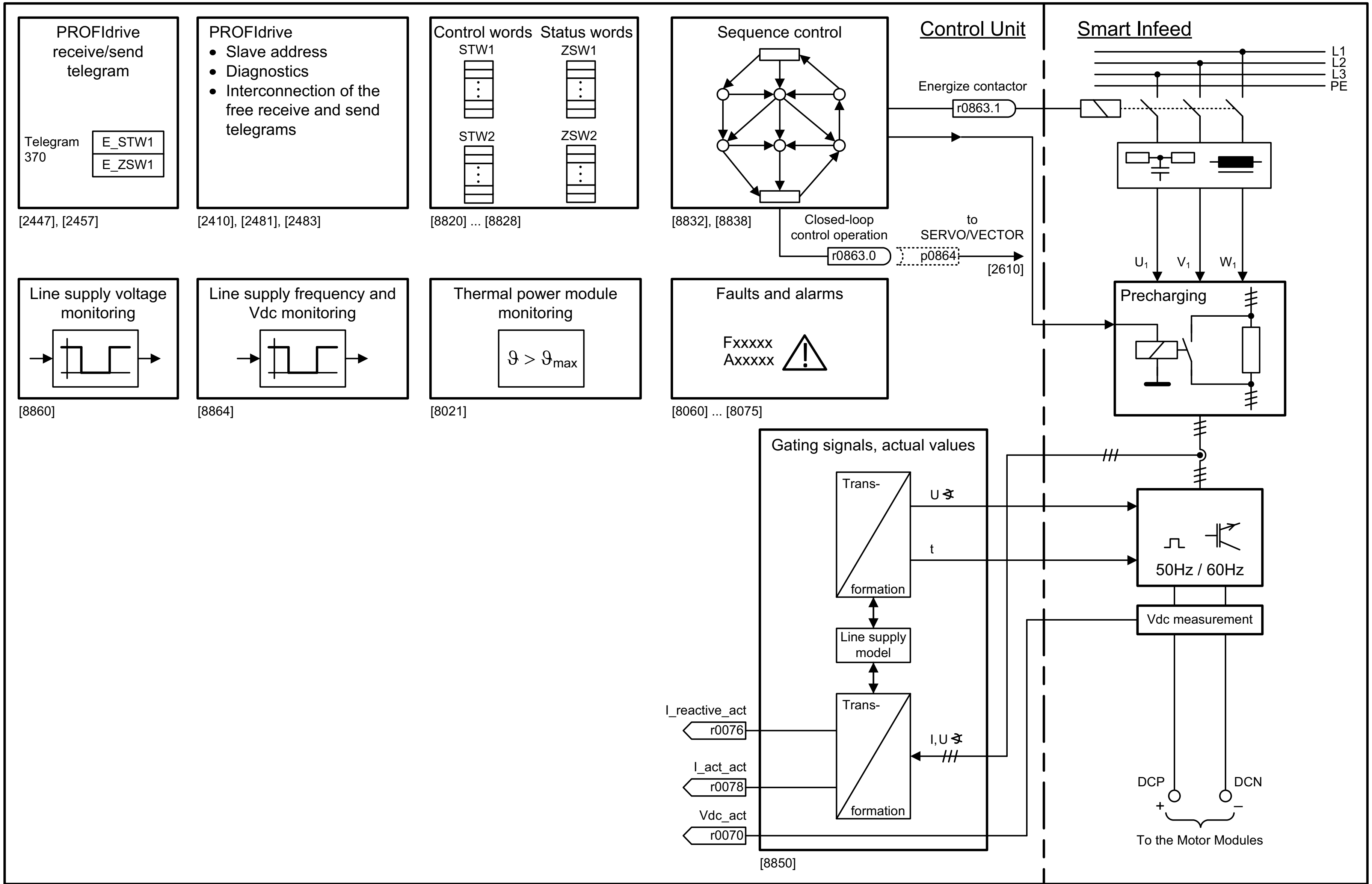
DO: B_INF	fp_8760_54_eng.vsd	Function diagram	- 8760 -
Basic Infeed - Signals and monitoring functions (p3400.0 = 0)	19.06.15 V05.01.01	S120/S150/G130/G150	

Fig. 3-328 8760 – Signals and monitoring functions (p3400.0 = 0)

3.35 Smart Infeed

Function diagrams

Fig. 3-329 8810 – Overview



1	2	3	4	5	6	7	8
DO: S_INF					fp_8810_01_eng.vsd	Function diagram	- 8810 -
Smart Infeed - Overview					18.08.17 V05.01.01	SINAMICS S120	

Fig. 3-330 8820 – Control word, sequence control infeed

p0115[3] (2000.00 µs)

STW seq_ctrl INF r0898

<2> <3> OFF2 S_src 1 (electrical): p0844[C] (1) → & → Bit 1

OFF2 S_src 2 (electrical): p0845[C] (1) → &

Input	Bit No.	Control word sequence control infeed	Output
<3> p0840[C] (0)	0	**1 = ON** (close precharging/line contactor, pulses can be enabled) 0 = OFF1 (pulse suppression and open precharging/line contactor)	r0898.0 To the sequencer [8832]
& (p0844[C], p0845[C])	1	**1 = OC** (enable is possible) 0 = OFF2 (immediate pulse suppression and power on inhibit)	r0898.1 To the sequencer [8832]
	2	**Reserved**	
<3> p0852[C] (1)	3	**1 = Operation enable** (pulses can be enabled) 0 = Inhibit operation (suppress pulses)	r0898.3 To the sequencer [8832]
	4	**Reserved**	
	5	**Reserved**	
p3533[C] (0)	6	**1 = Inhibit regenerative operation**	r0898.6
	7	**Reserved**	
	8	**Reserved**	
	9	**Reserved**	
<3> p0854[C] (0)	10	**1 = Control by PLC** <1>	r0898.10
	11	**Reserved**	
	12	**Reserved**	
	13	**Reserved**	
	14	**Reserved**	
	15	**Reserved**	

<1> STW1.10 must be set to ensure that the drive object accepts the process data (PZD).
<2> PROFIdrive interconnection: For the manufacturer-specific PROFIdrive telegram, the upper input is connected to PROFIdrive signal E_STW1 [2447]. This only involves CDS0.
<3> Is pre-defined via the PC if the master control is retrieved.

1	2	3	4	5	6	7	8

DO: S_INF	fp_8820_01_eng.vsd	Function diagram	- 8820 -
Smart Infeed - Control word, sequence control infeed	14.05.18 V05.01.01	SINAMICS S120	

p0115[3] (2000.00 µs)

Input	Bit No.	Status word sequence control infeed	Output (ZSW sequence ctrl r0899)
[8832] From sequencer	0	**1 = Ready for switching on**	r0899.0
[8832] From sequencer	1	**1 = Ready for operation**	r0899.1
[8832] From sequencer	2	**1 = Operation enabled**	r0899.2
	3	**Reserved**	
[8832] From sequencer	4	**1 = No OFF2 active**	r0899.4
	5	**Reserved**	
[8832] From sequencer	6	**1 = Switching on inhibited**	r0899.6
	7	**Reserved**	
[8832] From sequencer	8	**1 = Power up active**	r0899.8
Bit 9 = 1 --> Ready to exchange process data	9	**1 = Control request** <1>	r0899.9
	10	**Reserved**	
[8850] From power unit	11	**1 = Precharging completed**	r0899.11 [8864.5]
[8838.4] From line contactor control	12	**1 = Line contactor closed**	r0899.12
	13	**Reserved**	
	14	**Reserved**	
	15	**Reserved**	

<1> The drive object is ready to accept data.

1	2	3	4	5	6	7	8

DO: S_INF	fp_8826_01_eng.vsd	Function diagram	- 8826 -
Smart Infeed - Status word, sequence control infeed	19.06.15 V05.01.01	SINAMICS S120	

Fig. 3-331 8826 – Status word, sequence control infeed

p0115[3] (2000.00 µs)

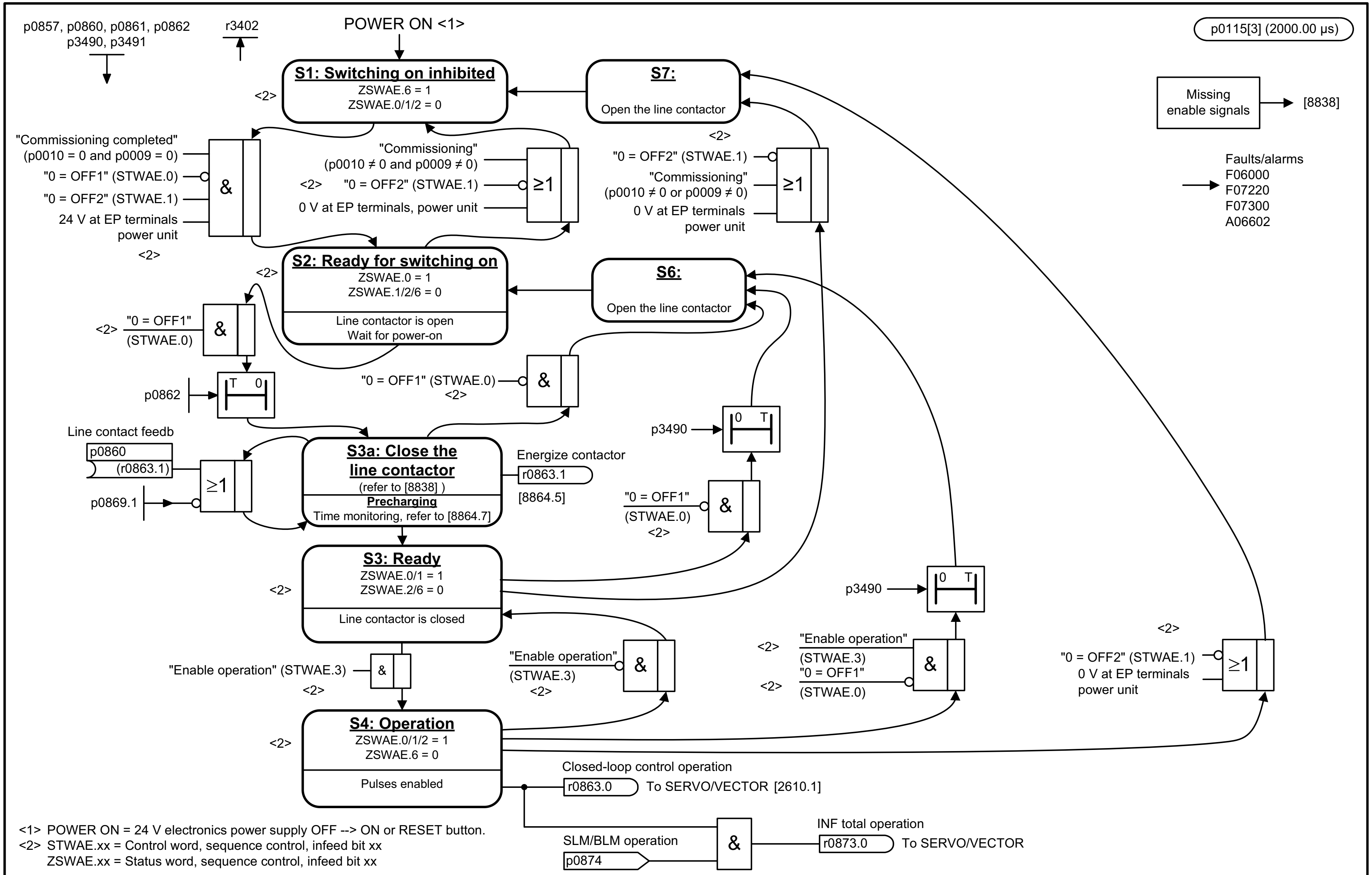
Bit No.	Infeed Status word	Inf ZSW r3405
0	**1 = Smart Mode active**	r3405.0
1	**1 = Vdc-ctrl active**	r3405.1
2	**1 = Phase failure detected**	r3405.2
3	**1 = Current limit reached**	r3405.3
4	**1 = Infeed operates in the regenerative mode** 0 = Infeed operates in the motor mode	r3405.4
5	**1 = Motor mode inhibited**	r3405.5
6	**1 = Generator mode inhibited**	r3405.6
7	**1 = DC link undervoltage alarm threshold undershot**	r3405.7
8	**Reserved**	
9	**Reserved**	
10	**Reserved**	
11	**Reserved**	
12	**Reserved**	
13	**Reserved**	
14	**Reserved**	
15	**Reserved**	

1	2	3	4	5	6	7	8

DO: S_INF	fp_8828_01_eng.vsd	Function diagram	- 8828 -
Smart Infeed - Status word, infeed	21.03.14 V05.01.01	SINAMICS S120	

Fig. 3-332 8828 – Status word, infeed

Fig. 3-333 8832 – Sequencer



1	2	3	4	5	6	7	8

DO: S_INF	fp_8832_01_eng.vsd	Function diagram	- 8832 -
Smart Infeed - Sequencer	27.12.17 V05.01.01	SINAMICS S120	

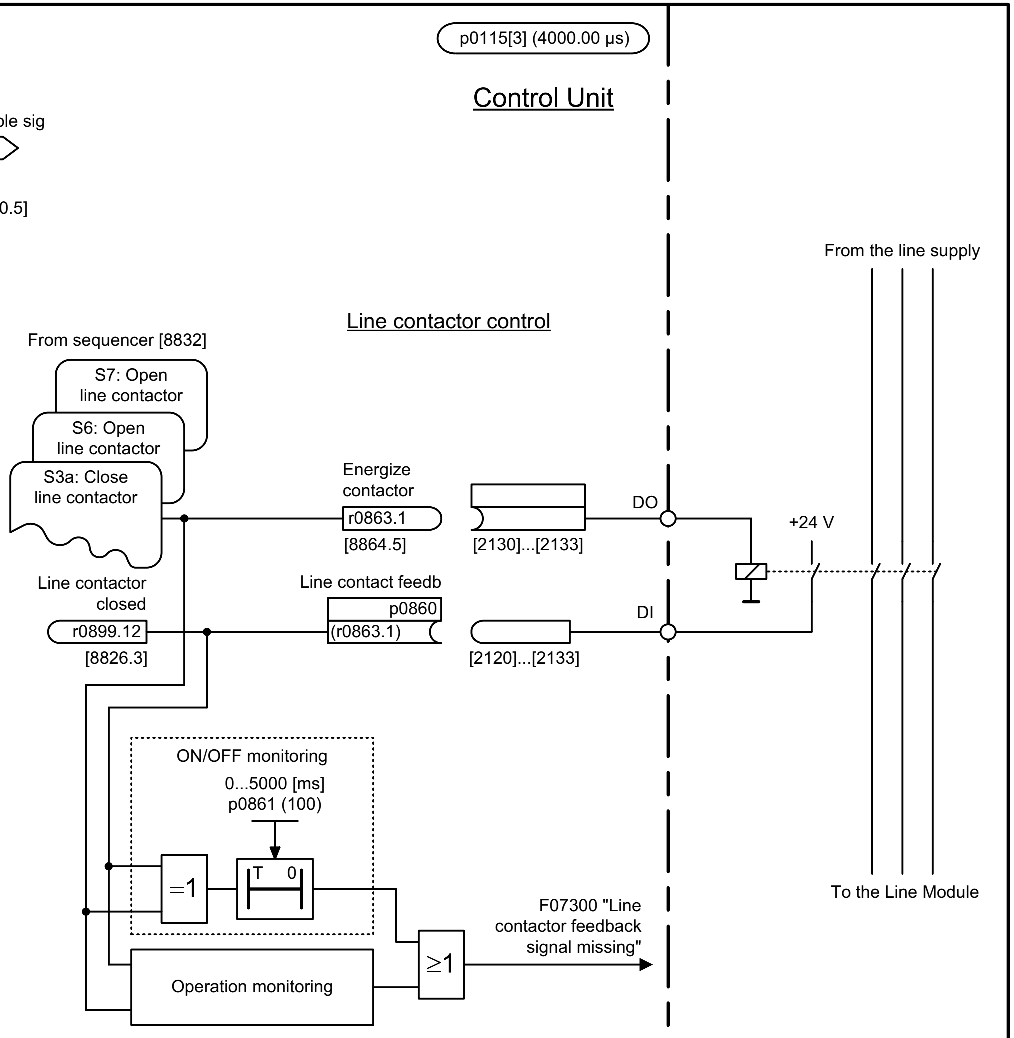
Fig. 3-334 8838 – Missing enable signals, line contactor control

Missing enable signals

Missing enable signals prevent the infeed going into the state "operation"
(Operation enabled: r0899.2 = 1 [8826]).

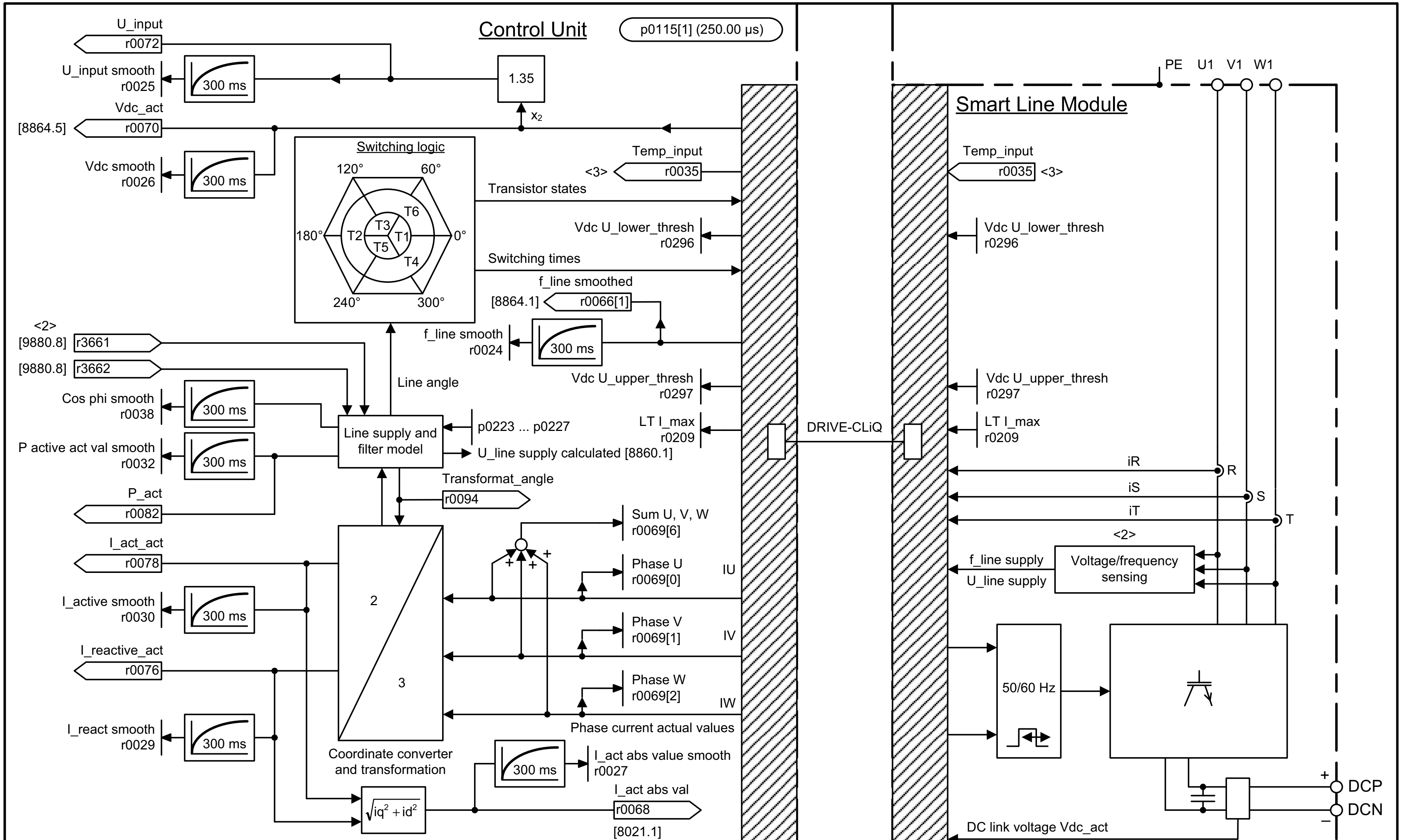
Missing enable sig r0046

Bit No.	Meaning	
0	**1 = OFF1 enable missing** (p0898.0 = 0 [8820] or switching on inhibited is present)	r0046.0 [3020.5]
1	**1 = OFF2 enable missing** (p0898.1 = 0 [8820])	r0046.1
2	**Reserved**	
3	**1 = Operation enable missing** (p0898.3 = 0 [8820])	r0046.3
4...7	**Reserved**	
8	**1 = EP terminals enable missing** (pulse enable EP terminals missing)	r0046.8
9...15	**Reserved**	
16	**1 = OFF1 enable internal missing** (OFF1 fault response is present)	r0046.16
17	**1 = OFF2 enable internal missing** (commissioning selected p0009 > 0 or p0010 > 0 or OFF2 fault response present)	r0046.17
18	**Reserved**	
19	**1 = Pulse enable internal missing**	r0046.19
20...25	**Reserved**	
26	**1 = Infeed inactive or not operational**	r0046.26
27, 28	**Reserved**	
29	**1 = Cooling unit ready signal missing**	r0046.29
30, 31	**Reserved**	



1	2	3	4	5	6	7	8

DO: S_INF
Smart Infeed - Missing enable signals, line contactor control
fp_8838_01_eng.vsd
20.01.17 V05.01.01
Function diagram
SINAMICS S120
- 8838 -

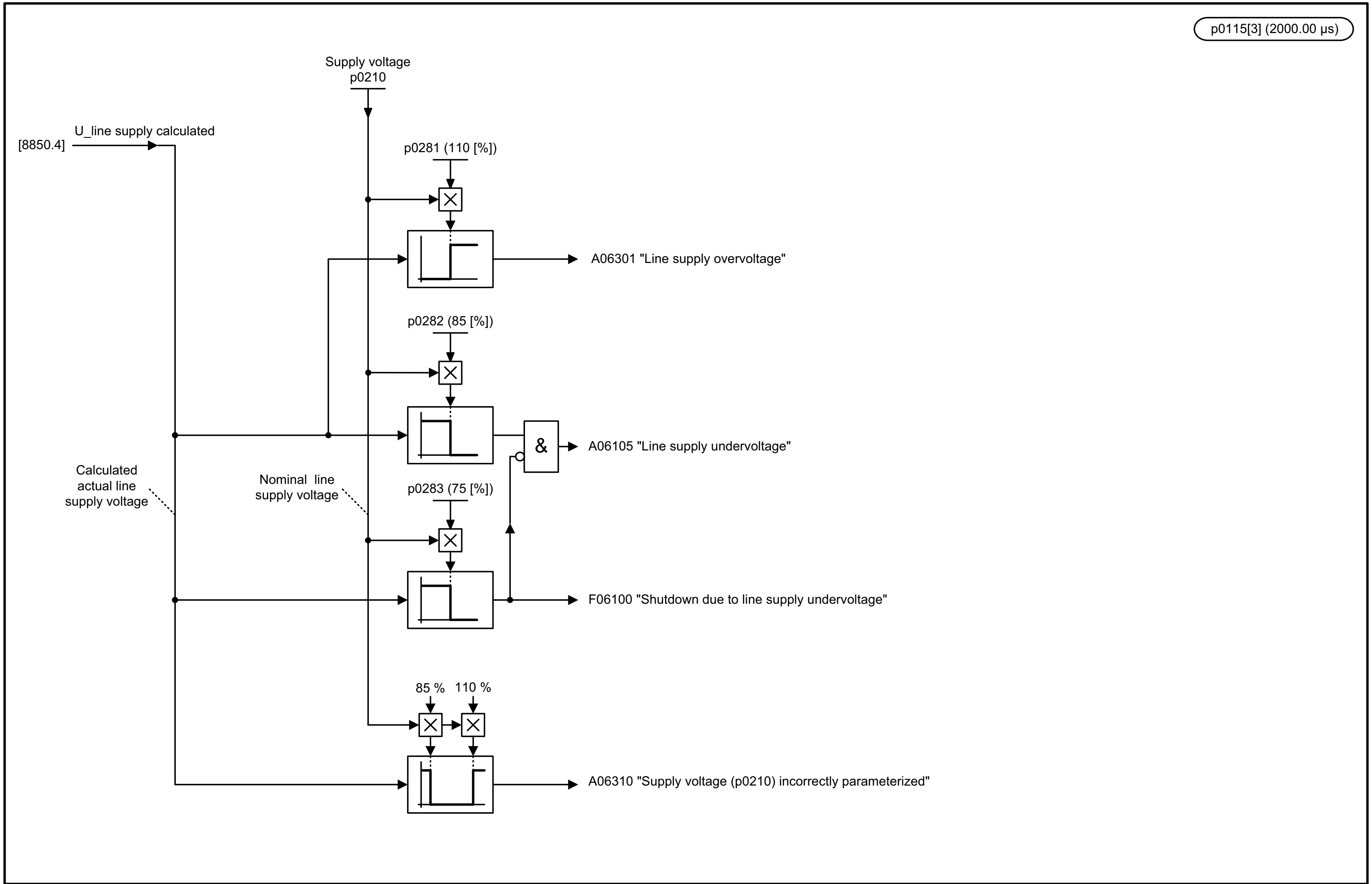


<1> Angle of the voltage vector in the fixed stator coordinate system.
<2> Voltage management is optional (otherwise from the filter module).
<3> Choice temperature input about p0601.

1	2	3	4	5	6	7	8

DO: S_INF	fp_8850_01_eng.vsd	Function diagram	- 8850 -
Smart Infeed - Interface to the Smart Infeed (control signals, actual values)	05.09.14 V05.01.01	SINAMICS S120	

Fig. 3-335 8850 – Interface to the Smart Infeed (control signals, actual values)

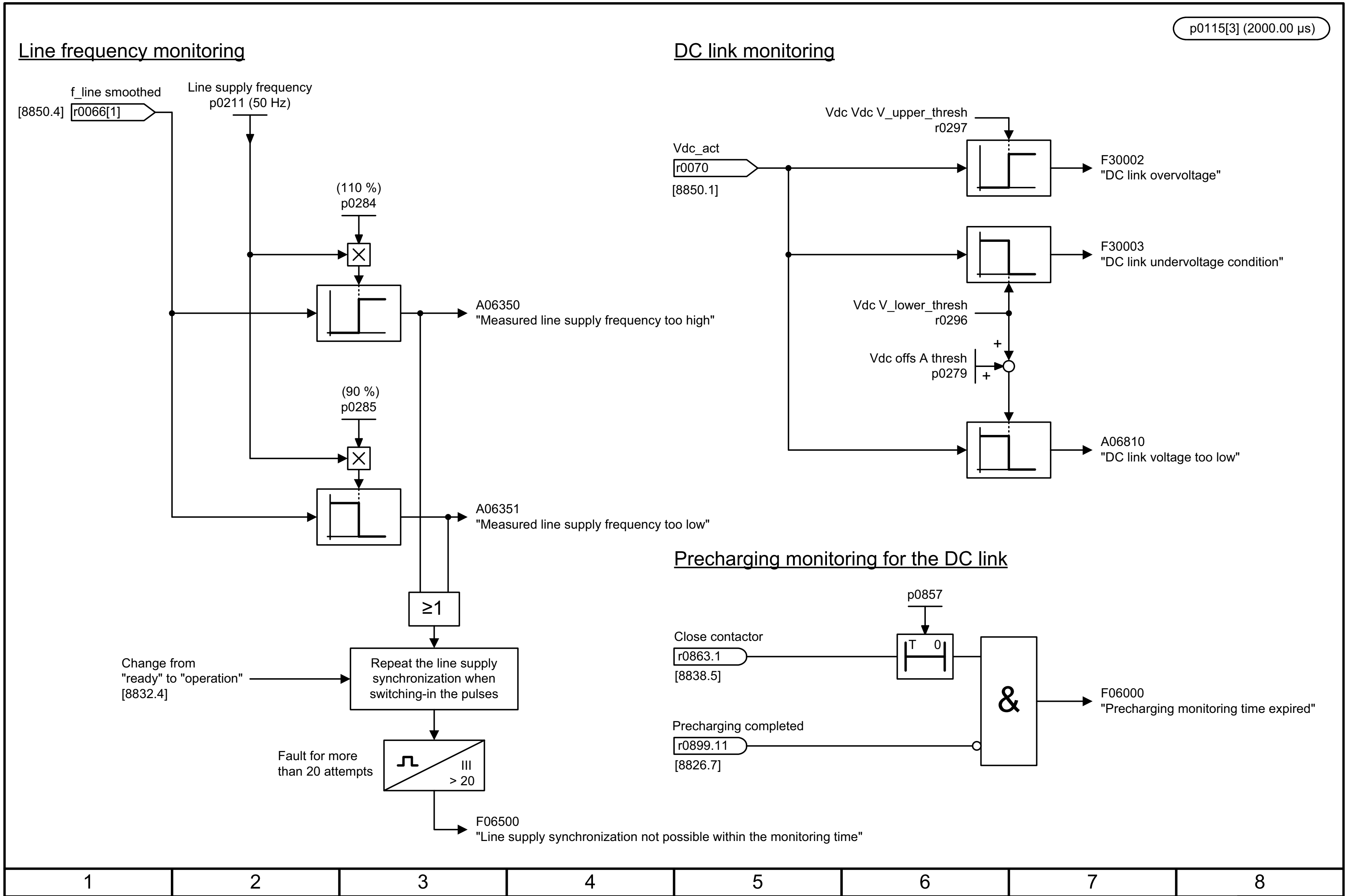


1	2	3	4	5	6	7	8

DO: S_INF	fp_8860_01_eng.vsd	Function diagram	- 8860 -
Smart Infeed - Signals and monitoring functions, line supply voltage monitoring	29.07.10 V05.01.01	SINAMICS S120	

Fig. 3-336 8860 – Signals and monitoring functions, line supply voltage monitoring

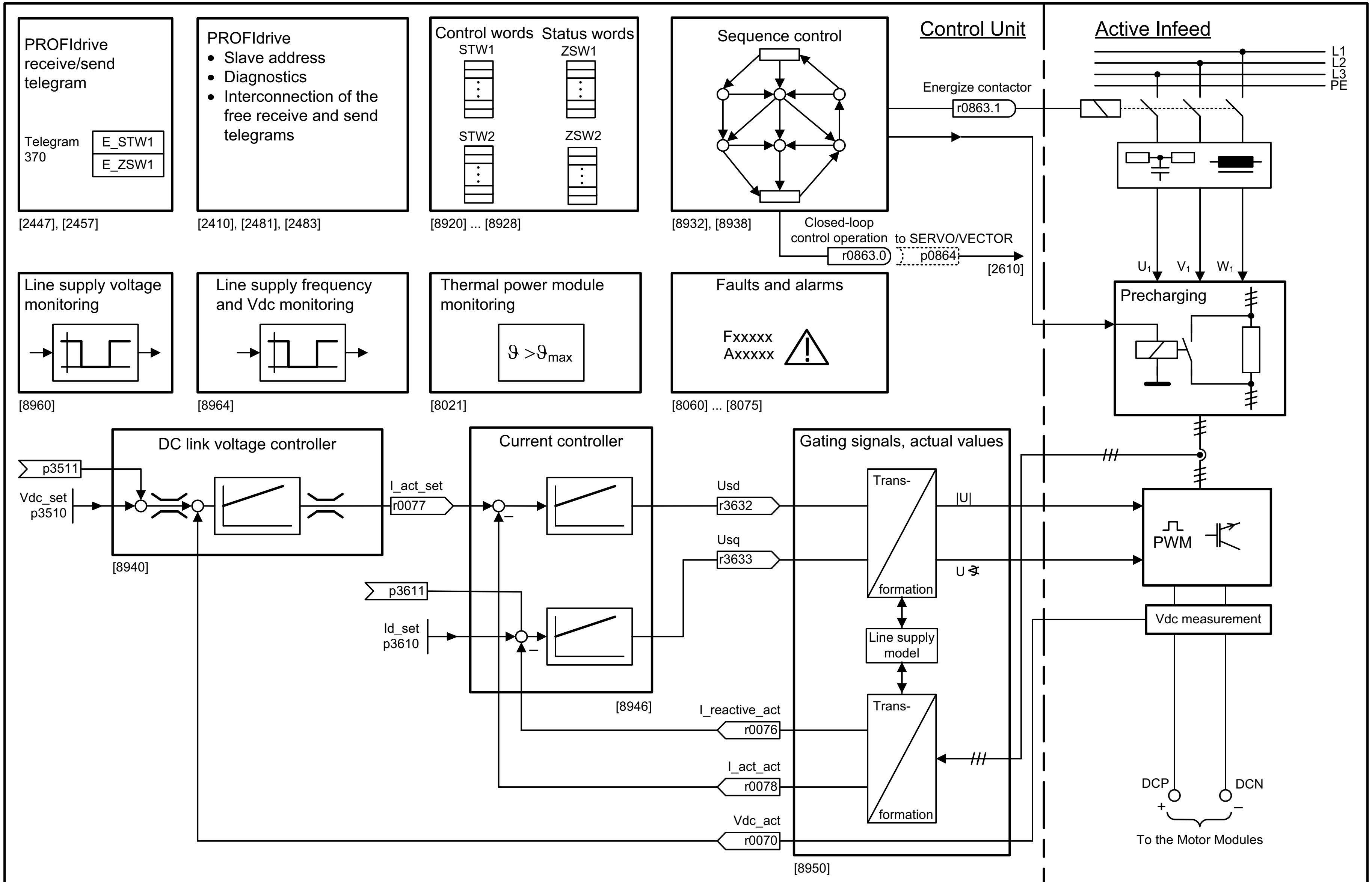
Fig. 3-337 8864 – Signals and monitoring functions, line frequency and Vdc monitoring



DO: S_INF	fp_8864_01_eng.vsd	Function diagram	- 8864 -
Smart Infeed - Signals and monitoring functions, line frequency and Vdc monitoring	19.06.15 V05.01.01	SINAMICS S120	

3.36 Active Infeed

Function diagrams



1	2	3	4	5	6	7	8

DO: A_INF	fp_8910_55_eng.vsd	Function diagram	- 8910 -
Active Infeed - Overview	18.08.17 V05.01.01	SINAMICS S120/S150	

Fig. 3-338 8910 – Overview

Fig. 3-339 8920 – Control word, sequence control infeed

p0115[3] (2000.00 µs)

<2> <3>
OFF2 S_src 1 (electrical): p0844[C] (1)
OFF2 S_src 2 (electrical): p0845[C] (1)
p0844[C] & p0845[C] → Bit 1

STW seq_ctrl INF: r0898

Input	Bit No.	Control word sequence control infeed	Output
<3> p0840[C] (0)	0	**= ON** (close precharging/line contactor, pulses can be enabled) 0 = OFF1 (reduce Vdc along a ramp, pulse suppression and open precharging/line contactor)	r0898.0 To the sequencer [8932]
& (p0844[C], p0845[C])	1	**1 = Operating condition no OFF2** (enable is possible) 0 = OFF2 (immediate pulse suppression, open precharging/line contactor and switching on inhibited)	r0898.1 To the sequencer [8932]
	2	**Reserved**	
<3> p0852[C] (1)	3	**1 = Enable operation** (pulses can be enabled) 0 = Inhibit operation (suppress pulses**)**	r0898.3 To the sequencer [8932]
	4	**Reserved**	
p3532[C] (0)	5	**1 = Inhibit motoring operation**	r0898.5
p3533[C] (0)	6	**1 = Inhibit regenerative operation**	r0898.6
	7	**Reserved**	
	8	**Reserved**	
	9	**Reserved**	
<3> p0854[C] (0)	10	**1 = Control by PLC** <1>	r0898.10
	11	**Reserved**	
	12	**Reserved**	
	13	**Reserved**	
	14	**Reserved**	
	15	**Reserved**	

<1> STW1.10 must be set to ensure that the drive object accepts the process data (PZD).
<2> PROFIdrive interconnection:
For the manufacturer-specific PROFIdrive telegram, the upper input is connected to PROFIdrive signal E_STW1 ([2447]). This only involves CDS0.
<3> Is predefined via the PC if the master control is retrieved.

1	2	3	4	5	6	7	8

DO: A_INF	fp_8920_55_eng.vsd	Function diagram	- 8920 -
Active Infeed - Control word, sequence control, infeed	25.10.12 V05.01.01	SINAMICS S120/S150	

p0115[3] (2000.00 µs)

ZSW sequence ctrl

Input	Bit No.	Status word sequence control infeed	Output
			r0899
[8932] From sequencer	0	**1 = Ready for switching on**	r0899.0
[8932] From sequencer	1	**1 = Ready for operation**	r0899.1
[8932] From sequencer	2	**1 = Operation enabled**	r0899.2
	3	**Reserved**	
[8932] From sequencer	4	**1 = No OFF2 active**	r0899.4
	5	**Reserved**	
[8932] From sequencer	6	**1 = Switching on inhibited**	r0899.6
	7	**Reserved**	
[8932] From sequencer	8	**1 = Power up active**	r0899.8
Bit 9 = 1 --> Ready to exchange process data	9	**1 = Control requested** <1>	r0899.9
	10	**Reserved**	
[8950] From power unit	11	**1 = Precharging completed**	r0899.11 [8964.5]
[8938.4] From line contactor control	12	**1 = Line contactor closed**	r0899.12
	13	**Reserved**	
	14	**Reserved**	
	15	**Reserved**	

<1> The drive object is ready to accept data.

1	2	3	4	5	6	7	8

DO: A_INF	fp_8926_55_eng.vsd	Function diagram	- 8926 -
Active Infeed - Status word, sequence control, infeed	19.06.15 V05.01.01	SINAMICS S120/S150	

Fig. 3-340 8926 – Status word, sequence control infeed

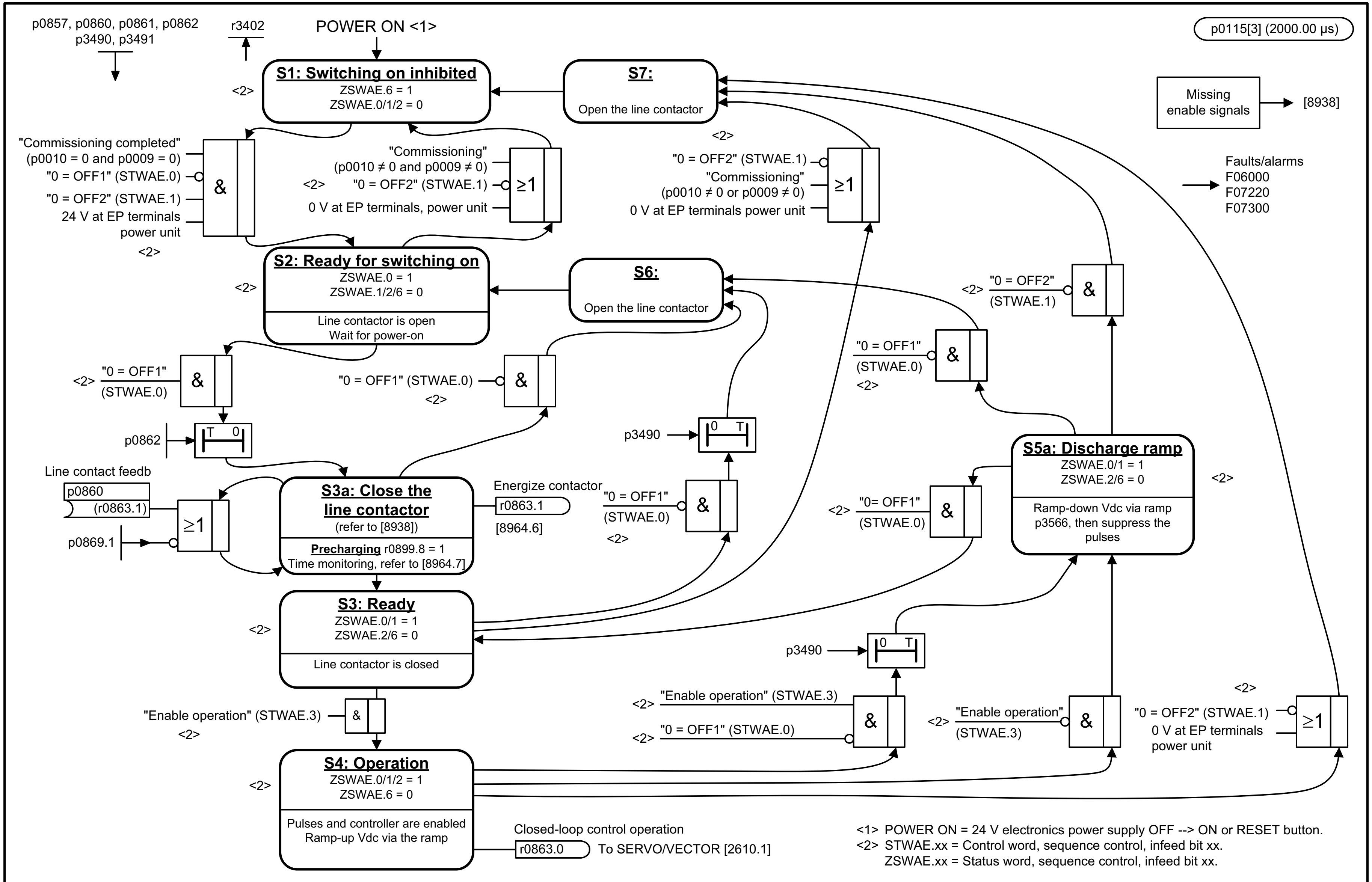
Fig. 3-341 8928 – Status word, infeed

p0115[3] (2000.00 µs)

Bit No.	Status word, infeed	Inf ZSW r3405
0	**1 = Smart Mode active**	r3405.0
1	**1 = Vdc controller active**	r3405.1
2	**1 = Phase failure detected**	r3405.2
3	**1 = Current limit reached**	r3405.3
4	**1 = Infeed operates in the regenerative mode** 0 = Infeed operates in the motoring mode	r3405.4
5	**1 = Motoring mode inhibited**	r3405.5
6	**1 = Regenerative mode inhibited**	r3405.6
7	**1 = DC link undervoltage alarm threshold undershot**	r3405.7
8	**Reserved**	
9	**Reserved**	
10	**Reserved**	
11	**Reserved**	
12	**Reserved**	
13	**Reserved**	
14	**Reserved**	
15	**Reserved**	

1	2	3	4	5	6	7	8

DO: A_INF	fp_8928_55_eng.vsd	Function diagram	**- 8928 -**
Active Infeed - Status word, infeed	12.12.08 V05.01.01	SINAMICS S120/S150	



1	2	3	4	5	6	7	8

DO: A_INF	fp_8932_55_eng.vsd	Function diagram	- 8932 -
Active Infeed - Sequencer	27.12.17 V05.01.01	SINAMICS S120/S150	

Fig. 3-342 8932 – Sequencer

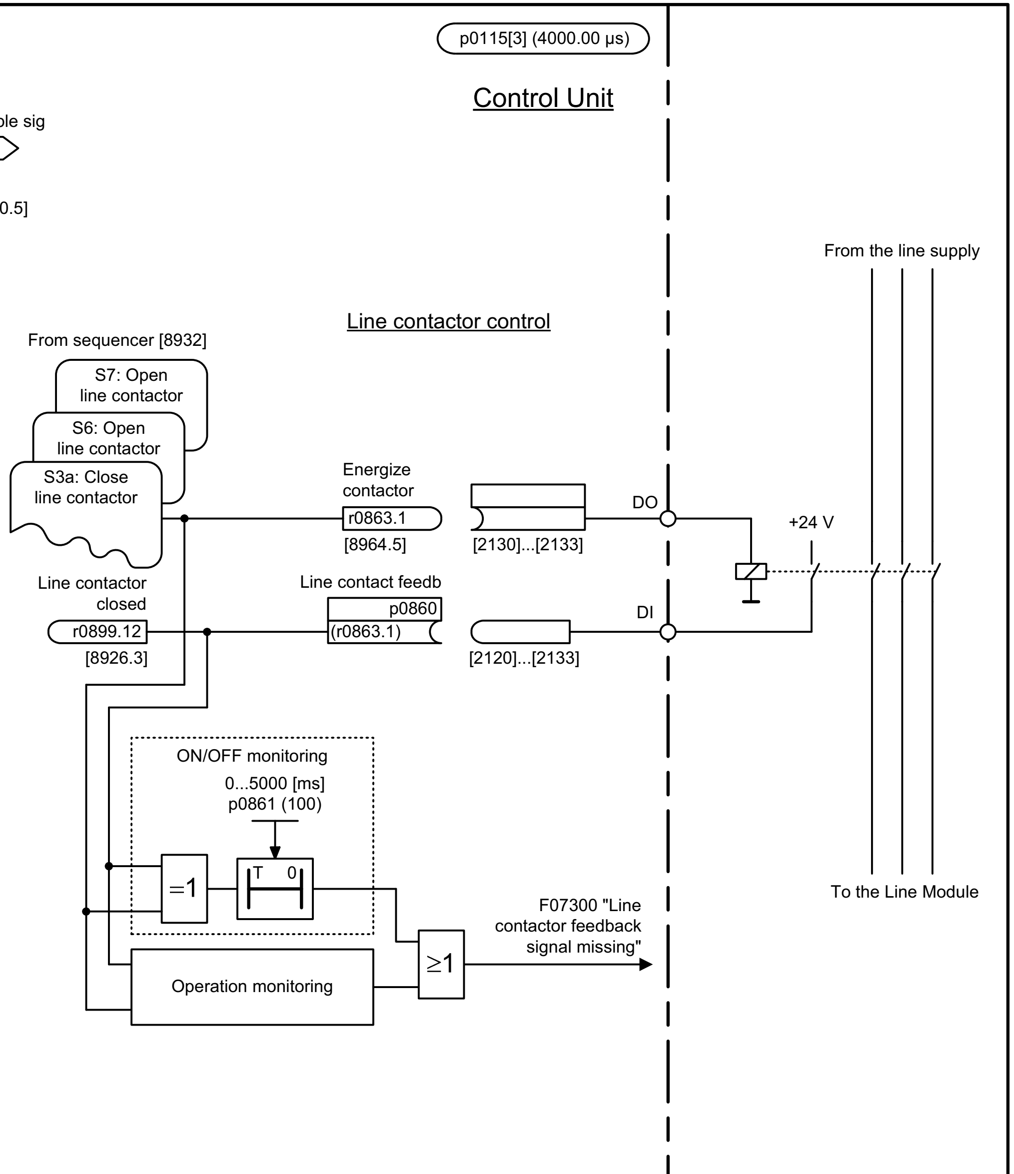
Fig. 3-343 8938 – Missing enable signals, line contactor control

Missing enable signals

Missing enable signals prevent the infeed going into the state "operation"
(Operation enabled: r0899.2 = 1 [8926]).

Bit No.	Meaning	
0	**1 = OFF1 enable missing** (p0898.0 = 0 [8920] or switching on inhibited is present)	r0046.0 [3020.5]
1	**1 = OFF2 enable missing** (p0898.1 = 0 [8920])	r0046.1
2	**Reserved**	
3	**1 = Operation enable missing** (p0898.3 = 0 [8920])	r0046.3
4...7	**Reserved**	
8	**1 = EP terminals enable missing** (pulse enable EP terminals missing)	r0046.8
9...15	**Reserved**	
16	**1 = OFF1 enable internal missing** (OFF1 fault response is present)	r0046.16
17	**1 = OFF2 enable internal missing** (commissioning selected p0009 > 0 or p0010 > 0 or OFF2 fault response present)	r0046.17
18	**Reserved**	
19	**1 = Pulse enable internal missing**	r0046.19
20...25	**Reserved**	
26	**1 = Infeed inactive or not operational**	r0046.26
27, 28	**Reserved**	
29	**1 = Cooling unit ready signal missing**	r0046.29
30, 31	**Reserved**	

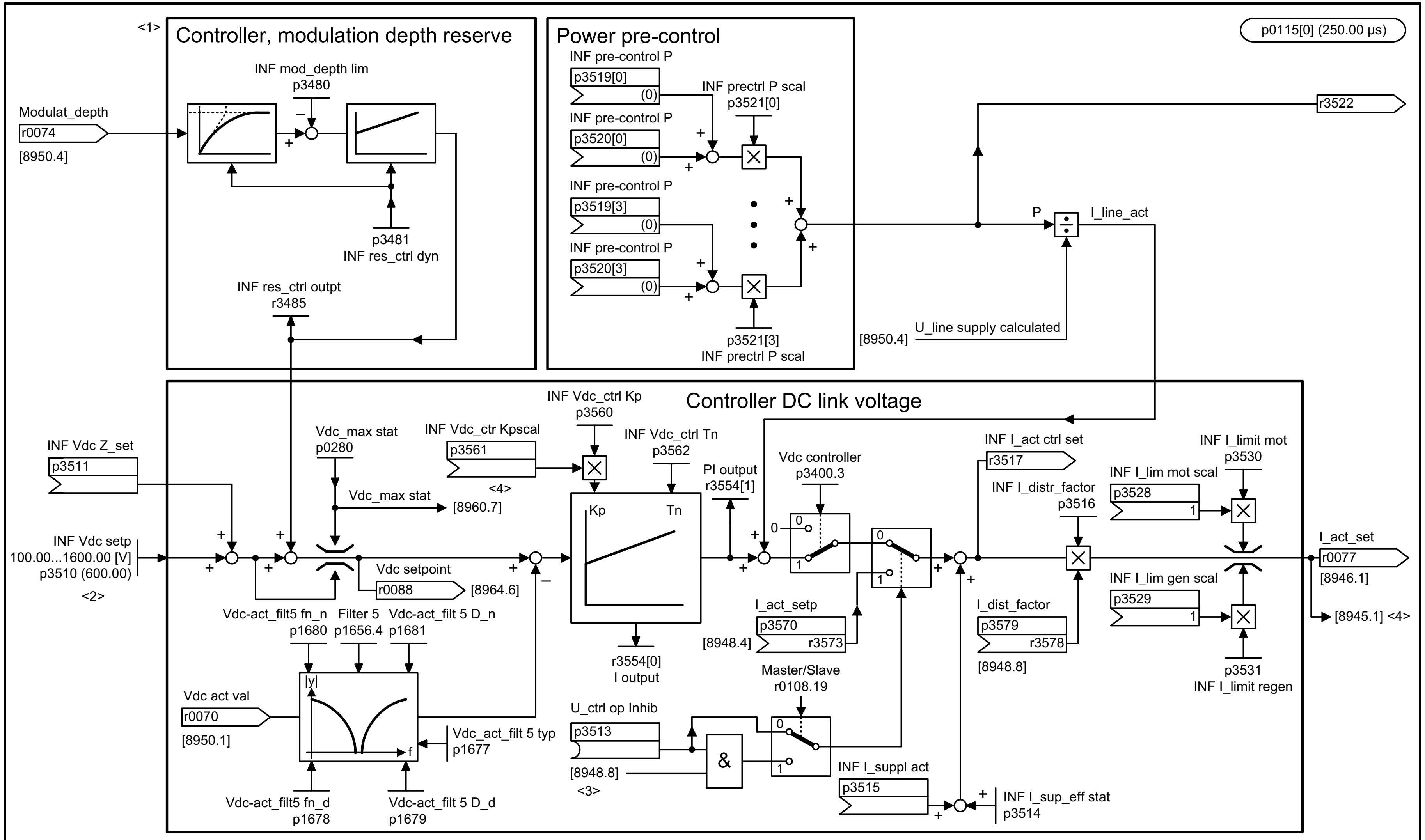
Missing enable sig r0046



1	2	3	4	5	6	7	8

DO: A_INF	fp_8938_55_eng.vsd	Function diagram	- 8938 -
Active Infeed - Missing enable signals, line contactor control	20.01.17 V05.01.01	SINAMICS S120/S150	

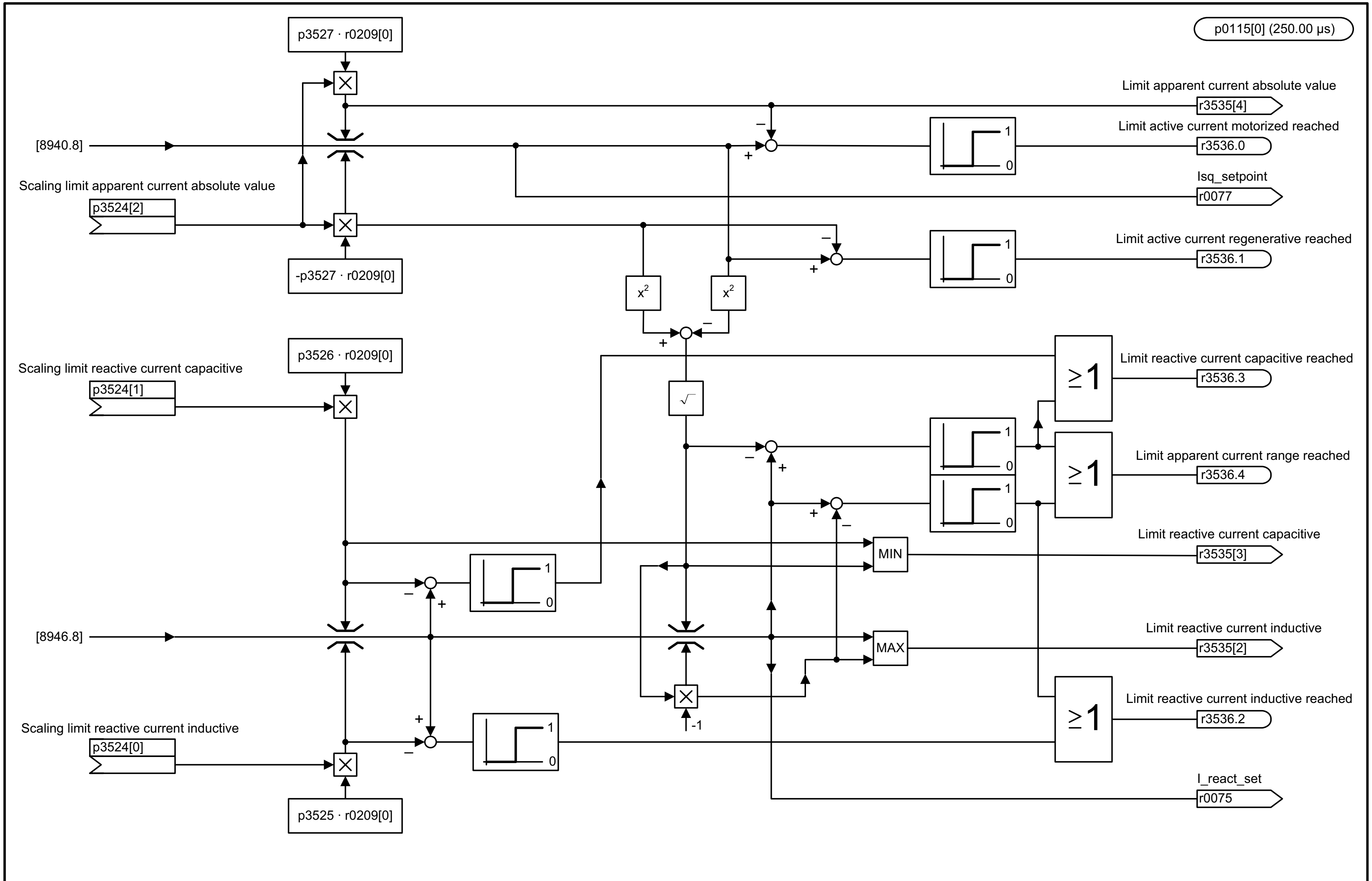
Fig. 3-344 8940 – Controller modulation depth reserve/controller DC link voltage (p3400.0 = 0)



<1> This controller increases (boosts) the DC link voltage when the modulation depth limit has been reached (p3480).
<2> When the pulses are enabled, the DC link voltage is ramped (p3566) from the actual value to the setpoint p3510.
<3> Applies only if the "Master/slave" function module is activated (r0108.19 = 1).
<4> Applies only if the "Additional Control" function module is activated (r0108.3 = 1).

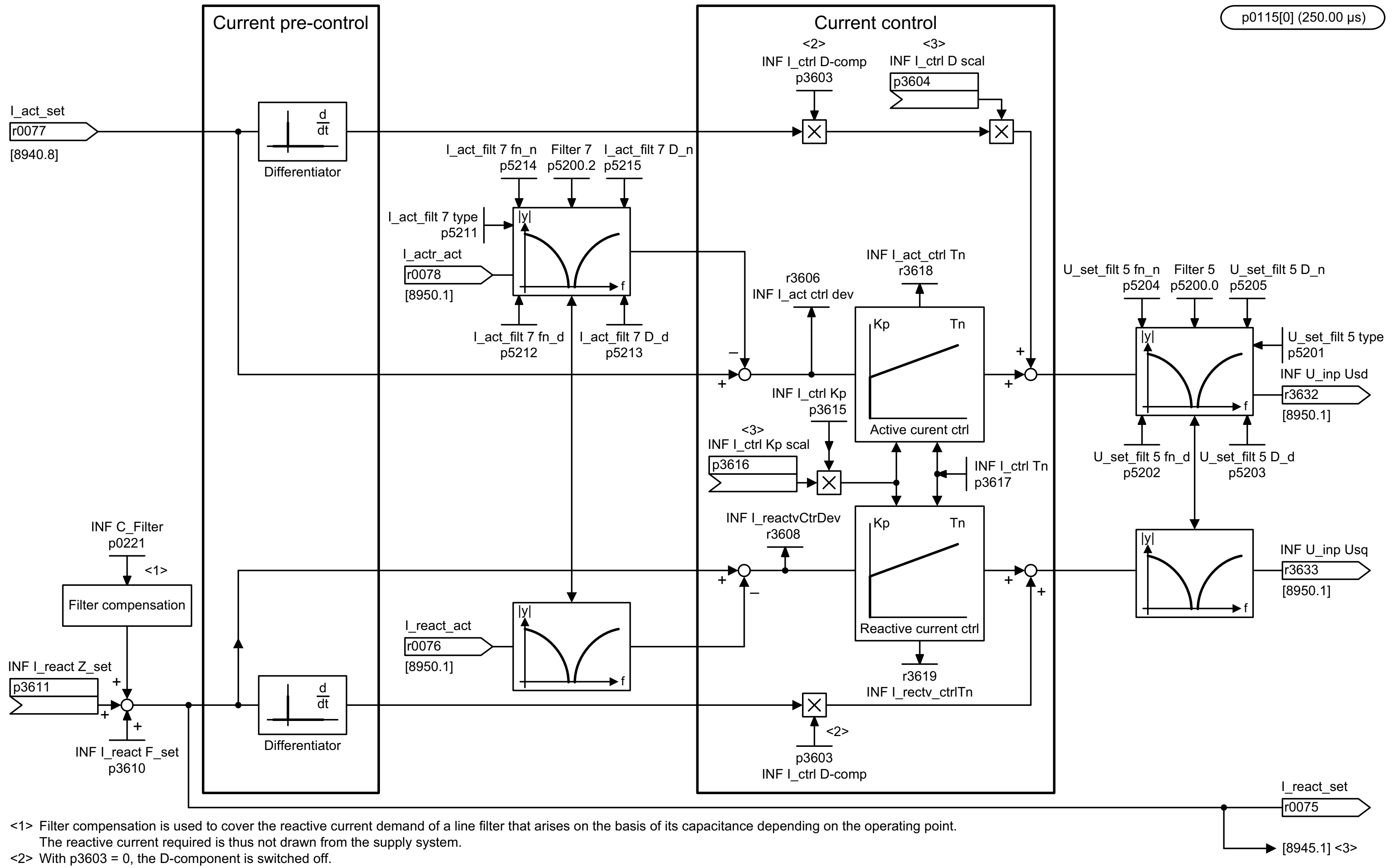
1	2	3	4	5	6	7	8
DO: A_INF, R_INF					fp_8940_55_eng.vsd	Function diagram	- 8940 -
Active Infeed - Controller modulation depth reserve/controller DC link voltage (p3400.0 = 0)					24.01.14 V05.01.01	SINAMICS S120/S150	

Fig. 3-345 8945 – Reactive current/apparent current limits (r0108.3 = 1)



1	2	3	4	5	6	7	8

DO: A_INF	fp_8945_55_eng.vsd	Function diagram	- 8945 -
Active Infeed - Reactive current/apparent current limits (r0108.3 = 1)	22.05.18 V05.01.01	SINAMICS S120/S150	



<1> Filter compensation is used to cover the reactive current demand of a line filter that arises on the basis of its capacitance depending on the operating point. The reactive current required is thus not drawn from the supply system.

<2> With p3603 = 0, the D-component is switched off.

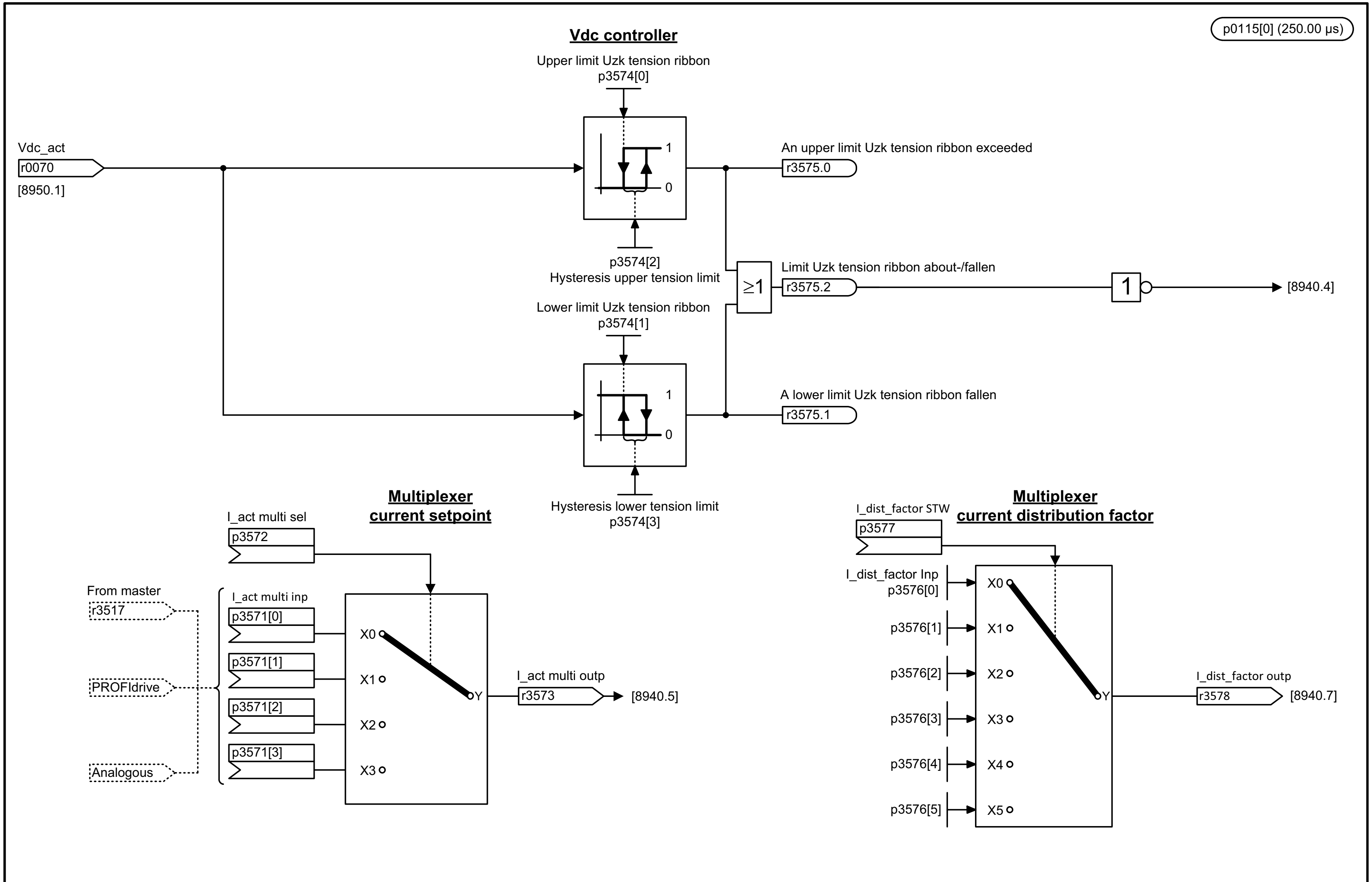
<3> Only with "Additional Control" function module activated (r0108.3 = 1).

1	2	3	4	5	6	7	8

DO: A_INF	fp_8946_55_eng.vsd	Function diagram	- 8946 -
Active Infeed - Current pre-control/current controller/gating unit (p3400.0 = 0)	17.09.13 V05.01.01	SINAMICS S120/S150	

Fig. 3-346 8946 – Current precontrol/current controller/gating unit (p3400.0 = 0)

Fig. 3-347 8948 – Master/slave (r0108.19 = 1)



1	2	3	4	5	6	7	8

DO: A_INF	fp_8948_55_eng.vsd	Function diagram	- 8948 -
Active Infeed - Master/slave (r0108.19 = 1)	07.12.10 V05.01.01	SINAMICS S120/S150	

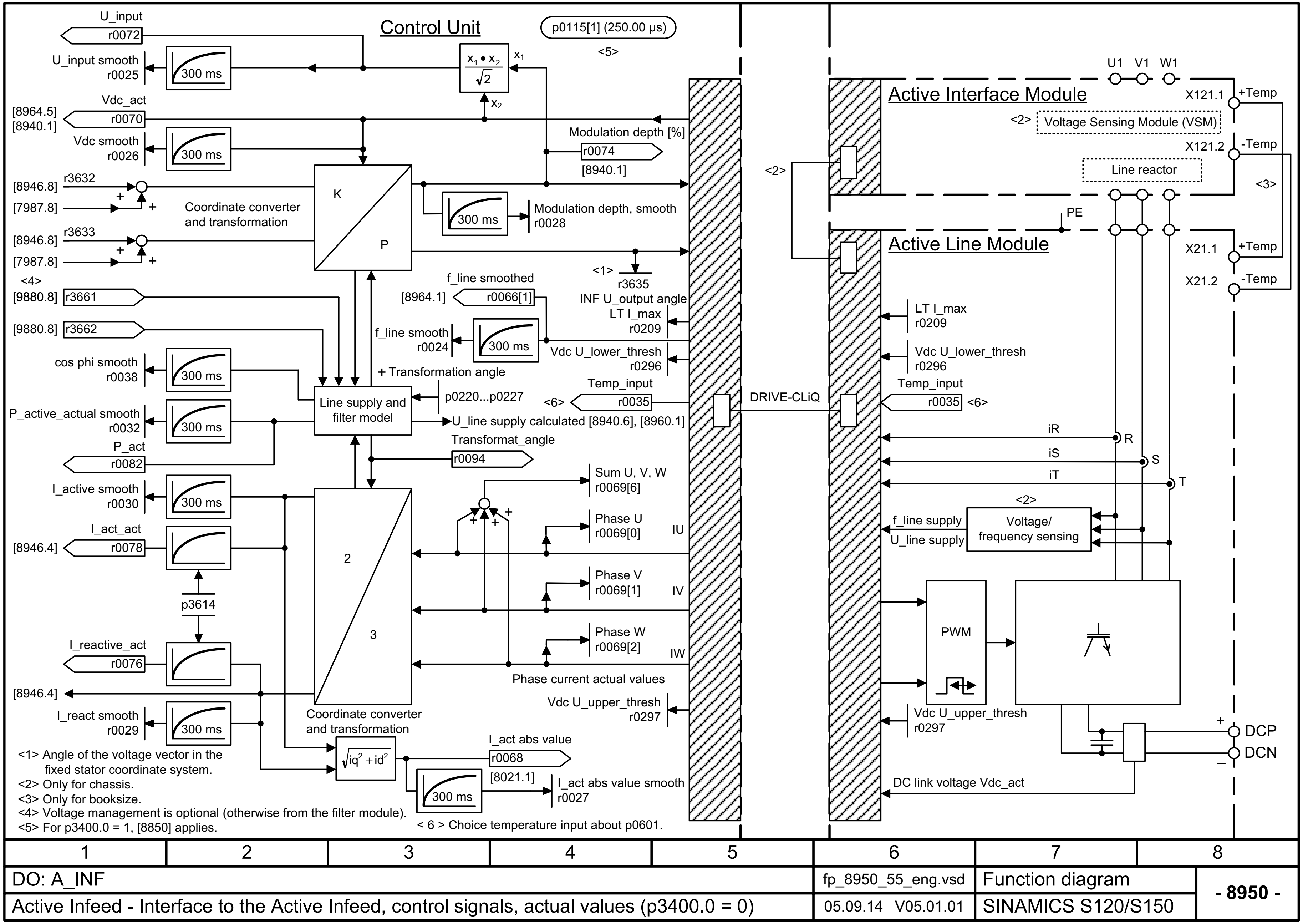
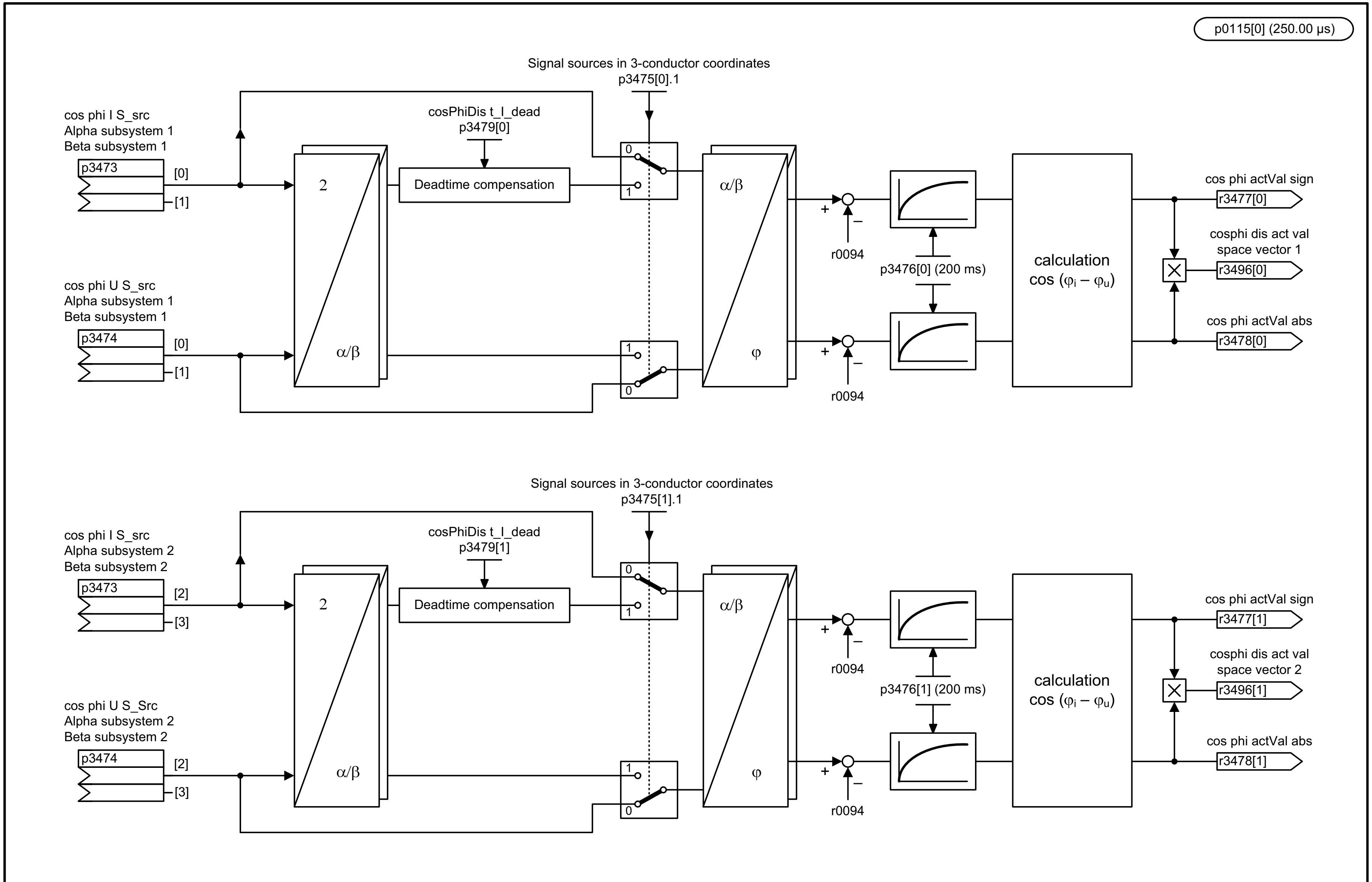


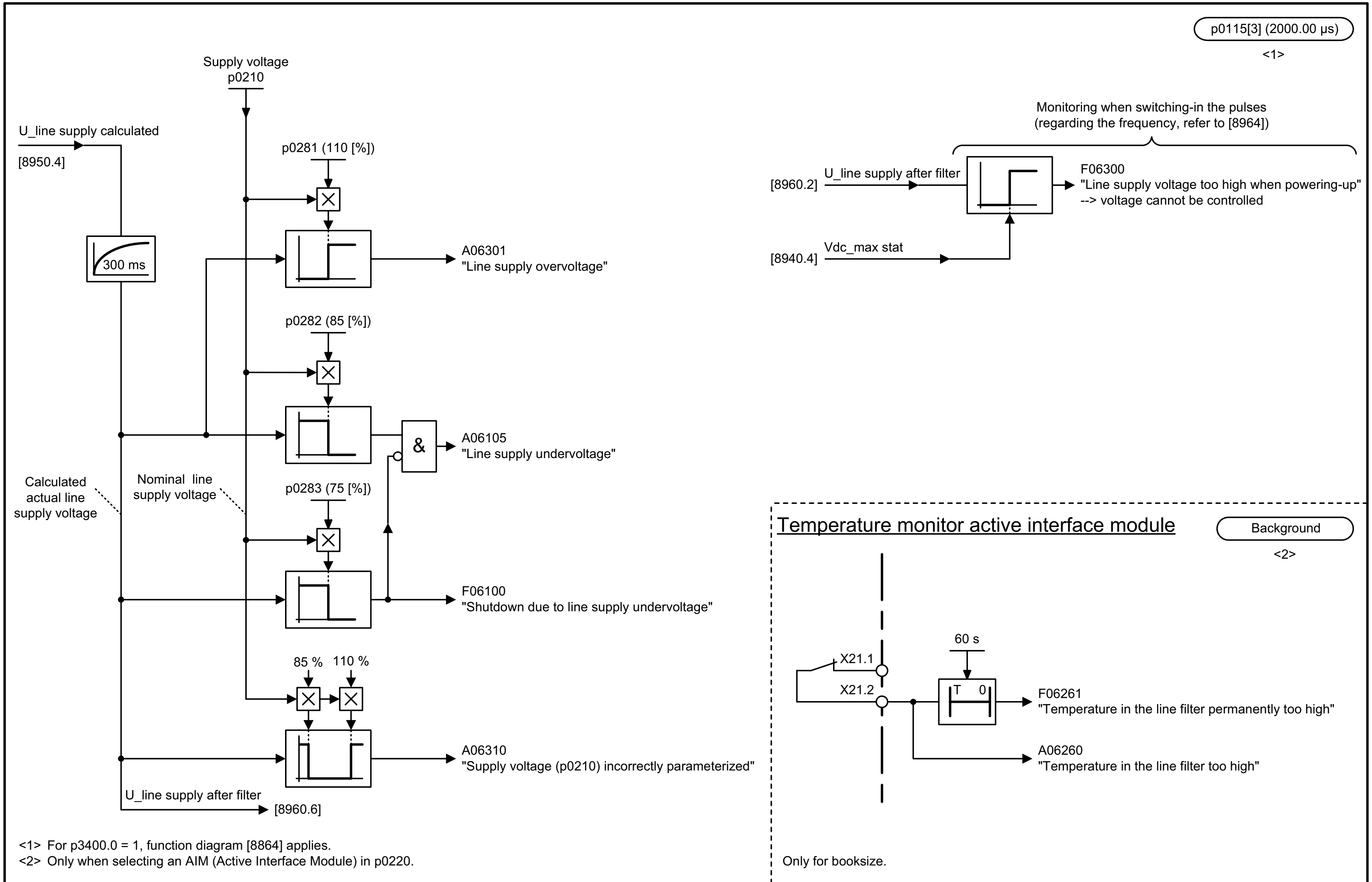
Fig. 3-348 8950 – Interface to the Active Infeed, control signals, actual values (p3400.0 = 0)

Fig. 3-349 8951 – Cos phi display (r0108.10 = 1)



1	2	3	4	5	6	7	8

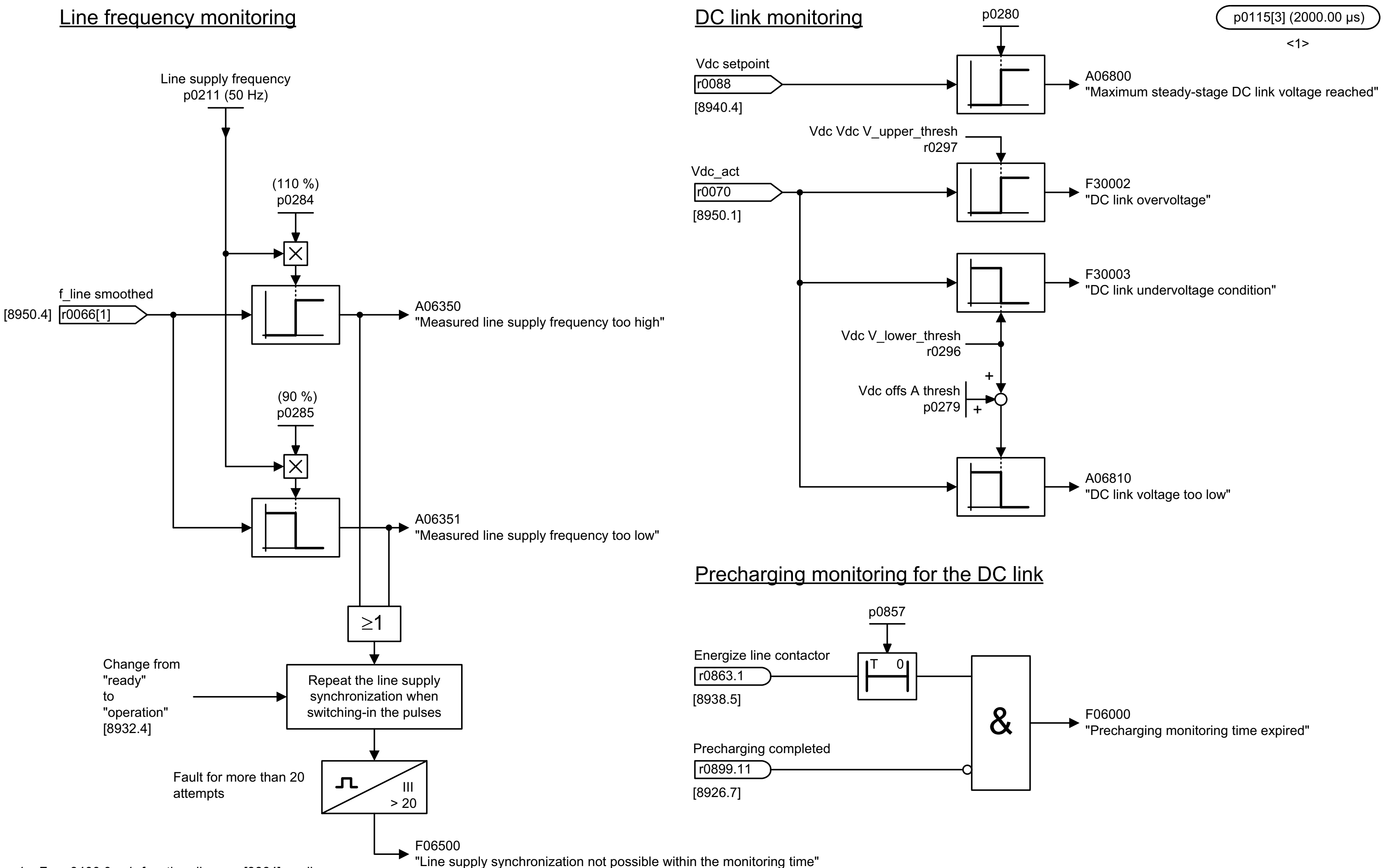
DO: A_INF	fp_8951_55_eng.vsd	Function diagram	- 8951 -
Active Infeed - Cos phi display (r0108.10 = 1)	28.07.15 V05.01.01	SINAMICS S120/S150	



1	2	3	4	5	6	7	8
DO: A_INF					fp_8960_55_eng.vsd	Function diagram	- 8960 -
Active Infeed - Signals and monitoring functions, line supply voltage monitoring (p3400.0 = 0)					26.02.13 V05.01.01	SINAMICS S120/S150	

Fig. 3-350 8960 – Signals and monitoring functions, line voltage monitoring (p3400.0 = 0)

Fig. 3-351 8964 – Signals and monitoring functions, line frequency/Vdc monit. (p3400.0 = 0)



<1> For p3400.0 = 1, function diagram [8864] applies.

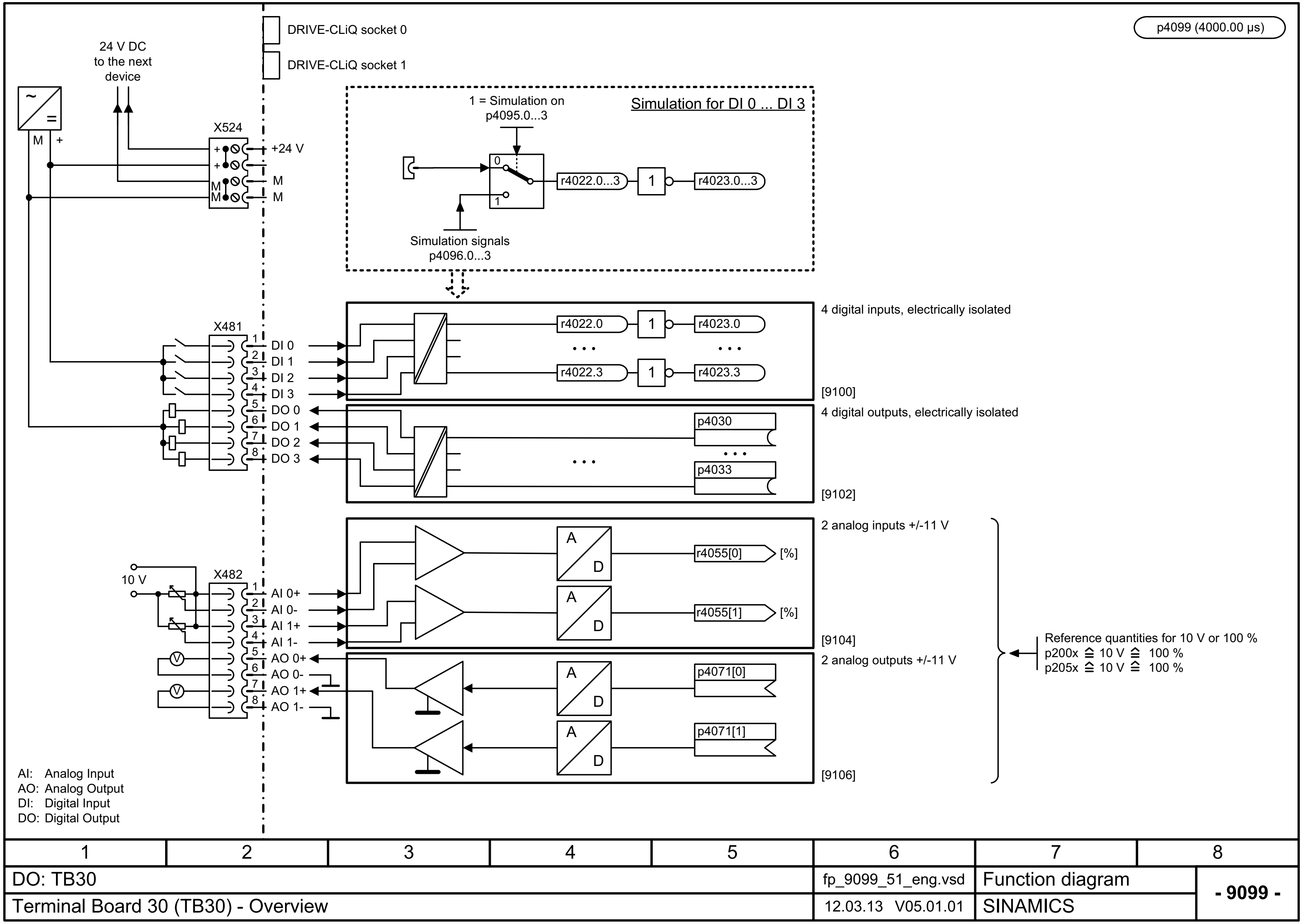
1	2	3	4	5	6	7	8

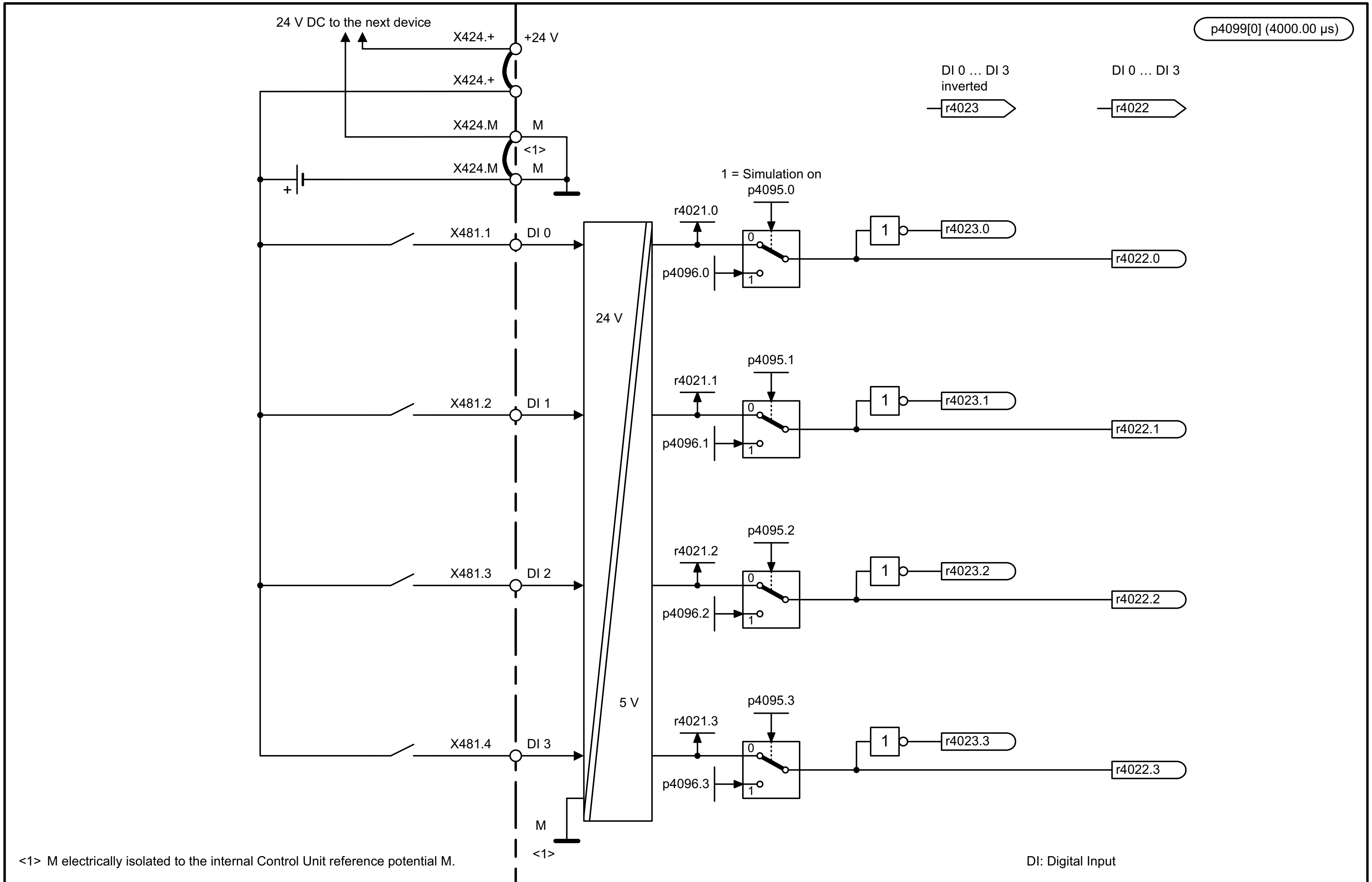
DO: A_INF	fp_8964_55_eng.vsd	Function diagram	- 8964 -
Active Infeed - Signals and monitoring functions, line frequency and Vdc monit. (p3400.0 = 0)	19.06.15 V05.01.01	SINAMICS S120/S150	

3.37 Terminal Board 30 (TB30)

Function diagrams

Fig. 3-352 9099 – Overview



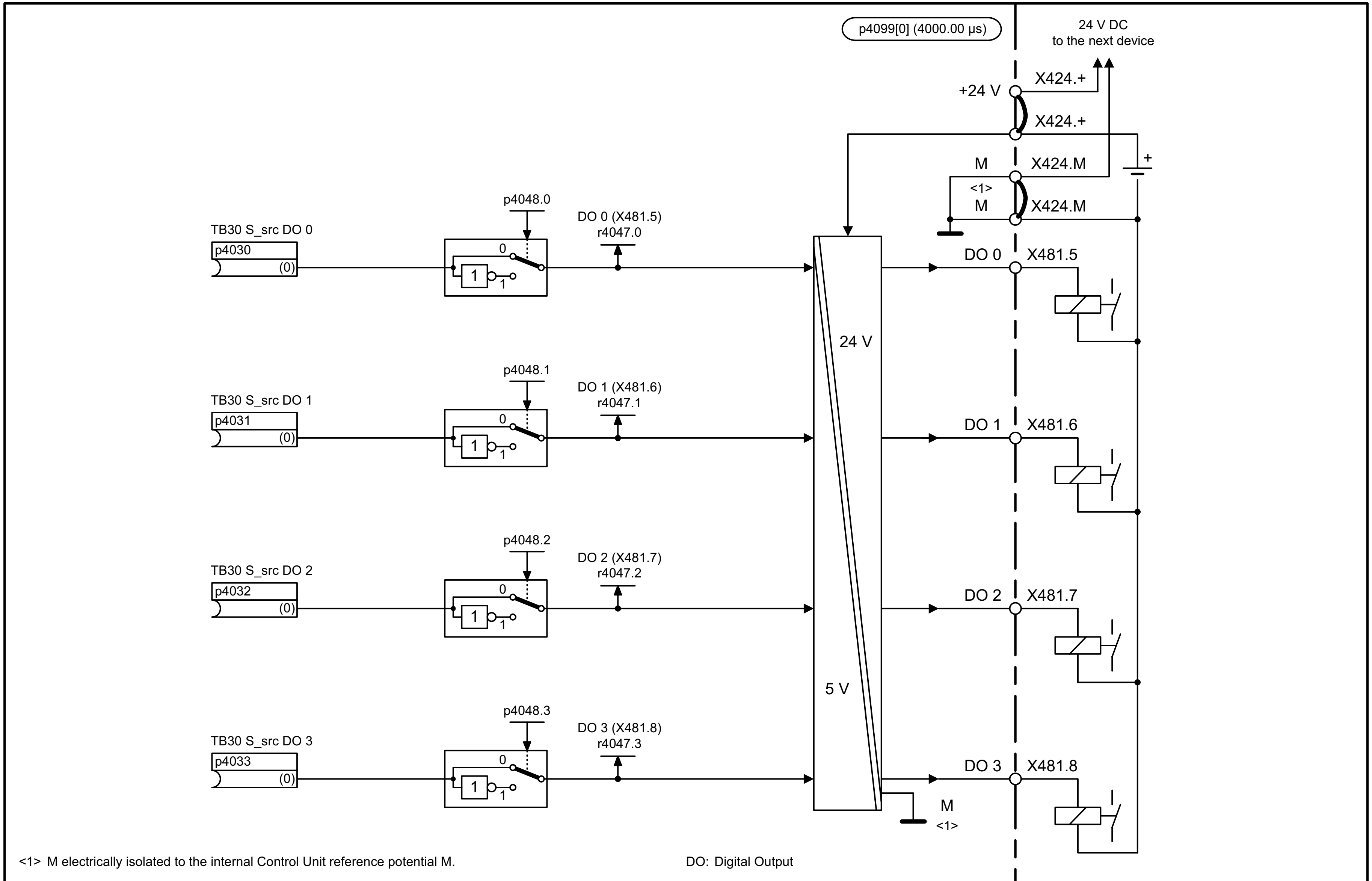


1	2	3	4	5	6	7	8

DO: TB30	fp_9100_51_eng.vsd	Function diagram	- 9100 -
Terminal Board 30 (TB30) - Digital inputs, electrically isolated (DI 0 ... DI 3)	24.11.09 V05.01.01	SINAMICS	

Fig. 3-353 9100 – Digital inputs, electrically isolated (DI 0 ... DI 3)

Fig. 3-354 9102 – Digital outputs, electrically isolated (DO 0 ... DO 3)



1	2	3	4	5	6	7	8

DO: TB30	fp_9102_51_eng.vsd	Function diagram	- 9102 -
Terminal Board 30 (TB30) - Digital outputs, electrically isolated (DO 0 ... DO 3)	24.11.09 V05.01.01	SINAMICS	

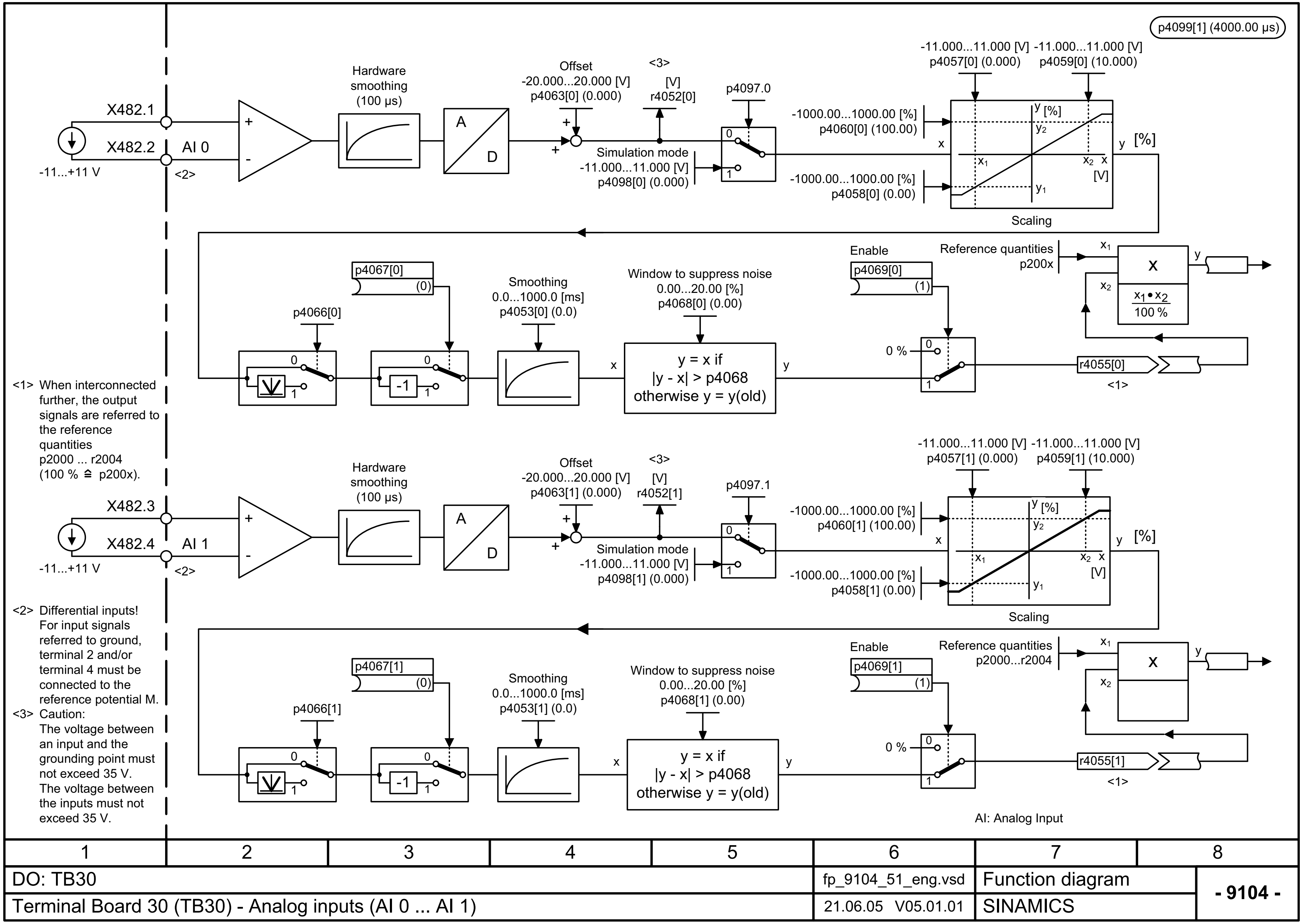
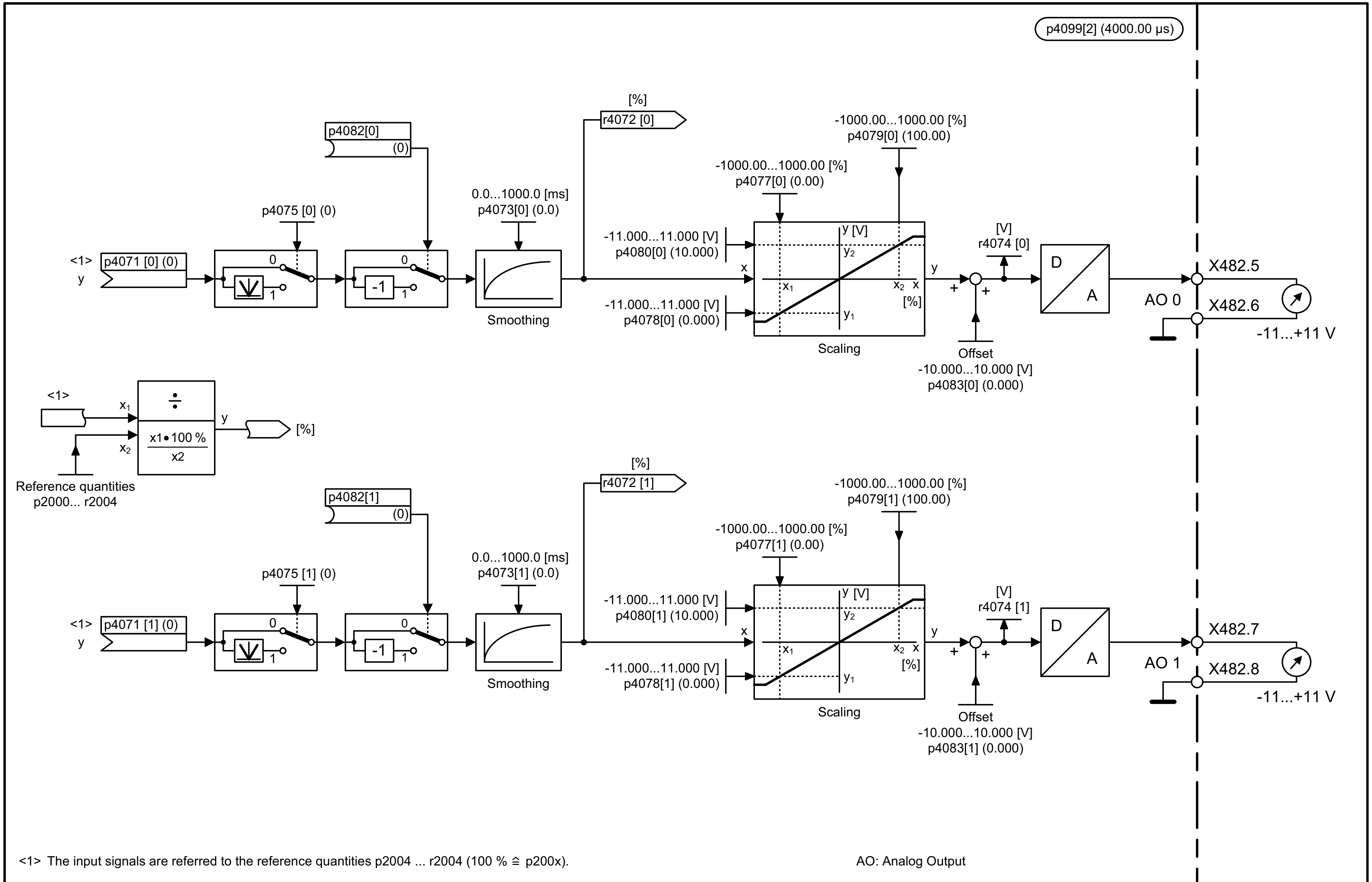


Fig. 3-355 9104 – Analog inputs (AI 0 ... AI 1)



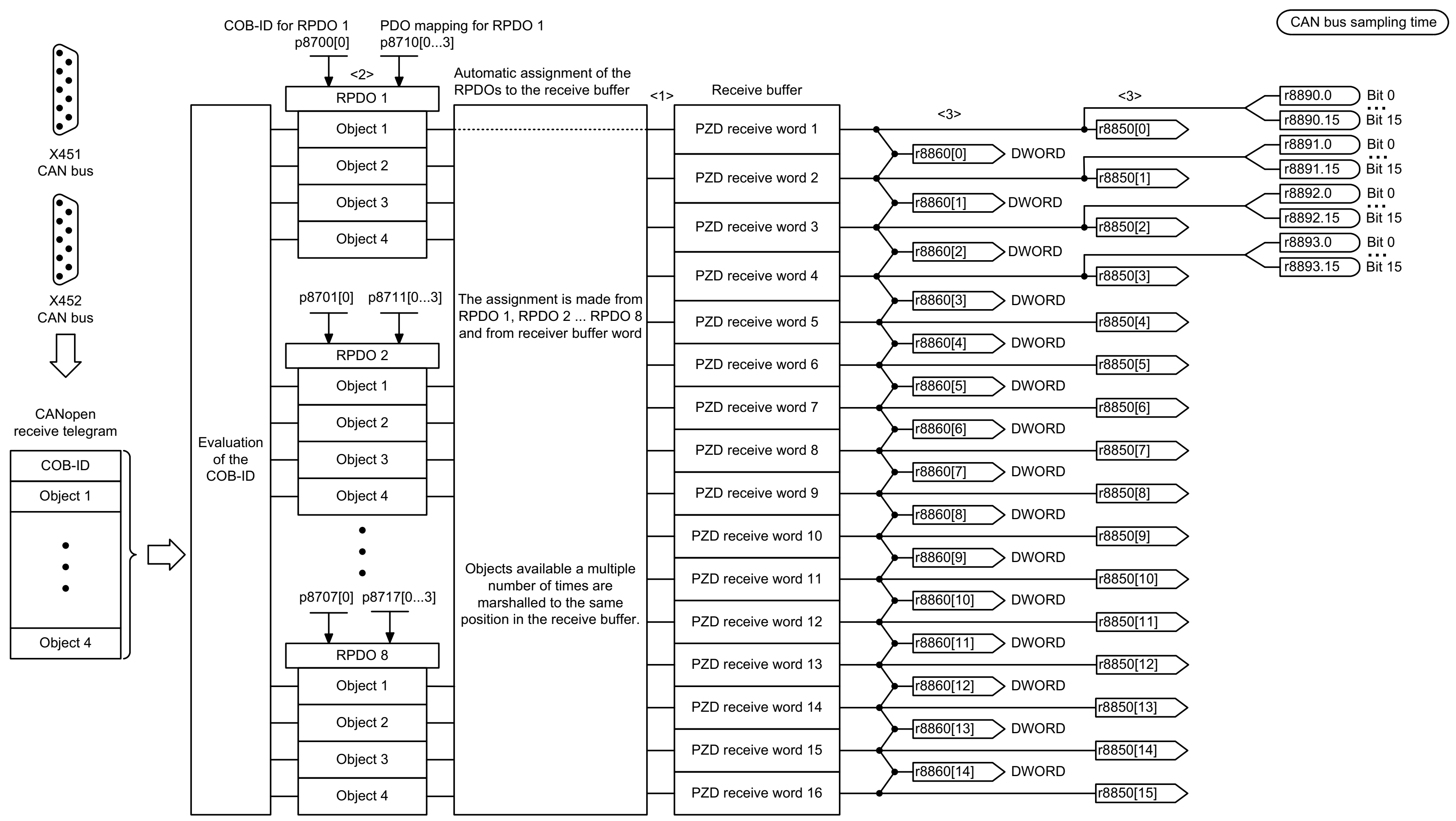
1	2	3	4	5	6	7	8
DO: TB30					fp_9106_51_eng.vsd	Function diagram	- 9106 -
Terminal Board 30 (TB30) - Analog outputs (AO 0 ... AO 1)					25.10.05 V05.01.01	SINAMICS	

Fig. 3-356 9106 – Analog outputs (AO 0 ... AO 1)

3.38 Communication Board CAN10 (CBC10)

Function diagrams

Fig. 3-357 9204 – Receive telegram, free PDO mapping (p8744 = 2)

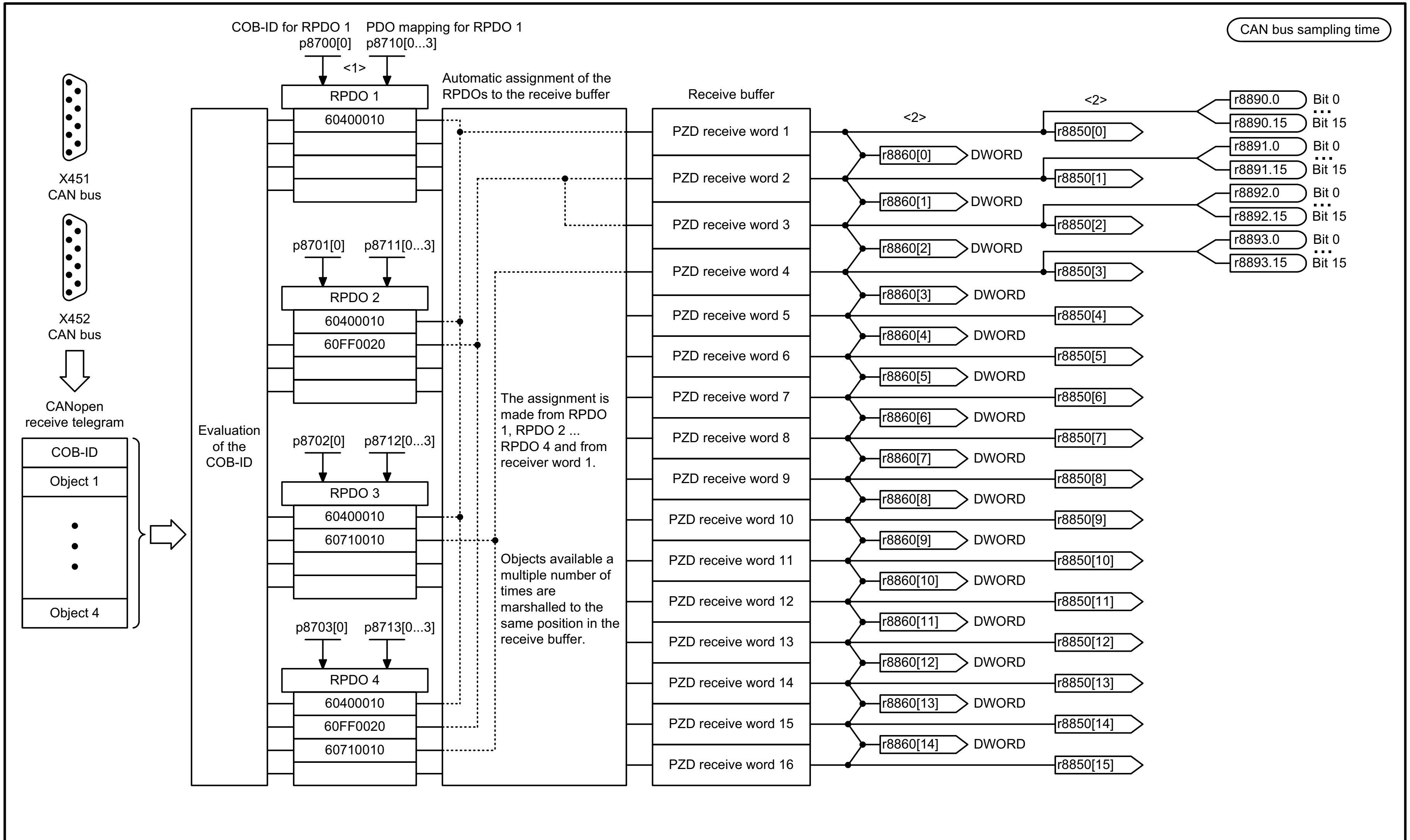


<1> To use automatic BICO interconnection (p8790 = 1), one of the receive words 1 - 4 must be used as control word 1 (STW1).
<2> Telegram: up to 4 words or 64 bits.
The sum of the various objects must not exceed 16 words.
<3> When interconnecting a connector output multiple times all the connector inputs must have either Integer or FloatingPoint data type.

RPDO: Receive Process Data Object
COB-ID: CAN Communication Object Identifier

1	2	3	4	5	6	7	8
DO: A_INFM2C, SERVO, VECTOR, VECTOR3P, VECTORGL, VECTORMV, VECTORSL					fp_9204_51_eng.vsd	Function diagram	- 9204 -
Communication Board CAN10 (CBC10) - Receive telegram, free PDO mapping (p8744 = 2)					05.07.13 V05.01.01	SINAMICS	

Fig. 3-358 9206 – Receive telegram, Predefined Connection Set (p8744 = 1)



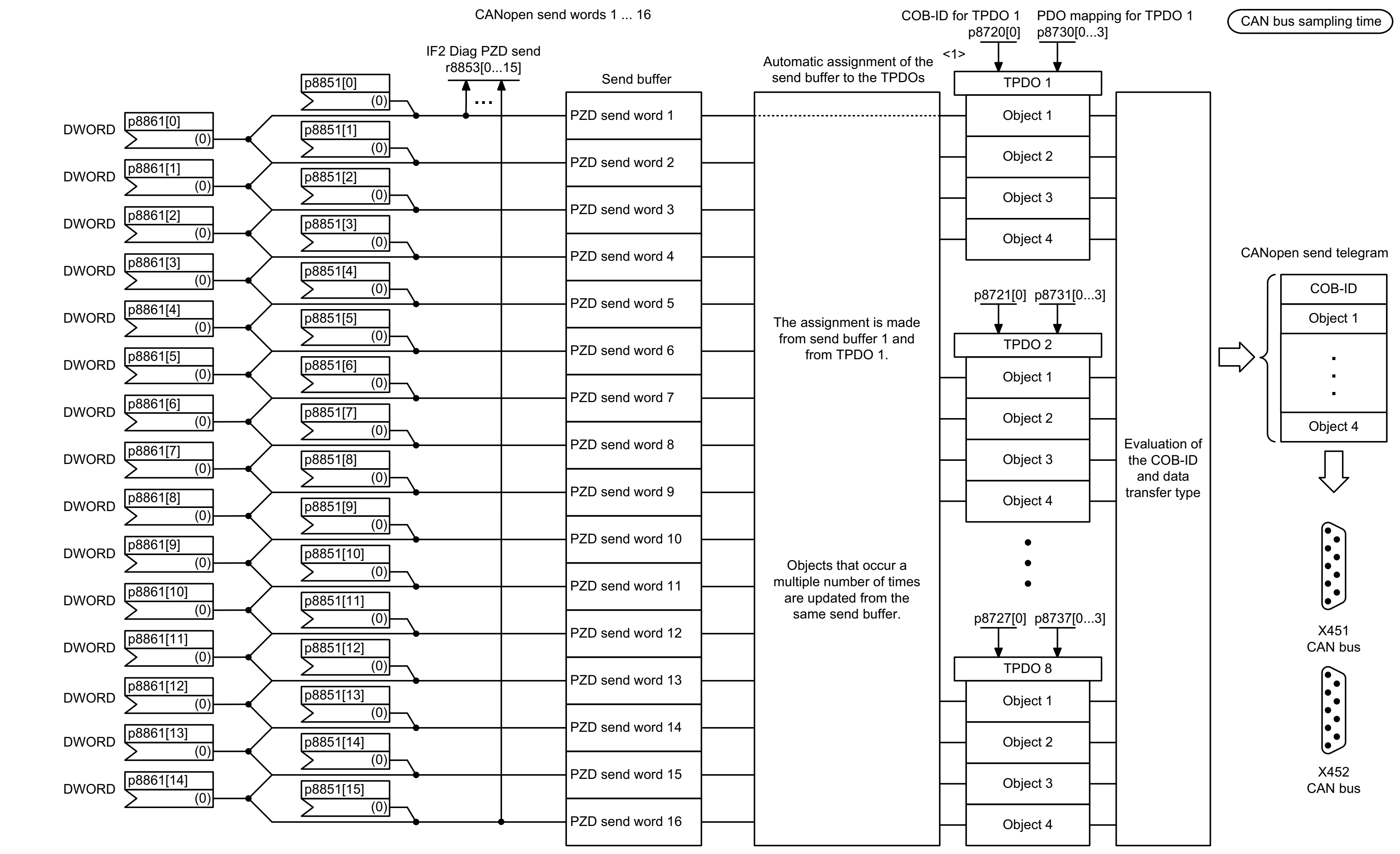
<1> Telegram: up to 4 words or 64 bits.
The sum of the various objects must not exceed 16 words.
<2> When interconnecting a connector output multiple times all the connector inputs must have either Integer or FloatingPoint data type.

RPDO: Receive Process Data Object
COB-ID: CAN Communication Object Identifier

1	2	3	4	5	6	7	8

DO: A_INFM2C, SERVO, VECTOR, VECTOR3P, VECTORGL, VECTORMV, VECTORSL	fp_9206_51_eng.vsd	Function diagram	- 9206 -
Communication Board CAN10 (CBC10) - Receive telegram, Predef. Conn. Set (p8744 = 1)	05.07.13 V05.01.01	SINAMICS	

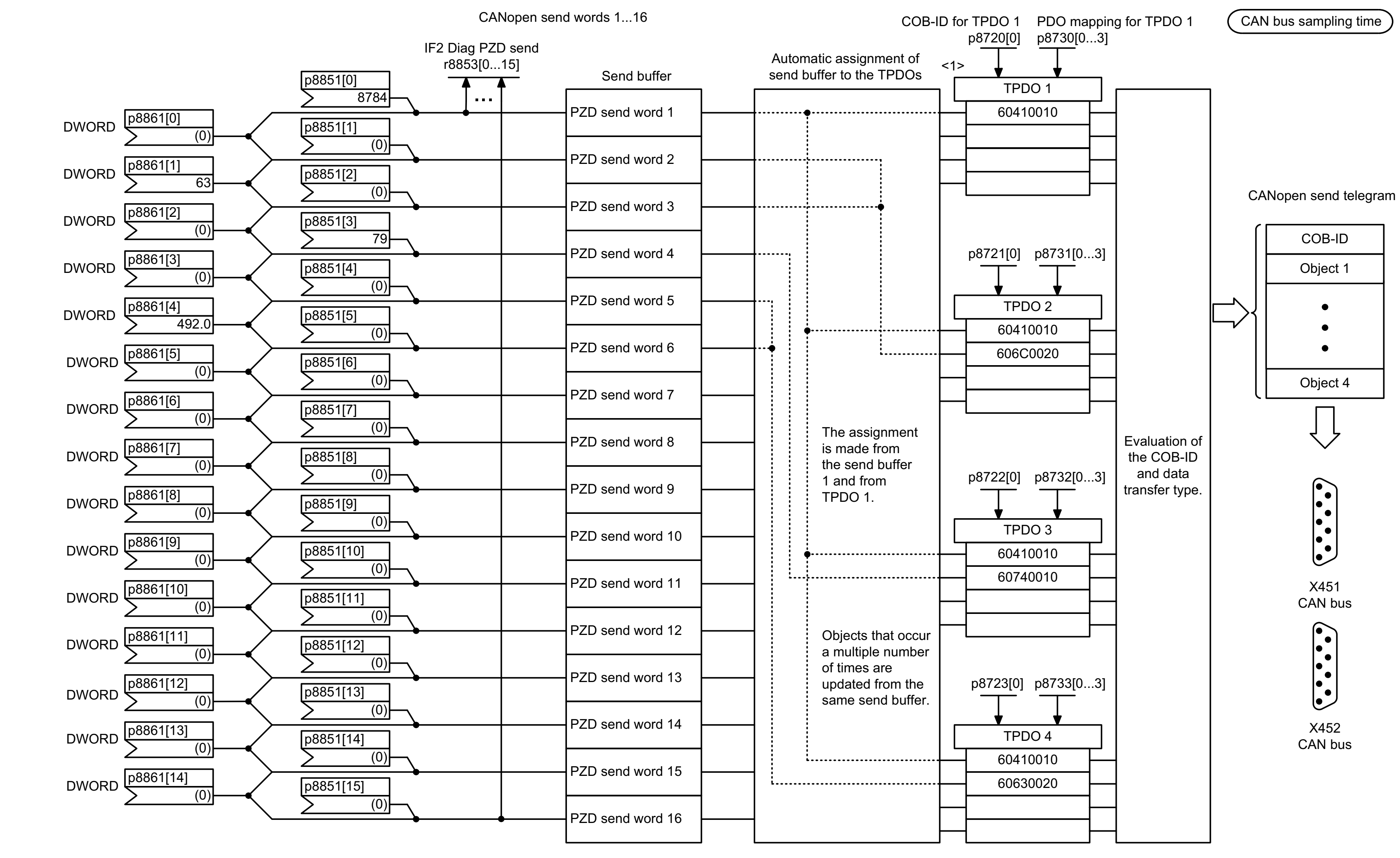
Fig. 3-359 9208 – Send telegram, free PDO mapping (p8744 = 2)



<1> Telegram: up to 4 words or 64 bits.
The sum of the various objects must not exceed 16 words.

TPDO: Transmit Process Data Object
COB-ID: CAN Communication Object Identifier

1	2	3	4	5	6	7	8
DO: A_INFM2C, SERVO, VECTOR, VECTOR3P, VECTORGL, VECTORMV, VECTORSL					fp_9208_51_eng.vsd	Function diagram	- 9208 -
Communication Board CAN10 (CBC10) - Send telegram, free PDO mapping (p8744 = 2)					05.07.13 V05.01.01	SINAMICS	



<1> Telegram: up to 4 words or 64 bits.
The sum of the various objects must not exceed 16 words.

TPDO: Transmit Process Data Object
COB-ID: CAN Communication Object Identifier

1	2	3	4	5	6	7	8
DO: A_INFM2C, SERVO, VECTOR, VECTOR3P, VECTORGL, VECTORMV, VECTORSL					fp_9210_51_eng.vsd	Function diagram	- 9210 -
Communication Board CAN10 (CBC10) - Send telegram, Predef. Connection Set (p8744 = 1)					05.07.13 V05.01.01	SINAMICS	

Fig. 3-361 9220 – Control word, CANopen

Signal targets for control word CANopen

CAN bus sampling time

Signal	Meaning	Interconnection parameters <1>	[Function diagram] internal control word	[Function diagram] signal target	Inverted
STW1.0	= ON (pulses can be enabled) **0 = OFF1** (braking with ramp-function generator, then pulse cancellation and ready for switching on)	p0840[0] = r8890.0	[2501.3]	[2610]	-
STW1.1	**1 = No coast-down activated** (enable possible) 0 = Activate coast-down (immediate pulse cancellation and power-on inhibit)	p0844[0] = r8890.1	[2501.3]	[2610]	-
STW1.2	**1 = No quick stop activated** (enable possible) 0 = Activate quick stop (braking along an OFF3 ramp p1135, then pulse cancellation and power- oninhibit)	p0848[0] = r8890.2	[2501.3]	[2610]	-
STW1.3	**1 = Enable operation** (pulses can be enabled) 0 = Inhibit operation (cancel pulses)	p0852[0] = r8890.3	[2501.3]	[2610]	-
STW1.4	**1 = Enable ramp-function generator** 0 = Inhibit ramp-function generator	<2> p1140[0] = r8890.4	[2501.3]	[3060]	-
STW1.5	**1 = Continue ramp-function generator** 0 = Freeze ramp-function generator	<2> p1141[0] = r8890.5	[2501.3]	[3060]	-
STW1.6	**1 = Enable speed setpoint ramp-function generator input** 0 = Inhibit setpoint (the ramp-function generator input is set to zero)	<2> p1142[0] = r8890.6	[2501.1]	[3060]	-
STW1.7	**= Acknowledge fault**	p2103[0] = r8890.7	[2546.1]	[8060]	-
STW1.8	**1 = Stop**	<2> - <3>	-	[3060]	-
STW1.9	**Reserved**	-	-	-	-
STW1.10	**Reserved**	-			-
STW1.11	**Can be freely connected**	pxxxx[y] = r8890.11			-
STW1.12	**Can be freely connected**	pxxxx[y] = r8890.12	-	-	-
STW1.13	**Can be freely connected**	pxxxx[y] = r8890.13	-	-	-
STW1.14	**Can be freely connected**	pxxxx[y] = r8890.14	-	-	-
STW1.15	**Can be freely connected**	pxxxx[y] = r8890.15	-	-	-

<1> Depending on the position of the CANopen control word in p8750, the number of the binector to be connected changes.
<2> Ignored by automatic control word interconnection (p8790).
<3> Interconnection via p8791.

1	2	3	4	5	6	7	8

DO: A_INFM2C, SERVO, VECTOR, VECTOR3P, VECTORGL, VECTORMV, VECTORSL	fp_9220_51_eng.vsd	Function diagram	- 9220 -
Communication Board CAN10 (CBC10) - Control word, CANopen	04.07.13 V05.01.01	SINAMICS	

Status word CANopen r8784

CAN bus sampling time

Source	Bit No.	Status word CANopen
From sequencer [2610]	0	**1 = Ready for switch on**
From sequencer [2610]	1	**1 = Ready** (DC link loaded, pulses blocked)
From sequencer [2610]	2	**1 = Operation enabled** (drive follows n_set)
From fault buffer [8060]	3	**1 = Fault present**
From sequencer [2610]	4	**1 = No coasting active**
From sequencer [2610]	5	**1 = No Quick Stop active**
From sequencer [2610]	6	**1 = Switching on inhibited active**
From alarm buffer [8065]	7	**1 = Alarm present**
p8785 (0)	8	**Can be freely interconnected (BI: p8785)**
Bit 9 = 1 --> Ready to exchange process data	9	**1 = Control request**
Status word CANopen Bit 8 = 0: from speed signals 2 [8011.8] (r2197.7) Status word CANopen Bit 8 = 1: From status word monitoring 3 [8010.8] (r2199.0)	10	**1 = Target reached** <1>
From status word speed controller [2522]	11	**1 = Torque limit reached**
From status word monitoring 3 [8010.8] (r2199.0)	12	**1 = Velocity equal to zero**
	13	**Reserved**
p8786 (0)	14	**Can be freely interconnected (BI: p8786)**
p8787 (0)	15	**Can be freely interconnected (BI: p8787)**

<1> With setpoint channel: connect p2151 with r1119 [8010.5].
<2> Only if p8791 = 1 or 3.

1	2	3	4	5	6	7	8

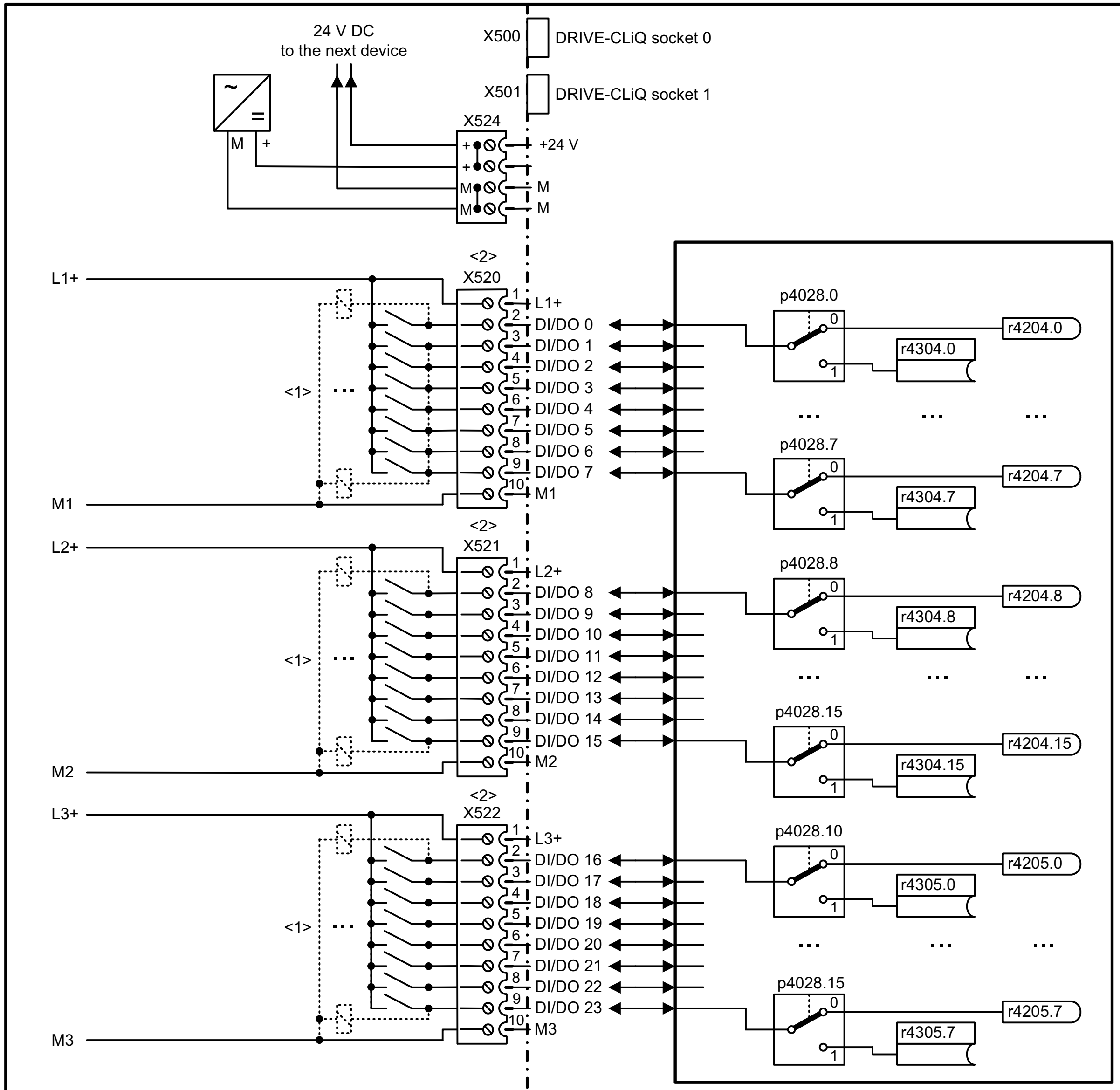
DO: A_INFM2C, SERVO, VECTOR, VECTOR3P, VECTORGL, VECTORMV, VECTORSL	fp_9226_51_eng.vsd	Function diagram	- 9226 -
Communication Board CAN10 (CBC10) - Status word, CANopen	24.02.14 V05.01.01	SINAMICS	

Fig. 3-362 9226 – Status word, CANopen

3.39 Terminal Module 15 (TM15)

Function diagrams

p4099 (125.00 µs)



<1> The wiring shown dashed applies for the setting as digital output (p4028.x = 1).

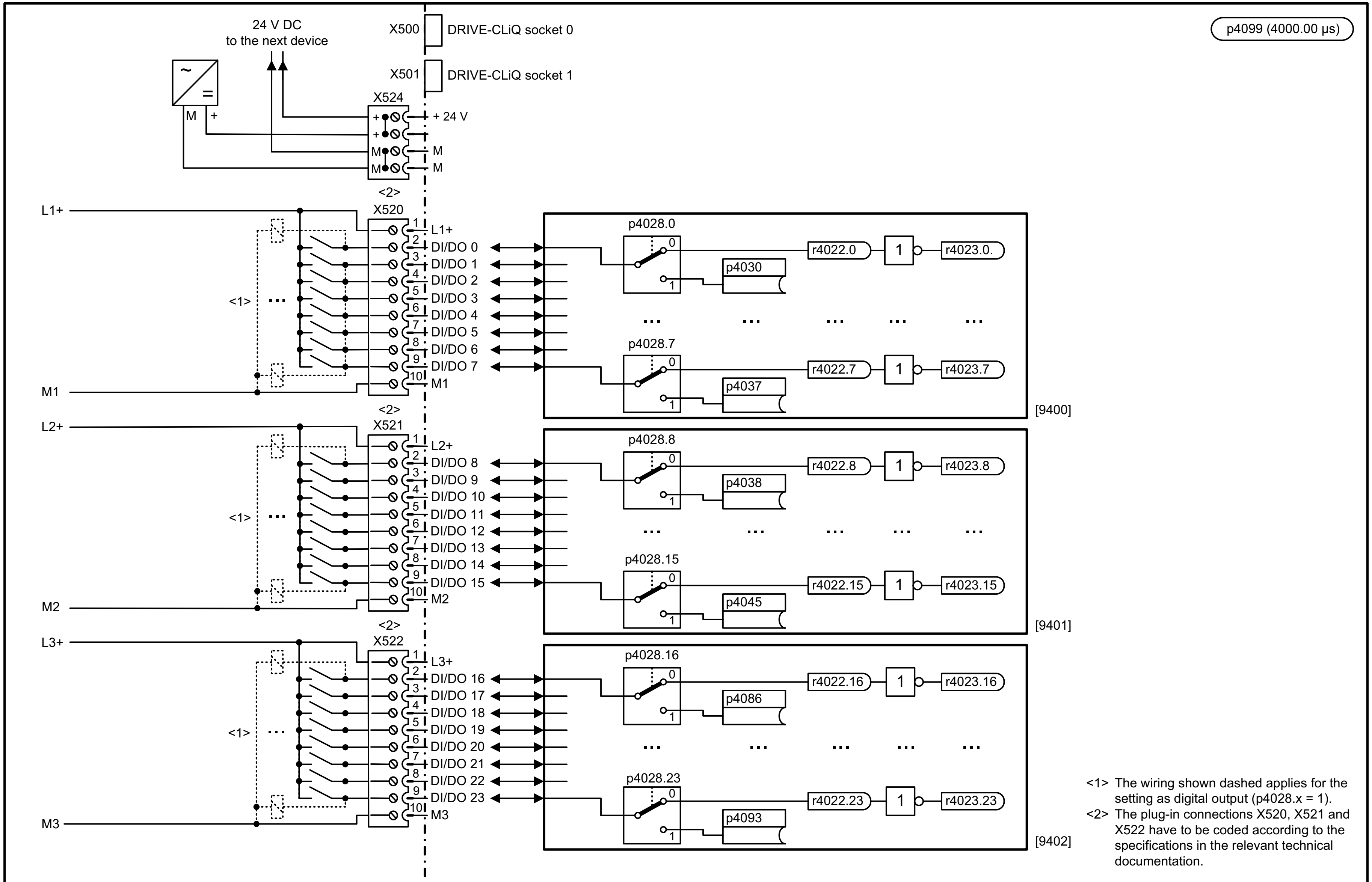
<2> The plug-in connections X520, X521 and X522 have to be coded according to the specifications in the relevant technical documentation.

1	2	3	4	5	6	7	8

DO: TM15	fp_9389_51_eng.vsd	Function diagram	- 9389 -
Terminal Module 15 (TM15) - Overview TM15 (SIMOTION)	17.03.14 V05.01.01	SINAMICS	

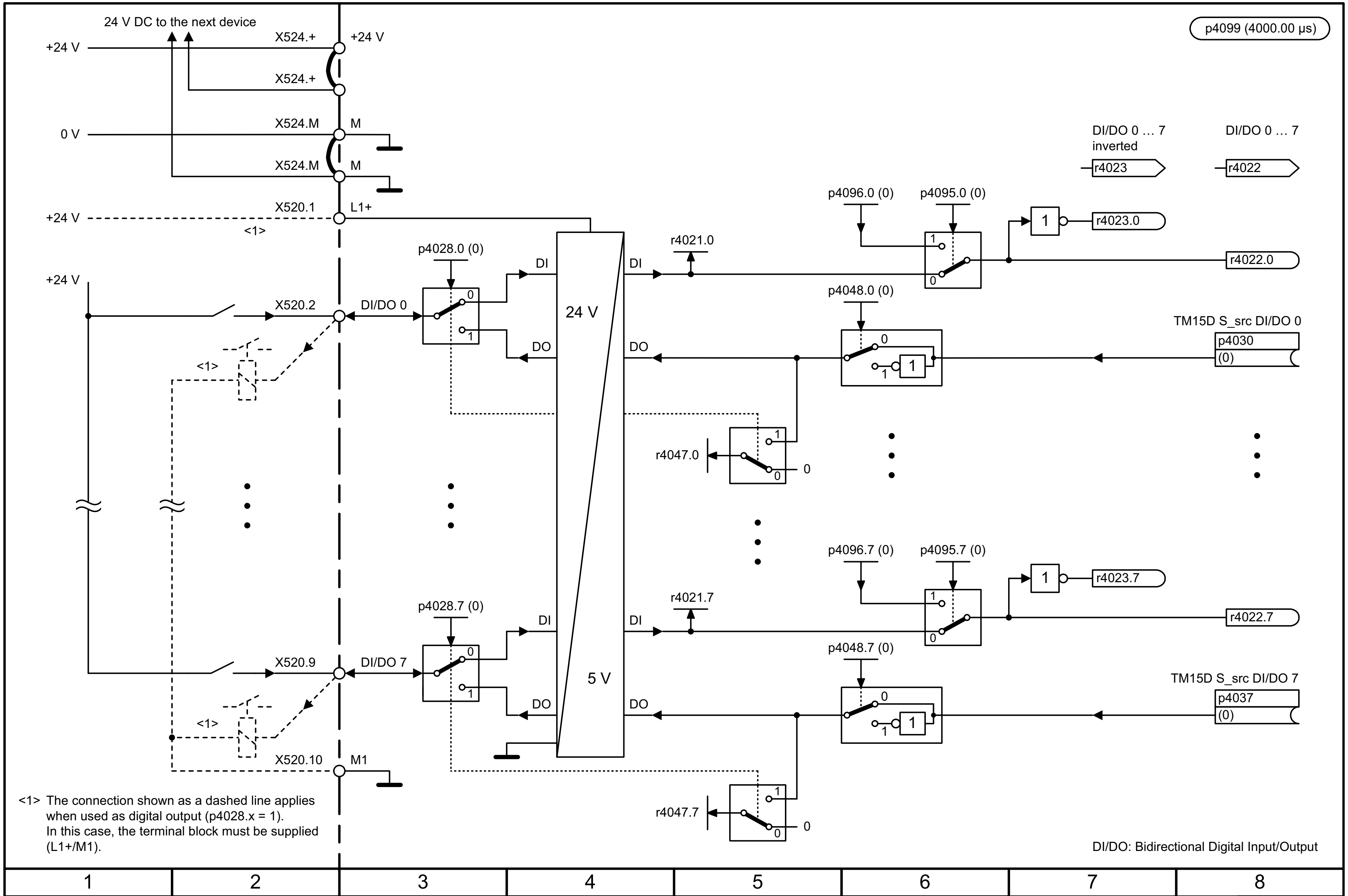
Fig. 3-363 9389 – Overview TM15 (SIMOTION)

Fig. 3-364 9399 – Overview TM15DI_DO (SINAMICS)



<1> The wiring shown dashed applies for the setting as digital output (p4028.x = 1).
<2> The plug-in connections X520, X521 and X522 have to be coded according to the specifications in the relevant technical documentation.

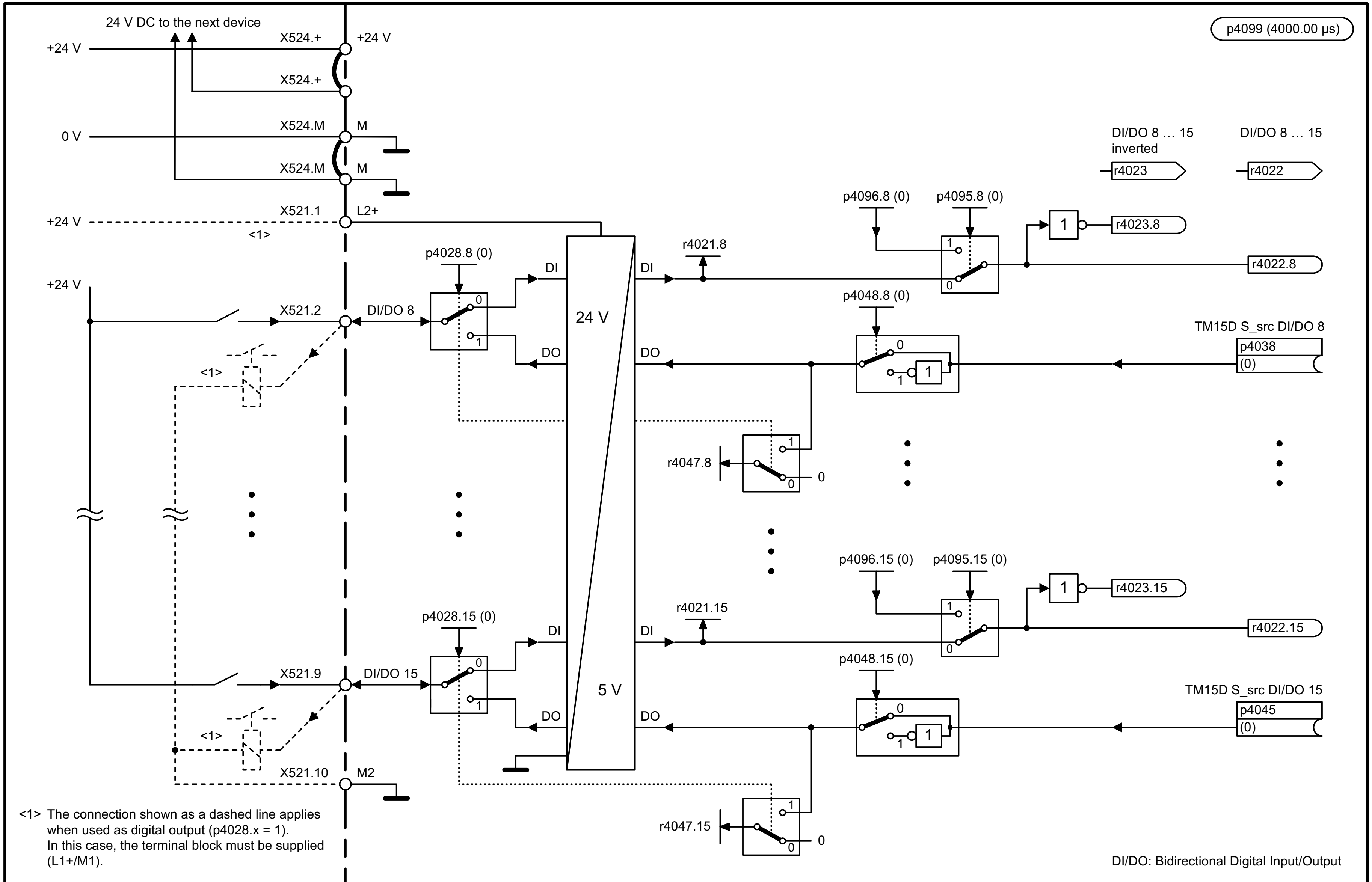
1	2	3	4	5	6	7	8
DO: TM15DI_DO					fp_9399_51_eng.vsd	Function diagram	- 9399 -
Terminal Module 15 (TM15) - Overview TM15DI_DO (SINAMICS)					17.03.14 V05.01.01	SINAMICS	



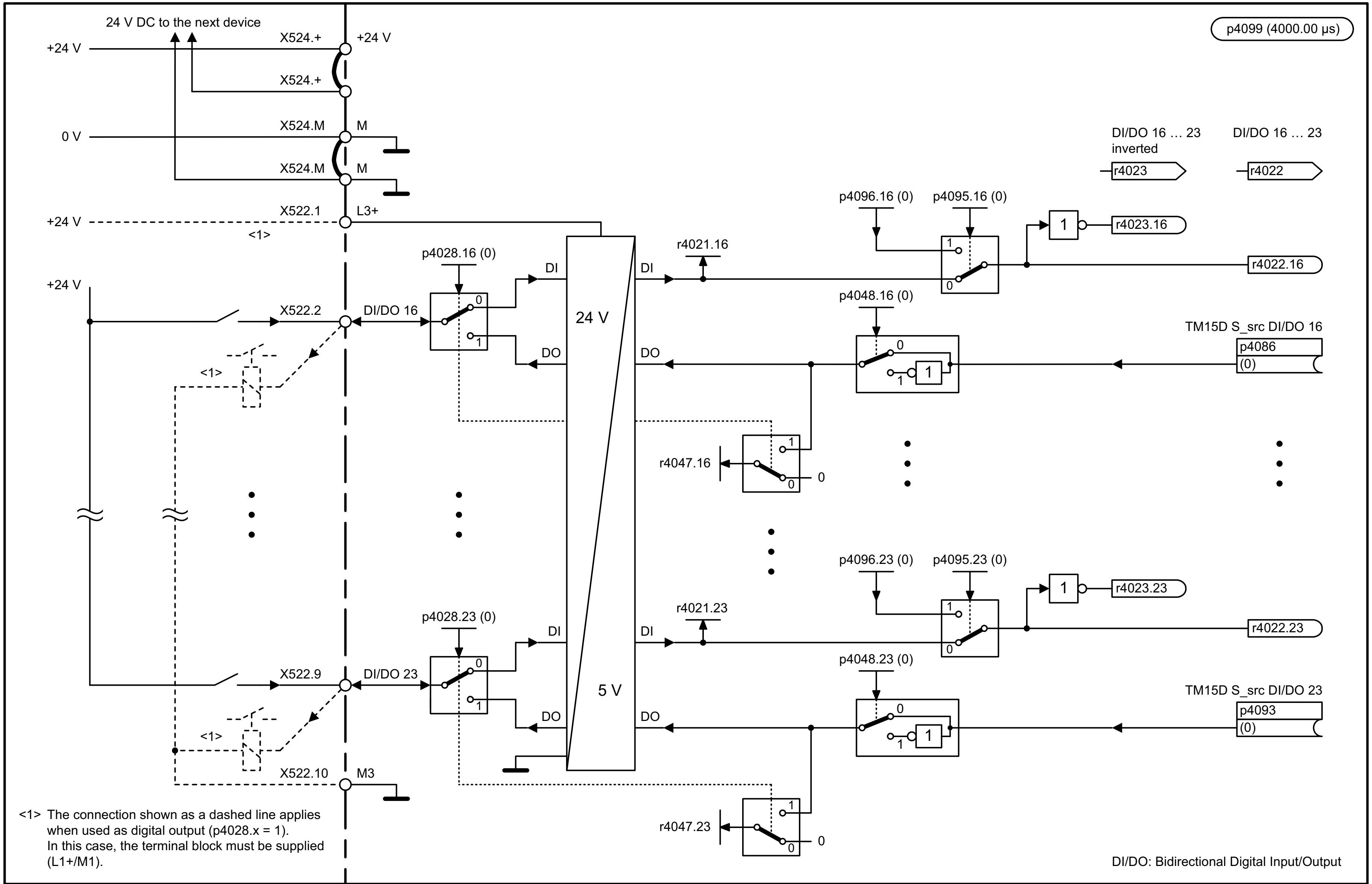
DO: TM15DI_DO	fp_9400_51_eng.vsd	Function diagram	- 9400 -
Terminal Module 15 (TM15) - Digital inputs/outputs bidirectional (DI/DO 0 ... DI/DO 7)	24.03.09 V05.01.01	SINAMICS	

Fig. 3-365 9400 – Digital inputs/outputs, bidirectional (DI/DO 0 ... DI/DO 7)

Fig. 3-366 9401 – Digital inputs/outputs, bidirectional (DI/DO 8 ... DI/DO 15)



1	2	3	4	5	6	7	8
DO: TM15DI_DO					fp_9401_51_eng.vsd	Function diagram	- 9401 -
Terminal Module 15 (TM15) - Digital inputs/outputs bidirectional (DI/DO 8 ... DI/DO 15)					24.03.09 V05.01.01	SINAMICS	



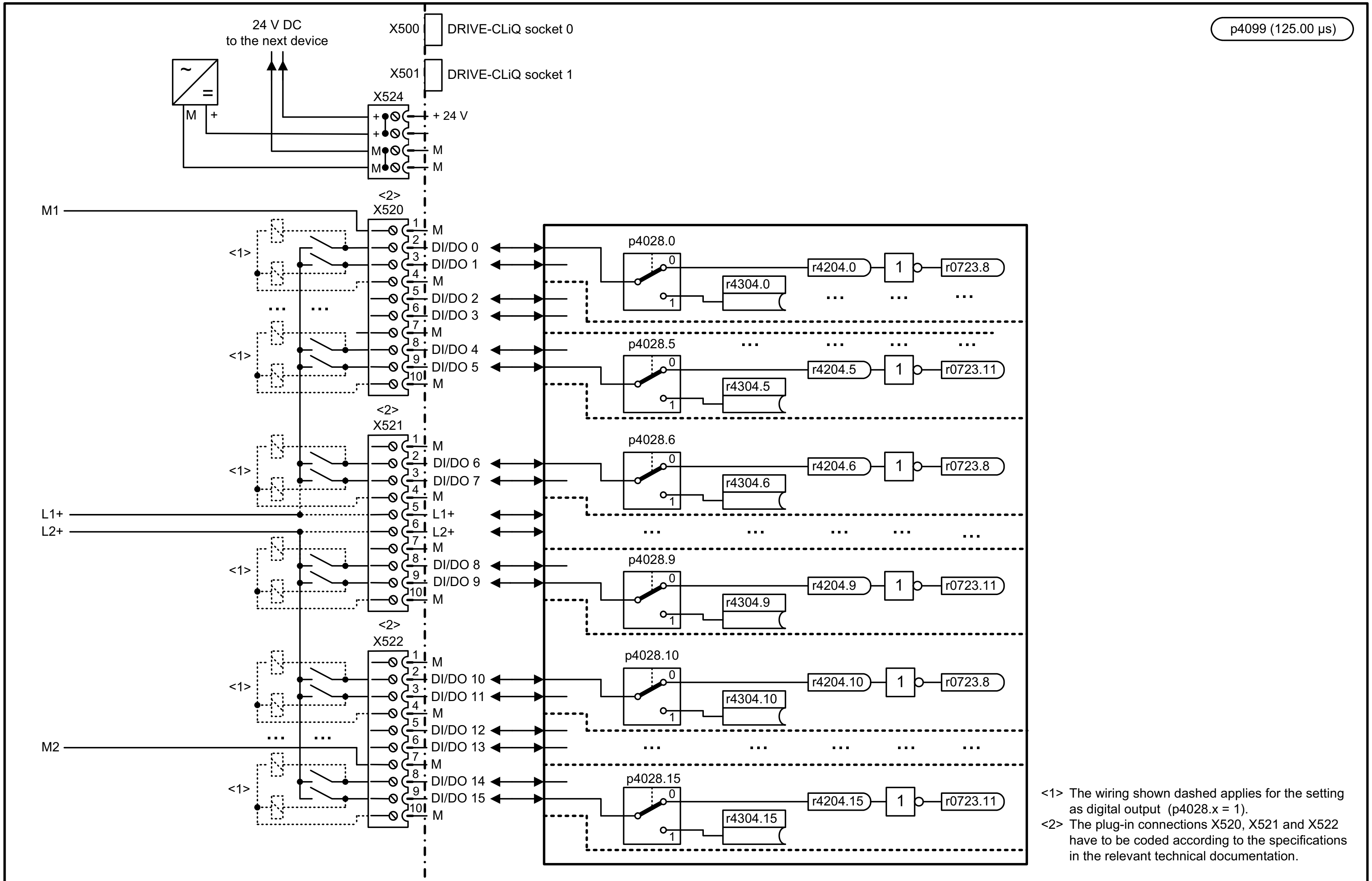
1	2	3	4	5	6	7	8

DO: TM15DI_DO	fp_9402_51_eng.vsd	Function diagram	- 9402 -
Terminal Module 15 (TM15) - Digital inputs/outputs bidirectional (DI/DO 16 ... DI/DO 23)	25.03.09 V05.01.01	SINAMICS	

Fig. 3-367 9402 – Digital inputs/outputs, bidirectional (DI/DO 16 ... DI/DO 23)

3.40 Terminal Module 17 High Feature (TM17 High Feature)

Function diagrams

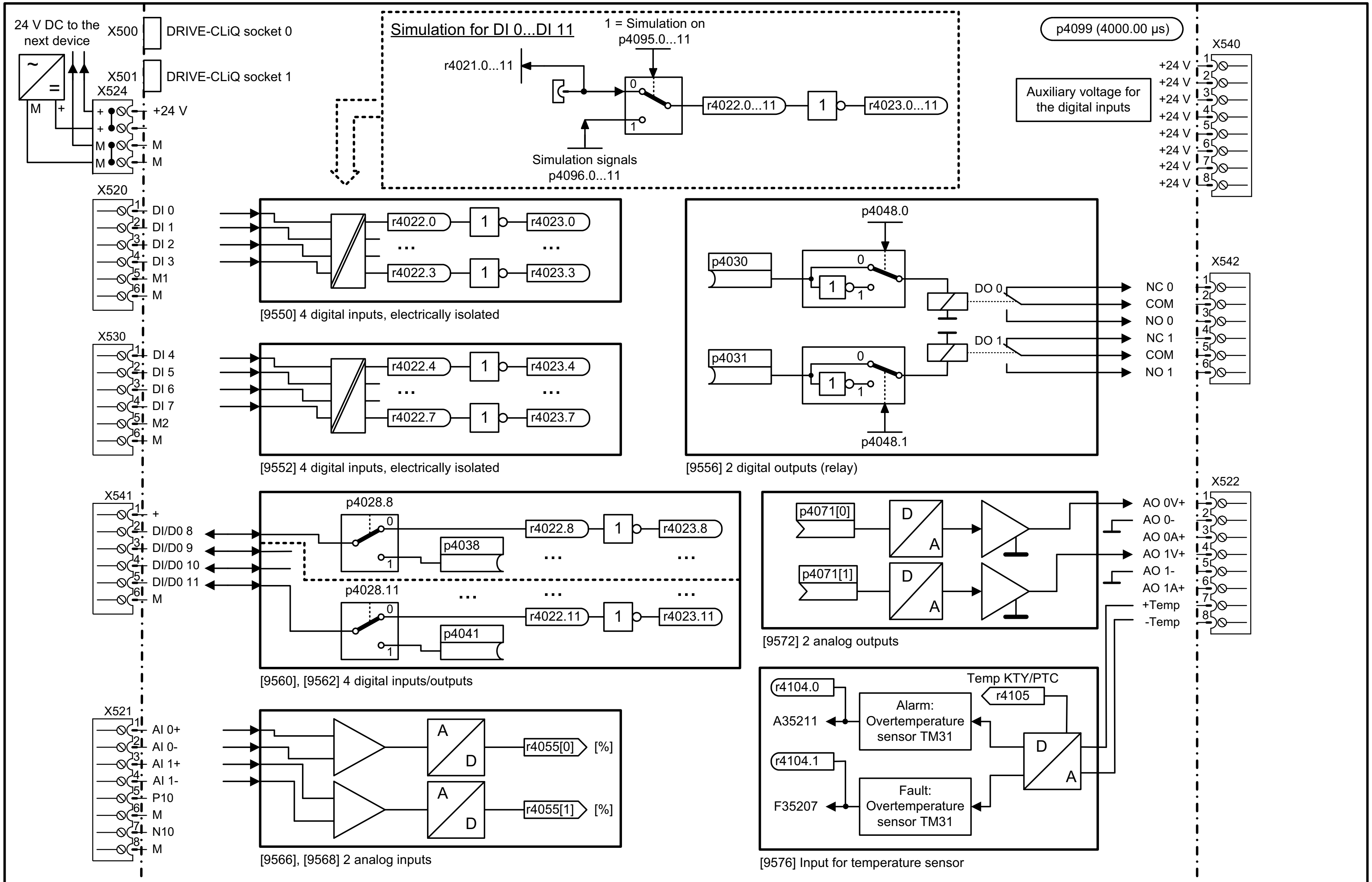


1	2	3	4	5	6	7	8
DO: TM17					fp_9419_51_eng.vsd	Function diagram	- 9419 -
Terminal Module 17 High Feature (TM17 High Feature) - Overview					29.04.13 V05.01.01	SINAMICS	

Fig. 3-368 9419 – Overview

3.41 Terminal Module 31 (TM31)

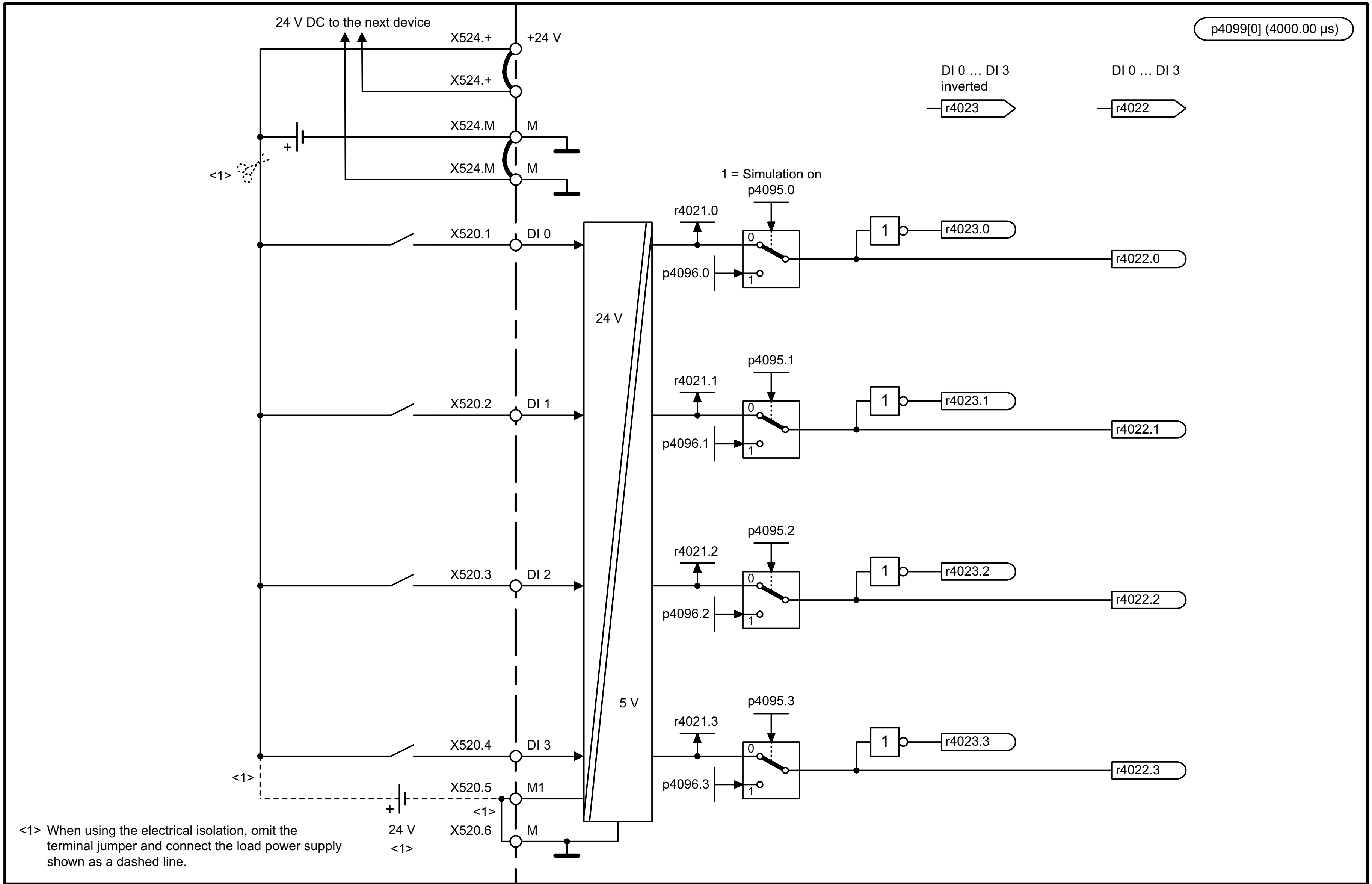
Function diagrams



1	2	3	4	5	6	7	8

DO: TM31	fp_9549_51_eng.vsd	Function diagram	- 9549 -
Terminal Module 31 (TM31) - Overview	12.03.13 V05.01.01	SINAMICS	

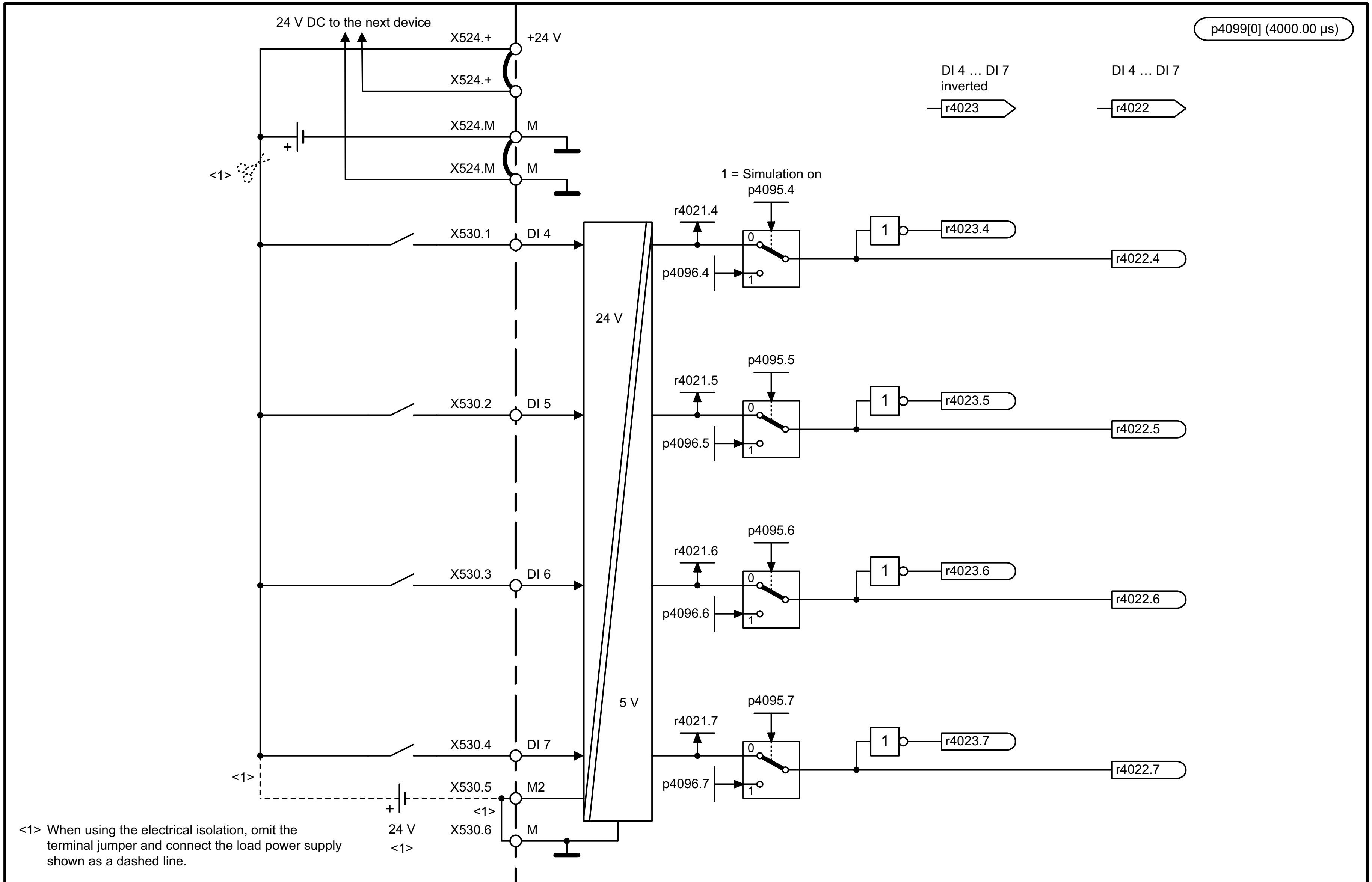
Fig. 3-369 9549 – Overview



1	2	3	4	5	6	7	8

DO: TM31	fp_9550_51_eng.vsd	Function diagram	- 9550 -
Terminal Module 31 (TM31) - Digital inputs, electrically isolated (DI 0 ... DI 3)	25.03.09 V05.01.01	SINAMICS	

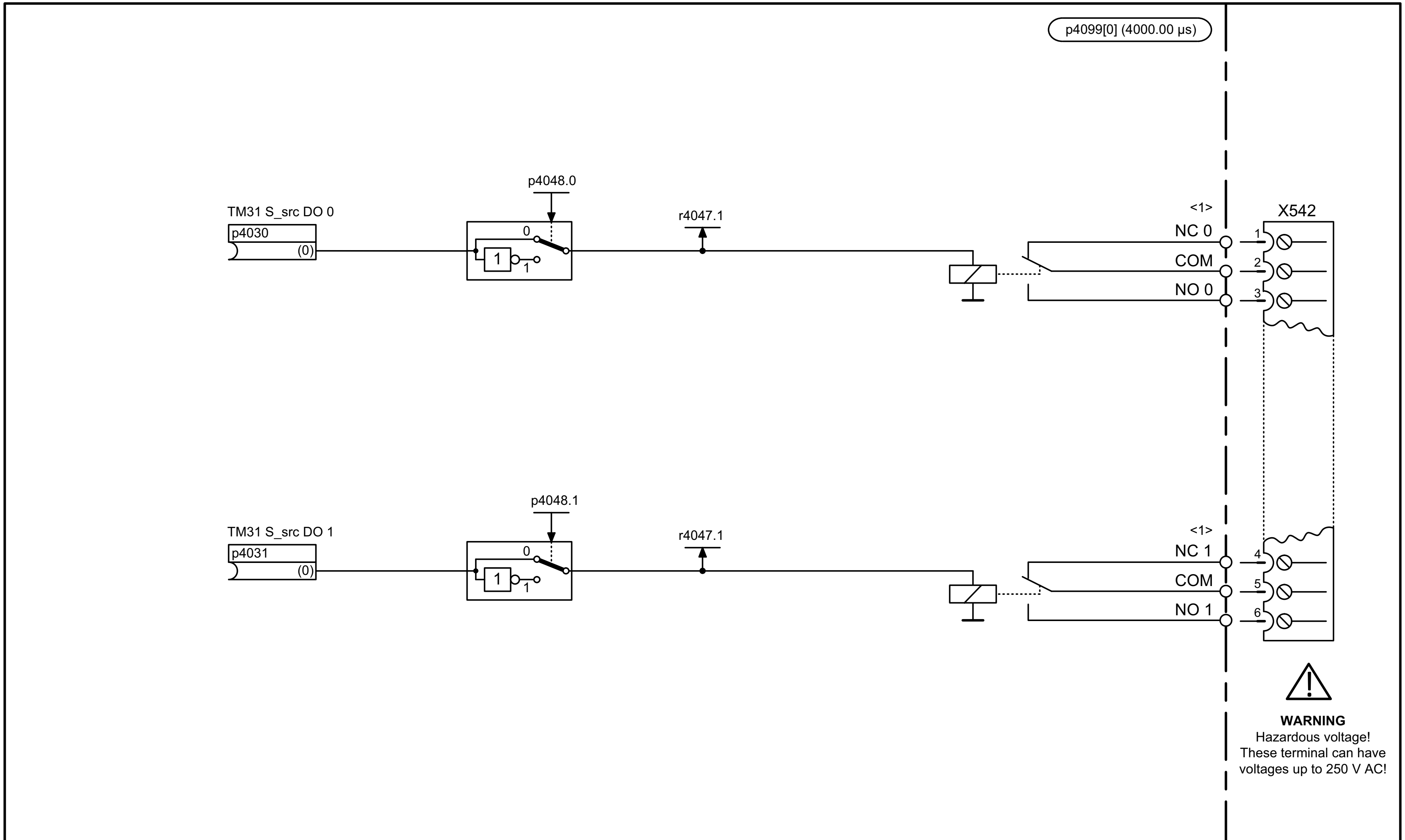
Fig. 3-370 9550 – Digital inputs, electrically isolated (DI 0 … DI 3)



1	2	3	4	5	6	7	8

DO: TM31	fp_9552_51_eng.vsd	Function diagram	- 9552 -
Terminal Module 31 (TM31) - Digital inputs, electrically isolated (DI 4 ... DI 7)	25.03.09 V05.01.01	SINAMICS	

Fig. 3-371 9552 – Digital inputs, electrically isolated (DI 4 … DI 7)



<1> NO: Normally Open contact ("open" in the quiescent state = NO contact)
NC: Normally Closed contact ("closed" in the quiescent state = NC contact)
The relay contacts have the following ratings - up to 100 V DC 240 W or 250 V AC 2000 VA.

1	2	3	4	5	6	7	8
DO: TM31					fp_9556_51_eng.vsd	Function diagram	- 9556 -
Terminal Module 31 (TM31) - Digital relay outputs, electrically isolated (DO 0 ... DO 1)					30.07.07 V05.01.01	SINAMICS	

Fig. 3-372 9556 – Digital relay outputs, electrically isolated (DO 0 ... DO 1)

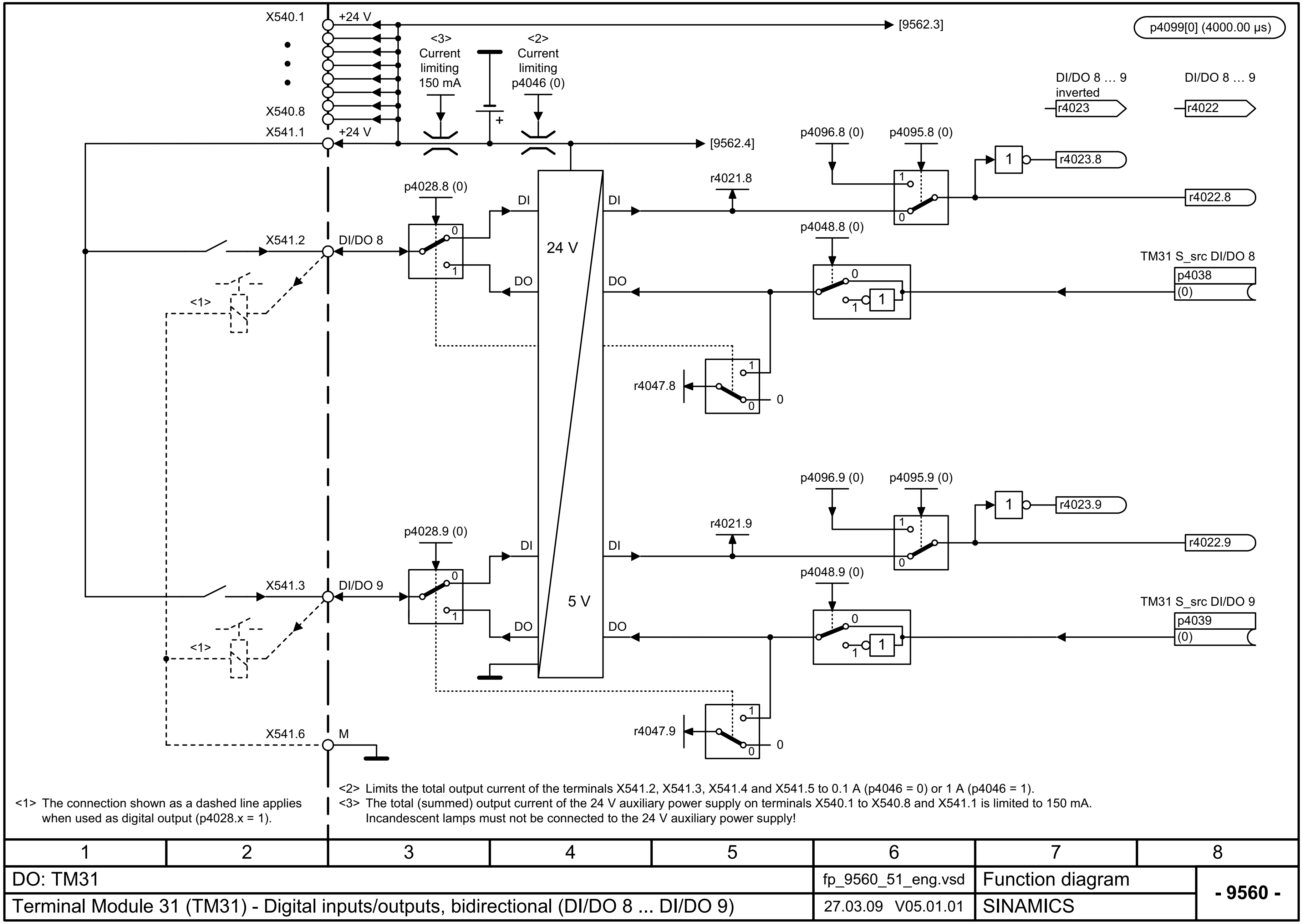
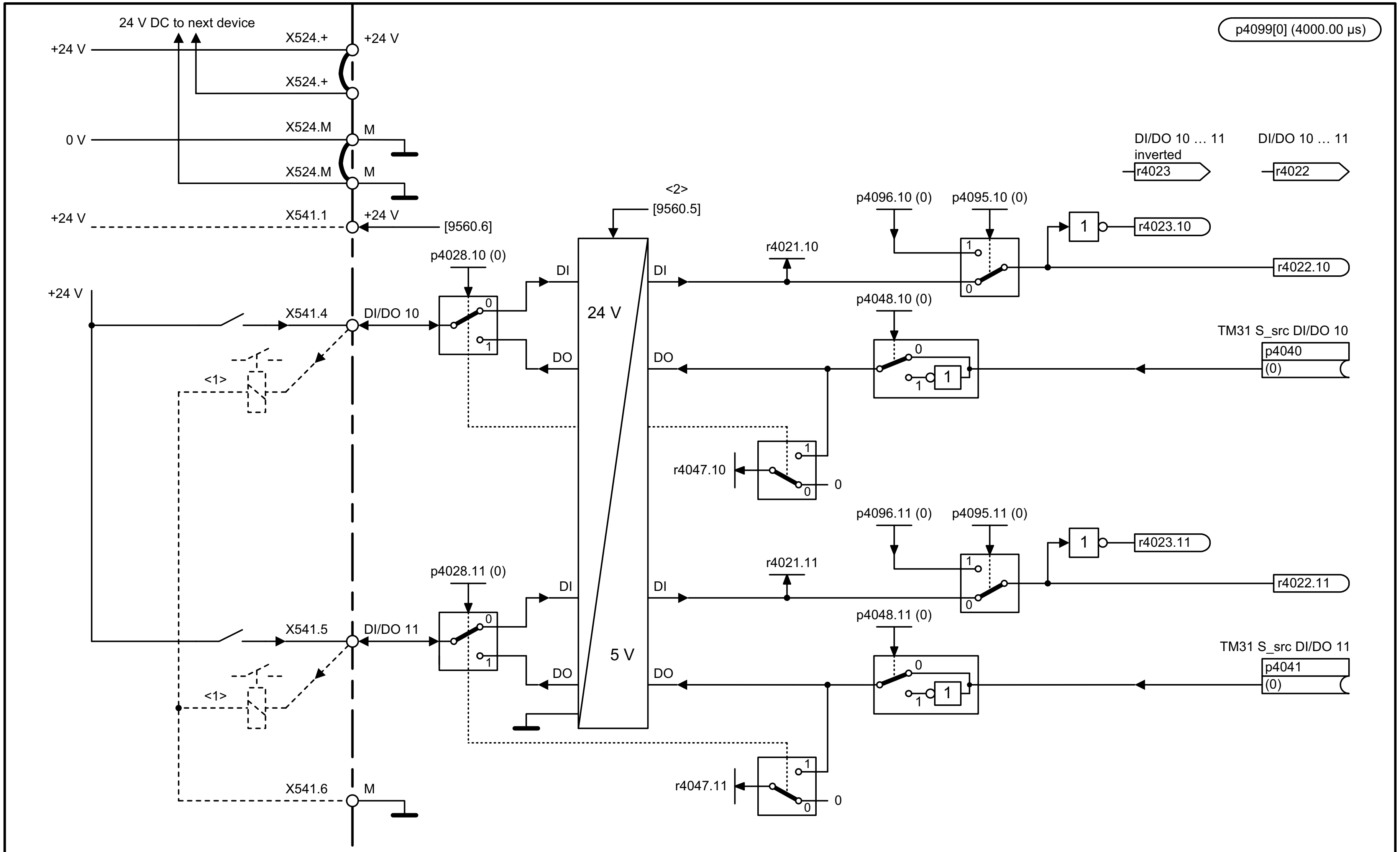


Fig. 3-373 9560 – Digital inputs/outputs, bidirectional (DI/DO 8 ... DI/DO 9)



<1> The connection shown in a dashed line applies when used as digital output (p4028.x = 1).

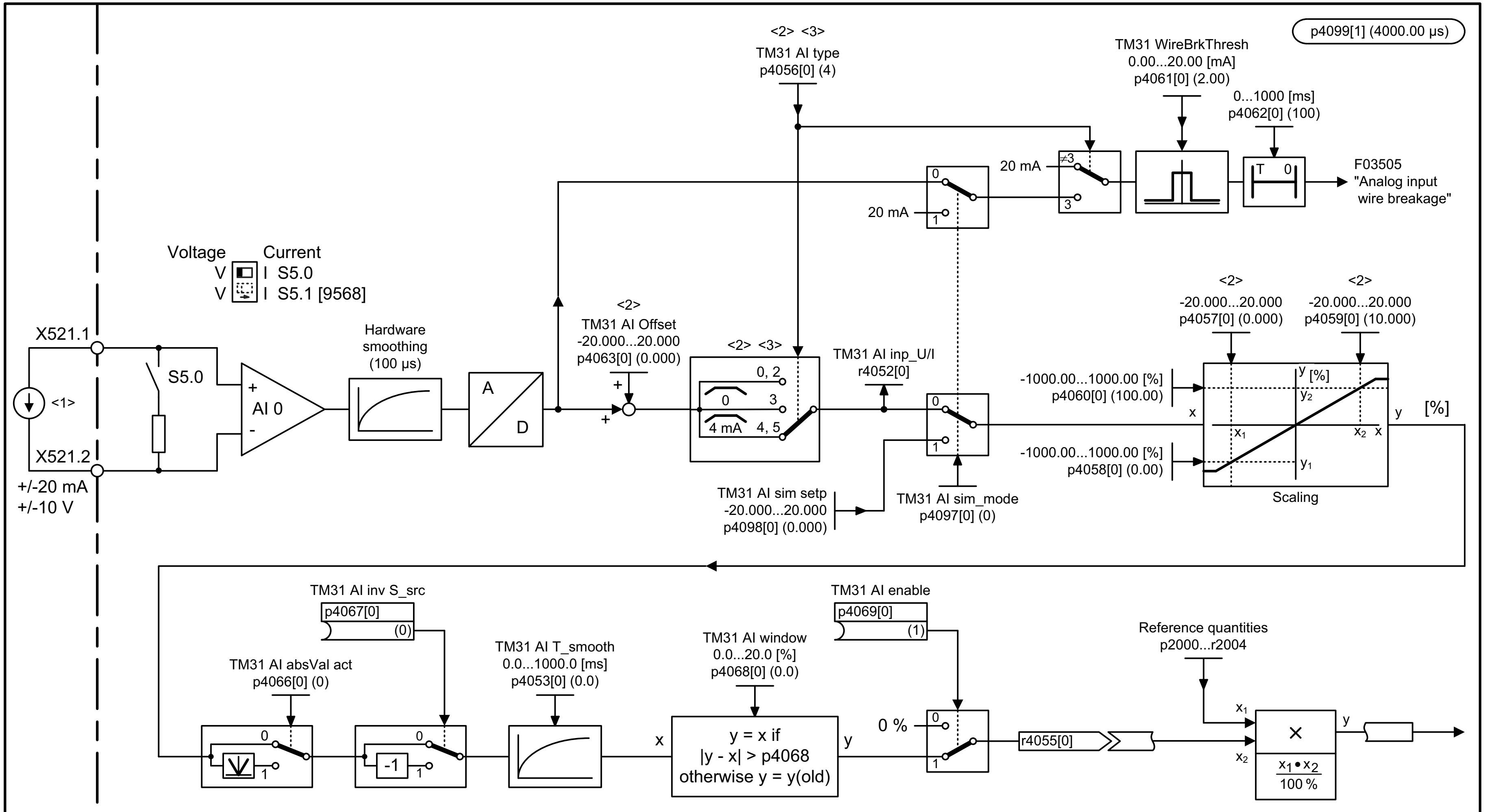
<2> Limits the total output current of the terminals X541.2, X541.3, X541.4 and X541.5 to 0.1 A (p4046 = 0) or 1 A (p4046 = 1).

1	2	3	4	5	6	7	8

DO: TM31	fp_9562_51_eng.vsd	Function diagram	- 9562 -
Terminal Module 31 (TM31) - Digital inputs/outputs, bidirectional (DI/DO 10 ... DI/DO 11)	27.03.09 V05.01.01	SINAMICS	

Fig. 3-374 9562 – Digital inputs/outputs, bidirectional (DI/DO 10 ... DI/DO 11)

Fig. 3-375 9566 – Analog input 0 (AI 0)



<1> Differential input!
In case of a ground-based input signal, the terminal X521.2 must be connected to the reference potential M.
Caution:
The voltage between an input (X521.1 or X521.2) and the ground point must not exceed 35 V.
When the load resistor is switched in (S5.0 closed), the voltage between the input terminals must not exceed 15 V.

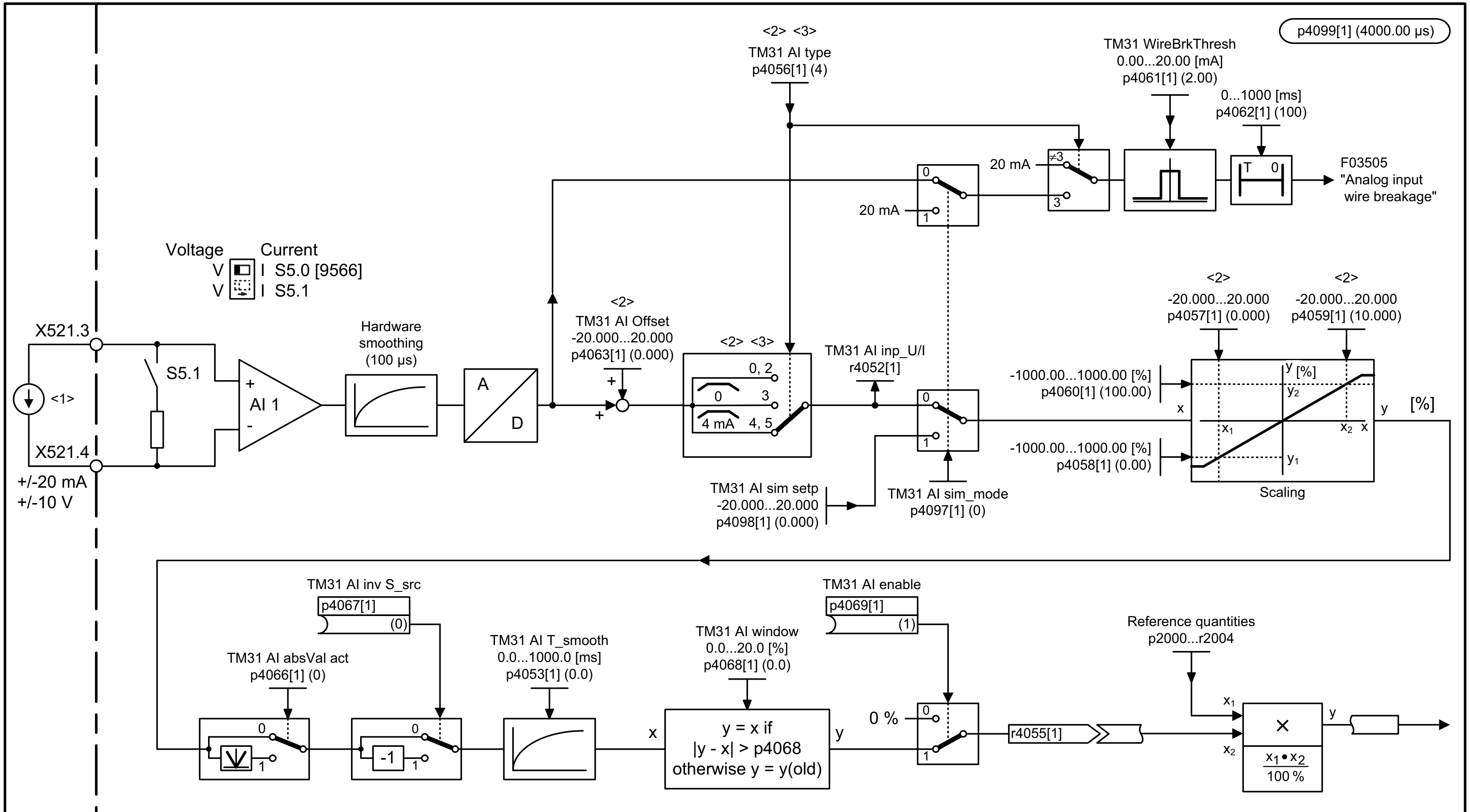
<2> For p4056 = 2, 3, 5 the units are mA.
For p4056 = 0, 4 the units are V.

<3> p4056
= 0: 0 V ... +10 V
= 2: 0 mA ... +20 mA
= 3: 4 mA ... +20 mA with monitoring
= 4: -10 V ... +10 V
= 5: -20 mA ... +20 mA

1	2	3	4	5	6	7	8

DO: TM31	fp_9566_51_eng.vsd	Function diagram	- 9566 -
Terminal Module 31 (TM31) - Analog input 0 (AI 0)	29.12.10 V05.01.01	SINAMICS	

Fig. 3-376 9568 – Analog input 1 (AI 1)



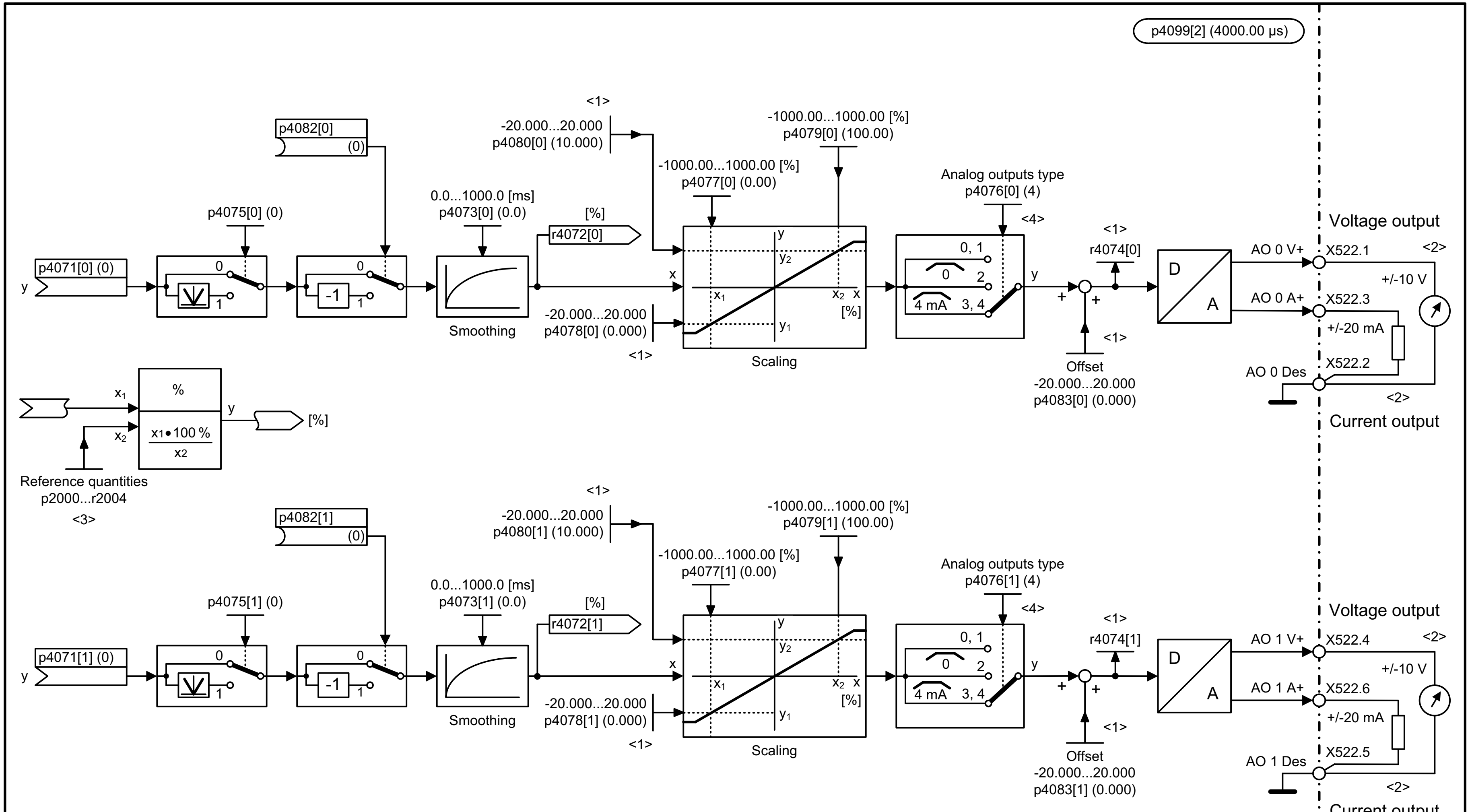
<1> Differential input!
In case of a ground-based input signal, the terminal X521.4 must be connected to the reference potential M.
Caution:
The voltage between an input (X521.3 or X521.4) and the ground point must not exceed 35 V.
When the load resistor is switched in (S5.1 closed), the voltage between the input terminals must not exceed 15 V.

<2> For p4056 = 2, 3, 5 the units are mA.
For p4056 = 0, 4 the units are V.

<3> p4056
= 0: 0 V ... +10 V
= 2: 0 mA ... +20 mA
= 3: 4 mA ... +20 mA with monitoring
= 4: -10 V ... +10 V
= 5: -20 mA ... +20 mA

1	2	3	4	5	6	7	8

DO: TM31	fp_9568_51_eng.vsd	Function diagram	- 9568 -
Terminal Module 31 (TM31) - Analog input 1 (AI 1)	29.12.10 V05.01.01	SINAMICS	



<1> For p4076 = 0, 2, 3 the units are mA.
For p4076 = 1, 4 the units are V.

<2> For a voltage output, the output voltage can be taken between the following terminals:
AO 0 between X522.2 (reference potential) and X522.1, AO 1 between X522.5 (reference potential) and X522.4.
For a current output, the output current can be taken from between the following terminals:
AO 0 between X522.2 and X522.3, AO 1 between X522.5 and X522.6.

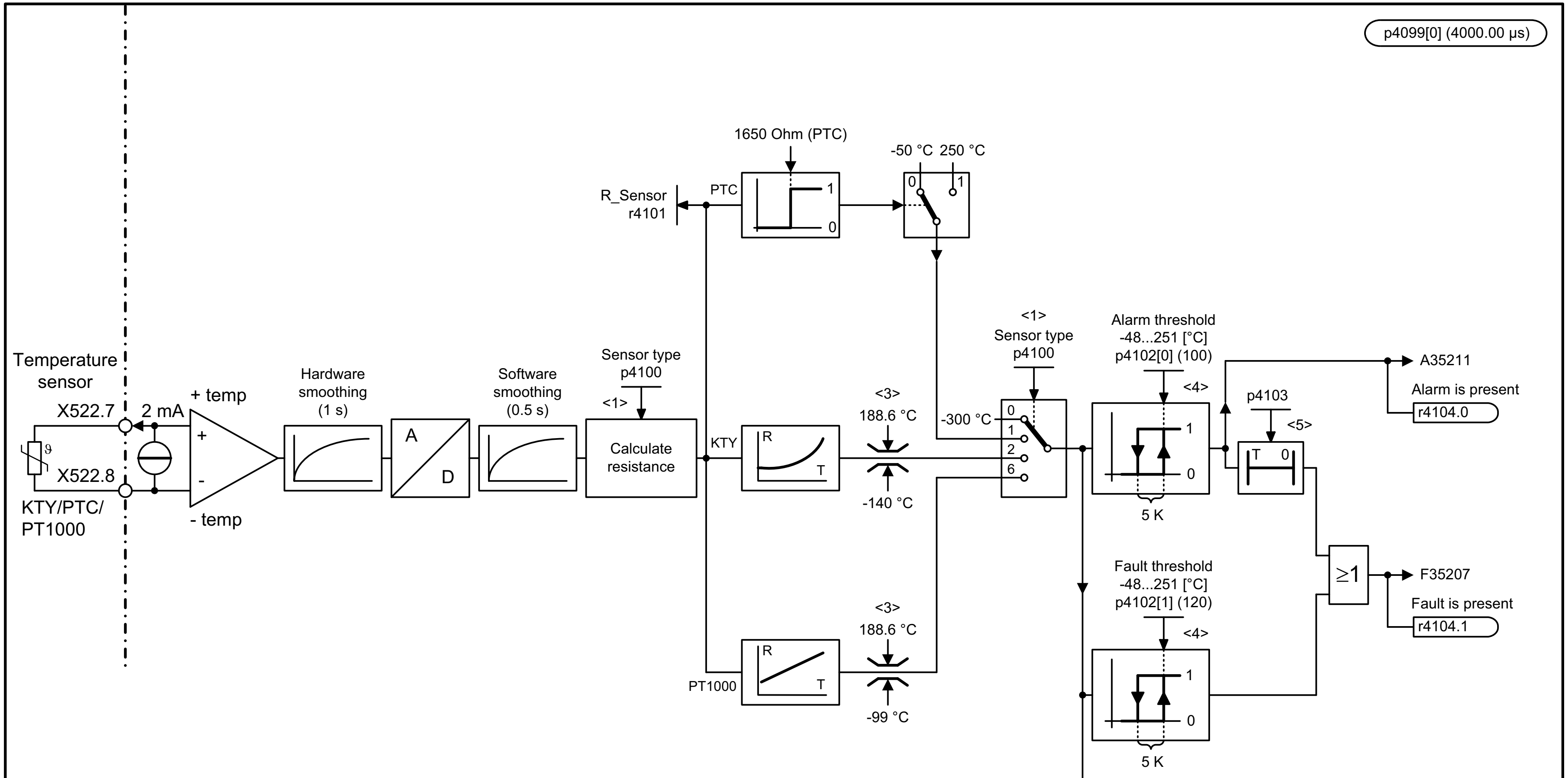
<3> The input signals are referred to the reference quantities p2004 ... r2004 (100 % = p200x).

<4> p4076
= 0: 0 mA ... +20 mA
= 1: 0 V ... +10 V
= 2: 4 mA ... +20 mA
= 3: -20 mA ... +20 mA
= 4: -10 V ... +10 V

1	2	3	4	5	6	7	8
DO: TM31					fp_9572_51_eng.vsd	Function diagram	- 9572 -
Terminal Module 31 (TM31) - Analog outputs (AO 0 ... AO 1)					17.03.09 V05.01.01	SINAMICS	

Fig. 3-377 9572 – Analog outputs (AO 0 ... AO 1)

Fig. 3-378 9576 – Temperature evaluation



<1> p4100
= 0: Evaluation disabled
= 1: PTC
= 2: KTY
= 6: PT1000

<2> An alarm A35920 in the temperature evaluation of the TM31 is signaled to the next (downstream) vector control via the special temperature value -300 °C.

<3> As a result of the wire breakage monitoring the maximum temperature that can be measured is limited to approximate 188.6 °C.

<4> PTC: A value > 250 °C de-activates the alarm or fault.
KTY/PT1000: A value > 188.6 °C de-activates the alarm or fault.

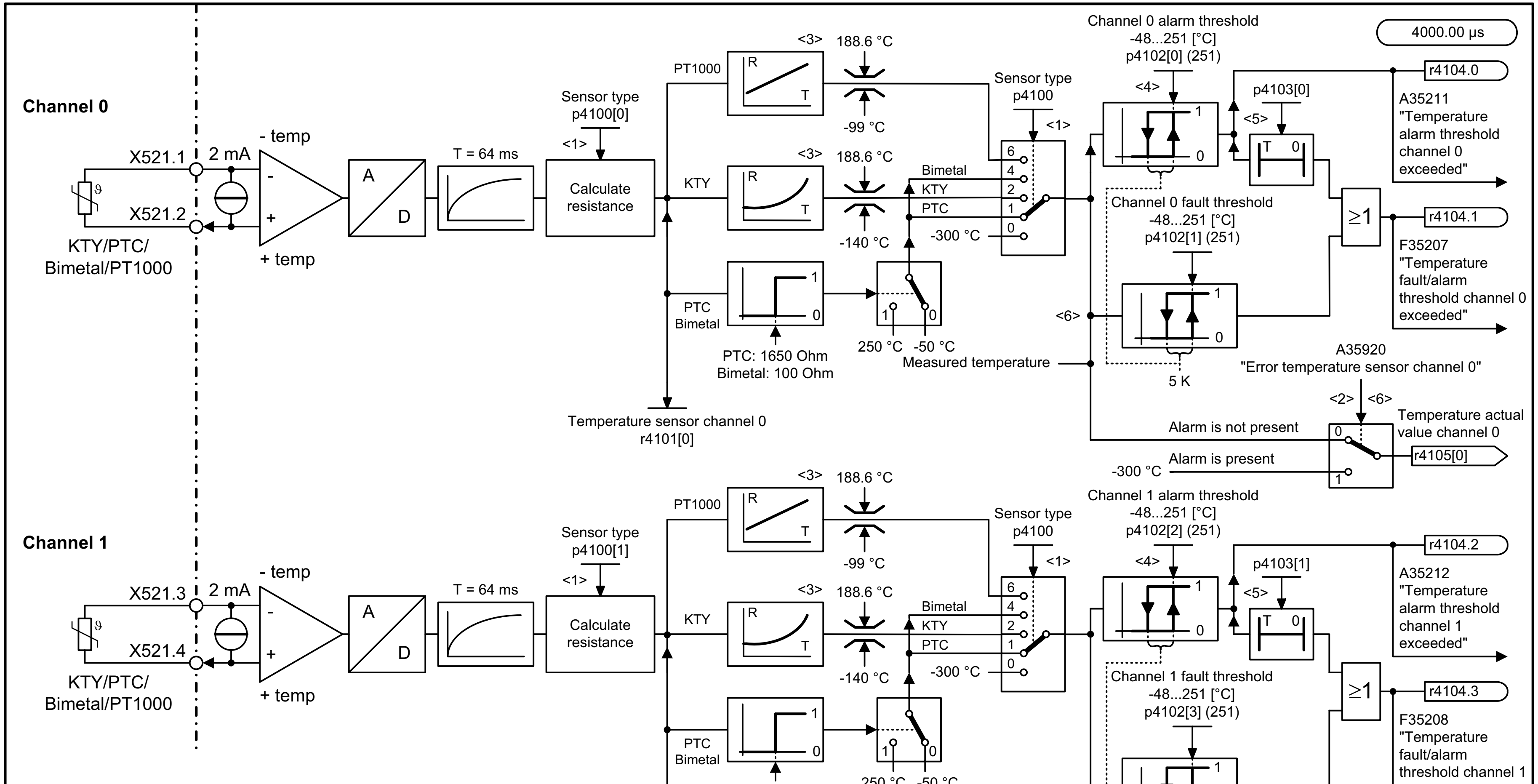
<5> PTC: p4103 = 0 ≙ delay time = 0 s.
KTY/PT1000: p4103 = 0 ≙ Output from temperature timer even off (0).

1	2	3	4	5	6	7	8

DO: TM31	fp_9576_51_eng.vsd	Function diagram	- 9576 -
Terminal Module 31 (TM31) - Temperature evaluation	10.05.16 V05.01.01	SINAMICS	

3.42 Terminal Module 120 (TM120)

Function diagrams



<1> p4100[0...3] = 0: Evaluation disabled
= 1: PTC
= 2: KTY
= 4: Bimetal break contact
= 6: PT1000

<2> An alarm A35920 or A35921 in the temperature evaluation channel 0 or 1 of the TM120 is signaled to the next (downstream) drive control via the special temperature actual value -300 °C.

<3> As a result of the wire breakage monitoring the maximum temperature that can be measured is limited to approximate 188.6 °C.

<4> A value > 250 °C de-activates the alarm or fault.

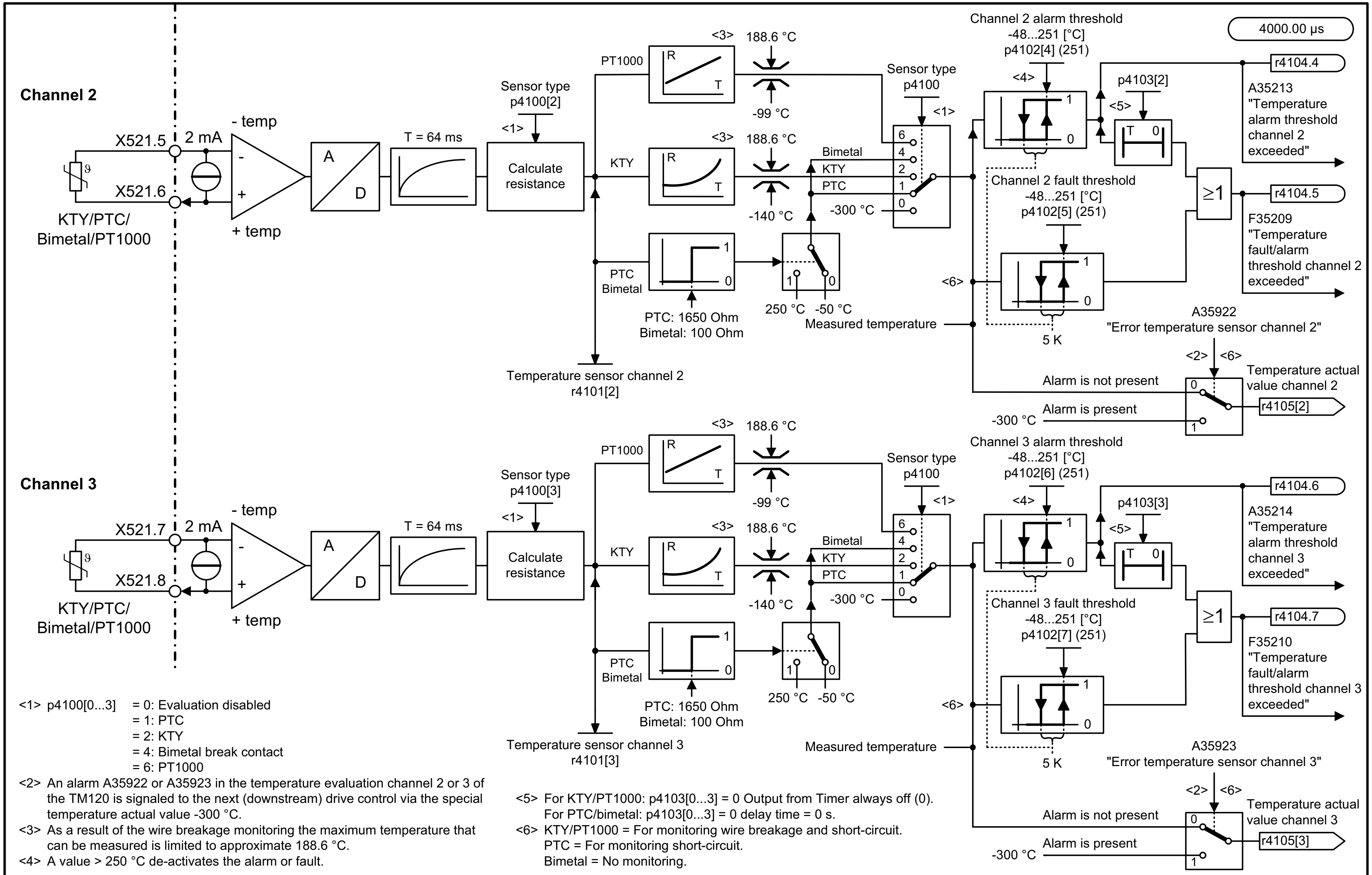
<5> For KTY/PT1000: p4103[0...3] = 0 Output from Timer always off (0).
For PTC/bimetal: p4103[0...3] = 0 delay time = 0 s.

<6> KTY/PT1000 = For monitoring wire breakage and short-circuit.
PTC = For monitoring short-circuit.
Bimetal = No monitoring.

1	2	3	4	5	6	7	8

DO: TM120	fp_9605_51_eng.vsd	Function diagram	- 9605 -
Terminal Module 120 (TM120) - Temperature evaluation channels 0 and 1	11.02.16 V05.01.01	SINAMICS	

Fig. 3-379 9605 – Temperature evaluation channels 0 and 1



<1> p4100[0...3] = 0: Evaluation disabled
= 1: PTC
= 2: KTY
= 4: Bimetal break contact
= 6: PT1000

<2> An alarm A35922 or A35923 in the temperature evaluation channel 2 or 3 of the TM120 is signaled to the next (downstream) drive control via the special temperature actual value -300 °C.

<3> As a result of the wire breakage monitoring the maximum temperature that can be measured is limited to approximate 188.6 °C.

<4> A value > 250 °C de-activates the alarm or fault.

<5> For KTY/PT1000: p4103[0...3] = 0 Output from Timer always off (0).
For PTC/bimetal: p4103[0...3] = 0 delay time = 0 s.

<6> KTY/PT1000 = For monitoring wire breakage and short-circuit.
PTC = For monitoring short-circuit.
Bimetal = No monitoring.

1	2	3	4	5	6	7	8

DO: TM120	fp_9606_51_eng.vsd	Function diagram	- 9606 -
Terminal Module 120 (TM120) - Temperature evaluation channels 2 and 3	11.02.16 V05.01.01	SINAMICS	

Fig. 3-380 9606 – Temperature evaluation channels 2 and 3

3.43 Terminal Module 150 (TM150)

Function diagrams

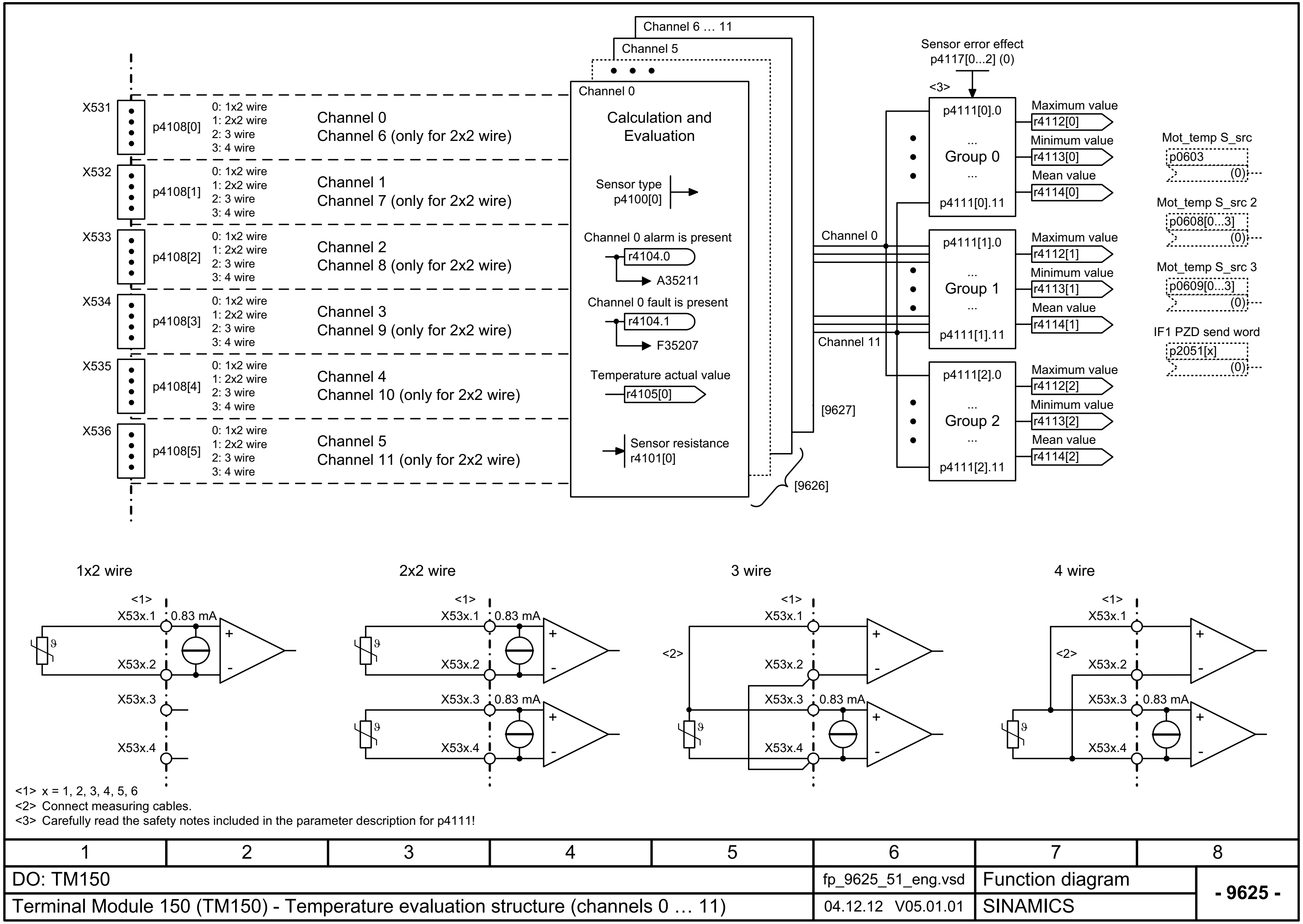
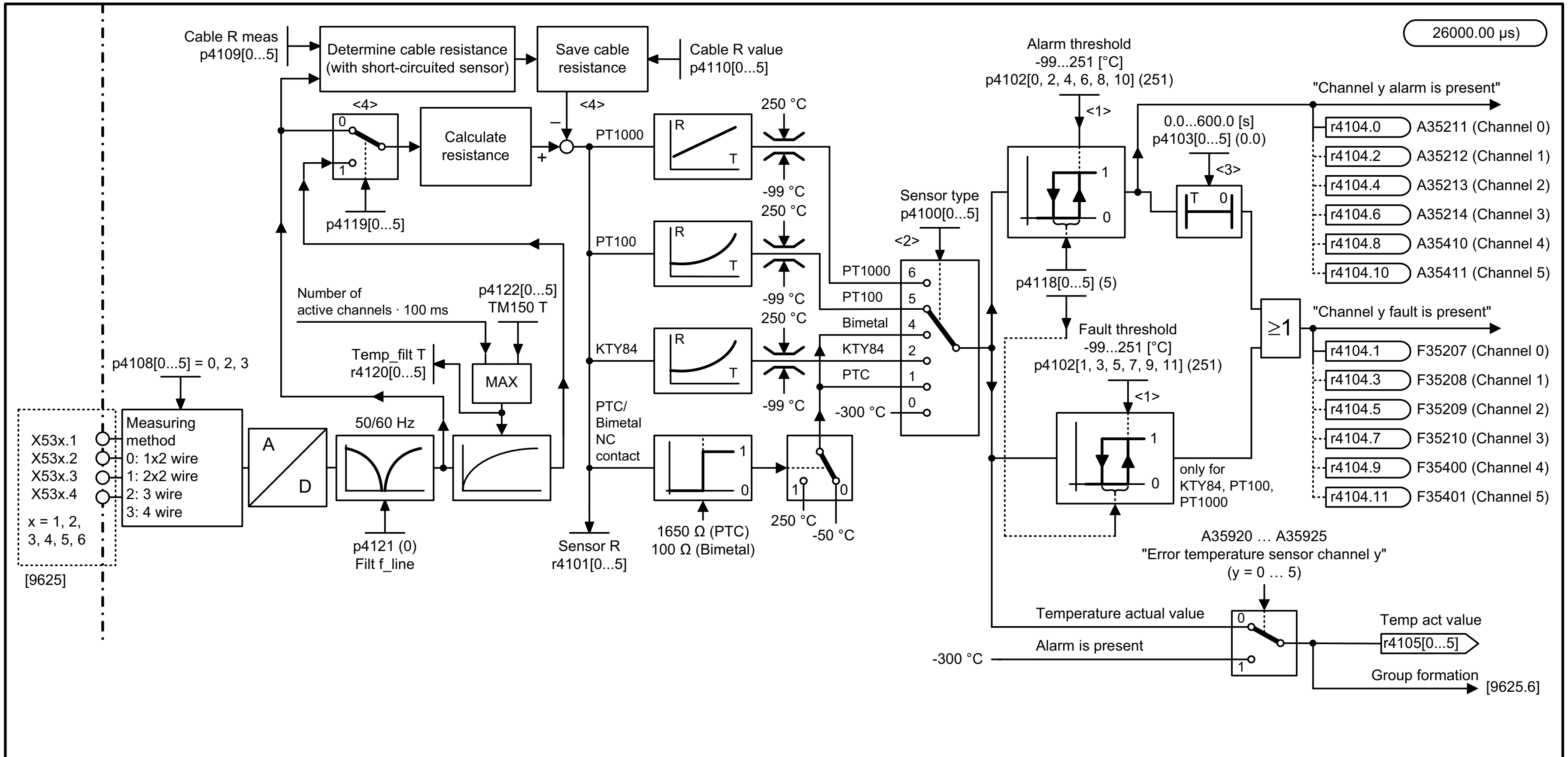


Fig. 3-381 9625 – Temperature evaluation structure (channels 0 … 11)

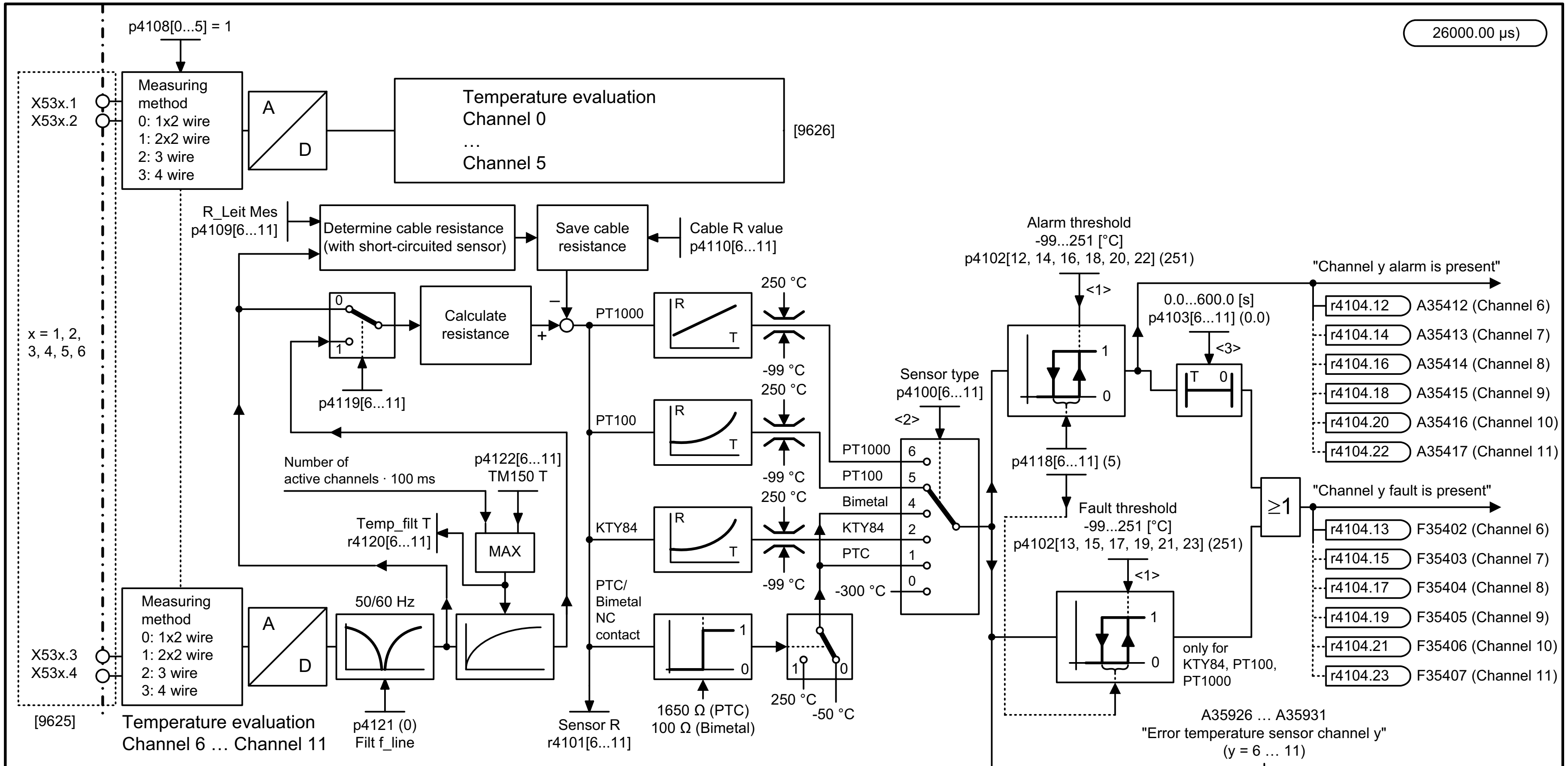
Fig. 3-382 9626 – Temperature evaluation 1x2, 3, 4-wire (channels 0 ... 5)



<1> For p4102[0...23] = 251 °C the evaluation of the appropriate threshold is deactivated.
<2> p4100[0...11]
= 0: Evaluation disabled
= 1: PTC thermistor (with monitoring for short-circuit)
= 2: KTY84 (with monitoring for wire break and short-circuit)
= 4: Bimetal NC contact (no monitoring)
= 5: PT100 (with monitoring for wire break and short-circuit)
= 6: PT1000 (with monitoring for wire break and short-circuit)
<3> For p4103 = 0 s and sensor type "KTY84", "PT100", "PT1000" (p4100[0...11] = 2, 5, 6) the following applies:
- The relevant fault can only be triggered via the fault threshold (the timer output is always logical 0).
For p4103 = 0 s and sensor type "PTC thermistor", "Bimetal NC contact" (p4100[0...11] = 1, 4) the following applies:
- The corresponding alarm and fault are output simultaneously (delay time = 0 s).
<4> Only for 1x2/2x2 wire evaluation (p4108[0...5] = 0, 1).

1	2	3	4	5	6	7	8
DO: TM150					fp_9626_51_eng.vsd	Function diagram	- 9626 -
Terminal Module 150 (TM150) - Temperature evaluation 1x2, 3, 4 wire (channels 0 … 5)					25.04.16 V05.01.01	SINAMICS	

Fig. 3-383 9627 – Temperature evaluation 2x2 wire (channels 0 … 11)

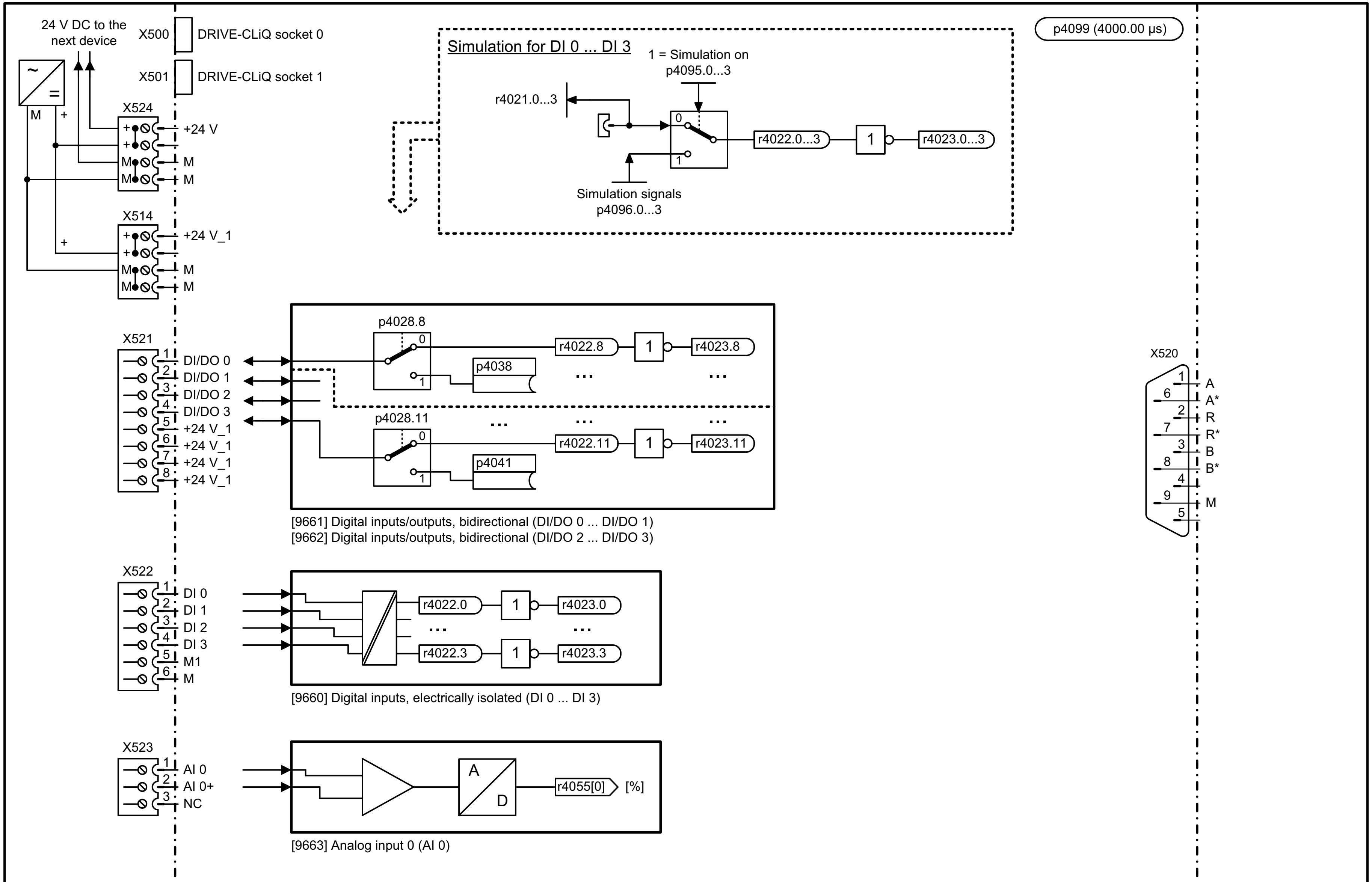


<1> For p4102[0...23] = 251 °C the evaluation of the appropriate threshold is deactivated.
<2> p4100[0...11]
= 0: Evaluation deactivated
= 1: PTC thermistor (with monitoring for short-circuit)
= 2: KTY84 (with monitoring for wire break and short-circuit)
= 4: Bimetal NC contact (no monitoring)
= 5: PT100 (with monitoring for wire break and short-circuit)
= 6: PT1000 (with monitoring for wire break and short-circuit)
<3> For p4103 = 0 s and sensor type "KTY84", "PT100", "PT1000" (p4100[0...11] = 2, 5, 6) the following applies:
- The relevant fault can only be triggered via the fault threshold (the timer output is always logical 0).
For p4103 = 0 s and sensor type "PTC thermistor", "Bimetal NC contact" (p4100[0...11] = 1, 4) the following applies:
- The corresponding alarm and fault are output simultaneously (delay time = 0 s).

1	2	3	4	5	6	7	8
DO: TM150					fp_9627_51_eng.vsd	Function diagram	- 9627 -
Terminal Module 150 (TM150) - Temperature evaluation 2x2 wire (channels 0 … 11)					25.04.16 V05.01.01	SINAMICS	

3.44 Terminal Module 41 (TM41)

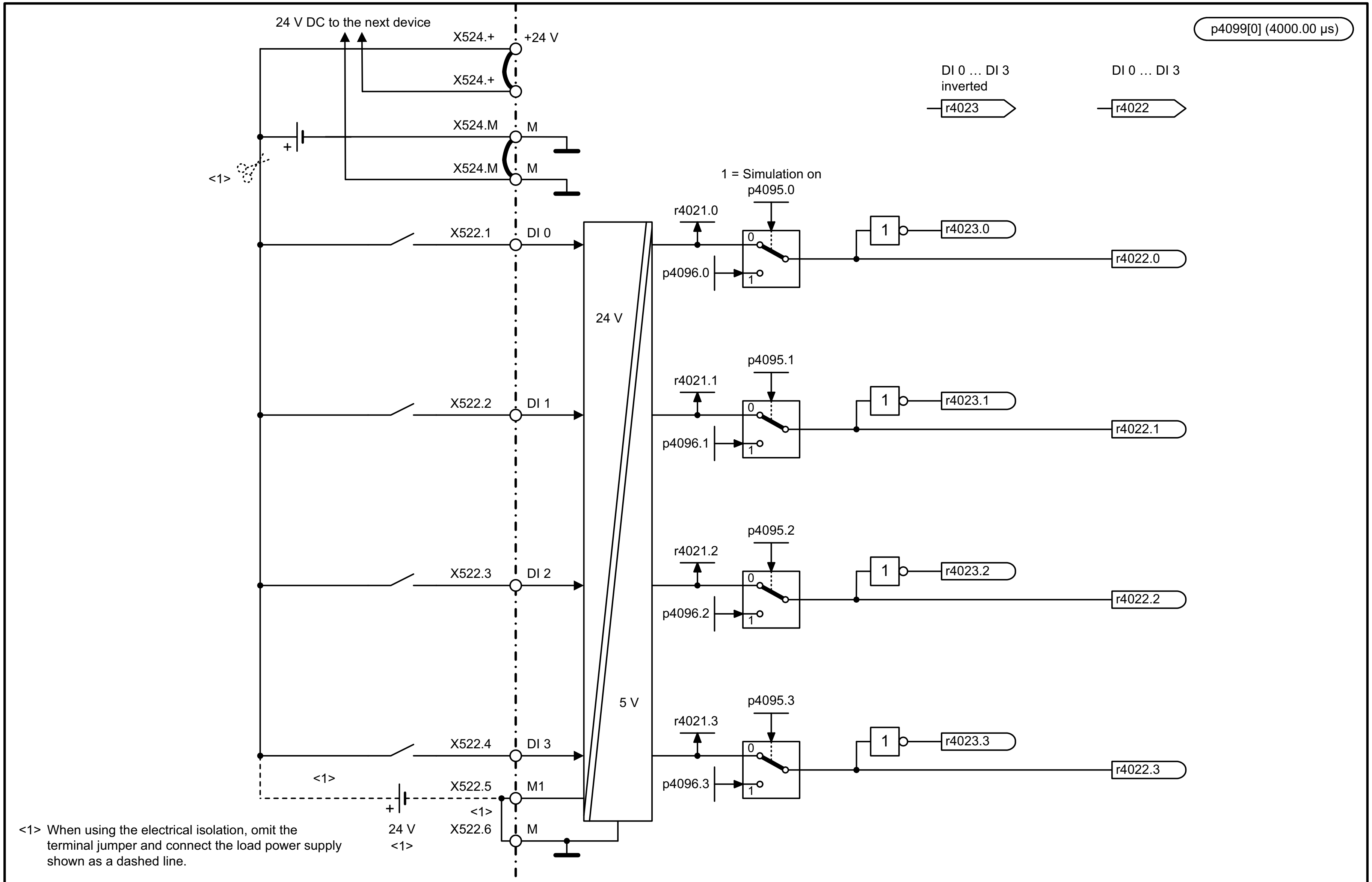
Function diagrams



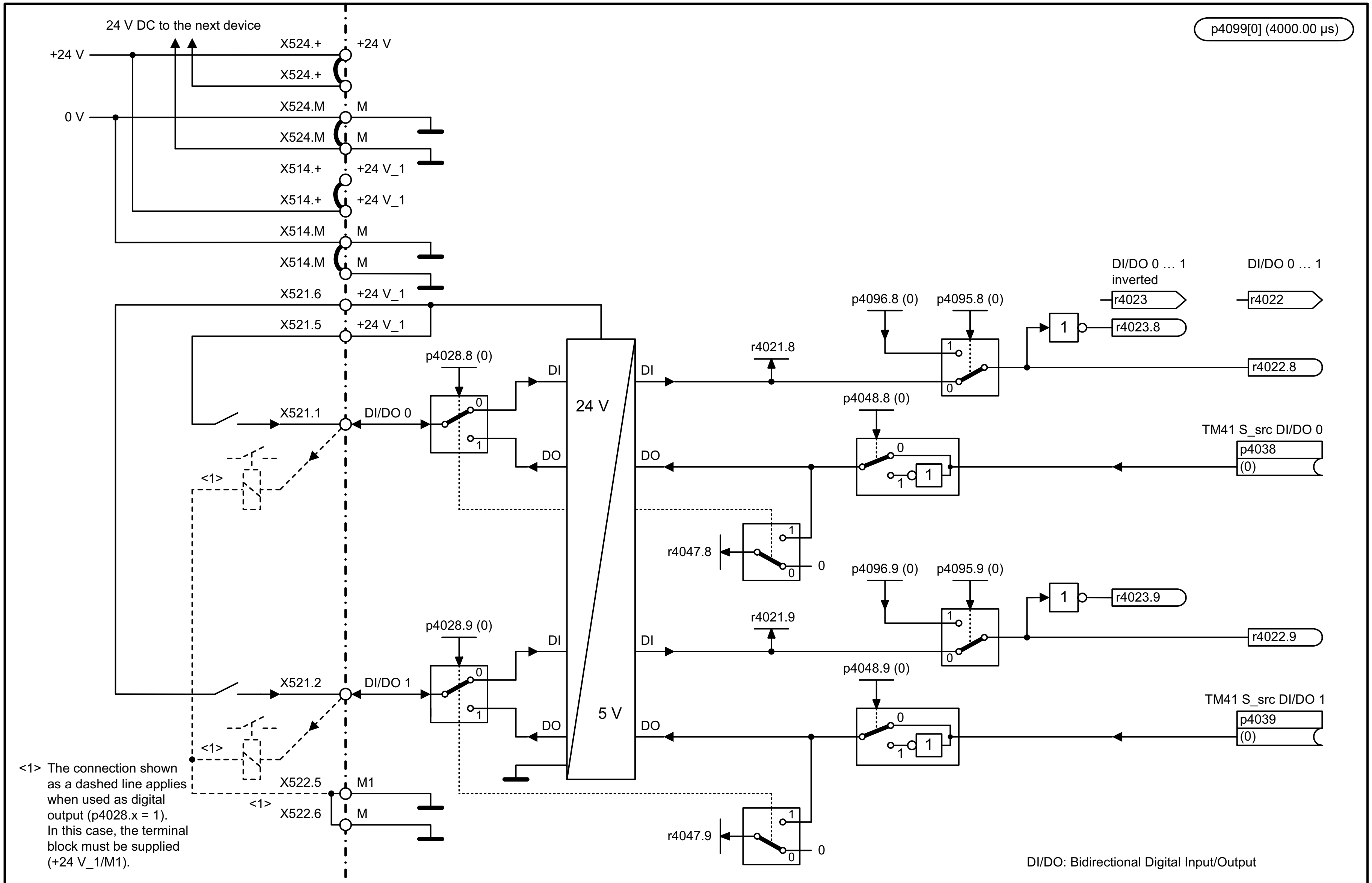
1	2	3	4	5	6	7	8
DO: TM41					fp_9659_51_eng.vsd	Function diagram	- 9659 -
Terminal Module 41 (TM41) - Overview					12.03.13 V05.01.01	SINAMICS	

Fig. 3-384 9659 – Overview

Fig. 3-385 9660 – Digital inputs, electrically isolated (DI 0 … DI 3)



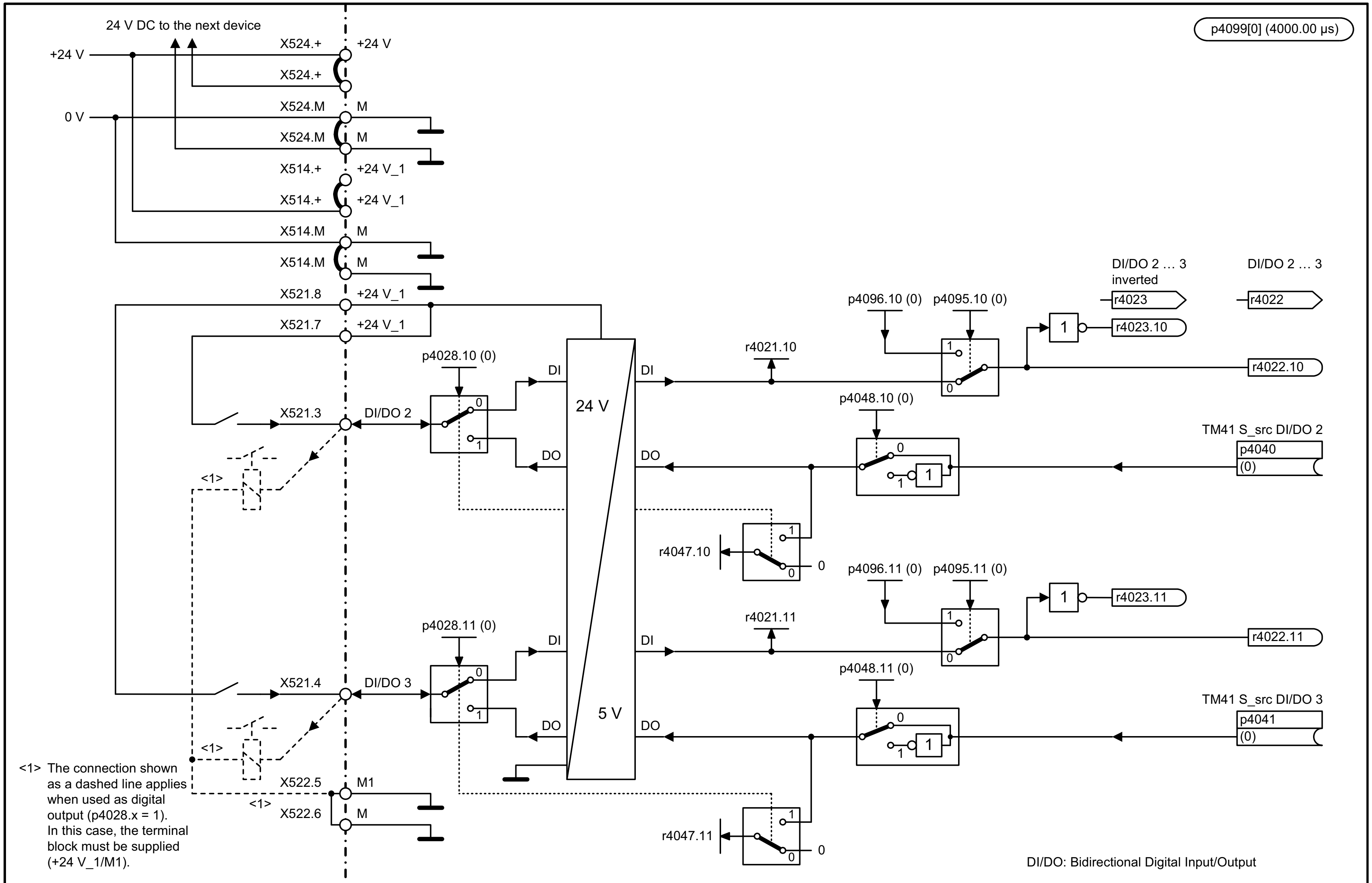
1	2	3	4	5	6	7	8
DO: TM41					fp_9660_51_eng.vsd	Function diagram	- 9660 -
Terminal Module 41 (TM41) - Digital inputs, electrically isolated (DI 0 ... DI 3)					25.03.09 V05.01.01	SINAMICS	



1	2	3	4	5	6	7	8
DO: TM41					fp_9661_51_eng.vsd	Function diagram	- 9661 -
Terminal Module 41 (TM41) - Digital inputs/outputs, bidirectional (DI/DO 0 ... DI/DO 1)					22.04.09 V05.01.01	SINAMICS	

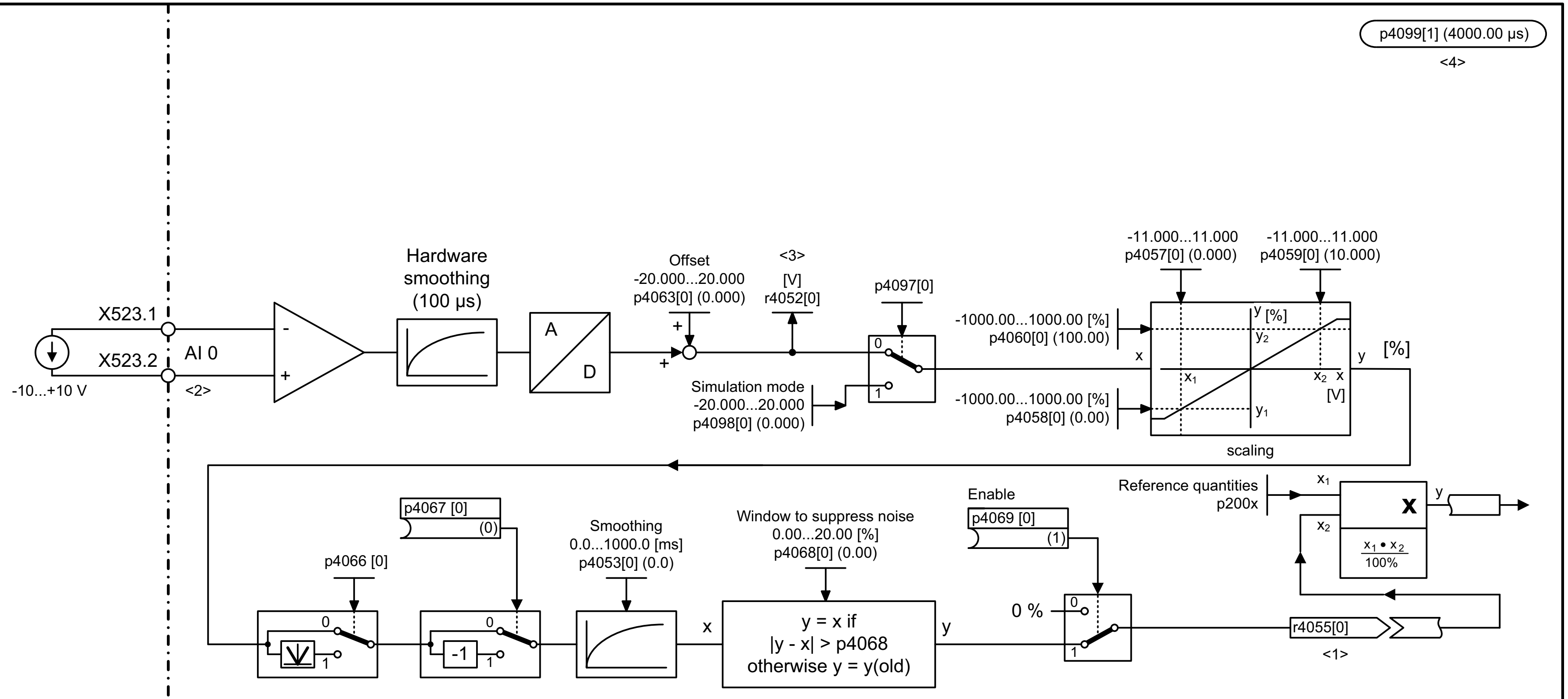
Fig. 3-386 9661 – Digital inputs/outputs, bidirectional (DI/DO 0 … DI/DO 1)

Fig. 3-387 9662 – Digital inputs/outputs, bidirectional (DI/DO 2 ... DI/DO 3)



1	2	3	4	5	6	7	8

DO: TM41	fp_9662_51_eng.vsd	Function diagram	- 9662 -
Terminal Module 41 (TM41) - Digital inputs/outputs bidirectional (DI/DO 2 ... DI/DO 3)	22.04.09 V05.01.01	SINAMICS	



<1> When interconnected, the output signals are referred to the reference quantities p200x or p205x (100 % corresponds to p20xx).

<2> Differential inputs!
For input signals referred to ground, terminal X523.1 must be connected to reference potential M.

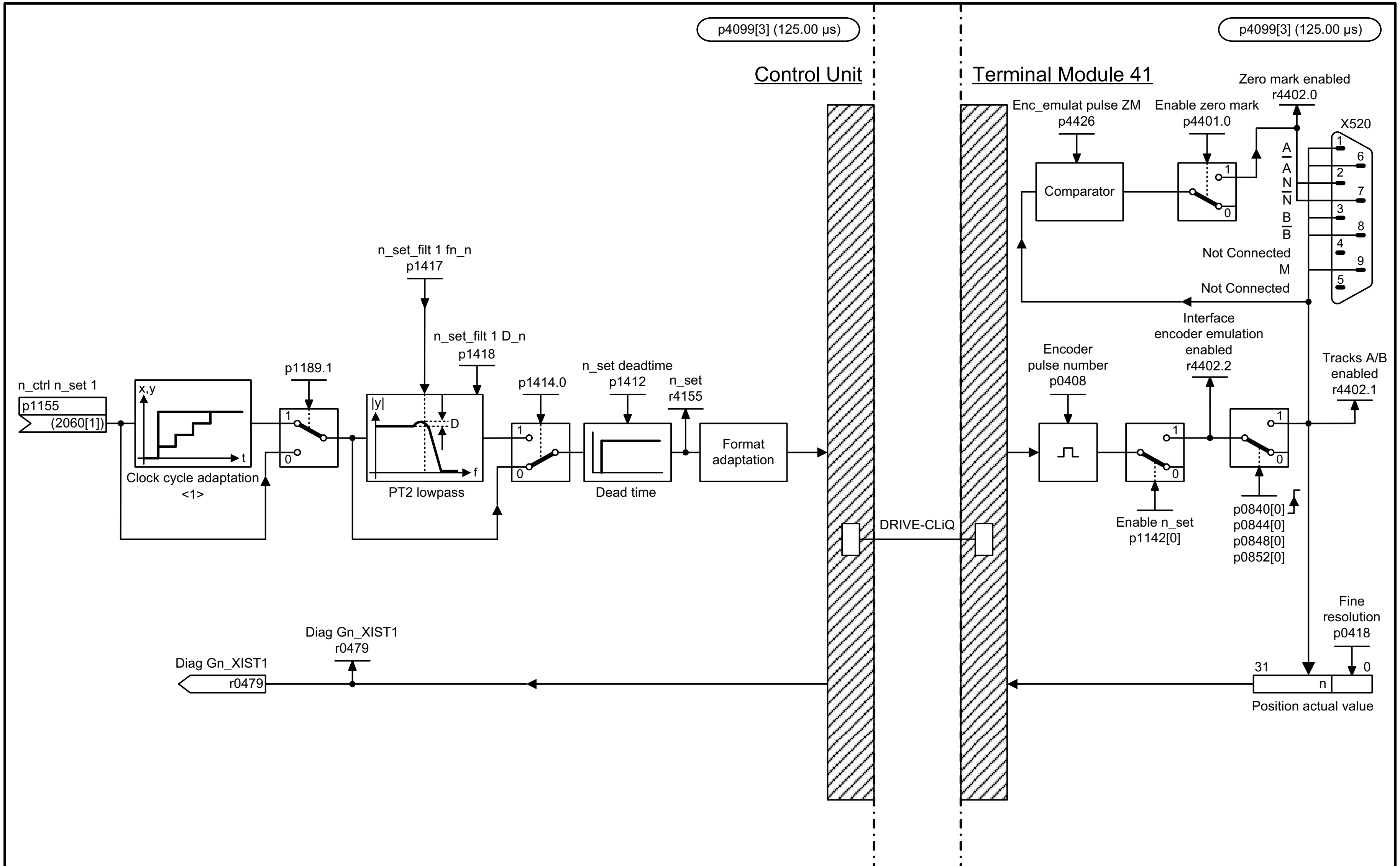
<3> Caution:
The voltage between an input and ground must not exceed 35 V.
The voltage between the inputs must not exceed 35 V.

<4> If the PROFIdrive communication is operated with clock cycle synchronism (r2064[0] = 1), the time slice automatically adjusts to the PROFIdrive clock cycle (r2064[1]). When the PROFIdrive interface is in this mode, p4099 does not influence the time slice for TM41.

1	2	3	4	5	6	7	8
DO: TM41					fp_9663_51_eng.vsd	Function diagram	- 9663 -
Terminal Module 41 (TM41) - Analog input 0 (AI 0)					11.06.08 V05.01.01	SINAMICS	

Fig. 3-388 9663 – Analog input 0 (AI 0)

Fig. 3-389 9674 – Incremental encoder emulation (p4400 = 0)

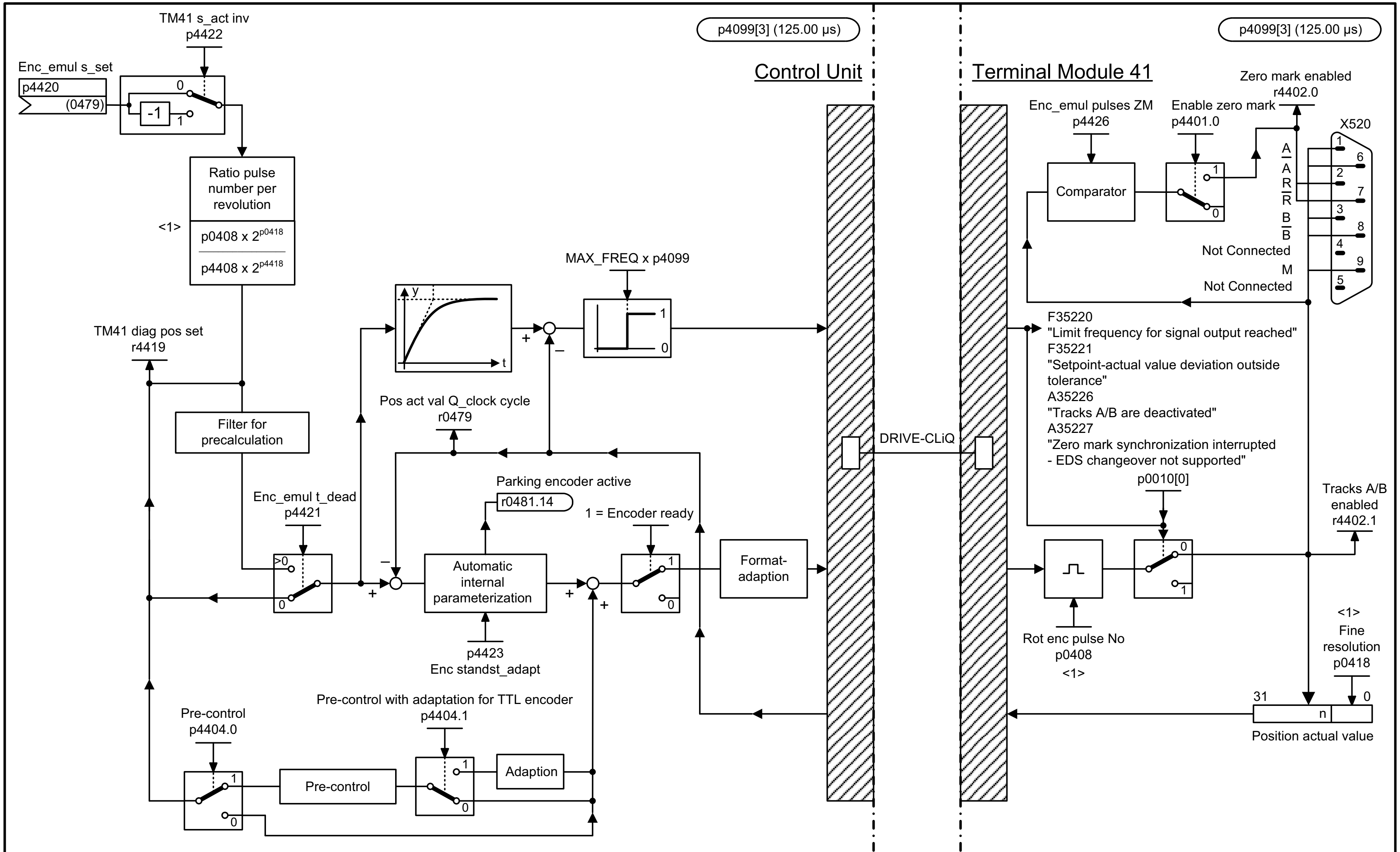


<1> Clock-cycle adaptation is only effective for the clock-cycle synchronous PROFIdrive.

1	2	3	4	5	6	7	8

DO: TM41	fp_9674_51_eng.vsd	Function diagram	- 9674 -
Terminal Module 41 (TM41) - Incremental encoder emulation (p4400 = 0)	14.12.11 V05.01.01	SINAMICS	

Fig. 3-390 9676 – Incremental encoder emulation (p4400 = 1)



<1> When "ratio pulse number per revolution" is activated, perform setting p4408 and p4418 analogously to the source of p4420.
When "ratio pulse number per revolution" is deactivated (p4408 = 0), perform setting p0408 and p0418 analogously to the source of p4420.

1	2	3	4	5	6	7	8

DO: TM41	fp_9676_51_eng.vsd	Function diagram	- 9676 -
Terminal Module 41 (TM41) - Incremental encoder emulation (p4400 = 1)	24.05.13 V05.01.01	SINAMICS	

2000.00 µs

Signal targets for STW1 Standard telegram 3 (p0922 = 3)

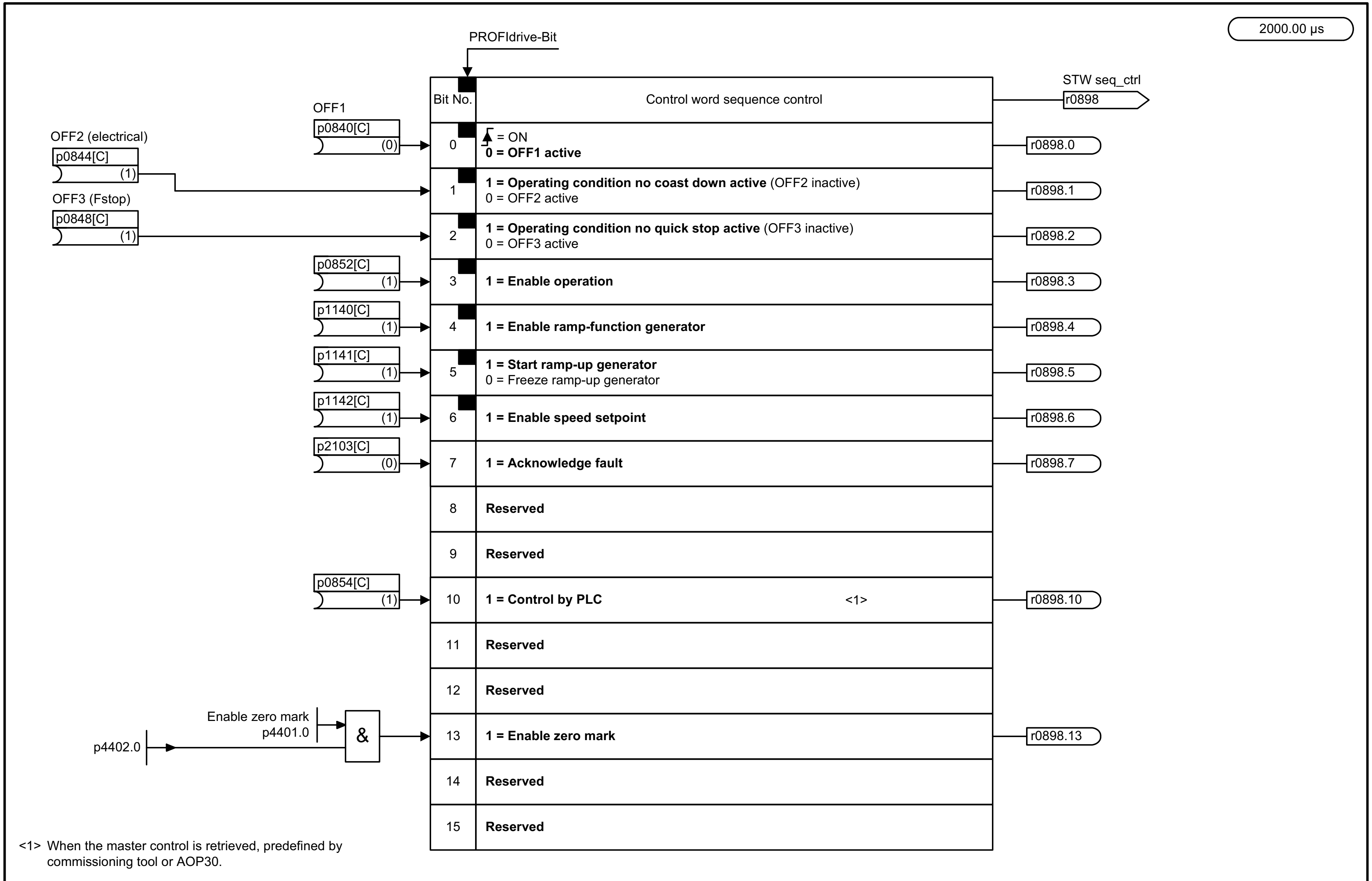
Signal	Meaning	Interconnection parameters	[Function diagram] internal control word	[Function diagram] signal target	Inverted
STW1.0	↑ = ON (pulses can be enabled) **0 = OFF1** (braking with ramp-function generator, then pulse cancellation, ready for switching on)	p0840 = r2090.0	[9678.3]	[9682]	-
STW1.1	**1 = No OFF2** (enable is possible) 0 = OFF2 (immediate pulse cancellation and power-on inhibit)	p0844 = r2090.1	[9678.3]	[9682]	-
STW1.2	**1 = No OFF3** (enable possible) 0 = OFF3 (braking with the OFF3 ramp p1135, then pulse cancellation and power-on inhibit)	p0848 = r2090.2	[9678.3]	[9682]	-
STW1.3	**1 = Enable operation** (pulses can be enabled) 0 = Inhibit operation (cancel pulses)	p0852 = r2090.3	[9678.3]	[9682]	-
STW1.4	**1 = Operating condition** (the ramp-function generator can be enabled) 0 = Inhibit ramp-function generator (set the ramp-function generator output to zero)	p1140 = r2090.4	[9678.3]	[9682]	-
STW1.5	**1 = Enable the ramp-function generator** 0 = Stop the ramp-function generator (freeze the ramp-function generator output)	p1141 = r2090.5	[9678.3]	[9682]	-
STW1.6	**1 = Enable setpoint** 0 = Inhibit setpoint (set the ramp-function generator input to zero)	p1142 = r2090.6	[9678.3]	[9682]	-
STW1.7	↑ **= Acknowledge faults**	p2103[0] = r2090.7	[2546.1]	[8060]	-
STW1.8	**Reserved**	-	-	-	-
STW1.9	**Reserved**	-	-	-	-
STW1.10	**1 = Control by PLC** <1>	p0854[0] = r2090.10	[9678.3]	-	-
STW1.11	**Reserved**	-	-	-	-
STW1.12	**Reserved**	-	-	-	-
STW1.13	**1 = Enable zero marks** <2>	p1035 = p2090.13	[9678.3]	-	-
STW1.14	**Reserved**	-	-	-	-
STW1.15	**Reserved**	-	-	-	-

<1> The drive object is ready for transfer.
<2> Without function on the TM41. The zero mark can only be switched via p4401.

1	2	3	4	5	6	7	8

DO: TM41	fp_9677_51_eng.vsd	Function diagram	- 9677 -
Terminal Module 41 (TM41) - STW1 control word interconnection (p0922 = 3)	16.06.10 V05.01.01	SINAMICS	

Fig. 3-391 9677 – STW1 control word interconnection (p0922 = 3)



1	2	3	4	5	6	7	8

DO: TM41	fp_9678_51_eng.vsd	Function diagram	- 9678 -
Terminal Module 41 (TM41) - Control word, sequence control (p4400 = 0)	10.09.09 V05.01.01	SINAMICS	

Fig. 3-392 9678 – Control word, sequence control (p4400 = 0)

Fig. 3-393 9679 – STW2 control word interconnection (p0922 = 3)

2000.00 µs

Signal targets for STW2 Standard telegram 3 (p0922 = 3) <1>

Signal	Meaning	Interconnection parameters	[Function diagram] internal control word	[Function diagram] signal target	Inverted
STW2.0	**Drive data set selection DDS, bit 0** <1>	p0820[0] = r2093.0	-	-	-
STW2.1	**Drive data set selection DDS, bit 1** <1>	p0821[0] = r2093.1	-	-	-
STW2.2	**Drive data set selection DDS, bit 2** <1>	p0822[0] = r2093.2	-	-	-
STW2.3	**Drive data set selection DDS, bit 3** <1>	p0823[0] = r2093.3	-	-	-
STW2.4	**Drive data set selection DDS, bit 4** <1>	p0824[0] = r2093.4	-	-	-
STW2.5	**Reserved**	-	-	-	-
STW2.6	**Reserved**	-	-	-	-
STW2.7	**Reserved**	-	-	-	-
STW2.8	**Reserved**	-	-	-	-
STW2.9	**Reserved**	-	-	-	-
STW2.10	**Reserved**	-	-	-	-
STW2.11	**Reserved**	-	-	-	-
STW2.12	**Master sign-of-life, bit 0**	p2045 = r2050[3]	-	[2410]	-
STW2.13	**Master sign-of-life, bit 1**				
STW2.14	**Master sign-of-life, bit 2**				
STW2.15	**Master sign-of-life, bit 3**				

<1> Not for TM41.

1	2	3	4	5	6	7	8

DO: TM41	fp_9679_51_eng.vsd	Function diagram	- 9679 -
Terminal Module 41 (TM41) - STW2 control word interconnection (p0922 = 3)	05.09.11 V05.01.01	SINAMICS	

Fig. 3-394 9680 – Status word, sequence control

2000.00 µs

PROFIdrive-Bit

ZSW seq_ctrl → r0899

Input	Bit No.	Status word sequence control	Output
From the sequencer [9682]	0	**1 = Ready for switching on**	r0899.0
From the sequencer [9682]	1	**1 = Ready**	r0899.1
From the sequence control [9678.7]	2	**1 = Operation enabled**	r0899.2
From fault buffer [8060.6]	3	**1 = Fault present**	r2139.3
From the sequencer [9682]	4	**1 = No coast down active** (OFF2 inactive)	r0899.4
From the sequencer [9682]	5	**1 = No quick stop active** (OFF3 inactive)	r0899.5
From the sequence control [9678.7]	6	**1 = Sw on inhibit**	r0899.6
From alarm buffer [8065.4]	7	**1 = Drive ready**	r2139.7
	8	**Reserved**	
Bit 9 = 1 --> ready to exchange process data	9	**1 = Control request <1>**	r0899.9
	10	**Reserved**	
	11	**Reserved**	
	12	**Reserved**	
From TM41 Impulse encoder simulation (HW)	13	**1 = Zero mark enabled**	r0899.13
From TM41 Impulse encoder simulation (HW)	14	**1 = Tracks A/B enabled**	r0899.14
From TM41 Impulse encoder simulation (HW)	15	**1 = Interface encoder emulation enabled**	r0899.15

<1> The drive object is ready to accept data.

1	2	3	4	5	6	7	8

DO: TM41	fp_9680_51_eng.vsd	Function diagram	- 9680 -
Terminal Module 41 (TM41) - Status word, sequence control	16.04.14 V05.01.01	SINAMICS	

2000.00 µs

Signal sources for ZSW1 Standard telegram 3 (p0922 = 3)

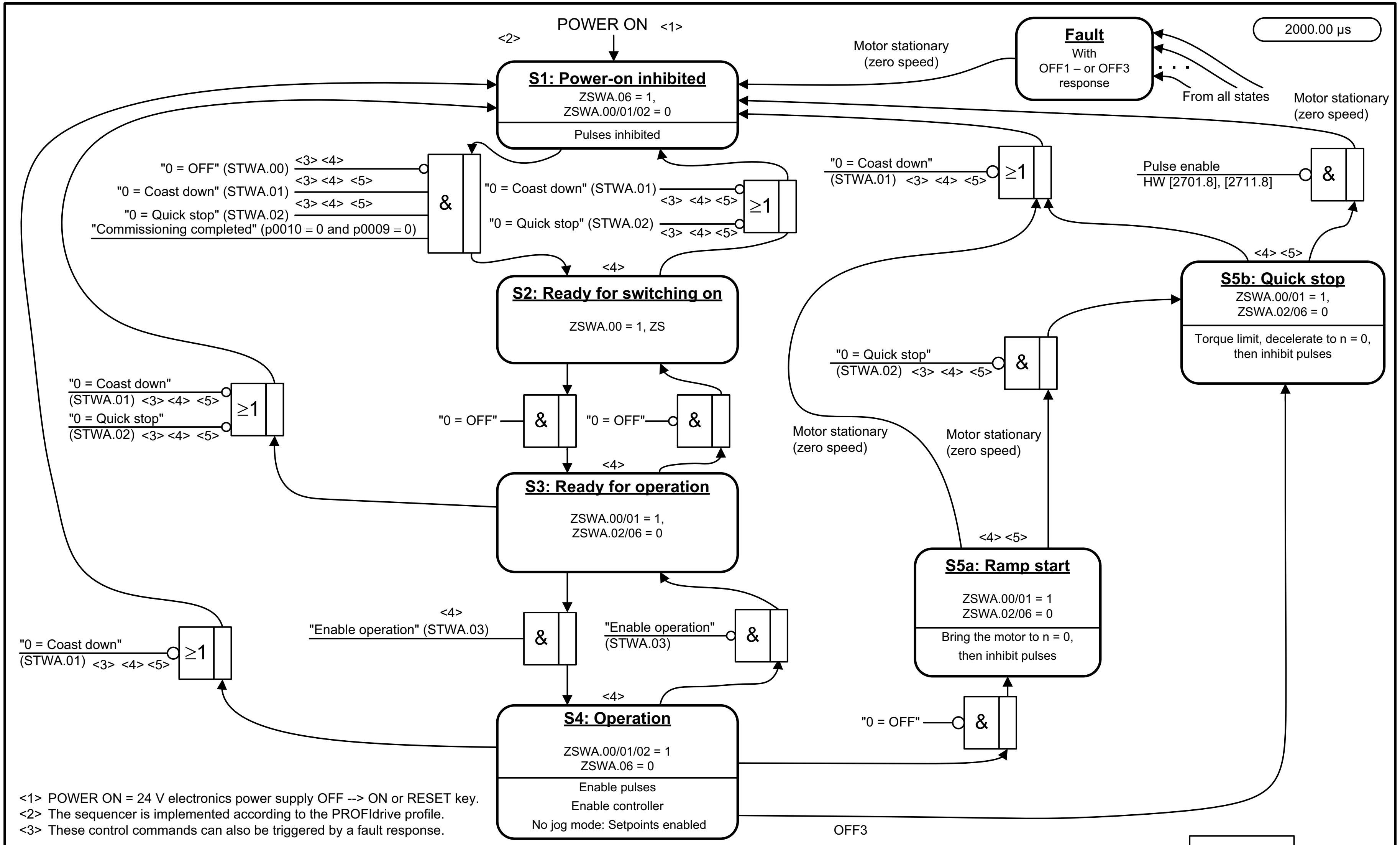
Signal	Meaning	Interconnection parameters	[Function diagram] Internal status word	[Function diagram] Signal source	Inverted
ZSW1.0	**1 = Ready for switching on**	p2080[0] = r0899.0	[9680.7]	[9682]	-
ZSW1.1	**1 = Ready**	p2080[1] = r0899.1	[9680.7]	[9682]	-
ZSW1.2	**1 = Operation enabled**	p2080[2] = r0899.2	[9680.7]	[9682]	-
ZSW1.3	**1 = Fault present**	p2080[3] = r2139.3	[2548.7]	[8060]	-
ZSW1.4	**1 = No coast down active**	p2080[4] = r0899.4	[9680.7]	[9682]	-
ZSW1.5	**1 = No quick stop active**	p2080[5] = r0899.5	[9680.7]	[9682]	-
ZSW1.6	**1 = Switching on inhibit active**	p2080[6] = r0899.6	[9680.7]	[9682]	-
ZSW1.7	**1 = Alarm present**	p2080[7] = r2139.7	[2548.7]	[8065]	-
ZSW1.8	**Reserved**	-	-	-	-
ZSW1.9	**1 = Control requested** <1>	p2080[9] = r0899.9	[9680.7]	[9680]	-
ZSW1.10	**Reserved**	-	-	-	-
ZSW1.11	**Reserved**	-	-	-	-
ZSW1.12	**Reserved**	-	-	-	-
ZSW1.13	**1 = Fault power unit thermal overload** <2>	p2080[13] = r2135.13	[2548.7]	[8021.8]	-
ZSW1.14	**Reserved**	-	-	-	-
ZSW1.15	**1 - Alarm power unit thermal overload** <2>	p2080[15] = r2135.15	[2548.7]	[8021.8]	-

<1> The drive object is ready accept data.
<2> Not for TM41.

1	2	3	4	5	6	7	8

DO: TM41	fp_9681_51_eng.vsd	Function diagram	- 9681 -
Terminal Module 41 (TM41) - ZSW1 status word interconnection (p0922 = 3)	19.10.11 V05.01.01	SINAMICS	

Fig. 3-395 9681 – ZSW1 status word interconnection (p0922 = 3)



<1> POWER ON = 24 V electronics power supply OFF --> ON or RESET key.
<2> The sequencer is implemented according to the PROFIdrive profile.
<3> These control commands can also be triggered by a fault response.

<4> STWA.xx = Control word sequence control bit xx (r0898) [2501]; ZSWA.xx = Status word sequence control bit xx (r0899) [2503].
<5> The terms "coast down", "quick stop", "ramp start" emulate a real axis. In this state, the actual value is frozen.

1	2	3	4	5	6	7	8
DO: TM41					fp_9682_51_eng.vsd	Function diagram	- 9682 -
Terminal Module 41 (TM41) - Sequencer (p4400 = 0)					27.02.14 V05.01.01	SINAMICS	

Fig. 3-396 9682 – Sequencer (p4400 = 0)

Fig. 3-397 9683 – ZSW2 status word interconnection (p0922 = 3)

2000.00 µs

Signal sources for ZSW2 Standard telegram 3 (p0922 = 3)

Signal	Meaning	Interconnection parameters	[Function diagram] Internal status word	[Function diagram] Signal source	Inverted
ZSW2.0	**1 = DDS present Bit 0** <2>	p2081[0] - r0051.0	-	-	-
ZSW2.1	**1 = DDS present Bit 1** <2>	p2081[1] - r0051.1	-	-	-
ZSW2.2	**1 = DDS present Bit 2** <2>	p2081[2] - r0051.2	-	-	-
ZSW2.3	**1 = DDS present Bit 3** <2>	p2081[3] - r0051.3	-	-	-
ZSW2.4	**1 = DDS present Bit 4** <2>	p2081[4] - r0051.4	-	-	-
ZSW2.5	**1 = Alarm class bit 0**	p2081[5] = r2139.11	-	-	-
ZSW2.6	**1 = Alarm class bit 1**	p2081[6] = r2139.12	-	-	-
ZSW2.7	**Reserved**	-	-	-	-
ZSW2.8	**Reserved**	-	-	-	-
ZSW2.9	**Reserved**	-	-	-	-
ZSW2.10	**Reserved**	-	-	-	-
ZSW2.11	**Reserved**	-	-	-	-
ZSW2.12 <1>	**Slave sign-of-life bit 0**	Implicitly interconnected	-	-	-
ZSW2.13 <1>	**Slave sign-of-life bit 1**				
ZSW2.14 <1>	**Slave sign-of-life bit 2**				
ZSW2.15 <1>	**Slave sign-of-life bit 3**				

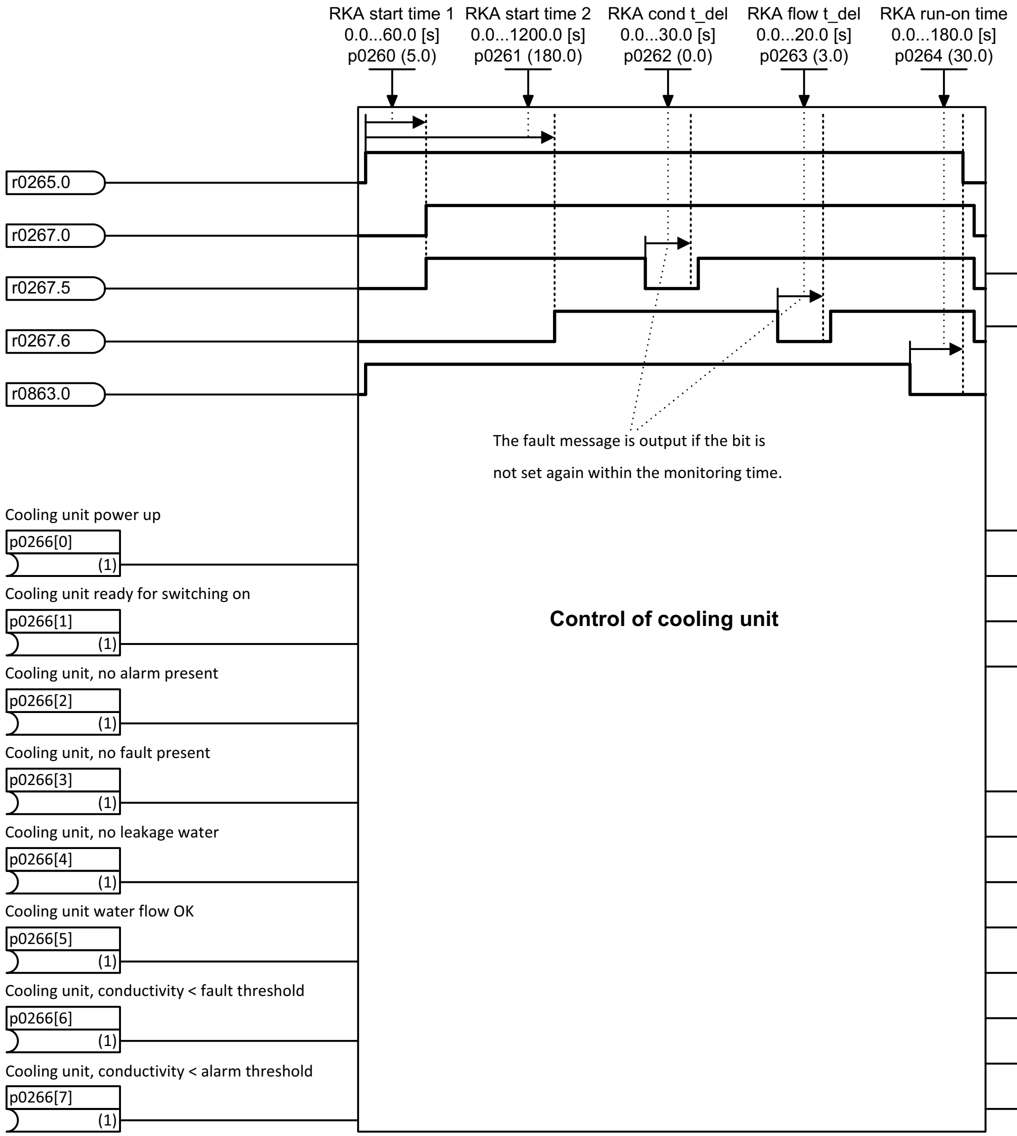
<1> These signals are automatically interconnected for clock-cycle synchronous operation.
<2> Not for TM41.

1	2	3	4	5	6	7	8

DO: TM41	fp_9683_51_eng.vsd	Function diagram	**- 9683 -**
Terminal Module 41 (TM41) - ZSW2 status word interconnection (p0922 = 3)	18.10.11 V05.01.01	SINAMICS	

3.45 Auxiliaries

Function diagrams



Cooling unit, control word

Bit No.	Meaning	
0	**1 = Power up cooling system**	r0265.0
1	**1 = Message, converter off**	r0265.1
2	**1 = Acknowledge faults**	r0265.2
3	**1 = Leakage water detection OK**	r0265.3

To cooling system

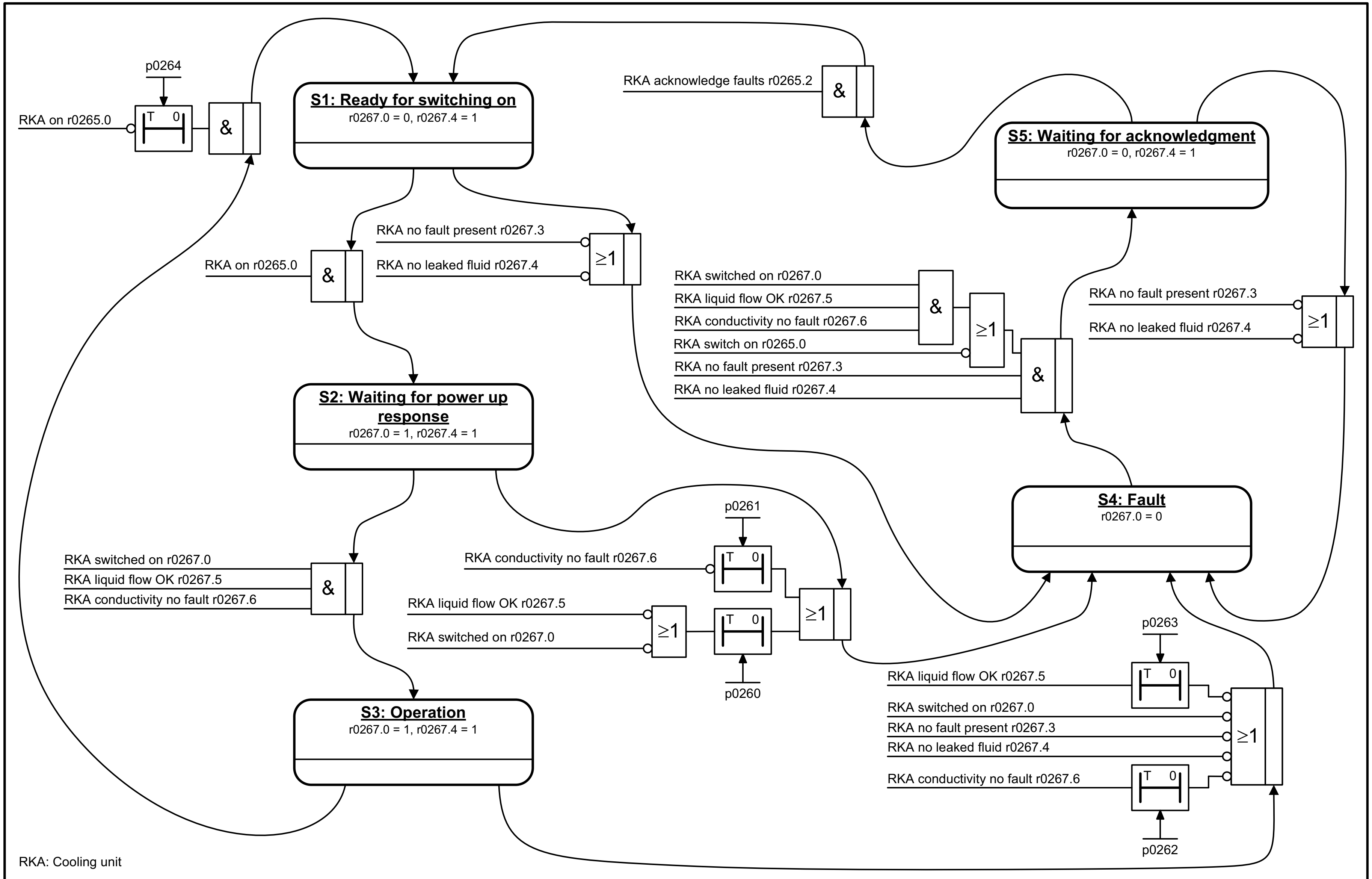
Cooling unit status word display

Bit No.	Meaning	
0	**RKA powered up**	r0267.0
1	**RKA ready for switching on**	r0267.1
2	**RKA no alarm present**	r0267.2
3	**RKA no fault present**	r0267.3
4	**RKA no leakage water**	r0267.4
5	**RKA water flow OK**	r0267.5
6	**RKA conductivity, no fault**	r0267.6
7	**RKA conductivity, no alarm**	r0267.7

1	2	3	4	5	6	7	8

DO: A_INF, B_INF, S_INF, SERVO, VECTOR	fp_9794_01_eng.vsd	Function diagram	- 9794 -
Auxiliaries - Cooling unit, control and feedback signals (r0108.28 = 1)	20.03.14 V05.01.01	SINAMICS S120	

Fig. 3-398 9794 – Cooling unit, control and feedback signals (r0108.28 = 1)

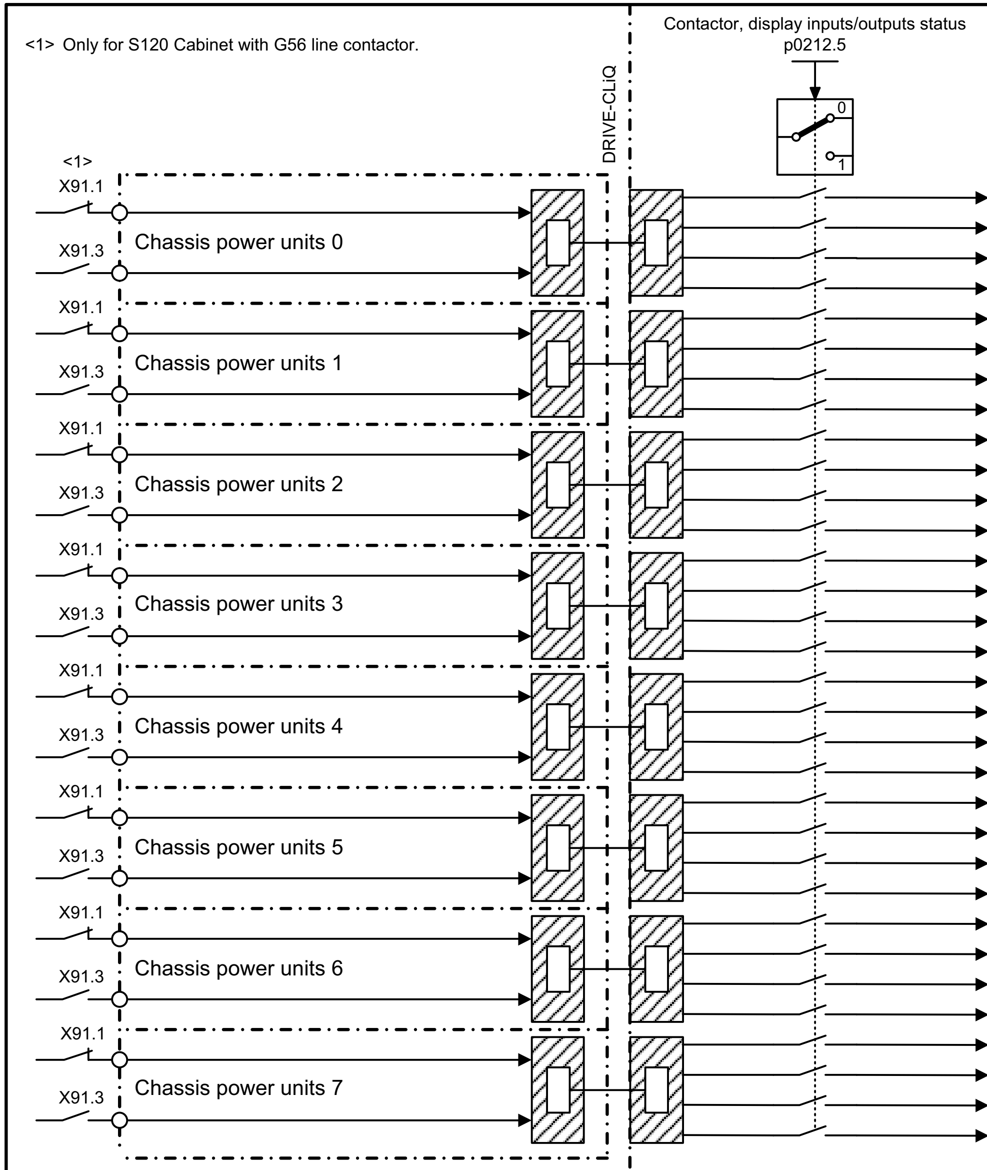


1	2	3	4	5	6	7	8
DO: A_INF, B_INF, S_INF, SERVO, VECTOR					fp_9795_01_eng.vsd	Function diagram	- 9795 -
Auxiliaries - Cooling unit, sequence control (r0108.28 = 1)					22.04.16 V05.01.01	SINAMICS S120	

Fig. 3-399 9795 – Cooling unit, sequence control (r0108.28 = 1)

Fig. 3-400 9814 – Chassis power units, 3 AC line connection and contactor status display

<1> Only for S120 Cabinet with G56 line contactor.



Power unit contactor inputs/outputs status

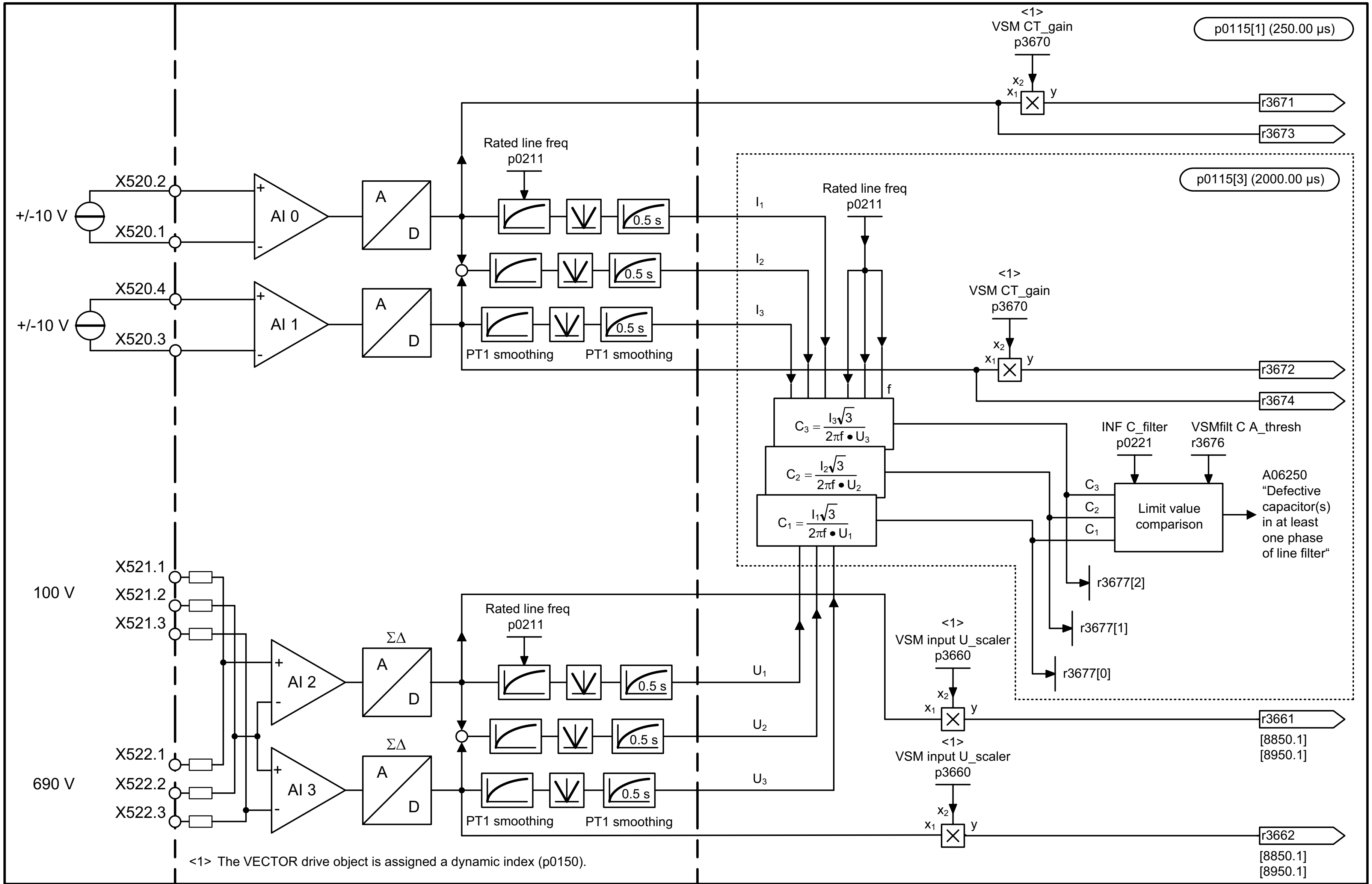
Bit No.	Meaning	Parameter
0	**PDS0 precharging/line contactor control output**	r0256.0
1	**PDS0 precharging/line contactor feedback signal input**	r0256.1
2	**PDS0 bypass contactor control output**	r0256.2
3	**PDS0 bypass contactor feedback signal input**	r0256.3
4	**PDS1 precharging/line contactor control output**	r0256.4
5	**PDS1 precharging/line contactor feedback signal input**	r0256.5
6	**PDS1 bypass contactor control output**	r0256.6
7	**PDS1 bypass contactor feedback signal input**	r0256.7
8	**PDS2 precharging/line contactor control output**	r0256.8
9	**PDS2 precharging/line contactor feedback signal input**	r0256.9
10	**PDS2 bypass contactor control output**	r0256.10
11	**PDS2 bypass contactor feedback signal input**	r0256.11
12	**PDS3 precharging/line contactor control output**	r0256.12
13	**PDS3 precharging/line contactor feedback signal input**	r0256.13
14	**PDS3 bypass contactor control output**	r0256.14
15	**PDS3 bypass contactor feedback signal input**	r0256.15
16	**PDS4 precharging/line contactor control output**	r0256.16
17	**PDS4 precharging/line contactor feedback signal input**	r0256.17
18	**PDS4 bypass contactor control output**	r0256.18
19	**PDS4 bypass contactor feedback signal input**	r0256.19
20	**PDS5 precharging/line contactor control output**	r0256.20
21	**PDS5 precharging/line contactor feedback signal input**	r0256.21
22	**PDS5 bypass contactor control output**	r0256.22
23	**PDS5 bypass contactor feedback signal input**	r0256.23
24	**PDS6 precharging/line contactor control output**	r0256.24
25	**PDS6 precharging/line contactor feedback signal input**	r0256.25
26	**PDS6 bypass contactor control output**	r0256.26
27	**PDS6 bypass contactor feedback signal input**	r0256.27
28	**PDS7 precharging/line contactor control output**	r0256.28
29	**PDS7 precharging/line contactor feedback signal input**	r0256.29
30	**PDS7 bypass contactor control output**	r0256.30
31	**PDS7 bypass contactor feedback signal input**	r0256.31

1	2	3	4	5	6	7	8

DO: A_INF, B_INF, S_INF, VECTOR	fp_9814_55_eng.vsd	Function diagram	- 9814 -
Auxiliaries - Chassis power units 3 AC line connection and contactor status display	04.12.12 V05.01.01	SINAMICS S120/S150	

3.46 Voltage Sensing Module (VSM)

Function diagrams



$$C_3 = \frac{I_3\sqrt{3}}{2\pi f \bullet U_3}$$

$$C_2 = \frac{I_2\sqrt{3}}{2\pi f \bullet U_2}$$

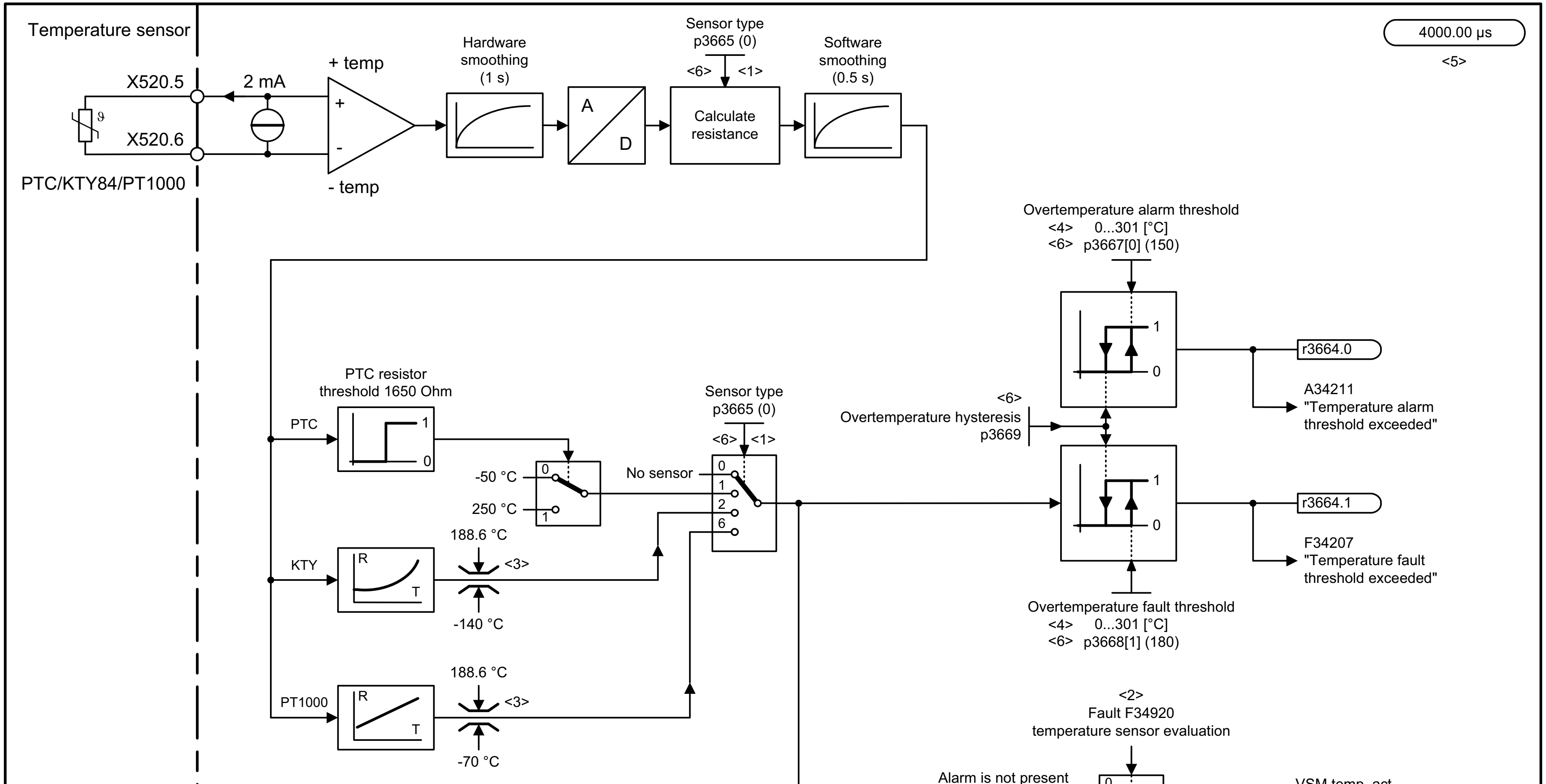
$$C_1 = \frac{I_1\sqrt{3}}{2\pi f \bullet U_1}$$

1	2	3	4	5	6	7	8

DO: A_INF, S_INF, VECTOR	fp_9880_54_eng.vsd	Function diagram	- 9880 -
Voltage Sensing Module (VSM) - Analog inputs (AI 0 ... AI 3)	18.12.13 V05.01.01	S120/S150/G130/G150	

Fig. 3-401 9880 – Analog inputs (AI 0 ... AI 3)

Fig. 3-402 9886 – Temperature evaluation



<1> p3665
= 0: No sensor
= 1: PTC
= 2: KTY84
= 6: PT1000

<2> A fault or alarm in the temperature evaluation of the VSM is communicated to the downstream evaluation using special temperature values.

<3> As a result of the wire breakage monitoring the maximum temperature that can be measured is limited to approximate 188.6 °C.

<4> PTC: A value > 250 °C de-activates the alarm or fault.
KTY/PT1000: A value > 188.6 °C de-activates the alarm or fault.

<5> Can only be used with chassis infeeds.

<6> The VECTOR drive object is assigned a dynamic index (p0150).

1	2	3	4	5	6	7	8

DO: A_INF, S_INF, VECTOR	fp_9886_54_eng.vsd	Function diagram	- 9886 -
Voltage Sensing Module (VSM) - Temperature evaluation	11.02.16 V05.01.01	S120/S150/G130/G150	

3.47 Basic Operator Panel 20 (BOP20)

Function diagrams

PROFIdrive sampling time

Interconnection STW BOP (r0019)

<1>

Signal	Meaning	Interconnection parameters
STW BOP.0	**1 = ON** **0 = OFF (OFF1)**	p0840[0] = r0019.0
STW BOP.1	**1 = No coast down** 0 = Coast down (OFF2)	p0844[0] = r0019.1
STW BOP.2	**1 = No quick stop** 0 = Quick stop (OFF3)	p0848[0] = r0019.2
STW BOP.3	**Reserved**	-
STW BOP.4	**Reserved**	-
STW BOP.5	**Reserved**	-
STW BOP.6	**Reserved**	-
STW BOP.7	**= Acknowledge fault**	p2102[0] = r0019.7
STW BOP.8	**Reserved**	-
STW BOP.9	**Reserved**	-
STW BOP.10	**Reserved**	-
STW BOP.11	**Reserved**	-
STW BOP.12	**Reserved**	-
STW BOP.13	**1 = Motorized potentiometer, raise**	p1035[0] = r0019.13
STW BOP.14	**1 = Motorized potentiometer, lower**	p1036[0] = r0019.14
STW BOP.15	**Reserved**	-

<1> The BICO interconnection represents an example that can be be changed by the user.

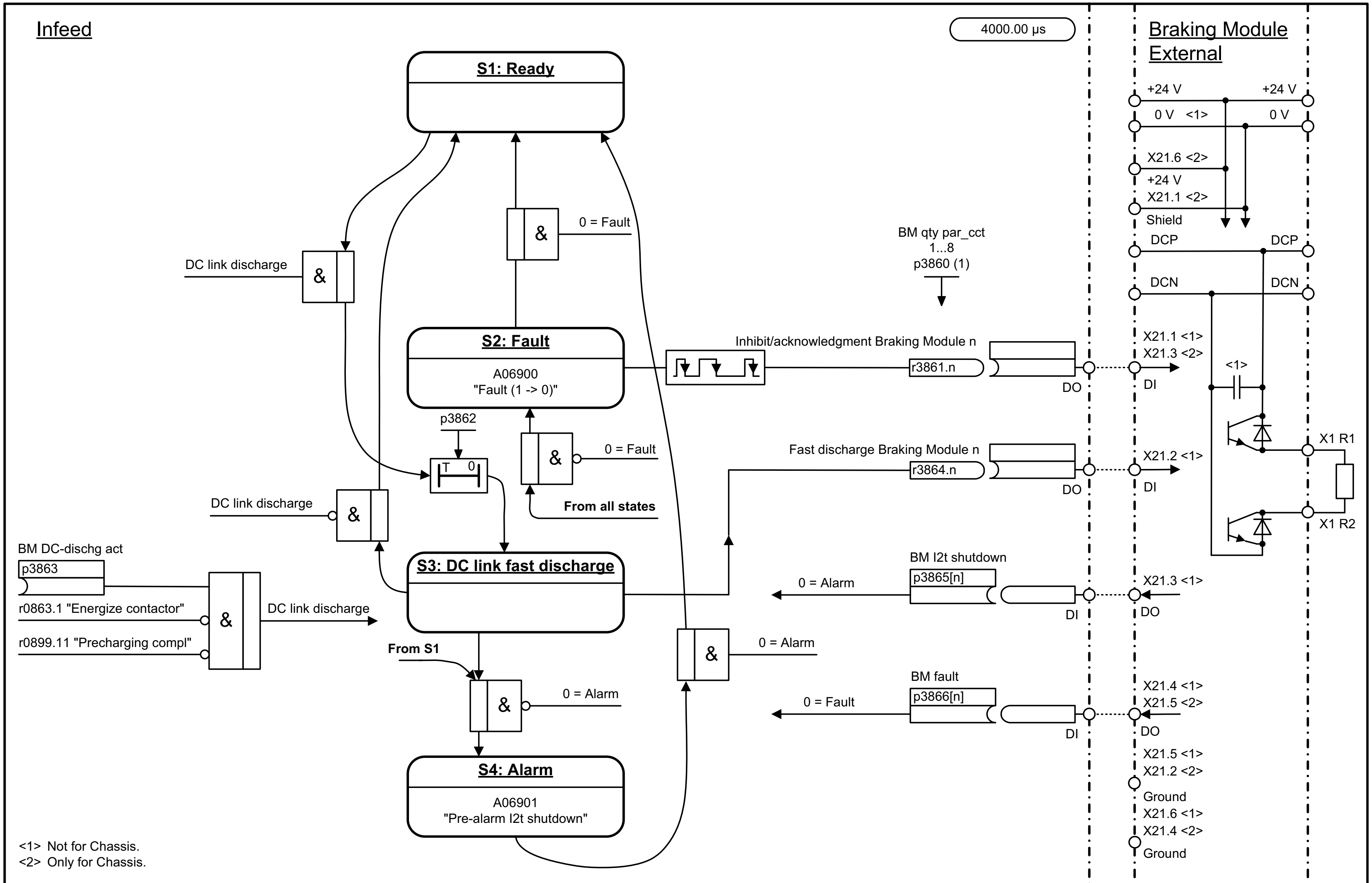
1	2	3	4	5	6	7	8

DO: CU_G, CU_S	fp_9912_54_eng.vsd	Function diagram	- 9912 -
Basic Operator Panel 20 (BOP20) - Control word interconnection	03.07.13 V05.01.01	S120/S150/G130/G150	

3.48 External Braking Module

Function diagrams

Fig. 3-404 9951 – Sequencer (r0108.26 = 1)



1	2	3	4	5	6	7	8

DO: A_INF, B_INF, S_INF	fp_9951_01_eng.vsd	Function diagram	- 9951 -
Braking Module External - Sequencer (r0108.26 = 1)	14.01.13 V05.01.01	SINAMICS S120	

Faults and alarms

4

Content

4.1 Overview of faults and alarms

4.1.1 General information

Display of faults/alarms (messages)

In the case of a fault, the drive signals the corresponding fault(s) and/or alarm(s).

For example, the following methods for displaying faults and alarms are available:

- Display via the fault and alarm buffer with PROFIBUS/PROFINET.
- Online via the commissioning software
- Display and operating unit (e.g. BOP, AOP)

Differences between faults and alarms

The differences between faults and alarms are as follows:

Table 4-1 Differences between faults and alarms

Type	Description
Faults	What happens when a fault occurs? • The appropriate fault reaction is initiated • Status signal ZSW1.3 is set. • The fault is entered into the fault buffer. How are faults eliminated? • Remove the original cause of the fault. • Acknowledge the fault.
Alarms	What happens when an alarm occurs? • Status signal ZSW1.7 is set. • The alarm is entered into the alarm buffer. How are alarms eliminated? • Alarms acknowledge themselves. If the cause of the alarm is no longer present, they automatically reset themselves.

Fault reactions

Note

The following table lists all fault reactions and their meanings used for the entire SINAMICS drive family.

The following fault reactions are defined:

Table 4-2 Fault reactions

List	PROFIdrive	Reaction	Description
NONE	-	None	No reaction when a fault occurs, **Note** When the "Basic positioner" function module is activated (r0108.4 = 1), the following applies: When a fault occurs with fault reaction "NONE", an active traversing task is interrupted and the system switches to tracking mode until the fault has been rectified and acknowledged.
OFF1	ON/ OFF	Brake along the ramp-function generator down ramp followed by pulse inhibit	**Closed-loop speed control (p1300 = 20, 21)** • n_set = 0 is input immediately to brake the drive along the ramp-function generator ramp down (p1121). • When zero speed is detected, the motor holding brake (if parameterized) is closed (p1215). The pulses are suppressed when the brake application time (p1217) expires. Zero speed is detected if the actual speed drops below the threshold (p1226) or if the monitoring time (p1227) started when the speed setpoint <= speed threshold (p1226) has expired. **Torque control (p1300 = 23)** • The following applies for torque control: Reaction as for OFF2. • When the system switches to torque control with p1501, the following applies: No separate braking reaction. If the actual speed value drops below the speed threshold (p1226) or the timer stage (p1227) has expired, the motor holding brake (if one is being used) is closed. The pulses are suppressed when the brake application time (p1217) expires.
OFF1_ DELAYED	-	As for OFF1, however delayed	Faults with this fault response only become effective after the delay time in p3136 has expired. The remaining time up to OFF1 is displayed in r3137.
OFF2	COAST STOP	Internal/external pulse inhibit	**Closed-loop speed and torque control** • Instantaneous pulse suppression, the drive "coasts" to a standstill. • The motor holding brake (if one is being used) is closed immediately. • Switching on inhibited is activated.

Table 4-2 Fault reactions, continued

List	PROFIdrive	Reaction	Description
OFF3	QUICK STOP	Braking along the OFF3 down ramp followed by pulse inhibit	**Closed-loop speed control (p1300 = 20, 21)** • n_set = 0 is input immediately to brake the drive along the OFF3 ramp down (p1135). • When zero speed is detected, the motor holding brake (if parameterized) is closed. The pulses are suppressed when the closing time of the holding brake (p1217) expires. Zero speed is detected if the actual speed drops below the threshold (p1226) or if the monitoring time (p1227) started when the speed setpoint <= speed threshold (p1226) has expired. • Switching on inhibited is activated. **Torque control (p1300 = 23)** • Changeover to speed-controlled operation and other reactions as described for speed-controlled operation.
STOP2	-	n_set = 0	• n_set = 0 is input immediately to brake the drive along the OFF3 ramp down (p1135). • The drive remains in closed-loop speed control.
IASC/ DCBRK	-	-	• For synchronous motors, the following applies: If a fault occurs with this fault reaction, an internal armature short-circuit is triggered. The conditions for p1231 = 4 must be observed. • For induction motors, the following applies: If a fault occurs with this fault reaction, DC braking is triggered. DC braking must have been commissioned (p1232, p1233, p1234).
ENCODER	-	Internal/external pulse inhibit (p0491)	The fault reaction ENCODER is applied as a function of the setting in p0491. Factory setting: p0491 = 0 --> Encoder fault causes OFF2 **Notice** When changing p0491, it is imperative that the information in the description of this parameter is carefully observed.

Acknowledging faults

The list of faults and alarms specifies how to acknowledge each fault after the cause has been remedied.

Table 4-3 Acknowledging faults

Acknowledgment	Description
POWER ON	The fault is acknowledged using POWER ON (switch drive unit off and on again). **Note** If this action has not removed the fault cause, the fault is displayed again immediately after power up.
IMMEDIATELY	Faults can be acknowledged on one drive object (Points 1 to 3) or on all drive objects (Point 4) as follows: 1 Set acknowledgment by parameter: p3981 = 0 --> 1 2 Acknowledging via binector inputs: p2103 BI: 1 Acknowledge faults p2104 BI: 2 Acknowledge faults p2105 BI: 3 Acknowledge faults 3 Acknowledging using a PROFIDRIVE control signal: STW1.7 = 0 --> 1 (edge) 4 Acknowledge all faults p2102 BI: Acknowledge all faults All of the faults on all of the drive objects of the drive system can be acknowledged using this binector input. **Note** • These faults can also be acknowledged by a POWER ON. • If the cause of the fault has not been removed, the fault will continue to be displayed after acknowledgment. • Safety Integrated faults The "Safe Torque Off" (STO) function must be deselected before these faults are acknowledged.
PULSE INHIBIT	The fault can only be acknowledged when the pulses are inhibited (r0899.11 = 0). The same options are available for acknowledging as described under acknowledge IMMEDIATELY.

4.1.2 Explanation of the list of faults and alarms

The data in the following example have been chosen at random. The information listed below is the maximum amount of information that a description can contain. Some of the information is optional.

The "List of faults and alarms" (Page 2489) has the following layout:

- - - - - - - - - - - - Start of example -

Axxxxx (F, N)	**Fault location (optional): Name**		
Message value:	Component number: %1, fault cause: %2		
Message class:	Text of the message class (number according to PROFIdrive)		
Drive object:	List of objects.		
Component:	Control Unit (CU)	**Propagation:**	GLOBAL
Reaction:	NONE		
Acknowledgement:	NONE		
Cause:	Description of possible causes. Fault value (r0949, interpret format): or alarm value (r2124, interpret format): (optional) Information about fault or alarm values (optional).		
Remedy:	Description of possible remedies.		
Response to F:	A_INFEED: OFF2 (OFF1, NONE) SERVO: NONE (OFF1, OFF2, OFF3) VECTOR: NONE (OFF1, OFF2, OFF3)		
Acknowl. upon F:	IMMEDIATELY (POWER ON)		
Response upon N:	NONE		
Acknowl. upon N:	NONE		

- - - - - - - - - - - - End of example -

Axxxxx	**Alarm xxxxx**
Axxxxx (F, N)	**Alarm xxxxx (message type can be changed to F or N)**
Fxxxxx	**Fault xxxxx**
Fxxxxx (A, N)	**Fault xxxxx (report type can be changed to A or N)**
Nxxxxx	**No message**
Nxxxxx (A)	**No message (message type can be changed to A)**
Cxxxxx	**Safety message (separate message buffer)**

A message comprises a letter followed by the relevant number.

The meaning of the letters is as follows:

- A means "Alarm"
- F means "Fault"
- N means "No message" or "Internal message"
- C means "Safety message"

The optional brackets indicate whether the type specified for this message can be changed and which message types can be adjusted via parameters (p2118, p2119).

Information on reaction and acknowledgment is specified independently for a message with an adjustable message type (e.g. reaction to F, acknowledgment for F).

Note

You can change the default properties of a fault or alarm by setting parameters.

The "List of faults and alarms" (Page 2489) supplies information referred to the properties of a message set as default. If the properties of a specific message are changed, the corresponding information may have to be modified in this list.

Fault location (optional): Name

The fault location (optional), the name of the fault or alarm and the message number are all used to identify the message (e.g. with the commissioning software).

Message value:

The information provided under the message value informs you about the composition of the fault/alarm value.

Example:

Message value: Component number: %1, fault cause: %2

This message value contains information about the component number and cause of the fault. The entries %1 and %2 are placeholders, which are filled appropriately in online operation (e.g. with the commissioning software).

Message class:

For each message, specifies the associated message class with the following structure:

Text of the message class (number according to PROFIdrive)

The message classes are transferred at different interfaces to higher-level control systems and their associated display and operating units.

The message classes that are available are shown in Table "Message classes and coding of various diagnostic interfaces (Page 2482)". In addition to the text of the message class and their number according to PROFIdrive – as well as a brief help text regarding the cause and remedy – they also include information about the various diagnostic interfaces:

- PN (hex)

  Specifies the "Channel error type" of the PROFINET channel diagnostics.

  When activating the channel diagnostics, using the GSDML file, the texts listed in the table can be displayed.

- DS1 (dec)

  Specifies the bit number in date set DS1 of the diagnostic alarm for SIMATIC S7.

  When the diagnostic alarms are activated, the texts listed in the table can be displayed.

- DP (dec)

  Specifies the "Error type" of the channel-related diagnostics for PROFIBUS.

  When the channel diagnostics are activated, the texts listed in the standard and the GSD file can be displayed.

- ET 200 (dec)

  Specifies the "Error type" of the channel-related diagnostics for the SIMATIC ET 200pro FC-2 device.

  When the channel diagnostics are activated, the texts listed in the standard and the GSD file of the ET 200pro can be displayed.
- NAMUR (r3113.x)

  Specifies the bit number in parameter r3113.

For the interfaces DP, ET 200, NAMUR, in some instances, the message classes are combined.

Table 4-4 Message classes and coding of various diagnostic interfaces

Text of the message class (number according to PROFIdrive) Cause and remedy.	**Diagnostics interface**				
	PN (hex)	**DS1 (dec)**	**DP (dec)**	**ET 200 (dec)**	**NAMUR (r3113.x)**
Hardware/software errors (1) A hardware or software malfunction was detected. Carry out a POWER ON for the relevant component. If it occurs again, contact the hotline.	9000	0	16	9	0
Line fault (2) A line supply fault has occurred (phase failure, voltage level ...). Check the line supply and fuses. Check the supply voltage. Check the wiring.	9001	1	17	24	1
Supply voltage fault (3) An electronics supply voltage fault (48 V, 24 V, 5 V …) was detected. Check the wiring. Check the voltage level.	9002	2	2 [1] 3 [2]	2 [1] 3 [2]	15
DC-link overvoltage (4) The DC-link voltage has assumed an inadmissibly high value. Check the dimensioning of the system (line supply, reactor, voltages). Check the infeed settings.	9003	3	18	24	2
Power electronics fault (5) An impermissible operating state of the power electronics was detected (overcurrent, overtemperature, IGBT failure …). Check compliance with the permissible load cycles. Check the ambient temperatures (fan).	9004	4	19	24	3
Overtemperature of the electronic component (6) The temperature in the component has exceeded the highest permissible limit. Check the ambient temperature / control cabinet ventilation.	9005	5	20	5	4
Ground fault / inter-phase short-circuit detected (7) A ground fault / inter-phase short-circuit was detected in the power cables or in the motor windings. Check the power cables (connection). Check the motor.	9006	6	21	20	5
Motor overload (8) The motor was operated outside the permissible limits (temperature, current, torque …). Check the load cycles and set limits. Check the ambient temperature / motor cooling.	9007	7	22	24	6

Table 4-4 Message classes and coding of various diagnostic interfaces, continued

Text of the message class (number according to PROFIdrive) Cause and remedy.	**Diagnostics interface**				
	PN (hex)	**DS1 (dec)**	**DP (dec)**	**ET 200 (dec)**	**NAMUR (r3113.x)**
Communication to the higher-level controller faulted (9) The communication to the higher-level controller (internal coupling, PROFIBUS, PROFINET …) is faulted or interrupted. Check the state of the higher-level controller. Check the communication connection/-wiring. Check the bus configuration/cycles.	9008	8	23	19	7
Safety monitoring channel has detected an error (10) A safe operation monitoring function has detected an error.	9009	9	24	25	8
Actual position/speed value incorrect or not available (11) An illegal signal state was detected while evaluating the encoder signals (track signals, zero marks, absolute values …). Check the encoder / state of the encoder signals. Observe the maximum permissible frequencies.	900A	10	25	29	9
Internal (DRIVE-CLiQ) communication faulted (12) The internal communication between the SINAMICS components is faulted or interrupted. Check the DRIVE-CLiQ wiring. Ensure an EMC-compliant installation. Observe the maximum permissible quantity structures / cycles.	900B	11	26	31	10
Infeed fault (13) The infeed is faulty or has failed. Check the infeed and its environment (line supply, filters, reactors, fuses …). Check the infeed control.	900C	12	27	24	11
Braking controller / Braking Module faulted (14) The internal or external Braking Module is faulted or overloaded (temperature). Check the connection/state of the Braking Module. Comply with the permissible number of braking operations and their duration.	900D	13	28	24	15
Line filter fault (15) The line filter monitoring has detected an excessively high temperature or another impermissible state. Check the temperature / temperature monitoring. Check the configuration to ensure that it is permissible (filter type, infeed, thresholds).	900E	14	17	24	15
External measured value / signal state outside of the permissible range (16) A measured value / signal state read in via the input area (digital/analog/temperature) has assumed an impermissible value/state. Identify and check the relevant signal. Check the set thresholds.	900F	15	29	26	15
Application / technological function faulty (17) The application / technological function has exceeded a (set) limit (position, velocity, torque …). Identify and check the relevant limit. Check the setpoint specification of the higher-level controller.	9010	16	30	9	15

Table 4-4 Message classes and coding of various diagnostic interfaces, continued

Text of the message class (number according to PROFIdrive) Cause and remedy.	**Diagnostics interface**				
	PN (hex)	**DS1 (dec)**	**DP (dec)**	**ET 200 (dec)**	**NAMUR (r3113.x)**
Error in the parameterization/configuration/commissioning procedure (18) An error was identified in the parameterization or in a commissioning procedure, or the parameterization does not match the actual device configuration. Determine the precise cause of the fault using the commissioning tool. Adapt the parameterization or device configuration.	9011	17	31	16	15
General drive fault (19) Group fault. Determine the precise cause of the fault using the commissioning tool.	9012	18	9	9	15
Auxiliary unit fault (20) The monitoring of an auxiliary unit (incoming transformer, cooling unit …) has detected an illegal state. Determine the exact cause of the fault and check the relevant device.	9013	19	29	26	15

1. Undervoltage condition of the electronics power supply

2. Overvoltage condition of the electronics power supply

Drive object:

Each message (fault/alarm) specifies the drive object in which it can be found.

A message can belong to either one, several, or all drive objects.

Component

Type of hardware component that has triggered the fault or alarm.

With "Component: None" it is not possible to assign the message to a hardware component.

Propagation

In the case of faults that are, for example, triggered by the Control Unit or a Terminal Module, central functions of the drive are also often affected. Using propagation, faults that are triggered by one drive object are therefore passed on to other drive objects.

There are the following types of propagation:

- BICO

  The fault is passed on to all active drive objects with closed-loop control functions (infeed, drive) to which there is a BICO interconnection.

- DRIVE

  The fault is passed on to all active drive objects with closed-loop control functions.

- GLOBAL

  The fault is passed on to all active drive objects.

- LOCAL

  The response of this type of propagation is dependent on parameter p3116.

  With binector input p3116 = 0 (factory setting) the following applies:
  The fault is passed on to the first active drive object with closed-loop control functions.

  With binector input p3116 = 1-signal, the following applies:
  The fault is not passed on.

Reaction: Default fault reaction (adjustable fault reaction)

Specifies the default reaction in the event of a fault.

The optional parentheses indicate whether the default fault reactions can be changed and which fault reactions can be adjusted via parameters (p2100, p2101).

Note

See Table "Fault reactions" (Page 2477)

Acknowledgment: Default acknowledgment (adjustable acknowledgment)

Specifies the default method of acknowledging faults after the cause has been eliminated.

The optional parentheses indicate whether the default acknowledgment can be changed and which acknowledgment can be adjusted via parameters (p2126, p2127).

Note

See Table "Acknowledging faults" (Page 2479)

Cause:

Describes the possible causes of the fault or alarm. A fault or alarm value can also be specified (optional).

Fault value (r0949, format):

The fault value is entered in the fault buffer in r0949[0..63] and specifies additional, more precise information about a fault.

Alarm value (r2124, format):

The alarm value specifies additional, more precise information about an alarm.

The alarm value is entered in the alarm buffer in r2124[0..7] and specifies additional, more precise information about an alarm.

Remedy:

Describes the methods available for eliminating the cause of the active fault or alarm.

⚠ **WARNING**
On a case for case basis, service and maintenance personnel are responsible for choosing a suitable method for eliminating the cause of faults.

4.1.3 Number ranges of faults and alarms

Note

The following number ranges represent an overview of all faults and alarms used in the SINAMICS drive family.

The faults and alarms for the product described in this List Manual are described in detail in "List of faults and alarms" (Page 2489).

Faults and alarms are organized into the following number ranges:

Table 4-5 Number ranges of faults and alarms

of	To	Area
1000	3999	Control Unit
4000	4999	Reserved
5000	5999	Power section
6000	6899	Infeed
6900	6999	Braking Module
7000	7999	Drive
8000	8999	Option Board
9000	12999	Reserved
13000	13020	Licensing
13021	13099	Reserved
13100	13102	Know-how protection
13103	19999	Reserved
20000	29999	OEM
30000	30999	DRIVE-CLiQ component power unit
31000	31999	DRIVE-CLiQ component encoder 1
32000	32999	DRIVE-CLiQ component encoder 2 **Note** Faults that occur are automatically output as an alarm if the encoder is parameterized as a direct measuring system and does not intervene in the motor control.
33000	33999	DRIVE-CLiQ component encoder 3 **Note** Faults that occur are automatically output as an alarm if the encoder is parameterized as a direct measuring system and does not intervene in the motor control.
34000	34999	Voltage Sensing Module (VSM)
35000	35199	Terminal Module 54F (TM54F)
35200	35999	Terminal Module 31 (TM31)
36000	36999	DRIVE-CLiQ Hub Module
37000	37999	HF Damping Module

Table 4-5 Number ranges of faults and alarms, continued

of	To	Area
40000	40999	Controller Extension 32 (CX32)
41000	48999	Reserved
49000	49999	SINAMICS GM/SM/GL
50000	50499	Communication Board (COMM BOARD)
50500	59999	OEM Siemens
60000	65535	SINAMICS DC MASTER (closed-loop DC current control)

4.2 List of faults and alarms

Product: SINAMICS S120/S150, Version: 5103400, Language: eng
Objects: A_INF, B_INF, CU_I, CU_I_D410, CU_LINK, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

F01000 Internal software error

Message value: Module: %1, line: %2
Message class: Hardware/software error (1)
Drive object: All objects
Component: Control Unit (CU) **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: POWER ON
Cause: An internal software error has occurred.
Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.
Remedy: - evaluate fault buffer (r0945).
- carry out a POWER ON (switch-off/switch-on) for all components.
- if required, check the data on the non-volatile memory (e.g. memory card).
- upgrade firmware to later version.
- contact Technical Support.
- replace the Control Unit.

F01001 FloatingPoint exception

Message value: %1
Message class: Hardware/software error (1)
Drive object: All objects
Component: Control Unit (CU) **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: POWER ON
Cause: An exception occurred during an operation with the FloatingPoint data type.
The error may be caused by the basic system or a technology function (e.g. FBLOCKS, DCC, TEC).
Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.
Note:
Refer to r9999 for further information about this fault.
r9999[0]: Fault number.
r9999[1]: Program counter at the time when the exception occurred.
r9999[2]: Cause of the FloatingPoint exception.
Bit 0 = 1: Operation invalid
Bit 1 = 1: Division by zero
Bit 2 = 1: Overflow
Bit 3 = 1: Underflow
Bit 4 = 1: Inaccurate result
Remedy: - carry out a POWER ON (switch-off/switch-on) for all components.
- check configuration and signals of the blocks in FBLOCKS.
- check configuration and signals of DCC charts.
- check configuration and signals of TEC charts.
- upgrade firmware to later version.
- contact Technical Support.

F01002	**Internal software error**		
Message value:	%1		
Message class:	Hardware/software error (1)		
Drive object:	All objects		
Component:	Control Unit (CU)	**Propagation:**	GLOBAL
Reaction:	OFF2		
Acknowledge:	IMMEDIATELY		
Cause:	An internal software error has occurred. Fault value (r0949, interpret hexadecimal): Only for internal Siemens troubleshooting.		
Remedy:	- carry out a POWER ON (switch-off/switch-on) for all components. - upgrade firmware to later version. - contact Technical Support.		

F01003	**Acknowledgment delay when accessing the memory**		
Message value:	%1		
Message class:	Hardware/software error (1)		
Drive object:	All objects		
Component:	Control Unit (CU)	**Propagation:**	GLOBAL
Reaction:	OFF2		
Acknowledge:	IMMEDIATELY		
Cause:	A memory area was accessed that does not return a "READY". Fault value (r0949, interpret hexadecimal): Only for internal Siemens troubleshooting.		
Remedy:	- carry out a POWER ON (switch-off/switch-on) for all components. - contact Technical Support.		

N01004 (F, A)	**Internal software error**		
Message value:	%1		
Message class:	Hardware/software error (1)		
Drive object:	All objects		
Component:	Control Unit (CU)	**Propagation:**	GLOBAL
Reaction:	NONE		
Acknowledge:	NONE		
Cause:	An internal software error has occurred. Fault value (r0949, hexadecimal): Only for internal Siemens troubleshooting.		
Remedy:	- read out diagnostics parameter (r9999). - contact Technical Support. See also: r9999 (Software error internal supplementary diagnostics)		
Reaction upon F:	OFF2		
Acknowl. upon F:	POWER ON		
Reaction upon A:	NONE		
Acknowl. upon A:	NONE		

F01005	**Firmware download for DRIVE-CLiQ component unsuccessful**
Message value:	Component number: %1, fault cause: %2
Message class:	Hardware/software error (1)
Drive object:	All objects
Component:	None **Propagation:** LOCAL
Reaction:	NONE
Acknowledge:	IMMEDIATELY
Cause:	It was not possible to download the firmware to a DRIVE-CLiQ component. Fault value (r0949, interpret hexadecimal): yyxxxx hex: yy = component number, xxxx = fault cause xxxx = 000B hex = 11 dec: DRIVE-CLiQ component has detected a checksum error. xxxx = 000F hex = 15 dec: The selected DRIVE-CLiQ component did not accept the contents of the firmware file. xxxx = 0012 hex = 18 dec: Firmware version is too old and is not accepted by the component. xxxx = 0013 hex = 19 dec: Firmware version is not suitable for the hardware release of the component. xxxx = 0065 hex = 101 dec: After several communication attempts, no response from the DRIVE-CLiQ component. xxxx = 008B hex = 139 dec: Initially, a new boot loader is loaded (must be repeated after POWER ON). xxxx = 008C hex = 140 dec: Firmware file for the DRIVE-CLiQ component not available on the memory card. xxxx = 008D hex = 141 dec: An inconsistent length of the firmware file was signaled. The firmware download may have been caused by a loss of connection to the firmware file. This can occur during a project download/reset in the case of a SINAMICS Integrated Control Unit, for example. xxxx = 008F hex = 143 dec: Component has not changed to the mode for firmware download. It was not possible to delete the existing firmware. xxxx = 0090 hex = 144 dec: When checking the firmware that was downloaded (checksum), the component detected a fault. It is possible that the file on the memory card is defective. xxxx = 0091 hex = 145 dec: Checking the loaded firmware (checksum) was not completed by the component in the appropriate time. xxxx = 009C hex = 156 dec: Component with the specified component number is not available (p7828). xxxx = Additional values: Only for internal Siemens troubleshooting.
Remedy:	- check the selected component number (p7828). - check the DRIVE-CLiQ wiring. - save suitable firmware file for download in the directory "/siemens/sinamics/code/sac/". - use a component with a suitable hardware version - after POWER ON has been carried out again for the DRIVE-CLiQ component, download firmware again. Depending on p7826, the firmware will be automatically downloaded.

A01006 Firmware update for DRIVE-CLiQ component required

Message value: Component number: %1
Message class: General drive fault (19)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The firmware of a DRIVE-CLiQ component must be updated as there is no suitable firmware or firmware version in the component for operation with the Control Unit.

Alarm value (r2124, interpret decimal):

Component number of the DRIVE-CLiQ component.

Remedy: Update the firmware using the commissioning tool:

The firmware version of all of the components on the "Version overview" page can be read in the Project Navigator under "Configuration" of the associated drive unit and an appropriate firmware update can be carried out.

Firmware update via parameter:

- take the component number from the alarm value and enter into p7828.
- start the firmware download with p7829 = 1.

A01007 POWER ON for DRIVE-CLiQ component required

Message value: Component number: %1
Message class: General drive fault (19)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: A DRIVE-CLiQ component must be switched on again (POWER ON) (e.g. due to a firmware update).

Alarm value (r2124, interpret decimal):

Component number of the DRIVE-CLiQ component.

Note:

For a component number = 1, a POWER ON of the Control Unit is required.

Remedy: - Switch off the power supply of the specified DRIVE-CLiQ component and switch it on again.

- For SINUMERIK, auto commissioning is prevented. In this case, a POWER ON is required for all components and the auto commissioning must be restarted.

A01009 (N) CU: Control module overtemperature

Message value: -
Message class: Overtemperature of the electronic components (6)
Drive object: All objects
Component: Control Unit (CU) **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The temperature (r0037[0]) of the control module (Control Unit) has exceeded the specified limit value.
Remedy: - check the air intake for the Control Unit.

- check the Control Unit fan.

Note:

The alarm is automatically withdrawn once the limit value has been fallen below.

Reaction upon N: NONE
Acknowl. upon N: NONE

F01010 Drive type unknown

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: An unknown drive type was found.
Fault value (r0949, interpret decimal):
Drive object number (refer to p0101, p0107).
Remedy: - replace Power Module.
- carry out a POWER ON (switch-off/switch-on) for all components.
- upgrade firmware to later version.
- contact Technical Support.

F01011 (N) Download interrupted

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The project download was interrupted.
Fault value (r0949, interpret decimal):
1: The user prematurely interrupted the project download.
2: The communication cable was interrupted (e.g. cable breakage, cable withdrawn).
3: The project download was prematurely exited by the commissioning tool.
100: Different versions between the firmware version and project files which were loaded by loading into the file system "Download from memory card".
Note:
The response to an interrupted download is the state "first commissioning".
Remedy: - check the communication cable.
- download the project again.
- boot from previously saved files (switch-off/switch-on or p0976).
- when loading into the file system (download from memory card), use the matching version.
Reaction upon N: NONE
Acknowl. upon N: NONE

F01012 (N) Project conversion error

Message value: %1
Message class: Hardware/software error (1)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2 (NONE)
Acknowledge: IMMEDIATELY
Cause: When converting the project of an older firmware version, an error occurred.
Fault value (r0949, interpret decimal):
Parameter number of the parameter causing the error.
For fault value = 600, the following applies:
The temperature evaluation is no longer assigned to the power unit but to the encoder evaluation.
Notice:
Monitoring of the motor temperature is no longer ensured.

Remedy: Check the parameter indicated in the fault value and correctly adjust it accordingly.

For fault value = 600:

Parameter p0600 must be set to the values 1, 2 or 3 in accordance with the assignment of the internal encoder evaluation to the encoder interface.

Value 1 means: The internal encoder evaluation is assigned to the encoder interface 1 via p0187.

Value 2 means: The internal encoder evaluation is assigned to the encoder interface 2 via p0188.

Value 3 means: The internal encoder evaluation is assigned to the encoder interface 3 via p0189.

- if necessary, the internal encoder evaluation must be assigned to an encoder interface via parameters p0187, p0188 or p0189 accordingly.
- if necessary, upgrade the firmware to a later version.

Reaction upon N: NONE

Acknowl. upon N: NONE

A01013 CU: Fan operating time reached or exceeded

Message value: %1

Message class: General drive fault (19)

Drive object: A_INF, B_INF, CU_LINK, CU_S_AC_DP, CU_S_AC_PN, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Control Unit (CU) **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: The maximum operating time of the fan in the Control Unit has either been reached or exceeded.

Alarm value (r2124, interpret decimal):

0: The maximum fan operating time is 500 hours.

1: The maximum fan operating time has been exceeded (50000 hours).

Remedy: Replace the fan in the Control Unit and reset the operating hours counter to 0 (p3961 = 0).

F01015 Internal software error

Message value: %1

Message class: Hardware/software error (1)

Drive object: All objects

Component: Control Unit (CU) **Propagation:** GLOBAL

Reaction: OFF2

Acknowledge: POWER ON

Cause: An internal software error has occurred.

Fault value (r0949, interpret decimal):

Only for internal Siemens troubleshooting.

Remedy:
- carry out a POWER ON (switch-off/switch-on) for all components.
- upgrade firmware to later version.
- contact Technical Support.

A01016 (F) Firmware changed

Message value: %1
Message class: Hardware/software error (1)
Drive object: All objects
Component: Control Unit (CU) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: At least one firmware file in the directory was illegally changed on the non-volatile memory (memory card/device memory) with respect to the version when shipped from the factory.

Alarm value (r2124, interpret decimal):

0: Checksum of one file is incorrect.

1: File missing.

2: File too many.

3: Incorrect firmware version.

4: Incorrect checksum of the back-up file.

Remedy: For the non-volatile memory for the firmware (memory card/device memory), restore the delivery condition.

Note:

The file involved can be read out using parameter r9925.

The status of the firmware check is displayed using r9926.

See also: r9925 (Firmware file incorrect), r9926 (Firmware check status)

Reaction upon F: OFF2
Acknowl. upon F: POWER ON

A01017 Component lists changed

Message value: %1
Message class: Hardware/software error (1)
Drive object: All objects
Component: Control Unit (CU) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: On the memory card, one file in the directory /SIEMENS/SINAMICS/DATA or /ADDON/SINAMICS/DATA has been illegally changed with respect to that supplied from the factory. No changes are permitted in this directory.

Alarm value (r2124, interpret decimal):

zyx dec: x = Problem, y = Directory, z = File name

x = 1: File does not exist.

x = 2: Firmware version of the file does not match the software version.

x = 3: File checksum is incorrect.

y = 0: Directory /SIEMENS/SINAMICS/DATA/

y = 1: Directory /ADDON/SINAMICS/DATA/

z = 0: File MOTARM.ACX

z = 1: File MOTSRM.ACX

z = 2: File MOTSLM.ACX

z = 3: File ENCDATA.ACX

z = 4: File FILTDATA.ACX

z = 5: File BRKDATA.ACX

z = 6: File DAT_BEAR.ACX

z = 7: File CFG_BEAR.ACX

z = 8: File ENC_GEAR.ACX

z = 9: File CFG_BRK.ACX

z = 10: File THERMMOTMOD.ACX

z = 11: File MAPPING.ACX

z = 12: File LOADGEAR.ACX

z = 13: File MOTRSM.ACX

Remedy: For the file on the memory card involved, restore the status originally supplied from the factory.

A01020 Writing to RAM disk unsuccessful

Message value: -
Message class: Hardware/software error (1)
Drive object: All objects
Component: Control Unit (CU) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: A write access to the internal RAM disk was unsuccessful.
Remedy: Adapt the file size for the system logbook to the internal RAM disk (p9930).
See also: p9930 (System logbook activation)

F01023 Software timeout (internal)

Message value: %1
Message class: Hardware/software error (1)
Drive object: All objects
Component: Control Unit (CU) **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: An internal software timeout has occurred.
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.
Remedy: - carry out a POWER ON (switch-off/switch-on) for all components.
- upgrade firmware to later version.
- contact Technical Support.

F01030 Sign-of-life failure for master control

Message value: -
Message class: Communication error to the higher-level control system (9)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: Infeed: OFF1 (NONE, OFF2)
Servo: OFF3 (IASC/DCBRK, NONE, OFF1, OFF2, STOP2)
Vector: OFF3 (IASC/DCBRK, NONE, OFF1, OFF2, STOP2)
Hla: OFF3 (NONE, OFF1, OFF2, STOP2)
Acknowledge: IMMEDIATELY
Cause: For active PC master control, no sign-of-life was received within the monitoring time.
The master control was returned to the active BICO interconnection.
Remedy: Set the monitoring time higher at the PC or, if required, completely disable the monitoring function.
The monitoring time is set as follows using the commissioning tool:
<Drive> -> Commissioning -> Control panel -> Button "Fetch master control" -> A window is displayed to set the monitoring time in milliseconds.
Notice:
The monitoring time should be set as short as possible. A long monitoring time means a late response when the communication fails!

F01031 Sign-of-life failure for OFF in REMOTE

Message value: -
Message class: Communication error to the higher-level control system (9)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: Infeed: OFF1 (NONE, OFF2)
Servo: OFF3 (IASC/DCBRK, NONE, OFF1, OFF2, STOP2)
Vector: OFF3 (IASC/DCBRK, NONE, OFF1, OFF2, STOP2)
Hla: OFF3 (NONE, OFF1, OFF2, STOP2)
Acknowledge: IMMEDIATELY
Cause: With the "OFF in REMOTE" mode active, no sign-of-life was received within 3 seconds.
Remedy: - check the data cable connection at the serial interface for the Control Unit (CU) and operator panel.
- check the data cable between the Control Unit and operator panel.

A01032 (F) ACX: all parameters must be saved

Message value: %1
Message class: Hardware/software error (1)
Drive object: All objects
Component: Control Unit (CU) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The parameters of an individual drive object were saved (p0971 = 1), although there is still no backup of all drive system parameters.
The saved object-specific parameters are not loaded the next time that the system powers up.
For the system to successfully power up, all of the parameters must have been completely backed up.
Alarm value (r2124, interpret decimal):
Only for internal Siemens troubleshooting.
See also: p0971 (Save drive object parameters)
Remedy: Save all parameters (p0977 = 1 or "copy RAM to ROM").
See also: p0977 (Save all parameters)
Reaction upon F: Infeed: NONE (OFF1, OFF2)
Servo: NONE (OFF1, OFF2, OFF3)
Vector: NONE (OFF1, OFF2, OFF3)
Hla: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

F01033 Units changeover: Reference parameter value invalid

Message value: Parameter: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: When changing over the units to the referred representation type, it is not permissible for any of the required reference parameters to be equal to 0.0
Fault value (r0949, parameter):
Reference parameter whose value is 0.0.
See also: p0349 (System of units motor equivalent circuit diagram data), p0505 (Selecting the system of units), p0595 (Technological unit selection)
Remedy: Set the value of the reference parameter to a number different than 0.0.
See also: p0304, p0305, p0310, p0596, p2000, p2001, p2002, p2003, r2004

F01034 Units changeover: Calculation parameter values after reference value change unsuccessful

Message value: Parameter: %1

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: IMMEDIATELY

Cause: The change of a reference parameter meant that for an involved parameter the selected value was not able to be re-calculated in the per unit representation. The change was rejected and the original parameter value restored.

Fault value (r0949, parameter):

Parameter whose value was not able to be re-calculated.

See also: p0304, p0305, p0310, p0596, p2000, p2001, p2002, p2003, r2004

Remedy: - Select the value of the reference parameter such that the parameter involved can be calculated in the per unit representation.

- Technology unit selection (p0595) before changing the reference parameter p0596, set p0595 = 1.

A01035 (F) ACX: Parameter back-up file corrupted

Message value: %1

Message class: Hardware/software error (1)

Drive object: All objects

Component: Control Unit (CU) **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: When the Control Unit is booted, no complete data set was found from the parameter back-up files. The last time that the parameterization was saved, it was not completely carried out.

It is possible that the backup was interrupted by switching off or withdrawing the memory card.

Alarm value (r2124, interpret hexadecimal):

ddccbbaa hex:

aa = 01 hex:

Power up was realized without data backup. The drive is in the factory setting.

aa = 02 hex:

The last available backup data record was loaded. The parameterization must be checked. It is recommended that the parameterization is downloaded again.

dd, cc, bb:

Only for internal Siemens troubleshooting.

See also: p0971 (Save drive object parameters), p0977 (Save all parameters)

Remedy: - download the project again using the commissioning tool.

- save all parameters (p0977 = 1 or "copy RAM to ROM").

See also: p0977 (Save all parameters)

Reaction upon F: Infeed: NONE (OFF1, OFF2)

Servo: NONE (OFF1, OFF2, OFF3)

Vector: NONE (OFF1, OFF2, OFF3)

Hla: NONE (OFF1, OFF2, OFF3)

Acknowl. upon F: IMMEDIATELY

F01036 (A) ACX: Parameter back-up file missing

Message value: %1
Message class: Hardware/software error (1)
Drive object: All objects
Component: Control Unit (CU) **Propagation:** LOCAL
Reaction: Infeed: NONE (OFF2)
Servo: NONE (OFF1, OFF2, OFF3)
Vector: NONE (OFF1, OFF2, OFF3)
Hla: NONE (OFF1, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: When downloading the device parameterization, a parameter back-up file PSxxxyyy.ACX associated with a drive object cannot be found.
Fault value (r0949, interpret hexadecimal):
Byte 1: yyy in the file name PSxxxyyy.ACX
yyy = 000 --> consistency back-up file
yyy = 001 ... 062 --> drive object number
yyy = 099 --> PROFIBUS parameter back-up file
Byte 2, 3, 4:
Only for internal Siemens troubleshooting.
Remedy: If you have saved your project data using the commissioning tool, carry-out a new download for your project.
Save using the function "Copy RAM to ROM" or with p0977 = 1.
This means that the parameter files are again completely written into the non-volatile memory.
Note:
If the project data have not been backed up, then a new first commissioning is required.
Reaction upon A: NONE
Acknowl. upon A: NONE

F01038 (A) ACX: Loading the parameter back-up file unsuccessful

Message value: %1
Message class: Hardware/software error (1)
Drive object: All objects
Component: Control Unit (CU) **Propagation:** LOCAL
Reaction: Infeed: NONE (OFF2)
Servo: NONE (OFF1, OFF2, OFF3)
Vector: NONE (OFF1, OFF2, OFF3)
Hla: NONE (OFF1, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: An error has occurred when downloading PSxxxyyy.ACX or PTxxxyyy.ACX files from the non-volatile memory.
Fault value (r0949, interpret hexadecimal):
Byte 1: yyy in the file name PSxxxyyy.ACX
yyy = 000 --> consistency back-up file
yyy = 001 ... 062 --> drive object number
yyy = 099 --> PROFIBUS parameter back-up file
Byte 2:
255: Incorrect drive object type.
254: Topology comparison unsuccessful -> drive object type was not able to be identified.
Reasons could be:
- incorrect component type in the actual topology
- Component does not exist in the actual topology.
- Component not active.
Additional values:
Only for internal Siemens troubleshooting.
Byte 4, 3:
Only for internal Siemens troubleshooting.

Remedy: - if you have saved the project data using the commissioning tool, download the project again. Save using the function "Copy RAM to ROM" or with p0977 = 1. This means that the parameter files are again completely written to the non-volatile memory.

- replace the memory card or Control Unit.

For byte 2 = 255:

- correct the drive object type (see p0107).

Reaction upon A: NONE

Acknowl. upon A: NONE

F01039 (A) ACX: Writing to the parameter back-up file was unsuccessful

Message value: %1

Message class: Hardware/software error (1)

Drive object: All objects

Component: Control Unit (CU) **Propagation:** LOCAL

Reaction: Infeed: NONE (OFF2)

Servo: NONE (OFF1, OFF2, OFF3)

Vector: NONE (OFF1, OFF2, OFF3)

Hla: NONE (OFF1, OFF2, OFF3)

Acknowledge: IMMEDIATELY

Cause: Writing to at least one parameter back-up file PSxxxyyy.*** in the non-volatile memory was unsuccessful.

- in the directory /USER/SINAMICS/DATA/ at least one parameter back-up file PSxxxyyy.*** has the "read only" file attribute and cannot be overwritten.

- there is not sufficient free memory space available.

- the non-volatile memory is defective and cannot be written to.

Fault value (r0949, interpret hexadecimal):

dcba hex

a = yyy in the file names PSxxxyyy.***

a = 000 --> consistency back-up file

a = 001 ... 062 --> drive object number

a = 070 --> FEPROM.BIN

a = 080 --> DEL4BOOT.TXT

a = 099 --> PROFIBUS parameter back-up file

b = xxx in the file names PSxxxyyy.***

b = 000 --> data save started with p0977 = 1 or p0971 = 1

b = 010 --> data save started with p0977 = 10

b = 011 --> data save started with p0977 = 11

b = 012 --> data save started with p0977 = 12

d, c:

Only for internal Siemens troubleshooting.

Remedy: - check the file attribute of the files (PSxxxyyy.***, CAxxxyyy.***, CCxxxyyy.***) and, if required, change from "read only" to "writeable".

- check the free memory space in the non-volatile memory. Approx. 80 kbyte of free memory space is required for every drive object in the system.

- replace the memory card or Control Unit.

Reaction upon A: NONE

Acknowl. upon A: NONE

F01040 Save parameter settings and carry out a POWER ON

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, CU_I, CU_I_D410, CU_LINK, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: POWER ON
Cause: A parameter was changed in the drive system which means that it is necessary to save the parameters and re-boot.
Remedy: - save parameters (p0971, p0977).
- carry out a POWER ON (switch-off/switch-on) for all components.
Then:
- upload the drive unit (commissioning tool).

F01040 Save parameter settings and carry out a POWER ON

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: POWER ON
Cause: A parameter was changed in the drive system which means that it is necessary to save the parameters and re-boot.
Examples:
- p1810.2 (wobulation of the pulse frequency) and p1802 (edge modulation)
- p1750.5 (cl.-loop control mode RESM and PMSM up to f=0Hz with HF signal injection)
Remedy: - save parameters (p0971, p0977).
- carry out a POWER ON for all components (switch on the Control Unit with or after the power units).
Then:
- upload the drive unit (commissioning tool).
Note:
When changing p1750.5 or p1810.2 for edge modulation, a warm restart is sufficient (p0009 = 30, p0976 = 3).
PMSM: permanent-magnet synchronous motor
RESM: reluctance synchronous motor (synchronous reluctance motor)

F01041 Parameter save necessary

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: Defective or missing files were detected on the memory card when booting.
Fault value (r0949, interpret decimal):
1: Source file cannot be opened.
2: Source file cannot be read.
3: Target directory cannot be set up.
4. Target file cannot be set up/opened.
5. Target file cannot be written to.
Additional values:
Only for internal Siemens troubleshooting.
Remedy: - save the parameters.
- download the project again to the drive unit.
- update the firmware
- if required, replace the Control Unit and/or memory card card.

F01042 Parameter error during project download

Message value: Parameter: %1, Index: %2, fault cause: %3

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: All objects

Component: None **Propagation:** LOCAL

Reaction: Infeed: NONE (OFF1, OFF2)
Servo: OFF2 (NONE, OFF1, OFF3)
Vector: OFF2 (NONE, OFF1, OFF3)
Hla: OFF2 (NONE, OFF1, OFF3)

Acknowledge: IMMEDIATELY

Cause: An error was detected when downloading a project using the commissioning software (e.g. incorrect parameter value). It is possible that the parameter limits are dependent on other parameters.

The detailed cause of the fault can be determined using the fault value.

Fault value (r0949, interpret hexadecimal):

ccbbaaaa hex

aaaa = Parameter

bb = Index

cc = fault cause

0: Parameter number illegal.

1: Parameter value cannot be changed.

2: Lower or upper value limit exceeded.

3: Sub-index incorrect.

4: No array, no sub-index.

5: Data type incorrect.

6: Setting not permitted (only resetting).

7: Descriptive element cannot be changed.

9: Descriptive data not available.

11: No master control.

15: No text array available.

17: Task cannot be executed due to operating state.

20: Illegal value.

21: Response too long.

22: Parameter address illegal.

23: Format illegal.

24: Number of values not consistent.

25: Drive object does not exist.

101: Presently deactivated.

104: Illegal value.

107: Write access not permitted when controller enabled.

108: Unit unknown.

109: Write access only in the commissioning state, encoder (p0010 = 4).

110: Write access only in the commissioning state, motor (p0010 = 3).

111: Write access only in the commissioning state, power unit (p0010 = 2).

112: Write access only in the quick commissioning mode (p0010 = 1).

113: Write access only in the ready mode (p0010 = 0).

114: Write access only in the commissioning state, parameter reset (p0010 = 30).

115: Write access only in the Safety Integrated commissioning state (p0010 = 95).

116: Write access only in the commissioning state, technological application/units (p0010 = 5).

117: Write access only in the commissioning state (p0010 not equal to 0).

118: Write access only in the commissioning state, download (p0010 = 29).

119: Parameter may not be written in download.

120: Write access only in the commissioning state, drive basic configuration (device: p0009 = 3).

121: Write access only in the commissioning state, define drive type (device: p0009 = 2).

122: Write access only in the commissioning state, data set basic configuration (device: p0009 = 4).

123: Write access only in the commissioning state, device configuration (device: p0009 = 1).

124: Write access only in the commissioning state, device download (device: p0009 = 29).
125: Write access only in the commissioning state, device parameter reset (device: p0009 = 30).
126: Write access only in the commissioning state, device ready (device: p0009 = 0).
127: Write access only in the commissioning state, device (device: p0009 not equal to 0).
129: Parameter may not be written in download.
130: Transfer of the master control is inhibited via binector input p0806.
131: Required BICO interconnection not possible because BICO output does not supply floating value
132: Free BICO interconnection inhibited via p0922.
133: Access method not defined.
200: Below the valid values.
201: Above the valid values.
202: Cannot be accessed from the Basic Operator Panel (BOP).
203: Cannot be read from the Basic Operator Panel (BOP).
204: Write access not permitted.

Remedy: - correct the parameterization in the commissioning tool and download the project again.
- enter the correct value in the specified parameter.
- identify the parameter that restricts the limits of the specified parameter.

F01043 Fatal error at project download

Message value: Fault cause: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: Infeed: NONE (OFF1, OFF2)
Servo: NONE (OFF1, OFF2, OFF3)
Vector: NONE (OFF1, OFF2, OFF3)
Hla: NONE (OFF1, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: A fatal error was detected when downloading a project using the commissioning tool.
Fault value (r0949, interpret decimal):
1: Device status cannot be changed to Device Download (drive object ON?).
2: Incorrect drive object number.
3: A drive object that has already been deleted is deleted again.
4: Deleting of a drive object that has already been registered for generation.
5: Deleting a drive object that does not exist.
6: Generating an undeleted drive object that already existed.
7: Regenerating a drive object already registered for generation.
8: Maximum number of drive objects that can be generated exceeded.
9: Error while generating a device drive object.
10: Error while generating target topology parameters (p9902 and p9903).
11: Error while generating a drive object (global component).
12: Error while generating a drive object (drive component).
13: Unknown drive object type.
14: Drive status cannot be changed to "ready for operation" (r0947 and r0949).
15: Drive status cannot be changed to drive download.
16: Device status cannot be changed to "ready for operation".
17: It is not possible to download the topology. The component wiring should be checked, taking into account the various messages/signals.
18: A new download is only possible if the factory settings are restored for the drive unit.
19: The slot for the option module has been configured several times (e.g. CAN and COMM BOARD)
20: The configuration is inconsistent (e.g. CAN for Control Unit, however no CAN configured for drive objects A_INF, SERVO or VECTOR).
21: Error when accepting the download parameters.
22: Software-internal download error.
23: download not possible when know-how protection is activated.

24: download not possible during a partial power up after inserting a component.

25: The configuration is inconsistent. Know-how protection is either not activated or only partially.

Additional values:

Only for internal Siemens troubleshooting.

Remedy: - use the current version of the commissioning tool.

- modify the offline project and carry out a new download (e.g. compare the number of drive objects, motor, encoder, power unit in the offline project and at the drive).

- change the drive state (is a drive rotating or is there a message/signal?).

- carefully note any other active messages/signals and remove their cause (e.g. correct any incorrectly set parameters).

- automatically calculate the control parameters (p0340). Then set p0010 = 0.

- boot from previously saved files (switch-off/switch-on or p0976).

- before a new download, restore the factory setting if the know-how protection was not activated on all drive objects.

F01044 CU: Descriptive data error

Message value: %1

Message class: Hardware/software error (1)

Drive object: All objects

Component: Control Unit (CU) **Propagation:** GLOBAL

Reaction: OFF2

Acknowledge: POWER ON

Cause: An error was detected when loading the descriptive data saved in the non-volatile memory.

Remedy: Replace the memory card or Control Unit.

A01045 CU: Configuring data invalid

Message value: %1

Message class: Hardware/software error (1)

Drive object: All objects

Component: Control Unit (CU) **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: An error was detected when evaluating the parameter files PSxxxyyy.ACX, PTxxxyyy.ACX, CAxxxyyy.ACX, or CCxxxyyy.ACX saved in the non-volatile memory. Because of this, under certain circumstances, several of the saved parameter values were not able to be accepted. Also see r9406 up to r9408.

Alarm value (r2124, interpret hexadecimal):

Only for internal Siemens troubleshooting.

Remedy: - check the parameters displayed in r9406 up to r9408, and correct these if required.

- Restore the factory setting using (p0976 = 1) and re-load the project into the drive unit.

Then save the parameterization in STARTER using the function "Copy RAM to ROM" or with p0977 = 1. This overwrites the incorrect parameter files in the non-volatile memory – and the alarm is withdrawn.

See also: r9406 (PS file parameter number parameter not transferred), r9407 (PS file parameter index parameter not transferred), r9408 (PS file fault code parameter not transferred)

A01049 CU: It is not possible to write to file

Message value: %1

Message class: Hardware/software error (1)

Drive object: All objects

Component: Control Unit (CU) **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: It is not possible to write into a write-protected file (PSxxxxxx.acx). The write request was interrupted.

Alarm value (r2124, interpret decimal):

Drive object number.

Remedy: Check whether the "write protected" attribute has been set for the files in the non-volatile memory under .../USER/SINAMICS/DATA/...

When required, remove write protection and save again (e.g. set p0977 to 1).

F01050 Memory card and device incompatible

Message value: -

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: All objects

Component: Control Unit (CU) **Propagation:** GLOBAL

Reaction: Infeed: OFF2 (NONE, OFF1)

Servo: OFF2 (NONE, OFF1, OFF3)

Vector: OFF2 (NONE, OFF1, OFF3)

Hla: OFF2 (NONE, OFF1, OFF3)

Acknowledge: IMMEDIATELY

Cause: The memory card and the device type do not match (e.g. a memory card for SINAMICS S is inserted in SINAMICS G).

Remedy: - insert the matching memory card.

- use the matching Control Unit or power unit.

F01054 CU: System limit exceeded

Message value: %1

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: All objects

Component: Control Unit (CU) **Propagation:** GLOBAL

Reaction: OFF2

Acknowledge: IMMEDIATELY

Cause: At least one system overload has been identified.

Fault value (r0949, interpret decimal):

1: Computing time load too high (r9976[1]).

5: Peak load too high (r9976[5]).

Note:

As long as this fault is present, it is not possible to save the parameters (p0971, p0977).

See also: r9976 (System utilization)

Remedy: For fault value = 1, 5:

- reduce the computing time load of the drive unit (r9976[1] and r9976[5]) to under 100 %.
- check the sampling times and adjust if necessary (p0115, p0799, p4099).
- deactivate function modules.
- deactivate drive objects.
- remove drive objects from the target topology.
- note the DRIVE-CLiQ topology rules and if required, change the DRIVE-CLiQ topology.

When using the Drive Control Chart (DCC) or free function blocks (FBLOCKS), the following applies:

- the computing time load of the individual run-time groups on a drive object can be read out in r21005 (DCC) or r20005 (FBLOCKS).
- if necessary, the assignment of the run-time group (p21000, p20000) can be changed in order to increase the sampling time (r21001, r20001).
- if necessary, reduce the number of cyclically calculated blocks (DCC) and/or function blocks (FBLOCKS).

F01055 CU: Internal error (SYNO of port and application not identical)

Message value: %1
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM150, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** DRIVE
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: All applications that operate with slaves at one port must be derived from the same SYNO clock cycle.

The first application whose registration (log-on) connects a slave to a port defines the SYNO clock cycle that will be used as basis for the port.

Fault value (r0949, interpret hexadecimal):

Method ID.

Note:

Only for internal Siemens troubleshooting.

Remedy: Contact Technical Support.

F01056 CU: Internal error (clock cycle of parameter group already assigned differently)

Message value: %1
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM150, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** DRIVE
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The requested parameter group (IREG, NREG, ...) is already being used in a different clock cycle.

Fault value (r0949, interpret hexadecimal):

Method ID.

Note:

Only for internal Siemens troubleshooting.

Remedy: Contact Technical Support.

F01057 CU: Internal error (different DRIVE-CLiQ type for the slave)

Message value: %1
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM150, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** DRIVE
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The requested DRIVE-CLiQ type (hps_ps, hps_enc, ...) has been specified differently for the same slave component.

Fault value (r0949, interpret hexadecimal):

Method ID.

Note:

Only for internal Siemens troubleshooting.

Remedy: Contact Technical Support.

F01058 CU: Internal error (slave missing in topology)

Message value: %1
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM150, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** DRIVE
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The requested slave component does not exist in the topology.
Fault value (r0949, interpret hexadecimal):
Method ID.
Note:
Only for internal Siemens troubleshooting.
Remedy: Contact Technical Support.

F01059 CU: Internal error (port does not exist)

Message value: %1
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM150, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** DRIVE
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The port object assigned according to the topology of the requested slave component does not exist.
Fault value (r0949, interpret hexadecimal):
Method ID.
Note:
Only for internal Siemens troubleshooting.
Remedy: Contact Technical Support.

F01060 CU: Internal error (parameter group not available)

Message value: %1
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM150, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** DRIVE
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The requested parameter group (IREG, NREG, ...) is not offered by this slave type.
Fault value (r0949, interpret hexadecimal):
Method ID.
Note:
Only for internal Siemens troubleshooting.
Remedy: Contact Technical Support.

F01061 CU: Internal error (application not known)

Message value: %1
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM150, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** DRIVE
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: An application that is not registered with TSM has attempted to register with registerSlaves().

The cause can be an unsuccessful TSM registration or an incorrect registration sequence. It is always necessary to log in to the TSM before registerSlaves() can be used.

Fault value (r0949, interpret hexadecimal):

Method ID.

Note:

Only for internal Siemens troubleshooting.

Remedy: Contact Technical Support.

F01063 CU: Internal error (PDM)

Message value: %1
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM150, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: An internal software error has occurred.

Fault value (r0949, interpret hexadecimal):

Method ID.

Note:

Only for internal Siemens troubleshooting.

Remedy: Contact Technical Support.

A01064 (F) CU: Internal error (CRC)

Message value: -
Message class: Hardware/software error (1)
Drive object: All objects
Component: Control Unit (CU) **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: A checksum error (CRC error) has occurred in the Control Unit program memory
Remedy: - carry out a POWER ON (switch-off/switch-on) for all components.

- upgrade firmware to later version.

- contact Technical Support.

Reaction upon F: Infeed: NONE (OFF1, OFF2)

Servo: NONE (OFF1, OFF2, OFF3, STOP2)

Vector: NONE (OFF1, OFF2, OFF3, STOP2)

Hla: NONE (OFF1, OFF2, OFF3, STOP2)

Acknowl. upon F: IMMEDIATELY (POWER ON)

F01068 CU: Data memory memory overflow

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: Control Unit (CU) **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The utilization for a data memory area is too large.
Fault value (r0949, interpret binary):
Bit 0 = 1: High-speed data memory 1 overloaded
Bit 1 = 1: High-speed data memory 2 overloaded
Bit 2 = 1: High-speed data memory 3 overloaded
Bit 3 = 1: High-speed data memory 4 overloaded
Remedy: - deactivate the function module.
- deactivate drive object.
- remove the drive object from the target topology.

A01069 Parameter backup and device incompatible

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: Control Unit (CU) **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The parameter backup on the memory card and the drive unit do not match.
The module boots with the factory settings.
Example:
Devices A and B. are not compatible and a memory card with the parameter backup for device A is inserted in device B.
Remedy: - insert a memory card with compatible parameter backup and carry out a POWER ON.
- insert a memory card without parameter backup and carry out a POWER ON.
- save the parameters (p0977 = 1).

F01070 Project/firmware is being downloaded to the memory card

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, CU_LINK, CU_S_AC_DP, CU_S_AC_PN, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: An upgrade (project/firmware download) was initiated on the memory card.
While this fault is present, the corresponding update takes place with plausibility and consistency checks. After this, depending on the command option, a new boot (reset) for the Control Unit is initiated.
Caution:
During the upgrade and while this fault is present, it is not permissible to switch off the Control Unit.
If the operation is interrupted, this can destroy the file system on the memory card. The memory card will then no longer work properly and must be repaired.
Remedy: Not necessary.
The fault is automatically withdrawn after the upgrade has been completed.

F01072 Memory card restored from the backup copy

Message value: -
Message class: General drive fault (19)
Drive object: All objects
Component: Control Unit (CU) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The Control Unit was switched-off while writing to the memory card. This is why the visible partition became defective.

After switching on, the data from the non-visible partition (backup copy) were written to the visible partition.

Remedy: Check that the firmware and parameterization is up-to-date.

A01073 (N) POWER ON required for backup copy on memory card

Message value: -
Message class: General drive fault (19)
Drive object: All objects
Component: Control Unit (CU) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The parameter assignment on the visible partition of the memory card has changed.

In order that the backup copy on the memory card is updated on the non-visible partition, it is necessary to carry out a POWER ON or hardware reset (p0972) of the Control Unit.

Note:

It is possible that a new POWER ON is requested via this alarm (e.g. after saving with p0971 = 1).

Remedy: - carry out a POWER ON (switch-off/switch-on) for the Control Unit.

- carry out a hardware reset (RESET button, p0972).

Reaction upon N: NONE
Acknowl. upon N: NONE

F01082 Parameter error when powering up from data backup

Message value: Parameter: %1, Index: %2, fault cause: %3
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: Infeed: OFF2 (NONE, OFF1)

Servo: OFF2 (NONE, OFF1, OFF3)

Vector: OFF2 (NONE, OFF1, OFF3)

Hla: OFF2 (NONE, OFF1, OFF3)

Acknowledge: IMMEDIATELY
Cause: Parameterizing errors have been detected (e.g. incorrect parameter value). It is possible that the parameter limits are dependent on other parameters.

The detailed cause of the fault can be determined using the fault value.

Fault value (r0949, interpret hexadecimal):

ccbbaaaa hex

aaaa = Parameter

bb = Index

cc = fault cause

0: Parameter number illegal.

1: Parameter value cannot be changed.

2: Lower or upper value limit exceeded.

3: Sub-index incorrect.

4: No array, no sub-index.

5: Data type incorrect.

6: Setting not permitted (only resetting).

7: Descriptive element cannot be changed.

9: Descriptive data not available.
11: No master control.
15: No text array available.
17: Task cannot be executed due to operating state.
20: Illegal value.
21: Response too long.
22: Parameter address illegal.
23: Format illegal.
24: Number of values not consistent.
25: Drive object does not exist.
101: Presently deactivated.
104: Illegal value.
107: Write access not permitted when controller enabled.
108: Unit unknown.
109: Write access only in the commissioning state, encoder (p0010 = 4).
110: Write access only in the commissioning state, motor (p0010 = 3).
111: Write access only in the commissioning state, power unit (p0010 = 2).
112: Write access only in the quick commissioning mode (p0010 = 1).
113: Write access only in the ready mode (p0010 = 0).
114: Write access only in the commissioning state, parameter reset (p0010 = 30).
115: Write access only in the Safety Integrated commissioning state (p0010 = 95).
116: Write access only in the commissioning state, technological application/units (p0010 = 5).
117: Write access only in the commissioning state (p0010 not equal to 0).
118: Write access only in the commissioning state, download (p0010 = 29).
119: Parameter may not be written in download.
120: Write access only in the commissioning state, drive basic configuration (device: p0009 = 3).
121: Write access only in the commissioning state, define drive type (device: p0009 = 2).
122: Write access only in the commissioning state, data set basic configuration (device: p0009 = 4).
123: Write access only in the commissioning state, device configuration (device: p0009 = 1).
124: Write access only in the commissioning state, device download (device: p0009 = 29).
125: Write access only in the commissioning state, device parameter reset (device: p0009 = 30).
126: Write access only in the commissioning state, device ready (device: p0009 = 0).
127: Write access only in the commissioning state, device (device: p0009 not equal to 0).
129: Parameter may not be written in download.
130: Transfer of the master control is inhibited via binector input p0806.
131: Required BICO interconnection not possible because BICO output does not supply floating value
132: Free BICO interconnection inhibited via p0922.
133: Access method not defined.
200: Below the valid values.
201: Above the valid values.
202: Cannot be accessed from the Basic Operator Panel (BOP).
203: Cannot be read from the Basic Operator Panel (BOP).
204: Write access not permitted.

Remedy: - correct the parameterization in the commissioning tool and download the project again.
- enter the correct value in the specified parameter.
- identify the parameter that restricts the limits of the specified parameter.

A01097 (N) NTP server cannot be accessed

Message value: -
Message class: Communication error to the higher-level control system (9)
Drive object: A_INF, B_INF, CU_LINK, CU_S_AC_DP, CU_S_AC_PN, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The selected NTP server (p3105[0...3]) cannot be accessed. Time synchronization cannot be performed.
Note:
NTP: Network Time Protocol
See also: p3105 (NTP server IP address)
Remedy: Correctly set the IP address of the NTP server, and check the connection to the NTP server.
See also: p3105 (NTP server IP address)
Reaction upon N: NONE
Acknowl. upon N: NONE

A01099 (N) UTC synchronization tolerance violated

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The tolerance (p3109) set for UTC synchronization was violated.
Note:
UTC: Universal Time Coordinates
See also: p3109 (UTC synchronization tolerance)
Remedy: Select the synchronization intervals shorter so that the deviation between the time of day master and drive system lies within the tolerance.
Note:
The deviation when synchronizing is shown in r3107.
See also: r3107 (UTC synchronization time out of tolerance)
Reaction upon N: NONE
Acknowl. upon N: NONE

A01100 CU: Memory card withdrawn

Message value: -
Message class: General drive fault (19)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The memory card (non-volatile memory) was withdrawn during operation.
Notice:
It is not permissible for the memory card to be withdrawn or inserted under voltage.
Remedy: - switch off the drive system.
- re-insert the memory card that was withdrawn - this card must match the drive system.
- switch on the drive system again.

F01105 (A) CU: Insufficient memory

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: Control Unit (CU) **Propagation:** GLOBAL
Reaction: OFF1
Acknowledge: POWER ON
Cause: Too many functions have been configured on this Control Unit (e.g. too many drives, function modules, data sets, Technology Extensions, blocks, etc).
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.
Remedy: - change the configuration on this Control Unit (e.g. fewer drives, function modules, data sets, Technology Extensions, blocks, etc).
- use an additional Control Unit.
Reaction upon A: NONE
Acknowl. upon A: NONE

F01106 CU: Insufficient memory

Message value: %1
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM150, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: There is not sufficient free memory space available.
Remedy: Not necessary.

F01107 CU: Save to memory card unsuccessful

Message value: %1
Message class: Hardware/software error (1)
Drive object: All objects
Component: Control Unit (CU) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: A data save in the non-volatile memory was not able to be successfully carried out.
- non-volatile memory is defective.
- insufficient space in the non-volatile memory.
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.
Remedy: - try to save again.
- replace the memory card or Control Unit.

F01110 CU: More than one SINAMICS G on one Control Unit

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: More than one SINAMICS G type power unit is being operated from the Control Unit.
Fault value (r0949, interpret decimal):
Number of the second drive with a SINAMICS G type power unit.
Remedy: Only one SINAMICS G drive type is permitted.

F01111 CU: Mixed operation of drive units illegal

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: Illegal operation of various drive units on one Control Unit:
- SINAMICS S together with SINAMICS G
- SINAMICS S together with SINAMICS S Value or Combi

Fault value (r0949, interpret decimal):
Number of the first drive object with a different power unit type.
Remedy: Only power units of one particular drive type may be operated with one Control Unit.

F01112 CU: Power unit not permissible

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The connected power unit cannot be used together with this Control Unit.
Fault value (r0949, interpret decimal):
1: Power unit is not supported (e.g. PM240).
2: DC/AC power unit connected to CU310 not permissible.
3: Power unit (S120M) not permitted for vector control.
Remedy: Replace the power unit that is not permissible by a component that is permissible.

F01120 (A) Terminal initialization has failed

Message value: %1
Message class: Hardware/software error (1)
Drive object: All objects
Component: None **Propagation:** BICO
Reaction: OFF1 (OFF2)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: An internal software error occurred while the terminal functions were being initialized.
Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.
Remedy:
- carry out a POWER ON (switch-off/switch-on) for all components.
- upgrade firmware to later version.
- contact Technical Support.
- replace the Control Unit.

Reaction upon A: NONE
Acknowl. upon A: NONE

F01122 (A) Frequency at the measuring probe input too high

Message value: %1
Message class: Application/technological function faulted (17)
Drive object: A_INF, B_INF, CU_I, CU_I_D410, CU_LINK, CU_S_AC_DP, CU_S_AC_PN, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_I_AC
Component: None **Propagation:** BICO
Reaction: OFF1 (OFF2)
Acknowledge: IMMEDIATELY

Cause: The frequency of the pulses at the measuring probe input is too high.
Fault value (r0949, interpret decimal):
1: DI/DO 9 (X122.8)
2: DI/DO 10 (X122.10)
4: DI/DO 11 (X122.11)
8: DI/DO 13 (X132.8)
16: DI/DO 14 (X132.10)
32: DI/DO 15 (X132.11)
64: DI/DO 8 (X122.7)
128: DI/DO 12 (X132.7)
Remedy: Reduce the frequency of the pulses at the measuring probe input.
Reaction upon A: NONE
Acknowl. upon A: NONE

F01122 (A) Frequency at the measuring probe input too high

Message value: %1
Message class: Application/technological function faulted (17)
Drive object: CU_NX_CX, SERVO_AC, VECTOR_AC
Component: None **Propagation:** BICO
Reaction: OFF1 (OFF2)
Acknowledge: IMMEDIATELY
Cause: The frequency of the pulses at the measuring probe input is too high.
Fault value (r0949, interpret decimal):
1: DI/DO 9 (X122.8)
2: DI/DO 10 (X122.10)
4: DI/DO 11 (X122.11)
64: DI/DO 8 (X122.7)
Remedy: Reduce the frequency of the pulses at the measuring probe input.
Reaction upon A: NONE
Acknowl. upon A: NONE

F01123 Power unit does not support digital inputs/outputs

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO
Component: Power Module **Propagation:** BICO
Reaction: OFF1 (OFF2)
Acknowledge: IMMEDIATELY
Cause: Power unit does not support the activated "digital inputs/outputs" function module
Remedy: Deactivate the function module.

F01150 CU: Number of instances of a drive object type exceeded

Message value: Drive object type: %1, number permitted: %2, actual number: %3
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The maximum permissible number of instances of a drive object type was exceeded.
Drive object type:
Drive object type (p0107), for which the maximum permissible number of instances was exceeded.
Number permitted:
Max. permissible number of instances for this drive object type.
Actual number:
Current number of instances for this drive object type.

	Note regarding the message value:
	The individual information is coded as follows in the message value (r0949/r2124):
	ddccbbaa hex: aa = drive object type, bb = number limited, cc = actual number, dd = no significance
Remedy:	- switch off the unit.
	- suitably restrict the number of instances of a drive object type by reducing the number of inserted components.
	- re-commission the unit.

F01151 CU: Number of drive objects of a category exceeded

Message value:	Drive object category: %1, number permitted: %2, actual number: %3
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Drive object:	All objects
Component:	None **Propagation:** LOCAL
Reaction:	NONE
Acknowledge:	IMMEDIATELY
Cause:	The maximum permissible number of drive objects of a category was exceeded.
	Drive object category:
	Drive object category, for which the maximum permissible number of drive objects was exceeded.
	Number permitted:
	Max. permissible number for this drive object category.
	Actual number:
	Actual number for this drive object category.
	Note regarding the message value:
	The individual information is coded as follows in the message value (r0949/r2124):
	ddccbbaa hex: aa = drive object category, bb = number limited, cc = actual number, dd = no significance
Remedy:	- switch off the unit.
	- suitably restrict the number of drive objects of the specified category by reducing the number of inserted components.
	- re-commission the unit.

F01152 CU: Invalid constellation of drive object types

Message value:	-
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Drive object:	All objects
Component:	None **Propagation:** LOCAL
Reaction:	NONE
Acknowledge:	POWER ON
Cause:	It is not possible to simultaneously operate drive object types SERVO, VECTOR and HLA.
	A maximum of 2 of these drive object types can be operated on a Control Unit.
Remedy:	- switch off the unit.
	- restrict the use of drive object types SERVO, VECTOR, HLA to a maximum of 2.
	- re-commission the unit.

F01200 CU: Time slice management internal software error

Message value:	%1
Message class:	Hardware/software error (1)
Drive object:	All objects
Component:	Control Unit (CU) **Propagation:** GLOBAL
Reaction:	OFF2
Acknowledge:	IMMEDIATELY (POWER ON)
Cause:	A time slice management error has occurred.
	It is possible that the sampling times have been inadmissibly set.
	Fault value (r0949, interpret hexadecimal):
	998:
	Too many time slices occupied by technology functions (e.g. DCC).
	999:
	Too many time slices occupied by the basic system. Too many different sampling times may have been set.

	Additional values:		
	Only for internal Siemens troubleshooting.		
Remedy:	- check the sampling time setting (p0112, p0115, p4099, p9500, p9511).		
	- contact Technical Support.		

F01205 CU: Time slice overflow

Message value:	%1		
Message class:	Hardware/software error (1)		
Drive object:	All objects		
Component:	Control Unit (CU)	**Propagation:**	GLOBAL
Reaction:	OFF2		
Acknowledge:	POWER ON		
Cause:	Insufficient processing time is available for the existing topology.		
	Fault value (r0949, interpret hexadecimal):		
	Only for internal Siemens troubleshooting.		
Remedy:	- reduce the number of drives.		
	- increase the sampling times.		

F01221 CU: Basic clock cycle too low

Message value:	%1		
Message class:	Error in the parameterization / configuration / commissioning procedure (18)		
Drive object:	All objects		
Component:	None	**Propagation:**	LOCAL
Reaction:	NONE		
Acknowledge:	IMMEDIATELY		
Cause:	The closed-loop control / monitoring cannot maintain the envisaged clock cycle.		
	The runtime of the closed-loop control/monitoring is too long for the particular clock cycle or the computing time remaining in the system is not sufficient for the closed-loop control/monitoring.		
	Fault value (r0949, interpret hexadecimal):		
	Only for internal Siemens troubleshooting.		
Remedy:	Increase the basic clock cycle of DRIVE-CLiQ communication.		
	See also: p0112 (Sampling times pre-setting p0115)		

F01222 CU: Basic clock cycle too low (computing time for communication not available)

Message value:	%1		
Message class:	Error in the parameterization / configuration / commissioning procedure (18)		
Drive object:	A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM150, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC		
Component:	None	**Propagation:**	LOCAL
Reaction:	NONE		
Acknowledge:	IMMEDIATELY		
Cause:	A time slice has not been defined that fulfills the requirements.		
	The port cannot be correctly operated as the alternating cyclic clock cycle cannot be maintained.		
	Fault value (r0949, interpret hexadecimal):		
	Method ID.		
	Note:		
	Only for internal Siemens troubleshooting.		
Remedy:	Contact Technical Support.		

A01223	**CU: Sampling time inconsistent**		
Message value:	%1		
Message class:	Error in the parameterization / configuration / commissioning procedure (18)		
Drive object:	All objects		
Component:	None	**Propagation:**	LOCAL
Reaction:	NONE		
Acknowledge:	NONE		

Cause:

When changing a sampling time (p0115[0], p0799 or p4099), inconsistency between the clock cycles has been identified.

Alarm value (r2124, interpret decimal):

1: Value lower than minimum value.

2: Value higher than maximum value.

3: Value not a multiple of 1.25 µs.

4: Value does not match isochronous PROFIBUS operation.

5: Value not a multiple of 125 µs.

6: Value not a multiple of 250 µs.

7: Value not a multiple of 375 µs.

8: Value not a multiple of 400 µs.

10: Special restriction of the drive object violated.

20: On a SERVO with a sampling time of 62.5 µs, more than two drive objects or one drive object of a type other than SERVO have been detected on the same DRIVE-CLiQ line (a maximum of two SERVO type drive objects are permitted).

21: Value can be a multiple of the current controller sampling time of a servo or vector drive in the system (e.g. for TB30, the values of all of the indices should be taken into account).

30: Value less than 31.25 µs.

31: Value less than 62.5 µs (31.25 µs is not supported for SMC10, SMC30, SMI10 and Double Motor Modules).

32: Value less than 125 µs.

33: Value less than 250 µs.

40: Nodes have been identified on the DRIVE-CLiQ line whose highest common denominator of the sampling times is less than 125 µs. Further, none of the nodes has a sampling time of less than 125 µs.

41: A chassis unit was identified on the DRIVE-CLiQ line as a node. Further, the highest common denominator of the sampling times of all of the nodes connected to the line is less than 250 µs.

42: An Active Line Module was identified on the DRIVE-CLiQ line as a node. Further, the highest common denominator of the sampling times of all of the nodes connected to the line is less than 125 µs.

43: A Voltage Sensing Module (VSM) was identified on the DRIVE-CLiQ line as a node. Further, the highest common denominator of the sampling times of all of the nodes connected to the line is not equal to the current controller sampling time of the drive object of the VSM.

44: The highest common denominator of the sampling times of all of the components connected to the DRIVE-CLiQ line is not the same for all components of this drive object (e.g. there are components on different DRIVE-CLiQ lines on which different highest common denominators are generated).

45: A chassis parallel unit was identified on the DRIVE-CLiQ line as a node. Further, the highest common denominator of the sampling times of all of the nodes connected to the line is less than 162.5 µs or 187.5 µs (for a 2x or 3x parallel connection).

46: A node has been identified on the DRIVE-CLiQ line whose sampling time is not a multiple of the lowest sampling time on this line.

52: Nodes have been identified on the DRIVE-CLiQ line whose highest common denominator of the sampling times is less than 31.25 µs.

54: Nodes have been identified on the DRIVE-CLiQ line whose highest common denominator of the sampling times is less than 62.5 µs.

56: Nodes have been identified on the DRIVE-CLiQ line whose highest common denominator of the sampling times is less than 125 µs.

58: Nodes have been identified on the DRIVE-CLiQ line whose highest common denominator of the sampling times is less than 250 µs.

99: Inconsistency of cross drive objects detected.

116: Recommended clock cycle in r0116[0...1].

General note:
The topology rules should be noted when connecting up DRIVE-CLiQ (refer to the appropriate product documentation).
The parameters of the sampling times can also be changed with automatic calculations.
Example for highest common denominator: 125 s, 125 μs, 62.5 μs --> 62.5 μs

Remedy: - check the DRIVE-CLiQ cables.
- set a valid sampling time.
See also: p0115, p0799, p4099

A01224 CU: Pulse frequency inconsistent

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: When changing the minimum pulse frequency (p0113) inconsistency between the pulse frequencies was identified.
Alarm value (r2124, interpret decimal):
1: Value lower than minimum value.
2: Value higher than maximum value.
3: Resulting sampling time is not a multiple of 1.25 μs.
4: Value does not match isochronous PROFIBUS operation.
10: Special restriction of the drive object violated.
99: Inconsistency of cross drive objects detected.
116: Recommended clock cycle in r0116[0...1].
Remedy: Set a valid pulse frequency.
See also: p0113 (Minimum pulse frequency, selection)

F01250 CU: CU-EEPROM incorrect read-only data

Message value: %1
Message class: Hardware/software error (1)
Drive object: All objects
Component: Control Unit (CU) **Propagation:** LOCAL
Reaction: NONE (OFF2)
Acknowledge: POWER ON
Cause: Error when reading the read-only data of the EEPROM in the Control Unit.
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.
Remedy: - carry out a POWER ON (switch-off/switch-on).
- replace the Control Unit.

A01251 CU: CU-EEPROM incorrect read-write data

Message value: %1
Message class: Hardware/software error (1)
Drive object: All objects
Component: Control Unit (CU) **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: Error when reading the read-write data of the EEPROM in the Control Unit.
Alarm value (r2124, interpret decimal):
Only for internal Siemens troubleshooting.

Remedy: For alarm value r2124 < 256, the following applies:
- carry out a POWER ON (switch-off/switch-on).
- replace the Control Unit.

For alarm value r2124 >= 256, the following applies:
- for the drive object with this alarm, clear the fault memory (p0952 = 0).
- as an alternative, clear the fault memory of all drive objects (p2147 = 1).
- replace the Control Unit.

F01255 CU: Option Board EEPROM read-only data error

Message value: %1
Message class: Hardware/software error (1)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE (OFF2)
Acknowledge: POWER ON
Cause: Error when reading the read-only data of the EEPROM in the Option Board.
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.
Remedy: - carry out a POWER ON (switch-off/switch-on).
- replace the Control Unit.

A01256 CU: Option Board EEPROM read-write data error

Message value: %1
Message class: Hardware/software error (1)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: Error when reading the read-write data of the EEPROM in the Option Board.
Alarm value (r2124, interpret decimal):
Only for internal Siemens troubleshooting.
Remedy: - carry out a POWER ON (switch-off/switch-on).
- replace the Control Unit.

F01260 Software not released

Message value: -
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, CU_I, CU_I_D410, CU_LINK, CU_NX_CX, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** GLOBAL
Reaction: Infeed: OFF1
Servo: OFF3
Vector: OFF3
Hla: OFF3
Acknowledge: POWER ON
Cause: The runtime software (RT-SW) has not been released.
Remedy: Only for internal Siemens troubleshooting.

F01275 Hardware description error

Message value: %1
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, CU_I, CU_I_D410, CU_LINK, CU_NX_CX, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** GLOBAL
Reaction: Infeed: OFF2
Servo: OFF3
Vector: OFF3
Hla: OFF3
Acknowledge: POWER ON
Cause: An error has occurred while accessing the hardware description file on the CompactFlash card.
Directory and file name: ADDON/SINAMICS/DATA/HW_DESC/014/DESC0000.ACX
Fault value (r0949, interpret decimal):
22: File not found.
24: File read access error.
26: Format error.
28: Version error.
30: Internal error ACX reader.
40: Contents error.
45: Hardware description not consistent.
60: Inconsistency: Number of Power Stack Adapters (PSA).
61: Inconsistency: Number of Sensor Module Cabinets (SMC).
62: Inconsistency: Number of Voltage Sensing Modules (VSM).
63: Inconsistency: Number of Terminal Modules (TM).
64: Inconsistency: Number of Terminal Boards (TB).
Remedy: Only for internal Siemens troubleshooting.

A01276 Hardware description not fully compatible

Message value: %1
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, CU_I, CU_I_D410, CU_LINK, CU_NX_CX, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The hardware description file contains more data than the firmware requires.
Remedy: Not necessary.

A01302 Error in the component trace

Message value: %1
Message class: General drive fault (19)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: An error has occurred in the component trace.
The message appears in the following cases:
- upload trace data (p7792 = 1).
- change factory setting (p7790, p7791) for missing property "component trace" (r0193.1 = 0).

Alarm value (r2124, interpret decimal):

1: The DRIVE-CLiQ component does not support the component trace (r0193.1 = 0).

101: Data from trace 1 cannot be read.

102: Data from trace 2 cannot be read.

103: Data from trace 3 cannot be read.

104: Data from trace 4 cannot be read.

105: Data from trace 5 cannot be read.

Remedy: For alarm value = 1:

Upgrade the firmware of the DRIVE-CLiQ component involved.

F01303 Component does not support the required function

Message value: %1

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: All objects

Component: None **Propagation:** BICO

Reaction: OFF2

Acknowledge: IMMEDIATELY

Cause: A function requested by the Control Unit is not supported by a DRIVE-CLiQ component.

Fault value (r0949, interpret decimal):

1: The component does not support the deactivation.

101: The Motor Module does not support an internal armature short-circuit.

102: The Motor Module does not support the deactivation.

201: The Sensor Module does not support actual value inversion (p0410.0 = 1) when using a Hall sensor (p0404.6 = 1) for the commutation.

202: The Sensor Module does not support parking/unparking.

203: The Sensor Module does not support the deactivation.

204: The firmware of this Terminal Module 15 (TM15) does not support the application TM15DI/DO.

205: The Sensor Module does not support the selected temperature evaluation (r0458, r0459).

206: The firmware of this Terminal Modules TM41/TM31/TM15 refers to an old firmware version. It is urgently necessary to upgrade the firmware to ensure disturbance-free operation.

207: The power unit with this hardware version does not support operation with device supply voltages of less than 380 V.

208: The Sensor Module does not support de-selection of commutation with zero mark (via p0430.23).

211: The Sensor Module does not support single-track encoders (r0459.10).

212: The Sensor Module does not support LVDT sensors (p4677.0).

213: The Sensor Module does not support the characteristic type (p4662).

214: The power unit does not support the temperature evaluation via PT1000 (r0193).

215: The Terminal Module does not support the temperature evaluation via PT1000

216: The Voltage Sensing Module (VSM) does not support operation with a PT1000 temperature sensor.

Remedy: Upgrade the firmware of the DRIVE-CLiQ component involved.

For fault value = 205, 214, 215:

- check parameter p0600 and p0601 and if required, adapt.

For fault value = 207:

- replace the power unit or if required set the device supply voltage higher (p0210).

For fault value = 208:

- check parameter p0430.23 and reset if necessary.

For fault value = 216:

- check the setting of the sensor type (p3665).
- use a Voltage Sensing module that supports operation with PT1000 (MLFB ...-xxx1).

A01304 (F) Firmware version of DRIVE-CLiQ component is not up-to-date

Message value: %1
Message class: General drive fault (19)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The non-volatile memory has a more recent firmware version than the one in the connected DRIVE-CLiQ component.
Alarm value (r2124, interpret decimal):
Component number of the DRIVE-CLiQ component involved.
Remedy: Update the firmware (p7828, p7829 - or commissioning tool).
Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY

F01305 Topology: Component number missing

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The component number from the topology was not parameterized (p0121 (for power unit, refer to p0107), p0131 (for servo/vector drives, refer to p0107), p0141, p0151, p0161).
Fault value (r0949, interpret decimal):
Data set number.
Note:
The fault also occurs if encoders have been configured (p0187 to p0189) but no component numbers exist for them.
In this case, the fault value includes the drive data set number plus 100 * encoder number (e.g. 3xx, if a component number was not entered in p0141 for encoder 3 (p0189)).
See also: p0121, p0131, p0141, p0142, p0151, p0161, p0186, p0187, p0188, p0189
Remedy: - enter missing component number.
- if required, remove the component and restart commissioning.
See also: p0121, p0131, p0141, p0142, p0151, p0161, p0186, p0187, p0188, p0189

A01306 Firmware of the DRIVE-CLiQ component being updated

Message value: %1
Message class: General drive fault (19)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: Firmware update is active for at least one DRIVE-CLiQ component.
Alarm value (r2124, interpret decimal):
Component number of the DRIVE-CLiQ component.
Remedy: Not necessary.
This alarm is automatically withdrawn after the firmware update has been completed.

A01314 Topology: Component must not be present

Message value: %1, to %2, %3, connection: %4
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: For a component, "deactivate and not present" is set but this component is still in the topology.
Alarm value (r2124, interpret hexadecimal):
ddccbbaa hex:
aa = component number
bb = component class of the component
cc = connection number
Note:
Component class and connection number are described in F01375.
Remedy: - remove the corresponding component.
- change the setting "deactivate and not present".
Note:
Under "Topology --> Topology view", the commissioning tool where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).
See also: p0105, p0125, p0145, p0155, p0165

A01317 (N) Deactivated component again present

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: If a component of the target topology for an active drive object is inserted and the associated parameter of the component is set to "deactivate" (p0125, p0145, p0155, p0165).
Note:
This is the only message that is displayed for a deactivated component.
Remedy: The alarm is automatically withdrawn for the following actions:
- activate the components involved (p0125 = 1, p0145 = 1, p0155 = 1, p0165 = 1).
- again withdraw the component involved.
See also: p0125 (Activate/deactivate power unit components), p0145, p0155, p0165 (Activate/deactivate filter module)
Reaction upon N: NONE
Acknowl. upon N: NONE

A01318 BICO: Deactivated interconnections present

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: This alarm is used in the following cases:
- if an inactive/non-operational drive object is active again/ready for operation
- if there are items in the list of BI/CI parameters (r9498[0...29], r9499[0...29])
- if the BICO interconnections saved in the list of BI/CI parameters (r9498[0...29], r9499[0...29]) have actually been changed

Remedy: Reset alarm:
- set p9496 to 1 or 2
or
- deactivate the drive object again.

A01319 Inserted component not initialized

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, CU_LINK, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: Initialization is required for at least one inserted component.
This is only possible if the pulses are inhibited for all the drive objects.
Remedy: Activate pulse inhibit for all drive objects.

A01320 Topology: Drive object number does not exist in configuration

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: A drive object number is missing in p0978
Alarm value (r2124, interpret decimal):
Index of p0101 under which the missing drive object number can be determined.
Remedy: Set p0009 to 1 and change p0978:
Rules:
- p0978 must include all of the drive object numbers (p0101).
- it is not permissible for a drive object number to be repeated.
- by entering a 0, the drive objects with PZD are separated from those without PZD.
- only 2 partial lists are permitted. After the second 0, all values must be 0.
- dummy drive object numbers (255) are only permitted in the first partial list.

A01321 Topology: Drive object number does not exist in configuration

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: p0978 contains a drive object number that does not exist.
Alarm value (r2124, interpret decimal):
Index of p0978 under which the drive object number can be determined.
Remedy: Set p0009 to 1 and change p0978:
Rules:
- p0978 must include all of the drive object numbers (p0101).
- it is not permissible for a drive object number to be repeated.
- by entering a 0, the drive objects with PZD are separated from those without PZD.
- only 2 partial lists are permitted. After the second 0, all values must be 0.
- dummy drive object numbers (255) are only permitted in the first partial list.

A01322 Topology: Drive object number present twice in configuration

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: A drive object number is present more than once in p0978.
Alarm value (r2124, interpret decimal):
Index of p0978 under which the involved drive object number is located.
Remedy: Set parameter p0009 = 1 and change p0978:
Rules:
- p0978 must include all of the drive object numbers (p0101).
- it is not permissible for a drive object number to be repeated.
- by entering a 0, the drive objects with PZD are separated from those without PZD.
- only 2 partial lists are permitted. After the second 0, all values must be 0.
- dummy drive object numbers (255) are only permitted in the first partial list.

A01323 Topology: More than two partial lists created

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: Partial lists are available more than twice in p0978. After the second 0, all must be 0.
Alarm value (r2124, interpret decimal):
Index of p0978 under which the illegal value is located.
Remedy: Set p0009 to 1 and change p0978:
Rules:
- p0978 must include all of the drive object numbers (p0101).
- it is not permissible for a drive object number to be repeated.
- by entering a 0, the drive objects with PZD are separated from those without PZD.
- only 2 partial lists are permitted. After the second 0, all values must be 0.
- dummy drive object numbers (255) are only permitted in the first partial list.

A01324 Topology: Dummy drive object number incorrectly created

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: In p0978, dummy drive object numbers (255) are only permitted in the first partial list.
Alarm value (r2124, interpret decimal):
Index of p0978 under which the illegal value is located.
Remedy: Set p0009 to 1 and change p0978:
Rules:
- p0978 must include all of the drive object numbers (p0101).
- it is not permissible for a drive object number to be repeated.
- by entering a 0, the drive objects with PZD are separated from those without PZD.
- only 2 partial lists are permitted. After the second 0, all values must be 0.
- dummy drive object numbers (255) are only permitted in the first partial list.

F01325 Topology: Component number not present in target topology

Message value: Component number: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The component configured in a parameter (e.g. p0121, p0131, etc.) is not present in the target topology.
Fault value (r0949, interpret decimal):
Configured component number that is not present in target topology.
Remedy: Establish topology and DO configuration consistency.

A01330 Topology: Quick commissioning not possible

Message value: Fault cause: %1, supplementary information: %2, preliminary component number: %3
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: Unable to carry out a quick commissioning. The existing actual topology does not fulfill the requirements.
Alarm value (r2124, interpret hexadecimal):
ccccbbaa hex: cccc = preliminary component number, bb = supplementary information, aa = fault cause
aa = 01 hex = 1 dec:
On one component illegal connections were detected.
- bb = 01 hex = 1 dec: For a Motor Module, more than one motor with DRIVE-CLiQ was detected.
- bb = 02 hex = 2 dec: For a motor with DRIVE-CLiQ, the DRIVE-CLiQ cable is not connected to a Motor Module.
aa = 02 hex = 2 dec:
The topology contains too many components of a particular type.
- bb = 01 hex = 1 dec: There is more than one master Control Unit.
- bb = 02 hex = 2 dec: There is more than 1 infeed (8 for a parallel circuit configuration).
- bb = 03 hex = 3 dec: There are more than 10 Motor Modules (8 for a parallel circuit configuration).
- bb = 04 hex = 4 dec: There are more than 9 encoders.
- bb = 05 hex = 5 dec: There are more than 8 Terminal Modules.
- bb = 07 hex = 7 dec: Unknown component type
- bb = 08 hex = 8 dec: There are more than 6 drive slaves.
- bb = 09 hex = 9 dec: Connection of a drive slave not permitted.
- bb = 0a hex = 10 dec: There is no drive master.
- bb = 0b hex = 11 dec: There is more than one motor with DRIVE-CLiQ for a parallel circuit.
- bb = 0c hex = 12 dec: Different power units are being used in a parallel connection.
- cccc: Not used.
aa = 03 hex = 3 dec:
More than 16 components are connected at a DRIVE-CLiQ socket of the Control Unit.
- bb = 0, 1, 2, 3 means e.g. detected at the DRIVE-CLiQ socket X100, X101, X102, X103.
- cccc: Not used.
aa = 04 hex = 4 dec:
The number of components connected one after the other is greater than 125.
- bb: Not used.
- cccc = preliminary component number of the first component and component that resulted in the fault.
aa = 05 hex = 5 dec:
The component is not permissible for SERVO.
- bb = 01 hex = 1 dec: SINAMICS G available.
- bb = 02 hex = 2 dec: Chassis available.
- cccc = preliminary component number of the first component and component that resulted in the fault.

aa = 06 hex = 6 dec:

On one component illegal EEPROM data was detected. These must be corrected before the system continues to boot.

- bb = 01 hex = 1 dec: The Article No. [MLFB] of the power unit that was replaced includes a space retainer. The space retainer (*) must be replaced by a correct character.
- cccc = preliminary component number of the component with illegal EEPROM data.

aa = 07 hex = 7 dec:

The actual topology contains an illegal combination of components.

- bb = 01 hex = 1 dec: Active Line Module (ALM) and Basic Line Module (BLM).
- bb = 02 hex = 2 dec: Active Line Module (ALM) and Smart Line Module (SLM).
- bb = 03 hex = 3 dec: SIMOTION control (e.g. SIMOTION D445) and SINUMERIK component (e.g. NX15).
- bb = 04 hex = 4 dec: SINUMERIK control (e.g. SINUMERIK 730.net) and SIMOTION component (e.g. CX32).
- cccc: Not used.

aa = 08 hex = 8 dec:

The motor is not completely connected.

- bb: Not used.
- cccc: Not used.

Note:

Connection type and connection number are described in F01375.

See also: p0097 (Select drive object type), r0098 (Actual device topology), p0099 (Device target topology)

Remedy:
- adapt the output topology to the permissible requirements.
- commission the device using the commissioning tool.
- for motors with DRIVE-CLiQ, connect the power and DRIVE-CLiQ cable to the same Motor Module (Single Motor Module: DRIVE-CLiQ at X202, Double Motor Module: DRIVE-CLiQ from motor 1 (X1) to X202, from motor 2 (X2) to X203).

For aa = 06 hex = 6 dec and bb = 01 hex = 1 dec:

Correct the Article No. when commissioning using the commissioning tool.

See also: p0097 (Select drive object type), r0098 (Actual device topology), p0099 (Device target topology)

A01331 Topology: At least one component not assigned to a drive object

Message value: Component number: %1

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: All objects

Component: None **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: At least one component is not assigned to a drive object.

- when commissioning, a component was not able to be automatically assigned to a drive object.
- the parameters for the data sets are not correctly set.

Alarm value (r2124, interpret decimal):

Component number of the unassigned component.

Remedy: This component is assigned to a drive object.

Check the parameters for the data sets.

Examples:

- power unit (p0121).
- motor (p0131, p0186).
- encoder interface (p0140, p0141, p0187 ... p0189).
- encoder (p0140, p0142, p0187 ... p0189).
- Terminal Module (p0151).
- option board (p0161).

F01340 Topology: Too many components on one line

Message value: Component number or connection number: %1, fault cause: %2

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: All objects

Component: None **Propagation:** LOCAL

Reaction: NONE

Acknowledge: IMMEDIATELY

Cause: For the selected communications clock cycle, too many DRIVE-CLiQ components are connected to one line of the Control Unit.

Fault value (r0949, interpret hexadecimal):

xyy hex: x = fault cause, yy = component number or connection number.

1yy:

The communications clock cycle of the DRIVE-CLiQ connection on the Control Unit is not sufficient for all read transfers.

2yy:

The communications clock cycle of the DRIVE-CLiQ connection on the Control Unit is not sufficient for all write transfers.

3yy:

Cyclic communication is fully utilized.

4yy:

The DRIVE-CLiQ cycle starts before the earliest end of the application. An additional dead time must be added to the control. Sign-of-life errors can be expected.

The conditions of operation with a current controller sampling time of 31.25 µs have not been maintained.

5yy:

Internal buffer overflow for net data of a DRIVE-CLiQ connection.

6yy:

Internal buffer overflow for receive data of a DRIVE-CLiQ connection.

7yy:

Internal buffer overflow for send data of a DRIVE-CLiQ connection.

8yy:

The component clock cycles cannot be combined with one another

900:

The lowest common multiple of the clock cycles in the system is too high to be determined.

901:

The lowest common multiple of the clock cycles in the system cannot be generated with the hardware.

Remedy: - check the DRIVE-CLiQ wiring.

- reduce the number of components on the DRIVE-CLiQ line involved and distribute these to other DRIVE-CLiQ sockets of the Control Unit. This means that communication is uniformly distributed over several lines.

For fault value = 1yy - 4yy in addition:

- increase the sampling times (p0112, p0115, p4099). If necessary, for DCC or FBLOCKS, change the assignment of the run-time group (p21000, p20000) so that the sampling time (r21001, r20001) is increased.

- if necessary, reduce the number of cyclically calculated blocks (DCC) and/or function blocks (FBLOCKS).

- reduce the function modules (r0108).

- establish the conditions for operation with a current controller sampling time of 31.25 µs (at the DRIVE-CLiQ line, only operate Motor Modules and Sensor Modules with this sampling time and only use a permitted Sensor Module (e.g. SMC20, this means a 3 at the last position of the Article No.)).

- For an NX, the corresponding Sensor Module for a possibly existing second measuring system should be connected to a free DRIVE-CLiQ socket of the NX.

For fault value = 8yy in addition:

- check the clock cycles settings (p0112, p0115, p4099). Clock cycles on a DRIVE-CLiQ line must be perfect integer multiples of one another. As clock cycle on a line, all clock cycles of all drive objects in the previously mentioned parameters apply, which have components on the line involved.

For fault value = 9yy in addition:

- check the clock cycles settings (p0112, p0115, p4099). The lower the numerical value difference between two clock cycles, the higher the lowest common multiple. This behavior has a significantly stronger influence, the higher the numerical values of the clock cycles.

F01341 Topology: Maximum number of DRIVE-CLiQ components exceeded

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: Too many DRIVE-CLiQ components were defined in the actual topology.

Note:

Pulse enable is withdrawn and prevented.

Remedy: - check the DRIVE-CLiQ wiring.

- reduce the number components on the DRIVE-CLiQ line involved in order to maintain the maximum quantity structure.

F01354 Topology: Actual topology indicates an illegal component

Message value: Fault cause: %1, component number: %2
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The actual topology indicates at least one illegal component.

Fault value (r0949, interpret hexadecimal):

yyxx hex: yy = component number, xx = cause.

xx = 1: Component at this Control Unit not permissible.

xx = 2: Component in combination with another component not permissible.

Note:

Pulse enable is prevented.

Remedy: Remove the illegal components and restart the system.

F01355 Topology: Actual topology changed

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The device target topology (p0099) does not correspond to the device actual topology (r0098).

The fault only occurs if the topology was commissioned using the automatic internal device mechanism and not using the commissioning tool.

Fault value (r0949, interpret decimal):

Only for internal Siemens troubleshooting.

See also: r0098 (Actual device topology), p0099 (Device target topology)

Remedy: One of the following counter-measures can be selected if no faults have occurred in the topology detection itself:

If commissioning is still not completed:

- carry out a self-commissioning routine (starting from p0009 = 1).

In general:

Set p0099 = r0098, set p0009 = 0; for existing Motor Modules, this results in servo drives being automatically generated (p0107).

Generating servo drives: Set p0097 to 1, set p0009 to 0.

Generating vector drives: Set p0097 to 2, set p0009 to 0.

Generating vector drives with parallel circuit: Set p0097 to 12, set p0009 to 0.

In order to set configurations in p0108, before setting p0009 to 0, it is possible to first set p0009 to 2 and modify p0108. The index corresponds to the drive object (p0107).

If commissioning has already been completed:

- re-establish the original connections and re-connect power to the Control Unit.
- restore the factory setting for the complete equipment (all of the drives) and allow automatic self-commissioning again.
- change the device parameterization to match the connections (this is only possible using the commissioning tool).

Notice:

Topology changes that result in this fault being generated cannot be accepted by the automatic function in the device, but must be transferred using the commissioning tool and parameter download. The automatic function in the device only allows constant topology to be used. Otherwise, when the topology is changed, all of the previous parameter settings are lost and replaced by the factory setting.

See also: r0098 (Actual device topology)

F01356 Topology: There is a defective DRIVE-CLiQ component

Message value: Fault cause: %1, Component number: %2, Connection number: %3

Message class: Hardware/software error (1)

Drive object: All objects

Component: None **Propagation:** LOCAL

Reaction: NONE (OFF2)

Acknowledge: IMMEDIATELY

Cause: The actual topology indicates at least one defective DRIVE-CLiQ component.

Fault value (r0949, interpret hexadecimal):

zzyyxx hex:

zz = connection number of the component at which the defective component is connected

yy = component number of the component at which the defective component is connected

xx = fault cause

xx = 1: Component at this Control Unit not permissible.

xx = 2: component with communication defect.

Note:

Pulse enable is withdrawn and prevented.

Remedy: Replace the defective component and restart the system.

F01357 Topology: Two Control Units identified on the DRIVE-CLiQ line

Message value: component number: %1, connection number: %2

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: All objects

Component: None **Propagation:** LOCAL

Reaction: NONE (OFF2)

Acknowledge: IMMEDIATELY

Cause: In the actual topology, 2 Control Units are connected with one another through DRIVE-CLiQ.

As standard, this is not permitted.

This is only permitted if the Technology Extension OALINK has already been installed on the two Control Units and has been commissioned online.

Fault value (r0949, interpret hexadecimal):

yyxx hex:

yy = connection number of the Control Unit at which the second Control Unit is connected

xx = component number of the Control Unit at which the second Control Unit is connected

Note:

Pulse enable is withdrawn and prevented.

Remedy: In general:

- remove the connection to the second Control Unit and restart.
- for the S120M component DRIVE-CLiQ extension, interchange the hybrid cable (IN/OUT).

When using OALINK:

- remove the DRIVE-CLiQ connection and restart the systems.
- install OALINK on both Control Units and activate.
- Check the configuration of the DRIVE-CLiQ sockets in OALINK.

A01358 Topology: Line termination not available

Message value: CU connection number: %1, component number: %2, connection number: %3
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: At least one line with distributed drives is not terminated. The last participant on the line must be terminated with a line termination connector.
This therefore ensures the degree of protection of the distributed drives.
Alarm value (r2124, interpret hexadecimal):
zzyyxx hex:
zz = connection number of the distributed drive with missing termination connector
yy = component number
xx = CU connection number
Remedy: Install the line terminating connector for the last distributed drive.

F01359 Topology: DRIVE-CLiQ performance not sufficient

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The DRIVE-CLiQ performance is not sufficient at one line in order to identify an inserted component.
Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.
Remedy: - carry out a POWER ON (switch-off/switch-on).
- Distribute components across several DRIVE-CLiQ lines.
Note:
For this topology, do not withdraw and insert components in operation.

F01360 Topology: Actual topology not permissible

Message value: Fault cause: %1, preliminary component number: %2
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The detected actual topology is not permissible.
Fault value (r0949, interpret hexadecimal):
ccccbbaa hex:
cccc = preliminary component number, bb = no significance, aa = fault cause
aa = 01 hex = 1 dec:
Too many components were detected at the Control Unit. A maximum of 199 components is permissible.
aa = 02 hex = 2 dec:
The component type of a component is not known.
aa = 03 hex = 3 dec:
It is illegal to combine ALM and BLM.
aa = 04 hex = 4 dec:
It is illegal to combine ALM and SLM.
aa = 05 hex = 5 dec:
It is illegal to combine BLM and SLM.
aa = 06 hex = 6 dec:
A CX32 was not directly connected to a permitted Control Unit.

aa = 07 hex = 7 dec:
An NX10 or NX15 was not directly connected to a permitted Control Unit.
aa = 08 hex = 8 dec:
A component was connected to a Control Unit that is not permitted for this purpose.
aa = 09 hex = 9 dec:
A component was connected to a Control Unit with out-of-date firmware.
aa = 0A hex = 10 dec:
Too many components of a particular type detected.
aa = 0B hex = 11 dec:
Too many components of a particular type detected on a single line.
Note:
The drive system is no longer booted. In this state, the drive control (closed-loop) cannot be enabled.

Remedy: For fault cause = 1:
Change the configuration. Connect less than 199 components to the Control Unit.
For fault cause = 2:
Remove the component with unknown component type.
For fault cause = 3, 4, 5:
Establish a valid combination.
For fault cause = 6, 7:
Connect the expansion module directly to a permitted Control Unit.
For fault cause = 8:
Remove component or use a permissible component.
For fault cause = 9:
Upgrade the firmware of the Control Unit to a later version.
For fault cause = 10, 11:
Reduce the number of components.

A01361 Topology: Actual topology contains SINUMERIK and SIMOTION components

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The detected actual topology contains SINUMERIK and SIMOTION components.
The drive system is no longer booted. In this state, the drive control (closed-loop) cannot be enabled.
Alarm value (r2124, interpret hexadecimal):
ddccbbaa hex: cc = fault cause, bb = component class of the actual topology, aa = component number of the component
cc = 01 hex = 1 dec:
An NX10 or NX15 was connected to a SIMOTION control.
cc = 02 hex = 2 dec:
A CX32 was connected to a SINUMERIK control.

Remedy: For alarm value = 1:
Replace all NX10 or NX15 by a CX32.
For alarm value = 2:
Replace all CX32 by an NX10 or NX15.

A01362 Topology: Topology rule(s) broken

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: At least one topology rule for the SINAMICS S120 Combi has been broken.

In the event of a fault, the ramping up of the drive system is aborted and closed-loop drive control is not enabled.

Alarm value (r2124, interpret decimal):

The alarm value indicates which rule has been violated.

1: The S120 Combi may only be wired via DRIVE-CLiQ socket X200 to X100 on the NCU.

2: Only one Single Motor Module (SMM) or one Double Motor Module (DMM) may be connected via X200 to the DRIVE-CLiQ socket X101 on the NCU.

3: Only one Terminal Module 54F (TM54F) or one DRIVE-CLiQ Hub Module (Hub) may be connected via X500 to the DRIVE-CLiQ socket X102 on the NCU.

4: Only Sensor Modules may be connected to DRIVE-CLiQ sockets X201 up to X203 (3-axis) or X204 (4-axis) on the S120 Combi.

5: Only one Sensor Module, type SMC20 or SME20 may be connected to DRIVE-CLiQ socket X205 (X204 is not available for 3-axis).

6: If a Single Motor Module is being used as the first expansion axis, only one more Single Motor Module may be connected (via X200 to X201 on the first Single Motor Module).

7: Only Sensor Modules may be connected to the corresponding DRIVE-CLiQ socket X202 on any Single Motor Modules which may be present.

8: For a second Single Motor Module or for a Double Motor Module, it is not permissible to connect anything at X201.

9: If a Double Motor Module is used as an expansion axis, only Sensor Modules may be connected to X202 and X203.

10: If a Terminal Module 54F (TM54F) is configured, only one DRIVE-CLiQ Hub Module (DMC20, DME20) may be connected to X501 of the TM54F module via DRIVE-CLiQ socket X500.

11: On the DRIVE-CLiQ Hub Module, only Sensor Modules Cabinet (SMC) and Sensor Modules External (SME) may be connected to X501 through X505.

12: Only certain Motor Modules may be used for expansion axes.

13: For an S120 Combi with 3 axes, nothing must be connected at the DRIVE-CLiQ Hub Module at X503.

Remedy: Evaluate the alarm value and ensure compliance with the corresponding topology rule(s).

F01375 Topology: Connection duplicated between two components

Message value: Component: %1, %2, connection: %3
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: When checking the actual topology, a ring-type connection was detected.

The fault value describes a component contained in the ring.

Fault value (r0949, interpret hexadecimal):

ccbbaaaa hex:

cc = connection number (%3)

bb = component class (% 2)

aaaa = preliminary component number (%1)

Component class:

0: Component unknown.

1: Control Unit

2: Motor Module

3: Line Module

4: Sensor Module

5: Voltage Sensing Module

6: Terminal Module
7: DRIVE-CLiQ Hub Module
8: Controller Extension
9: Filter Module
10: Hydraulic Module.
49: DRIVE-CLiQ component
50: Option slot
60: Encoder
70: DRIVE-CLiQ motor
71: Hydraulic cylinder
72: Hydraulic valve
80: Motor
Connection number:
0: Port 0, 1: Port 1, 2: Port 2, 3: Port 3, 4: Port 4, 5: Port 5
10: X100, 11: X101, 12: X102, 13: X103, 14: X104, 15: X105
20: X200, 21: X201, 22: X202, 23: X203
50: X500, 51: X501, 52: X502, 53: X503, 54: X504, 55: X505

Remedy: Output the fault value and remove the specified connection.
Note:
Under "Topology --> Topology view" the commissioning tool where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

F01380 Topology: Actual topology EEPROM defective

Message value: Preliminary component number: %1
Message class: Hardware/software error (1)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: POWER ON
Cause: When detecting the actual topology, a component with a defective EEPROM was detected.
Fault value (r0949, interpret hexadecimal):
bbbbaaaa hex:
bbbb = reserved
aaaa = preliminary component number of the defective components
Remedy: Output the fault value and remove the defected component.

A01381 Topology: power unit incorrectly inserted

Message value: Component: %1, to %2, %3, connection: %4
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: CU_I, CU_I_D410, CU_LINK, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM54F_MA, TM54F_SL
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The topology comparison has detected a power unit in the actual topology that has been incorrectly inserted.
Alarm value (r2124, interpret hexadecimal):
ddccbbaa hex:
dd = connection number (%4)
cc = component number (%3)
bb = component class (% 2)
aa = component number of the incorrectly inserted component (% 1)
Note:
The component is described in dd, cc and bb, where the component involved is incorrectly inserted.
Component class and connection number are described in F01375.
The drive system is no longer booted. In this state, the drive control (closed-loop) cannot be enabled.

Remedy: Adapting topologies:

- insert the components involved at the right connection (correct the actual topology).
- adapt the project/parameterizing in the commissioning tool (correct the target topology).
- automatically remove the topology error (p9904).

Note:

Under "Topology --> Topology view" the commissioning tool where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

A01381 Topology: Line Module incorrectly inserted

Message value: Component: %1, to %2, %3, connection: %4

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: A_INF, B_INF, R_INF, S_INF

Component: None **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: The topology comparison has detected a Line Module in the actual topology that has been incorrectly inserted with respect to the target technology.

Alarm value (r2124, interpret hexadecimal):

ddccbbaa hex:

dd = connection number (%4)

cc = component number (%3)

bb = component class (% 2)

aa = component number of the incorrectly inserted component (% 1)

Note:

The component is described in dd, cc and bb, where the component involved is incorrectly inserted.

Component class and connection number are described in F01375.

The drive system is no longer booted. In this state, the drive control (closed-loop) cannot be enabled.

Remedy: Adapting topologies:

- insert the components involved at the right connection (correct the actual topology).
- adapt the project/parameterizing in the commissioning tool (correct the target topology).
- automatically remove the topology error (p9904).

Note:

Under "Topology --> Topology view" the commissioning tool where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

A01381 Topology: Motor Module incorrectly inserted

Message value: Component: %1, to %2, %3, connection: %4

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: The topology comparison has detected a Motor Module in the actual topology that has been incorrectly inserted with respect to the target technology.

Alarm value (r2124, interpret hexadecimal):

ddccbbaa hex:

dd = connection number (%4)

cc = component number (%3)

bb = component class (% 2)

aa = component number of the incorrectly inserted component (% 1)

Note:

The component is described in dd, cc and bb, where the component involved is incorrectly inserted.

Component class and connection number are described in F01375.

The drive system is no longer booted. In this state, the drive control (closed-loop) cannot be enabled.

Remedy: Adapting topologies:

- insert the components involved at the right connection (correct the actual topology).
- adapt the project/parameterizing in the commissioning tool (correct the target topology).
- automatically remove the topology error (p9904).

Note:

Under "Topology --> Topology view" the commissioning tool where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

A01382 Topology: Sensor Module incorrectly inserted

Message value: Component: %1, to %2, %3, connection: %4

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: All objects

Component: None **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: The topology comparison has detected a Sensor Module in the actual topology that has been incorrectly inserted with respect to the target technology.

Alarm value (r2124, interpret hexadecimal):

ddccbbaa hex:

dd = connection number (%4)

cc = component number (%3)

bb = component class (% 2)

aa = component number of the incorrectly inserted component (% 1)

Note:

The component is described in dd, cc and bb, where the component involved is incorrectly inserted.

Component class and connection number are described in F01375.

The drive system is no longer booted. In this state, the drive control (closed-loop) cannot be enabled.

Remedy: Adapting topologies:

- insert the components involved at the right connection (correct the actual topology).
- adapt the project/parameterizing in the commissioning tool (correct the target topology).
- automatically remove the topology error (p9904).

Note:

Under "Topology --> Topology view" the commissioning tool where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

A01383 Topology: Terminal Module incorrectly inserted

Message value: Component: %1, to %2, %3, connection: %4

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: All objects

Component: None **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: The topology comparison has detected a Terminal Module in the actual topology that has been incorrectly inserted with respect to the target technology.

Alarm value (r2124, interpret hexadecimal):

ddccbbaa hex:

dd = connection number (%4)

cc = component number (%3)

bb = component class (% 2)

aa = component number of the incorrectly inserted component (% 1)

Note:

The component is described in dd, cc and bb, where the component involved is incorrectly inserted.

Component class and connection number are described in F01375.

The drive system is no longer booted. In this state, the drive control (closed-loop) cannot be enabled.

Remedy: Adapting topologies:

- insert the components involved at the right connection (correct the actual topology).
- adapt the project/parameterizing in the commissioning tool (correct the target topology).
- automatically remove the topology error (p9904).

Note:

Under "Topology --> Topology view" the commissioning tool where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

A01384 Topology: DRIVE-CLiQ Hub Module incorrectly inserted

Message value: Component: %1, to %2, %3, connection: %4

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: All objects

Component: None **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: The topology comparison has detected a DRIVE-CLiQ Hub Module in the actual topology that has been incorrectly inserted with respect to the target topology.

Alarm value (r2124, interpret hexadecimal):

ddccbbaa hex:

dd = connection number (%4)

cc = component number (%3)

bb = component class (% 2)

aa = component number of the incorrectly inserted component (% 1)

Note:

The component is described in dd, cc and bb, where the component involved is incorrectly inserted.

Component class and connection number are described in F01375.

The drive system is no longer booted. In this state, the drive control (closed-loop) cannot be enabled.

Remedy: Adapting topologies:

- insert the components involved at the right connection (correct the actual topology).
- adapt the project/parameterizing in the commissioning tool (correct the target topology).
- automatically remove the topology error (p9904).

Note:

Under "Topology --> Topology view" the commissioning tool where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

A01385 Topology: Controller Extension incorrectly inserted

Message value: Component: %1, to %2, %3, connection: %4

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: All objects

Component: None **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: The topology comparison has detected a controller extension 32 (CX32) in the actual topology that has been incorrectly inserted with respect to the target topology.

Alarm value (r2124, interpret hexadecimal):

ddccbbaa hex:

dd = connection number (%4)

cc = component number (%3)

bb = component class (% 2)

aa = component number of the incorrectly inserted component (% 1)

Note:

The component is described in dd, cc and bb, where the component involved is incorrectly inserted.

Component class and connection number are described in F01375.

The drive system is no longer booted. In this state, the drive control (closed-loop) cannot be enabled.

Remedy: Adapting topologies:
- insert the components involved at the right connection (correct the actual topology).
- adapt the project/parameterizing in the commissioning tool (correct the target topology).
- automatically remove the topology error (p9904).

Note:
Under "Topology --> Topology view" the commissioning tool where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

A01386 Topology: DRIVE-CLiQ component incorrectly inserted

Message value: Component: %1, to %2, %3, connection: %4
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The topology comparison has detected a DRIVE-CLiQ component in the actual topology that has been incorrectly inserted with respect to the target topology.
Alarm value (r2124, interpret hexadecimal):
ddccbbaa hex:
dd = connection number (%4)
cc = component number (%3)
bb = component class (% 2)
aa = component number of the incorrectly inserted component (% 1)
Note:
The component is described in dd, cc and bb, where the component involved is incorrectly inserted.
Component class and connection number are described in F01375.
The drive system is no longer booted. In this state, the drive control (closed-loop) cannot be enabled.

Remedy: Adapting topologies:
- insert the components involved at the right connection (correct the actual topology).
- adapt the project/parameterizing in the commissioning tool (correct the target topology).
- automatically remove the topology error (p9904).

Note:
Under "Topology --> Topology view" the commissioning tool where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

A01389 Topology: Motor with DRIVE-CLiQ incorrectly inserted

Message value: Component: %1, to %2, %3, connection: %4
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The topology comparison has detected a motor with DRIVE-CLiQ in the actual topology that has been incorrectly inserted with respect to the target topology.
Alarm value (r2124, interpret hexadecimal):
ddccbbaa hex:
dd = connection number (%4)
cc = component number (%3)
bb = component class (% 2)
aa = component number of the incorrectly inserted component (% 1)
Note:
The component is described in dd, cc and bb, where the component involved is incorrectly inserted.
Component class and connection number are described in F01375.
The drive system is no longer booted. In this state, the drive control (closed-loop) cannot be enabled.

Remedy: Adapting topologies:

- insert the components involved at the right connection (correct the actual topology).
- adapt the project/parameterizing in the commissioning tool (correct the target topology).
- automatically remove the topology error (p9904).

Note:

Under "Topology --> Topology view" the commissioning tool where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

A01416 Topology: Component additionally inserted

Message value: %1, to %2, %3, connection: %4

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: All objects

Component: None **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: The topology comparison has found a component in the actual topology which is not specified in the target topology.

Alarm value (r2124, interpret hexadecimal):

ddccbbaa hex:

dd = component class (% 2)

cc = connection number (%4)

bb = component class of the additional component (%1)

aa = component number (%3)

Note:

The component class of the additional component is contained in bb.

The component is described in dd, cc and aa, where the additional component is inserted.

Component class and connection number are described in F01375.

Remedy: Adapting topologies:

- remove the additional component (correct the actual topology).
- adapt the project/parameterizing in the commissioning tool (correct the target topology).

Note:

Under "Topology --> Topology view" the commissioning tool where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

A01420 Topology: Component different

Message value: Component: %1, target: %2, actual: %3, difference: %4

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: All objects

Component: None **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: The topology comparison has detected differences in the actual topology and target topologies in the electronic rating plate.

Alarm value (r2124, interpret hexadecimal):

ddccbbaa hex: aa = component number (%1), bb = component class of the target topology (%2), cc = component class of the actual topology (%3), dd = difference (%4)

dd = 01 hex = 1 dec:

Different component type.

dd = 02 hex = 2 dec:

Different article number.

dd = 03 hex = 3 dec:

Different manufacturer.

dd = 04 hex = 4 dec:

For a multi-component slave, the incorrect subcomponent (index) is connected (e.g. Double Motor Module X201 instead of X200) - or only a part of a multi-component slave is set to "deactivate and not available".

dd = 05 hex = 5 dec:

NX10 or NX15 used instead of CX32.

dd = 06 hex = 6 dec:
NX10 or NX15 used instead of CX32.
dd = 07 hex = 7 dec:
Different number of connections.
Note:
The component class is described in F01375.
The drive system is no longer booted. In this state, the drive control (closed-loop) cannot be enabled.

Remedy: Adapting topologies:
- connect the expected component (correct the actual topology).
- adapt the project/parameterizing in the commissioning tool (correct the target topology).

Topology comparison - if required, adapt the comparison level:
- parameterize the topology comparison of all components (p9906).
- parameterize the topology comparison of one components (p9907, p9908).

Note:
Under "Topology --> Topology view" the commissioning tool where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

A01425 Topology: Serial number different

Message value: Component: %1, %2, differences: %3
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The topology comparison has detected differences in the actual and target topologies in relation to one component. The serial number is different.
Alarm value (r2124, interpret hexadecimal):
ddccbbaa hex:
dd = reserved
cc = number of differences (%3)
bb = component class (% 2)
aa = component number (%1)
Note:
The component class is described in F01375.
The drive system is no longer booted. In this state, the drive control (closed-loop) cannot be enabled.

Remedy: Adapting topologies:
- change over the actual topology to match the target topology.
- load the target topology that matches the actual topology (commissioning tool).

For byte cc:
cc = 1 --> can be acknowledged using p9904 or p9905.
cc > 1 --> can be acknowledged using p9905 and can be deactivated using p9906 or p9907/p9908.
Note:
Under "Topology --> Topology view" the commissioning tool where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).
See also: p9904 (Topology comparison acknowledge differences), p9905 (Device specialization), p9906 (Topology comparison all components comparison level), p9907 (Topology comparison component number), p9908 (Topology comparison of a component comparison level)

A01428	**Topology: Incorrect connection used**		
Message value:	Component: %1, %2, connection (actual): %3, connection (target): %4		
Message class:	Error in the parameterization / configuration / commissioning procedure (18)		
Drive object:	All objects		
Component:	None	**Propagation:**	LOCAL
Reaction:	NONE		
Acknowledge:	NONE		

Cause: The topology comparison has detected differences in the actual and target topologies in relation to one component. For a component, another connection was used.

The different connections of a component are described in the alarm value.

Alarm value (r2124, interpret hexadecimal):

ddccbbaa hex:

dd = connection number of the target topology (%4)

cc = connection number of the actual topology (%3)

bb = component class (% 2)

aa = component number (%1)

Note:

Component class and connection number are described in F01375.

The drive system is no longer booted. In this state, the drive control (closed-loop) cannot be enabled.

Remedy: Adapting topologies:

- reinsert the DRIVE-CLiQ cable to the component (correct the actual topology).
- adapt the project/parameterizing in the commissioning tool (correct the target topology).
- automatically remove the topology error (p9904).

Note:

Under "Topology --> Topology view" the commissioning tool where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

See also: p9904 (Topology comparison acknowledge differences)

F01451	**Topology: Target topology is invalid**		
Message value:	%1		
Message class:	Error in the parameterization / configuration / commissioning procedure (18)		
Drive object:	All objects		
Component:	None	**Propagation:**	LOCAL
Reaction:	NONE		
Acknowledge:	IMMEDIATELY		

Cause: An error was detected in the target topology.

The target topology is invalid.

Fault value (r0949, interpret hexadecimal):

ccccbbaa hex: cccc = index error, bb = component number, aa = fault cause

aa = 1B hex = 27 dec: Error not specified.

aa = 1C hex = 28 dec: Value illegal.

aa = 1D hex = 29 dec: Incorrect ID.

aa = 1E hex = 30 dec: Incorrect ID length.

aa = 1F hex = 31 dec: Too few indices left.

aa = 20 hex = 32 dec: component not connected to Control Unit.

Remedy: Download the target topology again using the commissioning tool.

A01481 (N) Topology: power unit not connected

Message value: Component: %1, to %2, %3, connection: %4
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: CU_I, CU_I_D410, CU_LINK, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM54F_MA, TM54F_SL
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The topology comparison has detected a power unit that is missing in the actual topology with respect to the target topology.

Alarm value (r2124, interpret hexadecimal):

ddccbbaa hex:

dd = connection number (%4)

cc = component number (%3)

bb = component class (% 2)

aa = component number of the component that has not been inserted (% 1)

Note:

The component is described in dd, cc and bb, where the component has not been inserted.

Component class and connection number are described in F01375.

Remedy: Adapting topologies:

- insert the components involved at the right connection (correct the actual topology).
- adapt the project/parameterizing in the commissioning tool (correct the target topology).

Check the hardware:

- check the 24 V supply voltage.
- check DRIVE-CLiQ cables for interruption and contact problems.
- check that the component is working properly.

Note:

Under "Topology --> Topology view" the commissioning tool where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

Reaction upon N: NONE
Acknowl. upon N: NONE

A01481 (N) Topology: Line Module not connected

Message value: Component: %1, to %2, %3, connection: %4
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, R_INF, S_INF
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The topology comparison has detected a Line Module that is missing in the actual topology with respect to the target topology.

Alarm value (r2124, interpret hexadecimal):

ddccbbaa hex:

dd = connection number (%4)

cc = component number (%3)

bb = component class (% 2)

aa = component number of the component that has not been inserted (% 1)

Note:

The component is described in dd, cc and bb, where the component has not been inserted.

Component class and connection number are described in F01375.

Remedy: Adapting topologies:
- insert the components involved at the right connection (correct the actual topology).
- adapt the project/parameterizing in the commissioning tool (correct the target topology).

Check the hardware:
- check the 24 V supply voltage.
- check DRIVE-CLiQ cables for interruption and contact problems.
- check that the component is working properly.

Note:
Under "Topology --> Topology view" the commissioning tool where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

Reaction upon N: NONE
Acknowl. upon N: NONE

A01481 (N) Topology: Motor Module not connected

Message value: Component: %1, to %2, %3, connection: %4
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The topology comparison has detected a Motor Module that is missing in the actual topology with respect to the target topology.

Alarm value (r2124, interpret hexadecimal):
ddccbbaa hex:
dd = connection number (%4)
cc = component number (%3)
bb = component class (% 2)
aa = component number of the component that has not been inserted (% 1)

Note:
The component is described in dd, cc and bb, where the component has not been inserted.
Component class and connection number are described in F01375.

Remedy: Adapting topologies:
- insert the components involved at the right connection (correct the actual topology).
- adapt the project/parameterizing in the commissioning tool (correct the target topology).

Check the hardware:
- check the 24 V supply voltage.
- check DRIVE-CLiQ cables for interruption and contact problems.
- check that the component is working properly.

Note:
Under "Topology --> Topology view" the commissioning tool where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

Reaction upon N: NONE
Acknowl. upon N: NONE

A01482 Topology: Sensor Module not connected

Message value: Component: %1, to %2, %3, connection: %4

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: All objects

Component: None **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: The topology comparison has detected a Sensor Module that is missing in the actual topology with respect to the target topology.

Alarm value (r2124, interpret hexadecimal):

ddccbbaa hex:

dd = connection number (%4)

cc = component number (%3)

bb = component class (% 2)

aa = component number of the component that has not been inserted (% 1)

Note:

The component is described in dd, cc and bb, where the component has not been inserted.

Component class and connection number are described in F01375.

Remedy: Adapting topologies:

- insert the components involved at the right connection (correct the actual topology).
- adapt the project/parameterizing in the commissioning tool (correct the target topology).

Check the hardware:

- check the 24 V supply voltage.
- check DRIVE-CLiQ cables for interruption and contact problems.
- check that the component is working properly.

Note:

Under "Topology --> Topology view" the commissioning tool where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

A01483 Topology: Terminal Module not connected

Message value: Component: %1, to %2, %3, connection: %4

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: All objects

Component: None **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: The topology comparison has detected a Terminal Module that is missing in the actual topology with respect to the target topology.

Alarm value (r2124, interpret hexadecimal):

ddccbbaa hex:

dd = connection number (%4)

cc = component number (%3)

bb = component class (% 2)

aa = component number of the component that has not been inserted (% 1)

Note:

The component is described in dd, cc and bb, where the component has not been inserted.

Component class and connection number are described in F01375.

Remedy: Adapting topologies:
- insert the components involved at the right connection (correct the actual topology).
- adapt the project/parameterizing in the commissioning tool (correct the target topology).
Check the hardware:
- check the 24 V supply voltage.
- check DRIVE-CLiQ cables for interruption and contact problems.
- check that the component is working properly.
Note:
Under "Topology --> Topology view" the commissioning tool where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

A01484 Topology: DRIVE-CLiQ Hub Module not connected

Message value: Component: %1, to %2, %3, connection: %4
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The topology comparison has detected a DRIVE-CLiQ Hub Module missing in the actual topology with respect to the target topology.
Alarm value (r2124, interpret hexadecimal):
ddccbbaa hex:
dd = connection number (%4)
cc = component number (%3)
bb = component class (% 2)
aa = component number of the component that has not been inserted (% 1)
Note:
The component is described in dd, cc and bb, where the component has not been inserted.
Component class and connection number are described in F01375.
Remedy: Adapting topologies:
- insert the components involved at the right connection (correct the actual topology).
- adapt the project/parameterizing in the commissioning tool (correct the target topology).
Check the hardware:
- check the 24 V supply voltage.
- check DRIVE-CLiQ cables for interruption and contact problems.
- check that the component is working properly.
Note:
Under "Topology --> Topology view" the commissioning tool where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

A01485 Topology: Controller Extension not connected

Message value: Component: %1, to %2, %3, connection: %4
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The topology comparison has detected a Control Extension (CX32) missing in the actual topology with respect to the target topology.
Alarm value (r2124, interpret hexadecimal):
ddccbbaa hex:
dd = connection number (%4)
cc = component number (%3)
bb = component class (% 2)
aa = component number of the component that has not been inserted (% 1)

Note:
The component is described in dd, cc and bb, where the component has not been inserted.
Component class and connection number are described in F01375.

Remedy: Adapting topologies:
- insert the components involved at the right connection (correct the actual topology).
- adapt the project/parameterizing in the commissioning tool (correct the target topology).

Check the hardware:
- check the 24 V supply voltage.
- check DRIVE-CLiQ cables for interruption and contact problems.
- check that the component is working properly.

Note:
Under "Topology --> Topology view" the commissioning tool where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

A01486 Topology: DRIVE-CLiQ component not connected

Message value: Component: %1, to %2, %3, connection: %4
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The topology comparison has detected a DRIVE-CLiQ component missing in the actual topology with respect to the target topology.
Alarm value (r2124, interpret hexadecimal):
ddccbbaa hex:
dd = connection number (%4)
cc = component number (%3)
bb = component class (% 2)
aa = component number of the component that has not been inserted (% 1)
Note:
The component is described in dd, cc and bb, where the component has not been inserted.
Component class and connection number are described in F01375.

Remedy: Adapting topologies:
- insert the components involved at the right connection (correct the actual topology).
- adapt the project/parameterizing in the commissioning tool (correct the target topology).

Check the hardware:
- check the 24 V supply voltage.
- check DRIVE-CLiQ cables for interruption and contact problems.
- check that the component is working properly.

Note:
Under "Topology --> Topology view" the commissioning tool where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

A01487 Topology: Option slot component not inserted

Message value: Component: %1, to %2, %3, connection: %4

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: All objects

Component: None **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: The topology comparison has detected an option slot component missing in the actual topology with respect to the target topology.

Alarm value (r2124, interpret hexadecimal):

ddccbbaa hex:

dd = connection number (%4)

cc = component number (%3)

bb = component class (% 2)

aa = component number of the component that has not been inserted (% 1)

Note:

The component is described in dd, cc and bb, where the component has not been inserted.

Component class and connection number are described in F01375.

Remedy: Adapting topologies:

- insert the components involved at the right connection (correct the actual topology).
- adapt the project/parameterizing in the commissioning tool (correct the target topology).

Check the hardware:

- check the 24 V supply voltage.
- check DRIVE-CLiQ cables for interruption and contact problems.
- check that the component is working properly.

Note:

Under "Topology --> Topology view" the commissioning tool where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

A01489 Topology: motor with DRIVE-CLiQ not connected

Message value: Component: %1, to %2, %3, connection: %4

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: All objects

Component: None **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: The topology comparison has detected a motor with DRIVE-CLiQ missing in the actual topology with respect to the target topology.

Alarm value (r2124, interpret hexadecimal):

ddccbbaa hex:

dd = connection number (%4)

cc = component number (%3)

bb = component class (% 2)

aa = component number of the component that has not been inserted (% 1)

Note:

The component is described in dd, cc and bb, where the component has not been inserted.

Component class and connection number are described in F01375.

Remedy: Adapting topologies:
- insert the components involved at the right connection (correct the actual topology).
- adapt the project/parameterizing in the commissioning tool (correct the target topology).

Check the hardware:
- check the 24 V supply voltage.
- check DRIVE-CLiQ cables for interruption and contact problems.
- check that the component is working properly.

Note:

Under "Topology --> Topology view" the commissioning tool where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

A01507 (F, N) BICO: Interconnections to inactive objects present

Message value: %1

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: All objects

Component: None **Propagation:** BICO

Reaction: NONE

Acknowledge: NONE

Cause: There are BICO interconnections to an inactive/inoperable drive object.

The BI/CI parameters involved are listed in r9498.

The associated BO/CO parameters are listed in r9499.

The list of the BICO interconnections to other drive objects is displayed in r9491 and r9492 of the deactivated drive object.

Note:

r9498 and r9499 are only written to, if p9495 is not set to 0.

Alarm value (r2124, interpret decimal):

Number of BICO interconnections found to inactive drive objects.

Remedy: - set all open BICO interconnections centrally to the factory setting with p9495 = 2.
- make the non-operational drive object active/operational again (re-insert or activate components).

Reaction upon F: Infeed: OFF2 (NONE, OFF1)

Servo: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)

Vector: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)

Hla: OFF2 (NONE, OFF1, OFF3, STOP2)

Acknowl. upon F: IMMEDIATELY

Reaction upon N: NONE

Acknowl. upon N: NONE

A01508 BICO: Interconnections to inactive objects exceeded

Message value: -

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: All objects

Component: None **Propagation:** BICO

Reaction: NONE

Acknowledge: NONE

Cause: The maximum number of BICO interconnections (signal sinks) when deactivating a drive object was exceeded.

When deactivating a drive object, all BICO interconnections (signal sinks) are listed in the following parameters:
- r9498[0...29]: List of the BI/CI parameters involved.
- r9499[0...29]: List of the associated BO/CO parameters.

Remedy: Not necessary.

This alarm is automatically withdrawn as soon as no BICO interconnection is entered in r9498[29] and r9499[29] (value = 0).

Notice:

When re-activating the drive object, all BICO interconnections should be checked and if required, re-established.

F01510 BICO: Signal source is not float type

Message value: Parameter: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** BICO
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The requested connector output does not have the correct data type. This interconnection is not established.
Fault value (r0949, interpret decimal):
Parameter number to which an interconnection should be made (connector output).
Remedy: Interconnect this connector input with a connector output having a float data type.

F01511 (A) BICO: Interconnection with different scalings

Message value: Parameter: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** BICO
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The requested BICO interconnection was established. However, a conversion is made between the BICO output and BICO input using the reference values.
- the BICO output has different normalized units than the BICO input.
- message only for interconnections within a drive object.
Example:
The BICO output has, as normalized unit, voltage and the BICO input has current.
This means that the factor p2002/p2001 is calculated between the BICO output and the BICO input.
p2002: contains the reference value for current
p2001: contains the reference value for voltage
Fault value (r0949, interpret decimal):
Parameter number of the BICO input (signal sink).
Remedy: Not necessary.
Reaction upon A: NONE
Acknowl. upon A: NONE

F01512 BICO: No scaling available

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** BICO
Reaction: Infeed: OFF2 (OFF1)
Servo: OFF2
Vector: OFF2
Hla: OFF2
Acknowledge: POWER ON
Cause: An attempt was made to determine a conversion factor for a scaling that does not exist.
Fault value (r0949, interpret decimal):
Unit (e.g. corresponding to SPEED) for which an attempt was made to determine a factor.
Remedy: Apply scaling or check the transfer value.

F01513 (N, A) BICO: Interconnection cross DO with different scalings

Message value: Parameter: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** BICO
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The requested BICO interconnection was established. However, a conversion is made between the BICO output and BICO input using the reference values.

An interconnection is made between different drive objects and the BICO output has different normalized units than the BICO input or the normalized units are the same but the reference values are different.

Example 1:

BICO output with voltage normalized unit, BICO input with current normalized unit, BICO output and BICO input lie in different drive objects. This means that the factor p2002/p2001 is calculated between the BICO output and the BICO input.

p2002: contains the reference value for current

p2001: contains the reference value for voltage

Example 2:

BICO output with voltage normalized unit in drive object 1 (DO1), BICO input with voltage normalized unit in drive object 2 (DO2). The reference values for voltage (p2001) of the two drive objects have different values. This means that the factor p2001(DO1)/p2001(DO2) is calculated between the BICO output and the BICO input.

p2001: contains the reference value for voltage, drive objects 1, 2

Fault value (r0949, interpret decimal):

Parameter number of the BICO input (signal sink).

Remedy: Not necessary.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

A01514 (F) BICO: Error when writing during a reconnect

Message value: Parameter: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: During a reconnect operation (e.g. while booting or downloading - but can also occur in normal operation) a parameter was not able to be written to.

Example:

When writing to BICO input with double word format (DWORD), in the second index, the memory areas overlap (e.g. p8861). The parameter is then reset to the factory setting.

Alarm value (r2124, interpret decimal):

Parameter number of the BICO input (signal sink).

Remedy: Not necessary.
Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY

F01515 (A) BICO: Writing to parameter not permitted as the master control is active

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: When changing the number of CDS or when copying from CDS, the master control is active.

Remedy: If required, return the master control and repeat the operation.
Reaction upon A: NONE
Acknowl. upon A: NONE

A01590 (F) Drive: Motor maintenance interval expired

Message value: Fault cause: %1 bin
Message class: General drive fault (19)
Drive object: All objects
Component: Motor **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The selected service/maintenance interval for this motor was reached.
Alarm value (r2124, interpret decimal):
Motor data set number.
See also: p0650 (Actual motor operating hours), p0651 (Motor operating hours maintenance interval)
Remedy: carry out service/maintenance and reset the service/maintenance interval (p0651).
Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY

F01600 SI P1 (CU): STOP A initiated

Message value: %1
Message class: Safety monitoring channel has identified an error (10)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The drive-integrated "Safety Integrated" function on the Control Unit (CU) has detected a fault and initiated a STOP A (STO via the safety switch-off signal path of the Control Unit).
- forced checking procedure (test stop) of the safety switch-off signal path of the Control Unit unsuccessful.
- subsequent response to fault F01611 (defect in a monitoring channel).

Fault value (r0949, interpret decimal):
0: Stop request from monitoring channel 2.
1005:
- STO active, although STO not selected and there is no internal STOP A active.
- For a Power Module with "STO via terminals at the Power Module" (STO_A/STO_B), these terminals are active (DIP switch to "ON"). However, the "STO via terminals at the Power Module" function has not been enabled (p9601.7 = p9801.7 = 0).

1010: STO inactive although STO is selected or an internal STOP A is present.
1015: Feedback signal of STO for Motor Modules connected in parallel are different.
9999: Subsequent response to fault F01611.

Remedy:
- select Safe Torque Off and de-select again.
- replace the Motor Module involved.

For fault value = 1005:
- deactivate terminals STO_A/STO_B on the Power Module (set both DIP-switches to "OFF") or enable the "STO via terminals at the Power Module" function.

For fault value = 9999:
- carry out diagnostics for fault F01611.

Note:
CU: Control Unit
MM: Motor Module
SI: Safety Integrated
STO: Safe Torque Off / SH: Safe standstill

F01600	**SI P1 (CU): STOP A initiated**		
Message value:	%1		
Message class:	Safety monitoring channel has identified an error (10)		
Drive object:	HLA		
Component:	None	**Propagation:**	GLOBAL
Reaction:	OFF2		
Acknowledge:	IMMEDIATELY (POWER ON)		

Cause:

The drive-integrated "Safety Integrated" function on the Control Unit (CU) has detected a fault and initiated a STOP A (STO via the safety switch-off signal path of the Control Unit).

- forced checking procedure (test stop) of the safety switch-off signal path of the Control Unit unsuccessful.
- subsequent response to fault F01611 (defect in a monitoring channel).

Fault value (r0949, interpret decimal):

0: Stop request from monitoring channel 2.

1005: STO active although STO not selected and there is no internal STOP A present.

1010: STO inactive although STO is selected or an internal STOP A is present.

9999: Subsequent response to fault F01611.

Remedy:

- select Safe Torque Off and de-select again.
- replace Hydraulic Module involved.

For fault value = 9999:

- carry out diagnostics for fault F01611.

Note:

CU: Control Unit

SI: Safety Integrated

STO: Safe Torque Off / SH: Safe standstill

F01611 (A)	**SI P1 (CU): Defect in a monitoring channel**		
Message value:	%1		
Message class:	Safety monitoring channel has identified an error (10)		
Drive object:	SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC		
Component:	None	**Propagation:**	GLOBAL
Reaction:	NONE (OFF1, OFF2, OFF3)		
Acknowledge:	IMMEDIATELY (POWER ON)		

Cause:

The drive-integrated "Safety Integrated" function on processor 1 has detected a fault in the data cross-check between the two monitoring channels and has initiated a STOP F.

As a result of this fault, after the parameterized transition has expired (p9658), fault F01600 (SI CU: STOP A initiated) is output.

Fault value (r0949, interpret decimal):

0: Stop request from another monitoring channel.

1 ... 999:

Number of the cross-compared data that resulted in this fault. This number is also displayed in r9795.

1: SI monitoring clock cycle (r9780, r9880).

2: SI enable safety functions (p9601, p9801). Crosswise data comparison is only carried out for the supported bits.

3: SI SGE changeover discrepancy time (p9650, p9850).

4: SI transition period STOP F to STOP A (p9658, p9858).

5: SI enable Safe Brake Control (p9602, p9802).

6: SI Motion enable, safety-relevant functions (p9501, internal value).

7: SI delay time of STO for Safe Stop 1 (p9652, p9852).

8: SI PROFIsafe address (p9610, p9810).

9: SI debounce time for STO/SBC/SS1 (p9651, p9851).

10: SI delay time for initiating STO for ESR (p9697, p9897).

11: SI Safe Brake Adapter mode, BICO interconnection (p9621, p9821).

12: SI Safe Brake Adapter relay ON time (p9622[0], p9822[0]).

13: SI Safe Brake Adapter relay OFF time (p9622[1], p9822[1]).

14: SI PROFIsafe telegram selection (p9611, p9811).

15: SI PROFIsafe bus failure response (p9612, p9812).

1000: Watchdog timer has expired.

Within the time of approx. 5 x p9650, alternatively, the following was defined:

- the signal at terminal EP of the Motor Module continually changed with time intervals less than or equal to the discrepancy time (p9650/p9850).
- via PROFIsafe/TM54F, STO (also as subsequent response) was continually selected and deselected with time intervals less than or equal to the discrepancy time (p9650/p9850).
- safe pulse cancellation (r9723.9 - also as subsequent response) was continually selected and deselected with time intervals less than or equal to the discrepancy time (p9650/p9850).

1001, 1002: Initialization error, change timer / check timer.

1900: CRC error in the SAFETY sector.

1901: CRC error in the ITCM sector.

1902: Overloading in the ITCM sector has occurred in operation.

1903: Internal parameterizing error for CRC calculation.

1950: Module temperature outside the permissible temperature range.

1951: Module temperature not plausible.

2000: Status of the STO selection for both monitoring channels different.

2001: Feedback signal of STO shutdown for both monitoring channels different. This value can also subsequently occur as a result of other faults.

2002: Status of the delay timer SS1 for both monitoring channels different (status of the timer in p9650/p9850).

2003: Status of the STO terminal for both monitoring channels different.

2004: Status of the STO selection for Motor Modules connected in parallel different.

2005: Feedback signal of the safe pulse suppression on the Control Unit and Motor Modules connected in parallel different.

6000 ... 6999:

Error in the PROFIsafe control.

For these fault values, the failsafe control signals (Failsafe Values) are transferred to the safety functions. If "STOP B after failure of the PROFIsafe communication" (p9612) is parameterized, the transfer of the Failsafe Values is delayed.

6000: A fatal PROFIsafe communication error has occurred.

6064 ... 6071: error when evaluating the F parameter. The values of the transferred F parameters do not match the expected values in the PROFIsafe driver.

6064: Destination address and PROFIsafe address are different (F_Dest_Add).

6065: Destination address not valid (F_Dest_Add).

6066: Source address not valid (F_Source_Add).

6067: Watchdog time not valid (F_WD_Time).

6068: Incorrect SIL level (F_SIL).

6069: Incorrect F-CRC length (F_CRC_Length).

6070: Incorrect F parameter version (F_Par_Version).

6071: CRC error for the F parameters (CRC1). The transferred CRC value of the F parameters does not match the value calculated in the PROFIsafe driver.

6072: F parameterization is inconsistent.

6165: A communications error was identified when receiving the PROFIsafe telegram. The fault may also occur if an inconsistent or out-of-date PROFIsafe telegram has been received after switching the Control Unit off and on or after plugging in the PROFIBUS/PROFINET cable.

6166: A time monitoring error (timeout) was identified when receiving the PROFIsafe telegram.

Remedy: For fault value = 1 ... 5 and 7 ... 999:

- check the cross data comparison that resulted in a STOP F.
- carry out a POWER ON (switch-off/switch-on) for all components.
- upgrade the Motor Module software.
- upgrade the Control Unit software.

For fault value = 6:

- carry out a POWER ON (switch-off/switch-on) for all components.
- upgrade the Motor Module software.
- upgrade the Control Unit software.

For fault value = 1000:

- check the EP terminal at the Motor Module (contact problems).
- PROFIsafe: Remove contact problems/faults at the PROFIBUS master/PROFINET controller.
- check the wiring of the failsafe inputs at the TM54F (contact problems).
- check the discrepancy time, and if required, increase the value (p9650/p9850).

For fault value = 1001, 1002:

- carry out a POWER ON (switch-off/switch-on) for all components.
- upgrade the Motor Module software.
- upgrade the Control Unit software.

For fault value = 1900, 1901, 1902:

- carry out a POWER ON (switch-off/switch-on) for all components.
- upgrade the Control Unit software.
- replace Control Unit.

For fault value = 2000, 2001, 2002, 2003, 2004, 2005:

- check the discrepancy time, and if required, increase the value (p9650/p9850, p9652/p9852).
- check the wiring of the safety-relevant inputs (SGE) (contact problems).
- check the causes of the STO selection in r9772. When the SMM functions are active (p9501 = 1), STO can also be selected using these functions.
- replace the Motor Module involved.
- diagnose the other active faults and resolve the causes.

Note:

This fault can be acknowledged after removing the cause of the error and after correct selection/deselection of STO.

For fault value = 6000:

- carry out a POWER ON (switch-off/switch-on) for all components.
- check whether there is a DRIVE-CLiQ communication error between the two monitoring channels and, if required, carry out a diagnostics routine for the faults identified.
- increase the monitoring cycle clock settings (p9500, p9511).
- upgrade firmware to later version.
- contact Technical Support.
- replace the Control Unit.

For fault value = 6064:

- check the setting of the value in the F parameter F_Dest_Add at the PROFIsafe slave.
- check the setting of the PROFIsafe address of the Control Unit (p9610) and that of the Motor Module (p9810).

For fault value = 6065:

- check the setting of the value in the F parameter F_Dest_Add at the PROFIsafe slave. It is not permissible for the destination address to be either 0 or FFFF!

For fault value = 6066:

- check the setting of the value in the F parameter F_Source_Add at the PROFIsafe slave. It is not permissible for the source address to be either 0 or FFFF!

For fault value = 6067:

- check the setting of the value in the F parameter F_WD_Time at the PROFIsafe slave. It is not permissible for the watch time to be 0!

For fault value = 6068:

- check the setting of the value in the F parameter F_SIL at the PROFIsafe slave. The SIL level must correspond to SIL2!

For fault value = 6069:

- check the setting of the value in the F parameter F_CRC_Length at the PROFIsafe slave. The setting of the CRC2 length is 2-byte CRC in the V1 mode and 3-byte CRC in the V2 mode!

For fault value = 6070:

- check the setting of the value in the F parameter F_Par_Version at the PROFIsafe slave. The value for the F parameter version is 0 in the V1 mode and 1 in the V2 mode!

For fault value = 6071:

- check the settings of the values of the F parameters and the F parameter CRC (CRC1) calculated from these at the PROFIsafe slave and, if required, update.

For fault value = 6072:
- check the settings of the values for the F parameters and, if required, correct.
The following combinations are permissible for F parameters F_CRC_Length and F_Par_Version:
F_CRC_Length = 2-byte CRC and F_Par_Version = 0
F_CRC_Length = 3-byte CRC and F_Par_Version = 1
For fault value = 6165:
- if the fault occurs after powering up the Control Unit or after plugging in the PROFIBUS/PROFINET cable, acknowledge the fault.
- check the configuration and communication at the PROFIsafe slave.
- check the setting of the value for F parameter F_WD_Time on the PROFIsafe slave and increase if necessary.
- check whether there is a DRIVE-CLiQ communication error between the two monitoring channels and, if required, carry out a diagnostics routine for the faults identified.
- check whether all F parameters of the drive match the F parameters of the F host.
For fault value = 6166:
- check the configuration and communication at the PROFIsafe slave.
- check the setting of the value for F parameter F_WD_Time on the PROFIsafe slave and increase if necessary.
- evaluate diagnostic information in the F host.
- check PROFIsafe connection.
- check whether all F parameters of the drive match the F parameters of the F host.
Note:
CU: Control Unit
EP: Enable Pulses (pulse enable)
ESR: Extended Stop and Retract
MM: Motor Module
SGE: Safety-relevant input
SI: Safety Integrated
SMM: Safe Motion Monitoring
SS1: Safe Stop 1 (corresponds to Stop Category 1 acc. to EN60204)
STO: Safe Torque Off / SH: Safe standstill

Reaction upon A: NONE
Acknowl. upon A: NONE

F01611 (A) SI P1 (CU): Defect in a monitoring channel

Message value: %1
Message class: Safety monitoring channel has identified an error (10)
Drive object: HLA
Component: None **Propagation:** GLOBAL
Reaction: NONE (OFF1, OFF2, OFF3)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The drive-integrated "Safety Integrated" function on processor 1 has detected a fault in the data cross-check between the two monitoring channels and has initiated a STOP F.
As a result of this fault, after the parameterized transition has expired (p9658), fault F01600 (SI CU: STOP A initiated) is output.
Fault value (r0949, interpret decimal):
0: Stop request from another monitoring channel.
1 ... 999:
Number of the cross-compared data that resulted in this fault. This number is also displayed in r9795.
1: SI monitoring clock cycle (r9780, r9880).
2: SI enable safety functions (p9601, p9801). Crosswise data comparison is only carried out for the supported bits.
3: SI SGE changeover discrepancy time (p9650, p9850).
4: SI transition period STOP F to STOP A (p9658, p9858).
6: SI Motion enable, safety-relevant functions (p9501, internal value).
7: SI delay time of STO for Safe Stop 1 (p9652, p9852).
8: SI PROFIsafe address (p9610, p9810).
9: SI debounce time for STO/SBC/SS1 (p9651, p9851).
10: SI delay time for initiating STO for ESR (p9697, p9897).

11: SI HLA shutoff valve feedback signal contact configuration (p9626, p9826).

12: SI HLA shutoff valve wait time switch-on (p9625[0], p9825[0]).

13: SI HLA shutoff valve wait time switch-off (p9625[1], p9825[1]).

14: SI PROFIsafe telegram selection (p9611, p9811).

15: SI PROFIsafe bus failure response (p9612, p9812).

1000: Watchdog timer has expired.

Within the time of approx. 5 x p9650, alternatively, the following was defined:

- the signal at terminal STO of the Hydraulic Module continually changed with time intervals less than or equal to the discrepancy time (p9650/p9850).

- via PROFIsafe/TM54F, STO (also as subsequent response) was continually selected and deselected with time intervals less than or equal to the discrepancy time (p9650/p9850).

1001, 1002: Initialization error, change timer / check timer.

1900: CRC error in the SAFETY sector.

1901: CRC error in the ITCM sector.

1902: Overloading in the ITCM sector has occurred in operation.

1903: Internal parameterizing error for CRC calculation.

1950: Module temperature outside the permissible temperature range.

1951: Module temperature not plausible.

2000: Status of the STO selection for both monitoring channels different.

2001: Feedback signal of STO shutdown for both monitoring channels different. This value can also subsequently occur as a result of other faults.

2002: Status of the delay timer SS1 for both monitoring channels different (status of the timer in p9650/p9850).

2003: Status of the STO terminal for both monitoring channels different.

6000 ... 6999:

Error in the PROFIsafe control.

For these fault values, the failsafe control signals (Failsafe Values) are transferred to the safety functions. If "STOP B after failure of the PROFIsafe communication" (p9612) is parameterized, the transfer of the Failsafe Values is delayed.

6000: A fatal PROFIsafe communication error has occurred.

6064 ... 6071: error when evaluating the F parameter. The values of the transferred F parameters do not match the expected values in the PROFIsafe driver.

6064: Destination address and PROFIsafe address are different (F_Dest_Add).

6065: Destination address not valid (F_Dest_Add).

6066: Source address not valid (F_Source_Add).

6067: Watchdog time not valid (F_WD_Time).

6068: Incorrect SIL level (F_SIL).

6069: Incorrect F-CRC length (F_CRC_Length).

6070: Incorrect F parameter version (F_Par_Version).

6071: CRC error for the F parameters (CRC1). The transferred CRC value of the F parameters does not match the value calculated in the PROFIsafe driver.

6072: F parameterization is inconsistent.

6165: A communications error was identified when receiving the PROFIsafe telegram. The fault may also occur if an inconsistent or out-of-date PROFIsafe telegram has been received after switching the Control Unit off and on or after plugging in the PROFIBUS/PROFINET cable.

6166: A time monitoring error (timeout) was identified when receiving the PROFIsafe telegram.

Remedy: For fault value = 1 ... 5 and 7 ... 999:

- check the cross data comparison that resulted in a STOP F.
- carry out a POWER ON (switch-off/switch-on) for all components.
- upgrade the Hydraulic Module software.
- upgrade the Control Unit software.

For fault value = 6:

- carry out a POWER ON (switch-off/switch-on) for all components.
- upgrade the Hydraulic Module software.
- upgrade the Control Unit software.

For fault value = 1000:
- check the STO terminal at the Hydraulic Module (contact problems).
- PROFIsafe: Remove contact problems/faults at the PROFIBUS master/PROFINET controller.
- check the wiring of the failsafe inputs at the TM54F (contact problems).
- check the discrepancy time, and if required, increase the value (p9650/p9850).
For fault value = 1001, 1002:
- carry out a POWER ON (switch-off/switch-on) for all components.
- upgrade the Hydraulic Module software.
- upgrade the Control Unit software.
For fault value = 1900, 1901, 1902:
- carry out a POWER ON (switch-off/switch-on) for all components.
- upgrade the Control Unit software.
- replace Control Unit.
For fault value = 2000, 2001, 2002, 2003:
- check the discrepancy time, and if required, increase the value (p9650/p9850, p9652/p9852).
- check the wiring of the safety-relevant inputs (SGE) (contact problems).
- check the causes of the STO selection in r9772. When the SMM functions are active (p9501 = 1), STO can also be selected using these functions.
- replace Hydraulic Module involved.
- diagnose the other active faults and resolve the causes.
Note:
This fault can be acknowledged after removing the cause of the error and after correct selection/deselection of STO.
For fault value = 6000:
- carry out a POWER ON (switch-off/switch-on) for all components.
- check whether there is a DRIVE-CLiQ communication error between the two monitoring channels and, if required, carry out a diagnostics routine for the faults identified.
- increase the monitoring cycle clock settings (p9500, p9511).
- upgrade firmware to later version.
- contact Technical Support.
- replace the Control Unit.
For fault value = 6064:
- check the setting of the value in the F parameter F_Dest_Add at the PROFIsafe slave.
- check the setting of the PROFIsafe address of the Control Unit (p9610) and that of the hydraulic module (p9810).
For fault value = 6065:
- check the setting of the value in the F parameter F_Dest_Add at the PROFIsafe slave. It is not permissible for the destination address to be either 0 or FFFF!
For fault value = 6066:
- check the setting of the value in the F parameter F_Source_Add at the PROFIsafe slave. It is not permissible for the source address to be either 0 or FFFF!
For fault value = 6067:
- check the setting of the value in the F parameter F_WD_Time at the PROFIsafe slave. It is not permissible for the watch time to be 0!
For fault value = 6068:
- check the setting of the value in the F parameter F_SIL at the PROFIsafe slave. The SIL level must correspond to SIL2!
For fault value = 6069:
- check the setting of the value in the F parameter F_CRC_Length at the PROFIsafe slave. The setting of the CRC2 length is 2-byte CRC in the V1 mode and 3-byte CRC in the V2 mode!
For fault value = 6070:
- check the setting of the value in the F parameter F_Par_Version at the PROFIsafe slave. The value for the F parameter version is 0 in the V1 mode and 1 in the V2 mode!
For fault value = 6071:
- check the settings of the values of the F parameters and the F parameter CRC (CRC1) calculated from these at the PROFIsafe slave and, if required, update.

For fault value = 6072:

- check the settings of the values for the F parameters and, if required, correct.

The following combinations are permissible for F parameters F_CRC_Length and F_Par_Version:

F_CRC_Length = 2-byte CRC and F_Par_Version = 0

F_CRC_Length = 3-byte CRC and F_Par_Version = 1

For fault value = 6165:

- if the fault occurs after powering up the Control Unit or after plugging in the PROFIBUS/PROFINET cable, acknowledge the fault.

- check the configuration and communication at the PROFIsafe slave.

- check the setting of the value for F parameter F_WD_Time on the PROFIsafe slave and increase if necessary.

- check whether there is a DRIVE-CLiQ communication error between the two monitoring channels and, if required, carry out a diagnostics routine for the faults identified.

- check whether all F parameters of the drive match the F parameters of the F host.

For fault value = 6166:

- check the configuration and communication at the PROFIsafe slave.

- check the setting of the value for F parameter F_WD_Time on the PROFIsafe slave and increase if necessary.

- evaluate diagnostic information in the F host.

- check PROFIsafe connection.

- check whether all F parameters of the drive match the F parameters of the F host.

Note:

CU: Control Unit

EP: Enable Pulses (pulse enable)

ESR: Extended Stop and Retract

MM: Motor Module

SGE: Safety-relevant input

SI: Safety Integrated

SMM: Safe Motion Monitoring

SS1: Safe Stop 1 (corresponds to Stop Category 1 acc. to EN60204)

STO: Safe Torque Off / SH: Safe standstill

Reaction upon A: NONE

Acknowl. upon A: NONE

F01612 SI P1 (CU): STO inputs for power units connected in parallel different

Message value: Fault cause: %1 bin

Message class: Safety monitoring channel has identified an error (10)

Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: NONE (OFF1, OFF2, OFF3)

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The drive-integrated "Safety Integrated" function on the Control Unit (CU) has identified different states of the AND'ed STO inputs for power units connected in parallel and has initiated a STOP F.

As a result of this fault, after the parameterized transition has expired (p9658), fault F01600 (SI CU: STOP A initiated) is output.

Fault value (r0949, interpret binary):

Binary image of the digital inputs of the Control Unit that are used as signal source for the function "Safe Torque Off".

Remedy: - check the tolerance time SGE changeover and if required, increase the value (p9650).

- check the wiring of the safety-relevant inputs (SGE) (contact problems).

Note:

CU: Control Unit

SGE: Safety-relevant input

SI: Safety Integrated

STO: Safe Torque Off / SH: Safe standstill

N01620 (F, A) SI P1 (CU): Safe Torque Off active

Message value: -
Message class: Safety monitoring channel has identified an error (10)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The "Safe Torque Off" (STO) function of the basic functions has been selected on the Control Unit (CU) using the input terminal and is active.
Note:
- this message does not result in a safety stop response.
- this message is not output when STO is selected using the Extended Functions.

Remedy: Not necessary.
Note:
CU: Control Unit
SI: Safety Integrated
STO: Safe Torque Off / SH: Safe standstill

Reaction upon F: OFF2
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon A: NONE
Acknowl. upon A: NONE

N01621 (F, A) SI P1 (CU): Safe Stop 1 active

Message value: -
Message class: Safety monitoring channel has identified an error (10)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The "Safe Stop 1" (SS1) function has been selected on the Control Unit (CU) and is active.
Note:
This message does not result in a safety stop response.

Remedy: Not necessary.
Note:
CU: Control Unit
SI: Safety Integrated
SS1: Safe Stop 1 (corresponds to Stop Category 1 acc. to EN60204)

Reaction upon F: NONE (OFF3)
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon A: NONE
Acknowl. upon A: NONE

F01625 SI P1 (CU): Sign-of-life error in safety data

Message value: %1
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The drive-integrated "Safety Integrated" function on the Control Unit (CU) has detected an error in the sign-of-life of the safety data between the two monitoring channels and has initiated a STOP A.
- there is either a DRIVE-CLiQ communication error or communication has failed.
- a time slice overflow of the safety software has occurred.

Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.

Remedy: - select STO and then de-select again.
- carry out a POWER ON (switch-off/switch-on) for all components.
- check whether there is a DRIVE-CLiQ communication error between the two monitoring channels and, if required, carry out a diagnostics routine for the faults identified.
- de-select all drive functions that are not absolutely necessary.
- reduce the number of drives.
- check the electrical cabinet design and cable routing for EMC compliance
Note:
CU: Control Unit
MM: Motor Module
SI: Safety Integrated
STO: Safe Torque Off

F01630 SI P1 (CU): Brake control error

Message value: %1
Message class: Safety monitoring channel has identified an error (10)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The drive-integrated "Safety Integrated" function on the Control Unit (CU) has detected a brake control fault and initiated a STOP A.
- motor cable is not shielded correctly.
- defect in the brake control circuit of the Motor Module.
Fault value (r0949, interpret decimal):
10, 11:
Fault in "open holding brake" operation.
- parameter p1278 incorrectly set.
- no brake connected or wire breakage (check whether brake releases for p1278 = 1 and p9602/p9802 = 0 (SBC deactivated)).
- ground fault in brake cable.
20:
Fault in "brake open" state.
- short-circuit in brake winding.
30, 31:
Fault in "close holding brake" operation.
- no brake connected or wire breakage (check whether brake releases for p1278 = 1 and p9602/p9802 = 0 (SBC deactivated)).
- short-circuit in brake winding.
40:
Fault in "brake closed" state.
50:
Fault in the brake control circuit of the Control Unit or communication fault between the Control Unit and Motor Module (brake control diagnostics).
80:
Safe Brake Adapter.
Fault in the brake control circuit of the Control Unit or communication fault between the Control Unit and Motor Module (brake control diagnostics).
90:
Brake released for service purposes (X4).

Remedy: - check parameter p1278 (for SBC, only p1278 = 0 is permissible).
- for a parallel connection, check the setting of the power unit data set to control the holding brake (p7015).
- select Safe Torque Off and de-select again.
- check the motor holding brake connection.
- check the function of the motor holding brake.
- check whether there is a DRIVE-CLiQ communication error between the Control Unit and the Motor Module involved and, if required, carry out a diagnostics routine for the faults identified.
- check that the electrical cabinet design and cable routing are in compliance with EMC regulations (e.g. shield of the motor cable and brake conductors are connected with the shield connecting plate and the motor connectors are tightly screwed to the housing).
- replace the Motor Module involved.
Operation with Safe Brake Module or Safe Brake Adapter:
- check the Safe Brake Module or Safe Brake Adapter connection.
- Replace the Safe Brake Module or Safe Brake Adapter.
Note:
CU: Control Unit
SBC: Safe Brake Control
SI: Safety Integrated

A01631 (F, N) SI P1 (CU): motor holding brake/SBC configuration not practical

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: A configuration of motor holding brake and SBC was detected that is not practical.
The following configurations can result in this message:
- "No motor holding brake available" (p1215 = 0) and "SBC" enabled (p9602 = 1).
- "Motor holding brake just like the sequence control, connection via BICO" (p1215 = 3) and "SBC" enabled (p9602 = 1).
Note:
SBC: Safe Brake Control
Remedy: Check the parameterization of the motor holding brake and SBC and correct.
See also: p1215 (Motor holding brake configuration), p9602 (SI enable Safe Brake Control (Control Unit)), p9802 (SI enable Safe Brake Control (Motor Module))
Reaction upon F: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

F01632 SI P1 (CU): shutoff valve control/feedback signal error

Message value: %1
Message class: Safety monitoring channel has identified an error (10)
Drive object: HLA
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The drive-integrated "Safety Integrated" function on the Control Unit (monitoring channel 1) has detected a fault for the control/feedback signal of the shutoff valve and initiated a STOP A.
Possible causes:
- shutoff valve either not connected or not correctly connected (X272).
- feedback signal of the shutoff valve either not connected or not correctly connected (X281/X282).
- feedback signal of the shutoff valve incorrectly set (p9626/p9826).
- shutoff valve defective.
- Hydraulic Module defective.

Fault value (r0949, interpret decimal):
10, 11:
Fault in the "Open shutoff valve" operation.
20:
Fault in the "Shutoff valve open" state.
30, 31:
Fault in the "Close shutoff valve" operation.
40:
Fault in the "Shutoff valve closed" state.
50, 80:
Fault in the control/feedback signal of the cutoff valve or communication error between the Control Unit and the Hydraulic Module.

Remedy: - check the shutoff valve connection (X272).
- check the feedback signals of the shutoff valve (X281, X282).
- check the configuration of the feedback signals of the shutoff valve (p9626/p9826).
- check for EMC-compliant control cabinet design and cable routing (e.g. use shielded cables and connect the shield).
- if necessary, replace the shutoff valve.
- if necessary, replace the Hydraulic Module.
See also: p9626 (SI HLA shutoff valve feedback signal contact configuration (CU)), p9826 (SI HLA shutoff valve feedback signal contact configuration (MM))

F01640 (N, A) SI P1 (CU): component replacement identified and acknowledgment/save required

Message value: Fault cause: %1
Message class: General drive fault (19)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: "Safety Integrated" has identified that a component has been replaced.
It is no longer possible to operate the particular drive without fault.
When safety functions are active, after a component has been replaced it is necessary to carry out a partial acceptance test.
Fault value (r0949, interpret binary):
Bit 0 = 1:
It has been identified that the Control Unit has been replaced.
Bit 1 = 1:
It has been identified that the Motor Module/Hydraulic Module has been replaced.
Bit 2 = 1:
It has been identified that the Power Module has been replaced.
Bit 3 = 1:
It has been identified that the Sensor Module channel 1 has been replaced.
Bit 4 = 1:
It has been identified that the Sensor Module channel 2 has been replaced.
Bit 5 = 1:
It has been identified that the sensor channel 1 has been replaced.
Bit 6 = 1:
It has been identified that sensor channel 2 has been replaced.

Remedy: - acknowledge component replacement (p9702 = 29).
- save all parameters (p0977 = 1 or p0971 = 1 or "copy RAM to ROM").
- acknowledge fault (e.g. binector input p2103).
Note:
In addition to the fault, diagnostics bits r9776.2 and r9776.3 are set.
See also: p9702 (SI Acknowledge component replacement), r9776 (SI diagnostics)

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F01641 (N, A) SI P1 (CU): component replacement identified and save required

Message value: Fault cause: %1
Message class: General drive fault (19)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: "Safety Integrated" has identified that a component has been replaced.

No additional fault response is initiated, therefore operation of the particular drive is not restricted.

When safety functions are active, after a component has been replaced it is necessary to carry out a partial acceptance test.

Fault value (r0949, interpret binary):

Bit 0 = 1:
It has been identified that the Control Unit has been replaced.
Bit 1 = 1:
It has been identified that the Motor Module/Hydraulic Module has been replaced.
Bit 2 = 1:
It has been identified that the Power Module has been replaced.
Bit 3 = 1:
It has been identified that the Sensor Module channel 1 has been replaced.
Bit 4 = 1:
It has been identified that the Sensor Module channel 2 has been replaced.
Bit 5 = 1:
It has been identified that the sensor channel 1 has been replaced.
Bit 6 = 1:
It has been identified that sensor channel 2 has been replaced.

Remedy: - save all parameters (p0977 = 1 or p0971 = 1 or "copy RAM to ROM").
- acknowledge fault (e.g. binector input p2103).
See also: r9776 (SI diagnostics)

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F01641 (N, A) SI P1 (CU): component replacement identified and save required

Message value: Fault cause: %1
Message class: General drive fault (19)
Drive object: TM54F_MA
Component: Control Unit (CU) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The "Safety Integrated" function integrated in the drive has identified that a Terminal Module 54F (TM54F) has been replaced.
Remedy: - save all parameters (p0977 = 1 or p0971 = 1 or "copy RAM to ROM").
- acknowledge fault (e.g. binector input p2103).
See also: r9776 (SI diagnostics)

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F01649 SI P1 (CU): Internal software error

Message value: %1
Message class: Hardware/software error (1)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: An internal error in the Safety Integrated software on the Control Unit has occurred.
Note:
This fault results in a STOP A that cannot be acknowledged.
Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.
Remedy: - carry out a POWER ON (switch-off/switch-on) for all components.
- re-commission the "Safety Integrated" function and carry out a POWER ON.
- upgrade the firmware of the Control Unit to a later version.
- contact Technical Support.
- replace the Control Unit.
Note:
CU: Control Unit
SI: Safety Integrated

F01650 SI P1 (CU): Acceptance test required

Message value: %1
Message class: Safety monitoring channel has identified an error (10)
Drive object: A_INF, B_INF, CU_I, CU_I_D410, CU_LINK, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The drive-integrated "Safety Integrated" function on monitoring channel 1 requires an acceptance test.
Note:
This fault results in a STOP A that can be acknowledged.
Fault value (r0949, interpret decimal):
130: Safety parameters for monitoring channel 2 not available.
Note:
This fault value is always output when Safety Integrated is commissioned for the first time.
1000: Reference and actual checksum on monitoring channel 1 are not identical (booting).
- as a result of the changed current controller sampling time (p0115[0]), the clock cycle time for the Safety Integrated Basic Functions (r9780) was adapted.
- at least one checksum-checked piece of data is defective.
- safety parameters set offline and loaded into the Control Unit.
2000: Reference and actual checksum on monitoring channel 1 are not identical (commissioning mode).
- reference checksum on monitoring channel 1 incorrectly entered (p9799 not equal to r9798).
- when de-activating the safety functions, p9501 or p9503 were not deleted.
2001: Reference and actual checksum on monitoring channel 2 are not identical (commissioning mode).
- reference checksum on monitoring channel 2 incorrectly entered (p9899 not equal to r9898).
- when de-activating the safety functions, p9501 or p9503 are not deleted.
2002: Enable of safety-related functions between the two monitoring channels differ (p9601 not equal to p9801).
2003: Acceptance test is required as a safety parameter has been changed.
2004: An acceptance test is required because a project with enabled safety-functions has been downloaded.
2005: The Safety logbook has identified that a functional safety checksum has changed. An acceptance test is required.
2010: Enable of safety-related brake control between the two monitoring channels differ (p9602 not equal to p9802).

2020: Error when saving the safety parameters for the monitoring channel 2.

3003: Acceptance test is required as a hardware-related safety parameter has been changed.

3005: The Safety logbook has identified that a hardware-related safety checksum has changed. An acceptance test is required.

9999: Subsequent response of another safety-related fault that occurred when booting that requires an acceptance test.

Remedy: For fault value = 130:

- carry out safety commissioning routine.

For fault value = 1000:

- check the Safety Integrated Basic Functions (r9780) and adapt the reference checksum (p9799).
- again carry out safety commissioning routine.
- replace the memory card or Control Unit.
- Using STARTER, activate the safety parameters for the drive involved (change settings, copy parameters, activate settings).

For fault value = 2000:

- check the safety parameters on monitoring channel 1 and adapt the reference checksum (p9799).

For fault value = 2001:

- check the safety parameters on monitoring channel 2 and adapt the reference checksum (p9899).

For fault value = 2002:

- check the enable the safety-related functions on both monitoring channels (p9601 = p9801).

For fault value = 2003, 2004, 2005:

- carry out an acceptance test and generate an acceptance report.

The procedure when carrying out an acceptance test as well as an example of the acceptance report are provided in the following literature:

SINAMICS S120 Function Manual Safety Integrated

Note:

The fault with fault value 2005 can only be acknowledged when the "STO" function is de-selected.

For fault value = 2010:

- check the enable the safety-related brake control on both monitoring channels (p9602 = p9802).

For fault value = 2020:

- again carry out safety commissioning routine.
- replace the memory card or Control Unit.

For fault value = 3003:

- carry out the function checks for the modified hardware and generate an acceptance report.

The procedure when carrying out an acceptance test as well as an example of the acceptance report are provided in the following literature:

SINAMICS S120 Function Manual Safety Integrated

For fault value = 3005:

- carry out the function checks for the modified hardware and generate an acceptance report.

The fault with fault value 3005 can only be acknowledged when the "STO" function is de-selected.

For fault value = 9999:

- carry out diagnostics for the other safety-related fault that is present.

Note:

CU: Control Unit

MM: Motor Module

SI: Safety Integrated

STO: Safe Torque Off

See also: p9799 (SI reference checksum SI parameters (Control Unit)), p9899 (SI reference checksum SI parameters (Motor Module))

F01650	**SI P1 (CU): Acceptance test required**
Message value:	%1
Message class:	Safety monitoring channel has identified an error (10)
Drive object:	HLA
Component:	Control Unit (CU) **Propagation:** LOCAL
Reaction:	OFF2
Acknowledge:	IMMEDIATELY (POWER ON)

Cause:

The drive-integrated "Safety Integrated" function on monitoring channel 1 requires an acceptance test.

Note:

This fault results in a STOP A that can be acknowledged.

Fault value (r0949, interpret decimal):

130: Safety parameters for monitoring channel 2 not available.

Note:

This fault value is always output when Safety Integrated is commissioned for the first time.

1000: Reference and actual checksum on monitoring channel 1 are not identical (booting).

- as a result of the changed current controller sampling time (p0115[0]), the clock cycle time for the Safety Integrated Basic Functions (r9780) was adapted.
- at least one checksum-checked piece of data is defective.
- safety parameters set offline and loaded into the Control Unit.

2000: Reference and actual checksum on monitoring channel 1 are not identical (commissioning mode).

- reference checksum on monitoring channel 1 incorrectly entered (p9799 not equal to r9798).
- when de-activating the safety functions, p9501 or p9503 were not deleted.

2001: Reference and actual checksum on monitoring channel 2 are not identical (commissioning mode).

- reference checksum on monitoring channel 2 incorrectly entered (p9899 not equal to r9898).
- when de-activating the safety functions, p9501 or p9503 are not deleted.

2002: Enable of safety-related functions between the two monitoring channels differ (p9601 not equal to p9801).

2003: Acceptance test is required as a safety parameter has been changed.

2004: An acceptance test is required because a project with enabled safety-functions has been downloaded.

2005: The Safety logbook has identified that a functional safety checksum has changed. An acceptance test is required.

2020: Error when saving the safety parameters for the monitoring channel 2.

3003: Acceptance test is required as a hardware-related safety parameter has been changed.

3005: The Safety logbook has identified that a hardware-related safety checksum has changed. An acceptance test is required.

9999: Subsequent response of another safety-related fault that occurred when booting that requires an acceptance test.

Remedy:

For fault value = 130:

- carry out safety commissioning routine.

For fault value = 1000:

- check the Safety Integrated Basic Functions (r9780) and adapt the reference checksum (p9799).
- again carry out safety commissioning routine.
- replace the memory card or Control Unit.
- Using STARTER, activate the safety parameters for the drive involved (change settings, copy parameters, activate settings).

For fault value = 2000:

- check the safety parameters on monitoring channel 1 and adapt the reference checksum (p9799).

For fault value = 2001:

- check the safety parameters on monitoring channel 2 and adapt the reference checksum (p9899).

For fault value = 2002:

- check the enable the safety-related functions on both monitoring channels (p9601 = p9801).

For fault value = 2003, 2004, 2005:

- carry out an acceptance test and generate an acceptance report.

The procedure when carrying out an acceptance test as well as an example of the acceptance report are provided in the following literature:

SINAMICS S120 Function Manual Safety Integrated

The fault with fault value 2005 can only be acknowledged when the "STO" function is de-selected.

For fault value = 2020:

- again carry out safety commissioning routine.
- replace the memory card or Control Unit.

For fault value = 3003:

- carry out the function checks for the modified hardware and generate an acceptance report.

The procedure when carrying out an acceptance test as well as an example of the acceptance report are provided in the following literature:

SINAMICS S120 Function Manual Safety Integrated

For fault value = 3005:

- carry out the function checks for the modified hardware and generate an acceptance report.

The fault with fault value 3005 can only be acknowledged when the "STO" function is de-selected.

For fault value = 9999:

- carry out diagnostics for the other safety-related fault that is present.

Note:

CU: Control Unit

MM: Motor Module

SI: Safety Integrated

STO: Safe Torque Off

See also: p9799 (SI reference checksum SI parameters (Control Unit)), p9899 (SI reference checksum SI parameters (Motor Module))

F01651 SI P1 (CU): Synchronization safety time slices unsuccessful

Message value: %1

Message class: Hardware/software error (1)

Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: OFF2

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The "Safety Integrated" function requires a synchronization of the safety time slices between the two monitoring channels and between the Control Unit and the higher-level control. This synchronization routine was unsuccessful.

Note:

This fault results in a STOP A that cannot be acknowledged.

Fault value (r0949, interpret decimal):

121:

- with SINUMERIK Safety Integrated enabled, a drive-side warm restart was performed on the CU/NX.
- with SINUMERIK Safety Integrated enabled, the function "restore factory setting" was selected on a drive object of the CU and a drive-side warm restart was initiated.

150:

- fault in the synchronization to the PROFIBUS master.

All other values:

- only for internal Siemens troubleshooting.

See also: p9510 (SI Motion isochronous PROFIBUS master)

Remedy: For fault value = 121:
- carry out a common POWER ON/warm restart for the higher-level control and SINAMICS.
For fault value = 150:
- check the setting of p9510 (SI Motion isochronous PROFIBUS master) and if required, correct.
General:
- carry out a POWER ON (switch-off/switch-on) for all components.
- upgrade the Motor Module/Hydraulic Module software.
- upgrade the Control Unit software.
- upgrade the software of the higher-level control.
Note:
CU: Control Unit
SI: Safety Integrated

F01652 SI P1 (CU): Illegal monitoring clock cycle

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: One of the Safety Integrated monitoring clock cycles is not permissible.
- the monitoring clock cycle integrated in the drive cannot be maintained due to the communication conditions required in the system.
- the monitoring clock cycle for safe motion monitoring functions is not permissible (p9500).
- the actual value sensing clock cycle for safe motion monitoring functions is not permissible (p9511).
- the sampling time for the current controller (p0112, p0115[0]) cannot be supported.
Note:
This fault results in a STOP A that cannot be acknowledged.
Fault value (r0949, interpret decimal):
For motion monitoring functions that are not enabled (p9601.2 = p9801.2 = 0, p9501 = 0), the following applies:
- Minimum setting for the monitoring clock cycle (in µs).
For motion monitoring functions that are enabled (p9601.2 = p9801.2 = 1 and/or p9501 > 0), the following applies:
100:
- no matching monitoring clock cycle was able to be found.
- an illegal actual value sensing clock cycle was set for S120M (p9511).
101:
- the monitoring clock cycle is not an integer multiple of the actual value sensing clock cycle.
- SINAMICS S120M: the monitoring clock cycle (p9500) is not an integer multiple of 2 ms.
102:
- An error has occurred when transferring the actual value sensing clock cycle to the Motor Module.
103:
- An error has occurred when transferring the actual value sensing clock cycle to the Sensor Module.
104, 105:
- four times the current controller sampling time (p0115[0]) is greater than 1 ms when operating with a non-isochronous PROFIBUS.
- four times the current controller sampling time (p0115[0]) is greater than the DP clock cycle when operating with an isochronous PROFIBUS.
- the DP clock cycle is not an integer multiple of the sampling time of the current controller (p0115[0]).
106:
- the monitoring clock cycle does not match the monitoring clock cycle of the TM54F.
107:
- the actual value sensing clock cycle (p9511) is less than four times the current controller sampling time (p0115[0]).
- the actual value sensing clock cycle (p9511) is not an integer multiple of the sampling time of the current controller (p0115[0]).
108:
- the parameterized actual value sensing clock cycle cannot be set on this component

109:

- if the motion monitoring functions have been parameterized as encoderless (p9506), the actual value sensing clock cycle (p9511) and the current controller clock cycle (p0115[0]) must be identical.

- SINAMICS S110: if the motion monitoring functions have been parameterized as encoderless (p9506), the actual value sensing clock cycle p9511 must be = 250 µs.

110:

- the actual value sensing clock cycle (p9511) for safety with encoder (p9506 = 0) is less than 2 ms for this Control Unit (e.g. CU305).

111:

- the monitoring clock cycle is not an integer multiple of the sampling time of the current controller (p0115[0]).

112:

- An actual value sensing clock cycle p9511 = 0 on a drive object of a Double Motor Module is not permissible in the existing configuration.

200, 201:

- S120M: the monitoring clock cycle cannot be maintained as a result of the conditions required in the system.

202:

- the current controller sampling time is set to zero (p0115[0]).

Remedy: For enabled SI monitoring integrated in the drive (p9601/p9801 > 0):

- upgrade the firmware of the Control Unit to a later version.

For enabled motion monitoring function (p9501 > 0):

- correct the monitoring clock cycle (p9500) and carry out POWER ON.

For fault value = 100:

- for S120M, set the actual value sensing clock cycle to p9511 = 0.

For fault value = 101:

- actual value sensing clock cycle corresponds to position control clock cycle/DP clock cycle (factory setting).

- for motion monitoring functions integrated in the drive (p9601/p9801bit 2 = 1) the actual value sensing clock cycle can be directly parameterized in p9511/p9311.

- SINAMICS S120M: set the monitoring clock cycle (p9500) to an integer multiple of 2 ms.

For fault value = 104, 105:

- set a separate actual value sensing clock cycle in p9511.

- restrict operation to a maximum of two vector drives. For the standard setting in p0112, p0115, the current controller sampling time is automatically reduced to 250 µs. If the standard values were changed, then the current controller sampling time (p0112, p0115) should be appropriately set.

- increase the DP clock cycle for operation with an isochronous PROFIBUS so that there is a multiple clock cycle ratio of at least 4:1 between the DP clock cycle and the current controller sampling time. A clock cycle ratio of at least 8:1 is recommended.

- With firmware version 2.5, please ensure that parameter p9510 is set to 1 in the drive (clock cycle synchronous operation).

For fault value = 106:

- set the parameters for the monitoring clock cycles the same (p10000 and p9500/p9300).

For fault value = 107:

- set an actual value sensing clock cycle that matches the current controller clock cycle (p9511 >= 4 * p0115[0], 8 * p0115[0]) is recommended.

Note:

An actual value sensing clock cycle (p9511) that is set too low, can sporadically mean that safety messages C01711/C30711 are output with message value 1020 or 1021.

For fault value = 108:

- set a suitable actual value sensing clock cycle in p9511.

- if the DP clock cycle is used as the actual value sensing clock cycle for operation with isochronous PROFIBUS (p9511 = 0), then a suitable DP clock cycle must be configured. This must be set to less than 8 ms. If this is not possible, then p9511 must be set to the required actual value sensing clock cycle (< 8 ms).

- For SIMOTION D410-2, a suitable multiple of the DP clock cycle (e.g. 1, 2, 3, 4, 5, 6, 8, 10) must be parameterized. Otherwise, the clock cycle must be set to less than 8 ms.

For fault value = 109:

- set the actual value sensing clock cycle in p9511 to the same value as the current controller clock cycle (p0115[0]).

- SINAMICS S110: set the actual value sensing clock cycle to p9511 = 250 µs.

For fault value = 110:

- set the actual value sensing clock cycle in p9511 to 2 ms or higher.

For fault value = 111:

- set the monitoring clock cycle in p9500 as an integer multiple of the sampling time of the current controller (p0115[0]).

For fault value = 112:

- set the actual value sensing clock cycle p9511 to the required value (not equal to zero).

For fault value = 200, 201:

- increase the current controller sampling time (p0115[0]).
- if required, reduce the number of components connected to the corresponding DRIVE-CLiQ line, or distribute the components across several DRIVE-CLiQ sockets.

For fault value = 202:

- set the current controller sampling time to a sensible value (p0115[0]).

Note:

CU: Control Unit

MM: Motor Module

SI: Safety Integrated

F01652 SI P1 (CU): Illegal monitoring clock cycle

Message value: %1

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: HLA

Component: None **Propagation:** GLOBAL

Reaction: OFF2

Acknowledge: IMMEDIATELY (POWER ON)

Cause: One of the Safety Integrated monitoring clock cycles is not permissible.

- the monitoring clock cycle integrated in the drive cannot be maintained due to the communication conditions required in the system.
- the monitoring clock cycle for safe motion monitoring functions is not permissible (p9500).
- the actual value sensing clock cycle for safe motion monitoring functions is not permissible (p9511).
- the sampling time for the current controller (p0112, p0115[0]) cannot be supported.

Note:

This fault results in a STOP A that cannot be acknowledged.

Fault value (r0949, interpret decimal):

For motion monitoring functions that are not enabled (p9601.2 = p9801.2 = 0, p9501 = 0), the following applies:

- Minimum setting for the monitoring clock cycle (in µs).

For motion monitoring functions that are enabled (p9601.2 = p9801.2 = 1 and/or p9501 > 0), the following applies:

100:

- no matching monitoring clock cycle was able to be found.
- an illegal actual value sensing clock cycle was set for S120M (p9511).

101:

- the monitoring clock cycle is not an integer multiple of the actual value sensing clock cycle.

102:

- An error has occurred when transferring the actual value sensing clock cycle to the Hydraulic Module.

103:

- An error has occurred when transferring the actual value sensing clock cycle to the Sensor Module.

104, 105:

- four times the current controller sampling time (p0115[0]) is greater than 1 ms when operating with a non-isochronous PROFIBUS.
- four times the current controller sampling time (p0115[0]) is greater than the DP clock cycle when operating with an isochronous PROFIBUS.
- the DP clock cycle is not an integer multiple of the sampling time of the current controller (p0115[0]).

106:

- the monitoring clock cycle does not match the monitoring clock cycle of the TM54F.

107:

- the actual value sensing clock cycle (p9511) is less than four times the current controller sampling time (p0115[0]).

- the actual value sensing clock cycle (p9511) is not an integer multiple of the sampling time of the current controller (p0115[0]).

108:

- the parameterized actual value sensing clock cycle cannot be set on this component

111:

- the monitoring clock cycle is not an integer multiple of the sampling time of the current controller (p0115[0]).

112:

- an actual value sensing clock cycle p9511 = 0 is not permissible in this configuration.

202:

- the current controller sampling time is set to zero (p0115[0]).

Remedy: For enabled SI monitoring integrated in the drive (p9601/p9801 > 0):

- upgrade the firmware of the Control Unit to a later version.

For enabled motion monitoring function (p9501 > 0):

- correct the monitoring clock cycle (p9500) and carry out POWER ON.

For fault value = 100:

- for S120M, set the actual value sensing clock cycle to p9511 = 0.

For fault value = 101:

- actual value sensing clock cycle corresponds to position control clock cycle/DP clock cycle (factory setting).

- for motion monitoring functions integrated in the drive (p9601/p9801bit 2 = 1) the actual value sensing clock cycle can be directly parameterized in p9511/p9311.

For fault value = 104, 105:

- set a separate actual value sensing clock cycle in p9511.

- restrict operation to a maximum of two vector drives. For the standard setting in p0112, p0115, the current controller sampling time is automatically reduced to 250 µs. If the standard values were changed, then the current controller sampling time (p0112, p0115) should be appropriately set.

- increase the DP clock cycle for operation with an isochronous PROFIBUS so that there is a multiple clock cycle ratio of at least 4:1 between the DP clock cycle and the current controller sampling time. A clock cycle ratio of at least 8:1 is recommended.

- With firmware version 2.5, please ensure that parameter p9510 is set to 1 in the drive (clock cycle synchronous operation).

For fault value = 106:

- set the parameters for the monitoring clock cycles the same (p10000 and p9500/p9300).

For fault value = 107:

- set an actual value sensing clock cycle that matches the current controller clock cycle (p9511 >= 4 * p0115[0], 8 * p0115[0]) is recommended.

Note:

An actual value sensing clock cycle (p9511) that is set too low, can sporadically mean that safety messages C01711/C30711 are output with message value 1020 or 1021.

For fault value = 108:

- set a suitable actual value sensing clock cycle in p9511.

- if the DP clock cycle is used as the actual value sensing clock cycle for operation with isochronous PROFIBUS (p9511 = 0), then a suitable DP clock cycle must be configured. This must be set to less than 8 ms. If this is not possible, then p9511 must be set to the required actual value sensing clock cycle (< 8 ms).

- For SIMOTION D410-2, a suitable multiple of the DP clock cycle (e.g. 1, 2, 3, 4, 5, 6, 8, 10) must be parameterized. Otherwise, the clock cycle must be set to less than 8 ms.

For fault value = 111:

- set the monitoring clock cycle in p9500 as an integer multiple of the sampling time of the current controller (p0115[0]).

For fault value = 112:

- set the actual value sensing clock cycle p9511 to the required value (not equal to zero).

For fault value = 202:

- set the current controller sampling time to a sensible value (p0115[0]).

Note:

CU: Control Unit

SI: Safety Integrated

F01653 SI P1 (CU): PROFIBUS/PROFINET configuration error

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE (OFF1, OFF2, OFF3)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: There is a PROFIBUS/PROFINET configuration error for using Safety Integrated monitoring functions with a higher-level control (SINUMERIK or F-PLC).

Note:

For safety functions that have been enabled, this fault results in a STOP A that cannot be acknowledged.

Fault value (r0949, interpret decimal):

200: A safety slot for receive data from the control has not been configured.

210, 220: The configured safety slot for the receive data from the control has an unknown format.

230: The configured safety slot for the receive data from the F-PLC has the incorrect length.

231: The configured safety slot for the receive data from the F-PLC has the incorrect length.

240: The configured safety slot for the receive data from the SINUMERIK has the incorrect length.

250: A PROFIsafe slot is configured in the higher-level F control, however PROFIsafe is not enabled in the drive.

300: A safety slot for the send data to the control has not been configured.

310, 320: The configured safety slot for the send data to the control has an unknown format.

330: The configured safety slot for the send data to the F-PLC has the incorrect length.

331: The configured safety slot for the send data to the F-PLC has the incorrect length.

340: The configured safety slot for the send data to the SINUMERIK has the incorrect length.

400: The telegram number in the F-PLC does not match the parameterization in the drive.

Remedy: The following generally applies:

- check and, if necessary, correct the PROFIBUS/PROFINET configuration of the safety slot on the master side.
- upgrade the Control Unit software.

For fault value = 250:

- remove the PROFIsafe configuring in the higher-level F control or enable PROFIsafe in the drive.

For fault value = 231, 331:

- in the drive, parameterize the appropriate PROFIsafe telegram (p9611/p9811) to be set on the F-PLC and to be set in p60022.
- Configure the PROFIsafe telegram matching the parameterization (p9611/p9811) in the F-PLC.

A01654 (F, N) SI P1 (CU): Deviating PROFIsafe configuration

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The configuration of a PROFIsafe telegram in the higher-level control (F-PLC) does not match the parameterization in the drive.

Note:

This message does not result in a safety stop response.

Alarm value (r2124, interpret decimal):

1:

A PROFIsafe telegram is configured in the higher-level control, however PROFIsafe is not enabled in the drive (p9601.3).

2:

PROFIsafe is parameterized in the drive; however, a PROFIsafe telegram has not been configured in the higher-level control.

Remedy: The following generally applies:
- check and, if necessary, correct the PROFIsafe configuration in the higher-level control.
For alarm value = 1:
- remove the PROFIsafe configuring in the higher-level F control or enable PROFIsafe in the drive.
For alarm value = 2:
- configure the PROFIsafe telegram to match the parameterization in the higher-level F-control.

Reaction upon F: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

F01655 SI P1 (CU): Align monitoring functions

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: An error has occurred when aligning the Safety Integrated monitoring functions of both monitoring channels. No common set of supported SI monitoring functions was able to be determined.
- there is either a DRIVE-CLiQ communication error or communication has failed.
- Safety Integrated software releases on the Control Unit and Motor Module/Hydraulic Module are not compatible with one another.
Note:
This fault results in a STOP A that cannot be acknowledged.
Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.

Remedy: - carry out a POWER ON (switch-off/switch-on) for all components.
- upgrade the Motor Module/Hydraulic Module software.
- upgrade the Control Unit software.
- check the electrical cabinet design and cable routing for EMC compliance
Note:
CU: Control Unit
SI: Safety Integrated

F01656 SI CU: Parameter monitoring channel 2 error

Message value: %1
Message class: Hardware/software error (1)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: When accessing the Safety Integrated parameters for monitoring channel 2 in the non-volatile memory, an error has occurred.
Note:
This fault results in a STOP A that can be acknowledged.
Fault value (r0949, interpret decimal):
129:
- safety parameters for monitoring channel 2 corrupted.
- drive with enabled safety functions was possibly copied offline using the commissioning tool and the project downloaded.
131: Internal Motor Module/Hydraulic Module software error.
132: Communication errors when uploading or downloading the safety parameters for monitoring channel 2.
255: Internal software error on the Control Unit.

Remedy: - re-commission the safety functions.
- upgrade the Control Unit software.
- upgrade the Motor Module/Hydraulic Module software.
- replace the memory card or Control Unit.
For fault value = 129:
- activate the safety commissioning mode (p0010 = 95).
- adapt the PROFIsafe address (p9610).
- start the copy function for SI parameters (p9700 = D0 hex).
- acknowledge data change (p9701 = DC hex).
- exit the safety commissioning mode (p0010 = 0).
- save all parameters (p0977 = 1 or "copy RAM to ROM").
- carry out a POWER ON (switch-off/switch-on) for all components.
For fault value = 132:
- check the electrical cabinet design and cable routing for EMC compliance
Note:
CU: Control Unit
SI: Safety Integrated

F01657 SI P1 (CU): PROFIsafe telegram number invalid

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: POWER ON
Cause: The PROFIsafe telegram number set in p9611 is not valid.
When PROFIsafe is enabled (p9601.3 = 1), then a telegram number greater than zero must be entered in p9611.
Note:
This fault does not result in a safety stop response.
See also: p9611 (SI PROFIsafe telegram selection (Control Unit)), p60022 (PROFIsafe telegram selection)
Remedy: Check the telegram number setting (p9611).

F01658 SI P1 (CU): PROFIsafe telegram number differ

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The PROFIsafe telegram number is set differently in p9611 and p60022.
For p9611 not equal to 998, the following applies:
The telegram number must be identically set in both parameters.
The following applies for p9611 = 998:
As a result of the compatibility to firmware versions < 4.5, then only the values 0 and 30 are permitted in p60022.
Note:
This fault does not result in a safety stop response.
See also: p9611 (SI PROFIsafe telegram selection (Control Unit)), p60022 (PROFIsafe telegram selection)
Remedy: Match the telegram number in both parameters so that they are the same (p9611, p60022).

F01659	**SI P1 (CU): Write request for parameter rejected**
Message value:	%1
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Drive object:	A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	None **Propagation:** GLOBAL
Reaction:	OFF2
Acknowledge:	IMMEDIATELY (POWER ON)

Cause:

The write request for one or several Safety Integrated parameters on the Control Unit (CU) was rejected.

Note:

This fault does not result in a safety stop response.

Fault value (r0949, interpret decimal):

1: The Safety Integrated password is not set.

2: A reset of the drive parameters was selected. However, the Safety Integrated parameters were not reset, as Safety Integrated is presently enabled.

3: The interconnected STO input is in the simulation mode.

10: An attempt was made to enable the STO function although this cannot be supported.

11: An attempt was made to enable the SBC function although this cannot be supported.

12: An attempt was made to enable the SBC function although this cannot be supported for a parallel circuit configuration (r9871.14).

13: An attempt was made to enable the SS1 function although this cannot be supported.

14: An attempt was made to enable the PROFIsafe communication - although this cannot be supported or the version of the PROFIsafe driver used on both monitoring channels is different.

15: An attempt was made to enable the motion monitoring functions integrated in the drive although these cannot be supported.

16: An attempt was made to enable the STO function although this cannot be supported when the internal voltage protection (p1231) is enabled.

17: An attempt was made to enable the PROFIsafe function although this cannot be supported for a parallel circuit configuration.

18: An attempt was made to enable the PROFIsafe function for Basic Functions although this cannot be supported.

19: An attempt was made to enable the SBA (Safe Brake Adapter), although this cannot be supported.

20: An attempt was made to enable the motion monitoring functions integrated in the drive and the STO function, both controlled via F-DI.

21: An attempt was made to enable the motion monitoring functions integrated in the drive for a parallel connection, although these cannot be supported.

22: An attempt was made to enable the Safety Integrated functions although these cannot be supported by the connected Power Module.

23: For ESR, an attempt was made to enable the delay of STO, although this cannot be supported.

24: An attempt was made to enable the SBC function, although no power unit data set is set for the brake control (p7015 = 99).

25: An attempt was made to parameterize a PROFIsafe telegram although this cannot be supported.

26: With the selected signal source for STO/SS1, an attempt was made to activate the simulation mode.

27: An attempt was made to activate the Basic Functions by controlling via TM54F although this cannot be supported.

28: An attempt was made to enable the "STO via terminals at the Power Module" function although this cannot be supported.

29: An attempt was made to parameterize the STOP B as stop response for PROFIsafe failure, although this cannot be supported.

9612: An attempt was made to parameterize STOP B as stop response for PROFIsafe failure, although PROFIsafe is not enabled.

See also: p0970, p3900, p9612, r9771, r9871

Remedy: For fault value = 1:
- set the Safety Integrated password (p9761).
For fault value = 2:
- inhibit Safety Integrated (p9501, p9601) or reset safety parameters (p0970 = 5), then reset the drive parameters again.
For fault value = 3:
- end the simulation mode for the digital input (p0795).
For fault value = 10, 11, 12, 13, 14, 15, 17, 18, 19, 21, 22, 23, 27:
- check whether there are faults in the safety function alignment between the two monitoring channels (F01655, F30655) and if required, carry out diagnostics for the faults involved.
- use a Motor Module that supports the required function.
- upgrade the Motor Module software.
- upgrade the Control Unit software.
For fault value = 16:
- inhibit the internal voltage protection (p1231).
For fault value = 20:
- correct the enable setting (p9601).
For fault value = 22:
- use a Power Module that supports the Safety Integrated functions.
For fault value = 24:
- set the power unit data set for the holding brake (p7015).
For fault value = 25:
- use a Power Module that supports the PROFIsafe telegram selection.
- correct the telegram number setting (p9611).
For fault value = 26:
- deactivate the simulation mode for the set signal source for STO/SS1 (p9620) (p0795).
For fault value = 28:
- use the power unit with the feature "STO via terminals at the Power Module".
For fault value = 29:
- use a Motor Module that supports the required function.
- upgrade the Motor Module software.
- upgrade the Control Unit software.
- if required, parameterize the stop response for PROFIsafe failure to STOP A (p9612 = p9812 = 0).
For fault value = 33:
- deselect drive integrated motion monitoring without selection (p9601.5, p9801.5) and select safety functions that are supported (see p9771/p9871).
- use a Motor Module that supports the required function.
- upgrade the Motor Module software.
- upgrade the Control Unit software.
For fault value = 9612:
- establish communications with PROFIsafe (p9601).
- parameterize STOP A as the stop response for PROFIsafe failure (p9612 = 0).
Note:
CU: Control Unit
ESR: Extended Stop and Retract
F-DI: Failsafe Digital Input
SBA: Safe Brake Adapter
SBC: Safe Brake Control
SI: Safety Integrated
SS1: Safe Stop 1 (corresponds to Stop Category 1 acc. to EN60204)
STO: Safe Torque Off / SH: Safe standstill
See also: p9501, p9601, p9612, p9620, p9761

F01659 SI P1 (CU): Write request for parameter rejected

Message value: %1

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: HLA

Component: None **Propagation:** GLOBAL

Reaction: OFF2

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The write request for one or several Safety Integrated parameters on the Control Unit (CU) was rejected.

Note:

This fault does not result in a safety stop response.

Fault value (r0949, interpret decimal):

1: The Safety Integrated password is not set.

2: A reset of the drive parameters was selected. However, the Safety Integrated parameters were not reset, as Safety Integrated is presently enabled.

3: The interconnected STO input is in the simulation mode.

10: An attempt was made to enable the STO function although this cannot be supported.

13: An attempt was made to enable the SS1 function although this cannot be supported.

14: An attempt was made to enable the PROFIsafe communication - although this cannot be supported or the version of the PROFIsafe driver used on both monitoring channels is different.

15: An attempt was made to enable the motion monitoring functions integrated in the drive although these cannot be supported.

16: An attempt was made to enable the STO function although this cannot be supported when the internal voltage protection (p1231) is enabled.

18: An attempt was made to enable the PROFIsafe function for Basic Functions although this cannot be supported.

23: For ESR, an attempt was made to enable the delay of STO, although this cannot be supported.

25: An attempt was made to parameterize a PROFIsafe telegram although this cannot be supported.

26: With the selected signal source for STO/SS1, an attempt was made to activate the simulation mode.

27: An attempt was made to activate the Basic Functions by controlling via TM54F although this cannot be supported.

29: An attempt was made to parameterize the fault response for PROFIsafe failure to STOP B although this cannot be supported.

See also: p0970, p3900, p9612, r9771, r9871

Remedy: For fault value = 1:

- set the Safety Integrated password (p9761).

For fault value = 2:

- inhibit Safety Integrated (p9501, p9601) or reset safety parameters (p0970 = 5), then reset the drive parameters again.

For fault value = 3:

- end the simulation mode for the digital input (p0795).

For fault value = 10, 11, 12, 13, 14, 15, 17, 18, 19, 21, 22, 23:

- check whether there are faults in the safety function alignment between the two monitoring channels (F01655, F30655) and if required, carry out diagnostics for the faults involved.
- use a Hydraulic Module that supports the required function.
- upgrade the Hydraulic Module software.
- upgrade the Control Unit software.

For fault value = 16:

- inhibit the internal voltage protection (p1231).

For fault value = 25:

- correct the telegram number setting (p9611).

For fault value = 26:

- deactivate the simulation mode for the set signal source for STO/SS1 (p9620) (p0795).

For fault value = 29:

- check whether p9612 and p9812 are set; if required, correct the settings.
- use a Hydraulic Module that supports the required function.
- upgrade the Hydraulic Module software.
- upgrade the Control Unit software.

Note:
CU: Control Unit
ESR: Extended Stop and Retract
SI: Safety Integrated
SS1: Safe Stop 1 (corresponds to Stop Category 1 acc. to EN60204)
STO: Safe Torque Off / SH: Safe standstill
See also: p9501, p9601, p9612, p9620, p9761

F01659 SI P1 (CU): Write request for parameter rejected

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: TM54F_MA, TM54F_SL
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The write request for one or several Safety Integrated parameters on the Control Unit (CU) was rejected.
Note:
This fault does not result in a safety stop response.
Fault value (r0949, interpret decimal):
1: The Safety Integrated password is not set.
2: A reset of the drive parameters was selected. However, the Safety Integrated parameters were not reset, as Safety Integrated is presently enabled.
27: An attempt was made to activate the Basic Functions by controlling via TM54F although this cannot be supported.
See also: p0970, p3900, p9612, r9771, r9871
Remedy: For fault value = 1:
- set the Safety Integrated password (p10061).
For fault value = 2:
- inhibit Safety Integrated (p9501, p9601) or reset safety parameters (p0970 = 5), then reset the drive parameters again.
For fault value = 27:
- check whether there are faults in the safety function alignment between the Control Unit and the Motor Module involved (F01655, F30655) and if required, carry out diagnostics for the faults involved.
- use Motor Modules that supports the required function.
- upgrade the Motor Module software.
- upgrade the Control Unit software.
Note:
CU: Control Unit
MM: Motor Module
SI: Safety Integrated
See also: p9501, p9601, p9612, p9620, p9761

F01660 SI P1 (CU): Safety-related functions not supported

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The Motor Module/Hydraulic Module does not support the safety-related functions (e.g. the Motor Module/Hydraulic Module version is not the correct one). Safety Integrated cannot be commissioned.
Note:
This fault does not result in a safety stop response.

Remedy: - use a Motor Module/Hydraulic Module that supports the safety-related functions.
- upgrade the Motor Module/Hydraulic Module software.
Note:
CU: Control Unit
SI: Safety Integrated

F01661 SI P1 (CU): Simulation of the safety inputs active

Message value: Fault cause: %1 bin
Message class: General drive fault (19)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** DRIVE
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The simulation of the digital inputs of the Control Unit (p0795) is active.
It is not permissible that safety inputs are simulated.
Fault value (r0949, interpret binary):
The displayed bits indicate which digital inputs must not be simulated.
Remedy: - deactivate the simulation of the digital inputs of the Control Unit for the safety inputs (p0795).
- acknowledge fault.

F01663 SI P1 (CU): Copying the SI parameters rejected

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** DRIVE
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: In p9700, the value 87 or 208 is saved or was entered offline.
This is the reason that when booting, an attempt is made to copy Safety Integrated parameters from monitoring channel 1 to monitoring channel 2. However, no safety-relevant function has been selected in monitoring channel 1 (p9501 = 0, p9601 = 0). Copying was rejected for safety reasons.
As a consequence, inconsistent parameterization can occur in both monitoring channels, which in turn results in additional error messages.
Especially for inconsistent enabling of the safety functions on both monitoring channels (p9601 = 0, p9801 <> 0), fault F30625 is output.
Note:
This fault does not result in a safety stop response.
SI: Safety Integrated
See also: p9700 (SI Motion copy function)
Remedy: - set p9700 to 0.
- check p9501 and p9601 and if required, correct.
- restart the copying function by entering the corresponding value into p9700.
Alternatively, using the STARTER commissioning tool, perform the following steps in the online mode:
- call the "Safety Integrated" screen form (the field "Select safety functions" is at "No Safety Integrated").
- click on "Change settings".
- click on "Activate settings" (as a consequence, Safety Integrated is inhibited on both monitoring channels).
- save all parameters (p0977 = 1 or "copy RAM to ROM").
- carry out a POWER ON (switch-off/switch-on) for all components.

F01664	**SI P1 (CU): No automatic firmware update**		
Message value:	%1		
Message class:	Error in the parameterization / configuration / commissioning procedure (18)		
Drive object:	HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC		
Component:	None	**Propagation:**	DRIVE
Reaction:	OFF2		
Acknowledge:	IMMEDIATELY (POWER ON)		

Cause:

During booting, the system detected that the "Firmware update automatic" function (p7826 = 1) was not activated.

This function must be activated for automatic firmware updates/downgrades to prevent impermissible version combinations when safety functions are enabled.

Note:

This fault does not result in a safety stop response.

See also: p7826 (Firmware update automatic)

Remedy:

When safety functions are enabled (p9501 <> 0 and/or p9601 <> 0):

1. Activate the "Firmware update automatic" function (p7826 = 1).

2. Backup the parameters (p0977 = 1) and carry out a POWER ON.

When deactivating the safety functions (p9501 = 0, p9601 = 0), the fault can be acknowledged after exiting the safety commissioning mode.

F01665	**SI P1 (CU): System is defective**		
Message value:	%1		
Message class:	Hardware/software error (1)		
Drive object:	SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC		
Component:	Control Unit (CU)	**Propagation:**	GLOBAL
Reaction:	OFF2		
Acknowledge:	IMMEDIATELY		

Cause:

A system defect was detected before the last boot or in the actual one. The system might have been rebooted (reset).

Fault value (r0949, interpret hexadecimal):

200000 hex, 400000 hex, 8000yy hex (yy any):

- fault in the actual booting/operation.

800004 hex:

- parameters p9500/p9300 are, under certain circumstances, not the same. In addition, Safety message C01711/C30711 is displayed.

Additional values:

- defect before the last time that the system booted.

Remedy:

- carry out a POWER ON (switch-off/switch-on).
- upgrade firmware to later version.
- contact Technical Support.

For fault value = 200000 hex, 400000 hex, 8000yy hex (yy any):

- ensure that the Control Unit is connected to the Power Module.

For fault value = 800004 hex:

- check that parameters p9500/p9300 are the same.

Note:

PM: Power Module

STO: Safe Torque Off

A01666 (F) SI Motion P1 (CU): Steady-state (static) 1 signal at the F-DI for safe acknowledgment

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: A logical 1 signal is present at the F-DI configured in p10006 for more than 10 seconds.

If, at the F-DI no acknowledgment was performed for safe acknowledgment, then a steady-state logical and 0 signal must be present. This avoids unintentional safety-relevant acknowledgment (or the "Internal Event Acknowledge" signal) if a wire breaks or one of the two digital inputs bounces.

Remedy: Set the failsafe digital input (F-DI) to a logical 0 signal (p10006).

Note:

F-DI: Failsafe Digital Input

Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY

A01669 (F, N) SI Motion: Unfavorable combination of motor and power unit

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The combination of motor and power unit used is not suitable for using safe motion monitoring functions without an encoder.

The ratio between the power unit rated current (r0207[0]) and rated motor current (p0305) is greater than 5.

Alarm value (r2124, interpret decimal):

Number of the motor data set, which caused the fault.

Notice:

If this alarm is not observed, then message C01711 or C30711 – with the value 1041 ... 1044 – can sporadically occur.

Remedy: Use a suitable power unit with a lower power rating or a motor with a higher power rating.

Reaction upon F: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

F01670 SI Motion: Invalid parameterization Sensor Module

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The parameterization of a Sensor Module used for Safety Integrated is not permissible.

Note:

This fault results in a STOP A that cannot be acknowledged.

Fault value (r0949, interpret decimal):

1: No encoder was parameterized for Safety Integrated.

2: An encoder was parameterized for Safety Integrated that does not have an A/B track (sine/cosine).

3: The encoder data set selected for Safety Integrated is still not valid.

4: A communication error with the encoder has occurred.

5: Number of relevant bits in the encoder coarse position invalid.

6: DRIVE-CLiQ encoder configuration invalid.

7: Non-safety relevant component of the encoder coarse position for the linear DRIVE-CLiQ encoder not valid.

8: Parameterized Safety comparison algorithm not supported.

9: Relationship between the grid division and measuring step for linear DRIVE-CLiQ encoder is not binary.

10: For an encoder used for Safety Integrated, not all of the Drive Data Sets (DDS) are assigned to the same Encoder Data Set (EDS) (p0187 ... p0189).

11: The zero point setting of a linear DRIVE-CLiQ encoder used in Safety Integrated is not zero.

12: The second encoder is not parameterized (p9526 = 1 is not permissible).

13: Hydraulic Module: A second encoder has not been parameterized and a DRIVE-CLiQ encoder is not being used.

14: SCSE encoder is used in conjunction with an HTL/TTL encoder, another SCSE encoder or in a 1-encoder system.

Remedy: For fault value = 1, 2:

- use and parameterize an encoder that Safety Integrated supports (encoder with track A/B sine-wave, p0404.4 = 1).

For fault value = 3:

- check whether the drive or drive commissioning function is active and if required, exit this (p0009 = p00010 = 0), save the parameters (p0971 = 1) and carry out a POWER ON

For fault value = 4:

- check whether there is a DRIVE-CLiQ communication error between the Control Unit and the Sensor Module involved and if required, carry out a diagnostics routine for the faults identified.

For fault value = 5:

- p9525 = 0 (not permissible). Check the encoder parameterization on the Sensor Modules involved.

For fault value = 6:

- check p9515.0 (for DRIVE-CLiQ encoders, the following applies: p9515.0 = 1). Check the encoder parameterization on the Sensor Modules involved.

For fault value = 7:

- p12033 for an encoder used for Safety Integrated is not equal to 1. Use a linear DRIVE-CLiQ encoder and parameterize for p12033 = 1.

For fault value = 8:

- check p9541. Use and parameterize an encoder that implements an algorithm supported by Safety Integrated.

For fault value = 9:

- check p9514 and p9522. Use an encoder and parameterize, where the ratio between p9514 and p9522 is binary.

For fault value = 10:

- align the EDS assignment of all of the encoders used for Safety Integrated (p0187 ... p0189).

For fault value = 11:

- use and parameterize a linear DRIVE-CLiQ encoder, where the zero point setting is equal to 0.

For fault value = 12:

- parameterize an encoder for the second channel (p9526 > 1).

For fault value = 13:

- parameterize a second encoder or use a DRIVE-CLiQ encoder.

For fault value = 14:

- use a DRIVE-CLiQ encoder for channel 1 in conjunction with an SCSE encoder for channel 2.

Note:

SCSE: Single Channel Safety Encoder (single-channel encoder)

SI: Safety Integrated

F01671 SI Motion: Parameterization encoder error

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The parameterization of the encoder used by Safety Integrated is different to the parameterization of the standard encoder.

Note:

This fault does not result in a safety stop response.

Fault value (r0949, interpret decimal):

Parameter number of the non-corresponding safety parameter.

Remedy: Align the encoder parameterization between the safety encoder and the standard encoder.

Note:

SI: Safety Integrated

F01672 SI P1 (CU): Motor Module software/hardware incompatible

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The existing Motor Module software does not support safe motion monitoring or is not compatible to the software on the Control Unit or there is a communications error between the Control Unit and Motor Module.

Note:

This fault results in a STOP A that cannot be acknowledged.

Fault value (r0949, interpret decimal):

1:

The existing Motor Module software does not support the safe motion monitoring function.

2, 3, 6, 8:

There is a communications error between the Control Unit and Motor Module.

4, 5, 7:

The existing Motor Module software is not compatible to the software on the Control Unit.

9, 10, 11, 12:

The existing Motor Module software does not support the safe encoderless motion monitoring function.

13:

At least one Motor Module in parallel operation does not support the safe motion monitoring function.

Remedy: - check whether there are faults in the safety function alignment between the Control Unit and the Motor Module involved (F01655, F30655) and if required, carry out diagnostics for the faults involved.

For fault value = 1:

- use a Motor Module that supports safe motion monitoring.

For fault value = 2, 3, 6, 8:

- check whether there is a DRIVE-CLiQ communication error between the Control Unit and the Motor Module involved and, if required, carry out a diagnostics routine for the faults identified.

For fault value = 4, 5, 7, 9, 13:

- upgrade the Motor Module software.

Note:

SI: Safety Integrated

F01672 SI P1 (CU): Motor Module software/hardware incompatible

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA
Component: Power Module **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The existing Hydraulic Module software does not support safe motion monitoring or is not compatible to the software on the Control Unit or there is a communications error between the Control Unit and Hydraulic Module.

Note:

This fault results in a STOP A that cannot be acknowledged.

Fault value (r0949, interpret decimal):

1:

The existing Hydraulic Module software does not support the safe motion monitoring function.

2, 3, 6, 8:

There is a communications error between the Control Unit and Hydraulic Module.

4, 5, 7:

The existing Hydraulic Module software is not compatible to the software on the Control Unit.

Remedy: - check whether there are faults in the safety function alignment between the Control Unit and the Hydraulic Module involved (F01655, F30655) and if required, carry out diagnostics for the faults involved.

For fault value = 1:

- use a Hydraulic Module that supports safe motion monitoring.

For fault value = 2, 3, 6, 8:

- check whether there is a DRIVE-CLiQ communication error between the Control Unit and the Hydraulic Module involved and, if required, carry out a diagnostics routine for the faults identified.

For fault value = 4, 5, 7:

- upgrade the Hydraulic Module software.

Note:

SI: Safety Integrated

HM: Hydraulic Module.

F01673 SI Motion: Sensor Module software/hardware incompatible

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The existing Sensor Module software and/or hardware does not support the safe motion monitoring function with the higher-level control.

Note:

This fault does not result in a safety stop response.

Fault value (r0949, interpret decimal):

Only for internal Siemens troubleshooting.

Remedy: - upgrade the Sensor Module software.

- use a Sensor Module that supports the safe motion monitoring function.

Note:

SI: Safety Integrated

F01674 SI Motion P1 (CU): Safety function not supported by PROFIsafe telegram

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: POWER ON
Cause: The monitoring function enabled in p9501 and p9601 is not supported by the currently set PROFIsafe telegram (p9611).
Note:
This fault results in a STOP A that cannot be acknowledged.
Fault value (r0949, interpret bitwise binary):
Bit 18 = 1:
SS2E via PROFIsafe is not supported (p9501.18).
Bit 24 = 1:
Transfer SLS (SG) limit value via PROFIsafe not supported (p9501.24).
Bit 25 = 1:
Transfer safe position (SP) via PROFIsafe is not supported (p9501.25).
Bit 26 = 1:
Gearbox stage switchover via PROFIsafe is not supported (p9501.26).
Bit 28 = 1:
SCA via PROFIsafe is not supported (p9501.28).
Remedy: - Deselect the monitoring function involved (p9501, p9601).
- set the matching PROFIsafe telegram (p9611).
Note:
SCA: Safe Cam
SI: Safety Integrated
SLS: Safely-Limited Speed / SG: Safely reduced speed
SP: Safe Position
SS2E: Safe Stop 2 external (Safe Stop 2 with external stop, external STOP D)

F01675 SI Motion P1: settings in the PROFIBUS/PROFINET controller not permissible

Message value: %1
Message class: Safety monitoring channel has identified an error (10)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: For the "Safe synchronous position via PROFIsafe" function, an incorrect configuration setting was identified.
Note:
This fault results in a STOP A that can be acknowledged in the following way.
- select STO and then de-select again.
- internal event acknowledge (if the "Extended message acknowledgment" is active, p9507.0 = 1).
Fault value (r0949, decimal interpretation):
1:
"Synchronous safe position via PROFIsafe" is enabled (p9501.29 = 1) and is not set according to the rule Tdp = 2 x n x p9500 (n = 1, 2, 3, ...).
2:
"Synchronous safe position via PROFIsafe" is enabled (p9501.29 = 1) and isochronous operation is not set.
Note:
STO: Safe Torque Off
Remedy: For fault value = 1:
- set Tdp and monitoring clock cycle p9500 according to the rule Tdp = 2 x n x p9500. (n = 1, 2, 3, ...)
For fault value = 2:
- set "Isochronous mode" on the PROFIBUS/PROFINET controller.

F01679 SI CU: Safety parameter settings and topology changed, warm restart/POWER ON required

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2 (OFF1, OFF3)
Acknowledge: POWER ON
Cause: Safety parameters have been changed; these will only take effect following a warm restart or POWER ON (see alarm A01693).
A partial power up (boot) with modified configuration was then performed.
Remedy: - carry out a warm restart (p0009 = 30, p0976 = 2, 3).
- carry out a POWER ON (switch-off/switch-on) for all components.

F01680 SI Motion P1 (CU): Checksum error safety monitoring functions

Message value: %1
Message class: Safety monitoring channel has identified an error (10)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The actual checksum calculated by the drive and entered in r9728 via the safety-relevant parameters does not match the reference checksum saved in p9729 at the last machine acceptance.
Safety-relevant parameters have been changed or a fault is present.
Note:
This fault results in a STOP A that can be acknowledged.
Fault value (r0949, interpret decimal):
0: Checksum error for SI parameters for motion monitoring.
1: Checksum error for SI parameters for actual values.
2: Checksum error for SI parameters for component assignment.
Remedy: - check the safety-relevant parameters and if required, correct.
- execute the function "Copy RAM to ROM".
- perform a POWER ON if safety parameters requiring a POWER ON have been modified.
- carry out an acceptance test.

F01681 SI Motion P1 (CU): Incorrect parameter value

Message value: Parameter: %1, supplementary information: %2
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The parameter cannot be parameterized with this value.
Note:
This message does not result in a safety stop response.
Fault value (r0949, interpret decimal):
yyyyxxxx dec: yyyy = supplementary information, xxxx = parameter
yyyy = 0:
No additional information available.
xxxx = 9500 and yyyy = 1:
Parameter p9500 is not equal to p9300 or not an integer multiple of the sampling time of the current controller (p0115[0]).

xxxx = 9500 and yyyy = 16:

"Synchronous safe position via PROFIsafe" is enabled on several axes (p9501.29 = 1), and the monitoring clock cycle p9500 is set differently for these axes.

It is possible that the maximum permissible number of axes for the "Synchronous safe position via PROFIsafe" has been exceeded.

xxxx = 9501:

It is not permissible to enable the function "n < nx hysteresis and filtering" (p9501.16) in conjunction with the function "Extended functions without selection" (p9601.5).

xxxx = 9501 and yyyy = 8:

Referencing via SCC (p9501.27 = 1) is enabled without enabling an absolute motion monitoring function (p9501.1 or p9501.2).

xxxx = 9501 and yyyy = 10:

Referencing via SCC (p9501.27 = 1) and EPOS (r0108.4 = 1) are simultaneously enabled.

xxxx = 9501 and yyyy = 14:

"Synchronous safe position via PROFIsafe" is enabled (p9501.29 = 1), without enabling "Safe position via PROFIsafe" (p9501.25).

xxxx = 9501 and yyyy = 17:

"Synchronous safe position via PROFIsafe" is enabled (p9501.29 = 1) and "Safety without encoder" is enabled (p9506).

xxxx = 9501 and yyyy = 19:

SLA (p9501.20 = 1) is enabled with encoderless actual value sensing (p9506 equal to 1 or 3).

xxxx = 9501 and yyyy = 20:

SLA (p9501.20 = 1) is enabled with a 2-encoder system (p9526 not equal to 1).

xxxx = 9505:

When SLP is active (p9501.1 = 1), the modulo function is activated and this is not permitted (p9505 not equal to 0).

xxxx = 9506 and yyyy = 1:

Parameter p9506 is not equal to p9306.

xxxx = 9511 and yyyy = 1:

Parameter p9511 is not equal to p9311.

xxxx = 9511 and yyyy = 2:

On a Double Motor Module, between the drive objects, no different values in p9511 and p0115[0] is permitted.

xxxx = 9319:

The fine resolution of the encoder for the second channel is too high.

xxxx = 9522:

The gear stage was set too high.

xxxx = 9534 or 9535:

The limit values of SLP have been set too high (absolute values).

xxxx = 9544:

For linear axes, the maximum value is limited to 1 mm.

xxxx = 9547:

The hysteresis tolerance is not permissible.

xxxx = 9573:

"Referencing via Safety Control Channel" was requested (p9573 = 263), without enabling the function "Referencing via SCC" (p9501.27 = 0).

xxxx = 9578:

SLA is enabled (p9501.20 = 1). Acceleration limit is too low (p9578). Acceleration resolution is no longer sufficient (r9790). The minimum limit is the 3x acceleration resolution.

xxxx = 9585:

For Safety without encoder and synchronous motor, p9585 must be set to 4.

xxxx = 9601 and yyyy = 1:

If motion monitoring functions integrated in the drive (p9601.2 = 1) and extended functions without selection (p9601.5 = 1) are enabled, then PROFIsafe (p9601.3 = 1) or onboard F-DI (p9601.4 = 1) is not possible.

xxxx = 9601 and yyyy = 2:

Extended functions without selection (p9601.5 =1) are enabled without enabling motion monitoring functions integrated in the drive (p9601.2).

xxxx = 9601 and yyyy = 3:

Onboard F-DI are enabled without enabling motion monitoring functions integrated in the drive (p9601.2).

xxxx = 9601 and yyyy = 4:
Onboard F-DI are enabled. Then, it is not permissible to simultaneously set PROFIsafe and F-DI via PROFIsafe (p9501.30).
xxxx = 9601 and yyyy = 5:
Transfer of the SLS limit value via PROFIsafe (p9501.24) has been enabled, without enabling PROFIsafe.
xxxx = 9601 and yyyy = 6:
Transfer of the safe position via PROFIsafe (p9501.25) has been enabled, without enabling PROFIsafe.
xxxx = 9601 and yyyy = 7:
Safe switchover of the gearbox stages (p9501.26) has been enabled without enabling PROFIsafe.
xxxx = 9601 and yyyy = 11:
SS2E (p9501.18 = 1) is enabled without PROFIsafe being enabled.
xxxx = 9601 and yyyy = 12:
SCA (p9501.28 = 1) is enabled without enabling PROFIsafe.
xxxx = 9601 and yyyy = 18:
SLA (p9501.20 = 1) is enabled without enabling PROFIsafe.

Remedy: Correct parameter (if required, also on another monitoring channel, p9801).
If xxxx = 9500 and yyyy = 1:
- set p9500 "SI Motion monitoring clock cycle" as an integer multiple of p0115[0] "Current controller sampling time".
- align parameters 9300 and 9500, backup parameters (p0971 = 1) and carry out a POWER ON.

For xxxx = 9500 and yyyy = 16:
Inhibit "Synchronous safe position via PROFIsafe" function (p9501.29 = 0), or set monitoring clock cycle p9500 on all axes the same when the function is enabled.
If xxxx = 9501:
- correct parameters p9501.16 and p9301.16, or deselect the extended functions without selection (p9601.5).

If xxxx = 9501 and yyyy = 8:
Inhibit referencing via SCC (p9501.27) or enable an absolute motion monitoring function (p9501.1 or p9501.2).
If xxxx = 9501 and yyyy = 10:
Inhibit referencing via SCC (p9501.27) or EPOS (r0108.4).
For xxxx = 9501 and yyyy = 11:
Inhibit SS2E (p9501.18) - or enable PROFIsafe.
For xxxx = 9501 and yyyy = 12:
Inhibit SCA (p9501.28) - or enable PROFIsafe.
For xxxx = 9501 and yyyy = 14:
Inhibit "Synchronous safe position via PROFIsafe" function (p9501.29 = 0), or enable "Safe position via PROFIsafe" (p9501.25).
For xxxx = 9501 and yyyy = 17:
Inhibit "Synchronous safe position via PROFIsafe" function (p9501.29 = 0), or set "Safety with encoder" (p9506).
For xxxx = 9501 and yyyy = 19:
Inhibit SLA (p9501.20) or activate actual value sensing with encoder (p9506 equal to 0 or 2).
For xxxx = 9501 and yyyy = 20:
Inhibit SLA (p9501.20) or activate a 1-encoder system (p9526 equal to 1).
If xxxx = 9505:
Correct parameter p9501.1 or p9505.
If xxxx = 9507:
Set synchronous or induction motor according to p0300.
If xxxx = 9506:
Align parameters p9306 and p9506, back up the parameters (p0971 = 1) and carry out a POWER ON.
If xxxx = 9511:
Align parameters p9311 and p9511, back up the parameters (p0971 = 1) and carry out a POWER ON.
If xxxx = 9517:
Parameter p9516.0 should also be checked.
For xxxx = 9319:
For the SCSE encoder, parameter p9319 must not be set higher than 11.
If xxxx = 9522:
Correct the corresponding parameter.

If xxxx = 9534 or 9535:
Reduce the limit values (absolute values) of SLP.
If xxxx = 9544:
Correct parameter (for linear axes, the maximum value is limited to 1 mm).
If xxxx = 9547:
With hysteresis/filtering enabled (p9501.16 = 1), the following applies:
- set parameters p9546 and p9547 according to the following rule: p9547 <= 0.75 x p9546
- if the actual value synchronization is enabled (p9501.3 = 1), then this rule must be complied with: p9547 >= p9549
For xxxx = 9578:
- observe the information in r9790.
If xxxx = 9585:
Correct parameter (if required, also on the second monitoring channel, p9385).
If xxxx = 9601:
yyyy = 1:
Only enable motion monitoring functions integrated in the drive (p9601.2 = 1) and extended functions without selection (p9601.5 = 1), or only enable PROFIsafe (p9601.3 = 1) or only onboard F-DI (p9601.4 = 1).
yyyy = 2, 3:
Enable motion monitoring functions integrated in the drive (p9601.2 = 1).
yyyy = 4:
If onboard F-DI are enabled, then it is not permissible to simultaneously set PROFIsafe and F-DI via PROFIsafe (p9501.30), deselect PROFIsafe functionality or onboard F-DI.
yyyy = 5:
To transfer the SLS limit values via PROFIsafe (p9501.24 = 1), also enable PROFIsafe (p9601.3 =1) and motion monitoring functions integrated in the drive (p9601.2 = 1).
yyyy = 6:
For the safe position via PROFIsafe (p9501.25 = 1), also enable PROFIsafe (p9601.3 =1) and motion monitoring functions integrated in the drive (p9601.2 = 1).
yyyy = 7:
For safe switchover of gearbox stages (p9501.26 = 1) also enable PROFIsafe (p9601.3 =1) and motion monitoring functions integrated in the drive (p9601.2 = 1).
yyyy = 18:
For Safely-Limited Acceleration (p9501.20 = 1), also enable PROFIsafe (p9601.3 = 1) and the motion monitoring functions integrated in the drive (p9601.2 = 1).
Note:
SCA: Safe Cam
SCSE: Single Channel Safety Encoder (single-channel encoder)
SS2E: Safe Stop 2 external (Safe Stop 2 with external stop, external STOP D)
SLA: Safely-Limited Acceleration

F01681 SI Motion P1 (CU): Incorrect parameter value

Message value: Parameter: %1, supplementary information: %2
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The parameter cannot be parameterized with this value.
Note:
This message does not result in a safety stop response.
Fault value (r0949, interpret decimal):
yyyyxxxx dec: yyyy = supplementary information, xxxx = parameter
yyyy = 0:
No additional information available.
xxxx = 9500 and yyyy = 1:
Parameter p9500 is not equal to p9300 or not an integer multiple of the sampling time of the current controller (p0115[0]).

xxxx = 9500 and yyyy = 16:

"Synchronous safe position via PROFIsafe" is enabled on several axes (p9501.29 = 1), and the monitoring clock cycle p9500 is set differently for these axes.

It is possible that the maximum permissible number of axes for the "Synchronous safe position via PROFIsafe" has been exceeded.

xxxx = 9501:

It is not permissible to enable the function "n < nx hysteresis and filtering" (p9501.16) in conjunction with the function "Extended functions without selection" (p9601.5).

xxxx = 9501 and yyyy = 8:

Referencing via SCC (p9501.27 = 1) is enabled without enabling absolutes motion monitoring functions (p9501.1 or p9501.2).

xxxx = 9501 and yyyy = 10:

Referencing via SCC (p9501.27 = 1) and EPOS (r0108.4 = 1) are simultaneously

enabled.

xxxx = 9501 and yyyy = 11:

Safe function SS2E (p9501.18 = 1) is enabled without enabling PROFIsafe.

xxxx = 9501 and yyyy = 12:

SCA (p9501.28 = 1) is enabled without enabling PROFIsafe.

xxxx = 9501 and yyyy = 14:

"Synchronous safe position via PROFIsafe" is enabled (p9501.29 = 1), without enabling "Safe position via PROFIsafe" (p9501.25).

xxxx = 9501 and yyyy = 17:

"Synchronous safe position via PROFIsafe" is enabled (p9501.29 = 1) and "Safety without encoder" is enabled (p9506).

xxxx = 9501 and yyyy = 19:

SLA (p9501.20 = 1) is enabled with encoderless actual value sensing (p9506 equal to 1 or 3).

xxxx = 9501 and yyyy = 20:

SLA (p9501.20 = 1) is enabled with a 2-encoder system (p9526 not equal to 1).

xxxx = 9511 and yyyy = 1:

Parameter p9511 is not equal to p9311.

xxxx = 9511 and yyyy = 2:

Between the drive objects no different values in p9511 and p0115[0] are permitted.

xxxx = 9522:

The gear stage was set too high.

xxxx = 9534 or 9535:

The limit values of SLP have been set too high (absolute values).

xxxx = 9544:

For linear axes, the maximum value is limited to 1 mm.

xxxx = 9547:

Parameter p9547 has been set too low.

xxxx = 9573:

"Referencing via Safety Control Channel" was requested (p9573 = 263), without enabling the function "Referencing via SCC" (p9501.27 = 0).

xxxx = 9578:

SLA is enabled (p9501.20 = 1). Acceleration limit is too low (p9578). Acceleration resolution is no longer sufficient (r9790) (the minimum limit is 3x of the acceleration resolution).

xxxx = 9601 and yyyy = 1:

If motion monitoring functions integrated in the drive (p9601.2 = 1) and extended functions without selection (p9601.5 = 1) are activated, then PROFIsafe (p9601.3 = 1) is not possible.

xxxx = 9601 and yyyy = 2:

Extended functions without selection (p9601.5 =1) are enabled without enabling motion monitoring functions integrated in the drive (p9601.2).

xxxx = 9601 and yyyy = 5:

Transfer of the SLS limit value via PROFIsafe (p9501.24) has been enabled, without enabling PROFIsafe.

xxxx = 9601 and yyyy = 6:

Transfer of the safe position via PROFIsafe (p9501.25) has been enabled, without enabling PROFIsafe.

xxxx = 9601 and yyyy = 7:
Safe switchover of the gearbox stages (p9501.26) has been enabled without enabling PROFIsafe.
xxxx = 9601 and yyyy = 18:
SLA (p9501.20 = 1) is enabled without enabling PROFIsafe.

Remedy: Correct parameter (if required, also on another monitoring channel, p9801).
If xxxx = 9500 and yyyy = 1:
- set p9500 "SI Motion monitoring clock cycle" as an integer multiple of p0115[0] "Current controller sampling time".
- align parameters 9300 and 9500, backup parameters (p0971 = 1) and carry out a POWER ON.

For xxxx = 9500 and yyyy = 16:
Inhibit "Synchronous safe position via PROFIsafe" function (p9501.29 = 0), or set monitoring clock cycle p9500 on all axes the same when the function is enabled.
If xxxx = 9501:
- correct parameters p9501.16 and p9301.16, or deselect the extended functions without selection (p9601.5).

If xxxx = 9501 and yyyy = 8:
Inhibit referencing via SCC (p9501.27) or enable an absolute motion monitoring function (p9501.1 or p9501.2).
If xxxx = 9501 and yyyy = 10:
Inhibit referencing via SCC (p9501.27) or EPOS (r0108.4).
For xxxx = 9501 and yyyy = 11:
Inhibit SS2E (p9501.18) - or enable PROFIsafe.
For xxxx = 9501 and yyyy = 12:
Inhibit SCA (p9501.28) - or enable PROFIsafe.
For xxxx = 9501 and yyyy = 14:
Inhibit "Synchronous safe position via PROFIsafe" function (p9501.29 = 0), or enable "Safe position via PROFIsafe" (p9501.25).
For xxxx = 9501 and yyyy = 17:
Inhibit "Synchronous safe position via PROFIsafe" function (p9501.29 = 0), or set "Safety with encoder" (p9506).
For xxxx = 9501 and yyyy = 19:
Inhibit SLA (p9501.20) or activate actual value sensing with encoder (p9506 equal to 0 or 2).
For xxxx = 9501 and yyyy = 20:
Inhibit SLA (p9501.20) or activate a 1-encoder system (p9526 equal to 5).
If xxxx = 9511:
Align parameters p9311 and p9511, back up the parameters (p0971 = 1) and carry out a POWER ON.
If xxxx = 9517:
Parameter p9516.0 should also be checked.
If xxxx = 9522:
Correct the corresponding parameter.
If xxxx = 9534 or 9535:
Reduce the limit values (absolute values) of SLP.
If xxxx = 9544:
Correct parameter (for linear axes, the maximum value is limited to 1 mm).
If xxxx = 9547:
With hysteresis/filtering enabled (p9501.16 = 1), the following applies:
- set parameters p9546/p9346 and p9547/p9347 according to the following rule: p9546 >= 2 x p9547; p9346 >= 2 x p9347
- if the actual value synchronization is enabled (p9501.3 = 1), then this rule must be complied with: p9549 <= p9547; p9349 <= p9347

For xxxx = 9578:
- observe the information in r9790.

If xxxx = 9601:
yyyy = 1:
Only enable motion monitoring functions integrated in the drive (p9601.2 = 1) and extended functions without selection (p9601.5 = 1) – or only PROFIsafe (p9601.3 = 1).
yyyy = 2:
Enable motion monitoring functions integrated in the drive (p9601.2 = 1).

yyyy = 5:
To transfer the SLS limit values via PROFIsafe (p9501.24 = 1), also enable PROFIsafe (p9601.3 =1) and motion monitoring functions integrated in the drive (p9601.2 = 1).
yyyy = 6:
For the safe position via PROFIsafe (p9501.25 = 1), also enable PROFIsafe (p9601.3 =1) and motion monitoring functions integrated in the drive (p9601.2 = 1).
yyyy = 7:
For safe switchover of gearbox stages (p9501.26 = 1) also enable PROFIsafe (p9601.3 =1) and motion monitoring functions integrated in the drive (p9601.2 = 1).
yyyy = 18:
For Safely-Limited Acceleration (p9501.20 = 1), also enable PROFIsafe (p9601.3 = 1) and the motion monitoring functions integrated in the drive (p9601.2 = 1).

F01682 SI Motion P1 (CU): Monitoring function not supported

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The monitoring function enabled in p9501, p9601, p9801, p9307 or p9507 is not supported in this firmware version.
Note:
This fault results in a STOP A that cannot be acknowledged.
Fault value (r0949, interpret decimal):
1: Monitoring function SLP not supported (p9501.1).
2: Monitoring function SCA not supported (p9501.7 and p9501.8 ... 15 and p9503).
3: Monitoring function SLS override not supported (p9501.5).
4: Monitoring function external ESR activation not supported (p9501.4).
5: Monitoring function F-DI in PROFIsafe not supported (p9501.30).
6: Enable actual value synchronization not supported (p9501.3).
9: Monitoring function not supported by the firmware or enable bit not used.
10: Monitoring functions only supported for a SERVO drive object.
11: Encoderless monitoring functions (p9506.1) only supported for motion monitoring integrated in the drive (p9601.2).
12: Monitoring functions for ncSI are not supported for CU305.
14: Monitoring function SLA and ncSI not supported.
20: Motion monitoring functions integrated in the drive are only supported in conjunction with PROFIsafe (p9501, p9601.1 ... 2 and p9801.1 ... 2).
21: Enable a safe motion monitoring function (in p9501), not supported for enabled basic functions via PROFIsafe (p9601.2 = 0, p9601.3 = 1).
22: Encoderless monitoring functions in "chassis" format not supported.
23: CU240 does not support monitoring functions requiring an encoder.
24: Monitoring function SDI not supported (p9501.17).
25: Drive-integrated motion monitoring functions not supported (p9501, p9601.2).
26: Hysteresis and filtering for SSM monitoring function without an encoder not supported (p9501.16).
27: This hardware does not support onboard F-DI and F-DO.
28: Encoderless monitoring functions are not supported for synchronous motors (p9507.2).
29: SINAMICS S120M: Safety Extended Functions without encoder not supported.
31: This hardware does not support transfer SLS (SG) limit value via PROFIsafe (p9301/p9501.24).
33: Safety functions without selection not supported (p9601.5, p9801.5).
34: This module does not support safe position via PROFIsafe.
36: Function "SS1E" not supported.
37: Safe actual value sensing with HTL/TTL encoder (SMC30) not supported.
38: It is not permissible to simultaneously enable the safety functions (p9601) and the essential service mode (ESM, Essential Service Mode, p3880).
39: This module or software version of the CU/MM does not support safe gearbox stage switchover (p9501.26).

40: SIMOTION D410-2: Motion monitoring functions integrated in the drive or PROFIsafe control not supported.

41: SIMOTION D410-2: Safety functions not supported for the "Chassis" format.

42: Motion monitoring functions SLP and SP not supported for D4x5-2 and CX32-2 (p9501.1/25).

43: Motion monitoring functions SLP and SP as well as PROFIsafe telegrams 31/901/902 not supported for D410-2 (p9501.1/24/25/30, p9611).

44: This module/this software version does not support referencing via the Safety Control Channel (p9501.27).

45: Deactivating SOS/SLS during an external STOP A is not supported (p9501.23).

46: This firmware version does not support control of the basis functions via TM54F and the simultaneous enable of the extended functions or ncSI or PROFIsafe.

50: Shortening the switchover times for SOS (p9569/p9369, p9567/p9367) is not supported.

51: Safe actual value sensing with SCSE is not supported for dbSi (motion monitoring functions integrated in the drive, p9601.2 = 1).

52: "SBR with encoder" function is not supported (p9506 = 2).

53: SS2E function not supported (p9501.18).

54: SCA function not supported (p9501.28).

55: Encoderless monitoring functions are not supported for reluctance motors.

57: "Synchronous transfer safe position via PROFIsafe" function not supported (p9501.29).

58: "Safety limited acceleration" function (SLA) not supported (p9501.20).

9586: The set value of p9586/p9386 is greater than the supported maximum value.

9588: The set value of p9588/p9388 is greater than the supported maximum value.

9589: The set value of p9589/p9389 is greater than the supported maximum value.

9612: An attempt was made to parameterize STOP B as stop response for PROFIsafe failure, although PROFIsafe is not enabled.

See also: p9612 (SI PROFIsafe failure response (Control Unit))

Remedy: - deselect the monitoring function involved (p9501, p9503, p9506, p9601, p9801, p9307, p9507).

- reduce the set value (p9586, p9588, p9589).

- increase the set value (p9578).

For fault value = 9612:

- establish communications with PROFIsafe (p9601).

- parameterize STOP A as the stop response for PROFIsafe failure (p9612 = 0).

Note:

ESR: Extended Stop and Retract

SBR: Safe Brake Ramp (safe brake ramp monitoring)

SCA: Safe Cam / SN: Safe software cam

SCSE: Single Channel Safety Encoder (single-channel encoder)

SDI: Safe Direction (safe motion direction)

SLA: Safely-Limited Acceleration

SI: Safety Integrated

SLP: Safely-Limited Position / SE: Safe software limit switches

SLS: Safely-Limited Speed / SG: Safely reduced speed

SOS: Safe Operating Stop / SBH: Safe operating stop

SP: Safe Position

SPL: Safe programmable logic

SS1E: Safe Stop 1 External (Safe Stop 1 with external stop)

SS2E: Safe Stop 2 external (Safe Stop 2 with external stop, external STOP D)

See also: p9501, p9503, p9601, p9612, r9771

F01682 SI Motion P1 (CU): Monitoring function not supported

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The monitoring function enabled in p9501, p9601 or p9801 is not supported in this firmware version.

Note:

This fault results in a STOP A that cannot be acknowledged.

Fault value (r0949, interpret decimal):

2: Monitoring function SCA not supported (p9501.7 and p9501.8 ... 15 and p9503).

3: Monitoring function SLS override not supported (p9501.5).

6: Enable actual value synchronization not supported (p9501.3).

9: Monitoring function not supported by the firmware or enable bit not used.

13: SINUMERIK Safety Integrated with SPL on a Hydraulic Module is not supported.

14: Monitoring function SLA and ncSI not supported.

20: Motion monitoring functions integrated in the drive are only supported in conjunction with PROFIsafe (p9501, p9601.1 ... 2 and p9801.1 ... 2).

21: Enable a safe motion monitoring function (in p9501), not supported for enabled basic functions via PROFIsafe (p9601.2 = 0, p9601.3 = 1).

45: Deactivating SOS/SLS during an external STOP A is not supported (p9501.23).

46: This firmware version does not support control of the basis functions via TM54F and the simultaneous enable of the extended functions or ncSI.

50: Switchover times for SOS (p9569/p9369, p9567/p9367) are not supported.

53: SS2E function not supported (p9501.18).

54: SCA function not supported (p9501.28).

57: "Synchronous transfer safe position" function not supported (p9501.29).

58: "Safety limited acceleration" function (SLA) not supported (p9501.20).

9612: The setting p9612/p9812 = 1 is not supported for control via TM54F.

See also: p9612 (SI PROFIsafe failure response (Control Unit))

Remedy: - deselect the monitoring function involved (p9501, p9601, p9801).

For fault value = 9612:

- set parameter p9612/p9812 = 0.

Note:

ESR: Extended Stop and Retract

SCA: Safe Cam / SN: Safe software cam

SI: Safety Integrated

SLS: Safely-Limited Speed / SG: Safely reduced speed

SOS: Safe Operating Stop / SBH: Safe operating stop

SPL: Safe programmable logic

SS2E: Safety Stop 2 external (external STOP D)

See also: p9501, p9503, p9601, p9612, r9771

F01683 SI Motion P1 (CU): SOS/SLS enable missing

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The safety-relevant basic function "SOS/SLS" is not enabled in p9501 although other safety-relevant monitoring functions are enabled.

Note:

This fault does not result in a safety stop response.

Remedy:	Enable the function "SOS/SLS" (p9501.0) and carry out a POWER ON. Note: SI: Safety Integrated SLS: Safely-Limited Speed / SG: Safely reduced speed SOS: Safe Operating Stop / SBH: Safe operating stop See also: p9501 (SI Motion enable safety functions (Control Unit))

F01684 SI Motion P1 (CU): Safely-Limited Position limit values interchanged

Message value:	%1
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Drive object:	HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	None **Propagation:** GLOBAL
Reaction:	OFF2
Acknowledge:	IMMEDIATELY (POWER ON)
Cause:	For the function "Safely-Limited Position" (SLP), a lower value is in p9534 than in p9535. Note: This fault does not result in a safety stop response. Fault value (r0949, interpret decimal): 1: Limit values SLP1 interchanged. 2: Limit values SLP2 interchanged. See also: p9534, p9535
Remedy:	- correct the lower and upper limit values (p9535, p9534). - carry out a POWER ON (switch-off/switch-on). Note: SI: Safety Integrated SLP: Safely-Limited Position / SE: Safe software limit switches

F01685 SI Motion P1 (CU): Safely-Limited Speed limit value too high

Message value:	%1
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Drive object:	HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	None **Propagation:** GLOBAL
Reaction:	OFF2
Acknowledge:	IMMEDIATELY (POWER ON)
Cause:	The limit value for the function "Safely-Limited Speed" (SLS) is greater than the speed that corresponds to an encoder limit frequency of 500 kHz. Note: This fault does not result in a safety stop response. Fault value (r0949, interpret decimal): Maximum permissible speed.
Remedy:	Correct the limit values for SLS and carry out a POWER ON. Note: SI: Safety Integrated SLS: Safely-Limited Speed / SG: Safely reduced speed See also: p9531 (SI Motion SLS (SG) limit values (Control Unit))

F01686	**SI Motion: Illegal parameterization cam position**
Message value:	%1
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Drive object:	SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	None **Propagation:** GLOBAL
Reaction:	OFF2
Acknowledge:	IMMEDIATELY (POWER ON)
Cause:	For dbSI: - at least one enabled "Safe cam" (SCA) is parameterized in p9536 or p9537 too close to the tolerance range around the modulo position: the minus position value of a cam must be greater than the lower modulo limit + cam tolerance (p9540) + position tolerance (p9542); the plus position value of a cam must be less than the modulo limit - cam tolerance (p9540) - position tolerance (p9542). For a parameterized modulo position (p9505>0), the lower modulo limit = 0, the upper modulo limit = p9505. - the cam length of cam x = p9536[x]-p9537[x] is less than the cam tolerance + the position tolerance (= p9540 + p9542). This also means that cams of the minus position value must be less than the plus position value. For ncSI: At least one enabled "Safety Cam" (SCA) is parameterized in p9536 or p9537 too close to the tolerance range around the modulo position. The following conditions must be complied with to assign cams to a cam track: - the cam length of cam x = p9536[x]-p9537[x] must be greater or equal to the cam tolerance + the position tolerance (= p9540 + p9542). This also means that for cams on a cam track, the minus position value must be less than the plus position value. - the distance between 2 cams x and y (minus position value[y] - plus position value[x] = p9537[y] - p9536[x]) on a cam track must be greater than or equal to the cam tolerance + position tolerance (= p9540 + p9542). Note: This fault does not result in a safety stop response. Fault value (r0949, interpret decimal): Number of the "Safe Cam" with an illegal position. See also: p9501 (SI Motion enable safety functions (Control Unit))
Remedy:	Correct the cam position and carry out a POWER ON. Note: SCA: Safe Cam / SN: Safe software cam SI: Safety Integrated See also: p9536, p9537

F01687	**SI Motion: Illegal parameterization modulo value SCA (SN)**
Message value:	-
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Drive object:	SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	None **Propagation:** GLOBAL
Reaction:	OFF2
Acknowledge:	IMMEDIATELY (POWER ON)
Cause:	The parameterized modulo value for the "Safe Cam" (SCA) function is not a multiple of 360 000 mDegrees. Note: This fault does not result in a safety stop response.
Remedy:	Correct the modulo value for SCA and carry out a POWER ON. Note: SCA: Safe Cam / SN: Safe software cam SI: Safety Integrated See also: p9505 (SI Motion SP modulo value (Control Unit))

F01688 SI Motion CU: Actual value synchronization not permissible

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: - it is not permissible to enable actual value synchronization for a 1-encoder system.

- it is not permissible to simultaneously enable actual value synchronization and a monitoring function with absolute reference (SCA/SLP).

- it is not permissible to simultaneously enable actual value synchronization and safe position via PROFIsafe.

Note:

This fault results in a STOP A that cannot be acknowledged.

Remedy: - Either select the "actual value synchronization" function or parameterize a 2-encoder system.

- either deselect the function "actual value synchronization" or the monitoring functions with absolute reference (SCA/SLP) and carry out a POWER ON.

- either deselect the "actual value synchronization" function or do not enable "Safe position via PROFIsafe".

Note:

SCA: Safe Cam / SN: Safe software cam

SI: Safety Integrated

SLP: Safely-Limited Position / SE: Safe software limit switches

SP: Safe Position

See also: p9501 (SI Motion enable safety functions (Control Unit)), p9526 (SI Motion encoder assignment second channel)

C01689 SI Motion: Axis re-configured

Message value: Parameter: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: POWER ON
Cause: The axis configuration was changed (e.g. changeover between linear axis and rotary axis).

Parameter p0108.13 is internally set to the correct value.

Note:

This fault does not result in a safety stop response.

Fault value (r0949, interpret decimal):

Number of the parameter that initiated the change.

See also: p9502 (SI Motion axis type (Control Unit))

Remedy: The following should be carried out after the changeover:

- exit the safety commissioning mode (p0010).
- save all parameters (p0977 = 1 or "copy RAM to ROM").
- carry out a POWER ON.

Once the Control Unit has been switched on, safety message F01680 or F30680 indicates that the checksums in r9398[0] and r9728[0] have changed in the drive. The following must, therefore, be carried out:

- activate safety commissioning mode again.
- complete safety commissioning of the drive.
- exit the safety commissioning mode (p0010).
- save all parameters (p0977 = 1 or "copy RAM to ROM").
- carry out a POWER ON.

Note:

For the commissioning tool, the units are only consistently displayed after a project upload.

F01690 SI Motion: Data save problem for the NVRAM

Message value: %1
Message class: Hardware/software error (1)
Drive object: All objects
Component: Control Unit (CU) **Propagation:** LOCAL
Reaction: Infeed: NONE (OFF1, OFF2)
Servo: NONE (OFF1, OFF2, OFF3)
Vector: NONE (OFF1, OFF2, OFF3)
Hla: NONE (OFF1, OFF2, OFF3)
Acknowledge: POWER ON
Cause: There is not sufficient memory space in the NVRAM on the drive to save parameters r9781 and r9782 (safety logbook).
Note:
This fault does not result in a safety stop response.
Fault value (r0949, interpret decimal):
0: There is no physical NVRAM available in the drive.
1: There is no longer any free memory space in the NVRAM.
Remedy: For fault value = 0:
- use a Control Unit NVRAM.
For fault value = 1:
- de-select functions that are not required and that take up memory space in the NVRAM.
- contact Technical Support.
Note:
NVRAM: Non-Volatile Random Access Memory (non-volatile read and write memory)

A01691 (F) SI Motion: Ti and To unsuitable for DP cycle

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The configured times for PROFIBUS communication are not permitted and the DP cycle is used as the actual value acquisition cycle for the safe movement monitoring functions.
Isochronous PROFIBUS:
The sum of Ti and To is too high for the selected DP cycle. The DP cycle should be at least 1 current controller cycle greater than the sum of Ti and To.
No isochronous PROFIBUS:
The DP clock cycle must be at least 4x the current controller clock cycle.
Notice:
If this alarm is not observed, then message C01711 or C30711 – with the value 1020 ... 1021 – can sporadically occur.
Remedy: Configure Ti and To low so that they are suitable for the DP cycle or increase the DP cycle time.
Alternative when SI monitoring integrated in the drive is enabled (p9601/p9801 > 0):
Use the actual value acquisition cycle p9511/p9311 and, in turn, set independently from DP cycle. The actual values sensing clock cycle must be at least 4x the current controller clock cycle. A clock cycle ratio of at least 8:1 is recommended.
See also: p9511 (SI Motion actual value sensing cycle clock (Control Unit))
Reaction upon F: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY (POWER ON)

F01692 SI Motion P1 (CU): Parameter value not permitted for encoderless

Message value: Parameter: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The parameter cannot be set to this value if encoderless motion monitoring functions have been selected in p9506.
Note:
This fault does not result in a safety stop response.
Fault value (r0949, interpret decimal):
Parameter number with the incorrect value.
See also: p9501 (SI Motion enable safety functions (Control Unit))
Remedy: - correct the parameter specified in the fault value.
- if necessary, de-select encoderless motion monitoring functions (p9506).
See also: p9501 (SI Motion enable safety functions (Control Unit))

A01693 (F) SI P1 (CU): Safety parameter setting changed, warm restart/POWER ON required

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: Safety parameters have been changed; these will only take effect following a warm restart or POWER ON.
Alarm value (r2124, interpret decimal):
Parameter number of the safety parameter which has changed, necessitating a warm restart or POWER ON.
Remedy: - carry out a warm restart (p0009 = 30, p0976 = 2, 3).
- carry out a POWER ON (switch-off/switch-on) for all components.
Note:
Before performing an acceptance test, a POWER ON must be carried out for all components.
Reaction upon F: Infeed: NONE (OFF1, OFF2)
Servo: NONE (OFF1, OFF2, OFF3)
Vector: NONE (OFF1, OFF2, OFF3)
Hla: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: POWER ON

F01694 (A) SI Motion CU: Firmware version Motor Module/Hydraulic Module older Control Unit

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The firmware version of the Motor Module/Hydraulic Module is older than the version of the Control Unit.
It is possible that safety functions are not available (r9771/r9871).
Note:
This message does not result in a safety stop response.
This message can also occur, if after an automatic firmware update, a POWER ON was not carried out (Alarm A01007).
Remedy: Upgrade the firmware of the Motor Module/Hydraulic Module to a later version.
See also: r9390 (SI Motion version safety motion monitoring (Motor Module)), r9590 (SI Motion version safety motion monitoring (Control Unit))

Reaction upon A: NONE
Acknowl. upon A: NONE

A01695 (F) SI Motion: Sensor Module was replaced

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: A Sensor Module, which is used for safe motion monitoring functions, was replaced. The hardware replacement must be acknowledged. An acceptance test must be subsequently performed.

Note:

This message does not result in a safety stop response.

Remedy: Carry out the following steps using the STARTER commissioning tool:

- press the "Acknowledge hardware replacement" button in the safety screen form.
- execute the function "Copy RAM to ROM".
- carry out a POWER ON (switch-off/switch-on) for all components.

As an alternative, carry out the following steps in the expert list of the commissioning tool:

- start the copy function for the node identifier on the drive (p9700 = 1D hex).
- acknowledge the hardware CRC on the drive (p9701 = EC hex).
- save all parameters (p0977 = 1).
- carry out a POWER ON (switch-off/switch-on) for all components.

Then carry out an acceptance test (refer to the Safety Integrated Function Manual).

For SINUMERIK, the following applies:

HMI supports the replacement of components with Safety functions (operating area "Diagnostics" --> Softkey "Alarm list" --> Softkey "Confirm SI HW" etc.).

The precise procedure is given in the following document:

SINUMERIK Function Manual Safety Integrated

See also: p9700 (SI Motion copy function), p9701 (Acknowledge SI motion data change)

Reaction upon F: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY (POWER ON)

A01696 (F) SI Motion: Test stop for the motion monitoring functions selected when booting

Message value: -
Message class: Safety monitoring channel has identified an error (10)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The forced checking procedure (test stop) for the safe motion monitoring functions is already selected when booting, which is not permissible.

This is the reason that the test is only carried out again after first selecting the forced checking procedure.

Note:

This message does not result in a safety stop response.

See also: p9705 (SI Motion: Test stop signal source)

Remedy: De-select the forced checking procedure for the safe motion monitoring functions and then select again.

Notice:

It is not permissible to use TM54F inputs to select the test stop.

Note:

The signal source to select the forced checking procedure is set via binector input p9705.

SI: Safety Integrated

Reaction upon F: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY (POWER ON)

A01697 (F) SI Motion: Test stop for motion monitoring functions required

Message value: -
Message class: Safety monitoring channel has identified an error (10)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The time set in p9559 for the forced checking procedure (test stop) for the safe motion monitoring functions has been exceeded. A new forced checking procedure is required.

After the next time the forced checking procedure is selected, the message is withdrawn and the monitoring time is reset.

Note:

- this message does not result in a safety stop response.

- As the switch-off signal paths are not automatically checked during booting, an alarm is always issued once booting is complete.

- the test must be performed within a defined, maximum time interval (p9559, maximum of 9000 hours) in order to comply with the requirements as laid down in the standards for timely fault detection and the conditions to calculate the failure rates of safety functions (PFH value). Operation beyond this maximum time period is permissible if it can be ensured that the forced checking procedure is performed before persons enter the hazardous area and who are depending on the safety functions correctly functioning.

See also: p9559 (SI Motion forced checking procedure timer (Control Unit)), r9765 (SI Motion forced check procedure remaining time (Control Unit))

Remedy: Carry out the forced checking procedure of the safety motion monitoring functions.

The signal source to select the forced checking procedure is set via binector input p9705.

Notice:

It is not permissible to use TM54F inputs to select the forced checking procedure.

Note:

SI: Safety Integrated

See also: p9705 (SI Motion: Test stop signal source)

Reaction upon F: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY (POWER ON)

A01698 (F) SI P1 (CU): Commissioning mode active

Message value: -
Message class: General drive fault (19)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, TM54F_MA, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The commissioning of the "Safety Integrated" function is selected.

This message is withdrawn after the safety functions have been commissioned.

Note:

- this message does not result in a safety stop response.

- in the safety commissioning mode, the "STO" function is internally selected.

See also: p0010

Remedy: Not necessary.

Note:

CU: Control Unit

SI: Safety Integrated

Reaction upon F: Infeed: NONE (OFF1, OFF2)
Servo: NONE (OFF1, OFF2, OFF3)
Vector: NONE (OFF1, OFF2, OFF3)
Hla: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY (POWER ON)

A01699 (F) SI P1 (CU): Test stop for STO required

Message value: -
Message class: Safety monitoring channel has identified an error (10)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The time set in p9659 for the forced checking procedure (test stop) for the "STO" function has been exceeded. A new forced checking procedure is required.

After the next time the "STO" function is de-selected, the message is withdrawn and the monitoring time is reset.

Note:

- this message does not result in a safety stop response.
- the test must be performed within a defined, maximum time interval (p9659) in order to comply with the requirements as laid down in the standards for timely fault detection and the conditions to calculate the failure rates of safety functions (PFH value). Operation beyond this maximum time period is permissible if it can be ensured that the forced checking procedure is performed before persons enter the hazardous area and who are depending on the safety functions correctly functioning.

See also: p9659 (SI forced checking procedure timer), r9660 (SI forced checking procedure remaining time)

Remedy: Select STO and then de-select again.

Note:

CU: Control Unit

SI: Safety Integrated

STO: Safe Torque Off / SH: Safe standstill

Reaction upon F: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY (POWER ON)

C01700 SI Motion P1 (CU): STOP A initiated

Message value: -
Message class: Safety monitoring channel has identified an error (10)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The drive is stopped via a STOP A (STO via the safety switch-off signal path of the Control Unit).

Possible causes:

- stop request from the second monitoring channel.
- STO not active after a parameterized time (p9557) after test stop selection.
- subsequent response to the message C01706 "SI Motion CU: SAM/SBR limit exceeded".
- subsequent response to the message C01714 "SI Motion CU: Safely-Limited Speed exceeded".
- subsequent response to the message C01701 "SI Motion CU: STOP B initiated".
- subsequent response to the message C01715 "SI Motion CU: Safely-Limited Position exceeded".
- subsequent response to the message C01716 "SI Motion CU: tolerance for safe motion direction exceeded".

Remedy:

- remove the cause of the fault on the second monitoring channel.
- carry out a diagnostics routine for message C01706.
- carry out a diagnostics routine for message C01714.
- carry out a diagnostics routine for message C01701.
- carry out a diagnostics routine for message C01715.
- carry out a diagnostics routine for message C01716.
- check the value in p9557 (where available), increase the value if necessary, and carry out a POWER ON
- check the switch-off signal path of the Control Unit (check DRIVE-CLiQ communication if it has been implemented)
- replace the Motor Module, Power Module or Hydraulic Module.
- replace Control Unit.

This message can be acknowledged without a POWER ON as follows (safe acknowledgment):
- Terminal Module 54F (TM54F).
- onboard F-DI (only CU310-2).
- PROFIsafe.
- machine control panel.
Note:
SAM: Safe Acceleration Monitor (safe acceleration monitoring)
SBR: Safe Brake Ramp (safe brake ramp monitoring)
SI: Safety Integrated

C01701 SI Motion P1 (CU): STOP B initiated

Message value: -
Message class: Safety monitoring channel has identified an error (10)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE (OFF3)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The drive is stopped via a STOP B (braking along the OFF3 deceleration ramp).
As a result of this fault, after the time parameterized in p9556 has expired, or the speed threshold parameterized in p9560 has been undershot, message C01700 "STOP A initiated" is output.
Possible causes:
- stop request from the second monitoring channel.
- subsequent response to the message C01714 "SI Motion CU: Safely-Limited Speed exceeded".
- subsequent response to the message C01711 "SI Motion CU: Defect in a monitoring channel".
- subsequent response to the message C01707 "SI Motion CU: tolerance for safe operating stop exceeded".
- subsequent response to the message C01715 "SI Motion CU: Safely-Limited Position exceeded".
- subsequent response to the message C01716 "SI Motion CU: tolerance for safe motion direction exceeded".
Remedy: - remove the cause of the fault on the second monitoring channel.
- carry out a diagnostics routine for message C01714.
- carry out a diagnostics routine for message C01711.
- carry out a diagnostics routine for message C01707.
- carry out a diagnostics routine for message C01715.
- carry out a diagnostics routine for message C01716.
This message can be acknowledged without a POWER ON as follows (safe acknowledgment):
- Terminal Module 54F (TM54F).
- onboard F-DI (only CU310-2).
- PROFIsafe.
- machine control panel.
Note:
SI: Safety Integrated

C01706 SI Motion P1 (CU): SAM/SBR limit exceeded

Message value: -
Message class: Safety monitoring channel has identified an error (10)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: Motion monitoring functions with encoder (p9506 = 0) or encoderless with set acceleration monitoring (SAM, p9506 = 3):
- after initiating STOP B (SS1) or STOP C (SS2), the speed has exceeded the selected tolerance.
Motion monitoring functions encoderless with set brake ramp monitoring (SBR p9506 = 1):
- after initiating STOP B (SS1) or SLS changeover to the lower speed level, the speed has exceeded the selected tolerance.
The drive is shut down by the message C01700 "SI Motion: STOP A initiated".

Remedy: Check the braking behavior and, if necessary, adapt the parameterization of the parameter settings of the "SAM" or the "SBR" function.

This message can be acknowledged without a POWER ON as follows (safe acknowledgment):

- Terminal Module 54F (TM54F).
- onboard F-DI (only CU310-2).
- PROFIsafe.
- machine control panel.

Note:

SAM: Safe Acceleration Monitor (safe acceleration monitoring)

SBR: Safe Brake Ramp (safe ramp monitoring)

SI: Safety Integrated

See also: p9548, p9581, p9582, p9583

C01706 SI Motion P1 (CU): SAM/SBR limit exceeded

Message value: -

Message class: Safety monitoring channel has identified an error (10)

Drive object: HLA

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: IMMEDIATELY (POWER ON)

Cause: Motion monitoring functions with encoder (p9506 = 0):

- after initiating STOP B (SS1) or STOP C (SS2), the speed has exceeded the selected tolerance.

The drive is shut down by the message C01700 "SI Motion: STOP A initiated".

Remedy: Check the braking behavior and, if necessary, adapt the parameterization of the parameter settings of the "SAM" or the "SBR" function.

This message can be acknowledged without a POWER ON as follows (safe acknowledgment):

- Terminal Module 54F (TM54F).
- onboard F-DI (only CU310-2).
- PROFIsafe.
- machine control panel.

Note:

SAM: Safe Acceleration Monitor (safe acceleration monitoring)

SBR: Safe Brake Ramp (safe ramp monitoring)

SI: Safety Integrated

See also: p9548, p9581, p9582, p9583

C01707 SI Motion P1 (CU): Tolerance for safe operating stop exceeded

Message value: -

Message class: Safety monitoring channel has identified an error (10)

Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The actual position has distanced itself further from the target position than the standstill tolerance.

The drive is shut down by the message C01701 "SI Motion: STOP B initiated".

Remedy:

- check whether safety faults are present and if required carry out the appropriate diagnostic routines for the particular faults.
- check whether the standstill tolerance matches the accuracy and control dynamic performance of the axis.
- carry out a POWER ON.

This message can be acknowledged without a POWER ON as follows (safe acknowledgment):

- Terminal Module 54F (TM54F).
- onboard F-DI (only CU310-2).
- PROFIsafe.
- machine control panel.

Note:
SI: Safety Integrated
SOS: Safe Operating Stop / SBH: Safe operating stop
See also: p9530 (SI Motion standstill tolerance (Control Unit))

C01708 SI Motion P1 (CU): STOP C initiated

Message value: -
Message class: Safety monitoring channel has identified an error (10)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: STOP2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The drive is stopped via a STOP C (braking along the OFF3 deceleration ramp).
"Safe Operating Stop" (SOS) is activated after the parameterized time has expired.
Possible causes:
- stop request from the higher-level control.
- subsequent response to the message C01714 "SI Motion CU: Safely-Limited Speed exceeded".
- subsequent response to the message C01715 "SI Motion CU: Safely-Limited Position exceeded".
- subsequent response to the message C01716 "SI Motion CU: tolerance for safe motion direction exceeded".
See also: p9552 (SI Motion transition time STOP C to SOS (SBH) (Control Unit))
Remedy: - remove the cause of the fault at the control.
- carry out a diagnostics routine for message C01714/C01715/C01716.
This message can be acknowledged without a POWER ON as follows (safe acknowledgment):
- Terminal Module 54F (TM54F).
- onboard F-DI (only CU310-2).
- PROFIsafe.
- machine control panel.
Note:
SI: Safety Integrated
SOS: Safe Operating Stop / SBH: Safe operating stop

C01709 SI Motion P1 (CU): STOP D initiated

Message value: -
Message class: Safety monitoring channel has identified an error (10)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The drive is stopped via a STOP D (braking along the path).
"Safe Operating Stop" (SOS) is activated after the parameterized time has expired.
Possible causes:
- stop request from the higher-level control.
- subsequent response to the message C01714 "SI Motion CU: Safely-Limited Speed exceeded".
- subsequent response to the message C01715 "SI Motion CU: Safely-Limited Position exceeded".
- subsequent response to the message C01716 "SI Motion CU: tolerance for safe motion direction exceeded".
See also: p9553 (SI Motion transition time STOP D to SOS (SBH) (Control Unit))
Remedy: - remove the cause of the fault at the control.
- carry out a diagnostics routine for message C01714/C01715/C01716.
This message can be acknowledged without a POWER ON as follows (safe acknowledgment):
- Terminal Module 54F (TM54F).
- onboard F-DI (only CU310-2).
- PROFIsafe.
- machine control panel.

Note:
SI: Safety Integrated
SOS: Safe Operating Stop / SBH: Safe operating stop

C01710 SI Motion P1 (CU): STOP E initiated

Message value: -
Message class: Safety monitoring channel has identified an error (10)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The drive is stopped via a STOP E (retraction motion).
"Safe Operating Stop" (SOS) is activated after the parameterized time has expired.
Possible causes:
- stop request from the higher-level control.
- subsequent response to the message C01714 "SI Motion CU: Safely-Limited Speed exceeded".
- subsequent response to the message C01715 "SI Motion CU: Safely-Limited Position exceeded".
- subsequent response to the message C01716 "SI Motion CU: tolerance for safe motion direction exceeded".
See also: p9554 (SI Motion transition time STOP E to SOS (SBH) (Control Unit))
Remedy: - remove the cause of the fault at the control.
- carry out a diagnostics routine for message C01714/C01715/C01716.
This message can be acknowledged without a POWER ON as follows (safe acknowledgment):
- Terminal Module 54F (TM54F).
- onboard F-DI (only CU310-2).
- PROFIsafe.
- machine control panel.
Note:
SI: Safety Integrated
SOS: Safe Operating Stop / SBH: Safe operating stop

C01711 SI Motion P1 (CU): Defect in a monitoring channel

Message value: %1
Message class: Safety monitoring channel has identified an error (10)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: When cross-comparing the two monitoring channels, the drive detected a difference between the input data or results of the monitoring functions and initiated a STOP F. One of the monitoring functions no longer reliably functions - i.e. safe operation is no longer possible.
If at least one monitoring function is active, then after the parameterized timer has expired, the message C01701 "SI Motion: STOP B initiated" is output.
The message value that resulted in a STOP F is displayed in r9725.
If the drive is operated together with a SINUMERIK, the message values are described in message 27001 of SINUMERIK, with the exception of the following message values, which can only occur in SINAMICS:
1007: communication error with the PLC (sign-of-life).
1008: communication error with the PLC (CRC).
The following described message values involve the data cross-check between the two monitoring channels (safety functions integrated in the drive).
The message values may also occur in the following cases if the cause that is explicitly mentioned does not apply:
- cycle times not uniformly parameterized (p9500/p9300 and p9511/p9311)
- differently parameterized axis types (p9502/p9302).
- excessively fast cycle times (p9500/p9300, p9511/p9311).
- For message values 3, 44 ... 57, 232 and 1-encoder system, differently set encoder parameters.
- For message values 3, 44 ... 57, 232 and 2-encoder system, encoder parameters that have not been correctly set.
- incorrect synchronization.

Message value (r9749, interpret decimal):

0 to 999: Number of the cross-compared data that resulted in this fault.

Message values that are not subsequently listed are only for internal Siemens troubleshooting.

0: Stop request from the other monitoring channel.

1: Status image of monitoring functions SOS, SLS, SAM/SBR, SDI, SLA or SLP (result list 1) (r9710[0], r9710[1]).

2: Status image of monitoring function SCA or n < nx (result list 2) (r9711[0], r9711[1]).

3: The position actual value differential (r9713[0/1]) between the two monitoring channels is greater than the tolerance in p9542/p9342. When actual value synchronization is enabled (p9501.3/p9301.3), the velocity differential (based on the position actual value) is greater than the tolerance in p9549/p9349.

4: Error when synchronizing the data cross-check between the two channels.

5: Function enable signals (p9501/p9301) Safety monitoring clock cycle too small (p9500/p9300).

6: Limit value for SLS1 (p9531[0]/p9331[0])

7: Limit value for SLS2 (p9531[1]/p9331[1])

8: Limit value for SLS3 (p9531[2]/p9331[2])

9: Limit value for SLS4 (p9531[3]/p9331[3])

10: Standstill tol. (p9530/p9330)

11: Upper limit value for SLP1 (p9534[0]/p9334[0]).

12: Lower limit value for SLP1 (p9535[0]/p9335[0]).

13: Upper limit value for SLP2 (p9534[1]/p9334[1]).

14: Lower limit value for SLP2 (p9535[1]/p9335[1]).

15: Upper limit value for SCA, cam 1 plus position (p9536[0]/p9336[0]+p9540/p9340)

16: Lower limit value for SCA, cam 1 plus position (p9536[0]/p9336[0])

17: Upper limit value for SCA, cam 1 minus position (p9537[0]/p9337[0]+p9540/p9340)

18: Lower limit for SCA, cam 1 minus position (p9537[0]/p9337[0])

19...30: limit value SCA, cams 2 to 4. Refer above fault values 15 to 18 for cam 1

31: Position tolerance (p9542/p9342) or (p9549/p9349) when actual value synchronization is enabled (p9501.3/p9301.3)

32: Position tolerance for safe referencing (p9544/p9344).

33: Time, velocity changeover (p9551/p9351)

35: Delay time, STOP A (p9556/p9356)

36: Checking time, STO (p9557/p9357)

37: Trans. time, STOP C to SOS (p9552/p9352)

38: Trans. time STOP D to SOS (p9553/p9353)

39: Trans. time, STOP E to SOS (p9554/p9354)

40: Stop response for SLS (p9561/p9361)

41: Stop response for SLP1 (p9562[0]/p9362[0])

42: Shutdown speed, STO (p9560/p9360)

43: Memory test, stop response (STOP A).

44 ... 57: General

Possible cause 1 (during commissioning or parameter modification)

The tolerance value for the monitoring function is not the same on the two monitoring channels.

Possible cause 2 (during active operation)

The limit values are based on the actual value (r9713[0/1]). If the safe actual values on the two monitoring channels do not match, the limit values, which have been set at a defined interval, will also be different (i.e. corresponding to message value 3). This can be ascertained by checking the safe actual positions.

Permissible deviation between the two monitoring channels: p9542/p9342.

44: Position actual value (r9713[0/1]) + limit value SLS1 (p9531[0]/p9331[0]) * safety monitoring clock cycle (p9500/p9300).

45: Position actual value (r9713[0/1]) - limit value SLS1 (p9531[0]/p9331[0]) * safety monitoring clock cycle (p9500/p9300).

46: Position actual value (r9713[0/1]) + limit value SLS2 (p9531[1]/p9331[1]) * safety monitoring clock cycle (p9500/p9300).

47: Position actual value (r9713[0/1]) - limit value SLS2 (p9531[1]/p9331[1]) * safety monitoring clock cycle (p9500/p9300).

48: Position actual value (r9713[0/1]) + limit value SLS3 (p9531[2]/p9331[2]) * safety monitoring clock cycle (p9500/p9300).

49: Position actual value (r9713[0/1]) - limit value SLS3 (p9531[2]/p9331[2]) * safety monitoring clock cycle (p9500/p9300).

50: Position actual value (r9713[0/1]) + limit value SLS4 (p9531[3]/p9331[3]) * safety monitoring clock cycle (p9500/p9300).

51: Position actual value (r9713[0/1]) - limit value SLS4 (p9531[3]/p9331[3]) * safety monitoring clock cycle (p9500/p9300).

52: Standstill position + tolerance (p9530/9330)

53: Standstill position - tolerance (p9530/9330)

54: Position actual value (r9713[0/1]) + limit value nx (p9546/p9346) * safety monitoring clock cycle (p9500/p9300) + tolerance (p9542/p9342).

55: Position actual value (r9713[0/1]) + limit value nx (p9546/p9346) * safety monitoring clock cycle (p9500/p9300).

56: Position actual value (r9713[0/1]) - limit value nx (p9546/p9346) * safety monitoring clock cycle (p9500/p9300).

57: Position actual value (r9713[0/1]) - limit value nx (p9546/p9346) * safety monitoring clock cycle (p9500/p9300) - tolerance (p9542/p9342).

58: Actual stop request.

75: Velocity limit nx (p9546, p9346).

When the function "n < nx: hysteresis and filtering" (p9501.16 = 1) is enabled, this message value is also output for a different hysteresis tolerance (p9547/p9347).

76: Stop response for SLS1 (p9563[0]/p9363[0])

77: Stop response for SLS2 (p9563[1]/p9363[1])

78: Stop response for SLS3 (p9563[2]/p9363[2])

79: Stop response for SLS4 (p9563[3]/p9363[3])

80: Modulo value for SP for rotary axes (p9505/p9305).

81: Velocity tolerance for SAM (p9548/p9348)

82: SGEs for SLS correction factor.

83: Acceptance test timer (p9558/p9358)

84: Trans. time STOP F (p9555/p9355)

85: Trans. time bus failure (p9580/p9380)

86: ID 1-encoder system (p9526/p9326).

87: Encoder assignment, second channel (p9526/p9326)

88: SCA (SN) enable (p9503/p9303).

89: Encoder limit freq.

90: Upper limit value for SCA, cam 5 plus position (p9536[4]/p9336[4]+p9540/p9340).

91: Lower limit value for SCA, cam 5 plus position (p9536[4]/p9336[4]).

92: Upper limit value for SCA, cam 5 minus position (p9537[4]/p9337[4]+p9540/p9340).

93: Lower limit for SCA, cam 5 minus position (p9537[4]/p9337[4]).

94...224: limit value SCA, cams 6 to 30. See above, fault values 90 to 93 for cam 5.

225...229: Status screens of the monitoring function SCA (result lists 3...7).

230: Filter time constant for n < nx.

231: Hysteresis tolerance for n < nx.

232: Smoothed velocity actual value.

233: Limit value nx / safety monitoring clock cycle + hysteresis tolerance.

234: Limit value nx / Safety monitoring clock cycle.

235: -Limit value nx / Safety monitoring clock cycle.

236: -Limit value nx / safety monitoring clock cycle - hysteresis tolerance.

237: SGA n < nx.

238: speed limit value for SAM (p9568/p9368 or p9346/p9346).

239: Acceleration for SBR (p9581/p9381 and p9583/p9383).

240: Inverse value of acceleration for SBR (p9581/p9381 and p9583/p9383).

241: Deceleration time for SBR (p9582/p9382).

242: Encoderless safety (p9506/p9306).

243: Function configuration (p9507/p9307).

244: Encoderless actual value sensing filter time (p9587/p9387).

245: Encoderless actual value sensing minimum current (p9588/p9388).

246: Voltage tolerance acceleration (p9589/p9389).

247: SDI tolerance (p9564/p9364).

248: SDI positive upper limit (7FFFFFFF hex).

249: Position actual value (r9713[0/1]) - SDI tolerance (p9564/p9364).

250: Position actual value (r9713[0/1]) + SDI tolerance (p9564/p9364).

251: SDI negative lower limit (80000001 hex).

252: SDI stop response (p9566/p9366).

253: SDI delay time (p9565/p9365).

254: Setting the evaluation delay for actual value sensing after pulse enable (p9586/p9386).

255: Setting, behavior during pulse suppression (p9509/p9309).

256: Status image of monitoring functions SOS, SLS, SLP, test stop, SBR, SDI (result list 1 ext) (r9710).

257: Safety functions for motion monitoring functions without selection (p9512/p9312) different.

258: Fault tolerance, actual value sensing encoderless (p9585/p9385).

259: Scaling factor for safe position via PROFIsafe (p9574/p9374) or PROFIsafe telegram (p9611/p9811) different.

260: Modulo value including scaling (p9505/p9305 and p9574/p9374) for SP with 16 bit.

261: Scaling factor for acceleration for SBR different.

262: Scaling factor for the inverse value of the acceleration for SBR different.

263: Stop response for SLP2 (p9562[1]/p9362[1])

264: Position tolerance including scaling (p9542/p9342 and p9574/p9374) for SP with 16 bit.

265: Status image of all change functions (results list 1) (r9710).

266: The switchover speed to SOS differs (p9567/p9367).

267: The transition time to SOS after standstill differs (p9569/p9369).

268: SLP delay time differs (p9577/p9377).

269: Factor to increase the position tolerance when switching over the gearbox stage (p9543/9343).

270: Screen form for SGE image: all functions, which are not supported/enabled for the actual parameterization (p9501/p9301, p9601/p9801 and p9506/p9306)..

271: Screen form for SGE image: Deselect all bits for the "Safe gearbox switchover" function.

272: activation of the increased position tolerance for the "Safe gearbox switchover" function different (p9568/p9368 or p9346/p9346 or "0").

273: speed limit value for flattening the ramp for SAM/SBR different.

274: SGA SCA, cams 1 to 15.

275: SGA SCA, cams 16 to 30.

276: Limit value for SLA1 (p9578/p9378).

277: Stop response for SLA1 (p9579/p9379).

278: Upper limit value for SLA1

279: Lower limit value for SLA1

1000: Watchdog timer has expired. Too many signal changes have occurred at safety-relevant inputs.

1001: Initialization error of watchdog timer.

1002:

User agreement after the timer has expired different.

The user agreement is not consistent. After a time of 4 s has expired, the status of the user agreement is different in both monitoring channels.

1003:

Reference tolerance exceeded.

When the user agreement is set, the difference between the new reference point that has been determined after the system boots (absolute encoder) or reference point approach (distance-coded or incremental measuring system) and the safe actual position (saved value + traversing distance) is greater than the reference tolerance (p9544). In this case, the user agreement is withdrawn.

1004:

Plausibility error for user agreement.

1. If the user agreement has already been set, then the setting is initiated again. In this case, the user agreement is withdrawn.

2. The user agreement was set, although the axis has still not been referenced.

1005:

- for safe motion monitoring functions without encoder: pulses already suppressed for test stop selection.

- for safe motion monitoring functions with encoder: STO already active for test stop selection.

1011: Acceptance test status between the monitoring channels differ.

1012: Plausibility violation of the actual value from the encoder.

1014: fault when synchronizing the SGA for the "Safe cam" function

1015: Gearbox switchover (bit 27 in PROFIsafe telegram) takes longer than 2 min.

1020: Cyc. communication failure between the monit. channels.

1021: Cyc. communication failure between the monit. channel and Sensor Module.

1022: Sign-of-life error for DRIVE-CLiQ encoders monitoring channel 1.

1023: Error in the effectiveness test in the DRIVE-CLiQ encoder

1024: Sign-of-life error for HTL/TTL encoders.

1032: Sign-of-life error for DRIVE-CLiQ encoders monitoring channel 2.

1033: Error checking offset between POS1 and POS2 for DRIVE-CLiQ encoder monitoring channel 1.

1034: Error checking offset between POS1 and POS2 for DRIVE-CLiQ encoder monitoring channel 2.

1035: offset between POS1 and POS2 for DRIVE-CLiQ encoder on one of the monitoring channels has changed since the last commissioning.

1039: Overflow when calculating the position.

1041: Current absolute value too low (encoderless)

1042: Current/voltage plausibility error

1043: Too many acceleration phases

1044: Actual current values plausibility error.

5000 ... 5140:

PROFIsafe message values.

For these message values, the failsafe control signals (Failsafe Values) are transferred to the safety functions.

5000, 5014, 5023, 5024, 5030 ... 5032, 5042, 5043, 5052, 5053, 5068, 5072, 5073, 5082 ... 5087, 5090, 5091, 5122 ... 5125, 5132 ... 5135, 5140:

An internal software error has occurred (only for internal Siemens troubleshooting).

5012: Error when initializing the PROFIsafe driver.

5013: The result of the initialization is different for the two controllers.

5022: Error when evaluating the F parameters. The values of the transferred F parameters do not match the expected values in the PROFIsafe driver.

5025: The result of the F parameterization is different for the two controllers.

5026: CRC error for the F parameters. The transferred CRC value of the F parameters does not match the value calculated in the PST.

5065: A communications error was identified when receiving the PROFIsafe telegram.

5066: A time monitoring error (timeout) was identified when receiving the PROFIsafe telegram.

6000 ... 6166:

PROFIsafe message values (PROFIsafe driver for PROFIBUS DP V1/V2 and PROFINET).

For these message values, the failsafe control signals (Failsafe Values) are transferred to the safety functions. If "Stop B after failure of the PROFISafe communication" (p9612) is parameterized, the transfer of the Failsafe Values is delayed.

The significance of the individual message values is described in safety fault F01611.

7000: Difference of the safe position is greater than the parameterized tolerance (p9542/p9342).

7001: Scaling value for the safe position in the 16 bit notation, too low (p9574/p9374).

7002: Cycle counter for transferring the safe position is different in both monitoring channels.

7003: error when providing the data for the "Synchronous safe position via PROFIsafe" function.

7004: PROFIsafe clock cycle not correctly synchronized to the DP clock cycle.

See also: p9555 (SI Motion transition time STOP F to STOP B (Control Unit)), r9725 (SI Motion diagnostics STOP F)

Remedy: The following generally applies:

The monitoring clock cycles in both channels and the axis types should be checked for equality and the same setting applied if necessary. If the error continues to be identified, increasing the monitoring clock cycles may resolve it.

For message value = 0:

- no error was identified in this monitoring channel. Note the error message of the other monitoring channel (for MM: C30711).

For message value = 3:

Commissioning phase:

- check the encoder parameters, and if required, correct (p9516/p9316, p9517/p9317, p9518/p9318, p9520/p9320, p9521/p9321, p9522/p9322, p9526/p9326).

In operation:

- check the mechanical design and the encoder signals.

- if closed-loop control with edge modulation is parameterized (p1802[x] = 9): parameterize edge modulation for actual value sensing without encoder (p9507.5 = p9307.5 = 1).

For message value = 4:

The monitoring clock cycles in both channels should be checked for equality and if required, set the same. In combination with message value 5 from the other monitoring channel (with MM: C30711), the monitoring clock cycle settings must be increased.

For message value = 11 ... 14:

- the limit values in p9534/p9334 or p9535/p9335 are not equal or have been set too high. Correct the values.

For message value = 15 ... 30 and 90 ... 229:

- the cam positions for function SCA in p9536/p9336, p9537/p9337 or the cam tolerance p9540/p9340 are not equal. Correct the values. Increase the cam tolerance p9540/p9340.

For message value = 232:

- increase the hysteresis tolerance (p9547/p9347). Possibly set the filtering higher (p9545/p9345).

For message value = 274, 275:

- increase the cam tolerance p9540/p9340 and/or the position tolerance p9542/p9342.

For message value = 1 ... 999:

- if the message value is listed under cause: Check the cross-checked parameters to which the message value refers.

- copy the safety parameters.

- carry out a POWER ON (switch-off/switch-on) for all components.

- upgrade the Motor Module software.

- upgrade the Control Unit software.

- correction of the encoder evaluation. The actual values differ as a result of mechanical faults (V belts, travel to a mechanical endstop, wear and window setting that is too narrow, encoder fault, ...).

Note:

For SINAMICS firmware version >= 4.7, the KDV list is increased when setting p9567 > 0. For a non-compatible version of SINUMERIK this can lead to an error for the data cross-check (is indicated with message value >= 237). If necessary, p9567 must be set = 0, or the firmware version of SINUMERIK upgraded.

For message value = 1000:

- investigate the signal associated with the safety-relevant input (contact problems).

For message value = 1001:

- carry out a POWER ON (switch-off/switch-on) for all components.

- upgrade the Motor Module software.

- upgrade the Control Unit software.

For message value = 1002:

- perform safe acknowledgment, set the user agreement in both monitoring channels simultaneously (within 4 s).

For message value = 1003:

- check the mechanical system of the axis. It is possible that the axis was shifted when switched-off, and the last saved actual position no longer corresponds with the new actual position after the system has been powered up again.

- increase the tolerance for the actual value comparison when referencing (p9544).

Then check the actual values, perform a POWER ON and set the user agreement again.

For message value = 1004:

For 1., the following applies: Perform safe acknowledgment. Set the user agreement again.

For 2., the following applies: Perform safe acknowledgment. Only set the user agreement again if the axis has been referenced.

For message value = 1005:

- for safe motion monitoring functions without encoder: check the conditions for pulse enable.

- for safe motion monitoring functions with encoder: check the conditions for STO deselection.

Note:

For a Power Module, the test stop should always be performed for pulse enable (independent of whether with encoder or without encoder).

For message value = 1007:

- check the PLC for the correct operating state (run state, basic program).

For message value = 1008:

- check whether incorrect or overlapping address ranges have been set in SINUMERIK machine data MD10393.

For message value = 1011:

- for diagnostics, refer to parameter (r9571).

For message value = 1012:

- upgrade the Sensor Module firmware to a more recent version.

- for 1-encoder systems, the following applies: check the encoder parameters for equality (p9515/p9315, p9519/p9319, p9523/p9323, p9524/p9324, p9525/p9325, p9529/p9329).

- for a 1-encoder system and 2-encoder system the following applies: in order to correctly copy the encoder parameters from p04xx, p9700 must be set to 46 and p9701 must be set to 172.

- for DQI encoders the following applies: If required, upgrade the firmware version of the Control Unit to a more recent version, which is released for DQI encoders.

- check the electrical cabinet design and cable routing for EMC compliance

- carry out a POWER ON (switch-off/switch-on) for all components or a warm restart (p0009 = 30, p0976 = 2, 3).

- replace the hardware.

For message value = 1014:

- check the encoder actual values. If required, increase the position tolerance (p9542) and/or cam tolerance (p9540).

For message value = 1020, 1021, 1024:

- check the communication link.

- if required, increase the monitoring cycle clock settings (p9500, p9511).

- carry out a POWER ON (switch-off/switch-on) for all components or a warm restart (p0009 = 30, p0976 = 2, 3).

- replace the hardware.

For message value = 1033, 1034:

- if required, upgrade the firmware version of the Control Unit to a more recent version, which is released for DQI encoders.

For message value = 1035, if one of the safety encoders was replaced:

- confirm the hardware replacement (p9700 = 29, p9701 = 236 or p9702 = 29).

- save all parameters (p0977 = 1 or p0971 = 1 or "copy RAM to ROM").

- acknowledge fault (e.g. binector input p2103).

For message value = 1039:

- check the conversion factors such as spindle pitch or gearbox ratios.

For message value = 1041:

- check whether the motor has sufficient current (>r9785[0]).

- reduce the minimum current (p9588).

- for synchronous motors increase the absolute value of p9783.

- check whether the function "Closed-loop controlled operation with HF signal injection" is activated (p1750.5 = 1) and if required, deactivate.

For message value = 1042:

- increase the ramp-function generator ramp-up/down time (p1120/p1121).

- check that the current/speed control is set correctly (torque-generating/field-generating current and actual speed value may not fluctuate).

- reduce the dynamic response of the setpoint value.

- check the absolute current and voltage values, and set the control behavior so that this is greater than 3% of the rated converter data in operation or in the case of a fault.

- increase the minimum current (p9588/p9388).

For message value = 1043:

- increase the voltage tolerance (p9589).

- increase the ramp-function generator ramp-up/down time (p1120/p1121).

- check that the current/speed control is set correctly (torque-generating/field-generating current and actual speed value may not fluctuate).

- reduce the dynamic response of the setpoint value.

For message value = 5000, 5014, 5023, 5024, 5030, 5031, 5032, 5042, 5043, 5052, 5053, 5068, 5072, 5073, 5082 ... 5087, 5090, 5091, 5122 ... 5125, 5132 ... 5135, 5140:

- carry out a POWER ON (switch-off/switch-on) for all components.

- check whether there is a DRIVE-CLiQ communication error between the Control Unit and the Motor Module involved and, if required, carry out a diagnostics routine for the faults identified.

- upgrade firmware to later version.

- contact Technical Support.

- replace the Control Unit.

For message value = 5012:

- check the setting of the PROFIsafe address of the Control Unit (p9610) and that of the Motor Module (p9810). It is not permissible for the PROFIsafe address to be 0 or FFFF!

For message value = 5013, 5025:

- carry out a POWER ON (switch-off/switch-on) for all components.

- check the setting of the PROFIsafe address of the Control Unit (p9610) and that of the Motor Module (p9810).

- check whether there is a DRIVE-CLiQ communication error between the Control Unit and the Motor Module involved and, if required, carry out a diagnostics routine for the faults identified.

For message value = 5022:

- check the setting of the values of the F parameters at the PROFIsafe slave (F_SIL, F_CRC_Length, F_Par_Version, F_Source_Add, F_Dest_add, F_WD_Time).

For message value = 5026:

- check the settings of the values of the F parameters and the F parameter CRC (CRC1) calculated from these at the PROFIsafe slave and update.

For message value = 5065:

- check the configuration and communication at the PROFIsafe slave (cons. No. / CRC).

- check the setting of the value for F parameter F_WD_Time on the PROFIsafe slave and increase if necessary.

- check whether there is a DRIVE-CLiQ communication error between the Control Unit and the Motor Module involved and, if required, carry out a diagnostics routine for the faults identified.

For message value = 5066:

- check the setting of the value for F parameter F_WD_Time on the PROFIsafe slave and increase if necessary.

- evaluate diagnostic information in the F host.

- check PROFIsafe connection.

For message value = 6000 ... 6999:

Refer to the description of the message values in safety fault F01611.

For message value = 7000:

- increase the position tolerance (p9542/p9342).

- determine the actual position of CU (r9713[0] and the second channel r9713[1], and check the difference for plausibility.

- reduce the difference of the actual position from CU (r9713[0] and the second channel r9713[1] for a 2-encoder system.

For message value = 7001:

- increase the scaling value for the safe position in the 16 bit notation (p9574/p9374).

- if required, reduce the traversing range.

For message value = 7002:

- carry out a POWER ON (switch-off/switch-on) for all components.

- check whether there is a DRIVE-CLiQ communication error between the Control Unit and the Motor Module involved and, if required, carry out a diagnostics routine for the faults identified.

This message can be acknowledged without a POWER ON as follows (safe acknowledgment):

- Terminal Module 54F (TM54F).

- onboard F-DI (only CU310-2).

- PROFIsafe.

- machine control panel.

For message value = 7003, 7004:

- if required, adapt the settings for the times for Tdp, Ti and To - or increase the monitoring clock cycle p9500 (rule Tdp = 2 x n x p9500, n= 1, 2, 3, ...).

See also: p9300 (SI Motion monitoring clock cycle (Motor Module)), p9500 (SI Motion monitoring clock cycle (Control Unit))

C01711 SI Motion P1 (CU): Defect in a monitoring channel

Message value: %1

Message class: Safety monitoring channel has identified an error (10)

Drive object: HLA

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: IMMEDIATELY (POWER ON)

Cause: When cross-comparing the two monitoring channels, the drive detected a difference between the input data or results of the monitoring functions and initiated a STOP F. One of the monitoring functions no longer reliably functions - i.e. safe operation is no longer possible.

If at least one monitoring function is active, then after the parameterized timer has expired, the message C01701 "SI Motion: STOP B initiated" is output.

The message value that resulted in a STOP F is displayed in r9725.

If the drive is operated together with a SINUMERIK, the message values are described in message 27001 of SINUMERIK, with the exception of the following message values, which can only occur in SINAMICS:

1007: communication error with the PLC (sign-of-life)

1008: communication error with the PLC (CRC)

The following described message values involve the data cross-check between the two monitoring channels (safety functions integrated in the drive).

The message values may also occur in the following cases if the cause that is explicitly mentioned does not apply:

- cycle times not uniformly parameterized (p9500/p9300 and p9511/p9311)

- excessively fast cycle times (p9500/p9300, p9511/p9311).

- For message values 3, 44 ... 57, 232 and 1-encoder system, differently set encoder parameters.

- For message values 3, 44 ... 57, 232 and 2-encoder system, encoder parameters that have not been correctly set.

- incorrect synchronization.

Message value (r9749, interpret decimal):

0 to 999: Number of the cross-compared data that resulted in this fault.

Message values that are not subsequently listed are only for internal Siemens troubleshooting.

0: Stop request from the other monitoring channel.

1: Status image of monitoring functions SOS, SLS, SAM/SBR, SDI or SLP (result list 1) (r9710[0], r9710[1]).

2: Status image of monitoring function SCA or n < nx (result list 2) (r9711[0], r9711[1]).

3: The position actual value differential (r9713[0/1]) between the two monitoring channels is greater than the tolerance in p9542/p9342. When actual value synchronization is enabled (p9501.3/p9301.3), the velocity differential (based on the position actual value) is greater than the tolerance in p9549/p9349.

4: Error when synchronizing the data cross-check between the two channels.

5: Function enable signals (p9501/p9301) Safety monitoring clock cycle too small (p9500/p9300).

6: Limit value for SLS1 (p9531[0]/p9331[0])

7: Limit value for SLS2 (p9531[1]/p9331[1])

8: Limit value for SLS3 (p9531[2]/p9331[2])

9: Limit value for SLS4 (p9531[3]/p9331[3])

10: Standstill tol. (p9530/p9330)

11: Upper limit value for SLP1 (p9534[0]/p9334[0]).

12: Lower limit value for SLP1 (p9535[0]/p9335[0]).

13: Upper limit value for SLP2 (p9534[1]/p9334[1]).

14: Lower limit value for SLP2 (p9535[1]/p9335[1]).

31: Position tolerance (p9542/p9342) or (p9549/p9349) when actual value synchronization is enabled (p9501.3/p9301.3)

32: Position tolerance for safe referencing (p9544/p9344).

33: Time, velocity changeover (p9551/p9351)

35: Delay time, STOP A (p9556/p9356)

36: Checking time, STO (p9557/p9357)

37: Trans. time, STOP C to SOS (p9552/p9352)

38: Trans. time STOP D to SOS (p9553/p9353)

39: Trans. time, STOP E to SOS (p9554/p9354)

40: Stop response for SLS (p9561/p9361)

41: Stop response for SLP1 (p9562[0]/p9362[0])

42: Shutdown speed, STO (p9560/p9360)

43: Memory test, stop response (STOP A).

44 ... 57: General

Possible cause 1 (during commissioning or parameter modification)

The tolerance value for the monitoring function is not the same on the two monitoring channels.

Possible cause 2 (during active operation)

The limit values are based on the actual value (r9713[0/1]). If the safe actual values on the two monitoring channels do not match, the limit values, which have been set at a defined interval, will also be different (i.e. corresponding to message value 3). This can be ascertained by checking the safe actual positions.

Permissible deviation between the two monitoring channels: p9542/p9342.

44: Position actual value (r9713[0/1]) + limit value SLS1 (p9531[0]/p9331[0]) * safety monitoring clock cycle (p9500/p9300).

45: Position actual value (r9713[0/1]) - limit value SLS1 (p9531[0]/p9331[0]) * safety monitoring clock cycle (p9500/p9300).

46: Position actual value (r9713[0/1]) + limit value SLS2 (p9531[1]/p9331[1]) * safety monitoring clock cycle (p9500/p9300).

47: Position actual value (r9713[0/1]) - limit value SLS2 (p9531[1]/p9331[1]) * safety monitoring clock cycle (p9500/p9300).

48: Position actual value (r9713[0/1]) + limit value SLS3 (p9531[2]/p9331[2]) * safety monitoring clock cycle (p9500/p9300).

49: Position actual value (r9713[0/1]) - limit value SLS3 (p9531[2]/p9331[2]) * safety monitoring clock cycle (p9500/p9300).

50: Position actual value (r9713[0/1]) + limit value SLS4 (p9531[3]/p9331[3]) * safety monitoring clock cycle (p9500/p9300).

51: Position actual value (r9713[0/1]) - limit value SLS4 (p9531[3]/p9331[3]) * safety monitoring clock cycle (p9500/p9300).

52: Standstill position + tolerance (p9530/9330)

53: Standstill position - tolerance (p9530/9330)

54: Position actual value (r9713[0/1]) + limit value nx (p9546/p9346) * safety monitoring clock cycle (p9500/p9300) + tolerance (p9542/p9342).

55: Position actual value (r9713[0/1]) + limit value nx (p9546/p9346) * safety monitoring clock cycle (p9500/p9300).

56: Position actual value (r9713[0/1]) - limit value nx (p9546/p9346) * safety monitoring clock cycle (p9500/p9300).

57: Position actual value (r9713[0/1]) - limit value nx (p9546/p9346) * safety monitoring clock cycle (p9500/p9300) - tolerance (p9542/p9342).

58: Actual stop request.

75: Velocity limit nx (p9546, p9346).

When the function "n < nx: hysteresis and filtering" (p9501.16 = 1) is enabled, this message value is also output for a different hysteresis tolerance (p9547/p9347).

76: Stop response for SLS1 (p9563[0]/p9363[0])

77: Stop response for SLS2 (p9563[1]/p9363[1])

78: Stop response for SLS3 (p9563[2]/p9363[2])

79: Stop response for SLS4 (p9563[3]/p9363[3])

81: Velocity tolerance for SAM (p9548/p9348)

82: SGEs for SLS correction factor.

83: Acceptance test timer (p9558/p9358)

84: Trans. time STOP F (p9555/p9355)

85: Trans. time bus failure (p9580/p9380)

86: ID 1-encoder system (p9526/p9326).

87: Encoder assignment, second channel (p9526/p9326)

89: Encoder limit freq.

230: Filter time constant for n < nx.

231: Hysteresis tolerance for n < nx.

232: Smoothed velocity actual value.

233: Limit value nx / safety monitoring clock cycle + hysteresis tolerance.

234: Limit value nx / Safety monitoring clock cycle.

235: -Limit value nx / Safety monitoring clock cycle.

236: -Limit value nx / safety monitoring clock cycle - hysteresis tolerance.

237: SGA n < nx.

238: Speed limit value for SAM (p9568/p9368).

243: Function configuration (p9507/p9307).

246: Voltage tolerance acceleration (p9589/p9389).

247: SDI tolerance (p9564/p9364).

248: SDI positive upper limit (7FFFFFFF hex).

249: Position actual value (r9713[0/1]) - SDI tolerance (p9564/p9364).

250: Position actual value (r9713[0/1]) + SDI tolerance (p9564/p9364).

251: SDI negative lower limit (80000001 hex).

252: SDI stop response (p9566/p9366).

253: SDI delay time (p9565/p9365).

256: Status image of monitoring functions SOS, SLS, SLP, test stop, SBR, SDI (result list 1 ext) (r9710).

257: Safety functions for motion monitoring functions without selection (p9512/p9312) different.

259: Scaling factor for safe position via PROFIsafe (p9574/p9374) or PROFIsafe telegram (p9611/p9811) different.

260: Modulo value including scaling (p9505/p9305 and p9574/p9374) for SP with 16 bit.

263: Stop response for SLP2 (p9562[1]/p9362[1])

264: Position tolerance including scaling (p9542/p9342 and p9574/p9374) for SP with 16 bit.

265: Status image of all change functions (results list 1) (r9710).

266: The switchover speed to SOS differs (p9567/p9367).

267: The transition time to SOS after standstill differs (p9569/p9369).

268: SLP delay time differs (p9577/p9377).

269: Factor to increase the position tolerance when switching over the gearbox stage (p9543/9343).

270: Screen form for SGE image: all functions, which are not supported/enabled for the actual parameterization (p9501/p9301, p9601/p9801 and p9506/p9306)..

271: Screen form for SGE image: Deselect all bits for the "Safe gearbox switchover" function

272: Activation of the increased position tolerance for the "Safe gearbox switchover" function different

276: Limit value for SLA1 (p9578/p9378).

277: Stop response for SLA1 (p9579/p9379).

278: Upper limit value for SLA1

279: Lower limit value for SLA1

1000: Watchdog timer has expired. Too many signal changes have occurred at safety-relevant inputs.

1001: Initialization error of watchdog timer.

1002:

User agreement after the timer has expired different.

The user agreement is not consistent. After a time of 4 s has expired, the status of the user agreement is different in both monitoring channels.

1003:

Reference tolerance exceeded.

When the user agreement is set, the difference between the new reference point that has been determined after the system boots (absolute encoder) or reference point approach (distance-coded or incremental measuring system) and the safe actual position (saved value + traversing distance) is greater than the reference tolerance (p9544). In this case, the user agreement is withdrawn.

1004:

Plausibility error for user agreement.

1. If the user agreement has already been set, then the setting is initiated again. In this case, the user agreement is withdrawn.

2. The user agreement was set, although the axis has still not been referenced.

1005: STO already active for test stop selection.

1011: Acceptance test status between the monitoring channels differ.

1012: Plausibility violation of the actual value from the encoder.

1014: fault when synchronizing the SGA for the "Safe cam" function

1015: Gearbox switchover (bit 27 in PROFIsafe telegram) takes longer than 2 min.

1020: Cyc. communication failure between the monit. channels.

1021: Cyc. communication failure between the monit. channel and Sensor Module.

1022: Sign-of-life error for DRIVE-CLiQ encoders monitoring channel 1.

1023: Error in the effectiveness test in the DRIVE-CLiQ encoder

1024: Sign-of-life error for HTL/TTL encoders.

1032: Sign-of-life error for DRIVE-CLiQ encoders monitoring channel 2.

1033: Error checking offset between POS1 and POS2 for DRIVE-CLiQ encoder monitoring channel 1.

1034: Error checking offset between POS1 and POS2 for DRIVE-CLiQ encoder monitoring channel 2.

1039: Overflow when calculating the position.

5000 ... 5140:

PROFIsafe message values.

For these message values, the failsafe control signals (Failsafe Values) are transferred to the safety functions.

5000, 5014, 5023, 5024, 5030 ... 5032, 5042, 5043, 5052, 5053, 5068, 5072, 5073, 5082 ... 5087, 5090, 5091, 5122 ... 5125, 5132 ... 5135, 5140: an internal software error has occurred (only for internal Siemens fault diagnostics).

5012: Error when initializing the PROFIsafe driver.

5013: The result of the initialization is different for the two controllers.

5022: Error when evaluating the F parameters. The values of the transferred F parameters do not match the expected values in the PROFIsafe driver.

5025: The result of the F parameterization is different for the two controllers.

5026: CRC error for the F parameters. The transferred CRC value of the F parameters does not match the value calculated in the PST.

5065: A communications error was identified when receiving the PROFIsafe telegram.

5066: A time monitoring error (timeout) was identified when receiving the PROFIsafe telegram.

6000 ... 6166:

PROFIsafe message values (PROFIsafe driver for PROFIBUS DP V1/V2 and PROFINET).

For these message values, the failsafe control signals (Failsafe Values) are transferred to the safety functions. If "Stop B after failure of the PROFISafe communication" (9612) is parameterized, the transfer of the Failsafe Values is delayed.

The significance of the individual message values is described in safety fault F01611.

7000: Difference of the safe position is greater than the parameterized tolerance (p9542/p9342).

7001: Scaling value for the safe position in the 16 bit notation, too low (p9574/p9374).

7002: Cycle counter for transferring the safe position is different in both monitoring channels.

7003: error when providing the data for the "Synchronous safe position via PROFIsafe" function.

7004: PROFIsafe clock cycle not correctly synchronized to the DP clock cycle.

See also: p9555 (SI Motion transition time STOP F to STOP B (Control Unit)), r9725 (SI Motion diagnostics STOP F)

Remedy: The following generally applies:

The monitoring clock cycles in both channels and the axis types should be checked for equality and the same setting applied if necessary. If the error continues to be identified, increasing the monitoring clock cycles may resolve it.

For message value = 0:

- no error was identified in this monitoring channel. Note the error message of the other monitoring channel (for HM: C30711).

For message value = 3:

Commissioning phase:

- check the encoder parameters, and if required, correct (p9516/p9316, p9517/p9317, p9518/p9318, p9520/p9320, p9521/p9321, p9522/p9322, p9526/p9326).

In operation:

- check the mechanical design and the encoder signals.

For message value = 4:

The monitoring clock cycles in both channels should be checked for equality and if required, set the same. In combination with message value 5 from the other monitoring channel (with HM: C30711), the monitoring clock cycle settings must be increased.

For message value = 11 ... 14:

- the limit values in p9534/p9334 or p9535/p9335 are not equal or have been set too high. Correct the values.

For message value = 232:

- increase the hysteresis tolerance (p9547/p9347). Possibly set the filtering higher (p9545/p9345).

For message value = 1 ... 999:

- if the message value is listed under cause: Check the cross-checked parameters to which the message value refers.

- copy the safety parameters.

- carry out a POWER ON (switch-off/switch-on) for all components.

- upgrade the Hydraulic Module software.

- upgrade the Control Unit software.

- correction of the encoder evaluation. The actual values differ as a result of mechanical faults (V belts, travel to a mechanical endstop, wear and window setting that is too narrow, encoder fault, ...).

Note:

For SINAMICS firmware version >= 4.7, the KDV list is increased when setting p9567 > 0. For a non-compatible version of SINUMERIK this can lead to an error for the data cross-check (is indicated with message value >= 237). If necessary, p9567 must be set = 0, or the firmware version of SINUMERIK upgraded.

For message value = 1000:

- investigate the signal associated with the safety-relevant input (contact problems).

For message value = 1001:

- carry out a POWER ON (switch-off/switch-on) for all components.

- upgrade the Hydraulic Module software.

- upgrade the Control Unit software.

For message value = 1002:

- perform safe acknowledgment, set the user agreement in both monitoring channels simultaneously (within 4 s).

For message value = 1003:

- check the mechanical system of the axis. It is possible that the axis was shifted when switched-off, and the last saved actual position no longer corresponds with the new actual position after the system has been powered up again.

- increase the tolerance for the actual value comparison when referencing (p9544).

Then check the actual values, perform a POWER ON and set the user agreement again.

For message value = 1004:

For 1., the following applies: Perform safe acknowledgment. Set the user agreement again.

For 2., the following applies: Perform safe acknowledgment. Only set the user agreement again if the axis has been referenced.

For message value = 1005: deselect checking the conditions for STO.

For message value = 1007:

- check the PLC for the correct operating state (run state, basic program).

For message value = 1008:

- check whether incorrect or overlapping address ranges have been set in SINUMERIK machine data MD10393.

For message value = 1011:

- for diagnostics, refer to parameter (r9571).

For message value = 1012:

- upgrade the Sensor Module firmware to a more recent version.
- for 1-encoder systems, the following applies: check the encoder parameters for equality (p9515/p9315, p9519/p9319, p9523/p9323, p9524/p9324, p9525/p9325, p9529/p9329).
- for a 1-encoder system and 2-encoder system the following applies: in order to correctly copy the encoder parameters from p04xx, p9700 must be set to 46 and p9701 must be set to 172.
- for DQI encoders the following applies: If required, upgrade the firmware version of the Control Unit to a more recent version, which is released for DQI encoders.
- check the electrical cabinet design and cable routing for EMC compliance
- carry out a POWER ON (switch-off/switch-on) for all components or a warm restart (p0009 = 30, p0976 = 2, 3).
- replace the hardware.

For message value = 1014:

- check the encoder actual values. If required, increase the position tolerance (p9542) and/or cam tolerance (p9540).

For message value = 1020, 1021,1024:

- check the communication link.
- if required, increase the monitoring cycle clock settings (p9500, p9511).
- carry out a POWER ON (switch-off/switch-on) for all components or a warm restart (p0009 = 30, p0976 = 2, 3).
- replace the hardware.

For message value = 1033:

- if required, upgrade the firmware version of the Control Unit to a more recent version, which is released for DQI encoders.

For message value = 1039:

- check the conversion factors such as spindle pitch or gearbox ratios.

For message value = 1041:

- check whether the motor has sufficient current (>r9785[0]).
- reduce the minimum current (p9588).
- for synchronous motors increase the absolute value of p9783.
- check whether the function "Closed-loop controlled operation with HF signal injection" is activated (p1750.5 = 1) and if required, deactivate.

For message value = 1042:

- increase the ramp-function generator ramp-up/down time (p1120/p1121).
- check that the current/speed control is set correctly (torque-generating/field-generating current and actual speed value may not fluctuate).
- reduce the dynamic response of the setpoint value.
- check the absolute current and voltage values, and set the control behavior so that this is greater than 3% of the rated converter data in operation or in the case of a fault.
- increase the minimum current (p9588/p9388).

For message value = 1043:

- increase the voltage tolerance (p9589).
- increase the ramp-function generator ramp-up/down time (p1120/p1121).
- check that the current/speed control is set correctly (torque-generating/field-generating current and actual speed value may not fluctuate).
- reduce the dynamic response of the setpoint value.

For message value = 5000, 5014, 5023, 5024, 5030, 5031, 5032, 5042, 5043, 5052, 5053, 5068, 5072, 5073, 5082 ... 5087, 5090, 5091, 5122 ... 5125, 5132 ... 5135, 5140:

- carry out a POWER ON (switch-off/switch-on) for all components.
- check whether there is a DRIVE-CLiQ communication error between the Control Unit and the Hydraulic Module involved and, if required, carry out a diagnostics routine for the faults identified.
- upgrade firmware to later version.
- contact Technical Support.
- replace the Control Unit.

For message value = 5012:

- check the setting of the PROFIsafe address of the Control Unit (p9610) and that of the hydraulic module (p9810). It is not permissible for the PROFIsafe address to be 0 or FFFF!

For message value = 5013, 5025:

- carry out a POWER ON (switch-off/switch-on) for all components.
- check the setting of the PROFIsafe address of the Control Unit (p9610) and that of the hydraulic module (p9810).
- check whether there is a DRIVE-CLiQ communication error between the Control Unit and the Hydraulic Module involved and, if required, carry out a diagnostics routine for the faults identified.

For message value = 5022:

- check the setting of the values of the F parameters at the PROFIsafe slave (F_SIL, F_CRC_Length, F_Par_Version, F_Source_Add, F_Dest_add, F_WD_Time).

For message value = 5026:

- check the settings of the values of the F parameters and the F parameter CRC (CRC1) calculated from these at the PROFIsafe slave and update.

For message value = 5065:

- check the configuration and communication at the PROFIsafe slave (cons. No. / CRC).
- check the setting of the value for F parameter F_WD_Time on the PROFIsafe slave and increase if necessary.
- check whether there is a DRIVE-CLiQ communication error between the Control Unit and the Hydraulic Module involved and, if required, carry out a diagnostics routine for the faults identified.

For message value = 5066:

- check the setting of the value for F parameter F_WD_Time on the PROFIsafe slave and increase if necessary.
- evaluate diagnostic information in the F host.
- check PROFIsafe connection.

For message value = 6000 ... 6999:

Refer to the description of the message values in safety fault F01611.

For message value = 7000:

- increase the position tolerance (p9542/p9342).
- determine the actual position of CU (r9713[0] and the second channel r9713[1], and check the difference for plausibility.
- reduce the difference of the actual position from CU (r9713[0] and the second channel r9713[1] for a 2-encoder system.

For message value = 7001:

- increase the scaling value for the safe position in the 16 bit notation (p9574/p9374).
- if required, reduce the traversing range.

For message value = 7002:

- carry out a POWER ON (switch-off/switch-on) for all components.
- check whether there is a DRIVE-CLiQ communication error between the Control Unit and the Hydraulic Module involved and, if required, carry out a diagnostics routine for the faults identified.

This message can be acknowledged as follows:

- motion monitoring functions integrated in the drive: Via Terminal Module 54F (TM54F) or PROFIsafe
- motion monitoring functions with SINUMERIK: Via the machine control panel

For message value = 7003, 7004:

- if required, adapt the settings for the times for Tdp, Ti and To - or increase the monitoring clock cycle p9500 (rule Tdp = 2 x n x p9500, n= 1, 2, 3, ...).

See also: p9300 (SI Motion monitoring clock cycle (Motor Module)), p9500 (SI Motion monitoring clock cycle (Control Unit))

C01712 SI Motion P1 (CU): Defect in F-IO processing

Message value: %1

Message class: Safety monitoring channel has identified an error (10)

Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Control Unit (CU) **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: IMMEDIATELY (POWER ON)

Cause: When cross checking and comparing the two monitoring channels, the drive detected a difference between parameters or results of the F-IO processing and initiated a STOP F. One of the monitoring functions no longer reliably functions - i.e. safe operation is no longer possible.

The safety message C01711 with message value 0 is also displayed due to initiation of STOP F.

If at least one monitoring function is active, the safety message C01701 "SI Motion: STOP B initiated" is output after the parameterized timer has expired.

Message value (r9749, interpret decimal):

Number of the cross-compared data that resulted in this message.

1: SI discrepancy monitoring time inputs (p10002, p10102).

2: SI acknowledgment internal event input terminal (p10006, p10106).

3: SI STO input terminal (p10022, p10122).

4: SI SS1 input terminal (p10023, p10123).

5: SI SS2 input terminal (p10024, p10124).

6: SI SOS input terminal (p10025, p10125).

7: SI SLS input terminal (p10026, p10126).

8: SI SLS_Limit(1) input terminal (p10027, p10127).

9: SI SLS_Limit(2) input terminal (p10028, p10128).

10: SI Safe State signal selection (p10039, p10139).

11 SI F-DI input mode (p10040, p10140).

12: SI F-DO 0 signal sources (p10042, p10142).

13: Different states for static inactive signal sources (p10006, p10022 ... p10031).

14: SI discrepancy monitoring time outputs (p10002, p10102).

15: SI acknowledgment internal event (p10006, p10106).

16: SI test sensor feedback signal test mode selected for test stop (p10046, p10146, p10047, p10147).

17: SI delay time for test stop at DOs (p10001).

18 ... 25: SI test sensor feedback signal (p10046, p10146, p10047, p10147). Expected state of internal readback signal, generated from the selected test stop mode.

26 ... 33: SI test sensor feedback signal (p10046, p10146, p10047, p10147). Expected state of external readback signal, generated from the selected test stop mode.

34 ... 41: SI test sensor feedback signal (p10046, p10146, p10047, p10147). Expected state of second internal readback signal, generated from the selected test stop mode.

42: Internal data for processing the second internal readback signal, generated from the selected test stop mode (p10047, p10147).

43: Internal data for processing the internal readback signal, generated from the selected test stop mode (p10047, p10147).

44: Internal data for processing the external readback signal, generated from the selected test stop mode (p10047, p10147).

45: Internal data for initialization state of test stop mode, dependent upon test stop parameters.

46: SI digital inputs debounce time (p10017, p10117)

47: Selection F-DI for PROFIsafe (p10050, p10150)

48: Screen form of the F-DIs used (p10006, p10022 ... p10031).

49: SI SDI positive input terminal (p10030, p10130).

50: SI SDI negative input terminal (p10031, p10131).

51: SI SLP input terminal (p10032, p10132).

52: SI SLP select input terminal (p10033, p10133).

53: Internal data for retraction logic (p10009, p100109).

54: SI F-DI for retraction SLP (p10009, p100109).

Remedy:

- check parameterization in the parameters involved and correct if required.
- ensure equality by copying the SI data to the second channel and then carry out an acceptance test.
- check monitoring clock cycle in p9500 and p9300 for equality.

This message can be acknowledged without a POWER ON as follows (safe acknowledgment):

- onboard F-DI (only CU310-2).
- PROFIsafe.
- machine control panel.

See also: p9300 (SI Motion monitoring clock cycle (Motor Module)), p9500 (SI Motion monitoring clock cycle (Control Unit))

C01714 SI Motion P1 (CU): Safely-Limited Speed exceeded

Message value: %1
Message class: Safety monitoring channel has identified an error (10)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The drive has moved faster than that specified by the velocity limit value (p9531). The drive is stopped as a result of the configured stop response (p9563).

Message value (r9749, interpret decimal):

100: SLS1 exceeded.

200: SLS2 exceeded.

300: SLS3 exceeded.

400: SLS4 exceeded.

1000: Encoder limit frequency exceeded.

Remedy: - check the traversing/motion program in the control.

- check limits for SLS and if required adapt accordingly (p9531).

This message can be acknowledged without a POWER ON as follows (safe acknowledgment):

- Terminal Module 54F (TM54F).
- onboard F-DI (only CU310-2).
- PROFIsafe.
- machine control panel.

Note:

SI: Safety Integrated

SLS: Safely-Limited Speed / SG: Safely reduced speed

See also: p9531, p9563

C01715 SI Motion P1 (CU): Safely-Limited Position exceeded

Message value: %1
Message class: Safety monitoring channel has identified an error (10)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The axis has moved past a parameterized position that is monitored by the "SLP" function.

Message value (r9749, interpret decimal):

10: SLP1 violated.

20: SLP2 violated.

Remedy: - check the traversing/motion program in the control.

- check the limits for "SLP" function and if required, adapt (p9534, p9535).

This message can be acknowledged without a POWER ON as follows (safe acknowledgment):

Prerequisite:

- deselect "SLP" function and retract the axis into the permitted position range.

Carry out a safe acknowledgment using one of the following options:

- Terminal Module 54F (TM54F).
- onboard F-DI (only CU310-2).
- PROFIsafe.
- machine control panel.

Note:

SI: Safety Integrated

SLP: Safely-Limited Position / SE: Safe software limit switches

See also: p9534, p9535

C01716 SI Motion P1 (CU): Tolerance for safe motion direction exceeded

Message value: %1

Message class: Safety monitoring channel has identified an error (10)

Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The tolerance for the "safe motion direction" function was exceeded. The drive is stopped as a result of the configured stop response (p9566).

Message value (r9749, interpret decimal):

0: Tolerance for the "safe motion direction positive" function exceeded.

1: Tolerance for the "safe motion direction negative" function exceeded.

Remedy: - check the traversing/motion program in the control.

- check the tolerance for "SDI" function and if required, adapt (p9564).

This message can be acknowledged without a POWER ON as follows (safe acknowledgment):

Prerequisite:

- deselect the "SDI" function and if required select again.

Carry out a safe acknowledgment using one of the following options:

- Terminal Module 54F (TM54F).
- onboard F-DI (only CU310-2).
- PROFIsafe.
- machine control panel.

Note:

SDI: Safe Direction (safe motion direction)

SI: Safety Integrated

See also: p9564, p9565, p9566

C01717 SI Motion P1 (CU): SLA limit exceeded

Message value: -

Message class: Safety monitoring channel has identified an error (10)

Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The acceleration limit for the "Safely-Limited Acceleration" function was exceeded. The drive is stopped as a result of the configured stop response (p9579).

Remedy: - check the traversing/motion program in the control.

- check the acceleration limit for the "SLA" function and if required, adapt (p9578).
- carry out a safe acknowledgment.

Note:

SI: Safety Integrated

SLA: Safely-Limited Acceleration

See also: p9578 (SI Motion SLA acceleration limit (CU)), p9579 (SI Motion SLA stop response (Control Unit))

C01730 SI Motion P1 (CU): Reference block for dynamic Safely-Limited Speed invalid

Message value: %1

Message class: Safety monitoring channel has identified an error (10)

Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The reference block transferred via PROFIsafe is negative.

A reference block is used to generate a referred velocity limit value based on the reference quantity "Velocity limit value SLS1" (p9531[0]).

The drive is stopped as a result of the configured stop response (p9563[0]).

Message value (r9749, interpret decimal):

requested, invalid reference block.

Remedy: In the PROFIsafe telegram, input data S_SLS_LIMIT_IST must be corrected.

This message can be acknowledged without a POWER ON as follows (safe acknowledgment):

- PROFIsafe.

Note:

SI: Safety Integrated

SLS: Safely-Limited Speed / SG: Safely reduced speed

C01745 SI Motion P1 (CU): Checking braking torque for the brake test

Message value: -

Message class: Safety monitoring channel has identified an error (10)

Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: POWER ON (IMMEDIATELY)

Cause: The scaling of the brake torque for the brake test can be changed using parameter p2003.

An acceptance test must be carried out again for the braking test. This determines whether the braking test is still carried out with the correct braking torque.

Remedy: - carry out a POWER ON (switch-off/switch-on) for all components.

- repeat the acceptance test for the safe brake test if the brake test is used.

See also: p2003

C01750 SI Motion P1 (CU): Hardware fault safety-relevant encoder

Message value: %1

Message class: Hardware/software error (1)

Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Encoder 1 **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The encoder that is used for the safety-relevant motion monitoring functions signals a hardware fault.

Message value (r9749, interpret decimal):

Encoder status word 1, encoder status word 2 that resulted in the message.

Remedy: - check the encoder connection.

- replace encoder.

This message can be acknowledged without a POWER ON as follows (safe acknowledgment):

- Terminal Module 54F (TM54F).
- onboard F-DI (only CU310-2).
- PROFIsafe.
- machine control panel.

Note regarding encoder replacement for a third-party motor:

The serial number of the encoder must be copied in order to acknowledge this safety message.

This can be realized using p0440 = 1 or p1990 = 1.

C01751 SI Motion P1 (CU): Effectivity test fault safety-relevant encoder

Message value: %1
Message class: Safety monitoring channel has identified an error (10)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 1 **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The DRIVE-CLiQ encoder for safe motion monitoring signals an error for the effectivity tests.
Message value (r9749, interpret decimal):
Only for internal Siemens troubleshooting.
Remedy: - check the encoder connection.
- replace encoder.
This message can be acknowledged without a POWER ON as follows (safe acknowledgment):
- Terminal Module 54F (TM54F).
- onboard F-DI (only CU310-2).
- PROFIsafe.
- machine control panel.

C01752 SI Motion P1 (CU): reference position invalid

Message value: %1
Message class: Safety monitoring channel has identified an error (10)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The transferred reference position is invalid.
Message value (r9749, interpret decimal):
1: It is not possible to directly transfer the reference position (p9573=89).
2: It is not possible to transfer the reference position into the motion.
Remedy: - unpark axis/encoder.
- acknowledge encoder fault
- deactivate gearbox stage switchover.
- when referencing via the Safety Control Channel (SCC), enable the function "Referencing via SCC" (p9501.27/9301.27).
This message can be acknowledged as follows:
- motion monitoring functions integrated in the drive: Via Terminal Module 54F (TM54F) or PROFIsafe

C01770 SI Motion P1 (CU): Discrepancy error of the failsafe inputs/outputs

Message value: %1
Message class: Safety monitoring channel has identified an error (10)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The failsafe digital inputs/digital outputs (F-DI/F-DO) show a different state longer than that parameterized in p10002/p10102 - or too many switching operations took place within a monitoring cycle p10002.

Fault value (r0949, interpret bitwise binary):
yyyyxxxx bin
xxxx: Discrepancy error for failsafe digital inputs (F-DI).
Bit 0: Discrepancy error for F-DI 0
Bit 1: Discrepancy error for F-DI 1
...

yyyy: Discrepancy error for failsafe digital outputs (F-DO).

Bit 0: Discrepancy error for F-DO 0

...

Note:

If several discrepancy errors occur consecutively, then this message is only signaled for the first error that occurs.

Remedy: - check the wiring of the F-DI (contact problems).

- if the wiring is correct, and there is no interrupted cable or similar, then a check must be made as to whether the switching frequency at FDI is too high, and should be reduced (switching pulses must have a longer time between them). After each edge at an FDI, as a minimum, the discrepancy time should elapse before switching again.

Note:

This message can be acknowledged via F-DI or PROFIsafe (safe acknowledgment).

Discrepancy errors of an F-DI can only be acknowledged if safe acknowledgment was carried out once after the cause of the error was resolved (p10006, acknowledgment via PROFIsafe, extended message acknowledgment). As long as safety acknowledgment was not carried out, the corresponding F-DI stays in the safe state internally.

When the "Extended message acknowledgment" function (p9507.0) is active, the following applies:

If the F-DI assigned for STO or SS1 is in a failsafe state due to a discrepancy error, then when deselecting via this F-DI, safe acknowledgment can no longer be executed.

Sets the discrepancy time for fast switching operations at the F-DIs:

For fast switching operations at the failsafe digital inputs (F-DI), it may be necessary to adapt the discrepancy time to the switching frequency:

- the period of a cyclic switching pulse must be less than half of the discrepancy time (if necessary, round down)
- the time between two switching pulses should be longer than the discrepancy time (if necessary, round up)
- the discrepancy time must be at least p9500. (it must always be rounded-down or rounded-up to an integer multiple of the SI sampling time p9500.)

If a debounce time has been parameterized (p10017>0), then the shortest possible discrepancy time is directly specified by the debounce time.

- the period of a cyclic switching pulse must be less than half of the discrepancy time-p10017 (if necessary, round down)
- the time between two switching pulses should be longer than the discrepancy time+p10017 (if necessary, round up)
- the discrepancy time must be at least p9500 The debounce time must always be set less than the discrepancy time.

Example:

For an SI sampling time of 12 ms and a switching frequency of 110 ms (p10017 = 0), as a maximum, the discrepancy time can be set as follows: p10002 <= 110/2 ms - 12 ms = 43 ms --> rounded off, p10002 <= 36 ms is obtained. As the discrepancy time is accepted rounded off to a integer SI sampling time, the result must be rounded off to an integer SI sampling time if the result is not a multiple integer of the SI sampling time. Basic constraint when setting the discrepancy time: Discrepancy time of the F-DIs must always be longer than the longest SI sampling time of all drives that use Safety Integrated with TM54F (p9780/p9500). F-DI: Failsafe Digital Input F-DO: Failsafe Digital Output

Note:

F-DI: Failsafe Digital Input

F-DO: Failsafe Digital Output

A01772 SI Motion P1 (CU): Test stop for failsafe digital outputs running

Message value: -

Message class: Safety monitoring channel has identified an error (10)

Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Control Unit (CU) **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: The forced checking procedure (test stop) for the failsafe digital inputs is currently in progress.

Remedy: The alarm is automatically withdraw after successfully ending or canceling (when a fault condition occurs) the test stop.

Note:

F-DO: Failsafe Digital Output

F01773 SI Motion P1 (CU): Test stop failsafe digital output error

Message value: %1

Message class: Safety monitoring channel has identified an error (10)

Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Control Unit (CU) **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: IMMEDIATELY (POWER ON)

Cause: A fault has occurred on processor 1 during the forced checking procedure (test stop) of the failsafe digital output.

Fault value (r0949, interpret hexadecimal):

RRRVWXYZ hex:

R: Reserved.

V: Actual state of the DO channel concerned (see X) on processor 1 (corresponds to the states read back from the hardware, bit 0 = DO 0, bit 1 = DO 1, etc.).

W: Required state of the DO channel concerned (see X, bit 0 = DO 0, bit 1 = DO 1, etc.).

X: DO channels involved, which indicate an error (bit 0 = DO 0, bit 1 = DO 1, etc.).

Y: Reason for the test stop fault.

Z: State of the test stop in which the fault has occurred.

Y: Reason for the test stop fault

Y = 1: Processor 2 in incorrect test stop state (internal fault).

Y = 2: Expected states of the DOs were not fulfilled (CU305: readback via DI 22 / CU240 readback DI 5).

Y = 3: Incorrect timer state on processor 1 (internal fault)

Y = 4: Expected states of the diag DOs were not fulfilled (CU305: internal readback on processor 2).

Y = 5: Expected states of the second diag DOs were not fulfilled (CU305: internal readback on processor 1).

X and V indicate the DI or Diag-DO state dependent upon the reason for the fault (2, 4 or 5).

In the event of multiple test stop faults, the first one that occurred is shown.

Z: Test stop state and associated test actions

Z = 0 ... 3: Synchronization phase of test stop between processor 1 and processor 2 no switching operations

Z = 4: DO + OFF and DO - OFF

Z = 5: Check to see if states are as expected

Z = 6: DO + ON and DO - ON

Z = 7: Check to see if states are as expected

Z = 8: DO + OFF and DO - ON

Z = 9: Check to see if states are as expected

Z = 10: DO + ON and DO - OFF

Z = 11: Check to see if states are as expected

Z = 12: DO + OFF and DO - OFF

Z = 13: Check to see if states are as expected

Z = 14: End of test stop

Diag expected states in table format:

Test stop state: Expectation Mode 1 / Mode 2 / Mode 3 / Mode 4

5: 0/-/-/1

7: 0/-/-/0

9: 0/-/-/0

11: 1/-/-/1

13: 0/-/-/1

Second diag expected states in table format:

Test stop state: Expectation Mode 1 / Mode 2 / Mode 3 / Mode 4

5: -/-/-/1

7: -/-/-/0

9: -/-/-/1

11: -/-/-/0

13: -/-/-/1

DI expected states in table format:

Test stop state: Expectation Mode 1 / Mode 2 / Mode 3 / Mode 4

5: -/1/1/-

7: -/0/0/-

9: -/0/1/-

11: -/0/1/-

13: -/1/1/-

Example:

Fault F01773 (P1) is signaled with fault value = 0001_0127 and fault F30773 (P2) is signaled with fault value 0000_0127.

This means that in state 7 (Z = 7) the state of the external readback signal was not set correctly (Y = 2) after DO-0 (X = 1) was switched to ON/ON.

Fault value 0001_0127 indicates that 0 was expected (W = 0) and 1 (V = 1) was read back from the hardware.

Fault value 0000_0127 on the processor 2 indicates that the states were as expected.

In the case of fault F30773, W and V are always identical; a value of 0 always means that 0 was expected at the readback input but was not present on processor 1.

Remedy: Check the wiring of the failsafe digital output (F-DO) and restart the test stop.

Note:

- the fault is withdrawn if the test stop is successfully completed.
- in the event of multiple test stop faults, the first one that occurred is shown. Once the test stop has been restarted the next queued test stop fault will be signaled (if there is one).

F-DO: Failsafe Digital Output

A01774 SI Motion P1 (CU): Test stop for failsafe digital outputs required

Message value: -

Message class: Safety monitoring channel has identified an error (10)

Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Control Unit (CU) **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: The time set in p10003 for the forced checking procedure (test stop) for the failsafe digital outputs has been exceeded. A new forced checking procedure is required.

After the next time the forced checking procedure is selected, the message is withdrawn and the monitoring time is reset.

Note:

- this message does not result in a safety stop response.
- the test must be performed within a defined, maximum time interval (p10003, maximum of 8760 hours) in order to comply with the requirements as laid down in the standards for timely fault detection and the conditions to calculate the failure rates of safety functions (PFH value). Operation beyond this maximum time period is permissible if it can be ensured that the forced checking procedure is performed before persons enter the hazardous area and who are depending on the safety functions correctly functioning.

See also: p10003

Remedy: Carry out the forced checking procedure for the digital outputs.

The signal source to select the forced checking procedure is set via binector input p10007.

Note:

F-DO: Failsafe Digital Output

See also: p10007

A01780 SBT When selected, the brake is closed

Message value: Following brakes are closed: %1 bin
Message class: Safety monitoring channel has identified an error (10)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: When selecting the brake test or starting the brake test, not all of the brakes were open.

Alarm value (r2124, interpret binary):

Bit 0 = 1:

The internal brake is closed.

Bit 1 = 1:

The external brake is closed (p10230.5, p10235.5, p10202).

Note:

The alarm is also issued, if a brake has not been configured in p10202.

SBT: Safe Brake Test

See also: p10202 (SI Motion SBT brake selection), p10230 (SI Motion SBT control word), p10235 (SI Safety Control Channel control word S_STW3B)

Remedy: Open all brakes and reselect the brake test (p10230.0, p10235.0).

A01781 SBT brake opening time exceeded

Message value: Fault cause: %1 bin
Message class: Safety monitoring channel has identified an error (10)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The maximum time (11 s) to open the brake during the brake test was exceeded.

Possible causes:

- during the brake test the drive went into a fault condition, and therefore the brake was closed by the drive.
- for an external brake, the feedback signal "Brake closed" was signaled too long (p10230.5, p10235).

Alarm value (r2124, interpret binary):

Bit 0 = 1:

Internal brake was not able to be opened.

Bit 1 = 1:

External brake was not able to be opened.

Note:

SBT: Safe Brake Test

Remedy: - carry out a safe acknowledgment.

- restart the brake test (p10230.1, p10235.1).

See also: p10230 (SI Motion SBT control word), p10235 (SI Safety Control Channel control word S_STW3B)

A01782 SBT brake test incorrect control

Message value: Fault cause: %1 bin
Message class: Safety monitoring channel has identified an error (10)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE

Cause: The brake test was canceled as a result of incorrect control.
Alarm value (r2124, evaluate binary):
Alarm value 0:
The brake test was canceled as a result of a fault (brake opening time or brake closing time exceeded).
Bit 0:
The safe brake test was canceled by resetting the brake test selection.
Bit 1:
The safe brake test was canceled by resetting the brake test start.
Bit 2:
The brake, which was selected at the start of the brake test, has not been configured in p10202.
When starting the brake test, as a result of the test top selection, brake 1 is not configured as internal brake.
There is a brake test configuration error. In this case, alarm A01785 is also output.
Note:
SBT: Safe Brake Test
See also: p10202 (SI Motion SBT brake selection)

Remedy: - check parameterization of the brake test (p10202).
- check as to whether alarm A01785 is present, and if so, evaluate.
- carry out a safe acknowledgment.
- if required, restart the brake test.

A01783 SBT brake closing time exceeded

Message value: Fault cause: %1 bin
Message class: Safety monitoring channel has identified an error (10)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The maximum time (11 s) to close the brake during the brake test was exceeded.
Alarm value (r2124, interpret binary):
Bit 0 = 1:
Internal brake was not able to be closed.
Bit 1 = 1:
External brake was not able to be closed.
Note:
SBT: Safe Brake Test

Remedy: - When using an external brake, check that the feedback signal "brake closed" is correctly interconnected with the control word of the brake test (p10230.5, p10235.5).
- When using an internal brake with external feedback signal, check whether the feedback signal is correctly interconnected with the extended brake control.
- carry out a safe acknowledgment.
- restart the brake test (p10230.1, p10235.1).

A01784 SBT brake test canceled with fault

Message value: Fault cause: %1
Message class: Safety monitoring channel has identified an error (10)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The safe brake test was canceled as a result of a fault.
Alarm value (r2124, interpret binary):
Bit 17 = 1: fault in the brake test sequence (cause, see bits 0 ... 10).
Bit 18 = 1: the internal brake is closed. It must be open when the external brake is tested (p10202).
Bit 19 = 1: the external brake is closed. It must be open when the internal brake is tested (p10202).
Bit 20 = 1: not all brakes are open (p10202).
Bit 21 = 1: axis position during the brake test not valid due to parking axis.

Bit 22 = 1: internal software error.
Bit 23 = 1: the permissible position range of the axis was violated with the brake closed (p10212/p10222).
Bit 24 = 1: the tested internal brake was opened while the brake test was active.
Bit 25 = 1: the tested external brake was opened while the brake test was active.
Bit 26 = 1: during the active brake test, the test torque left its tolerance bandwidth (20 %).
Cause for alarm value bit 17:
Bit 0 = 1: operation when selecting the brake test not enabled (r0899.2 = 0).
Bit 1 = 1: external fault occurred (e.g. the brake test that has already started is canceled by the user).
Bit 2 = 1: when selecting the brake test a brake is closed.
Bit 3 = 1: when determining the load torque a brake is closed.
Bit 4 = 1: a fault with a stop response has occurred (e.g. OFF1, OFF2 or OFF3) - or pulse enable was withdrawn (e.g. STO selected or operation no longer enabled).
Bit 5 = 1: when selecting the brake test the axis speed setpoint is too high.
Bit 6 = 1: the actual speed (r0063) of the axis is too high (e.g. brake does not hold during the brake test).
Bit 7 = 1: incorrect speed controller mode (e.g. encoderless speed control or U/f operation).
Bit 8 = 1: closed-loop control not enabled or function generator active.
Bit 9 = 1: control does not switch over to the brake test (e.g. because PI speed control has not been parameterized).
Bit 10 = 1: torque limit reached (r1407.7, r1408.8).
Note:
SBT: Safe Brake Test

Remedy: - remove the fault cause.
- carry out a safe acknowledgment.
- if required, restart the brake test.
For bit 17 = 1 with bit 6 = 1 or bit 23 = 1:
If the brake closing time of the motor holding brake (p1217) has been set too low, then at the start of the brake test, the brake is closed too late. The brake closing time should be adapted (p1217).

A01785 SBT brake test configuration error

Message value: %1
Message class: Safety monitoring channel has identified an error (10)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: Error when parameterizing the brake test.
In this configuration, the brake test cannot be started or cannot be started without error.
Alarm value (r2124, interpret decimal):
1:
No motion monitoring functions have been enabled.
2:
Two internal brakes were configured (p10202).
4:
No internal brakes were configured (p10202).
8:
The brake test is configured for an internal brake, however the safety brake control is not enabled (p9602/p9802).
(Note: from V5.1, SBT is permitted for the internal brake without SBC.)
16:
The safe brake test and Safety without encoder are simultaneously enabled (p9306/p9506). This is not permissible.
32:
The Safe Brake Test and vector U/f control is enabled. The safe brake test is not possible in this control mode.
Note:
SBT: Safe Brake Test

Remedy: Check parameterization of the brake test.

F01786 SCC signal source changed

Message value: -
Message class: Safety monitoring channel has identified an error (10)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The signal source in p10235 or p10250 was changed.
The new signal source is effective immediately.
Note:
SCC: Safety Control Channel
See also: p10235 (SI Safety Control Channel control word S_STW3B), p10250 (SI Safety Control Channel control word S_STW1B)
Remedy: Acknowledge fault.

F01787 SBT motor type different

Message value: -
Message class: Safety monitoring channel has identified an error (10)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The motor type set for the safe brake test (p10204) does not match the motor type set via the function module (r0108.12).
Remedy: Adapt the motor type set for the safe brake test.
Note:
All of the parameters for the brake test, whose unit depends on the motor type, should be checked.
See also: p10204 (SI Motion SBT motor type), p10209

A01788 SI: Automatic test stop waits for STO deselection via motion monitoring functions

Message value: -
Message class: Safety monitoring channel has identified an error (10)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The automatic test stop (forced checking procedure) was not able to be carried out after powering up.
Possible causes:
- the STO function is selected via safe motion monitoring functions.
- a safety message is present, that resulted in a STO.
Note:
STO: Safe Torque Off
Remedy: - deselect STO via safe motion monitoring functions.
- remove the cause of the safety messages and acknowledge the messages.
Note:
The automatic test stop is performed after removing the cause.

A01789 SI: Automatic test stop and brake test when test stop is selected not permitted

Message value: -
Message class: Safety monitoring channel has identified an error (10)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The parameterization of the automatic test stop (p9507.6/p9307.6) and the brake test when a test stop is selected (p10203 = 2) are not permissible.

The test stop is not automatically carried out when the powering up.

Remedy: - correct the parameter assignment.

- set p10203 not equal to 2 or deactivate the automatic test stop.

Note:

A warm restart or POWER ON is required to carry out the automatic test stop.

A01794 (N) SI Motion: check modulo value for safe position via PROFIsafe

Message value: -
Message class: Hardware/software error (1)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: When parameterizing the modulo value for safe position via PROFIsafe (p9505) the position actual value can jump when the range that can be represented overflows.

Range that can be represented:

- 32-bit value: +/- 2048 revolutions
- 16-bit value: +/- 2048 revolutions (depending on p9574)

Remedy: Correct the parameter assignment.

Set p9505 to 2^n revolutions - and to complete revolutions (i.e. a multiple of 360 °).

Note:

This alarm can be hidden for the case that the possible position actual value jump can be tolerated for the particular application, or does not represent a problem; for example because the parameterized modulo range fits "almost as integer number" in the range of +/- 2048 revolutions that can be represented.

To re-parameterize the alarm to "NO REPORT", it is not permissible that the alarm is present. As a consequence, the following sequence is required for the re-parameterization:

- correct p9505 to "2^n".
- re-parameterize the alarm using p2118 and p2119.
- set p9505 back to the required value.

Reaction upon N: NONE
Acknowl. upon N: NONE

A01795 SI Motion P1 (CU): Wait time after exiting the safe pulse cancellation expired

Message value: -
Message class: Safety monitoring channel has identified an error (10)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: After exiting safe pulse cancellation, within the wait time of 5 seconds, encoderless actual value sensing was not able to be activated for the extended functions without selection.

A change is again made into the "safe pulse cancellation" state.

Remedy: - check missing enable signals, which prevent the drive control from being commissioned (r0046).

- evaluate possible fault messages of the encoderless actual value sensing and remove.

A01796 (F, N) SI P1 (CU): Wait for communication

Message value: %1
Message class: Communication error to the higher-level control system (9)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The drive waits for communication to be established to execute the safety-relevant motion monitoring functions.

Note:

STO is active in this state.

Alarm value (r2124, interpret decimal):

1: Wait for communication to be established to SINUMERIK.

2: Wait for communication to be established to TM54F.

3: Wait for communication to be established to PROFIsafe F-Host.

Remedy: If, after a longer period of time, the message is not automatically withdrawn, the following checks have to be made as appropriate:

For communication with SINUMERIK, the following applies:

- check any other PROFIBUS messages/signals present and remove their cause.
- check that assignment of the axes on the higher-level control to the drives in the drive unit is correct.
- check enable signal of the safety-relevant motion monitoring functions for the corresponding axis on the higher-level control and if required, set it.

For communication with TM54F, the following applies:

- check any other messages/signals present for DRIVE-CLiQ communication with the TM54F and remove their cause.
- check the setting of p10010. All the drive objects controlled by the TM54F must be listed.

For communication with PROFIsafe F-Host, the following applies:

- check any other PROFIsafe communication messages/signals present and evaluate them.
- check the operating state of the F-Host.
- check the communication connection to the F Host.
- check the communication connection to the Motor Module/Hydraulic Module. It must be ensured that when the Control Unit powers up, the Motor Module/Hydraulic Module is connected and at the latest is also switched-on with the Control Unit. Otherwise, if the Motor Module/Hydraulic Module is subsequently inserted or switched on, a POWER ON must be performed at the Control Unit.

Note:

STO: Safe Torque Off

See also: p9601, p9801, p10010

Reaction upon F: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

C01797 SI Motion P1 (CU): Axis not safely referenced

Message value: %1
Message class: Safety monitoring channel has identified an error (10)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The standstill position saved before switching off does not match the actual position determined at switch-on.

Message value (r9749, interpret decimal):

1: Axis not safely referenced.

2: User agreement missing.

Remedy: If safe automatic referencing is not possible the user must issue a user agreement for the new position using the softkey. This mean that this position is then designated as safety-relevant.

Note:

SI: Safety Integrated

C01798 SI Motion P1 (CU): Test stop for motion monitoring functions running

Message value: -
Message class: Safety monitoring channel has identified an error (10)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The forced checking procedure (test stop) for the safe motion monitoring functions is currently in progress.
Remedy: Not necessary.

The message is automatically withdrawn when the test stop has been completed.

Note:

SI: Safety Integrated

C01799 SI Motion P1 (CU): Acceptance test mode active

Message value: -
Message class: Safety monitoring channel has identified an error (10)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The acceptance test mode is active.

This means the following:

- the setpoint velocity limiting is deactivated (r9733).
- the standard limit switches are deactivated during the acceptance test for function SLP (SE) (for EPOS internal, otherwise via r10234).
- for safety functions with SINUMERIK, the following applies: The POWER ON signals of the safety-relevant motion monitoring functions can be acknowledged during the acceptance test using the acknowledgment functions of the higher-level control.

Remedy: Not necessary.

The message is withdrawn when exiting the acceptance test mode.

Note:

SI: Safety Integrated

SLP: Safely-Limited Position / SE: Safe software limit switches

F01800 DRIVE-CLiQ: Hardware/configuration error

Message value: %1
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: Infeed: NONE (OFF1, OFF2)

Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)

Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)

Hla: NONE (OFF1, OFF2, OFF3, STOP2)

Acknowledge: IMMEDIATELY (POWER ON)
Cause: A DRIVE-CLiQ connection fault has occurred.

Fault value (r0949, interpret decimal):

100 ... 107:

Communication via DRIVE-CLiQ socket X100 ... X107 has not been switched to cyclic operation. The cause may be an incorrect structure or a configuration that results in an impossible bus timing.

10:

Loss of the DRIVE-CLiQ connection. The cause may be, for example, that the DRIVE-CLiQ cable was withdrawn from the Control Unit or as a result of a short-circuit for motors with DRIVE-CLiQ. This fault can only be acknowledged in cyclic communication.

11:

Repeated faults when detecting the connection. This fault can only be acknowledged in cyclic communication.

12:

A connection was detected but the node ID exchange mechanism does not function. The reason is probably that the component is defective. This fault can only be acknowledged in cyclic communication.

Remedy: For fault value = 100 ... 107:

- ensure that the DRIVE-CLiQ components have the same firmware versions.
- avoid longer topologies for short current controller sampling times.

For fault value = 10:

- check the DRIVE-CLiQ cables at the Control Unit.
- remove any short-circuit for motors with DRIVE-CLiQ.
- carry out a POWER ON.

For fault value = 11:

- check the electrical cabinet design and cable routing for EMC compliance

For fault value = 12:

- replace the component involved.

A01839 DRIVE-CLiQ diagnostics: cable fault to the component

Message value: Component number: %1

Message class: General drive fault (19)

Drive object: All objects

Component: Control Unit (CU) **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: The fault counter (r9936[0...199]) to monitor the DRIVE-CLiQ connections/cables has been incremented.

Alarm value (r2124, interpret decimal):

Component number.

Note:

The component number specifies the component whose feeder cable from the direction of the Control Unit is faulted.

The alarm automatically disappears after 5 seconds, assuming that no other data transfer error has occurred.

See also: r9936 (DRIVE-CLiQ diagnostic error counter connection)

Remedy:

- check the corresponding DRIVE-CLiQ cables.
- check the electrical cabinet design and cable routing for EMC compliance

A01840 SMI: Component found without motor data

Message value: Component number: %1

Message class: Hardware/software error (1)

Drive object: All objects

Component: None **Propagation:** DRIVE

Reaction: NONE

Acknowledge: NONE

Cause: An SMI/DQI without motor data has been found (e.g. SMI installed as replacement part).

Alarm value (r2124, interpret decimal):

Component number from target topology.

Remedy: 1. Download the SMI/DQI data (motor/encoder data) from the data backup again (p4690, p4691).

2. Carry out a POWER ON (switch-off/switch-on) for this component.

Note:

DQI: DRIVE-CLiQ Sensor Integrated

SMI: SINAMICS Sensor Module Integrated

See also: p4690 (SMI spare part component number), p4691 (SMI spare part save/download data)

A01900 (F) PB/PN: Configuration telegram error

Message value: %1

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: A_INF, B_INF, CU_LINK, CU_S_AC_DP, CU_S_AC_PN, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: A controller attempts to establish a connection using an incorrect configuring telegram.

Alarm value (r2124, interpret decimal):

1:

Connection established to more drive objects than configured in the device. The drive objects for process data exchange and their sequence are defined in p0978.

2:

Too many PZD data words for output or input to a drive object. The number of possible PZD items in a drive object is determined by the number of indices in r2050/p2051.

3:

Uneven number of bytes for input or output.

4:

Setting data for synchronization not accepted. For more information, see A01902.

211:

Unknown parameterizing block.

223:

Clock synchronization for the PZD interface set in p8815[0] is not permissible.

More than one PZD interface is operated in clock synchronism.

253:

PN Shared Device: Illegal mixed configuration of PROFIsafe and PZD.

254:

PN Shared Device: Illegal double assignment of a slot/subslot.

255:

PN: Configured drive object and existing drive object do not match.

256:

PN: configured telegram cannot be set.

500:

Illegal PROFIsafe configuration for the interface set in p8815[1].

More than one PZD interface is operated with PROFIsafe.

501:

PROFIsafe parameter error (e.g. F_dest).

502:

PROFIsafe telegram does not match.

503:

PROFIsafe connection is rejected as long as there is no isochronous connection (p8969).

Additional values:

Only for internal Siemens troubleshooting.

Remedy: Check the bus configuration on the master and the slave sides.

For alarm value = 1, 2:

- check the list of the drive objects with process data exchange (p0978).

Note:

With p0978[x] = 0, all of the following drive objects in the list are excluded from the process data exchange.

For alarm value = 2:

- check the number of data words for output and input to a drive object.

For alarm value = 211:

- Ensure offline version <= online version.

For alarm value = 223, 500:
- check the setting in p8839 and p8815.
- check for inserted but not configured CBE20.
- ensure that only one PZD interface is operated in clock synchronism or with PROFIsafe.
For alarm value = 255:
- check configured drive objects.
For alarm value = 256:
- check the configured telegram.
For alarm value = 501:
- check the set PROFIsafe address (p9610).
For alarm value = 502:
- check the set PROFIsafe telegram (p60022, p9611).

Reaction upon F: NONE (OFF1)
Acknowl. upon F: IMMEDIATELY

A01902 PB/PN: clock cycle synchronous operation parameterization not permissible

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: Parameterization for isochronous operation is not permissible.
Alarm value (r2124, interpret decimal):
0: Bus cycle time Tdp < 0.5 ms.
1: Bus cycle time Tdp > 32 ms.
2: Bus cycle time Tdp is not an integer multiple of the current controller sampling time.
3: Instant of the actual value sensing Ti > Bus cycle time Tdp or Ti = 0.
4: Instant of the actual value sensing Ti is not an integer multiple of the current controller sampling time.
5: Instant of the setpoint acceptance To >= Bus cycle time Tdp or To = 0.
6: Instant of the setpoint acceptance To is not an integer multiple of the current controller sampling time.
7: Master application cycle time Tmapc is not an integer multiple of the speed controller sampling time.
8: Bus reserve bus cycle time Tdp - data exchange time Tdx less than two current controller sampling times.
10: Instant of the setpoint acceptance To <= data exchange time Tdx + current controller sampling time
11: Master application cycle time Tmapc > 14 x Tdp or Tmapc = 0.
12: PLL tolerance window Tpll_w > Tpll_w_max.
13: Bus cycle time Tdp is not a multiple of all basic clock cycles p0110[x].
16: For COMM BOARD, the instant in time for the actual value sensing Ti is less than two current controller sampling times.

Remedy: - Adapt the bus parameterization Tdp, Ti, To.
- adapt the sampling time for the current controller or speed controller.
For alarm value = 10:
- reduce Tdx by using fewer bus participants or shorter telegrams.
Note:
PB: PROFIBUS
PN: PROFINET

A01903 (F) COMM INT: Receive configuration data invalid

Message value: %1

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: A_INF, B_INF, CU_I, CU_I_D410, CU_LINK, CU_NX_CX, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: The drive unit did not accept the receive configuration data.

Alarm value (r2124, interpret decimal):

Return value of the receive configuration data check.

1: Connection established to more drive objects than configured in the device. The drive objects for process data exchange and their sequence are defined in p0978.

2: Too many PZD data words for output or input to a drive object. The number of possible PZD items in a drive object is determined by the number of indices in r2050/p2051.

3: Uneven number of bytes for input or output.

4: Setting data for synchronization not accepted. For more information, see A01902.

5: Cyclic operation not active.

501: PROFIsafe parameter error (e.g. F_dest).

Additional values:

Only for internal Siemens troubleshooting.

Remedy: Check the receive configuration data.

For alarm value = 1, 2:

Check the list of the drive objects with process data exchange (p0978). With p0978[x] = 0, all of the following drive objects in the list are excluded from the process data exchange.

For alarm value = 2:

Check the number of data words for output and input to a drive object.

For alarm value = 501:

Check the set PROFIsafe address (p9610).

Reaction upon F: Infeed: NONE (OFF1, OFF2)

Servo: NONE (OFF1, OFF2, OFF3)

Vector: NONE (OFF1, OFF2, OFF3)

Hla: NONE (OFF1, OFF2, OFF3)

Acknowl. upon F: IMMEDIATELY

F01910 (N, A) Fieldbus: setpoint timeout

Message value: -

Message class: Communication error to the higher-level control system (9)

Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM150, TM15DI_DO, TM31, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: Infeed: OFF2 (NONE, OFF1)

Servo: OFF3 (IASC/DCBRK, NONE, OFF1, OFF2, STOP2)

Vector: OFF3 (IASC/DCBRK, NONE, OFF1, OFF2, STOP2)

Hla: OFF3 (NONE, OFF1, OFF2, STOP2)

Acknowledge: IMMEDIATELY

Cause: The reception of setpoints from the fieldbus interface (onboard, PROFIBUS/PROFINET/USS) has been interrupted.

- bus connection interrupted.
- controller switched off.
- controller set into the STOP state.

See also: p2040, p2047 (PROFIBUS additional monitoring time)

Remedy: Restore the bus connection and set the controller to RUN.

Note regarding PROFIBUS slave redundancy:

For operation on a Y link, it must be ensured that "DP alarm mode = DPV1" is set in the slave parameterization.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F01911 (N, A) PB/PN: clock cycle synchronous operation clock cycle failure

Message value: -
Message class: Communication error to the higher-level control system (9)
Drive object: All objects
Component: None **Propagation:** GLOBAL
Reaction: Infeed: OFF1
Servo: OFF1 (OFF3)
Vector: OFF1 (OFF3)
Hla: OFF1 (OFF3)
Acknowledge: IMMEDIATELY
Cause: The global control telegram to synchronize the clock cycles has failed - in cyclic operation - for several DP clock cycles or has violated the time grid specified in the parameterizing telegram over several consecutive DP clock cycles (refer to the bus cycle time, Tdp and Tpllw).
Remedy: - check the physical bus configuration (cable, connector, terminating resistor, shielding, etc.).
- check whether communication was briefly or permanently interrupted.
- check the bus and controller for utilization level (e.g. bus cycle time Tdp was set too short).
PB: PROFIBUS
PN: PROFINET
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F01912 (N, A) PB/PN: clock cycle synchronous operation sign-of-life failure

Message value: -
Message class: Communication error to the higher-level control system (9)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** LOCAL
Reaction: Infeed: OFF1
Servo: OFF1 (OFF3)
Vector: OFF1 (OFF3)
Hla: OFF1 (OFF3)
Acknowledge: IMMEDIATELY
Cause: The maximum permissible number of errors in the controller sign-of-life (clock synchronous operation) has been exceeded in cyclic operation.
Remedy: - physically check the bus (cables, connectors, terminating resistor, shielding, etc.).
- correct the interconnection of the controller sign-of-life (p2045).
- check whether the controller correctly sends the sign-of-life (e.g. create a trace with STW2.12 ... STW2.15 and trigger signal ZSW1.3).
- check the permissible telegram failure rate (p0925).
- check the bus and controller for utilization level (e.g. bus cycle time Tdp was set too short).
Note:
PB: PROFIBUS
PN: PROFINET
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F01913 (N, A) COMM INT: Monitoring time sign-of-life expired

Message value: -

Message class: Communication error to the higher-level control system (9)

Drive object: A_INF, B_INF, CU_I, CU_I_D410, CU_LINK, CU_NX_CX, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: Infeed: OFF1 (NONE, OFF2)
Servo: OFF1 (NONE, OFF2, OFF3)
Vector: OFF1 (NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)

Acknowledge: IMMEDIATELY

Cause: The monitoring time for the sign-of-life counter has expired.

The connection between the drive and the higher-level control (SIMOTION, SINUMERIK) has been interrupted for the following reasons:

- the control was reset.
- the data transfer to the control was interrupted.

Remedy:
- wait until the control has re-booted.
- restore data transfer to the control.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F01914 (N, A) COMM INT: Monitoring time configuration expired

Message value: %1

Message class: Communication error to the higher-level control system (9)

Drive object: A_INF, B_INF, CU_I, CU_I_D410, CU_LINK, CU_NX_CX, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** LOCAL

Reaction: Infeed: NONE (OFF1, OFF2)
Servo: NONE (OFF1, OFF2, OFF3)
Vector: NONE (OFF1, OFF2, OFF3)
Hla: NONE (OFF1, OFF2, OFF3)

Acknowledge: IMMEDIATELY

Cause: The monitoring time for the configuration has expired.

Fault value (r0949, interpret decimal):

0: The transfer time of the send configuration data has been exceeded.

1: The transfer time of the receive configuration data has been exceeded.

Remedy:
- acknowledge faults that are present.
- carry out a POWER ON (switch-off/switch-on) for all components.
- upgrade firmware to later version.
- contact Technical Support.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F01915 (N, A) PB/PN: clock cycle synchronous operation sign-of-life failure drive object 1

Message value: -
Message class: Communication error to the higher-level control system (9)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: Group display for problems with the sign-of-life of the master (isochronous operation) on the drive object 1 (Control Unit).
For central measurements, synchronism with the central master is lost.
Remedy: Note:
PB: PROFIBUS
PN: PROFINET
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

A01920 (F) PROFIBUS: Interruption cyclic connection

Message value: -
Message class: Communication error to the higher-level control system (9)
Drive object: A_INF, B_INF, CU_LINK, CU_S_AC_DP, CU_S_AC_PN, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The cyclic connection to the PROFIBUS master is interrupted.
Remedy: Establish the PROFIBUS connection and activate the PROFIBUS master in the cyclic mode.
Note:
If there is no communication to a higher-level control system, then p2030 should be set = 0 to suppress this message.
See also: p2030 (Field bus interface protocol selection)
Reaction upon F: NONE (OFF1)
Acknowl. upon F: IMMEDIATELY

A01921 (F) PROFIBUS: Receive setpoints after To

Message value: -
Message class: Communication error to the higher-level control system (9)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: Output data of PROFIBUS master (setpoints) received at the incorrect instant in time within the PROFIBUS clock cycle.
Remedy: - check bus configuration.
- check parameters for clock cycle synchronization (ensure To > Tdx).
Note:
To: Time of setpoint acceptance
Tdx: Data exchange time
Reaction upon F: NONE (OFF1)
Acknowl. upon F: IMMEDIATELY

A01925 (F)	**Modbus TCP: connection interrupted**		
Message value:	-		
Message class:	Communication error to the higher-level control system (9)		
Drive object:	CU_S_AC_DP, CU_S_AC_PN, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN		
Component:	None	**Propagation:**	LOCAL
Reaction:	NONE		
Acknowledge:	NONE		
Cause:	The Ethernet connection to the Modbus controller is interrupted.		
Remedy:	- establish an Ethernet connection. - activate the Modbus controller.		
Reaction upon F:	NONE		
Acknowl. upon F:	IMMEDIATELY		

A01930	**PB/PN: current controller sampling time clock cycle synch. not equal**		
Message value:	%1		
Message class:	Error in the parameterization / configuration / commissioning procedure (18)		
Drive object:	All objects		
Component:	None	**Propagation:**	GLOBAL
Reaction:	NONE		
Acknowledge:	NONE		
Cause:	The current controller sampling time of all drives must be set the same for the clock cycle synchronous operation. Alarm value (r2124, interpret decimal): Number of the drive object with different current controller sampling time.		
Remedy:	Set current controller sampling time to identical values (p0115[0]). Note: PB: PROFIBUS PN: PROFINET See also: p0115		

A01931	**PB/PN: speed controller sampling time clock cycle synch. not equal**		
Message value:	%1		
Message class:	Error in the parameterization / configuration / commissioning procedure (18)		
Drive object:	All objects		
Component:	None	**Propagation:**	LOCAL
Reaction:	NONE		
Acknowledge:	NONE		
Cause:	The speed controller sampling time of all drives must be set the same for the clock cycle synchronous operation. Alarm value (r2124, interpret decimal): Number of the drive object with the different speed controller sampling time.		
Remedy:	Set the speed controller sampling times to identical values (p0115[1]). Note: PB: PROFIBUS PN: PROFINET See also: p0115		

A01932 PB/PN: clock cycle synchronization missing for DSC

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: There is no clock synchronization or clock synchronous sign of life and DSC is selected.
Note:
DSC: Dynamic Servo Control
See also: p0922, p1190, p1191
Remedy: Set clock synchronization across the bus configuration and transfer clock synchronous sign-of-life.
See also: r2064 (PB/PN diagnostics clock cycle synchronism)

A01940 PB/PN: clock cycle synchronism not reached

Message value: -
Message class: Communication error to the higher-level control system (9)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The bus is in the data exchange state and clock synchronous operation has been selected using the parameterizing telegram. It was not possible to synchronize to the clock cycle specified by the master.
- the master does not send a clock synchronous global control telegram although clock synchronous operation was selected when configuring the bus.
- the master is using another clock synchronous DP clock cycle than was transferred to the slave in the parameterizing telegram.
- at least one drive object has a pulse enable (not controlled from PROFIBUS/PROFINET either).

Remedy: - check the master application and bus configuration.
- check the consistency between the clock cycle input when configuring the slave and clock cycle setting at the master.
- check that no drive object has a pulse enable. Only enable the pulses after synchronizing the PROFIBUS/PROFINET drives.

Note:
PB: PROFIBUS
PN: PROFINET

A01941 PB/PN: clock cycle signal missing when establishing bus communication

Message value: -
Message class: Communication error to the higher-level control system (9)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The bus is in the data exchange state and clock synchronous operation has been selected using the parameterizing telegram. The global control telegram for synchronization is not being received.
Remedy: Check the master application and bus configuration.
Note:
PB: PROFIBUS
PN: PROFINET

A01943 PB/PN: clock cycle signal error when establishing bus communication

Message value: -

Message class: Communication error to the higher-level control system (9)

Drive object: All objects

Component: None **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: The bus is in the data exchange state and clock synchronous operation has been selected using the parameterizing telegram.

The global control telegram for synchronization is being irregularly received.

-.the master is sending an irregular global control telegram.

- the master is using another clock synchronous DP clock cycle than was transferred to the slave in the parameterizing telegram.

Remedy: - check the master application and bus configuration.

- check the consistency between the clock cycle input when configuring the slave and clock cycle setting at the master.

Note:

PB: PROFIBUS

PN: PROFINET

A01944 PB/PN: sign-of-life synchronism not reached

Message value: -

Message class: Communication error to the higher-level control system (9)

Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: The bus is in the data exchange state and clock synchronous operation has been selected using the parameterizing telegram.

Synchronization with the master sign-of-life (STW2.12 ... STW2.15) could not be completed because the sign-of-life is changing differently to how it was configured in the Tmapc time grid.

Remedy: - ensure that the master correctly increments the sign-of-life in the master application clock cycle Tmapc.

- correct the interconnection of the master sign-of-life (p2045).

Note:

PB: PROFIBUS

PN: PROFINET

A01945 PROFIBUS: Connection to the Publisher failed

Message value: Fault cause: %1 bin

Message class: Communication error to the higher-level control system (9)

Drive object: All objects

Component: None **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: For PROFIBUS peer-to-peer data transfer, the connection to at least one Publisher has failed.

Alarm value (r2124, interpret binary):

Bit 0 = 1: Publisher with address in r2077[0], connection failed.

...

Bit 15 = 1: Publisher with address in r2077[15], connection failed.

Remedy: - check the PROFIBUS cables.

- carry out a first commissioning of the Publisher that has the failed connection.

See also: r2077 (PROFIBUS diagnostics peer-to-peer data transfer addresses)

F01946 (A) PROFIBUS: Connection to the Publisher aborted

Message value: Fault cause: %1 bin
Message class: Communication error to the higher-level control system (9)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: Infeed: OFF1 (NONE, OFF2)
Servo: OFF1 (NONE, OFF2, OFF3)
Vector: OFF1 (NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: At this drive object, the connection to at least one Publisher for PROFIBUS peer-to-peer data transfer in cyclic operation has been aborted.
Fault value (r0949, interpret binary):
Bit 0 = 1: Publisher with address in r2077[0], connection aborted.
...
Bit 15 = 1: Publisher with address in r2077[15], connection aborted.
Remedy: - check the PROFIBUS cables.
- check the state of the Publisher that has the aborted connection.
See also: r2077 (PROFIBUS diagnostics peer-to-peer data transfer addresses)
Reaction upon A: NONE
Acknowl. upon A: NONE

F01950 (N, A) PB/PN: clock cycle synchronous operation synchronization unsuccessful

Message value: -
Message class: Communication error to the higher-level control system (9)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: OFF1 (NONE)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: Synchronization of the internal clock cycle to the global control telegram has failed. The internal clock cycle exhibits an unexpected shift.
Remedy: Only for internal Siemens troubleshooting.
Note:
PB: PROFIBUS
PN: PROFINET
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F01951 CU SYNC: Synchronization application clock cycle missing

Message value: %1
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: All objects
Component: None **Propagation:** GLOBAL
Reaction: OFF2 (NONE)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: If DRIVE-CLiQ components with different application clock cycle are operated on a DRIVE-CLiQ port, this requires synchronization with the Control Unit. This synchronization routine was unsuccessful.
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.

Remedy: - carry out a POWER ON (switch-off/switch-on) for all components.
- upgrade the software of the DRIVE-CLiQ components.
- upgrade the Control Unit software.
Note:
If a Controller Extension is being used (e.g. CX32, NX10), then the following applies:
Check whether the Controller Extension is issuing error messages, and if required, remove these.

F01952 CU DRIVE-CLiQ: Synchronization of component not supported

Message value: %1
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: All objects
Component: None **Propagation:** DRIVE
Reaction: OFF2 (NONE)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The existing system configuration requires that the connected DRIVE-CLiQ components support the synchronization between the basic clock cycle, DRIVE-CLiQ clock cycle and the application clock cycle.
However, not all DRIVE-CLiQ components have this functionality.
Fault value (r0949, interpret decimal):
Component number of the first faulty DRIVE-CLiQ component.
Remedy: Upgrade the firmware of the component specified in the fault value.
Note:
If required, also upgrade additional components in the DRIVE-CLiQ line.

A01953 CU SYNC: Synchronization not completed

Message value: %1
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: After the drive system is switched on, the synchronization between the basic clock cycle, DRIVE-CLiQ clock cycle and application clock cycle was started but was not completed within the selected time tolerance.
Alarm value (r2124, interpret decimal):
Only for internal Siemens troubleshooting.
Remedy: Carry out a POWER ON (switch-off/switch-on) for all components.
If the error occurs after the drive sampling times were changed, and if a Terminal Module 31 (TM31) is being used, the sampling times (p0115, p4099) should be set as integer multiples to the drive clock cycles (p0115).

F01954 CU DRIVE-CLiQ: Synchronization unsuccessful

Message value: %1
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: Synchronization between the basic clock cycle, DRIVE-CLiQ clock cycle and application clock cycle was started and was not able to be successfully completed (e.g. after switch-on).
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.
Remedy: 1. Remove the cause of a possible DRIVE-CLiQ fault.
2. Initiate a new synchronization, e.g. as follows:
- remove the PROFIBUS master and re-insert again.
- restart the PROFIBUS master.
- switch off the Control Unit and switch on again.
- carry out a Control Unit hardware reset (RESET button, p0972).
- carry out a parameter reset and download the saved parameters (p0009 = 30, p0976 = 2, 3).

A01955 CU DRIVE-CLiQ: Synchronization DO not completed

Message value: %1
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: After the drive system is switched on, the synchronization between the basic clock cycle, DRIVE-CLiQ clock cycle and application clock cycle was started but was not completed within the selected time tolerance.

Alarm value (r2124, interpret decimal):

Only for internal Siemens troubleshooting.

Remedy: Carry out a POWER ON (switch-off/switch-on) for all components of the DO.

A01970 CBE25: cyclic connection interrupted

Message value: %1
Message class: Communication error to the higher-level control system (9)
Drive object: A_INF, B_INF, CU_LINK, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The cyclic connection to the PROFINET controller is interrupted.

See also: r8936 (Cyclic connection status)

Remedy: Establish the PROFINET connection and activate the PROFINET controller in the cyclic mode.

A01971 CBE2x: maximum number of controllers exceeded

Message value: Info 1: %1, Info 2: %2
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, CU_LINK, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: A controller attempts to establish a connection to the drive, and as a consequence exceeds the permitted number of PROFINET connections.

The alarm disappears automatically after approx. 30 seconds.

Alarm value (r2124, interpret hexadecimal):

yyyyxxxx hex: yyyy = info. 1, xxxx = info. 2

Info 1 = 0: number of RT connections exceeded

Info 1 > 0: number of IRT connections exceeded

Info 2: permitted number of connections

Remedy: Check the configuration of the PROFINET controllers.

A01979 CBE2x: internal error for cyclic data transfer

Message value: %1

Message class: Communication error to the higher-level control system (9)

Drive object: A_INF, B_INF, CU_LINK, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: The cyclic actual values and/or setpoints were not transferred within the specified times.

Alarm value (r2124, interpret hexadecimal):

Only for internal Siemens troubleshooting.

Remedy: Correctly set T_io_input or T_io_output.

A01980 PN: cyclic connection interrupted

Message value: %1

Message class: Communication error to the higher-level control system (9)

Drive object: A_INF, B_INF, CU_LINK, CU_S_AC_DP, CU_S_AC_PN, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: The cyclic connection to the PROFINET controller is interrupted.

See also: r8936 (Cyclic connection status)

Remedy: Establish the PROFINET connection and activate the PROFINET controller in the cyclic mode.

A01981 PN: Maximum number of controllers exceeded

Message value: Info 1: %1, Info 2: %2

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: A_INF, B_INF, CU_LINK, CU_S_AC_DP, CU_S_AC_PN, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: A controller attempts to establish a connection to the drive, and as a consequence exceeds the permitted number of PROFINET connections.

The alarm disappears automatically after approx. 30 seconds.

Alarm value (r2124, interpret hexadecimal):

yyyyxxxx hex: yyyy = info. 1, xxxx = info. 2

Info 1 = 0: number of RT connections exceeded

Info 1 > 0: number of IRT connections exceeded

Info 2: permitted number of connections

Remedy: Check the configuration of the PROFINET controllers.

A01982 PN: second controller missing

Message value: -

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: A_INF, B_INF, CU_LINK, CU_S_AC_DP, CU_S_AC_PN, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: Connections to two PROFINET controllers are expected. However, only the connection to a PROFINET controller is present.

- system redundancy is activated.

Remedy: Check the configuration of the PROFINET controllers.

A01983 PN: system redundancy switchover running

Message value: -

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: A_INF, B_INF, CU_LINK, CU_S_AC_DP, CU_S_AC_PN, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: The "PROFINET system redundancy" function is configured and the connection between the primary control and drive device is interrupted. The backup controller assumes control of the drive device.

Remedy: Not necessary.

The alarm is automatically withdrawn after switchover has been successfully completed.

A01989 PN: internal cyclic data transfer error

Message value: %1

Message class: Communication error to the higher-level control system (9)

Drive object: A_INF, B_INF, CU_LINK, CU_S_AC_DP, CU_S_AC_PN, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: The cyclic actual values and/or setpoints were not transferred within the specified times.

Alarm value (r2124, interpret hexadecimal):

Only for internal Siemens troubleshooting.

Remedy: Correctly set T_io_input or T_io_output.

A01990 (F) USS: PZD configuration error

Message value: %1

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: A_INF, B_INF, CU_LINK, CU_S_AC_DP, CU_S_AC_PN, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: The configuration of the process data (PZD) for the USS protocol is incorrect.

Alarm value (r2124, interpret decimal):

2: PZD amount (p2022) too great for the first drive object (p978[0]).

The number of possible PZD items in a drive object is determined by the number of indices in r2050/p2051.

Remedy: For alarm value = 2:
Check the amount of USS PZD (p2022) and the maximum PZD amount (r2050/p2051) for the first drive object (p0978[0]).
Reaction upon F: NONE (OFF1)
Acknowl. upon F: IMMEDIATELY

A02000 Function generator: Start not possible

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: The function generator has already been started.
Remedy: Stop the function generator and restart again if necessary.
Note:
The alarm is reset as follows:
- remove the cause of this alarm.
- restart the function generator.
See also: p4800 (Function generator control)

A02005 Function generator: Drive does not exist

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: The drive object specified for connection does not exist.
See also: p4815 (Function generator drive number)
Remedy: Use the existing drive object with the corresponding number.
Note:
The alarm is reset as follows:
- remove the cause of this alarm.
- restart the function generator.
See also: p4815 (Function generator drive number)

A02006 Function generator: No drive specified for connection

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: No drive specified for connection in p4815.
See also: p4815 (Function generator drive number)
Remedy: At least one drive to be connected must be specified in p4815.
Note:
The alarm is reset as follows:
- remove the cause of this alarm.
- restart the function generator.
See also: p4815 (Function generator drive number)

A02007 Function generator: Drive not SERVO / VECTOR / DC_CTRL

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: The drive object specified for connection is not a SERVO / VECTOR or DC_CTRL.
See also: p4815 (Function generator drive number)
Remedy: Use a SERVO / VECTOR / DC_CTRL drive object with the corresponding number.
Note:
The alarm is reset as follows:
- remove the cause of this alarm.
- restart the function generator.

A02008 Function generator: Drive specified a multiple number of times

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: The drive object specified for connection is already specified.
Alarm value (r2124, interpret decimal):
Drive object number of the drive object that is specified a multiple number of times.
Remedy: Specify a different drive object.
Note:
The alarm is reset as follows:
- remove the cause of this alarm.
- restart the function generator.

A02009 Function generator: Illegal mode

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: The set operating mode (p1300) of the drive object is not permissible when using the function generator.
Alarm value (r2124, interpret decimal):
Number of the drive object involved.
Remedy: Change the operating mode for this drive object to p1300 = 20 (encoderless speed control) or p1300 = 21 (speed control with encoder).
Note:
The alarm is reset as follows:
- remove the cause of this alarm.
- restart the function generator.

A02010 Function generator: Speed setpoint from the drive is not zero

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: The speed setpoint of a drive selected for connection is greater than the value for the standstill detection set using p1226.
Remedy: For all of the drives specified for connection, set the speed setpoints to zero.

Note:

The alarm is reset as follows:

- remove the cause of this alarm.
- restart the function generator.

A02011 Function generator: The actual drive speed is not zero

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, CU_I, CU_I_D410, CU_LINK, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: The speed actual value of a drive selected for connection is greater than the value for the standstill detection set using p1226.
Remedy: Set the relevant drives to zero speed before starting the function generator.

Note:

The alarm is reset as follows:

- remove the cause of this alarm.
- restart the function generator.

A02015 Function generator: Drive enable signals missing

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: The master control and/or enable signals are missing to connect to the specified drive.

See also: p4815 (Function generator drive number)
Remedy: Fetch the master control to the specified drive object and set all enable signals.

Note:

The alarm is reset as follows:

- remove the cause of this alarm.
- restart the function generator.

A02016 Function generator: Magnetizing running

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: Magnetizing has not yet been completed on a drive object specified for connection.
Alarm value (r2124, interpret decimal):
Number of the drive object involved.
See also: p4815 (Function generator drive number)
Remedy: Wait for magnetizing of the motor (r0056.4).
Note:
The alarm is reset as follows:
- restart the function generator.
See also: r0056 (Status word, closed-loop control)

A02020 Function generator: Parameter cannot be changed

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: This parameter setting cannot be changed when the function generator is active (p4800 = 1).
See also: p4810, p4812, p4813, p4815, p4820, p4821, p4822, p4823, p4824, p4825, p4826, p4827, p4828, p4829
Remedy: - stop the function generator before parameterizing (p4800 = 0).
- if required, start the function generator (p4800 = 1).
Note:
The alarm is reset as follows:
- remove the cause of this alarm.
- restart the function generator.
See also: p4800 (Function generator control)

A02025 Function generator: Period too short

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, CU_I, CU_I_D410, CU_LINK, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: The value for the period is too short.
See also: p4821 (Function generator period)
Remedy: Check and adapt the value for the period.
Note:
The alarm is reset as follows:
- remove the cause of this alarm.
- restart the function generator.
See also: p4821 (Function generator period)

A02026 Function generator: Pulse width too high

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: The selected pulse width is too high.
The pulse width must be less than the period duration.
See also: p4822 (Function generator pulse width)
Remedy: Reduce pulse width.
Note:
The alarm is reset as follows:
- remove the cause of this alarm.
- restart the function generator.
See also: p4821 (Function generator period), p4822 (Function generator pulse width)

A02030 Function generator: Physical address equals zero

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: The specified physical address is zero.
See also: p4812 (Function generator physical address)
Remedy: Set a physical address with a value other than zero.
Note:
The alarm is reset as follows:
- remove the cause of this alarm.
- restart the function generator.
See also: p4812 (Function generator physical address)

A02040 Function generator: Illegal value for offset

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: The value for the offset is higher than the value for the upper limit or lower than the value for the lower limit.
See also: p4826 (Function generator offset)
Remedy: Adjust the offset value accordingly.
Note:
The alarm is reset as follows:
- remove the cause of this alarm.
- restart the function generator.
See also: p4826 (Function generator offset), p4828 (Function generator lower limit), p4829 (Function generator upper limit)

A02041 Function generator: Illegal value for bandwidth

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: The bandwidth referred to the time slice clock cycle of the function generator has either been set too low or too high.
Depending on the time slice clock cycle, the bandwidth is defined as follows:
Bandwidth_max = 1 / (2 x time slice clock cycle)
Bandwidth_min = Bandwidth_max / 100000
Example:
Assumption: p4830 = 125 µs
--> Bandwidth_max = 1 / (2 x 125 µs) = 4000 Hz
--> Bandwidth_min = 4000 Hz / 100000 = 0.04 Hz
Note:
p4823: Function generator bandwidth
p4830: Function generator time slice clock cycle
See also: p4823 (Function generator bandwidth), p4830 (Function generator time slice cycle)
Remedy: Check the value for the bandwidth and adapt accordingly.
Note:
The alarm is reset as follows:
- remove the cause of this alarm.
- restart the function generator.

A02047 Function generator: Time slice clock cycle invalid

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: The time slice clock cycle selected does not match any of the existing time slices.
See also: p4830 (Function generator time slice cycle)
Remedy: Enter an existing time slice clock cycle. The existing time slices can be read out via p7901.
Note:
The alarm is reset as follows:
- remove the cause of this alarm.
- restart the function generator.
See also: r7901 (Sampling times)

A02050 Trace: Start not possible

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: The trace has already been started.
See also: p4700 (Trace control)
Remedy: Stop the trace and, if necessary, start again.

A02051 Trace: recording not possible as a result of know-how protection

Message value: initiating recorder: %1, parameter %2
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: TRACE recording is not possible as at least one signal or trigger signal being used is under know-how protection.
Alarm value (r2124, interpret hexadecimal):
bbbbaaaa hex:
aaaa = 1: recorder 0
aaaa = 2: recorder 1
aaaa = 3: recorders 0 and 1
bbbb = parameter number (hexadecimal), that was not able to be written to.
See also: p4700, p4711, p4730, p4731, p4732, p4733, p4734, p4735, p4736, p4737
Remedy: - Temporarily activate or deactivate know-how protection (p7766).
- include the signal in the OEM exception list (p7763, p7764).
- Where relevant do not record the signal.
See also: p7763 (KHP OEM exception list number of indices for p7764), p7764 (KHP OEM exception list)

A02055 Trace: Recording time too short

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: The trace duration is too short.
The minimum is twice the value of the trace clock cycle.
See also: p4721 (Trace recording time)
Remedy: Check the selected recording time and, if necessary, adjust.

A02056 Trace: Recording cycle too short

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: The selected recording cycle is shorter than the selected basic clock cycle 0 (p0110[0]).
See also: p4720 (Trace recording cycle)
Remedy: Increase the value for the trace cycle.

A02057 Trace: Time slice clock cycle invalid

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: The time slice clock cycle selected does not match any of the existing time slices.
See also: p4723 (Trace time slice cycle)
Remedy: Enter an existing time slice clock cycle. The existing time slices can be read out via p7901.
See also: r7901 (Sampling times)

A02058	**Trace: Time slice clock cycle for endless trace not valid**		
Message value:	-		
Message class:	Error in the parameterization / configuration / commissioning procedure (18)		
Drive object:	All objects		
Component:	None	**Propagation:**	BICO
Reaction:	NONE		
Acknowledge:	NONE		
Cause:	The selected time slice clock cycle cannot be used for the endless trace See also: p4723 (Trace time slice cycle)		
Remedy:	Enter the clock cycle of an existing time slice with a cycle time >= 2 ms for up to 4 recording channels or >= 4 ms from 5 recording channels per trace. The existing time slices can be read out via p7901. See also: r7901 (Sampling times)		

A02059	**Trace: Time slice clock cycle for 2 x 8 recording channels not valid**		
Message value:	-		
Message class:	Error in the parameterization / configuration / commissioning procedure (18)		
Drive object:	All objects		
Component:	None	**Propagation:**	BICO
Reaction:	NONE		
Acknowledge:	NONE		
Cause:	The selected time slice clock cycle cannot be used for more than 4 recording channels. See also: p4723 (Trace time slice cycle)		
Remedy:	Enter the clock cycle of an existing time slice with a cycle time >= 4 ms or reduce the number of recording channels to 4 per trace. The existing time slices can be read out via p7901. See also: r7901 (Sampling times)		

A02060	**Trace: Signal to be traced missing**		
Message value:	-		
Message class:	Error in the parameterization / configuration / commissioning procedure (18)		
Drive object:	All objects		
Component:	None	**Propagation:**	BICO
Reaction:	NONE		
Acknowledge:	NONE		
Cause:	- a signal to be traced was not specified. - the specified signals are not valid. See also: p4730 (Trace record signal 0), p4731 (Trace record signal 1), p4732 (Trace record signal 2), p4733 (Trace record signal 3)		
Remedy:	- specify the signal to be traced. - check whether the relevant signal can be traced.		

A02061	**Trace: Invalid signal**		
Message value:	-		
Message class:	Error in the parameterization / configuration / commissioning procedure (18)		
Drive object:	A_INF, B_INF, CU_I, CU_I_D410, CU_LINK, CU_NX_CX, CU_S_AC_DP, CU_S_AC_PN, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC		
Component:	None	**Propagation:**	BICO
Reaction:	NONE		
Acknowledge:	NONE		
Cause:	- the specified signal does not exist. - the specified signal can no longer be traced (recorded). See also: p4730 (Trace record signal 0), p4731 (Trace record signal 1), p4732 (Trace record signal 2), p4733 (Trace record signal 3)		

Remedy: - specify the signal to be traced.
- check whether the relevant signal can be traced.

A02062 Trace: Invalid trigger signal

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: - a trigger signal was not specified.
- the specified signal does not exist.
- the specified signal is not a fixed-point signal.
- the specified signal cannot be used as a trigger signal for the trace.
See also: p4711 (Trace trigger signal)
Remedy: Specify a valid trigger signal.

A02063 Trace: Invalid data type

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: The specified data type to select a signal using a physical address is invalid.
See also: p4711 (Trace trigger signal), p4730 (Trace record signal 0), p4731 (Trace record signal 1), p4732 (Trace record signal 2), p4733 (Trace record signal 3)
Remedy: Use a valid data type.

A02070 Trace: Parameter cannot be changed

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: The trace parameter settings cannot be changed when the trace is active.
See also: p4700, p4710, p4711, p4712, p4713, p4714, p4715, p4716, p4720, p4721, p4722, p4730, p4731, p4732, p4733, p4780, p4781, p4782, p4783, p4789, p4795
Remedy: - stop the trace before parameterization.
- if required, start the trace.

A02075 Trace: Pretrigger time too long

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: The selected pretrigger time must be shorter than the trace time.
See also: p4721 (Trace recording time), p4722 (Trace trigger delay)
Remedy: Check the pretrigger time setting and change if necessary.

F02080 Trace: Parameterization deleted due to unit changeover

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The trace parameterization in the drive unit was deleted due to a unit changeover or a change in the reference parameters.
Remedy: Restart trace.

A02085 Message function: Parameterization error

Message value: Parameter: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: A parameterization error was identified when starting the variable message function.
Alarm value (r2124, interpret decimal):
Incorrectly set parameter.
See also: p3290, p3291, p3292, p3293, r3294, p3295, p3296, p3297, p3298, p3299
Remedy: Correct the parameter and restart.
Note:
The alarm is automatically withdrawn when stopping, or when successfully starting the variable message function (p3290.0).

A02095 MTrace 0: multiple trace cannot be activated

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The following functions or settings are not permissible in conjunction with a multiple trace (trace recorder 0):
- measuring function
- long-time trace
- trigger condition "immediate recording start" (IMMEDIATE)
- trigger condition "start with function generator" (FG_START)

Remedy:
- if required, deactivate the multiple trace (p4840[0] = 0).
- deactivate function or setting that is not permissible

See also: p4840 (MTrace cycle number setting)

A02096 MTrace 0: cannot be saved

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: It is not possible to save the measurement results of a multiple trace on the memory card (trace recorder 0).
A multiple trace is not started or is canceled.
Alarm value (r2124, interpret decimal):
1: Memory card cannot be accessed.
- card is not inserted or is blocked by a mounted USB drive.

3: data save operation to slow.
- a second trace has been completed before the measurement results of the first trace were able to be saved.
- writing the measurement result files to the card is blocked by the parameter save.
4: Data save operation canceled.
- for instance, the file required for the data save operation was not able to be found.
See also: p4840 (MTrace cycle number setting)

Remedy:
- insert or remove the memory card.
- use a larger memory card.
- configure a longer trace time or use an endless trace.
- avoid saving parameters while a multiple trace is running.
- check whether other functions are presently accessing measurement result files.

A02097 MTrace 1: multiple trace cannot be activated

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The following functions or settings are not permissible in conjunction with a multiple trace (trace recorder 1):
- measuring function
- long-time trace
- trigger condition "immediate recording start" (IMMEDIATE)
- trigger condition "start with function generator" (FG_START)

Remedy:
- if required, deactivate the multiple trace (p4840[1] = 0).
- deactivate function or setting that is not permissible
See also: p4840 (MTrace cycle number setting)

A02098 MTrace 1: cannot be saved

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: It is not possible to save the measurement results of a multiple trace on the memory card (trace recorder 1).
A multiple trace is not started or is canceled.
Alarm value (r2124, interpret decimal):
1: Memory card cannot be accessed.
- card is not inserted or is blocked by a mounted USB drive.
3: data save operation to slow.
- a second trace has been completed before the measurement results of the first trace were able to be saved.
- writing the measurement result files to the card is blocked by the parameter save.
4: Data save operation canceled.
- for instance, the file required for the data save operation was not able to be found.
See also: p4840 (MTrace cycle number setting)

Remedy:
- insert or remove the memory card.
- use a larger memory card.
- configure a longer trace time or use an endless trace.
- avoid saving parameters while a multiple trace is running.
- check whether other functions are presently accessing measurement result files.

A02099 Trace: Insufficient Control Unit memory

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: The memory space still available on the Control Unit is no longer sufficient for the trace function.
Remedy: Reduce the memory required, e.g. as follows:
- reduce the trace time.
- increase the trace clock cycle.
- reduce the number of signals to be traced.

See also: r4708 (Trace memory space required), r4799 (Trace memory location free)

A02100 Drive: Computing dead time current controller too short

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The value in p0118 produces a dead time of one clock cycle because it is prior to setpoint availability.
Possible causes:
- a parameter backup with a version higher than 4.3 was loaded to a version less than or equal to 4.3.
- the system properties after replacing a component no longer match the parameter assignment.

Alarm value (r2134, floating point):
Minimum value for p0118 where dead time no longer occurs.
Remedy:
- set p0118 to zero.
- set p0118 to a value greater than or equal to the alarm value (for p1810.11 = 1)
- set p0117 (from the device) to an automatic setting (p0117 = 1).
- check the firmware versions of the components involved.

See also: p0117 (Current controller computing dead time mode), p0118 (Current controller computing dead time)

A02150 TEC: Technology Extension cannot be loaded

Message value: %1
Message class: Hardware/software error (1)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The system was not able to load a Technology Extension.
Alarm value (r2124, interpret hexadecimal):
10 hex (16 dec):
The interface version in the DCB user library is not compatible to the DCC standard library that has been loaded.
12 hex (18 dec):
A technology package was not able to be downloaded to a Control Unit because the warm restart necessary was not able to be performed.
Only for internal Siemens troubleshooting.
Remedy:
- carry out a warm restart (p0009 = 30, p0976 = 2, 3).
- carry out a POWER ON (switch-off/switch-on) for all components.
- upgrade firmware to later version.
- contact Technical Support.

For alarm value = 10 hex (16 dec):
Load a compatible DCB user library (compatible to the interface of the DCC standard library).

For alarm value = 12 hex (18 dec):
Carry out a POWER ON (switch-off/switch-on) for all components.
Note:
DCB: Drive Control Block
DCC: Drive Control Chart
TEC: Technology Extension
See also: r4950, r4955, p4956, r4957

F02151 (A) TEC: internal software error

Message value: %1
Message class: Hardware/software error (1)
Drive object: All objects
Component: None **Propagation:** GLOBAL
Reaction: Infeed: OFF2 (NONE, OFF1)
Servo: OFF2 (NONE, OFF1, OFF3)
Vector: OFF2 (NONE, OFF1, OFF3)
Hla: OFF2 (NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: An internal software error has occurred within a Technology Extension.
Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.
Remedy: - carry out a POWER ON (switch-off/switch-on) for all components.
- upgrade firmware to later version.
- contact Technical Support.
- replace the Control Unit.
Note:
TEC: Technology Extension
See also: r4950, r4955, p4956, r4957
Reaction upon A: NONE
Acknowl. upon A: NONE

F02152 (A) TEC: insufficient memory

Message value: %1
Message class: Hardware/software error (1)
Drive object: All objects
Component: None **Propagation:** GLOBAL
Reaction: OFF1
Acknowledge: IMMEDIATELY (POWER ON)
Cause: Too many functions have been configured on this Control Unit (e.g. too many drives, function modules, data sets, Technology Extensions, blocks, etc).
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.
Remedy: - change the configuration on this Control Unit (e.g. fewer drives, function modules, data sets, Technology Extensions, blocks, etc).
- use an additional Control Unit.
Note:
TEC: Technology Extension
Reaction upon A: NONE
Acknowl. upon A: NONE

F02153 TEC: technology function does not exist

Message value: -
Message class: Hardware/software error (1)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: A technology function (e.g. Technology Extension, DCB library) does not exist on the drive device.
When configuring, a technology function is activated, which does not exist on the drive device. This can occur when downloading a project or when powering up.
Remedy: - load the required technology function to the drive device.
- if required, deactivate the technology function not required in the configuration.
Note:
DCB: Drive Control Block
TEC: Technology Extension

F03000 NVRAM fault on action

Message value: %1
Message class: Hardware/software error (1)
Drive object: All objects
Component: Control Unit (CU) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: A fault occurred during execution of action p7770 = 1 or 2 for the NVRAM data.
Fault value (r0949, interpret hexadecimal):
yyxx hex: yy = fault cause, xx = application ID
yy = 1:
The action p7770 = 1 is not supported by this version if Drive Control Chart (DCC) is activated for the drive object concerned.
yy = 2:
The data length of the specified application is not the same in the NVRAM and the backup.
yy = 3:
The data checksum in p7774 is not correct.
yy = 4:
No data available to load.
See also: p7770 (NVRAM action)
Remedy: - Perform the remedy according to the results of the troubleshooting.
- if necessary, start the action again.

F03001 NVRAM checksum incorrect

Message value: %1
Message class: Hardware/software error (1)
Drive object: All objects
Component: Control Unit (CU) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: A checksum error occurred when evaluating the non-volatile data (NVRAM) on the Control Unit.
The NVRAM data affected was deleted.
Remedy: Carry out a POWER ON (switch-off/switch-on) for all components.

F03500 (A)	TM: Initialization		
Message value:	%1		
Message class:	Hardware/software error (1)		
Drive object:	All objects		
Component:	Terminal Module (TM)	**Propagation:**	BICO
Reaction:	OFF1 (OFF2)		
Acknowledge:	IMMEDIATELY (POWER ON)		
Cause:	When initializing the Terminal Modules, the terminals of the Control Unit or the Terminal Board 30, an internal software error has occurred. Fault value (r0949, interpret decimal): yxxx dex y = Only for internal Siemens troubleshooting xxx = component number (p0151)		
Remedy:	- switch-off/switch-on the power supply for the Control Unit. - check the DRIVE-CLiQ connection. - if required, replace the Terminal Module. The Terminal Module should be directly connected to a DRIVE-CLiQ socket of the Control Unit. If the fault occurs again, replace the Terminal Module.		
Reaction upon A:	NONE		
Acknowl. upon A:	NONE		

A03501	TM: Sampling time change		
Message value:	-		
Message class:	Error in the parameterization / configuration / commissioning procedure (18)		
Drive object:	All objects		
Component:	Terminal Module (TM)	**Propagation:**	BICO
Reaction:	NONE		
Acknowledge:	NONE		
Cause:	The sampling times of the inputs/outputs were changed. This change only becomes valid after the next boot.		
Remedy:	Carry out a POWER ON.		

F03505 (N, A)	CU: Analog input wire breakage		
Message value:	%1		
Message class:	External measured value / signal state outside the permissible range (16)		
Drive object:	CU_I, CU_I_D410, CU_S_AC_DP, CU_S_AC_PN, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN		
Component:	Terminal Module (TM)	**Propagation:**	BICO
Reaction:	NONE		
Acknowledge:	IMMEDIATELY (POWER ON)		
Cause:	The wire-break monitoring for an analog input has responded. The input value of the analog input has exceeded the threshold value parameterized in p0761[0]. p0756[0]: analog input 0 (X131.7/X131.8) Fault value (r0949, interpret decimal): Note: For the following analog input type, the wire breakage monitoring is active: p0756[0] = 3 (4 ... 20 mA with monitoring)		
Remedy:	- check the wiring to the signal source for interruptions. - check the magnitude of the injected current - it is possible that the infed signal is too low. - check the load resistor (250 Ohm). Note: The input current measured by the analog input can be read in r0752[0]. For p756[0] = 3 (unipolar current input monitored (+4 ... +20 mA)) the following applies: A current less than 4 mA is not displayed in r752[0] - but instead r752[0] = 4 mA is output.		

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F03505 (N, A) Analog input wire breakage

Message value: %1
Message class: External measured value / signal state outside the permissible range (16)
Drive object: CU_LINK, CU_NX_CX, TM120, TM150, TM54F_MA, TM54F_SL
Component: Terminal Module (TM) **Propagation:** BICO
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The wire-break monitoring for an analog input has responded.
The input value of the analog input has exceeded the threshold value parameterized in p4061[x].
Index x = 0: Analog input 0 (X521.1/X521.2)
Index x = 1: Analog input 1 (X521.3/X521.4)
Fault value (r0949, interpret decimal):
yxxx dec
y = analog input (0 = analog input 0 (AI 0), 1 = analog input 1 (AI 1))
xxx = component number (p0151)
Note:
For the following analog input type, the wire breakage monitoring is active:
p4056[x] = 3 (unipolar current input monitored (+4 ... +20 mA)
Remedy: - check the wiring for interruptions.
- check the magnitude of the injected current - it is possible that the infed signal is too low.
- check the load resistor (250 Ohm).
Note:
The input current measured by the Terminal Module can be read out from r4052[x].
For p4056[x] = 3 (unipolar current input monitored (+4 ... +20 mA)) the following applies:
A current less than 4 mA is not displayed in r4052[x] - but instead r4052[x] = 4 mA is output.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F03505 (N, A) Analog input wire breakage

Message value: %1
Message class: External measured value / signal state outside the permissible range (16)
Drive object: A_INF, B_INF, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Module (TM) **Propagation:** BICO
Reaction: OFF1 (NONE, OFF2)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The wire-break monitoring for an analog input has responded.
Remedy: Check the wiring for interruptions.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F03505 (N, A) TB: Analog input wire breakage

Message value: %1
Message class: External measured value / signal state outside the permissible range (16)
Drive object: TB30
Component: Terminal Module (TM) **Propagation:** BICO
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The wire-break monitoring for an analog input has responded.
Remedy: Check the wiring for interruptions.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F03505 (N, A) TM: Analog input wire breakage

Message value: %1
Message class: External measured value / signal state outside the permissible range (16)
Drive object: TM15, TM15DI_DO, TM17, TM31
Component: Terminal Module (TM) **Propagation:** BICO
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The wire-break monitoring for an analog input has responded.
The input value of the analog input has exceeded the threshold value parameterized in p4061[x].
Index x = 0: Analog input 0 (X521.1/X521.2)
Index x = 1: Analog input 1 (X521.3/X521.4)
Fault value (r0949, interpret decimal):
yxxx dec
y = analog input (0 = analog input 0 (AI 0), 1 = analog input 1 (AI 1))
xxx = component number (p0151)
Note:
For the following analog input type, the wire breakage monitoring is active:
p4056[x] = 3 (unipolar current input monitored (+4 ... +20 mA)
Remedy: - check the wiring for interruptions.
- check the magnitude of the injected current - it is possible that the infed signal is too low.
- check the load resistor (250 Ohm).
Note:
The input current measured by the Terminal Module can be read out from r4052[x].
For p4056[x] = 3 (unipolar current input monitored (+4 ... +20 mA)) the following applies:
A current less than 4 mA is not displayed in r4052[x] - but instead r4052[x] = 4 mA is output.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F03505 (N, A) TM: Analog input wire breakage

Message value: %1
Message class: External measured value / signal state outside the permissible range (16)
Drive object: TM41
Component: Terminal Module (TM) **Propagation:** BICO
Reaction: OFF1 (NONE, OFF2)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The wire-break monitoring for an analog input has responded.
The input value of the analog input has exceeded the threshold value parameterized in p4061[x].
Index x = 0: Analog input 0 (X522.1 to .3)
Index x = 1: Analog input 1 (X522.4 to .5)
Fault value (r0949, interpret decimal):
yxxx dec
y = analog input (0 = analog input 0 (AI 0), 1 = analog input 1 (AI 1))
xxx = component number (p0151)
Note:
For the following analog input type, the wire breakage monitoring is active:
p4056[x] = 3 (unipolar current input monitored (+4 ... +20 mA)
Remedy: - check the wiring for interruptions.
- check the magnitude of the injected current - it is possible that the infed signal is too low.
- check the load resistor (250 Ohm).
Note:
The input current measured by the Terminal Module can be read out from r4052[x].
For p4056[x] = 3 (unipolar current input monitored (+4 ... +20 mA)) the following applies:
A current less than 4 mA is not displayed in r4052[x] - but instead r4052[x] = 4 mA is output.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

A03506 (F, N) 24 V power supply missing

Message value: %1
Message class: Supply voltage fault (undervoltage) (3)
Drive object: A_INF, B_INF, CU_I, CU_I_D410, CU_LINK, CU_S_AC_DP, CU_S_AC_PN, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: The 24 V power supply for the digital outputs (X124) is missing.
Remedy: Check the terminals for the power supply voltage (X124, L1+, M).
Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

A03507 (F, N) Digital output not set

Message value: %1
Message class: General drive fault (19)
Drive object: CU_I, CU_I_D410, CU_LINK, CU_S_AC_DP, CU_S_AC_PN, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HUB, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM54F_MA, TM54F_SL
Component: None **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: Despite specification by the signal source the digital output has not been set.
Possible causes:
- power supply missing.
- the digital output is in current limiting (e.g. due to short-circuit).
- the digital output is being used for Safety Extended Functions.
- the control has authority to access the digital output by means of direct access (see also r0729).
Alarm value (r2124, interpret bitwise binary):
Digital output involved (structured the same as r0747).
Remedy: - check the 24 V power supply (e.g. X130.6 for CU310-2, ground is X130.5).
- check the output terminals for short-circuits.
- reset the signal source of the digital output for use by Safety Extended Functions.
- carry out a POWER ON (switch-off/switch-on).
Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

A03507 (F, N) Digital output not set

Message value: %1
Message class: General drive fault (19)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: Despite specification by the signal source the digital output has not been set.
Possible causes:
- power supply missing.
- the digital output is in current limiting (e.g. due to short-circuit).
- the digital output is being used for Safety Extended Functions.
- the control has authority to access the digital output by means of direct access (see also r0729).
Alarm value (r2124, interpret bitwise binary):
Digital output involved (structured the same as r0747).
Remedy: - check the 24 V power supply (e.g. X131.7 for CU305, ground is X131.8).
- check the output terminals for short-circuits.
- reset the signal source of the digital output for use by Safety Extended Functions.
- carry out a POWER ON (switch-off/switch-on).
Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

A03510 (F, N) CU: Calibration data not plausible

Message value: %1
Message class: Hardware/software error (1)
Drive object: CU_S_AC_DP, CU_S_AC_PN, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN
Component: Terminal Module (TM) **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: During booting, the calibration data for the analog inputs is read and checked with respect to plausibility.
At least one calibration data point was determined to be invalid.
Remedy: - switch-off/switch-on the power supply for the Control Unit.
- check the DRIVE-CLiQ wiring.
Note:
If it reoccurs, then replace the module.
In principle, operation could continue.
The analog channel involved possibly does not achieve the specified accuracy.
Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

A03510 (F, N) CU: Calibration data not plausible

Message value: %1
Message class: Hardware/software error (1)
Drive object: CU_I, CU_I_D410
Component: Terminal Module (TM) **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: During ramp-up, the Terminal Module 31 (TM31) calibration data is read in and checked for plausibility.
At least one calibration data point was determined to be invalid.
Alarm value (r2124, interpret binary):
Bit 1: 10 V value, analog input 0 invalid.
Bit 3: 10 V value, analog input 1 invalid.
Bit 4: Offset, analog output 0 invalid.
Bit 5: 10 V value, analog output 0 invalid.
Bit 6: Offset, analog output 1 invalid.
Bit 7: 10 V value, analog input 1 invalid.
Remedy: - switch-off/switch-on the power supply for the Control Unit.
- check the DRIVE-CLiQ wiring.
Note:
If it reoccurs, then replace the module.
In principle, operation could continue.
The analog channel involved possibly does not achieve the specified accuracy.
Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

A03510 (F, N)	**Calibration data not plausible**
Message value:	%1
Message class:	Hardware/software error (1)
Drive object:	A_INF, B_INF, CU_LINK, CU_NX_CX, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM41, TM54F_MA, TM54F_SL
Component:	Terminal Module (TM) **Propagation:** BICO
Reaction:	NONE
Acknowledge:	NONE
Cause:	During ramp-up, the Terminal Module 31 (TM31) calibration data is read in and checked for plausibility. At least one calibration data point was determined to be invalid. Alarm value (r2124, interpret binary): Bit 1: 10 V value, analog input 0 invalid. Bit 3: 10 V value, analog input 1 invalid. Bit 4: Offset, analog output 0 invalid. Bit 5: 10 V value, analog output 0 invalid. Bit 6: Offset, analog output 1 invalid. Bit 7: 10 V value, analog input 1 invalid.
Remedy:	- switch-off/switch-on the power supply for the Control Unit. - check the DRIVE-CLiQ wiring. Note: If it reoccurs, then replace the module. In principle, operation could continue. The analog channel involved possibly does not achieve the specified accuracy.
Reaction upon F:	NONE (OFF1, OFF2)
Acknowl. upon F:	IMMEDIATELY (POWER ON)
Reaction upon N:	NONE
Acknowl. upon N:	NONE

A03510 (F, N)	**Calibration data not plausible**
Message value:	%1
Message class:	Hardware/software error (1)
Drive object:	VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Terminal Module (TM) **Propagation:** BICO
Reaction:	NONE
Acknowledge:	NONE
Cause:	During booting, the calibration data for the analog inputs is read and checked with respect to plausibility. At least one calibration data point was determined to be invalid.
Remedy:	- switch-off/switch-on the power supply for the Control Unit. - check the DRIVE-CLiQ wiring. Note: If it reoccurs, then replace the module. In principle, operation could continue. The analog channel involved possibly does not achieve the specified accuracy.
Reaction upon F:	NONE
Acknowl. upon F:	IMMEDIATELY (POWER ON)
Reaction upon N:	NONE
Acknowl. upon N:	NONE

A03510 (F, N)	**TM: Calibration data not plausible**		
Message value:	%1		
Message class:	Hardware/software error (1)		
Drive object:	TM120, TM15, TM150, TM15DI_DO, TM17, TM31		
Component:	Terminal Module (TM)	**Propagation:**	BICO
Reaction:	NONE		
Acknowledge:	NONE		
Cause:	During ramp-up, the Terminal Module 31 (TM31) calibration data is read in and checked for plausibility. At least one calibration data point was determined to be invalid. Alarm value (r2124, interpret binary): Bit 1: 10 V value, analog input 0 invalid. Bit 3: 10 V value, analog input 1 invalid. Bit 4: Offset, analog output 0 invalid. Bit 5: 10 V value, analog output 0 invalid. Bit 6: Offset, analog output 1 invalid. Bit 7: 10 V value, analog input 1 invalid.		
Remedy:	- switch-off/switch-on the power supply for the Control Unit. - check the DRIVE-CLiQ wiring. Note: If it reoccurs, then replace the module. In principle, operation could continue. The analog channel involved possibly does not achieve the specified accuracy.		
Reaction upon F:	NONE		
Acknowl. upon F:	IMMEDIATELY (POWER ON)		
Reaction upon N:	NONE		
Acknowl. upon N:	NONE		

A03550	**TM: Speed setpoint filter natural frequency > Shannon frequency**		
Message value:	-		
Message class:	Error in the parameterization / configuration / commissioning procedure (18)		
Drive object:	All objects		
Component:	None	**Propagation:**	BICO
Reaction:	NONE		
Acknowledge:	NONE		
Cause:	The natural filter frequency of the speed setpoint filter (p1417) is greater than or equal to the Shannon frequency. The Shannon frequency is calculated according to the following formula: 0.5 / p4099[3] See also: p1417		
Remedy:	Reduce the natural frequency of the speed setpoint filter (PT2 low pass) (p1417).		

F03590 (N, A)	**TM: Module not ready**		
Message value:	%1		
Message class:	Error in the parameterization / configuration / commissioning procedure (18)		
Drive object:	All objects		
Component:	Terminal Module (TM)	**Propagation:**	GLOBAL
Reaction:	Infeed: OFF2 (NONE) Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2) Vector: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2) Hla: OFF2 (NONE)		
Acknowledge:	IMMEDIATELY (POWER ON)		
Cause:	The Terminal Module involved does not send a ready signal and no valid cyclic data. Fault value (r0949, interpret decimal): Drive object number of the Terminal Module involved.		

Remedy: - check the 24 V power supply.
- check the DRIVE-CLiQ wiring.
- check whether the sampling time of the drive object involved is not equal to zero (p4099[0]).

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

A05000 (N) Power unit: Overtemperature heat sink AC inverter

Message value: -
Message class: Power electronics faulted (5)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The alarm threshold for overtemperature at the inverter heat sink has been reached. The response is set using p0290.
If the heat sink temperature exceeds the value set in p0292[0], then fault F30004 is output.
Remedy: Check the following:
- is the ambient temperature within the defined limit values?
- have the load conditions and the load duty cycle been appropriately dimensioned?
- has the cooling failed?

Reaction upon N: NONE
Acknowl. upon N: NONE

A05001 (N) Power unit: Overtemperature depletion layer chip

Message value: -
Message class: Power electronics faulted (5)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC
Component: Power Module **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: Alarm threshold for overtemperature of the power semiconductor in the AC converter has been reached.
Note:
- the response is set using p0290.
- if the temperature of the barrier layer increases by the value set in p0292[1], then fault F30025 is initiated.
Remedy: Check the following:
- is the ambient temperature within the defined limit values?
- have the load conditions and the load duty cycle been appropriately dimensioned?
- has the cooling failed?
- pulse frequency too high?
See also: r0037, p0290

Reaction upon N: NONE
Acknowl. upon N: NONE

A05001 (N) Power unit: Overtemperature depletion layer chip

Message value: -
Message class: Power electronics faulted (5)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: Alarm threshold for overtemperature of the power semiconductor in the AC converter has been reached.
Note:
- the response is set using p0290.
- if the temperature of the barrier layer increases by the value set in p0292[1], then fault F30025 is initiated.

Remedy: Check the following:
- is the ambient temperature within the defined limit values?
- have the load conditions and the load duty cycle been appropriately dimensioned?
- has the cooling failed?
- pulse frequency too high?

Note:

If the alarm occurs after reducing the current controller sampling time (p0115[0]) during the motor data identification (standstill measurement), then it is recommended that this is initially performed using the standard sampling time and then the sampling time should be subsequently changed over.

See also: r0037, p0290

Reaction upon N: NONE

Acknowl. upon N: NONE

A05002 (N) Power unit: Air intake overtemperature

Message value: -

Message class: Power electronics faulted (5)

Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Power Module **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: The alarm threshold for the air intake overtemperature has been reached. For air-cooled power units, the threshold is 42 °C (hysteresis 2 K). The response is set using p0290.

If the air intake temperature increases by an additional 13 K, then fault F30035 is output.

Remedy: Check the following:
- is the ambient temperature within the defined limit values?
- has the fan failed? Check the direction of rotation.

Reaction upon N: NONE

Acknowl. upon N: NONE

A05003 (N) Power unit: Internal overtemperature

Message value: -

Message class: Power electronics faulted (5)

Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Power Module **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: The alarm threshold for internal overtemperature has been reached.

If the temperature inside the power unit increases by an additional 5 K, then fault F30036 is triggered.

Remedy: Check the following:
- is the ambient temperature within the defined limit values?
- has the fan failed? Check the direction of rotation.

Reaction upon N: NONE

Acknowl. upon N: NONE

A05004 (N) Power unit: Rectifier overtemperature

Message value: -

Message class: Power electronics faulted (5)

Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Power Module **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: The alarm threshold for the overtemperature of the rectifier has been reached. The response is set using p0290.

If the temperature of the rectifier increases by an additional 5 K, then fault F30037 is triggered.

Remedy: Check the following:
- is the ambient temperature within the defined limit values?
- have the load conditions and the load duty cycle been appropriately dimensioned?
- has the fan failed? Check the direction of rotation.
- has a phase of the line supply failed?
- is an arm of the supply (incoming) rectifier defective?

Reaction upon N: NONE
Acknowl. upon N: NONE

A05005 Cooling unit: Cooling medium flow rate too low

Message value: %1
Message class: Auxiliary unit faulted (20)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: Cooling unit: Alarm - flow rate has fallen below the alarm value
Remedy:
- check the feedback signals and parameter assignment (p0260 ... p0267).
- check the coolant feed.

A05006 (N) Power unit: Overtemperature thermal model

Message value: -
Message class: Power electronics faulted (5)
Drive object: A_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The temperature difference between the chip and heat sink has exceeded the permissible limit value (blocksize power units only).

Depending on p0290, an appropriate overload response is initiated.

See also: r0037

Remedy: Not necessary.

This alarm is automatically withdrawn once the limit value has been fallen below.

Note:

If the alarm is not automatically withdrawn and the temperature continues to rise, this can result in fault F30024.

See also: p0290 (Power unit overload response)

Reaction upon N: NONE
Acknowl. upon N: NONE

N05007 (A) Power unit: Overtemperature thermal model (chassis PU)

Message value: -
Message class: Power electronics faulted (5)
Drive object: A_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The temperature difference between the chip and heat sink has exceeded the permissible limit value (r0293) (chassis power units only).

Depending on p0290, an appropriate overload response is initiated.

See also: r0037, r0293 (Power unit alarm threshold model temperature)

Remedy: Not necessary.

This alarm is automatically withdrawn once the limit value has been fallen below.

See also: p0290 (Power unit overload response)

Reaction upon A: NONE
Acknowl. upon A: NONE

F05050	**Parallel circuit: Pulse enable in spite of pulse inhibit**		
Message value:	%1		
Message class:	Application/technological function faulted (17)		
Drive object:	A_INF, B_INF, R_INF, S_INF, VECTOR, VECTOR_AC, VECTOR_I_AC		
Component:	Power Module	**Propagation:**	GLOBAL
Reaction:	Infeed: OFF2 (NONE, OFF1) Vector: OFF2 (NONE, OFF1, OFF3, STOP2)		
Acknowledge:	IMMEDIATELY		
Cause:	A power unit signals that the pulses are enabled although the pulses are inhibited. Fault value (r0949, interpret decimal): Number of the power unit involved.		
Remedy:	The power unit is defective and must be replaced.		

F05051	**Parallel circuit: Power unit pulse enable missing**		
Message value:	%1		
Message class:	Application/technological function faulted (17)		
Drive object:	A_INF, B_INF, R_INF, S_INF, VECTOR, VECTOR_AC, VECTOR_I_AC		
Component:	Power Module	**Propagation:**	GLOBAL
Reaction:	Infeed: OFF2 (NONE, OFF1) Vector: OFF2 (NONE, OFF1, OFF3, STOP2)		
Acknowledge:	IMMEDIATELY		
Cause:	For one or several power units, the pulses were not able to be enabled. Fault value (r0949, interpret decimal): Number of the power unit involved.		
Remedy:	- acknowledge power unit faults that are still present. - inhibit the pulses of the power unit involved (p7001).		

A05052 (F)	**Parallel circuit: Illegal current asymmetry**		
Message value:	%1		
Message class:	Application/technological function faulted (17)		
Drive object:	A_INF, B_INF, R_INF, S_INF, VECTOR, VECTOR_AC, VECTOR_I_AC		
Component:	Power Module	**Propagation:**	GLOBAL
Reaction:	NONE		
Acknowledge:	NONE		
Cause:	The deviation of the individual currents of the power units exceeds the alarm threshold specified in p7010. Alarm value (r2124, interpret decimal): 1: Phase U. 2: Phase V. 3: Phase W.		
Remedy:	- inhibit the pulses of the faulted power unit (p7001). - check the connecting cables. Loose contacts can cause current spikes. - the motor reactors are non-symmetrical or faulty and must be replaced. - the CTs must be calibrated or replaced.		
Reaction upon F:	Infeed: NONE (OFF1, OFF2) Vector: NONE (OFF1, OFF2, OFF3, STOP2)		
Acknowl. upon F:	IMMEDIATELY		

A05053 (F)	**Parallel circuit: Inadmissible DC link voltage asymmetry**		
Message value:	-		
Message class:	Application/technological function faulted (17)		
Drive object:	A_INF, B_INF, R_INF, S_INF, VECTOR, VECTOR_AC, VECTOR_I_AC		
Component:	Power Module	**Propagation:**	GLOBAL
Reaction:	NONE		
Acknowledge:	NONE		
Cause:	The deviation of the DC link voltage measured values exceeds the alarm threshold specified in p7011.		

Remedy: - inhibit the pulses of the faulted power unit (p7001).
- check the DC link connecting cables.
- the DC link voltage measurement is incorrect and must be calibrated or renewed.

Reaction upon F: Infeed: NONE (OFF1, OFF2)
Vector: NONE (OFF1, OFF2, OFF3, STOP2)

Acknowl. upon F: IMMEDIATELY

A05054 (N) Parallel circuit: Power unit deactivated

Message value: %1

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Power Module **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: For the drive object involved, fewer power units connected in parallel are active than exist in the target topology. Operation is only possible at reduced power (power derating).

Remedy: Re-activate the deactivated power units if required.
See also: p0125 (Activate/deactivate power unit components), p0895 (Activate/deactivate power unit components), p0897 (Parking axis selection)

Reaction upon N: NONE

Acknowl. upon N: NONE

F05055 Parallel connection: Power units with illegal code numbers

Message value: Parameter: %1

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: A_INF, B_INF, HLA, R_INF, S_INF

Component: Power Module **Propagation:** GLOBAL

Reaction: OFF2 (NONE)

Acknowledge: IMMEDIATELY

Cause: The code numbers of the power units are not permissible.
For parallel circuit configurations, only power units with identical power unit data may be used.
Possible causes:
- the code numbers of the power units do not match.
For booksize drive units, the following additionally applies:
- a parallel connection is not possible for the power units being used.
- there are too many power units being used in the parallel connection.
Fault value (r0949, interpret decimal):
Parameter in which the inadmissible power unit code number was detected.

Remedy: - Use power units with the same code number.
For booksize drive units, the following additionally applies:
- use power units which are permitted for a parallel connection.
- reduce the number of power units being used in the parallel connection.

F05055 Parallel connection: Power units with illegal code numbers

Message value: Parameter: %1

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Power Module **Propagation:** GLOBAL

Reaction: OFF2 (NONE)

Acknowledge: IMMEDIATELY

Cause: The code numbers of the power units do not match.
Fault value (r0949, interpret decimal):
Parameter in which the first different power unit code number was detected.

Remedy: Use power units with the same code number.
For parallel circuit configurations, only power units with identical power unit data may be used.

F05056 Parallel circuit: Power unit EEPROM versions differ

Message value: Parameter: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** GLOBAL
Reaction: OFF2 (NONE)
Acknowledge: IMMEDIATELY
Cause: The EEPROM versions of the power units do not match.
Fault value (r0949, interpret decimal):
Parameter in which the first different version number was detected.
Remedy: Use power units with the same EEPROM version.
Note:
For parallel circuit configurations, only power units with identical EEPROM versions may be used.

F05057 Parallel circuit: Power unit firmware versions differ

Message value: Parameter: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** GLOBAL
Reaction: OFF2 (NONE)
Acknowledge: IMMEDIATELY
Cause: The firmware versions of the power units connected in parallel do not match.
Fault value (r0949, interpret decimal):
Parameter in which the first different version number was detected.
Remedy: Use power units with the same firmware version.
For parallel circuit configurations, only power units with identical firmware versions may be used.

F05058 Parallel circuit: VSM EEPROM versions differ

Message value: Parameter: %1
Message class: General drive fault (19)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The EEPROM versions of the Voltage Sensing Modules (VSM) do not match.
Fault value (r0949, interpret decimal):
Parameter in which the first different version number was detected.
Remedy: For parallel circuit configurations, only Voltage Sensing Modules (VSM) with identical EEPROM versions may be used.

F05059 Parallel circuit: VSM firmware versions differ

Message value: Parameter: %1
Message class: General drive fault (19)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The firmware versions of the Voltage Sensing Module (VSM) do not match.
Fault value (r0949, interpret decimal):
Parameter in which the first different version number was detected.
Remedy: For parallel circuit configurations, only Voltage Sensing Modules (VSM) with identical firmware versions may be used.

F05060 Parallel circuit: Power unit firmware version does not match

Message value: Parameter: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: Firmware from version V02.30.01.00 is required when connecting the power units in parallel.
Remedy: Update the firmware of the power units (at least V02.30.01.00).

F05061 Infeed VSM count

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Voltage Sensing Module (VSM) **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The number of active Voltage Sensing Modules (VSM) for the drive object infeed with chassis power units is not correct.

For A_Infeed, each active power unit must be assigned an active VSM also for a parallel circuit configuration.

For S_Infeed, the active drive object, must be assigned at least one active VSM.

Fault value (r0949, interpret decimal):

Number of VSMs that are currently assigned to the drive object.

Remedy: Adapts the number of active Voltage Sensing Modules (VSM).

F05064 Parallel connection: Pulse synchronization error

Message value: -
Message class: General drive fault (19)
Drive object: A_INF, R_INF, S_INF, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** GLOBAL
Reaction: Infeed: OFF2 (OFF1)

Vector: OFF2 (OFF1, OFF3)

Acknowledge: POWER ON (IMMEDIATELY)
Cause: The pulse synchronization of at least one of the power units connected in parallel is incorrect.
Remedy: Restart the drive system.

A05065 (F, N) Voltage measured values not plausible

Message value: %1
Message class: Power electronics faulted (5)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The voltage measurement does not supply any plausible values and is not used.

Alarm value (r2124, interpret bitwise binary):

Bit 1: Phase U

Bit 2: Phase V

Bit 3: Phase W

Remedy: The following parameterization must be made in order to deactivate the alarm:

- Deactivate voltage measurement (p0247.0 = 0).
- Deactivate flying restart with voltage measurement (p0247.5 = 0) and deactivate fast flying restart (p1780.11 = 0).

Reaction upon F: NONE (OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

F05118 (A) Precharging contactor simultaneity monitoring time exceeded

Message value: fault cause: %1, additional information: %2
Message class: Infeed faulted (13)
Drive object: A_INF, B_INF, R_INF, S_INF, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** GLOBAL
Reaction: OFF2 (NONE, OFF1)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: A feedback signal for the precharging contactor (ALM, SLM, BLM diode) or the line contactor (BLM thyristor) interconnected and the simultaneity monitoring (p0255[4, 6]) activated.

After opening or closing a contactor of the parallel connection, after a monitoring time has elapsed, not all of the contactors have assumed the same state.

Fault value (r0949, interpret binary):

yyyyxxxx hex: yyyy = supplementary information, xxxx = fault cause

Fault cause:

Bit 0 = 1: simultaneity error when closing the contactors.

Bit 1 = 1: simultaneity error when opening the contactors.

Supplementary information:

Bit 0 = 1: PDS0 contactor is closed.

Bit 1 = 1: PDS1 contactor is closed.

Bit 2 = 1: PDS2 contactor is closed.

Bit 3 = 1: PDS3 contactor is closed.

Bit 4 = 1: PDS4 contactor is closed.

Bit 5 = 1: PDS5 contactor is closed.

Bit 6 = 1: PDS6 contactor is closed.

Bit 7 = 1: PDS7 contactor is closed.

Note:

ALM: Active Line Module

BLM: Basic Line Module

PDS: Power unit Data Set

SLM: Smart Line Module

Remedy: - check the monitoring time setting (p0255[4, 6]).

- check the wiring and control of the contactor.

- if required, replace the contactor.

See also: p0255 (Power unit contactor monitoring time)

Reaction upon A: NONE
Acknowl. upon A: NONE

F05119 (A) Bypass contactor simultaneity monitoring time exceeded

Message value: fault cause: %1, additional information: %2
Message class: Infeed faulted (13)
Drive object: A_INF, B_INF, R_INF, S_INF, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** GLOBAL
Reaction: OFF2 (NONE, OFF1)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: A feedback signal for the bypass contactor is interconnected and the simultaneity monitoring (p0255[5, 7]) activated.

After opening or closing a contactor of the parallel connection, after a monitoring time has elapsed, not all of the contactors have assumed the same state.

Fault value (r0949, interpret binary):

yyyyxxxx hex: yyyy = supplementary information, xxxx = fault cause

Fault cause:

Bit 0 = 1: simultaneity error when closing the contactors.

Bit 1 = 1: simultaneity error when opening the contactors.

Supplementary information:
Bit 0 = 1: PDS0 contactor is closed.
Bit 1 = 1: PDS1 contactor is closed.
Bit 2 = 1: PDS2 contactor is closed.
Bit 3 = 1: PDS3 contactor is closed.
Bit 4 = 1: PDS4 contactor is closed.
Bit 5 = 1: PDS5 contactor is closed.
Bit 6 = 1: PDS6 contactor is closed.
Bit 7 = 1: PDS7 contactor is closed.
Note:
PDS: Power unit Data Set

Remedy: - check the monitoring time setting (p0255[5, 7]).
- check the wiring and control of the contactor.
- if required, replace the contactor.
See also: p0255 (Power unit contactor monitoring time)

Reaction upon A: NONE
Acknowl. upon A: NONE

F06000 Infeed: Precharging monitoring time expired

Message value: -
Message class: Infeed faulted (13)
Drive object: A_INF, B_INF, R_INF, S_INF
Component: Power Module **Propagation:** GLOBAL
Reaction: OFF2 (OFF1)
Acknowledge: IMMEDIATELY
Cause: After the line contactor closes the power unit does not signal the READY state within the monitoring time (p0857).
The end of the DC link precharging was not able to be completed for one of the following reasons:
1) There is no line supply voltage connected.
2) The line contactor/line side switch has not been closed.
3) The line supply voltage is too low.
4) Line supply voltage incorrectly set (p0210).
5) The precharging resistors are overheated as there were too many precharging operations per time unit.
6) The precharging resistors are overheated as the DC link capacitance is too high.
7) The precharging resistors are overheated because when there is no "ready for operation" (r0863.0) of the infeed unit, power is taken from the DC link.
8) The precharging resistors are overheated as the line contactor was closed during the DC link fast discharge through the Braking Module.
9) The DC link has either a ground fault or a short-circuit.
10) The precharging circuit is possibly defective (only for chassis units).
See also: p0210 (Drive unit line supply voltage), p0857 (Power unit monitoring time)

Remedy: In general:
- check the line supply voltage at the connecting terminals.
- check the line supply voltage setting (p0210).
- check the monitoring time and, if required, increase (p0857).
- where relevant, observe additional power unit messages/signals (e.g. F30027).
- the following applies to booksize units: Wait (approx. 8 min.) until the precharging resistors have cooled down. For this purpose, preferably disconnect the infeed unit from the line supply.
For 5):
- carefully observe the permissible precharging frequency (refer to the appropriate Equipment Manual).
For 6):
- check the total capacitance of the DC link and reduce in accordance with the maximum permissible DC link capacitance if necessary (refer to the appropriate Equipment Manual)

For 7):

- interconnect the ready-for-operation signal from the infeed unit (r0863.0) in the enable logic of the drives connected to this DC link

For 8):

- check the connections of the external line contactor. The line contactor must be open during DC link fast discharge.

For 9):

- check the DC link for ground faults or short circuits.

F06010 Infeed: Power unit EP 24 V missing in operation

Message value: -

Message class: Infeed faulted (13)

Drive object: A_INF, B_INF, R_INF, S_INF

Component: Power Module **Propagation:** GLOBAL

Reaction: OFF2 (OFF1)

Acknowledge: IMMEDIATELY (POWER ON)

Cause: In operation, the pulse enable via terminal EP at the Line Module (X21.3, X21.4) was withdrawn.

Note:

EP: Enable Pulses (pulse enable)

Remedy: - do not open the line side switch in operation - only when the pulses are inhibited.

- check the wiring of terminal EP (X21.3, X21.4) at the Line Module to exclude any poor contacts.

F06050 Infeed: Smart Mode not supported

Message value: -

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: A_INF, R_INF, S_INF

Component: Power Module **Propagation:** GLOBAL

Reaction: OFF2

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The power unit does not support the Smart Mode or pulse frequency wobbulation is activated (p1810).

Remedy: - set the suitable sampling time 250 µs <= p0115[0] <= 400 µs (e.g. by setting p0112 and p0115 to the factory setting).

- upgrade the power unit software and/or hardware for the Smart Mode. The availability of the Smart Mode function is displayed in r0192.

- when the software gating unit is activated (p1810.2 = 1 or p1810.13 = 1), then the Smart Mode is not permissible. Either the Smart Motor must be deactivated (p3400.0 = 0) or the software gating unit must be deactivated.

- for A_INF the following applies: deactivate the Smart Mode using p3400.0 = 0, and activate closed-loop voltage control with p3400.3 = 1. For booksize power units, it must be noted that for a supply voltage p0210 > 415 V only the Smart Mode is possible in the presetting. If DC link voltages above 660 V are permissible in the application, then voltage-controlled operation can be activated with p0280, p0210, p3400 and p3510. The information regarding p0210 should be carefully noted.

See also: r0192 (Power unit firmware properties 1)

F06052 Infeed: Filter temperature evaluation not supported

Message value: -

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: A_INF, R_INF, S_INF

Component: Power Module **Propagation:** GLOBAL

Reaction: OFF2 (NONE)

Acknowledge: IMMEDIATELY

Cause: The power unit does not support filter temperature evaluation.

This feature (r0192.11) is required when an Active Interface Module is used as a line filter (p0220 = 41 ... 45).

Remedy: Upgrade the firmware for the power unit to a later version.

See also: r0192 (Power unit firmware properties 1), p0220

F06080 (A) Infeed: parameter error

Message value: Parameter: %1
Message class: Infeed faulted (13)
Drive object: A_INF, R_INF, S_INF
Component: Power Module **Propagation:** GLOBAL
Reaction: OFF2 (NONE, OFF1)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: An infeed parameter is incorrectly set.
Fault value (r0949, interpret decimal):
Number of the parameter involved.
See also: p3665 (VSM temperature evaluation sensor type), p3667, p3668
Remedy: Appropriately change the parameter specified in the fault value.
See also: p3665 (VSM temperature evaluation sensor type), p3667, p3668
Reaction upon A: NONE
Acknowl. upon A: NONE

F06100 Infeed: Shutdown due to line supply undervoltage condition

Message value: %1
Message class: Network fault (2)
Drive object: A_INF, B_INF, R_INF, S_INF
Component: None **Propagation:** GLOBAL
Reaction: OFF2 (OFF1)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The filtered (steady-state) value of the line supply voltage is less than the fault threshold (p0283).
Fault condition: Vrms < p0283 * p0210
Fault value (r0949, floating point):
Actual steady-state line supply voltage.
Note:
The occurrence of this fault is delayed by the time in p3492. If the fault is removed during this design time, then the power unit is not tripped (shut down).
See also: p0283 (Line supply undervoltage shutdown (trip) threshold), p3492 (Infeed, line supply undervoltage delay time)
Remedy: - check the line supply.
- check the line supply voltage (p0210).
- check the threshold value (p0283).

A06105 (F) Infeed: Line supply undervoltage

Message value: %1
Message class: Network fault (2)
Drive object: A_INF, B_INF, R_INF, S_INF
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The filtered (steady-state) value of line supply voltage is lower than the alarm threshold (p0282).
Alarm condition: Vrms < p0282 * p0210
Alarm value (r2124, floating point):
Actual steady-state line supply voltage.
See also: p0282 (Line supply undervoltage alarm threshold)
Remedy: - check the line supply.
- check the line supply voltage (p0210).
- check the alarm threshold (p0282).
Reaction upon F: NONE (OFF1, OFF2)
Acknowl. upon F: IMMEDIATELY (POWER ON)

F06200 Infeed: One or several line phases failed

Message value: -
Message class: Network fault (2)
Drive object: A_INF, R_INF, S_INF
Component: None **Propagation:** GLOBAL
Reaction: OFF2 (OFF1)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: Failure overvoltage in one or several line supply phases.

The fault can be output in two operating states:

1. During the switch-on phase of the infeed unit.

The measured line supply angle deviates from the regular characteristic for a 3-phase system - the PLL cannot be synchronized.

The fault occurs immediately after switch-on if, when operating with a Voltage Sensing Module (VSM), the phase assignment L1, L2, L3 at the VSM differs from the phase assignment at the power unit.

2. While the infeed is operational.

During an active line voltage alarm (A06205) or current symmetry alarm (A06206), an additional fault occurred, which resulted in a shutdown. Alarm values A06205 and A06206 could provide additional information about the cause of the shutdown.

Possible causes:

- voltage dip on the line side or phase failure or overvoltage lasting longer than 10 ms.
- overload condition on the load side with peak current.
- line reactor missing.

Remedy:
- check the line supply, terminals and fuses.
- check the connection and size (rating) of the line line filter and/or the line commutating reactor.
- check and correct the phase assignment at the VSM (X521 or X522) and at the power unit.
- check the load.
- if failed in operation, carefully note the previous alarm messages A06205/A06206 with alarm values.

See also: p3463 (Infeed phase failure detection line supply angle change)

A06205 (F) Infeed: Voltage dip in at least one line supply phase

Message value: %1
Message class: Network fault (2)
Drive object: A_INF, R_INF, S_INF
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: Voltage dip or overvoltage in one or several line supply phases has been detected in operation.

The event is displayed in status parameter r3405.2.

If nothing else is specified for the alarm values, then at the instant of the alarm, the pulses are inhibited for a minimum of 8 ms.

Also for alarm values with pulse inhibit, the operating signal of the infeed remains in r0863.0.

Alarm value (r2124, interpret bitwise binary):

Bit 0: Line angle deviation due to a line supply fault (limit value p3463).

Bit 2: Active current deviation.

Bit 3: Line frequency deviation (limit values: 115 % * p0284, 85 % * p0285).

Bit 4: Line overvoltage (limit value: 120 % * p0281 * p0210).

Bit 5: Line undervoltage (limit value: 20 % * p0210).

Bit 7: peak current event.

Bit 8: Line supply angle deviation identified in the Smart Mode (p3400.0 = 1). In addition, for Extended Smart Mode (p3440.1 = 1) the following applies: pulses are not inhibited.

Bit 9: DC link voltage dip identified in the Smart Mode (p3400.0 = 1).

Bit 11: Line voltage detection error identified in the Smart Mode (p3400.0 = 1):

Bit 12: Line voltage deviation identified in the Extended Smart Mode (p3400.0 = 1, p3440.1 = 1). Pulses are not inhibited.

Bit 14: Recharging current fault.

Remedy: When the alarm occurs, the following always applies:
- check the line supply, terminals and fuses.
- check the line supply quality and system fault level.
- check the load.

Dependent on the alarm value in r2124, the following also applies:

For bit 0 = 1:

Line fault occurred or poor/incorrect controller setting. For poor line quality or frequent line supply changeover operations, when required, limit value p3463 can be increased until the alarm value no longer occurs.

For bit 2 = 1:

Line fault occurred or poor/incorrect controller setting. - check the controller setting and load.

For bit 3 = 1:

Line fault occurred. For poor line quality or frequent line changeover operations, when required, limit values p0284 and p0285 can be increased until the alarm value no longer occurs.

For bit 4 = 1:

Line interrupted or line overvoltage has occurred.

For bit 5 = 1:

Line interrupted or line undervoltage occurred.

For bit 7 = 1:

Peak current shutdown due to a line fault, overload or incorrect/missing line reactor.

For bit 8 = 1:

Line fault occurred.

For bit 9 = 1:

Line undervoltage or overload.

For bit 11 = 1:

Fault in at least one line phase.

For bit 12 = 1:

Voltage fault in at least one line phase. Check the settings in p3444[2, 3].

For bit 14 = 1:

Supply/infeed overload or a fault in at least one line phase.

See also: r3405, p3463 (Infeed phase failure detection line supply angle change)

Reaction upon F: NONE (OFF1, OFF2)

Acknowl. upon F: IMMEDIATELY (POWER ON)

A06206 (F) Infeed: Line currents asymmetrical alarm

Message value: %1

Message class: Network fault (2)

Drive object: A_INF, R_INF, S_INF

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: The asymmetry of the three line currents at the terminals of the power unit exceeds the set alarm threshold (p3465).

Generally, the cause of current asymmetry is line voltage asymmetry or failure of a line phase (e.g. a fuse has ruptured or a terminal connection has become loose). As a consequence, the message is also signaled as possible phase failure in status parameter r3405.2.

Cyclic power fluctuations in the DC link with the line frequency can also result in unequal rms values of the line currents. For this type of operating scenario, it is recommended that monitoring is deactivated (p3465[0, 3] = 0).

Alarm value (r2134, floating point):

Digits to the left of the decimal point:

Highest rms phase current in amps.

Decimal places:

Quotient of the lowest and highest rms phase current value.

Remedy: - check the line supply, terminals and fuses.
- check the line supply quality and system fault level.
- check the load.
- check the settings in p3462 and p3465.

See also: r3405, p3465 (Infeed current symmetry monitoring thresholds)

Reaction upon F: NONE (OFF1, OFF2)
Acknowl. upon F: IMMEDIATELY (POWER ON)

F06207 (N, A) Infeed: Line currents asymmetrical

Message value: %1
Message class: Network fault (2)
Drive object: A_INF, R_INF, S_INF
Component: Power Module **Propagation:** GLOBAL
Reaction: OFF1 (NONE, OFF2)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The asymmetry of the line currents is continuously too high.
The most probable cause is failure of a line phase.
Fault value (r2133, floating point):
Digits to the left of the decimal point:
Highest rms phase current in amps.
Decimal places:
Quotient of the lowest and highest rms phase current value.
Remedy: - check the previous alarm A06206 and the alarm value.
- check the line supply, terminals and fuses.
- check the settings in p3462 and p3465.
- check the connection and size (rating) of the line line filter and/or the line commutating reactor.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

A06208 (F, N) Infeed line: supply voltage asymmetrical

Message value: -
Message class: Infeed faulted (13)
Drive object: A_INF, R_INF, S_INF
Component: Power Module **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: Asymmetry of the voltages in the line phase too high.
The most probable cause is failure of a line phase.
Note:
This message is only output when asymmetry monitoring is activated (p3640.1 = 1).
Remedy: - check the line supply, terminals and fuses.
- check the setting values for the phase asymmetry (p3647[0, 1]).
Reaction upon F: NONE (OFF1, OFF2)
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

F06210 Infeed: Summation current too high

Message value: %1
Message class: Ground fault / inter-phase short-circuit detected (7)
Drive object: A_INF, R_INF, S_INF
Component: Power Module **Propagation:** GLOBAL
Reaction: OFF2 (OFF1)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The smoothed total of the phase currents (i1 + i2 + i3) is greater than 4 % of the maximum power unit current (r0209).

Possible causes:

- the DC link has a ground fault that results in a high summation current (r0069.6). The DC component in the line currents can damage/destroy the power unit, line reactor or line filter!
- the zero point calibration of the current measurement was not carried out (p3491, A06602).
- defective current measurement in the power unit.

Fault value (r0949, floating point):

Smoothed total of the phase currents.

Remedy: - check the DC link for a low-ohmic or high-ohmic ground fault and if present, remove.

- increase the monitoring time of the current offset measurement (p3491).
- replace the power unit if necessary.

F06211 Infeed: Summation current impermissibly high

Message value: %1
Message class: Ground fault / inter-phase short-circuit detected (7)
Drive object: A_INF, R_INF, S_INF
Component: Power Module **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The smoothed sum of the phase currents (i1 + i2 + i3) is impermissibly high. The summed current has exceeded the parameterized threshold for the ground fault monitoring (p0287).

Possible causes:

- there is a ground fault that results in a high summation current (r0069.6). The DC component in the line currents can damage/destroy the power unit, line reactor or line filter!
- the zero point calibration of the current measurement was not carried out (p3491, A06602).
- the current measurement in the power unit is defective.

Fault value (r0949, floating point):

Smoothed total of the phase currents (peak value).

Remedy: - check the line supply for ground faults and remove any that are present.

- check the set threshold for the ground fault monitoring (p0287).
- if required, replace the power unit.

See also: p0287 (Ground fault monitoring shutdown threshold)

F06211 Summation current impermissibly high

Message value: %1
Message class: Ground fault / inter-phase short-circuit detected (7)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The smoothed sum of the phase currents (i1 + i2 + i3) is impermissibly high. The total current has exceeded the parameterized threshold for the ground fault monitoring (p0287).

Possible causes:

- there is a ground fault that results in a high summation current (r0069.6). The DC component in the line currents can damage/destroy the power unit, reactor, filter or motor!
- the current measurement in the power unit is defective.

Fault value (r0949, floating point):

Smoothed total of the phase currents.

Remedy: - check the line supply for ground faults and remove any that are present.
- check the set threshold for the ground fault monitoring (p0287).
- if required, replace the power unit.
See also: p0287 (Ground fault monitoring shutdown threshold)

A06215 (F) Infeed: Summation current too high

Message value: %1
Message class: Ground fault / inter-phase short-circuit detected (7)
Drive object: A_INF, R_INF, S_INF
Component: Power Module **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The smoothed total of the phase currents (i1 + i2 + i3) is greater than 3 % of the maximum power unit current (r0209).
Possible causes:
- the DC link has a ground fault that results in a high summation current (r0069.6). The DC component in the line currents can damage/destroy the power unit, line reactor or line filter!
- the zero point calibration of the current measurement was not carried out (p3491, A06602).
- defective current measurement in the power unit.
Alarm value (r2124, floating point):
Smoothed total of the phase currents.
Remedy: - check the DC link for a low-ohmic or high-ohmic ground fault and if present, remove.
- increase the monitoring time of the current offset measurement (p3491).
- replace the power unit if necessary.
Reaction upon F: NONE (OFF1, OFF2)
Acknowl. upon F: IMMEDIATELY (POWER ON)

A06250 (F, N) Infeed: Defective capacitor(s) in at least one phase of line filter

Message value: %1
Message class: Line filter faulted (15)
Drive object: A_INF, R_INF, S_INF
Component: Power Module **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: A change in the line filter capacitance was detected in at least one line phase.
The voltages and phase currents of the line filter, measured using a VSM, indicate a deviation of the filter capacitances from the value parameterized in p0221.
A change or a defect of the line filter capacitors results in a shift of the resonant frequencies and can result in severe damage to the drive system.
Alarm value (r2124, floating point):
The currently calculated capacitance in µF (rounded-off to an integer number).
Note:
The first decimal point specifies the number of the phase (1, 2, 3) where the capacitance deviates from the specified value.
Remedy: - check the parameterized value of the filter capacitance (p0221).
- check the correct wiring of the VSM:
Differential voltages u12 and u23 must be available at the 100 V/690 V inputs of the VSM.
The phase currents of the line filter must be available at the 10 V inputs via a current-voltage transformer.
- check the alarm limits for the permissible filter capacitance deviation (p3676).
- check the scaling of the line supply voltage measurement using the VSM (p3660).
- check the scaling of the filter current measurement using the VSM (p3670).
- check the line filter capacitors and if required, replace the line filter.
For a parallel connection of power units, the following applies:
- parameter r3677[0...2] indicates the average value of all filter capacitances.
- parameters r7320[0...n], r7321[0...n] and r7322[0...n] indicate the capacitance of each individual filter. The defective filter can be localized by the particular VSM.

	Note:
	VSM: Voltage Sensing Module
	See also: p0221, p3660, p3670, p3676
Reaction upon F:	NONE (OFF1, OFF2)
Acknowl. upon F:	IMMEDIATELY (POWER ON)
Reaction upon N:	NONE
Acknowl. upon N:	NONE

F06255 (A) Infeed: temperature threshold value not permissible

Message value: %1

Message class: Infeed faulted (13)

Drive object: A_INF, R_INF, S_INF

Component: Voltage Sensing Module (VSM) **Propagation:** GLOBAL

Reaction: NONE (OFF1, OFF2)

Acknowledge: IMMEDIATELY (POWER ON)

Cause: At least one temperature threshold value is set outside the permissible value range.

For sensor type KTY84 (p3665 = 2) or PT1000 (p3665 = 6), the value range from 181 °C to 300 °C is not permissible.

Fault value (r0949, interpret bitwise binary):

The bit number corresponds to the number of the Voltage Sensing Module (VSM) involved.

Bit 0: the value in p3667/p3668 is outside the permissible value range.

For liquid-cooled AIMs (see p0220) the value range between 71 °C and 300 °C is also not permissible.

Bit 1: the value in p5467[0]/p5468[0] is outside the permissible value range.

Bit 2: the value in p5467[1]/p5468[1] is outside the permissible value range.

See also: p3667, p3668, p5467 (VSM2 overtemperature alarm threshold), p5468 (VSM2 overtemperature shutdown threshold)

Remedy: Set the temperature thresholds within the measuring range.

Reaction upon A: NONE

Acknowl. upon A: NONE

A06260 Infeed: Temperature in the line filter too high

Message value: -

Message class: Line filter faulted (15)

Drive object: A_INF, R_INF, S_INF

Component: Power Module **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: The temperature monitoring in the line filter has responded.

If the temperature remains too high during the complete monitoring time, this results in fault F06261.

Note:

The temperature monitoring is only available for an Active Interface Module.

Remedy: - check whether the line filter type set in p0220[0] matches the line filter that is actually connected. Ensure that the line filter specified for the infeed being used is connected or correct the setting of the line filter type in p0220[0].

- temperature monitoring is mandatory for AIM line filters (refer to p0220). Ensure that the line filter temperature switch is correctly and reliably connected to input X21 of the infeed.
- reduce the ambient temperature of the line filter.
- reduce the load on the infeed and the filter module.
- check the magnitude of the line supply voltage.
- the internal fan of the filter module is defective. Replace the fan if necessary.
- defective temperature switch of the filter module. Replace the filter module if necessary.

F06261 Infeed: Temperature in the line filter permanently too high

Message value: -
Message class: Line filter faulted (15)
Drive object: A_INF, R_INF, S_INF
Component: Power Module **Propagation:** GLOBAL
Reaction: OFF2 (OFF1)
Acknowledge: IMMEDIATELY
Cause: After the temperature monitoring responded, the temperature in the line filter was permanently exceeded.

Note:

The temperature monitoring is only available for an Active Interface Module (AIM).

Remedy: - check whether the line filter type set in p0220[0] matches the line filter that is actually connected. Ensure that the line filter specified for the infeed being used is connected or correct the setting of the line filter type in p0220[0].

- temperature monitoring is mandatory for AIM line filters (refer to p0220). Ensure that the temperature switch in the line filter is correctly and reliably connected to input X21 of the infeed.
- reduce the ambient temperature of the line filter.
- reduce the load on the infeed and the line filter.
- check the magnitude of the line supply voltage.
- the internal fan of the line filter is defective. Replace the fan if necessary.
- defective temperature switch of the line filter. Replace the line filter if necessary.

F06262 Infeed: Temperature switch in the line filter open when switching on

Message value: -
Message class: Line filter faulted (15)
Drive object: A_INF, R_INF, S_INF
Component: Power Module **Propagation:** GLOBAL
Reaction: OFF2 (OFF1)
Acknowledge: IMMEDIATELY
Cause: When switching on the infeed, the temperature in the line filter is too high. Switching on is prevented.
Remedy: - check whether the line filter type set in p0220[0] matches the line filter that is actually connected. Ensure that the line filter specified for the infeed being used is connected or correct the setting of the line filter type in p0220[0].

- temperature monitoring is mandatory for AIM line filters (refer to p0220). Ensure that the temperature switch in the line filter is correctly and reliably connected to input X21 of the infeed.
- the filter temperature is too high. Allow the system to cool down.
- the internal fan of the line filter is defective. Replace the fan if necessary.
- defective temperature switch of the line filter. Replace the line filter if necessary.

F06300 Infeed: Line voltage too high at power on

Message value: %1
Message class: Network fault (2)
Drive object: A_INF, R_INF, S_INF
Component: None **Propagation:** GLOBAL
Reaction: OFF2 (NONE, OFF1)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The RMS line supply voltage Vrms was so high when switching on that controlled operation is not possible without exceeding the permissible maximum voltage in the DC link (p0280).

Fault condition: Vrms * 1.5 > p0280.

Fault value (r0949, floating point):

Lowest possible controlled DC link voltage for the line supply voltage presently connected.

See also: p0280 (DC link voltage maximum steady-state)

Remedy: - check the line supply voltage

- check the maximum DC link voltage and if required, increase (p0280).
- check the line supply voltage and compare with the actual line supply voltage (p0210).
- check whether the power unit is dimensioned for the line supply voltage actually being used.

See also: p0210 (Drive unit line supply voltage), p0280 (DC link voltage maximum steady-state)

A06301 (F) Infeed: Line supply overvoltage

Message value: Line supply voltage: %1
Message class: Network fault (2)
Drive object: A_INF, B_INF, R_INF, S_INF
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The filtered (steady-state) value of the rms line supply voltage Vrms is higher than the alarm threshold (p0281).
Alarm condition: Vrms > p0281 * p0210.
Alarm value (r2124, floating point):
Actual steady-state line supply voltage.
See also: p0281 (Line supply overvoltage alarm threshold)
Remedy: - check the line supply.
- check the line supply voltage (p0210).
- check the alarm threshold (p0281).
See also: p0210 (Drive unit line supply voltage), p0281 (Line supply overvoltage alarm threshold)
Reaction upon F: NONE (OFF1, OFF2)
Acknowl. upon F: IMMEDIATELY (POWER ON)

F06310 (A) Infeed: Supply voltage (p0210) incorrectly parameterized

Message value: Line supply voltage: %1
Message class: Network fault (2)
Drive object: A_INF, B_INF, R_INF, S_INF
Component: None **Propagation:** GLOBAL
Reaction: NONE (OFF1, OFF2)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: After precharging was completed, the line supply voltage Vrms was calculated using the measured DC link voltage. This voltage Vrms is not within the tolerance range of the supply voltage.
The following applies for the tolerance range: 85 % * p0210 < Vrms < 110 % * p0210
Fault value (r0949, floating point):
Line supply voltage Vrms present.
See also: p0210 (Drive unit line supply voltage)
Remedy: - check the parameterized supply voltage and if required change (p0210).
- check the line supply voltage.
See also: p0210 (Drive unit line supply voltage)
Reaction upon A: NONE
Acknowl. upon A: NONE

F06310 (A) Supply voltage (p0210) incorrectly parameterized

Message value: -
Message class: Network fault (2)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE (OFF1, OFF2)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: For AC/AC drive units, the measured DC voltage lies outside the tolerance range after precharging has been completed.
The following applies for the tolerance range: 1.16 * p0210 < r0070 < 1.6 * p0210
Note:
The fault can only be acknowledged when the drive is switched off.
See also: p0210 (Drive unit line supply voltage)
Remedy: - check the parameterized supply voltage and if required change (p0210).
- check the line supply voltage.
See also: p0210 (Drive unit line supply voltage)

Reaction upon A: NONE
Acknowl. upon A: NONE

F06311 Infeed: Supply voltage (p0210) incorrect

Message value: Line supply voltage: %1
Message class: Network fault (2)
Drive object: A_INF, B_INF, R_INF, S_INF
Component: None **Propagation:** GLOBAL
Reaction: OFF2 (OFF1)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The line voltage nominal value indicated in p0210 is outside the nominal voltage range of the power unit.

After precharging was completed, the actual line supply voltage Vrms was calculated using the measured DC link voltage. This voltage Vrms does not lie within the extended tolerance range of the supply voltage set in p0210.

The following applies for the extended tolerance range: 75 % * p0210 < Vrms < 120 % * p0210

Alarm value (r2124, floating point):

Line supply voltage Vrms present.

See also: p0210 (Drive unit line supply voltage)

Remedy: - check the parameterized supply voltage and if required change (p0210).

- check the line supply voltage.

See also: p0210 (Drive unit line supply voltage)

F06320 Master/slave: 4-channel multiplexer control not valid

Message value: %1
Message class: Infeed faulted (13)
Drive object: A_INF, R_INF
Component: Power Module **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: Values 0, 1, 2, and 3 are valid to control the 4-channel multiplexer via connector input p3572.

In this case, an invalid value was identified. The control remains effective with the previous value.

Fault value (r0949, interpret decimal):

Invalid value to control the multiplexer.

See also: p3572 (Master/slave active current setpoint multiplexer selection)

Remedy: - check the interconnection to control the multiplexer (CI: p3572).

- check the signal source signal value of the BICO interconnection.

See also: p3572 (Master/slave active current setpoint multiplexer selection)

F06321 Master/slave: 6-channel multiplexer control not valid

Message value: %1
Message class: Infeed faulted (13)
Drive object: A_INF, R_INF
Component: Power Module **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: For the 6-channel multiplexer control via connector input p3577 an invalid value was identified. Values of 0, 1, 2, 3, 4 and 5 are valid. The control remains effective with the previous value.

Fault value (r0949, interpret decimal):

Invalid value used to control the multiplexer.

See also: p3577 (Master/slave current distribution factor multiplexer selection)

Remedy: - check the interconnection to control the multiplexer (CI: p3577).

- check the signal source signal value of the BICO interconnection.

A06350 (F) Infeed: Measured line frequency too high

Message value: Line frequency: %1
Message class: Network fault (2)
Drive object: A_INF, R_INF, S_INF
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The actual line frequency f_line is higher than the parameterized alarm threshold (f_line > p0211 * p0284).
The alarm can be output in two operating states:
1. During the switch-on phase of the infeed unit.
Consequence:
Synchronization of the infeed to the line supply is interrupted and is restarted.
The alarm is reissued if the line frequency remains higher than the parameterized alarm threshold.
2. While the infeed is operational.
Consequence:
The infeed still remains in the operating state, alarm A06350 is output. This signifies a critical operational fault.
Alarm value (r2124, floating point):
Actual line frequency determined.
See also: p0284 (Line supply frequency exceeded alarm threshold)
Remedy: - check the parameterized line frequency and if required change (p0211).
- check the alarm threshold (p0284).
- check the line supply.
- check the line supply quality.
See also: p0211, p0284 (Line supply frequency exceeded alarm threshold)
Reaction upon F: NONE (OFF1, OFF2)
Acknowl. upon F: IMMEDIATELY (POWER ON)

A06351 (F) Infeed: Measured line frequency too low

Message value: Line frequency: %1
Message class: Network fault (2)
Drive object: A_INF, R_INF, S_INF
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The actual line frequency f_line is lower than the parameterized alarm threshold (f_line < p0211 * p0285).
The alarm can be output in two operating states:
1. During the switch-on phase of the infeed unit.
Consequence:
Synchronization of the infeed to the line supply is interrupted and is restarted.
The alarm is reissued if the line frequency remains less than the parameterized alarm threshold.
2. While the infeed is operational.
Consequence:
The infeed remains in the "operating" (run) state and alarm A06351 is output. This signifies a critical operational fault.
Alarm value (r2124, floating point):
Actual line frequency determined.
See also: p0285 (Line supply frequency undershot alarm threshold)
Remedy: - check the parameterized line frequency and if required change (p0211).
- check the alarm threshold (p0285).
- check the line supply.
- check the line supply quality.
See also: p0211, p0285 (Line supply frequency undershot alarm threshold)
Reaction upon F: NONE (OFF1, OFF2)
Acknowl. upon F: IMMEDIATELY (POWER ON)

A06400 Infeed: Line supply data identification selected/active

Message value: -
Message class: Infeed faulted (13)
Drive object: A_INF, R_INF, S_INF
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The line supply data identification is selected and active.
The line inductance and the DC link capacitance are measured at the next pulse enable.
See also: p3410 (Infeed identification method)
Remedy: Not necessary.
This alarm is automatically withdrawn after the measurement has been completed.

A06401 Infeed: Transformer data identification/test mode selected/active

Message value: %1
Message class: Infeed faulted (13)
Drive object: A_INF, R_INF
Component: Power Module **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: A transformer data identification type or a transformer test operation has been selected or is active.
Alarm value (r2124, interpret decimal):
11: Identification type 1 selected for transformer data (automatic determination of the magnetizing inductance).
12: Identification type 2 selected for transformer data (automatic determination of transformer phase shift and gain correction).
13: Identification type 3 selected for transformer data (determination of total leakage inductance of transformer during line data identification).
101: Test mode 1 selected.
102: Test mode 2 selected.
See also: p5480 (Transformer magnetization mode)
Remedy: Not necessary.
This alarm is automatically withdrawn after the identification has expired.

F06500 Infeed: Line synchronization not possible

Message value: -
Message class: Network fault (2)
Drive object: A_INF, R_INF, S_INF
Component: Power Module **Propagation:** GLOBAL
Reaction: OFF2 (OFF1)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The line synchronization is not possible within the monitoring time.
The infeed was re-synchronized to the line supply because it was interrupted due to an incorrect line frequency or due to excessively high line voltage distortion.
After 20 attempts, synchronization - and therefore also the switching-on operation - were interrupted.
Remedy: - check the parameterized line frequency and if required change (p0211).
- check the setting of the threshold values (p0284, p0285).
- check the line supply.
- check the connecting terminals
- for significant line voltage distortion, after assessment by experts, the tolerance threshold p3457[2] can be adapted.
When using a Voltage Sensing Module (VSM):
- check the line supply connection at the terminals (X521, X522).
- check VSM activation (p0145, p3400).
- check the line supply quality.

Note:

In the case of chassis power units, the availability of correct VSM voltage measured values is imperative for line synchronization.

See also: p0211, p0284 (Line supply frequency exceeded alarm threshold), p0285 (Line supply frequency undershot alarm threshold), p3457 (Infeed PLL supplementary settings)

A06502 (F, N) Infeed: Unable to achieve line synchronization in transformer magnetization

Message value: -

Message class: Network fault (2)

Drive object: A_INF, R_INF

Component: Power Module **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: Line synchronization is not possible within the monitoring time (p5481[2]).

Remedy: - check the setting of the threshold value (p5485).

- check the setting of the maximum time (p5481[2])

- check the line supply quality.

See also: p5481 (Transformer magnetization times), p5485 (Transformer magnetization voltage thresholds)

Reaction upon F: NONE (OFF1, OFF2)

Acknowl. upon F: IMMEDIATELY

Reaction upon N: NONE

Acknowl. upon N: NONE

F06503 Infeed: Line black start unsuccessful

Message value: %1

Message class: Network fault (2)

Drive object: A_INF, R_INF, S_INF

Component: None **Propagation:** GLOBAL

Reaction: OFF1 (NONE, OFF2)

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The line black start was unsuccessful.

Fault value (r0949, interpret decimal):

State of the black start (corresponds to r5482).

The following applies for fault value r0949 = 109:

At the start of a black start (p5581 = 1), a line supply was identified (frequency and voltage within the specified limits p0281 to p0285).

The following applies to all other fault values:

The maximum time for a black start (p5581[2]) was exceeded.

Remedy: - check the conditions of a line black start.

- check the parameterization of the line black start.

See also: p5581 (Island grid times)

F06504 Infeed: Island line supply synchronization unsuccessful

Message value: %1

Message class: Network fault (2)

Drive object: A_INF, R_INF, S_INF

Component: None **Propagation:** GLOBAL

Reaction: NONE (OFF1, OFF2)

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The island line supply synchronization was unsuccessful.

Alarm value (r2124, interpret decimal):

State, in which the island line supply synchronization has remained (corresponds to r5482).

See also: r5482 (Line synchronization status)

Remedy: - check the conditions for the island line supply synchronization.

- check the parameterization of the island line supply synchronization.

See also: p5581 (Island grid times)

F06505 Infeed: For transformer magnetization current limit exceeded

Message value: %1
Message class: Network fault (2)
Drive object: A_INF, R_INF, S_INF
Component: None **Propagation:** GLOBAL
Reaction: OFF1 (OFF2)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The current limit was exceeded when magnetizing the transformer (r0068 > p5494[1] * r0207).
Remedy: - check the setting of the current limit (p5494[1])
- check the primary side of the transformer for a short-circuit.
- check the control and feedback signal of the circuit breaker.
See also: p5494 (Transformer magnetization scaling values)

A06601 (F) Infeed: Current offset measurement interrupted

Message value: %1
Message class: Infeed faulted (13)
Drive object: A_INF, R_INF, S_INF
Component: Power Module **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: Defective current measurement or a DC current is present during the offset measurement.
Alarm value (r2124, interpret decimal):
1: Excessively high phase current has occurred during the current offset calibration.
2: The measured current offset is greater than the 3% of the maximum permissible converter current (e.g. due to a ground fault in the DC link).
Remedy: For alarm value = 1:
- possible counter-measure if there is no line contactor: Power up an adequately long time before OFF1 = 1.
For alarm value = 2:
- defective current measurement or a DC current is present during the offset measurement.
- check the DC link for a ground fault.
Reaction upon F: NONE (OFF1, OFF2)
Acknowl. upon F: IMMEDIATELY (POWER ON)

A06602 (F) Infeed: Current offset measurement not possible

Message value: -
Message class: Infeed faulted (13)
Drive object: A_INF, R_INF, S_INF
Component: Power Module **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: After an OFF1 = 1 no valid current offset measurement was able to be made within the monitoring time (p3491) before closing the line contactor. The current offset is set to 0.
See also: p3491 (Infeed I-offset measurement monitoring time)
Remedy: - check the DC link for a ground fault. A ground fault can destroy parts and components!
- check the monitoring time setting and if required increase (p3491). At least 100 ms is required for a valid measurement (p3491 > 100 ms).
Notice:
If there is no valid measurement, then under certain circumstances the quality of the DC link control will be reduced.
See also: p3491 (Infeed I-offset measurement monitoring time)
Reaction upon F: NONE (OFF1, OFF2)
Acknowl. upon F: IMMEDIATELY (POWER ON)

F06700 (A) Infeed: Switch line contactor for load condition

Message value: -
Message class: Infeed faulted (13)
Drive object: A_INF, B_INF, R_INF, S_INF
Component: Power Module **Propagation:** GLOBAL
Reaction: NONE (OFF2)
Acknowledge: IMMEDIATELY
Cause: For an ON command, the infeed line contactor should be switched under load.
Remedy: - do not load the DC link if the infeed has not issued an operating signal (r0863.0 = 1).
- after the infeed has been switched off, all power units connected to the DC link should be switched off. To realize this, the operating signal of the infeed (r0863.0) must be suitably interconnected.
Reaction upon A: NONE
Acknowl. upon A: NONE

A06800 (F) Infeed: Maximum steady-state DC link voltage reached

Message value: -
Message class: Infeed faulted (13)
Drive object: A_INF, R_INF, S_INF
Component: Power Module **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The DC link voltage setpoint has reached the maximum steady-state voltage parameterized in p0280.
The DC link voltage is increased by the modulation depth reserve controller for the following reasons:
- modulation depth reserve is too low (p3480).
- line supply voltage is too high.
- supply voltage (p0210) parameterized to be too low.
- excessively high setpoint for the reactive line current.
Remedy: - check the line supply voltage setting (p0210).
- check the line supply for an overvoltage condition.
- reduce the modulation depth reserve (p3480).
- reduce the reactive current setpoint.
See also: p0210 (Drive unit line supply voltage), p0280 (DC link voltage maximum steady-state), p3480 (Infeed modulation depth limit)
Reaction upon F: NONE (OFF1, OFF2)
Acknowl. upon F: IMMEDIATELY (POWER ON)

A06810 (F) Infeed: DC link voltage alarm threshold fallen below

Message value: -
Message class: Infeed faulted (13)
Drive object: A_INF, B_INF, R_INF, S_INF
Component: Power Module **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: In operation, the DC link voltage has dropped to below the alarm threshold. The alarm threshold is obtained from the sum of p0279 and r0296.
Note:
When the alarm threshold is fallen below, this is also indicated using status bit r3405.7.
Possible causes:
- line supply voltage dip or another line supply fault.
- overload of the infeed.
- for Active Line Module: Controller incorrectly parameterized.
See also: p0279 (DC link voltage offset alarm threshold), r0296 (DC link voltage undervoltage threshold), r3405

Remedy:	- check the line voltage and line supply quality. - reduce the power drawn, avoid step-like load changes - for Active Line Module: Adapt the controller parameterization (e.g. automatic line supply identification (p3410 = 4, 5)).		
Reaction upon F:	NONE (OFF1, OFF2)		
Acknowl. upon F:	IMMEDIATELY (POWER ON)		

A06849 (F, N) Infeed: Short-circuit operation active

Message value:	-		
Message class:	Infeed faulted (13)		
Drive object:	A_INF, R_INF		
Component:	Power Module	**Propagation:**	GLOBAL
Reaction:	NONE		
Acknowledge:	NONE		
Cause:	The current hysteresis controller sequence control has detected a short circuit (r5452, r5522). The absolute line supply voltage (r5444[0], r5512[0]) is below the short-circuit voltage limit (p5459[2], p5529[2]), and the current limitation is active (r5402.3=1, r5502.3=1). Note: The effective current limit is obtained from the parameterized overcurrent (p5453) and the hysteresis width (p5454).		
Remedy:	- check the parameterization of the current hysteresis controller (p5453). - check the line supply cables for a short-circuit. See also: r5452 (Current hysteresis controller sequence control status word), p5453 (Current hysteresis controller overcurrent limit)		
Reaction upon F:	NONE		
Acknowl. upon F:	IMMEDIATELY		
Reaction upon N:	NONE		
Acknowl. upon N:	NONE		

F06850 Infeed: Short-circuit prevailing for too long

Message value:	%1		
Message class:	Network fault (2)		
Drive object:	A_INF, R_INF		
Component:	Power Module	**Propagation:**	GLOBAL
Reaction:	OFF2		
Acknowledge:	IMMEDIATELY (POWER ON)		
Cause:	The maximum permissible duration (p5458[1], p5528[1]) for the short-circuit has been exceeded. The short-circuit could not be cleared within this time. See also: p5509 (Dynamic grid support scaling values)		
Remedy:	- check the minimum time parameter setting (p5458[1], p5528[1]). - check the line supply and fuses. See also: p5458 (Current hysteresis controller minimum time operating state), p5528 (Dynamic grid control operating state times)		

F06851 Infeed: Distributed infeed line monitoring tripped

Message value:	%1		
Message class:	Network fault (2)		
Drive object:	A_INF, R_INF		
Component:	None	**Propagation:**	GLOBAL
Reaction:	OFF2 (NONE)		
Acknowledge:	IMMEDIATELY (POWER ON)		
Cause:	The line monitoring of the distributed line infeed has tripped. Alarm value (r2124, interpret hexadecimal): Corresponds to status word (r5542).		
Remedy:	- check the line supply. - check the parameterization of the line monitoring (p5540 ... p5559). See also: p5540 (Line monitoring configuration), r5542 (Line monitoring status word)		

F06855 Infeed: Line filter monitor responded

Message value: %1
Message class: Line filter faulted (15)
Drive object: A_INF, R_INF
Component: Power Module **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: A threshold value parameterized in p3678 has been exceeded or undershot in the line filter.

Fault value (r0949, interpret decimal):

0: Voltage threshold, alpha/beta voltage monitoring fallen below (p3678[0]).

2: Voltage threshold value of the phase voltage monitoring fallen below (p3678[0]).

x1:

Current threshold value exceeded (p3678[1]). The 10th position codes the power unit number of the Active Interface Module involved.

Example:

01 : overcurrent in line filter 1

11 : overcurrent in line filter 2

See also: p3678 (Filter monitoring threshold values), p3679 (Transformer filter monitoring times)

Remedy: - check the parameterization of the threshold values for filter monitoring (p3678]).

- check filter.

For fault value = 0:

- check the parameterization of the voltage monitoring smoothing time (p3679[0]).

For fault value = 1:

- check the parameterization of the current monitoring minimum time (p3679[1]).

A06860 Infeed: Function module activation not possible

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, R_INF
Component: Power Module **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: Function module activation is not possible.

The power unit used has at least one of the following features:

- gating unit with current limiting control (r0192.19).
- gating unit with all-phase current limiting (r0192.30).

The affected function module is identified in fault value r0949 (the value of r0949 corresponds to the bit of parameter p0108).

r0949 = 7 "Dynamic grid support" function module

r0949 = 12: "Line droop control" function module

See also: r0192 (Power unit firmware properties 1), p5401 (Line droop control activation)

Remedy: - check whether the power unit used has the "gating unit with current limiting control" feature (r0192.19) or "gating unit with all-phase current limiting" feature (r0192.30).

- if necessary, use a power unit that has at least one of these features.

A06900 (F) Braking Module: Fault (1 -> 0)

Message value: %1
Message class: Braking Module faulted (14)
Drive object: A_INF, B_INF, R_INF, S_INF
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The Braking Module signals a fault (1 -> 0) via X21.4 ("booksize" format) or X21.5 ("chassis" format).
This signal is wired to a system digital input and correspondingly interconnected using binector input p3866[0...7].
Possible causes:
- wiring of the signal or BICO interconnection of the signal source incorrect.
- overtemperature
- electronics power supply missing.
- ground fault/short-circuit.
- internal component fault.
See also: p3866 (Braking Module fault)
Remedy: - check binector input p3866[0...7] and the wiring from terminal X21.4 ("booksize" format) or X21.5 ("chassis" format).
- reduce the number of braking operations.
- check the 24 V power supply of the component.
- check for a ground fault or short circuit.
- replace the component if necessary.
Reaction upon F: NONE (OFF2)
Acknowl. upon F: IMMEDIATELY

A06901 Braking Module: Pre-alarm I2t shutdown

Message value: %1
Message class: Braking Module faulted (14)
Drive object: A_INF, B_INF, R_INF, S_INF
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The Braking Module "Booksize" format signals "Pre-alarm I2t shutdown" via terminal X21.3.
This signal is wired to a system digital input and correspondingly interconnected using binector input p3865[0...7].
Note:
This function is not supported for the "chassis" format.
Remedy: - reduce the number of braking operations.
- check binector input p3865[0...7] and the wiring from terminal X21.3 of the particular Braking Module.

A06904 (N) Braking Module internal is inhibited

Message value: %1
Message class: Braking Module faulted (14)
Drive object: B_INF
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The internal Braking Module was inhibited via binector input p3680 = 1 signal.
In the inhibited state, energy cannot be dissipated using the braking resistor.
See also: p3680 (Braking Module internal inhibit)
Remedy: Release the internal Braking Module (BI: p3680 = 0 signal).
Reaction upon N: NONE
Acknowl. upon N: NONE

A06905 Braking Module internal I2t shutdown alarm

Message value: %1
Message class: Braking Module faulted (14)
Drive object: B_INF
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The internal Braking Module outputs an alarm due to the high I2t value.
80% of the maximum switch-on duration of the braking resistor has been reached.
Note:
This message is also displayed via BO: p3685.
See also: r3685 (Digital Braking Module: Pre-alarm I2t shutdown)
Remedy: Reduce the number of braking operations.

F06906 (A) Braking Module internal fault

Message value: %1
Message class: Braking Module faulted (14)
Drive object: B_INF
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The internal Braking Module outputs a fault due to overcurrent or an excessively high I2t value and is therefore inhibited.
Note:
This message is also displayed via BO: p3686.
Fault value (r0949, interpret bitwise binary):
Bit 0 = 1: I2t exceeded
Bit 1 = 1: overcurrent
See also: r3686 (Digital Braking Module fault)
Remedy: Reduce the number of braking operations.
Reaction upon A: NONE
Acknowl. upon A: NONE

F06907 Braking Module internal overtemperature

Message value: -
Message class: Braking Module faulted (14)
Drive object: B_INF
Component: None **Propagation:** GLOBAL
Reaction: OFF2 (NONE, OFF1)
Acknowledge: IMMEDIATELY
Cause: The temperature sensor connected to the braking resistor signals an overtemperature.
The Braking Module is still active. If the overtemperature persists for more than 60 s, fault F06908 is output, and the braking module is switched off.
See also: r3687 (Digital Braking Module pre-alarm overtemperature)
Remedy: - reduce the temperature at the sensor.
- check the temperature sensor connection.

F06908 Braking Module internal overtemperature shutdown

Message value: -
Message class: Braking Module faulted (14)
Drive object: B_INF
Component: None **Propagation:** GLOBAL
Reaction: OFF2 (OFF1)
Acknowledge: IMMEDIATELY
Cause: Braking module shut down due to overtemperature at the temperature sensor of the braking resistor.
The overtemperature is detected by the sensor for longer than 60 s.
See also: r3688 (Braking Module internal overtemperature shutdown)
Remedy: - reduce the temperature at the sensor.
- check the temperature sensor connection.

F06909 Braking Module internal Vce fault

Message value: %1
Message class: Braking Module faulted (14)
Drive object: B_INF
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: In the power unit, the monitoring of the collector-emitter voltage (U_ce) of the power semiconductor to control the braking resistor has responded.
Possible causes:
- short circuit at the braking resistor terminals.
- defective power semiconductor in the braking resistor control.
Note:
Under certain circumstances, this fault is also output if a braking resistor is not connected, and the energy is fed back into the Braking Module.
See also: r3689 (Digital Braking Module Uce fault)
Remedy: - connect a braking resistor.
- check the braking resistor connection.
- check the braking resistor.
- carry out a POWER ON (switch-off/switch-on).
- replace the unit.

A06921 (N) Braking resistor phase asymmetry

Message value: -
Message class: Braking Module faulted (14)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Motor **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: - the three resistors of the braking chopper are not symmetrical.
- DC link voltage oscillations caused by fluctuating loads of the connected drives.
Remedy: - check the feeder cables to the braking resistors.
- if required, increase the value for detecting asymmetry (p1364).
See also: p1360 (Braking chopper braking resistor cold), p1362 (Braking chopper activation threshold), r1363 (Braking chopper output voltage), p1364 (Braking chopper resistor asymmetry)
Reaction upon N: NONE
Acknowl. upon N: NONE

F06922 Braking resistor phase failure

Message value: %1

Message class: Braking Module faulted (14)

Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Motor **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: IMMEDIATELY

Cause: A phase failure for the brake resistor was detected.

Fault value (r0949, interpret decimal):

11: Phase U

12: Phase V

13: Phase W

See also: p3235 (Phase failure signal motor monitoring time)

Remedy: Check the feeder cables to the braking resistors.

See also: p1360 (Braking chopper braking resistor cold), p1362 (Braking chopper activation threshold), r1363 (Braking chopper output voltage), p1364 (Braking chopper resistor asymmetry)

F07011 Drive: Motor overtemperature

Message value: %1

Message class: Motor overload (8)

Drive object: SERVO, SERVO_AC, SERVO_I_AC

Component: Motor **Propagation:** GLOBAL

Reaction: OFF2 (NONE, OFF1, OFF3, STOP2)

Acknowledge: IMMEDIATELY

Cause: KTY84/PT1000:

The motor temperature has exceeded the fault threshold (p0605) or the timer (p0606) after the alarm threshold was exceeded (p0604) has expired.

PTC, bimetallic NC contact:

The response threshold of 1650 Ohm was exceeded (for SME p4600 ... p4603 or for TM120 p4610 ... p4613 = 10, 30), or the timer (p0606) has expired after 1650 Ohm has been exceeded (for SME p4600 ... p4603 or for TM120 p4610 ... p4613 = 12, 32).

Motor temperature model:

The calculated motor temperature is too high.

Possible causes:

- motor overloaded.
- motor ambient temperature too high.
- PTC / bimetallic NC contact: Wire breakage or sensor not connected.
- motor temperature model incorrectly parameterized.

Hysteresis:2K

Fault value (r0949, interpret decimal):

1, 2, 3, 4:

Number of the temperature channel leading to the message (for SME/TM120 (p0601 = 10, 11)).

200:

Motor temperature model 1 (I2t): temperature too high.

300:

Motor temperature model 3: after the monitoring time has expired, the temperature is still higher than the alarm threshold.

301:

Motor temperature model 3: temperature is too high, or the model has not been parameterized.

302:

Motor temperature model 3: Encoder temperature is not within the valid range.

See also: p0351, p0604, p0605, p0606, p0612, p0613, p0617, p0618, p0619, p0625, p0626, p0627, p0628

Remedy:
- reduce the motor load.
- check the ambient temperature and the motor ventilation.
- check the wiring and temperature sensor connection.
- check monitoring limits.
- check the encoder type (p0404).
- check the motor type (p0300, p0301).
- check activation of the motor temperature model (p0612).
- check the motor temperature model parameters.
- check the encoder (p0404).

See also: p0351, p0604, p0605, p0606, p0612, p0617, p0618, p0619, p0625, p0626, p0627, p0628, r5397

F07011 Drive: Motor overtemperature

Message value: %1
Message class: Motor overload (8)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Motor **Propagation:** GLOBAL
Reaction: OFF2 (NONE, OFF1, OFF3, STOP2)
Acknowledge: IMMEDIATELY
Cause: KTY84/PT1000 or no sensor:

The measured motor temperature or model temperature has exceeded the fault threshold (p0605) or the timer (p0606) has elapsed following the alarm threshold (p0604) being exceeded.

The response parameterized in p0610 becomes active.

PTC or bimetallic NC contact:

The response threshold of 1650 Ohm was exceeded or the NC contact opened and the timer (p0606) has expired. The response parameterized in p0610 becomes active.

Possible causes:
- motor is overloaded.
- the motor ambient temperature is too high.
- PTC / bimetallic NC contact: Wire breakage or sensor not connected.

Fault value (r0949, interpret decimal):

200:

Motor temperature model 1 (I2t): temperature too high.

Number of the temperature channel leading to the message (for SME/TM120 (p0601 = 10, 11)).

See also: p0351, p0604, p0605, p0606, p0612, p0613, p0617, p0618, p0619, p0625, p0626, p0627, p0628

Remedy:
- reduce the motor load.
- check the ambient temperature and the motor ventilation.
- check the wiring and the connection of the PTC or bimetallic NC contact.

See also: p0351, p0604, p0605, p0606, p0612, p0617, p0618, p0619, p0625, p0626, p0627, p0628

A07012 (N) Drive: Motor temperature model 1/3 overtemperature

Message value: %1
Message class: Motor overload (8)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Motor **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The motor temperature model 1/3 identified that the alarm threshold was exceeded.

Hysteresis:2K.

Alarm value (r2124, interpret decimal):

200:

Motor temperature model 1 (I2t): temperature too high.

300:

Motor temperature model 3: temperature too high.

See also: r0034 (Motor utilization thermal), p0351 (Piston position natural frequency minimum), p0605 (Mot_temp_mod 1/2 sensor threshold and temperature value), p0611 (I2t motor model thermal time constant), p0612 (Mot_temp_mod activation), p0613 (Mot_temp_mod 1/3 ambient temperature)

Remedy:	- check the motor load and if required, reduce. - check the motor ambient temperature. - check activation of the motor temperature model (p0612). Motor temperature model 1 (I2t): - check the thermal time constant (p0611). - check alarm threshold. Motor temperature model 3: - check the motor type. - check alarm threshold. - check the model parameters. See also: r0034 (Motor utilization thermal), p0351 (Piston position natural frequency minimum), p0605 (Mot_temp_mod 1/2 sensor threshold and temperature value), p0611 (I2t motor model thermal time constant), p0612 (Mot_temp_mod activation), r5397 (Mot_temp_mod 1/3 ambient temperature image p0613)
Reaction upon N:	NONE
Acknowl. upon N:	NONE

F07013 Drive: Motor temperature model configuration fault

Message value:	%1		
Message class:	Motor overload (8)		
Drive object:	SERVO, SERVO_AC, SERVO_I_AC		
Component:	Motor	**Propagation:**	GLOBAL
Reaction:	OFF2 (NONE, OFF1, OFF3, STOP2)		
Acknowledge:	IMMEDIATELY		
Cause:	A fault has occurred in the configuration of the motor temperature model. Fault value (r0949, interpret decimal): 300: Motor temperature model 3: The sensor does not supply the necessary sensor temperature for the thermal model. 301: Motor temperature model 3: The sensor type is unknown. 302: Motor temperature model 3: At least one other temperature model was simultaneously activated. 303: Motor temperature model unknown in the actual firmware version. See also: p0300, p0301, p0404, p0612		
Remedy:	- check the encoder type. - check the motor type. - check activation of the motor temperature model (p0612). - check the parameters of the motor temperature model (p5350 and following). See also: p0300, p0301, p0404, p0612		

A07014 (N) Drive: Motor temperature model configuration alarm

Message value:	%1		
Message class:	Motor overload (8)		
Drive object:	SERVO, SERVO_AC, SERVO_I_AC		
Component:	Motor	**Propagation:**	GLOBAL
Reaction:	NONE		
Acknowledge:	NONE		
Cause:	A fault has occurred in the configuration of the motor temperature model. Alarm value (r2124, interpret decimal): 1: All motor temperature models: It is not possible to save the model temperature 300: Motor temperature model 3: Threshold value for alarm (r5398) is higher than the threshold value for fault (r5399). See also: p0610 (Motor overtemperature response), p5390 (Mot_temp_mod 1/3 alarm threshold), p5391 (Mot_temp_mod 1/3 fault threshold)		

Remedy: - set the response for motor overtemperature to "Alarm and fault, no reduction of I_max" (p0610 = 2).
- check and correct the threshold values (r5398, r5399).
See also: p0610 (Motor overtemperature response), p5390 (Mot_temp_mod 1/3 alarm threshold), p5391 (Mot_temp_mod 1/3 fault threshold)
Reaction upon N: NONE
Acknowl. upon N: NONE

A07014 (N) Drive: Motor temperature model configuration alarm

Message value: %1
Message class: Motor overload (8)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Motor **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: A fault has occurred in the configuration of the motor temperature model.
Alarm value (r2124, interpret decimal):
1:
All motor temperature models: It is not possible to save the model temperature
See also: p0610 (Motor overtemperature response)
Remedy: - set the response for motor overtemperature to "Alarm and fault, no reduction of I_max" (p0610 = 2).
See also: p0610 (Motor overtemperature response)
Reaction upon N: NONE
Acknowl. upon N: NONE

A07015 Drive: Motor temperature sensor alarm

Message value: %1
Message class: External measured value / signal state outside the permissible range (16)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Motor **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: An error was detected when evaluating the temperature sensor set in p0600 and p0601.
With the fault, the time in p0607 is started. If the fault is still present after this time has expired, then fault F07016 is output; however, at the earliest, 50 ms after alarm A07015.
Possible causes:
- wire breakage or sensor not connected (KTY: R > 1630 Ohm, PT1000: R > 1720 Ohm).
- measured resistance too low (PTC: R < 20 Ohm, KTY: R < 50 Ohm, PT1000: R < 603 Ohm).
Alarm value (r2124, interpret decimal):
- if SME/TM120 is selected (p0601 = 10, 11),
this is the number of the temperature channel leading to the message.
Remedy: - make sure that the sensor is connected correctly.
- check the parameterization (p0600, p0601).
See also: r0035, p0600, p0601, p0607

F07016 Drive: Motor temperature sensor fault

Message value: %1
Message class: External measured value / signal state outside the permissible range (16)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Motor **Propagation:** GLOBAL
Reaction: OFF1 (NONE, OFF2, OFF3, STOP2)
Acknowledge: IMMEDIATELY
Cause: An error was detected when evaluating the temperature sensor set in p0600 and p0601.
Possible causes:
- wire breakage or sensor not connected (KTY: R > 1630 Ohm, PT1000: R > 1720 Ohm).
- measured resistance too low (PTC: R < 20 Ohm, KTY: R < 50 Ohm, PT1000: R < 603 Ohm).

Note:

If alarm A07015 is present, the time in p0607 is started. If the fault is still present after this time has expired, then fault F07016 is output; however, at the earliest, 50 ms after alarm A07015.

Fault value (r0949, interpret decimal):

- if SME/TM120 is selected (p0601 = 10, 11),

this is the number of the temperature channel leading to the message.

See also: p0607 (Temperature sensor fault timer)

Remedy:
- make sure that the sensor is connected correctly.
- check the parameterization (p0600, p0601).
- induction motors: Deactivate temperature sensor fault (p0607 = 0).
- When TM120 and SMC/SME (p0601 = 10, 11) are being used, set the same sensor type on the drive (p4610 ... p4613) as for TM120.

See also: r0035, p0600, p0601, p0607

A07017 Additional temperature alarm threshold exceeded

Message value: %1

Message class: External measured value / signal state outside the permissible range (16)

Drive object: SERVO, SERVO_AC, SERVO_I_AC

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: The additional temperature has exceeded the alarm threshold in p4102[0]

The time in p4103 is also started with this alarm. Fault F07018 is output if the alarm is still active after this time has expired.

- overtemperature (r4105 > p4102[0]).

See also: p4100, p4102, p4103, r4105

Remedy:
- make sure that the sensor is connected correctly.
- check parameterization (p4100).

F07018 Additional temperature fault threshold exceeded

Message value: %1

Message class: External measured value / signal state outside the permissible range (16)

Drive object: SERVO, SERVO_AC, SERVO_I_AC

Component: None **Propagation:** GLOBAL

Reaction: OFF1 (ENCODER, NONE, OFF2, OFF3, STOP2)

Acknowledge: IMMEDIATELY

Cause: The additional temperature has exceeded the fault threshold in p4102[1]

Fault value (r0949, interpret decimal):

0:

Overtemperature (r4105 > p4102[1] or r4105 > p4102[0] for longer than the time in p4103).

1:

Wire breakage or sensor not connected (KTY: R > 1630 Ohm, PT1000: R > 1720 Ohm).

Measured resistance too low (KTY: R < 50 Ohm, PT1000: R < 603 Ohm).

See also: p4100, p4102, p4103, r4105

Remedy:
- make sure that the sensor is connected correctly.
- check parameterization (p4100).

F07080 Drive: Incorrect control parameter

Message value: Parameter: %1

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: A_INF, B_INF, CU_LINK, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The closed-loop control parameters have been parameterized incorrectly (e.g. p0356 = L_spread = 0).

Fault value (r0949, interpret decimal):

The fault value includes the parameter number involved.

See also: p0310, p0311, p0341, p0344, p0350, p0354, p0356, p0357, p0358, p0360, p0400, p0404, p0408, p0640, p1082, r1082, p1300

Remedy: Modify the parameter indicated in the fault value (r0949) (e.g. p0640 = current limit > 0).

See also: p0311, p0341, p0344, p0350, p0354, p0356, p0358, p0360, p0400, p0404, p0408, p0640, p1082, r1082

F07082 Macro: Execution not possible

Message value: Fault cause: %1, supplementary information: %2, preliminary parameter number: %3

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: All objects

Component: None **Propagation:** LOCAL

Reaction: NONE

Acknowledge: IMMEDIATELY

Cause: The macro cannot be executed.

Fault value (r0949, interpret hexadecimal):

ccccbbaa hex:

cccc = preliminary parameter number, bb = supplementary information, aa = fault cause

Fault causes for the trigger parameter itself:

19: Called file is not valid for the trigger parameter.

20: Called file is not valid for parameter 15.

21: Called file is not valid for parameter 700.

22: Called file is not valid for parameter 1000.

23: Called file is not valid for parameter 1500.

24: Data type of a TAG is incorrect (e.g. Index, number or bit is not U16).

Fault causes for the parameters to be set:

25: Error level has an undefined value.

26: Mode has an undefined value.

27: A value was entered as string in the tag value that is not "DEFAULT".

31: Entered drive object type unknown.

32: A device was not able to be found for the determined drive object number.

34: A trigger parameter was recursively called.

35: It is not permissible to write to the parameter via macro.

36: Check, writing to a parameter unsuccessful, parameter can only be read, not available, incorrect data type, value range or assignment incorrect.

37: Source parameter for a BICO interconnection was not able to be determined.

38: An index was set for a non-indexed (or CDS-dependent) parameter.

39: No index was set for an indexed parameter.

41: A bit operation is only permissible for parameters with the parameter format DISPLAY_BIN.

42: A value not equal to 0 or 1 was set for a BitOperation.

43: Reading the parameter to be changed by the BitOperation was unsuccessful.

51: Factory setting for DEVICE may only be executed on the DEVICE.

61: The setting of a value was unsuccessful.

Remedy:	- check the parameter involved. - check the macro file and BICO interconnection. See also: p0015, p0700, p1000, p1500

F07083 Macro: ACX file not found

Message value:	Parameter: %1		
Message class:	Error in the parameterization / configuration / commissioning procedure (18)		
Drive object:	All objects		
Component:	None	**Propagation:**	LOCAL
Reaction:	NONE		
Acknowledge:	IMMEDIATELY		
Cause:	The ACX file (macro) to be executed was not able to be found in the appropriate directory. Fault value (r0949, interpret decimal): Parameter number with which the execution was started. See also: p0015, p0700, p1000, p1500		
Remedy:	- check whether the file is saved in the appropriate directory on the memory card. Example: If p0015 is set to 1501, then the selected ACX file must be located in the following directory: ... /PMACROS/DEVICE/P15/PM001501.ACX		

F07084 Macro: Condition for WaitUntil not fulfilled

Message value:	Parameter: %1		
Message class:	Error in the parameterization / configuration / commissioning procedure (18)		
Drive object:	All objects		
Component:	None	**Propagation:**	LOCAL
Reaction:	NONE		
Acknowledge:	IMMEDIATELY		
Cause:	The WaitUntil condition set in the macro was not fulfilled in a certain number of attempts. Fault value (r0949, interpret decimal): Parameter number for which the condition was set.		
Remedy:	Check and correct the conditions for the WaitUntil loop.		

F07085 Drive: Open-loop/closed-loop control parameters changed

Message value:	Parameter: %1		
Message class:	Error in the parameterization / configuration / commissioning procedure (18)		
Drive object:	A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC		
Component:	None	**Propagation:**	GLOBAL
Reaction:	NONE		
Acknowledge:	IMMEDIATELY (POWER ON)		
Cause:	Open-loop/closed-loop control parameters have had to be changed. Possible causes: 1. As a result of other parameters, they have exceeded the dynamic limits. 2. They cannot be used due to the fact that the hardware detected not having certain features. 3. The value is estimated as the thermal time constant is missing. 4. Motor temperature model 1 is activated as thermal motor protection is missing. Fault value (r0949, interpret decimal): Changed parameter number. 340: The motor and control parameters were automatically calculated (p0340 = 1), because the vector control was subsequently activated as configuration (r0108.2). 611: The time constant for thermal motor model 1 was estimated. 612: Thermal motor model 1 was activated (p0612.0 = 1). See also: p0640, p1082, r1082, p1300, p1800		

Remedy: Not necessary.
It is not necessary to change the parameters as they have already been correctly limited.

F07086 Units changeover: Parameter limit violation due to reference value change

Message value: Parameter: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: A reference parameter was changed in the system. This resulted in the fact that for the parameters involved, the selected value was not able to be written in the per unit notation.
The values of the parameters were set to the corresponding violated minimum limit/maximum limit or to the factory setting.
Possible causes:
- the steady-state minimum limit/maximum limit or that defined in the application was violated.
Fault value (r0949, parameter):
Diagnostics parameter to display the parameters that were not able to be re-calculated.
See also: p0304, p0305, p0310, p0596, p2000, p2001, p2002, p2003, r2004
Remedy: Check the adapted parameter value and if required correct.
See also: r9450 (Reference value change parameter with unsuccessful calculation)

F07087 Drive: Encoderless operation not possible for the selected pulse frequency

Message value: Parameter: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: Encoderless operation is not possible for the selected pulse frequency (p1800).
Encoderless operation is activated under the following conditions:
- the changeover speed for encoderless operation (p1404) is less than the maximum speed (p0322).
- a control type with encoderless operation has been selected (p1300).
- encoder faults of the motor encoder result in a fault response with encoderless operation (p0491).
See also: p0491, p1300, p1404, p1800
Remedy: Increase the pulse frequency (p1800).
Note:
In encoderless operation, the pulse frequency must be at least as high as one quarter of the current controller clock cycle frequency (1/p0115[0]).

F07088 Units changeover: Parameter limit violation due to units changeover

Message value: Parameter: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: A changeover of units was initiated. This resulted in a violation of a parameter limit
Possible causes for the violation of a parameter limit:
- When rounding off a parameter corresponding to its decimal places, the steady-state minimum limit or maximum limit was violated.
- inaccuracies for the data type "FloatingPoint".
In these cases, when the minimum limit is violated then the parameter value is rounded up and when the maximum limited is violated the parameter value is rounded down.

	Fault value (r0949, interpret decimal):
	Diagnostics parameter r9451 to display all parameters whose value had to be adapted.
	See also: p0100 (IEC/NEMA Standards), p0349 (System of units motor equivalent circuit diagram data), p0505 (Selecting the system of units), p0595 (Technological unit selection)
Remedy:	Check the adapted parameter values and if required correct.
	See also: r9451 (Units changeover adapted parameters)

A07089 Changing over units: Function module activation is blocked because the units have been changed over

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: An attempt was made to activate a function module. This is not permissible if the units have already been changed over.
See also: p0100 (IEC/NEMA Standards), p0349 (System of units motor equivalent circuit diagram data), p0505 (Selecting the system of units)
Remedy: Restore units that have been changed over to the factory setting.

F07090 Drive: Upper torque limit less than the lower torque limit

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2 (NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY
Cause: The upper torque limit is lower than the lower torque limit.
Remedy: P1 must be >= P2 if parameter P1 is connected to p1522 and parameter P2 to p1523.

A07091 Drive: determined current controller dynamic response invalid

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: Control Unit (CU) **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: When one button tuning is activated (p5300 = 1), the current controller is measured after the pulses have been enabled. Evaluation has indicated that the current control loop was not appropriately set.
Possible causes:
- incorrectly set current controller.
- PRBS amplitude set too high (p5296).
Alarm value (r2124, interpret hexadecimal):
1: Dynamic response too low.
2: Current controller unstable.
Note:
PRBS: Pseudo Random Binary Signal (binary noise)
Remedy: - the measurement can be repeated with a smaller excitation amplitude (p5296).
- if required, adapt the current controller proportional gain (p1715).

A07092 Drive: moment of inertia estimator still not ready

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The moment of inertia estimator has still not determined any valid values.

The acceleration cannot be calculated.

The moment of inertia estimator has stabilized, if the frictional values (p1563, p1564) as well as the moment of inertia value (p1493) have been determined and the appropriate status signal is set (r1407.26 = 1).

The following parameters influence the response of the moment of the inertia estimator:

p1560, p1561, p1562

Remedy: Traverse the axis until the moment of inertia estimator has stabilized.

This alarm is automatically withdrawn after the moment of inertia estimator has stabilized.

F07093 (A) Drive: Test signal error

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: Control Unit (CU) **Propagation:** GLOBAL
Reaction: OFF3 (NONE, OFF1, OFF2)
Acknowledge: IMMEDIATELY
Cause: An error was identified when executing the "Test signal" function (p5307.1 = 1).

The function was not executed or was canceled.

Fault value (r0949, interpret decimal):

1: No distance limit has been defined (p5308 = 0).

2: The moment of inertia estimator has not stabilized in the parameterized time (p5309) (r1407.26).

3: The parameterized distance (p5308) was exceeded.

4: no motor encoder parameterized (closed-loop speed control without encoder).

5: Offset (p5297) is too high for the parameterized distance (p5308).

6: Pulse enable was withdrawn while traversing.

7: speed setpoint not equal to zero.

See also: p5307 (Activate One Button Tuning test signal), p5308 (One Button Tuning test signal distance limiting), p5309 (One Button Tuning test signal duration)

Remedy: For fault value = 1:

- Define distance limiting (p5308).

For fault value = 2:

- increase the duration or distance limiting (p5309, p5308).

For fault value = 3:

- check distance limiting (p5308).

For fault value = 4:

- configure speed control with encoder.

For fault value = 5:

- increase distance limit p5308 or reduce offset p5297.

- the fault can only be acknowledged after p5300 was set = 0.

- for the factory setting, a test signal duration of approximately 1.3 s is obtained. If an offset (p5297) of 60 rpm is set, for example, then this results in a distance of approximately 1.3 revolutions. As a consequence, a value must be parameterized in parameter p5308, which is longer than this distance + 10% controller reserve (e.g. p5308=515°). Further, the distance depends on the speed controller sampling time (p0115[1]) and the controller configuration (p5271).

For fault value = 6:

- keep the drive switched on until the "Test signal" function has been completely exited.

For fault value = 7:

- set the speed setpoint to zero.

Reaction upon A: NONE
Acknowl. upon A: NONE

A07094 General parameter limit violation

Message value: Parameter: %1
Message class: Hardware/software error (1)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: As a result of the violation of a parameter limit, the parameter value was automatically corrected.
Minimum limit violated --> parameter is set to the minimum value.
Maximum limit violated --> parameter is set to the maximum value.
Alarm value (r2124, interpret decimal):
Parameter number, whose value had to be adapted.
Remedy: Check the adapted parameter values and if required correct.

A07095 (N) Drive: One Button Tuning activated

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The One Button Tuning function is active.
One Button Tuning is performed at the next switch-on command.
See also: p5300 (Autotuning selection)
Remedy: Not necessary.
The alarm is automatically withdrawn after One Button Tuning has been exited (p5300 = 0).
Reaction upon N: NONE
Acknowl. upon N: NONE

F07097 (A) Drive: Test signal error distance limiting

Message value: Fault cause: %1, traversing distance: %2
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: Control Unit (CU) **Propagation:** GLOBAL
Reaction: OFF3 (NONE, OFF1, OFF2)
Acknowledge: IMMEDIATELY
Cause: An error was identified when executing the "Test signal" function (p5307.1 = 1) or auto tuning was selected (p5300 = 1).
The function was not executed or was canceled.
Fault value (r0949, interpret decimal):
yyyyxxxx hex: yyyy = error cause, xxxx = traversing distance
See also: p5307 (Activate One Button Tuning test signal), p5308 (One Button Tuning test signal distance limiting), p5309 (One Button Tuning test signal duration)
Remedy: - enter the traversing path in parameter p5308 - or deselect the function involved in p5301.
- for fault cause = 1, 2, shorter traversing paths may be possible.
For fault cause = 1:
- deselect bit 0 and bit 1 in parameter p5301.
For fault cause = 2:
- deselect bit 2 in parameter p5301.
For fault cause= 3:
- deselect bit 4 and bit 5 in parameter p5301.
Reaction upon A: NONE
Acknowl. upon A: NONE

F07098 (A) Drive: One Button Tuning configuration error

Message value: Fault cause: %1 bin
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF3 (NONE, OFF1, OFF2)
Acknowledge: IMMEDIATELY
Cause: The requested One Button Tuning configuration (p5301) is not supported.
Fault value (r0949, interpret binary):
Bit 5:
The function requires that the "Advanced Positioning Control" function module (APC) is activated.
See also: p3700 (AVS/APC configuration), p5301 (One Button Tuning configuration)
Remedy: For bit 5 = 1:
- activate the "APC" function module (r0108.7 = 1).
- activate the "APC without sensor on the load side" function (p3700.2 = 1).

Reaction upon A: NONE
Acknowl. upon A: NONE

F07100 Drive: Sampling times cannot be reset

Message value: Parameter: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: When resetting drive parameter (p0976) sampling times cannot be reset using p0111, p0112, p0115.
Fault value (r0949, interpret decimal):
Parameter whose setting prevents the sampling times being reset.
See also: r0110 (Basic sampling times)
Remedy: - continue to work with the set sampling times.
- before resetting the drive parameters, set the basic clock cycle p0110[0] to the original value.
See also: r0110 (Basic sampling times)

F07110 Drive: Sampling times and basic clock cycle do not match

Message value: Parameter: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The parameterized sampling times do not match the basic clock cycle.
Fault value (r0949, interpret decimal):
The fault value specifies the parameter involved.
See also: r0110, r0111, p0115
Remedy: Enter the current controller sampling times so that they are identical to the basic clock cycle, e.g. by selecting p0112. Note which basic clock cycle is selected in p0111.
The sampling times in p0115 can only be changed manually in the sampling times pre-setting "Expert" (p0112).
See also: r0110, r0111, p0112, p0115

A07140 Drive: current controller sampling time for spindle does not match

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The parameterized current controller sampling time for the spindle has been set too high.
Remedy: Set the sampling time equal to or less than the value in r5034 (p0112, p0115).
See also: p0112, p0115, r5034

A07200 Drive: Master control ON command present

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The ON/OFF1 command is present (no 0 signal).
The command is either influenced via binector input p0840 (current CDS) or control word bit 0 via the master control.
Remedy: Switch the signal via binector input p0840 (current CDS) or control word bit 0 via the master control to 0.

F07220 (N, A) Drive: Master control by PLC missing

Message value: -
Message class: Communication error to the higher-level control system (9)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: Infeed: OFF1 (NONE, OFF2)
Servo: OFF1 (NONE, OFF2, OFF3, STOP2)
Vector: OFF1 (NONE, OFF2, OFF3, STOP2)
Hla: OFF1 (NONE, OFF2, OFF3, STOP2)
Acknowledge: IMMEDIATELY
Cause: The "master control by PLC" signal was missing in operation.
- interconnection of the binector input for "master control by PLC" is incorrect (p0854).
- the higher-level control has withdrawn the "master control by PLC" signal.
- data transfer via the fieldbus (master/drive) was interrupted.

Remedy: - check the interconnection of the binector input for "master control by PLC" (p0854).
- check the "master control by PLC" signal and, if required, switch in.
- check the data transfer via the fieldbus (master/drive).

Note:
If the drive should continue to operate after withdrawing "master control by PLC" then fault response must be parameterized to NONE or the message type should be parameterized as alarm.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F07300 (A) Drive: Line contactor feedback signal missing

Message value: -
Message class: Auxiliary unit faulted (20)
Drive object: A_INF, B_INF, R_INF, S_INF, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2 (NONE)
Acknowledge: IMMEDIATELY
Cause:
- the line contactor was not able to be closed within the time in p0861.
- the line contactor was not able to be opened within the time in p0861.
- the line contactor dropped out during operation
- the line contactor has closed although the drive converter is switched off.

Remedy:
- check the setting of p0860.
- check the feedback circuit from the line contactor.
- increase the monitoring time in p0861.
- for G150LE (power extension)/G150HP (High Power), the following applies: If, contrary to the appropriate specifications, the circuit breakers are monitored using the line contactor control of drive object B_INF then, for B_INF, parameter p0869.1 must be set = 0.

See also: p0860 (Line contactor feedback signal), p0861 (Line contactor monitoring time)

Reaction upon A: NONE
Acknowl. upon A: NONE

F07300 (A) Drive: Line contactor feedback signal missing

Message value: -
Message class: Auxiliary unit faulted (20)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2 (NONE)
Acknowledge: IMMEDIATELY
Cause:
- the line contactor was not able to be closed within the time in p0861.
- the line contactor was not able to be opened within the time in p0861.
- the line contactor dropped out during operation
- the line contactor has closed although the drive converter is switched off.

Remedy:
- check the setting of p0860.
- check the feedback circuit from the line contactor.
- increase the monitoring time in p0861.

See also: p0860 (Line contactor feedback signal), p0861 (Line contactor monitoring time)

Reaction upon A: NONE
Acknowl. upon A: NONE

F07311 Bypass motor switch

Message value: Fault cause: %1 bin
Message class: Application/technological function faulted (17)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: Fault value (r0949, interpret bitwise binary):

Bit 1: Switch "Closed" feedback signal missing.

Bit 2: Switch "Open" feedback signal missing.

Bit 3: Switch feedback signal too slow.

After switching, the system waits for the positive feedback signal. If the feedback signal is received later than the specified time, then a fault trip (shutdown) is issued.

Bit 6: Drive switch feedback signal not consistent with the bypass state.

The drive switch is closed when switching-on or when switching-in the motor.

See also: p1260 (Bypass configuration), r1261 (Bypass control/status word), p1266 (Bypass control command), p1267 (Bypass changeover source configuration), p1269 (Bypass switch feedback signal), p1274 (Bypass switch monitoring time)

Remedy: - check the transfer of the feedback signals.

- check the switch.

F07312 Bypass Line Side Switch:

Message value: Fault cause: %1 bin

Message class: Application/technological function faulted (17)

Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: OFF2

Acknowledge: IMMEDIATELY

Cause: Fault value (r0949, interpret bitwise binary):

Bit 1: Switch "Closed" feedback signal missing.

Bit 2: Switch "Open" feedback signal missing.

Bit 3: Switch feedback signal too slow.

After switching, the system waits for the positive feedback signal. If the feedback signal is received later than the specified time, then a fault trip (shutdown) is issued.

Bit 6: Line Side Switch feedback signal not consistent with the bypass state.

When switching-on or when switching-in the motor, the line side switch is closed without this having been requested from the bypass.

See also: p1260 (Bypass configuration), r1261 (Bypass control/status word), p1266 (Bypass control command), p1267 (Bypass changeover source configuration), p1269 (Bypass switch feedback signal), p1274 (Bypass switch monitoring time)

Remedy: - check the transfer of the feedback signals.

- check the switch.

F07320 Drive: Automatic restart interrupted

Message value: %1

Message class: Application/technological function faulted (17)

Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC

Component: None **Propagation:** GLOBAL

Reaction: OFF2

Acknowledge: IMMEDIATELY

Cause: - the specified number of restart attempts (p1211) has been completely used up because within the monitoring time (p1213) the faults were not able to be acknowledged. The number of restart attempts (p1211) is decremented at each new start attempt.

- the monitoring time for the power unit has expired (p0857).

- when exiting commissioning or at the end of the motor identification routine or the speed controller optimization, the drive unit is not automatically switched on again.

Fault value (r0949, interpret hexadecimal):

Only for internal Siemens troubleshooting.

Remedy: - increase the number of restart attempts (p1211). The actual number of starting attempts is displayed in r1214.

- increase the delay time in p1212 and/or the monitoring time in p1213.

- either increase or disable the monitoring time of the power unit (p0857).

F07320 Drive: Automatic restart interrupted

Message value: %1
Message class: Application/technological function faulted (17)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: - the specified number of restart attempts (p1211) has been completely used up because within the monitoring time (p1213) the faults were not able to be acknowledged. The number of restart attempts (p1211) is decremented at each new start attempt.

- the monitoring time for the power unit has expired (p0857).

- when exiting commissioning or at the end of the motor identification routine or the speed controller optimization, the drive unit is not automatically switched on again.

Fault value (r0949, interpret hexadecimal):

Only for internal Siemens troubleshooting.

Remedy: - increase the number of restart attempts (p1211). The actual number of starting attempts is displayed in r1214.

- increase the delay time in p1212 and/or the monitoring time in p1213.

- either increase or disable the monitoring time of the power unit (p0857).

- reduce the delay time to reset the start counter p1213[1] so that fewer faults are registered in the time interval.

A07321 Drive: Automatic restart active

Message value: -
Message class: Application/technological function faulted (17)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The automatic restart (AR) is active. When the line supply returns and/or the causes of the existing faults are removed the drive is automatically restarted. The pulses are enabled and the motor starts to rotate.

Remedy: - the automatic restart (AR) should, if required, be inhibited (p1210 = 0).

- an automatic restart can be directly interrupted by withdrawing the switch-on command (BI: p0840).

A07329 (N) Drive: kT estimator, kT(iq) characteristic or voltage compensation does not function

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: A function of the function module "extended torque control" (r0108.1) was activated - however the (complete) function is not available.

Alarm value (r2124, interpret decimal):

1 ... 3: The kT estimator is active (p1780.3 = 1) without a functioning compensation of the voltage emulation error in the drive converter. This means that the accuracy is severely restricted.

1: The drive converter voltage emulation error "final value" is 0 (p1952).

2: The drive converter voltage emulation error "current offset" is 0 (p1953).

3: The compensation of the voltage emulation error is disabled (p1780.8 = 0).

4: The kT estimator (p1780.3 = 1), the kT(iq) characteristic (p1780.9 = 1) or the compensation of the voltage emulation error (p1780.8 = 1) was activated without activating the function module "extended torque control" (when the function module is activated, the following must apply: r0108.1 = 1).

5: the kT(iq) characteristic has been activated (p1780.9 = 1). However, the kT characteristic value kT1 is 0 (p0645). The function is not active.

Remedy: For alarm value = 1, 2:

- carry out an identification of the voltage emulation error in the drive converter (p1909.14 = 1, p1910 = 1).
- set the parameter to compensate the voltage emulation error in the drive converter (p1952, p1953).

For alarm value = 3:

- enable the compensation of the voltage emulation error in the drive converter (p1780.8 = 1).

For alarm value = 4:

- activate the function module "extended torque control" (r0108.1 = 1) or deactivate the corresponding functions (p1780.3 = 0, p1780.8 = 0, p1780.9 = 0).

For alarm value = 5:

- determine the parameters of the kT characteristic (p0645 ... p0648) using the rotating measurement (p1959.6, p1960).
- enter the parameters of the kT characteristic (p0645 ... p0648) (if known).
- if necessary, deactivate the kT characteristic (p1780.9 = 0).

Reaction upon N: NONE

Acknowl. upon N: NONE

F07330 Flying restart: Measured search current too low

Message value: -

Message class: Application/technological function faulted (17)

Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: OFF2 (NONE, OFF1)

Acknowledge: IMMEDIATELY

Cause: During a flying restart, it was identified that the search current reached is too low.

It is possible that the motor is not connected.

Remedy: Check the motor feeder cables.

F07331 Flying restart: Function not supported

Message value: -

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: OFF2 (NONE, OFF1)

Acknowledge: IMMEDIATELY

Cause: It is not possible to power up with the motor rotating (no flying restart).

In the following cases, the "flying restart" function is not supported:

Permanent-magnet synchronous motor (PMSM):

- operation with U/f characteristic.
- encoderless operation without a Voltage Sensing Module (VSM) being connected.

Separately excited synchronous motor (SESM):

- operation with U/f characteristic.

Remedy:

- deactivate the "flying restart" function (p1200 = 0).
- change the open-loop/closed-loop control mode (p1300).
- connect a Voltage Sensing Module (VSM) (voltage measurement).

N07332 Flying restart: maximum speed reduced

Message value: %1

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: The maximum speed that can be reached is reduced; at very high speeds problems associated with the flying restart can be encountered.

Possible causes:

- power ratio, power unit/motor too high

Remedy:	Parameter changes are not required. Note: A flying restart at speeds above 3000 rpm should be avoided.

F07333 Closed-loop control function not supported

Message value: %1
Message class: Application/technological function faulted (17)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2 (NONE)
Acknowledge: IMMEDIATELY
Cause: A closed-loop control function that is not supported was activated.
Fault value (r0949, decimal interpretation):
0:
Open-loop controlled operation (open-loop mode for speeds < p1755) is not supported in the encoderless torque control mode (see p1300, p1501).
Remedy: For fault value = 0:
When keeping encoderless operation, these options include:
- change the control mode to encoderless closed-loop speed control using p1300=20 and p1501=0.
- when continuing the closed-loop torque control: activate encoderless operation including zero frequency with test pulses using p1750.5=1 (only S120 + purchased license).

A07350 (F) Drive: Measuring probe parameterized to a digital output

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The measuring probe is connected to a bi-directional digital input/output and the terminal is set as output.
Alarm value (r2124, interpret decimal):
8: DI/DO 8 (X122.9/X132.1)
9: DI/DO 9 (X122.10/X132.2)
10: DI/DO 10 (X122.12/X132.3)
11: DI/DO 11 (X122.13/X132.4)
12: DI/DO 12 (X132.9)
13: DI/DO 13 (X132.10)
14: DI/DO 14 (X132.12)
15: DI/DO 15 (X132.13)
Regarding the terminal designation:
The first designation is valid for CU320, the second for CU305.
Remedy: - set the terminal as input (p0728).
- de-select the measuring probe (p0488, p0489, p0580).
Reaction upon F: OFF1
Acknowl. upon F: IMMEDIATELY

A07351 (F)	**Drive: Measuring probe parameterized to a digital output**
Message value:	%1
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Drive object:	SERVO
Component:	Power Module **Propagation:** LOCAL
Reaction:	NONE
Acknowledge:	NONE
Cause:	The measuring probe is connected to a bi-directional digital input/output and the terminal is set as output. Alarm value (r2124, interpret decimal): 0: DI/DO 0 distributed (X3.2) 1: DI/DO 1 distributed (X3.4)
Remedy:	- set the terminal as input (p4028). - de-select the probe (p0488, p0489). See also: p0488, p0489, p4028
Reaction upon F:	OFF1
Acknowl. upon F:	IMMEDIATELY

A07354	**Drive: cogging torque compensation not possible**
Message value:	Fault cause: %1, drive data set: %2
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Drive object:	SERVO, SERVO_AC, SERVO_I_AC
Component:	None **Propagation:** DRIVE
Reaction:	NONE
Acknowledge:	NONE
Cause:	Cogging torque compensation is selected and is not (completely) supported. Alarm value (r2124, interpret hexadecimal): yyyyxx hex: yyyy = fault cause, xx = drive data set yyyy = 1: The encoder evaluation does not support this function. yyyy = 2: The encoder has no absolute information. yyyy = 3: The motor has no encoder (p0187 = 99). yyyy = 3: The motor has no encoder (p0187 = 99). yyyy = 4: Learning was activated (p5251) for closed-loop control without encoder (p1300 = 20 or p1404 < 12 rpm or 12 m/min - or p1317 = 1). yyyy = 5: The internal table is active; however, period p5253 has not been set equal to 1.
Remedy:	If required, deselect the cogging torque compensation (p5250 = 0). For fault cause = 1: Use an absolute encoder or an encoder evaluation that supports the function (r0459.13 = 1). If required, upgrade the firmware to a newer version (version 04.50.30.01 or higher is required). For fault cause = 2: Use an encoder with absolute information (absolute track, unique zero mark, resolver with one pole pair). The function cannot be tested as long as the encoder is not reset after learning (encoder fault, parking, POWER ON). Continuous use is not recommended. For fault cause = 3: Only select cogging torque compensation for operation with motor encoder. For fault cause = 4: Activate learning, only for operation with encoder (p1300, p1404, p1317).

For fault cause = 5:
- set period p5253 = 1.
- activate the external table and learning (p5250.0 = 1, p5251).
See also: p5250 (Compensation configuration), p5251 (Activate learn cogging torque compensation)

F07355 (N, A)	**Drive: cogging torque compensation error when learning**
Message value:	%1
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Drive object:	SERVO, SERVO_AC, SERVO_I_AC
Component:	None **Propagation:** DRIVE
Reaction:	OFF1 (NONE, OFF2)
Acknowledge:	IMMEDIATELY
Cause:	A cogging torque compensation error has occurred while learning. Fault value (r0949, interpret decimal): 1: The learning velocity is too high. - rotating: absolute value greater than 5 [rpm] - linear: absolute value greater than 0.5 [m/min]
Remedy:	For fault value = 1: Repeat learning with the lower velocity setpoint. Recommended speeds: - rotating 2 [rpm] - linear 0.1 [m/min] See also: p5250 (Compensation configuration), p5251 (Activate learn cogging torque compensation)
Reaction upon N:	NONE
Acknowl. upon N:	NONE
Reaction upon A:	NONE
Acknowl. upon A:	NONE

A07400 (N)	**Drive: DC link voltage maximum controller active**
Message value:	-
Message class:	Application/technological function faulted (17)
Drive object:	SERVO, SERVO_AC, SERVO_I_AC
Component:	None **Propagation:** GLOBAL
Reaction:	NONE
Acknowledge:	NONE
Cause:	The DC link voltage controller has been activated because of the upper switch-in threshold (p1244). A system deviation can occur between the setpoint and actual speed. See also: r0056 (Status word, closed-loop control), p1240 (Vdc controller or Vdc monitoring configuration)
Remedy:	Not necessary. This alarm is automatically withdrawn after the upper threshold has been distinctly exceeded. Otherwise, apply the following measures: - use a Braking Module or regenerative feedback unit. - increase the ramp-down times (p1121, p1135). - shut down the Vdc_max controller (p1240 = 0).
Reaction upon N:	NONE
Acknowl. upon N:	NONE

A07400 (N) Drive: DC link voltage maximum controller active

Message value: -
Message class: Application/technological function faulted (17)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The DC link voltage controller has been activated because the upper switch-in threshold has been exceeded (r1242, r1282).

The ramp-down times are automatically increased in order to maintain the DC link voltage (r0070) within the permissible limits. There is a system deviation between the setpoint and actual speeds.

When the DC link voltage controller is switched out (disabled), this is the reason that the ramp-function generator output is set to the speed actual value.

See also: r0056 (Status word, closed-loop control), p1240 (Vdc controller or Vdc monitoring configuration), p1280 (Vdc controller or Vdc monitoring configuration (U/f))

Remedy: If the controller is not to intervene:

- increase the ramp-down times.
- switch off the Vdc_max controller (p1240 = 0 for vector control, p1280 = 0 for U/f control).

If the ramp-down times are not to be changed:

- use a chopper or regenerative feedback unit.

Reaction upon N: NONE
Acknowl. upon N: NONE

A07401 (N) Drive: DC link voltage maximum controller deactivated

Message value: -
Message class: Application/technological function faulted (17)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The Vdc_max controller can no longer maintain the DC link voltage (r0070) below the limit value (r1242, r1282) and was therefore switched out (disabled).

- the line supply voltage is permanently higher than specified for the power unit.
- the motor is permanently in the regenerative mode as a result of a load that is driving the motor.

Remedy:

- check whether the input voltage is within the permissible range (if required, increase the value in p0210).
- check whether the load duty cycle and load limits are within the permissible limits.

Reaction upon N: NONE
Acknowl. upon N: NONE

A07402 (N) Drive: DC link voltage minimum controller active

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The DC link voltage controller has been activated due to the lower switch-in threshold (p1248).

A system deviation can occur between the setpoint and actual speed.

A possible cause can be e.g. that the line supply has failed.

See also: r0056 (Status word, closed-loop control), p1240 (Vdc controller or Vdc monitoring configuration), p1248 (DC link voltage threshold lower)

Remedy: Not necessary.
This alarm is automatically withdrawn after the lower threshold has been distinctly exceeded.
Otherwise, apply the following measures:
- check the line supply and infeed.
- increase the ramp-up times (p1120).
- shut down the Vdc_min controller (p1240 = 0).

Reaction upon N: NONE
Acknowl. upon N: NONE

A07402 (N) Drive: DC link voltage minimum controller active

Message value: -
Message class: Application/technological function faulted (17)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The DC link voltage controller has been activated as the lower switch-in threshold has been undershot (r1246, r1286).
The kinetic energy of the motor is used to buffer the DC link. The drive is therefore braked.
See also: r0056 (Status word, closed-loop control), p1240 (Vdc controller or Vdc monitoring configuration), p1280 (Vdc controller or Vdc monitoring configuration (U/f))
Remedy: The alarm disappears when power supply returns.
Reaction upon N: NONE
Acknowl. upon N: NONE

F07403 (N, A) Drive: Lower DC link voltage threshold reached

Message value: -
Message class: Infeed faulted (13)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The DC link voltage monitoring is active (p1240 = 5, 6) and the lower DC link voltage threshold (p1248) was reached in the "Operation" state.
Remedy: - check the line supply voltage.
- check the infeed.
- reduce the lower DC link threshold (p1248).
- switch out (disable) the DC link voltage monitoring (p1240 = 0).

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F07403 (N, A) Drive: Lower DC link voltage threshold reached

Message value: -
Message class: Infeed faulted (13)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The DC link voltage monitoring is active (p1240, p1280 = 5, 6) and the lower DC link voltage threshold (r1246, r1286) was reached in the "Operation" state.
Remedy: - check the line supply voltage.
- check the infeed.
- adapt the device supply voltage (p0210) or the switch-on level (p1245, p1285).
- disable the DC link voltage monitoring (p1240, p1280 = 0).

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F07404 Drive: Upper DC link voltage threshold reached

Message value: -
Message class: DC link overvoltage (4)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2 (NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY
Cause: The DC link voltage monitoring is active (p1240 = 4, 6) and the upper DC link voltage threshold (p1244) was reached in the "Operation" state.
Remedy: - check the line supply voltage.
- check the infeed unit or the Braking Module.
- increase the upper DC link voltage threshold (p1244).
- if necessary, deactivate the DC link voltage monitoring (p1240 = 0).

F07404 Drive: Upper DC link voltage threshold reached

Message value: -
Message class: DC link overvoltage (4)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2 (NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY
Cause: - the DC link voltage monitoring is active (p1240, p1280 = 4, 6) and the upper DC link voltage threshold (r1242, r1282) was reached in the "Operation" state.
- the monitoring of the DC link voltage (p1284) has responded (only U/f control).
- the DC link voltage control (only when the technology controller is activated r0108.16 = 1) is available - and the supply voltage (p0210) has been reduced.
Remedy: - check the line supply voltage.
- check the infeed.
- adapt the device supply voltage (p0210).
- if necessary, deactivate the DC link voltage monitoring (p1240, p1280 = 0).
- adapt the monitoring of the DC link voltage (p1284, only U/f).

F07405 (N, A) Drive: Kinetic buffering minimum speed fallen below

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Acknowledge: IMMEDIATELY
Cause: During kinetic buffering the speed fell below minimum speed (p1257 or p1297 for vector drives with U/f control) and the line supply did not return.
Remedy: Check the speed threshold for the Vdc_min controller (kinetic buffering) (p1257, p1297).
See also: p1257 (Vdc_min controller speed threshold), p1297 (Vdc_min controller speed threshold (U/f))
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F07406 (N, A) Drive: Kinetic buffering maximum time exceeded

Message value: -
Message class: Application/technological function faulted (17)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF3 (IASC/DCBRK, NONE, OFF1, OFF2, STOP2)
Acknowledge: IMMEDIATELY
Cause: The maximum buffer time (p1255 and p1295 for vector drives with U/f control) has been exceeded without the line supply having returned.
Remedy: Check the time threshold for Vdc-min controller (kinetic buffering) (p1255, p1295).
See also: p1255 (Vdc_min controller time threshold), p1295 (Vdc_min controller time threshold (U/f))
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F07407 Drive: Vdc reduction not permissible

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: For chassis power units, the reduction of the line voltage (see r0212.0) is only possible for closed-loop control of the DC link voltage.
Remedy: - Activate DC link voltage control for the motor/generator.
- deactivate line voltage reduction (p0212.0 = 0).
See also: p0212 (Power unit configuration)

A07409 (N) Drive: U/f control, current limiting controller active

Message value: %1
Message class: Application/technological function faulted (17)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The current limiting controller of the U/f control was activated because the current limit was exceeded.
Remedy: The alarm is automatically withdrawn after one of the following measures:
- increase current limit (p0640).
- reduce the load.
- slow down the ramp up to the setpoint speed.
Reaction upon N: NONE
Acknowl. upon N: NONE

F07410 Drive: Current controller output limited

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2 (NONE, OFF1)
Acknowledge: IMMEDIATELY
Cause: The condition "I_act = 0 and Uq_set_1 longer than 16 ms at its limit" is present and can be caused by the following:
- motor not connected or motor contactor open.
- no DC link voltage present.
- Motor Module defective.

Remedy: - connect the motor or check the motor contactor.
- check the DC link voltage (r0070).
- check the Motor Module.

F07410 Drive: Current controller output limited

Message value: -
Message class: Application/technological function faulted (17)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2 (NONE, OFF1)
Acknowledge: IMMEDIATELY
Cause: The condition "I_act = 0 and Uq_set_1 longer than 16 ms at its limit" is present and can be caused by the following:
- motor not connected or motor contactor open.
- motor data and motor configuration (star-delta) do not match.
- no DC link voltage present.
- power unit defective.
- the "flying restart" function is not activated.

Remedy: - connect the motor or check the motor contactor.
- check the motor parameterization and the connection type (star-delta).
- check the DC link voltage (r0070).
- check the power unit.
- activate the "flying restart" function (p1200).

F07411 Drive: Flux controller output limited

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2 (NONE, OFF1)
Acknowledge: IMMEDIATELY
Cause: The specified flux setpoint cannot be reached, although the set maximum field current is specified (p1603).
- incorrect motor data.
- motor data and motor configuration (star-delta) do not match.
- the current limit has been set too low for the motor (p0640, p0323, p1603).
- induction motor (encoderless, open-loop controlled) in I2t limiting.
- the Motor Module is too small.

Remedy: - correct the motor data.
- check the motor configuration.
- correct the current limits (p0640, p0323, p1603).
- reduce the induction motor load.
- if required, use a larger Motor Module.

F07411 Drive: Flux setpoint not reached when building up excitation

Message value: -
Message class: Application/technological function faulted (17)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: When quick magnetizing is configured (p1401.6 = 1) the specified flux setpoint is not reached although 90% of the maximum current is specified.

- incorrect motor data.
- motor data and motor configuration (star-delta) do not match.
- the current limit has been set too low for the motor.
- induction motor (encoderless, open-loop controlled) in I2t limiting.
- the Motor Module is too small.
- the magnetizing time p0346 is too short.

Remedy:
- correct the motor data. Perform motor data identification and rotating measurement.
- check the motor configuration.
- correct the current limits (p0640).
- reduce the induction motor load.
- if required, use a larger Motor Module.
- check motor supply cable.
- check power unit.
- increase p0346.

F07412 Drive: Commutation angle incorrect (motor model)

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: ENCODER (NONE, OFF2)
Acknowledge: IMMEDIATELY
Cause: An incorrect commutation angle was detected that can result in a positive coupling in the speed controller.

Possible causes:

- the phase sequence of the output phases for the motor is incorrect (e.g. the phases are interchanged).
- the motor encoder is incorrectly adjusted with respect to the magnet position.
- the motor encoder is damaged.
- the angular commutation offset is incorrectly set (p0431).
- data to calculate the motor model has been incorrectly set (p0356 (motor-stator leakage inductance) and/or p0350 (motor-stator resistance) and/or p0352 (cable resistance)).
- the changeover speed for the motor model is too low (p1752). The monitoring function only becomes effective above the changeover speed.
- pole position identification might have calculated an incorrect value when activated (p1982 = 1).
- the motor encoder speed signal is faulted.
- the control loop is instable due to incorrect parameterization.

Fault value (r0949, interpret decimal):

SERVO:

0: The comparison of the pole position angle from the encoder and motor model resulted in an excessively high value (> 80 ° electrical).

1: -

VECTOR:

0: The comparison of the pole position angle from the encoder and motor model resulted in an excessively high value (> 45 ° electrical).

1: The change in the speed signal from the motor encoder has changed by > p0492 within a current controller clock cycle.

Remedy: - check the phase sequence for the motor, and if required, correct (wiring, p1820).

- if the encoder mounting was changed - re-adjust the encoder.

- replace the defective motor encoder.

- correctly set the angular commutation offset (p0431). If required, determine using p1990.

- correctly set the motor stator resistance, cable resistance and motor-stator leakage inductance (p0350, p0352, p0356).

Calculate the cable resistance from the cross-section and length, check the inductance and stator resistance using the motor data sheet, measure the stator resistance, e.g. using a multimeter - and if required, again identify the values using the stationary motor data identification (p1910).

- increase the changeover speed for the motor model (p1752). The monitoring is completely deactivated for p1752 > p1082 (maximum speed).

- with pole position identification activated (p1982 = 1) check the procedure for pole position identification (p1980) and force a new pole position identification procedure by means of de-selection followed by selection (p1982 = 0 -> 1).

Note:

For High Dynamic Motors (1FK7xxx-7xxx), for applications with a higher current, if necessary, the monitoring should be disabled.

F07413 Drive: Commutation angle incorrect (pole position identification)

Message value: -

Message class: Actual position/speed value incorrect or not available (11)

Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Encoder 1 **Propagation:** GLOBAL

Reaction: ENCODER (NONE, OFF2)

Acknowledge: IMMEDIATELY

Cause: An incorrect commutation angle was detected that can result in a positive coupling in the speed controller.

Within the pole position identification routine (p1982 = 2):

- a difference of > 45 ° electrical to the encoder angle was determined.

For VECTOR, within the encoder adjustment (p1990 = 2):

- a difference of > 6 ° electrical to the encoder angle was determined.

Remedy: - correctly set the angular commutation offset (p0431).

- re-adjust the motor encoder after the encoder has been replaced.

- replace the defective motor encoder.

- check the pole position identification routine. If the pole position identification routine is not suitable for this motor type, then disable the plausibility check (p1982 = 0).

F07414 (N, A) Drive: Encoder serial number changed

Message value: -

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: SERVO, SERVO_AC, SERVO_I_AC

Component: None **Propagation:** GLOBAL

Reaction: ENCODER (NONE, OFF2)

Acknowledge: IMMEDIATELY

Cause: The serial number of the motor encoder of a synchronous motor has changed. The change was only checked for encoders with serial number (e.g. EnDat encoders) and build-in motors (e.g. p0300 = 401) or third-party motors (p0300 = 2).

Cause 1:

- the encoder was replaced.

Cause 2:

- a third-party, built-in or linear motor was re-commissioned.

Cause 3:

- the motor with integrated and adjusted encoder was replaced.

Cause 4:

- the firmware was updated to a version that checks the encoder serial number.

Note:

With closed-loop position control, the serial number is accepted when starting the adjustment (p2507 = 2).

When the encoder is adjusted (p2507 = 3), the serial number is checked for changes and if required, the adjustment is reset (p2507 = 1).

Proceed as follows to hide serial number monitoring:

- set the following serial numbers for the corresponding Encoder Data Set: p0441= FF, p0442 = 0, p0443 = 0, p0444 = 0, p0445 = 0.
- parameterize F07414 as message type N (p2118, p2119).

Remedy: For causes 1, 2:

Carry out an automatic adjustment using the pole position identification routine. Acknowledge fault. Initiate the pole position identification routine with p1990 = 1. Then check that the pole position identification routine is correctly executed.

SERVO:

If a pole position identification technique is selected in p1980, and if p0301 does not contain a motor type with an encoder adjusted in the factory, then p1990 is automatically activated.

or

Set the adjustment via p0431. In this case, the new serial number is automatically accepted.

or

Mechanically adjust the encoder. Accept the new serial number with p0440 = 1.

For causes 3, 4:

Accept the new serial number with p0440 = 1.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

N07415 (F) Drive: Angular commutation offset transfer running

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: NONE
Cause: The angular commutation offset was automatically determined using p1990 = 1.

This fault causes the pulses to be suppressed - this is necessary to transfer the angular commutation offset to p0431.

See also: p1990 (Encoder adjustment determine angular commutation offset)

Remedy: The fault can be acknowledged without any additional measures.

Reaction upon F: OFF2
Acknowl. upon F: IMMEDIATELY

A07416 Drive: Flux controller configuration

Message value: Parameter: %1, Index: %2, fault cause: %3
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The configuration of the flux control (p1401) is contradictory.

Alarm value (r2124, interpret hexadecimal):

ccbbaaaa hex

aaaa = Parameter

bb = Index

cc = fault cause

cc = 01 hex = 1 dec:

Quick magnetizing (p1401.6) for soft start (p1401.0).

cc = 02 hex = 2 dec:
Quick magnetizing (p1401.6) for flux build-up control (p1401.2).
cc = 03 hex = 3 dec:
Quick magnetizing (p1401.6) for Rs identification after restart (p0621 = 2).

Remedy: For fault cause = 1:
- Shut down soft start (p1401.0 = 0).
- Shut down quick magnetizing (p1401.6 = 0).

For fault cause = 2:
- switch-on flux build-up control (p1401.2 = 1).
- Shut down quick magnetizing (p1401.6 = 0).

For fault cause = 3:
- Re-parameterize Rs identification (p0621 = 0, 1)
- Shut down quick magnetizing (p1401.6 = 0).

F07417 Drive: Pulse technique not plausible (motor model)

Message value: %1
Message class: Application/technological function faulted (17)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2 (NONE)
Acknowledge: IMMEDIATELY
Cause: The evaluation of the test pulse response indicated incorrect values.
Fault value (r0949, interpret decimal):
0:
An impermissible pulse technique configuration was detected during ramp-up.
Possible causes:
- the pulse technique was initially selected when the system powered up (p1750.5 = 1) but the power unit component does not support the current oversampling required (see r0192.23). As a consequence, p1750.0 was de-selected automatically.

10:
The pulse response is repeatedly implausible.
Possible causes:
- incorrect configuration of the power unit component
- the power unit component is faulty.

20:
For the specified pulse amplitude, the measured pulse response is much higher than the expected value.
Possible causes:
- Strong oscillations have occurred.
- the motor is short-circuited for high frequencies (output filter).
- the motor is damaged.

Remedy: For fault value = 0:
Once the pulse technique has been de-selected automatically (p1750.5 = 0), there are two possible options:
- acknowledge the fault and save parameter p1750.5 = 0 -> field-oriented control mode to standstill is not used and replaced by transition to open-loop control at low speeds.
- upgrade the power unit firmware (at least V4.3) -> field-oriented control mode to standstill is available.

For fault value = 10:
With active selection of the pulse technique (p1750.5 = 1):
- POWER ON (switch-off/switch-on) the Control Unit and the power unit together again.

or
- carry out a manual warm restart (p0009 = 30, p0976 = 2, 3).

If this does not solve the problem: Replace the power unit component.
For fault value = 20:
- control parameters might have been adjusted (factory setting, commissioning).
- filters must not be connected between motor and converter/inverter.
- check the motor.

F07419 Drive: Current setpoint filter adaptation error

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF1 (OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: An error has occurred when configuring or when using the "Current setpoint filter adaptation" function.

Fault value (r0949, interpret binary):

Bit 0: a filter has still not been assigned (p5281).

Bit 1: the assigned filter belongs to the "Extended current setpoint filter" function module that has not been activated (r0108.21).

Bit 2: the assigned filter is a type or has a characteristic, which is unsuitable for adaptation.

Bit 3: the assigned filter has not been activated (p1656, p5200).

Bit 4 ... 15: internal fault occurred.

Bit 16 ... 31: number of the drive data set with fault.

See also: p5280 (Current setpoint filter adaptation configuration), p5281 (Current setpoint filter adaptation assignment)

Remedy: The message can always be removed by deactivating adaptation (p5280 = 0, -1).

If adaptation is to remain active, then the countermeasure should be applied depending on the particular fault value.

For bit 0:

Assign the filter (p5281).

For bit 1:

activate the "Extended current setpoint filter" function module (r0108.21).

For bit 2:

Set the filter type "General filter 2nd order" and set the characteristic of a bandstop filter.

For bit 3:

Activate filter (p1656, p5200).

For bits 4 ... 15:

- carry out a POWER ON (switch-off/switch-on) for all components.
- upgrade firmware to later version.

See also: p5280 (Current setpoint filter adaptation configuration), p5281 (Current setpoint filter adaptation assignment)

F07420 Drive: Current setpoint filter natural frequency > Shannon frequency

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, R_INF
Component: None **Propagation:** GLOBAL
Reaction: NONE (OFF1, OFF2)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: One of the filter natural frequencies is greater than the Shannon frequency.

The Shannon frequency is calculated according to the following formula: 0.5 / p0115[0]

Fault value (r0949, interpret hexadecimal):

Bit 3: Filter 4 (p1673, p1675)

Bit 16: Filter 5 (p5202, p5204)

Bit 18: Filter 7 (p5212, p5214)

Remedy:

- reduce the numerator or denominator natural frequency of the current setpoint filter involved.
- reduce the current controller sampling time (p0115[0]).
- switch out the filter involved (p1656).

F07420 Drive: Current setpoint filter natural frequency > Shannon frequency

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE (OFF1, OFF2, OFF3)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: One of the filter natural frequencies is greater than the Shannon frequency.
The Shannon frequency is calculated according to the following formula: 0.5 / p0115[0]
Fault value (r0949, interpret hexadecimal):
Bit 0: Filter 1 (p1658, p1660)
Bit 1: Filter 2 (p1663, p1665)
Bit 2: Filter 3 (p1668, p1670)
Bit 3: Filter 4 (p1673, p1675)
Bit 8 ... 15: Data set number (starting from zero)
Bit 16: Filter 5 (p5202, p5204) - extended current setpoint filter (r0108.21)
Bit 17: Filter 6 (p5207, p5209) - extended current setpoint filter (r0108.21)
Bit 18: Filter 7 (p5212, p5214) - extended current setpoint filter (r0108.21)
Bit 19: Filter 8 (p5217, p5219) - extended current setpoint filter (r0108.21)
Bit 20: Filter 9 (p5222, p5224) - extended current setpoint filter (r0108.21)
Bit 21: Filter 10 (p5227, p5229) - extended current setpoint filter (r0108.21)
Remedy: - reduce the numerator or denominator natural frequency of the current setpoint filter involved.
- reduce the current controller sampling time (p0115[0]).
- switch out the filter involved (p1656).

F07421 Drive: Speed filter natural frequency > Shannon frequency

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE (OFF1, OFF2, OFF3)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: One of the filter natural frequencies is greater than the Shannon frequency.
The Shannon frequency is calculated according to the following formula: 0.5 / p0115[1]
Fault value (r0949, interpret hexadecimal):
Bit 0: Filter 1 (p1417, p1419)
Bit 1: Filter 2 (p1423, p1425)
Bit 4: Actual value filter (p1447, p1449)
Bit 8 ... 15: Data set number (starting from zero)
Remedy: - reduce the numerator or denominator natural frequency of the speed setpoint filter involved.
- reduce the speed controller sampling time (p0115[1]).
- switch off the filter involved (p1413, p1414).

F07422 Drive: Reference model natural frequency > Shannon frequency

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE (OFF1, OFF2, OFF3)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The natural filter frequency of the PT2 element for the reference model (p1433) is greater than the Shannon frequency.
The Shannon frequency is calculated according to the following formula: 0.5 / p0115[1]
Remedy: - reduce the natural frequency of PT2 element for reference model (p1433).
- reduce the speed controller sampling time (p0115[1]).

F07423 Drive: APC filter natural frequency > Shannon frequency

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE (OFF1, OFF2, OFF3)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: One of the filter natural frequencies is greater than the Shannon frequency.
The Shannon frequency is calculated according to the following formula: 0.5 / (p0115[1] * x)
Fault value (r0949, interpret hexadecimal):
Bit 0: Filter 1.1 (p3711, p3713), x = 1
Bit 4: Filter 2.1 (p3721, p3723), x = p3706
Bit 5: Filter 2.2 (p3726, p3728), x = p3706
Bit 8: Filter 3.1 (p3731, p3733), x = p3707
Bit 9: Filter 3.2 (p3736, p3738), x = p3707
Bit 16 ... 32: Data set number (starting from zero)
Remedy: - reduce the numerator or denominator natural frequency of the filter involved.
- reduce the speed controller sampling time (p0115[1]) or the sub-sampling (p3706, p3707).
- switch out the filter involved (p3704).

A07424 Drive: Operating condition for APC not valid

Message value: Fault cause: %1 bin
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The APC function (Advanced Positioning Control) has identified an invalid operating condition.
Alarm value (r2124, interpret hexadecimal):
Bit 0 = 1:
APC is operating without encoder
Bit 1 = 1:
Possible causes:
- the load measuring system for APC, selected using p3701, has a fault.
- the load measuring system selected using p3701 is in the park state (r0481[0...2].14).
The APC function is disabled.
Bit 2 = 1:
Possible causes:
- the load measuring system for APC, selected using p3701, has a fault.
- the load measuring system selected using p3701 is in the park state (r0481[0...2].14).
The pulse de-coupling is disabled, i.e. the speed of the motor measuring system is used as speed for the closed-loop motor speed control.
Remedy: For bit 0:
Only use the APC function in operation with an encoder.
For bit 1, 2:
Check the load measuring system.

F07425 Drive: APC monitoring time for speed limit expired

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF1
Acknowledge: IMMEDIATELY
Cause: The limit value (p3778) for the speed/velocity was exceeded for a time longer than that set in the monitoring time (p3779).
Note:
APC: Advanced Positioning Control
Remedy: - check the measured value.
- check the limit value and monitoring time (p3778, p3779).

F07426 (A) Technology controller actual value limited

Message value: %1
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The actual value for the technology controller, interconnected via connector input p2264, has reached a limit.
Fault value (r0949, interpret decimal):
1: upper limit reached.
2: lower limit reached.
Remedy: - adapt the limits to the signal level (p2267, p2268).
- check the actual value normalization (p0595, p0596).
- Deactivate evaluation of the limits (p2252.3)
See also: p0595, p0596, p2264, p2267, p2268
Reaction upon A: NONE
Acknowl. upon A: NONE

A07428 (N) Technology controller parameterizing error

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The technology controller has a parameterizing error.
Alarm value (r2124, interpret decimal):
1:
The upper output limit in p2291 is set lower than the lower output limit in p2292.
Remedy: For alarm value = 1:
Set the output limit in p2291 higher than in p2292.
See also: p2291 (Technology controller maximum limiting), p2292 (Technology controller minimum limiting)
Reaction upon N: NONE
Acknowl. upon N: NONE

F07429 Drive: DSC without encoder not possible

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The function DSC (Dynamic Servo Control) was activated although there is no encoder.
See also: p1191 (DSC position controller gain KPC), p1192 (DSC encoder selection)
Remedy: Check the encoder selection configuration (p1192).
Note:
If there is no encoder and connector input p1191 (DSC position controller gain) is interconnected, then connector input p1191 must have a 0 signal.

F07430 Drive: Changeover to open-loop torque controlled operation not possible

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2 (NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY
Cause: For encoderless operation, the converter cannot change over to closed-loop torque-controlled operation (BI: p1501).
Remedy: Do not attempt to cover over to closed-loop torque-controlled operation.

F07431 Drive: Changeover to encoderless operation not possible

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2 (OFF1)
Acknowledge: IMMEDIATELY
Cause: For closed-loop torque control, the converter cannot change over to encoderless operation (p1404).
Remedy: Do not attempt to change over to encoderless operation.

F07432 Drive: Motor without overvoltage protection

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2 (OFF1)
Acknowledge: IMMEDIATELY
Cause: In the case of a fault at maximum speed, the motor can generate an overvoltage that can destroy the drive system.
Fault value (r0949, interpret hexadecimal):
Associated Drive Data Set (DDS).

Remedy: Overvoltage protection can be implemented in the following ways:

1. Limit the maximum speed (p1082) without any additional protection.

The maximum speed without protection is calculated as follows:

Rotary synchronous motors: p1082 [rpm] <= 11.695 * r0297/p0316 [Nm/A]

Linear motors: p1082 [m/min] <= 73.484 * r0297/p0316 [N/A]

Rotary synchronous motor connected to the high-frequency converter:

p1082 [rpm] <= 4.33165E9 * (-p0316 + root(p0316^2 + 4.86E-9 * (r0297 * r0313)^2 * (r0377 - p0233) [mH] * p0234 [µF]) / (r0297 * r0313^2 * (r0377 - p0233) [mH] * p0234 [µF])

Linear motor connected to the high-frequency converter:

p1082 [m/min] <= 689.403 * p0315 * (root(p0316^2 * p0315^2 + 0.191865 * r0297^2 * (r0377 - p0233) [mH] * p0234 [µF]) / (r0297 * (r0377 - p0233) [mH] * p0234 [µF])

Rotary induction motor connected to the high-frequency converter:

p1082 [rpm] <= maximum (2.11383E5 / (r0313 * root((r0377 [mH] + r0382 [mH]) * p0234 [µF])); 0.6364 * r0297 * p0311[rpm] / p0304)

2. Use a Voltage Protection Module (VPM) in conjunction with the function "Safe Torque Off" (p9601, p9801 – only for synchronous motors).

When using a synchronous motor with VPM at the high-frequency converter, the following must apply:

p1082 [rpm] <= p0348 * (r0377 + p0233) / p0233

When a fault condition exists, the VPM short-circuits the motors. During the short-circuit, the pulses must be suppressed - this means that the terminals for the function "Safe Torque Off" (STO) must be connected to the VPM.

When using a VPM, p0643 must be set to 1.

3. Activate the internal voltage protection (p1231 = 3, only for synchronous motors).

In so doing, the following hardware preconditions must be fulfilled:

- the infeed of the group must be capable of energy recovery (Active Line Module, Smart Line Module), and the energy recovery power of the infeed must not be less than the maximum utilized S1 power of the synchronous motor.
- For Control Unit and infeed, a 24 V power supply other than that for the Motor Module must be used with the voltage protection activated. The 24 V power supply of this Motor Module must be DC link buffered (e.g. CSM).
- a Braking Module with a correspondingly configured braking resistor must be available at the DC link.
- the synchronous motor must be short-circuit proof.

See also: p0643 (Overvoltage protection for synchronous motors), p1231 (Armature short-circuit / DC braking configuration)

F07433 Drive: Closed-loop control with encoder is not possible as the encoder has not been unparked

Message value: %1

Message class: Actual position/speed value incorrect or not available (11)

Drive object: SERVO, SERVO_AC, SERVO_I_AC

Component: Sensor Module Encoder 1 **Propagation:** GLOBAL

Reaction: NONE (OFF1, OFF2, OFF3)

Acknowledge: IMMEDIATELY

Cause: The changeover to closed-loop control with encoder is not possible as the encoder has not been unparked.

Remedy: - check whether the encoder firmware supports the "parking" function (r0481.6 = 1).

- upgrade the firmware.

Note:

For long-stator motors (p3870.0 = 1), the following applies:

The encoder must have completed the unparking procedure (r3875.0 = 1) before a changeover can be made to closed-loop control with encoder. The encoder is unparked using binector input p3876 = 0/1 signal and remains until a 0 signal in this state.

F07434 Drive: It is not possible to change the direction of rotation with the pulses enabled

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: A drive data set was selected - with the pulses enabled - which has a different parameterized direction of rotation (p1821).

It is only possible to change the motor direction of rotation using p1821 when the pulses are inhibited.

Remedy: - change over the drive data set with the pulses inhibited.

- ensure that the changeover to a drive data set does not result in the motor direction of rotation being changed (i.e. for these drive data sets, the same value must be in p1821).

See also: p1821

F07435 (N) Drive: Setting the ramp-function generator for sensorless vector control

Message value: Parameter: %1
Message class: Application/technological function faulted (17)
Drive object: HLA, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: Vector: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3)
Hla: OFF2 (NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY
Cause: During operation with sensorless vector control (r1407.1) the ramp-function generator was stopped (p1141) or bypassed (p1122). An internal setting command of the ramp-function generator output caused the set setpoint speed to be frozen or was not able to be realized.

The drive is switched-on with flying restart activated (p1200), and at the same time the ramp-function generator is bypassed (p1122).

Remedy: - deactivate the holding command for the ramp-function generator (p1141).

- do not bypass the ramp-function generator (p1122).

- suppress the fault (p2101, p2119). This is necessary if the ramp-function generator is held using jogging and the speed setpoint is simultaneously inhibited (r0898.6).

Note:

For sensorless vector control it is not practical to read in the main setpoint of the speed control via p1155 or p1160 (p0922). In this case, the main setpoint should be injected before the ramp-function generator (p1070). The reason for this is that the ramp-function generator output is automatically set when transitioning from closed-loop speed controlled into open-loop speed controlled operation.

Reaction upon N: NONE
Acknowl. upon N: NONE

F07439 Drive: Function not supported

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2 (NONE)
Acknowledge: IMMEDIATELY
Cause: The power unit does not support the selected function.

Fault value (r0949, interpret decimal):

1:

The function "Current controller dynamic response higher" is selected (p1810.11 = 1), however, this is not supported by the power unit (r0192.27 = 0).

- firmware of the booksize power unit is not up-to-date.

- blocksize power unit was used.

2:

The function "Current controller dynamic response higher" is selected (p1810.11 = 1), however, this is not supported by the safety technology without encoder (9506 = 1, 3).

3:
The function "DC link voltage compensation in the power unit" is selected (p1810.1 = 1), however, this is not supported by the power unit (r0192.28 = 0).

Remedy: For fault value = 1:

- if necessary, upgrade the firmware of the booksize power unit to a later version (version >= 4.4).

Note:

If the firmware has already been automatically upgraded, then only a POWER ON (switch-off/switch-on) is required.

- Use a booksize power unit (version >= 4.4).

For fault value = 2:

- if an encoder with Safety position actual values sensing is available (r0458[0...2].19 = 1), reparameterize the encoderless safety technology (p9506 = 1, 3) to safety technology with encoder (p9506 = 0).

For fault value = 1, 2:

- Deselect the function "Current controller dynamics higher" (p1810.11 = 0) and if required, set the current, speed and position controller again or calculate (p0340 = 4).

For fault value = 3:

- if necessary, upgrade the firmware of the blocksize power unit to a later version (version >= 4.6).
- deselect the "DC link voltage compensation in the power unit" function (p1810.1 = 0).

See also: r0192, p1810, p9506

A07440 EPOS: Jerk time is limited

Message value: -

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: The calculation of the jerk time Tr = max(p2572, p2573) / p2574 resulted in an excessively high value so that the jerk time is internally limited to 1000 ms.

Note:

The alarm is also output if jerk limiting is not active.

Remedy: - increase the jerk limiting (p2574).

- reduce maximum acceleration or maximum deceleration (p2572, p2573).

See also: p2572 (EPOS maximum acceleration), p2573 (EPOS maximum deceleration), p2574 (EPOS jerk limiting)

A07441 LR: Save the position offset of the absolute encoder adjustment

Message value: -

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: The status of the absolute encoder adjustment has changed.

In order to permanently save the determined position offset (p2525) and the determined number of the drive data set (p2733), they must be saved in a non-volatile fashion (p0971, p0977).

Possible causes:

- motor or encoder were replaced (applies to EQN and DQI).
- position-relevant parameters were changed.
- an encoder that was not adjusted was adjusted (save the project in a non-volatile fashion using "Copy RAM to ROM").

Note:

This message is not output when switching-on the axis after having first moved it in the switched-off state, as long as the parameterizable monitoring window was not exited.

Remedy: Readjust the encoder.

See also: p2507 (LR absolute encoder adjustment status), p2525 (LR encoder adjustment offset)

F07442 (A) LR: Multiturn does not match the modulo range

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF1 (OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The ratio between the multiturn resolution and the modulo range (p2576) is not an integer number.

This results in the adjustment being set back, as the position actual value cannot be reproduced after switch-off/switch-on.

Remedy: Make the ration between the multiturn resolution and the modulo range an integer number.

The ratio v is calculated as follows:

1. Motor encoder without position tracking

v = (p0421 * p2506 * p0433 * p2505) / (p0432 * p2504 * p2576)

2. Motor encoder with position tracking for the measuring gear

v = (p0412 * p2506 * p2505) / (p2504 * p2576)

3. Motor encoder with position tracking for the load gear

v = (p2721 * p2506 * p0433) / (p0432 * p2576)

4. Motor encoder with position tracking for the load and measuring gear

v = (p2721 * p2506) / p2576

5. Direct encoder without position tracking

v = (p0421 * p2506 * p0433) / (p0432 * p2576)

6. Direct encoder with position tracking for the measuring gear

v = (p0412 * p2506) / p2576

Note:

With position tracking, it is recommended that p0412 and p2721 are changed

See also: p0412, p0432, p0433, p2504, p2505, p2506, p2576, p2721

Reaction upon A: NONE
Acknowl. upon A: NONE

F07443 (A) LR: Reference point coordinate not in the permissible range

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF1 (OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The reference point coordinate received when adjusting the encoder via connector input p2599 lies outside the half of the encoder range and cannot be set as actual axis position.

Fault value (r0949, interpret decimal):

Maximum permissible value for the reference point coordinate.

Remedy: Set the reference point coordinate to a lower value than specified in the fault value.

See also: p2598 (EPOS reference point coordinate signal source), p2599 (EPOS reference point coordinate value)

Reaction upon A: NONE
Acknowl. upon A: NONE

F07446 (A) Load gear: Position tracking cannot be reset

Message value: %1
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF1 (OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The position tracking cannot be reset.
Remedy: Reset the position tracking as follows:
- select encoder commissioning (p0010 = 4).
- reset position tracking, position (p2720.2 = 1).
- deselect encoder commissioning (p0010 = 0).

Then acknowledge the fault and, if necessary, re-adjust the absolute encoder (p2507).

Reaction upon A: NONE
Acknowl. upon A: NONE

F07447 Load gear: Position tracking, maximum actual value exceeded

Message value: Component number: %1, encoder data set: %2, drive data set: %3
Message class: Application/technological function faulted (17)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: When the position tracking of the load gear is configured, the drive/encoder (motor encoder) identifies a maximum possible absolute position actual value (r2723) that can no longer be represented within 32 bits.

Maximum value: p0408 * p2721 * 2^p0419

Fault value (r0949, interpret hexadecimal):

ccbbaa hex

aa = encoder data set

bb = component number

cc = drive data set

See also: p0408, p0419 (Fine resolution absolute value Gx_XIST2 (in bits)), p2721 (Load gear rotary absolute encoder revolutions virtual)

Remedy:
- reduce the fine resolution (p0419).
- reduce the multiturn resolution (p2721).

See also: p0419 (Fine resolution absolute value Gx_XIST2 (in bits)), p2721 (Load gear rotary absolute encoder revolutions virtual)

F07448 (A) Load gear: Position tracking, linear axis has exceeded the maximum range

Message value: -
Message class: Application/technological function faulted (17)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: Infeed: NONE

Servo: OFF1 (NONE, OFF2, OFF3)

Vector: OFF1 (NONE, OFF2, OFF3)

Hla: OFF1 (NONE, OFF2, OFF3)

Acknowledge: IMMEDIATELY
Cause: For a configured linear axis/no modulo axis, the currently effective motor encoder (encoder 1) has exceeded the maximum possible traversing range.

For the configured linear axis, the maximum traversing range is defined to be 64x (+/- 32x) of p0421. It should be read in p2721 and interpreted as the number of load revolutions.

Note:

Only the motor encoder in the currently effective drive data set is monitored here. The actual effective drive data set is displayed in x = r0051 and the corresponding motor encoder is specified in in p0187[x].

Remedy: The fault should be resolved as follows:
- select encoder commissioning (p0010 = 4).
- reset position tracking, position (p2720.2 = 1).
- deselect encoder commissioning (p0010 = 0).

The fault should then be acknowledged and the absolute encoder adjusted.

Reaction upon A: NONE

Acknowl. upon A: NONE

F07449 (A) Load gear: Position tracking actual position outside tolerance window

Message value: %1

Message class: Application/technological function faulted (17)

Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: Infeed: NONE

Servo: OFF1 (NONE, OFF2, OFF3)

Vector: OFF1 (NONE, OFF2, OFF3)

Hla: OFF1 (NONE, OFF2, OFF3)

Acknowledge: IMMEDIATELY

Cause: When switched off, the currently effective motor encoder was moved through a distance greater than was parameterized in the tolerance window. It is possible that there is no longer any reference between the mechanical system and encoder.

Note:

Only the motor encoder in the currently effective drive data set is monitored here. The actual effective drive data set is displayed in x = r0051 and the corresponding motor encoder is specified in in p0187[x].

Fault value (r0949, interpret decimal):

Deviation (difference) to the last encoder position in increments of the absolute value after the measuring gear - if one is being used. The sign designates the traversing direction.

Note:

The deviation (difference) found is also displayed in r2724.

See also: p2722 (Load gear position tracking tolerance window), r2724 (Load gear position difference)

Remedy: Reset the position tracking as follows:
- select encoder commissioning (p0010 = 4).
- reset position tracking, position (p2720.2 = 1).
- deselect encoder commissioning (p0010 = 0).

The fault should then be acknowledged and, if necessary, the absolute encoder adjusted (p2507).

See also: p0010, p2507

Reaction upon A: NONE

Acknowl. upon A: NONE

F07450 (A) LR: Standstill monitoring has responded

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF1 (OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: After the standstill monitoring time (p2543) expired, the drive left the standstill window (p2542).
- position actual value inversion incorrectly set (p0410).
- standstill window set too small (p2542).
- standstill monitoring time set too low (p2543).
- position loop gain too low (p2538).
- position loop gain too high (instability/oscillation, p2538).
- mechanical overload.
- Connecting cable, motor/drive converter incorrect (phase missing, interchanged).
- when selecting motor identification, select tracking mode (BI: p2655[0] = 1 signal).
- when selecting function generator, select tracking mode (BI: p2655[0] = 1 signal) and deactivate position control (BI:p2550 = 0 signal).

Remedy: Check the causes and resolve.
Reaction upon A: NONE
Acknowl. upon A: NONE

F07451 (A) LR: Position monitoring has responded

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF1 (OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: When the position monitoring time (p2545) expired, the drive had still not reached the positioning window (p2544).
- positioning window parameterized too small (p2544).
- position monitoring time parameterized too short (p2545).
- position loop gain too low (p2538).
- position loop gain too high (instability/oscillation, p2538).
- drive mechanically locked.

Remedy: Check the causes and resolve.
Reaction upon A: NONE
Acknowl. upon A: NONE

F07452 (A) LR: Following error too high

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF1 (OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The difference between the position setpoint position actual value (following error dynamic model, r2563) is higher than the tolerance (p2546).
- the drive torque or accelerating capacity exceeded.
- position measuring system fault.
- encoder cable interrupted.
- position control sense incorrect.
- mechanical system locked.
- excessively high traversing velocity or excessively high position reference value (setpoint) differences

Remedy: Check the causes and resolve.

Reaction upon A: NONE
Acknowl. upon A: NONE

F07453 LR: Position actual value preprocessing error

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF1 (OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: An error has occurred during the position actual value preprocessing.
Remedy: Check the encoder for the position actual value preprocessing.
See also: p2502 (LR encoder assignment)

A07454 LR: Position actual value preprocessing does not have a valid encoder

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: One of the following problems has occurred with the position actual value preprocessing:
- an encoder is not assigned for the position actual value preprocessing (p2502 = 0).
- an encoder is assigned, but no encoder data set (p0187 = 99 or p0188 = 99 or p0189 = 99).
- an encoder an an encoder data set have been assigned, however, the encoder data set does not contain any encoder data (p0400 = 0) or invalid data (e.g. p0408 = 0).

Remedy: Check the drive data sets, encoder data sets and encoder assignment.
See also: p0187 (Encoder 1 encoder data set number), p0188 (Encoder 2 encoder data set number), p0189 (Encoder 3 encoder data set number), p0400 (Encoder type selection), p2502 (LR encoder assignment)

A07455 EPOS: Maximum velocity limited

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The maximum velocity (p2571) is too high to correctly calculate the modulo correction.
Within the sampling time for positioning (p0115[5]), with the maximum velocity, a maximum of the half modulo length must be moved through. p2571 was limited to this value.
Remedy:
- reduce the maximum velocity (p2571).
- increase the sampling time for positioning (p0115[5]).

A07456 EPOS: Setpoint velocity limited

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The actual setpoint velocity is greater than the parameterized maximum velocity (p2571) and is therefore limited.
Remedy:
- check the entered setpoint velocity.
- reduce the velocity override (CI: p2646).
- increase the maximum velocity (p2571).
- check the signal source for the externally limited velocity (CI: p2594).

A07457	**EPOS: Combination of input signals illegal**
Message value:	%1
Message class:	Application/technological function faulted (17)
Drive object:	SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component:	None **Propagation:** GLOBAL
Reaction:	NONE
Acknowledge:	NONE
Cause:	An illegal combination of input signals that are simultaneously set was identified. Alarm value (r2124, interpret decimal): 0: Jog 1 and jog 2 (p2589, p2590). 1: Jog 1 or jog 2 and direct setpoint input/MDI (p2589, p2590, p2647). 2: Jog 1 or jog 2 and start referencing (p2589, p2590, p2595). 3: Jog 1 or jog 2 and activate traversing task (p2589, p2590, p2631). 4: Direct setpoint input/MDI and starting referencing (p2647, p2595). 5: Direct setpoint input/MDI and activate traversing task (p2647, p2631). 6: Start referencing and activate traversing task (p2595, p2631).
Remedy:	Check the appropriate input signals and correct.

F07458	**EPOS: Reference cam not found**
Message value:	-
Message class:	Application/technological function faulted (17)
Drive object:	SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component:	None **Propagation:** GLOBAL
Reaction:	OFF1 (OFF2, OFF3)
Acknowledge:	IMMEDIATELY
Cause:	After starting the search for reference, the axis moved through the maximum permissible distance to search for the reference cam without actually finding the reference cam.
Remedy:	- check the "reference cam" binector input (BI: p2612). - check the maximum permissible distance to the reference cam (p2606). - if axis does not have any reference cam, then set p2607 to 0. See also: p2606 (EPOS search for reference reference cam maximum distance), p2607 (EPOS search for reference reference cam present), p2612 (EPOS search for reference reference cam)

F07459	**EPOS: No zero mark**
Message value:	-
Message class:	Application/technological function faulted (17)
Drive object:	SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component:	None **Propagation:** GLOBAL
Reaction:	OFF1 (OFF2, OFF3)
Acknowledge:	IMMEDIATELY
Cause:	After leaving the reference cam, the axis has traversed the maximum permissible distance between the reference cam and zero mark without finding the zero mark.
Remedy:	- check the encoder regarding the zero mark - check the maximum permissible distance between the reference cam and zero mark (p2609). - use an external encoder zero mark (equivalent zero mark) (p0495). See also: p0495 (Equivalent zero mark input terminal), p2609 (EPOS search for reference max distance ref cam and zero mark)

F07460 EPOS: End of reference cam not found

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF1 (OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: During the search for reference, when the axis reached the zero mark it also reached the end of the traversing range without detecting an edge at the binector input "reference cam" (BI: p2612).

Maximum traversing range: -2147483648 [LU] ... -2147483647 [LU]

Remedy: - check the "reference cam" binector input (BI: p2612).

- repeat the search for reference.

See also: p2612 (EPOS search for reference reference cam)

A07461 EPOS: Reference point not set

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: When starting a traversing block/direct setpoint input, a reference point is not set (r2684.11 = 0).
Remedy: Reference the system (search for reference, flying referencing, set reference point).

A07462 EPOS: Selected traversing block number does not exist

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: A traversing block selected via binector input p2625 ... p2630 was started via binector input p2631 = 0/1 edge "Activate traversing task".

- the number of the started traversing block is not contained in p2616[0...n].

- the started traversing block is suppressed.

Alarm value (r2124, interpret decimal):

Number of the selected traversing block that is also not available.

Remedy: - correct the traversing program.

- select an available traversing block number.

A07463 (F) EPOS: External block change not requested in the traversing block

Message value: %1
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: For a traversing block with the block change enable CONTINUE_EXTERNAL_ALARM, the external block change was not requested.

Alarm value (r2124, interpret decimal):

Number of the traversing block.

Remedy: Resolve the reason as to why the edge is missing at binector input (BI: p2632).
Reaction upon F: OFF1
Acknowl. upon F: IMMEDIATELY

F07464 EPOS: Traversing block is inconsistent

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF1 (OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The traversing block does not contain valid information.
Alarm value (r2124, interpret decimal):
Number of the traversing block with invalid information.
Remedy: Check the traversing block and where relevant, take into consideration alarms that are present.

A07465 EPOS: Traversing block does not have a subsequent block

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: There is no subsequent block in the traversing block.
Alarm value (r2124, interpret decimal):
Number of the traversing block with the missing subsequent block.
Remedy: - parameterize this traversing block with the block change enable END.
- parameterize additional traversing blocks with a higher block number and for the last block, using the block change enable END.

A07466 EPOS: Traversing block number assigned a multiple number of times

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The same traversing block number was assigned a multiple number of times.
Alarm value (r2124, interpret decimal):
Number of the traversing block that was assigned a multiple number of times.
Remedy: Correct the traversing blocks.

A07467 EPOS: Traversing block has illegal task parameters

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The task parameter in the traversing block contains an illegal value.
Alarm value (r2124, interpret decimal):
Number of the traversing block with an illegal task parameter.
Remedy: Correct the task parameter in the traversing block.

A07468 EPOS: Traversing block jump destination does not exist

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: In a traversing block, a jump was programmed to a non-existent block.
Alarm value (r2124, interpret decimal):
Number of the traversing block with a jump destination that does not exist.
Remedy: - correct the traversing block.
- add the missing traversing block.

A07469 EPOS: Traversing block < target position < software limit switch minus

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: In the traversing block the specified absolute target position lies outside the range limited by the software limit switch minus.
Alarm value (r2124, interpret decimal):
Number of the traversing block with illegal target position.
Remedy: - correct the traversing block.
- change software limit switch minus (CI: p2578, p2580).

A07470 EPOS: Traversing block> target position > software limit switch plus

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: In the traversing block the specified absolute target position lies outside the range limited by the software limit switch plus.
Alarm value (r2124, interpret decimal):
Number of the traversing block with illegal target position.
Remedy: - correct the traversing block.
- change software limit switch plus (CI: p2579, p2581).

A07471 EPOS: Traversing block target position outside the modulo range

Message value: %1
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: In the traversing block the target position lies outside the modulo range.
Alarm value (r2124, interpret decimal):
Number of the traversing block with illegal target position.
Remedy: - in the traversing block, correct the target position.
- change the modulo range (p2576).

A07472 EPOS: Traversing block ABS_POS/ABS_NEG not possible

Message value: %1
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: In the traversing block the positioning mode ABS_POS or ABS_NEG were parameterized with the modulo correction not activated.
Alarm value (r2124, interpret decimal):
Number of the traversing block with the illegal positioning mode.
Remedy: Correct the traversing block.

A07473 (F) EPOS: Beginning of traversing range reached

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: When traversing, the axis has moved to the traversing range limit.
Remedy: Move away in the positive direction.
Reaction upon F: OFF1 (OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

A07474 (F) EPOS: End of traversing range reached

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: When traversing, the axis has moved to the traversing range limit.
Remedy: Move away in the negative direction.
Reaction upon F: OFF1 (OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

F07475 (A) EPOS: Target position < start of traversing range

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF1 (OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The target position for relative traversing lies outside the traversing range.
Remedy: Correct the target position.
Reaction upon A: NONE
Acknowl. upon A: NONE

F07476 (A) EPOS: Target position > end of the traversing range

Message value: -

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC

Component: None **Propagation:** GLOBAL

Reaction: OFF1 (OFF2, OFF3)

Acknowledge: IMMEDIATELY

Cause: The target position for relative traversing lies outside the traversing range.

Remedy: Correct the target position.

Reaction upon A: NONE

Acknowl. upon A: NONE

A07477 (F) EPOS: Target position < software limit switch minus

Message value: -

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: In the actual traversing operation, the target position is less than the software limit switch minus.

Remedy: - correct the target position.

- change software limit switch minus (CI: p2578, p2580).

See also: p2578 (EPOS software limit switch minus signal source), p2580 (EPOS software limit switch minus), p2582 (EPOS software limit switch activation)

Reaction upon F: OFF1 (OFF2, OFF3)

Acknowl. upon F: IMMEDIATELY

A07478 (F) EPOS: Target position > software limit switch plus

Message value: -

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: In the actual traversing operation, the target position is greater than the software limit switch plus.

Remedy: - correct the target position.

- change software limit switch plus (CI: p2579, p2581).

See also: p2579 (EPOS software limit switch plus signal source), p2581 (EPOS software limit switch plus), p2582 (EPOS software limit switch activation)

Reaction upon F: OFF1 (OFF2, OFF3)

Acknowl. upon F: IMMEDIATELY

A07479 EPOS: Software limit switch minus reached

Message value: -

Message class: Application/technological function faulted (17)

Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: The axis is at the position of the software limit switch minus. An active traversing block was interrupted.

Remedy: - correct the target position.

- change software limit switch minus (CI: p2578, p2580).

See also: p2578 (EPOS software limit switch minus signal source), p2580 (EPOS software limit switch minus), p2582 (EPOS software limit switch activation)

A07480 EPOS: Software limit switch plus reached

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The axis is at the position of the software limit switch plus. An active traversing block was interrupted.
Remedy: - correct the target position.
- change software limit switch plus (CI: p2579, p2581).
See also: p2579 (EPOS software limit switch plus signal source), p2581 (EPOS software limit switch plus), p2582 (EPOS software limit switch activation)

F07481 (A) EPOS: Axis position < software limit switch minus

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF1 (OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The actual position of the axis is less than the position of the software limit switch minus.
Remedy: - correct the target position.
- change software limit switch minus (CI: p2578, p2580).
See also: p2578 (EPOS software limit switch minus signal source), p2580 (EPOS software limit switch minus), p2582 (EPOS software limit switch activation)
Reaction upon A: NONE
Acknowl. upon A: NONE

F07482 (A) EPOS: Axis position > software limit switch plus

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF1 (OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The actual position of the axis is greater than the position of the software limit switch plus.
Remedy: - correct the target position.
- change software limit switch plus (CI: p2579, p2581).
See also: p2579 (EPOS software limit switch plus signal source), p2581 (EPOS software limit switch plus), p2582 (EPOS software limit switch activation)
Reaction upon A: NONE
Acknowl. upon A: NONE

A07483 EPOS: Travel to fixed stop clamping torque not reached

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The fixed stop in the traversing block was reached without the clamping torque/clamping force having been achieved.
Remedy: - check the maximum torque-generating current (r1533).
- check the torque limits (p1520, p1521).
- check the power limits (p1530, p1531).
- check the BICO interconnections of the torque limits (p1522, p1523, p1528, p1529).

F07484 EPOS: Fixed stop outside the monitoring window

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF3 (OFF1, OFF2)
Acknowledge: IMMEDIATELY
Cause: In the "fixed stop reached" state, the axis has moved outside the defined monitoring window (p2635).
Remedy: - check the monitoring window (p2635).
- check the mechanical system.

F07485 (A) EPOS: Fixed stop not reached

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF1 (OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: In a traversing block with the task FIXED STOP, the end position was reached without detecting a fixed stop.
Remedy: - check the traversing block and locate the target position further into the workpiece.
- check the "fixed stop reached" control signal (p2637).
- if required, reduce the maximum following error window to detect the fixed stop (p2634).
Reaction upon A: NONE
Acknowl. upon A: NONE

A07486 EPOS: Intermediate stop missing

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: In the modes "traversing blocks" or "direct setpoint input/MDI" at the start of motion, the binector input "no intermediate stop/intermediate stop" (BI: p2640) did not have a 1 signal.
Remedy: Connect a 1 signal to the binector input "no intermediate stop/intermediate stop" (BI: p2640) and re-start motion.
See also: p2640 (EPOS intermediate stop (0 signal))

A07487 EPOS: Reject traversing task missing

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: In the modes "traversing blocks" or "direct setpoint input/MDI" at the start of motion, the binector input "do not reject traversing task/reject traversing task" (BI: p2641) does not have a 1 signal.
Remedy: Connect a 1 signal to the binector input "do not reject traversing task/reject traversing task" (BI: p2641) and restart motion.
See also: p2641 (EPOS reject traversing task (0 signal))

F07488 EPOS: Relative positioning not possible

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF1 (OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: In the mode "direct setpoint input/MDI", for continuous transfer (p2649 = 1) relative positioning was selected (BI: p2648 = 0 signal).
Remedy: Check the control.

A07489 EPOS: Reference point correction outside the window

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: For the function "flying referencing" the difference between the measured position at the measuring probe and the reference point coordinate lies outside the parameterized window.
Remedy: - check the mechanical system.
- check the parameterization of the window (p2602).

F07490 (N) EPOS: Enable signal withdrawn while traversing

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF1 (OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: - for a standard assignment, another fault may have occurred as a result of withdrawing the enable signals.
- the drive is in the "switching on inhibited" state (for a standard assignment).
Remedy: - set the enable signals or check the cause of the fault that first occurred and then result (for a standard assignment).
- check the assignment to enable the basic positioning function.
Reaction upon N: NONE
Acknowl. upon N: NONE

F07491 (A) EPOS: STOP cam minus reached

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF3
Acknowledge: IMMEDIATELY
Cause: A 0 signal was detected at binector input p2569, i.e. the STOP cam minus was actuated.
For a positive traversing direction, the STOP cam minus was reached - i.e. the wiring of the STOP cam is incorrect.
See also: p2569 (EPOS STOP cam minus)
Remedy: - leave the STOP cam minus in the positive traversing direction and return the axis to the valid traversing range.
- check the wiring of the STOP cam.
Reaction upon A: NONE
Acknowl. upon A: NONE

F07492 (A)	**EPOS: STOP cam plus reached**		
Message value:	-		
Message class:	Application/technological function faulted (17)		
Drive object:	SERVO, SERVO_AC, VECTOR, VECTOR_AC		
Component:	None	**Propagation:**	GLOBAL
Reaction:	OFF3		
Acknowledge:	IMMEDIATELY		
Cause:	A 0 signal was detected at binector input p2570, i.e. the STOP cam plus was reached. For a negative traversing direction, the STOP cam plus was reached - i.e. the wiring of the STOP cam is incorrect. See also: p2570 (EPOS STOP cam plus)		
Remedy:	- leave the STOP cam plus in the negative traversing direction and return the axis to the valid traversing range. - check the wiring of the STOP cam.		
Reaction upon A:	NONE		
Acknowl. upon A:	NONE		

F07493	**LR: Overflow of the value range for position actual value**		
Message value:	%1		
Message class:	Application/technological function faulted (17)		
Drive object:	SERVO, SERVO_AC, VECTOR, VECTOR_AC		
Component:	None	**Propagation:**	GLOBAL
Reaction:	OFF1 (OFF2, OFF3)		
Acknowledge:	IMMEDIATELY		
Cause:	The value range (-2147483648 ... 2147483647) for the position actual value representation was exceeded. When the overflow occurs, the "referenced" or "adjustment absolute measuring system" status is reset. Fault value (r0949, interpret decimal): 1: The position actual value (r2521) has exceeded the value range. 2: The encoder position actual value Gn_XIST2 (r0483) or the absolute value after the load gear (r2723) has exceeded the value range. 3: The maximum encoder value times the factor to convert the absolute position (r0483 and/or r2723) from increments to length units (LU) has exceeded the value range for displaying the position actual value. Note: For a linear encoder, the following must be maintained: - p0407 * p2503 / (2^p0418*10^7) < 1 - p0407 * p2503 / (2^p0419*10^7) < 1		
Remedy:	If required, reduce the traversing range or position resolution (p2506). Increase the fine resolution of absolute position actual value (p0419). Note for fault value = 3: If the value for the maximum possible absolute position (LU) is greater than 4294967296, then it is not possible to make an adjustment due to an overflow. For rotary encoders, the maximum possible absolute position (LU) is calculated as follows: 1. Motor encoder without position tracking p2506 * p0433 * p2505 / (p0432 * p2504) p2506 * p0433 * p2505 * p0421 / (p0432 * p2504) for multiturn encoders 2. Motor encoder with position tracking for measuring gear p2506 * p0412 * p2505 / p2504 3. Motor encoder with position tracking for load gear p2506 * p2721 * p0433 / p0432 4. Motor encoder with position tracking for load and measuring gear p2506 * p2721 5. Direct encoder without position tracking p2506 * p0433 / p0432 p2506 * p0433 * p0421 / p0432 for multiturn encoders 6. Direct encoder with position tracking for measuring gear p2506 * p0412		

F07494 LR: Drive Data Set changeover in operation

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF1 (OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: A Drive Data Set changeover (DDS) with a change of the mechanical relationships (p2503 ... 2506), direction of rotation (p1821) or the encoder assignment (p2502) was requested in operation.

Note:

DDS: Drive Data Set

Remedy: To changeover the drive data set, initially, exit the "operation" mode.

A07495 (F, N) LR: Reference function interrupted

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: An activated reference function (reference mark search or measuring probe evaluation) was interrupted.

Possible causes:

- an encoder fault has occurred (Gn_ZSW.15 = 1).
- position actual value was set during an activated reference function.
- simultaneously activate reference mark search and measuring probe evaluation (BI: p2508 and BI: p2509 = 1 signal).
- activated reference function (reference mark search or measuring probe evaluation) was deactivated (BI: p2508 and BI: p2509 = 0 signal).
- the input terminal for the measuring probe is not set.

Remedy:
- check the causes and resolve.
- reset the control (BI: p2508 and BI: p2509 = 0 signal) and activate the requested function.
- set the input terminal for the measuring probe (p0488, p0489 or p2517, p2518).

Reaction upon F: OFF1 (OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A07496 EPOS: Enable not possible

Message value: %1
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: It is not possible to enable the basic positioner because at least one condition is missing.

Alarm value (r2124, interpret decimal):

1: EPOS enable missing (BI: p2656).

2: Position actual value, valid feedback signal missing (BI: p2658).

See also: p2656 (EPOS enable basic positioner), p2658 (EPOS position actual value valid feedback signal)

Remedy: Check the corresponding missing condition (binector input, signal source).

A07497 (N) LR: Position setting value activated

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: While the binector input p2514 has a 1 signal, the position actual value is set to the value received via connector input p2515. A possible system deviation cannot be corrected.
Remedy: Not necessary.
The alarm is automatically withdrawn for binector input p2514 = 0 signal.
Reaction upon N: NONE
Acknowl. upon N: NONE

A07498 (F) LR: Measuring probe evaluation not possible

Message value: %1
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: When evaluating the measuring probe, an error occurred.
Alarm value (r2124, interpret decimal):
6:
The input terminal for the measuring probe is not set.
4098:
Error when initializing the measuring probe.
4100:
The measuring pulse frequency is too high.
> 50000:
The measuring clock cycle is not a multiple integer of the position controller clock cycle.
Remedy: Deactivate the measuring probe evaluation (BI: p2509 = 0 signal).
For alarm value = 6:
Set the input terminal for the measuring probe (p0488, p0489 or p2517, p2518).
For alarm value = 4098:
Check the Control Unit hardware.
For alarm value = 4100:
Reduce the frequency of the measuring pulses at the measuring probe.
For alarm value > 50000:
Set the clock cycle ratio of the measuring clock cycle to the position controller clock cycle to an integer multiple.
To do this, the currently effective measuring clock cycle can be determined from the alarm value as follows:
Tmeas [125 µs] = alarm value - 50000
With PROFIBUS, the measuring clock cycle corresponds to the PROFIBUS clock cycle (r2064[1]).
Without PROFIBUS, the measuring clock cycle is an internal cycle time that cannot be influenced.
Reaction upon F: OFF1
Acknowl. upon F: IMMEDIATELY

F07499 (A) EPOS: Reversing cam approached with the incorrect traversing direction

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF3
Acknowledge: IMMEDIATELY
Cause: The reversing cam MINUS was approached in the positive traversing direction or the reversing cam PLUS was approached in the negative traversing direction.

See also: p2613 (EPOS search for reference reversing cam minus), p2614 (EPOS search for reference reversing cam plus)

Remedy: - check the wiring of the reversing cam (BI: p2613, BI: p2614).

- check the traversing direction to approach the reversing cam.

Reaction upon A: NONE
Acknowl. upon A: NONE

F07500 Drive: Power unit data set PDS not configured

Message value: Drive data set: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: Only for controlled line supply infeed/regenerative feedback units:

The power unit data set was not configured - this means that a data set number was not entered into the drive data set.

Fault value (r0949, interpret decimal):

Drive data set number of p0185.

Remedy: The index of the power unit data set associated with the drive data set should be entered into p0185.

F07501 Drive: Motor Data Set MDS not configured

Message value: Drive data set: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: Only for power units:

The motor data set was not configured - this means that a data set number was not entered into the associated drive data set.

Fault value (r0949, interpret decimal):

The fault value includes the drive data set number of p0186.

Remedy: The index of the motor data set associated with the drive data set should be entered into p0186.

See also: p0186 (Motor Data Sets (MDS) number)

F07502 Drive: Encoder Data Set EDS not configured

Message value: Drive data set: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: Only for power units:

The encoder data set was not configured - this means that a data set number was not entered into the associated drive data set.

Fault value (r0949, interpret decimal):

The fault value includes the drive data set number of p0187, p0188 and p0189.

The fault value is increased by 100 * encoder number (e.g. for p0189: Fault value 3xx with xx = data set number).

Remedy: The index of the encoder data set associated with the drive data set should be entered into p0187 (1st encoder), p0188 (2nd encoder) and p0189 (3rd encoder).

F07503 EPOS: STOP cam approached with the incorrect traversing direction

Message value: %1
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: Servo: NONE (OFF1, OFF2, OFF3)

Vector: NONE

Acknowledge: IMMEDIATELY
Cause: The STOP cam MINUS was approached in the positive traversing direction or the STOP cam PLUS was approached in the negative traversing direction.
Remedy: - check the wiring of the STOP cam (BI: p2569, BI: p2570).

- check the traversing direction to approach the STOP cam.

A07504 Drive: Motor data set is not assigned to a drive data set

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: A motor data set is not assigned to a drive object.

All of the existing motor data sets in the drive data sets must be assigned using the MDS number (p0186[0...n]). There must be at least as many drive data sets as motor data sets.

Alarm value (r2124, interpret decimal):

Number of the motor data set that has not been assigned.

Remedy: In the drive data sets, assign the non-assigned motor data set using the MDS number (p0186[0...n]).

- check whether all of the motor data sets are assigned to drive data sets.

- if required, delete superfluous motor data sets.

- if required, set up new drive data sets and assign to the corresponding motor data sets.

See also: p0186 (Motor Data Sets (MDS) number)

A07505 EPOS: Task fixed stop not possible in the U/f/SLVC mode

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: In the U/f/SLVC mode, an attempt was made to execute a traversing block with the "fixed stop" task. This is not possible.

Alarm value (r2124, interpret decimal):

Number of the traversing block with an illegal task parameter.

Remedy: - check the traversing block and change the task.

- change the open-loop/closed-loop control mode (p1300).

See also: p1300 (Open-loop/closed-loop control operating mode), p2621 (EPOS traversing block task)

A07506 EPOS: check BICO interconnection between EPOS and position controller

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: Control Unit (CU) **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The BICO interconnections to transfer setpoints between EPOS and LR (position control) have not been set, although the BICO interconnections to transfer the fine resolutions have been set.

Remedy: 1. Disconnect BICO interconnections for the fine resolutions (CI: p2694 = 0, CI: p2695 = 0).

2. Set BICO interconnections for the setpoints (CI: p2530 = r2665, CI: p2531 = r2666).

3. Set BICO interconnections for the fine resolutions (CI: p2694 = r2696, CI: p2695 = r2697).

See also: p2530, p2531, r2665, r2666, p2694, p2695, r2696, r2697

A07507 EPOS: reference point cannot be set

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: Motor **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: After the reference point correction, the position setpoint lies outside the traversing range limits.

Remedy: - optimize the position controller.

- due to a possible position controller deviation, reference point coordinate p2599 should not be directly placed at the traversing range limits.

F07509 Drive: Component assignment missing

Message value: %1

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: OFF2

Acknowledge: IMMEDIATELY

Cause: A Drive Data Set (DDS) is assigned to a Motor Data Set (MDS) or Encoder Data Set (EDS) that does not have a component number.

Fault value (r0949, interpret decimal):

nnmmmxxyyy

nn: Number of the MDS/EDS.

mmm: Parameter number of the missing component number.

xx: Number of the DDS that is assigned to the MDS/EDS.

yyy: Parameter number that references the MDS/EDS.

Example:

p0186[7] = 5: DDS 7 is assigned MDS 5.

p0131[5] = 0: There is no component number set in MDS 5.

Alarm value = 0513107186

Remedy: In the drive data sets, no longer assign MDS/EDS using p0186, p0187, p0188, p0189 or set a valid component number.

See also: p0131, p0141, p0142, p0186, p0187, p0188, p0189

F07510 Drive: Identical encoder in the drive data set

Message value: %1

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: All objects

Component: None **Propagation:** GLOBAL

Reaction: OFF2

Acknowledge: IMMEDIATELY

Cause: More than one encoder with identical component number is assigned to a single drive data set. In one drive data set, it is not permissible that identical encoders are operated together.

Fault value (r0949, interpret decimal):

1000 * first identical encoder + 100 * second identical encoder + drive data set.

Example:

Fault value = 1203 means:

In drive data set 3, the first (p0187[3]) and second encoder (p0188[3]) are identical.

Remedy: Assign the drive data set to different encoders.

See also: p0141, p0187 (Encoder 1 encoder data set number), p0188 (Encoder 2 encoder data set number), p0189 (Encoder 3 encoder data set number)

F07511 Drive: Encoder used a multiple number of times

Message value: %1

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: All objects

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: IMMEDIATELY

Cause: Each encoder may only be assigned to one drive and within a drive must - in each drive data set - either always be encoder 1, always encoder 2 or always encoder 3. This unique assignment has been violated.

Fault value (r0949, interpret decimal):

The two parameters in coded form, that refer to the same component number.

First parameter:

Index: First and second decimal place (99 for EDS, not assigned DDS)

Parameter number: Third decimal place (1 for p0187, 2 for p0188, 3 for p0189, 4 for EDS not assigned DDS)

Drive number: Fourth and fifth decimal place

Second parameter:

Index: Sixth and seventh decimal place (99 for EDS, not assigned DDS)

Parameter number: Eighth decimal place (1 for p0187, 2 for p0188, 3 for p0189, 4 for EDS, not assigned DDS)

Drive number: Ninth and tenth decimal place

See also: p0141

Remedy: Correct the double use of a component number using the two parameters coded in the fault value.

F07512 Drive: Encoder data set changeover cannot be parameterized

Message value: %1

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: OFF2

Acknowledge: IMMEDIATELY

Cause: Using p0141, a changeover of the encoder data set is prepared that is illegal. In this firmware release, an encoder data set changeover is only permitted for the components in the actual topology.

Fault value (r0949, interpret decimal):

Incorrect EDS data set number.

See also: p0187 (Encoder 1 encoder data set number), p0188 (Encoder 2 encoder data set number), p0189 (Encoder 3 encoder data set number)

Remedy: Every encoder data set must be assigned its own dedicated DRIVE-CLiQ socket. The component numbers of the encoder interfaces (p0141) must have different values within a drive object.

The following must apply:

p0141[0] not equal to p0141[1] not equal to ... not equal to p0141[n]

A07514 (N) Drive: Data structure does not correspond to the interface module

Message value: -

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: The interface mode "SIMODRIVE 611 universal" was set (p2038 = 1) and the data structure does not correspond to this mode.

The following settings are possible, depending on the number of data sets:

Number of DDS/MDS (p0180/p0130): p0186

1/1: p0186[0] = 0

2/2: p0186[0] = 0, p0186[1] = 1

4/4: p0186[0] = 0, p0186[1] = 1, p0186[2] = 2, p0186[3] = 3

8/8: p0186[0] = 0, p0186[1] = 1, p0186[2] = 2 ... p0186[7] = 7

16/16: p0186[0] = 0, p0186[1] = 1, p0186[2] = 2 ... p0186[15] = 15

32/32: p0186[0] = 0, p0186[1] = 1, p0186[2] = 2 ... p0186[31] = 31

2/1: p0186[0, 1] = 0

4/2: p0186[0, 1] = 0, p0186[1, 2] = 1

8/4: p0186[0, 1] = 0, p0186[1, 2] = 1, p0186[3, 4] = 2, p0186[5, 6] = 3

16/8: p0186[0, 1] = 0, p0186[1, 2] = 1, p0186[3, 4] = 2 ... p0186[14, 15] = 7

32/16: p0186[0, 1] = 0, p0186[1, 2] = 1, p0186[3, 4] = 2 ... p0186[30, 31] = 15

4/1: p0186[0, 1, 2, 3] = 0

8/2: p0186[0, 1, 2, 3] = 0, p0186[4, 5, 6, 7] = 1

16/4: p0186[0, 1, 2, 3] = 0, p0186[4, 5, 6, 7] = 1, p0186[8, 9, 10, 11] = 2, p0186[12, 13, 14, 15] = 3

32/8: p0186[0, 1, 2, 3] = 0, p0186[4, 5, 6, 7] = 1, p0186[8, 9, 10, 11] = 2 ... p0186[28, 29, 30, 31] = 7

8/1: p0186[0...7] = 0

16/2: p0186[0...7] = 0, p0186[8...15] = 1

32/4: p0186[0...7] = 0, p0186[8...15] = 1, p0186[16...23] = 2, p0186[24...31] = 3

16/1: p0186[0...15] = 0

32/2: p0186[0...15] = 0, p0186[16...31] = 1

32/1: p0186[0...31] = 0

9/2: p0186[0...7] = 0, p0186[8] = 1

10/2: p0186[0...7] = 0, p0186[8, 9] = 1

12/2: p0186[0...7] = 0, p0186[8...11] = 1

See also: p0180 (Number of Drive Data Sets (DDS)), p0186 (Motor Data Sets (MDS) number), p2038 (IF1 PROFIdrive STW/ZSW interface mode)

Remedy: - check the data structure according to the possible settings mentioned in the cause.

- check the interface mode (p2038).

Reaction upon N: NONE

Acknowl. upon N: NONE

F07515 Drive: Power unit and motor incorrectly connected

Message value: %1

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: OFF2

Acknowledge: IMMEDIATELY

Cause: A power unit (via PDS) was assigned to a motor (via MDS) in a drive data set that is not connected in the target topology. It is possible that a motor has not been assigned to the power unit (p0131).

Fault value (r0949, interpret decimal):

Number of the incorrectly parameterized drive data set.

Remedy: - assign the drive data set to a combination of motor and power unit permitted by the target topology.
- adapt the target topology.
- if required, for a missing motor, recreate the component (drive Wizard).
See also: p0121 (Power unit component number), p0131 (Motor component number), p0186 (Motor Data Sets (MDS) number)

F07516 Drive: Re-commission the data set

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The assignment between the drive data set and motor data set (p0186) or between the drive data set and the encoder data set was modified (p0187). This is the reason that the drive data set must re-commissioned.
Fault value (r0949, interpret decimal):
Drive data set to be re-commissioned.
Remedy: Commission the drive data set specified in the fault value (r0949).

F07517 Drive: Encoder data set changeover incorrectly parameterized

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: In at least two drive data sets (DDS), the same motor data set (MDS) is assigned different encoder data sets (EDS) for the motor encoder. In various DDSs, it is not permissible for an MDS to have different motor encoders.
The following parameterization therefore results results in an error:
DDS0: p0186[0] = 0, p0187[0] = 0
DDS1: p0186[1] = 0, p0187[1] = 1
Fault value (r0949, interpret decimal):
The lower 16 bits indicate the first DDS. The upper 16 bits indicate the second DDS.
Remedy: Create two MDS with the same motor data in order to operate one motor with different motor encoders.
Example:
DDS0: p0186[0] = 0, p0187[0] = 0
DDS1: p0186[1] = 1, p0187[1] = 1

F07518 Drive: Motor data set changeover incorrectly parameterized

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The system has identified that two motor data sets were incorrectly parameterized.
Parameter r0313 (calculated from p0314, p0310, p0311), r0315 and p1982 may only have different values if the motor data sets are assigned different motors. p0827 is used to assign the motors and/contactors.
It is not possible to toggle between motor data sets.
Fault value (r0949, interpret hexadecimal):
xxxxyyyy:
xxxx: First DDS with assigned MDS, yyyy: Second DDS with assigned MDS
Remedy: Correct the parameterization of the motor data sets.

A07519 Drive: Motor changeover incorrectly parameterized

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: With the setting p0833.0 = 1, a motor changeover via the application is selected. This is the reason that p0827 must have different values in the appropriate motor data set.

Alarm value (r2124, interpret hexadecimal):

xxxxyyyy:

xxxx: First MDS, yyyy: Second MDS

Remedy: - parameterize the appropriate motor data sets differently (p0827).

- select the setting p0833.0 = 0 (motor changeover via the drive).

A07520 Drive: Motor cannot be changed over

Message value: %1
Message class: Application/technological function faulted (17)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The motor cannot be changed over.

Alarm value (r2124, interpret decimal):

1:

The contactor for the motor that is presently active cannot be opened, because for a synchronous motor, the speed (r0063) is greater than the speed at the start of field weakening (p0348). As long as r0063 > p0348, the current in the motor does not decay in spite of the pulses being suppressed.

2:

The "contactor opened" feedback signal was not detected within 1 s.

3:

The "contactor closed" feedback signal was not detected within 1 s.

Remedy: For alarm value = 1:

Set the speed lower than the speed at the start of field weakening (r0063 < p0348).

For alarm value = 2, 3:

Check the feedback signals of the contactor involved.

A07530 Drive: Drive Data Set DDS not present

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The selected drive data set is not available (p0837 > p0180). The drive data set was not changed over.

See also: p0180, p0820, p0821, p0822, p0823, p0824, r0837

Remedy: - select the existing drive data set.

- set up additional drive data sets.

A07531	**Drive: Command Data Set CDS not present**		
Message value:	-		
Message class:	Error in the parameterization / configuration / commissioning procedure (18)		
Drive object:	All objects		
Component:	None	**Propagation:**	GLOBAL
Reaction:	NONE		
Acknowledge:	NONE		
Cause:	The selected command data set is not available (p0836 > p0170). The command data set was not changed over. See also: p0810, p0811, r0836		
Remedy:	- select the existing command data set. - set up additional command data sets.		

A07541	**Drive: Data set changeover not possible**		
Message value:	-		
Message class:	Application/technological function faulted (17)		
Drive object:	A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC		
Component:	None	**Propagation:**	GLOBAL
Reaction:	NONE		
Acknowledge:	NONE		
Cause:	The selected drive data set changeover and the assigned motor changeover are not possible and are not carried out. For synchronous motors, the motor contactor may only be switched for actual speeds less than the speed at the start of field weakening (r0063 < p0348). See also: r0063, p0348		
Remedy:	Reduce the speed to below the speed at the start of field weakening (r0063 < p0348).		

A07550 (F, N)	**Drive: Not possible to reset encoder parameters**		
Message value:	%1		
Message class:	Hardware/software error (1)		
Drive object:	A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC		
Component:	None	**Propagation:**	GLOBAL
Reaction:	NONE		
Acknowledge:	NONE		
Cause:	When carrying out a factory setting (e.g. using p0970 = 1), it was not possible to reset the encoder parameters. The encoder parameters are directly read out of the encoder via DRIVE-CLiQ. Alarm value (r2124, interpret decimal): Component number of the encoder involved.		
Remedy:	- repeat the operation. - check the DRIVE-CLiQ connection.		
Reaction upon F:	Infeed: NONE (OFF1, OFF2) Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2) Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2) Hla: NONE (OFF1, OFF2, OFF3, STOP2)		
Acknowl. upon F:	IMMEDIATELY (POWER ON)		
Reaction upon N:	NONE		
Acknowl. upon N:	NONE		

F07551	**Drive encoder: No commutation angle information**		
Message value:	Fault cause: %1, drive data set: %2		
Message class:	Error in the parameterization / configuration / commissioning procedure (18)		
Drive object:	HLA, SERVO, SERVO_AC, SERVO_I_AC		
Component:	Encoder 1	**Propagation:**	GLOBAL
Reaction:	Servo: OFF2 (IASC/DCBRK) Hla: OFF2		
Acknowledge:	IMMEDIATELY (POWER ON)		

Cause: The commutation angle information is missing. This means that synchronous motors cannot be controlled (closed-loop control)

Fault value (r0949, interpret decimal):

yyyyxxxx dec: yyyy = fault cause, xxxx = drive data set

yyyy = 1 dec:

The motor encoder used does not supply an absolute commutation angle.

yyyy = 2 dec:

The selected ratio of the measuring gear does not match the motor pole pair number.

Remedy: For fault cause = 1:

- check the encoder parameterization (p0404).
- use an encoder with track C/D, EnDat interface of Hall sensors.
- use an encoder with sinusoidal A/B track for which the motor pole pair number (r0313) multiplied by the gear ratio (p0432/p0433) is less than the encoder pulse number (p0408) – or is an integer multiple of the encoder pulse number (p0408).
- activate the pole position identification routine (p1982 = 1).

For fault cause = 2:

- the quotient of the pole pair number divided by the ratio of the measuring gear must be an integer number: (p0314 * p0433) / p0432.

Note:

For operation with track C/D, this quotient must be less than 8.

See also: p0402 (Gearbox type selection), p0404 (Encoder configuration effective), p0432 (Gearbox factor encoder revolutions), p0433 (Gearbox factor motor/load revolutions)

F07551 Drive encoder: No commutation angle information

Message value: Fault cause: %1, drive data set: %2

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Encoder 1 **Propagation:** GLOBAL

Reaction: OFF2 (IASC/DCBRK)

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The commutation angle information is missing. This means that synchronous motors cannot be controlled (closed-loop control)

Fault value (r0949, interpret decimal):

yyyyxxxx dec: yyyy = fault cause, xxxx = drive data set

yyyy = 1 dec:

The motor encoder used does not supply an absolute commutation angle.

yyyy = 2 dec:

The selected ratio of the measuring gear does not match the motor pole pair number.

Remedy: For fault cause = 1:

- check the encoder parameterization (p0404).
- use an encoder with track C/D, EnDat interface of Hall sensors.
- use an encoder with sinusoidal A/B track for which the motor pole pair number (r0313) multiplied by the gear ratio (p0432/p0433) is less than the encoder pulse number (p0408) – or is an integer multiple of the encoder pulse number (p0408).
- activate the pole position identification routine (p1982 = 1) for motor encoders without absolute position information. Then, using an encoder adjustment (p1990), the angular commutation offset should be determined.

For fault cause = 2:

- the quotient of the pole pair number divided by the ratio of the measuring gear must be an integer number: (p0314 * p0433) / p0432.

Note:

For operation with track C/D, this quotient must be less than 8.

See also: p0402 (Gearbox type selection), p0404 (Encoder configuration effective), p0432 (Gearbox factor encoder revolutions), p0433 (Gearbox factor motor/load revolutions)

F07552 (A) Drive encoder: Encoder configuration not supported

Message value: Fault cause: %1, component number: %2, encoder data set: %3

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: Infeed: OFF2 (NONE, OFF1)

Servo: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)

Vector: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)

Hla: OFF2 (NONE, OFF1, OFF3, STOP2)

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The requested encoder configuration is not supported. Only bits may be requested in p0404 that are signaled as being supported by the encoder evaluation in r0456.

Fault value (r0949, interpret decimal):

ccccbbaa hex: cccc = fault cause, bb = component number, aa = encoder data set

cccc = 1: encoder sin/cos with absolute track (is supported by SME25).

cccc = 3: Squarewave encoder (this is supported by SMC30).

cccc = 4: sin/cos encoder (this is supported by SMC20, SMI20, SME20, SME25).

cccc = 10: DRIVE-CLiQ encoder (is supported by DQI).

cccc = 12: sin/cos encoder with reference mark (this is supported by SME20).

cccc = 15: Commutation with zero mark for separately excited synchronous motors with VECTORMV.

cccc = 23: Resolver (this is supported by SMC10, SMI10).

cccc = 65535: Other function (compare r0456 and p0404).

See also: p0404 (Encoder configuration effective), r0456 (Encoder configuration supported)

Remedy: - check the encoder parameterization (p0400, p0404).

- use the matching encoder evaluation (r0456).

Reaction upon A: NONE

Acknowl. upon A: NONE

F07553 (A) Drive encoder: Sensor Module configuration not supported

Message value: Encoder data set: %1, first incorrect bit: %2, incorrect parameter: %3

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: Infeed: OFF2 (NONE, OFF1)

Servo: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)

Vector: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)

Hla: OFF2 (NONE, OFF1, OFF3, STOP2)

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The Sensor Module does not support the requested configuration.

For incorrect p0430 (cc = 0), the following applies:

- in p0430 (requested functions), at least 1 bit was set that is not set in r0458 (supported functions) (exception: Bit 19, 28, 29, 30, 31).

- p1982 > 0 (pole position identification requested), but r0458.16 = 0 (pole position identification not supported).

For incorrect p0437 (cc = 1), the following applies:

- in p0437 (requested functions), at least 1 bit was set that is not set in r0459 (supported functions).

Fault value (r0949, interpret hexadecimal):

ddccbbaa hex

aa: encoder data set number

bb: first incorrect bit

cc: incorrect parameter
cc = 0: incorrect parameter is p0430
cc = 1: incorrect parameter is p0437
cc = 2: incorrect parameter is r0459
dd: reserved (always 0)

Remedy: - check the encoder parameterization (p0430, p0437).
- check the pole position identification routine (p1982).
- use the matching encoder evaluation (r0458, r0459).
See also: p0430, p0437, r0458, r0459, p1982

Reaction upon A: NONE
Acknowl. upon A: NONE

F07555 (A) Drive encoder: Configuration position tracking

Message value: Component number: %1, encoder data set: %2, drive data set: %3, fault cause: %4
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 1 **Propagation:** GLOBAL
Reaction: Infeed: OFF2 (NONE, OFF1)
Servo: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Vector: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Hla: OFF2 (NONE, OFF1, OFF3, STOP2)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: For position tracking, the configuration is not supported.
Position tracking can only be activated for absolute encoders.
For linear axes, it is not possible to simultaneously activate the position tracking for load and measuring gears.
Fault value (r0949, interpret hexadecimal):
ddccbbaa hex
aa = encoder data set
bb = component number
cc = drive data set
dd = fault cause
dd = 00 hex = 0 dec
An absolute encoder is not being used.
dd = 01 hex = 1 dec
Position tracking cannot be activated because the memory of the internal NVRAM is not sufficient or a Control Unit does not have an NVRAM.
dd = 02 hex = 2 dec
For a linear axis, the position tracking was activated for the load and measuring gear.
dd = 03 hex = 3 dec
Position tracking cannot be activated because position tracking with another gear ratio, axis type or tolerance window has already been detected for this encoder data set.
dd = 04 hex = 4 dec
A linear encoder is being used.
See also: p0404 (Encoder configuration effective), p0411 (Measuring gear configuration)
Remedy: For fault value 0:
- use an absolute encoder.
For fault value 1:
- use a Control Unit with sufficient NVRAM.
For fault value = 2, 4:
- if necessary, de-select the position tracking (p0411 for the measuring gear, p2720 for the load gear).
For fault value 3:
- Only activate position tracking of the load gear in the same encoder data set if the gear ratio (p2504, p2505), axis type (p2720.1) and tolerance window (p2722) are also the same. These parameters must be the same in all drive data sets, which use the same motor encoder (p187).

Reaction upon A: NONE
Acknowl. upon A: NONE

F07556 Measuring gear: Position tracking, maximum actual value exceeded

Message value: Component number: %1, encoder data set: %2
Message class: Actual position/speed value incorrect or not available (11)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: When the position tracking of the measuring gear is configured, the drive/encoder identifies a maximum possible absolute position actual value (r0483) that cannot be represented within 32 bits.

Maximum value: p0408 * p0412 * 2^p0419

Fault value (r0949, interpret decimal):

aaaayyxx hex: yy = component number, xx = encoder data set

See also: p0408, p0412 (Measuring gear absolute encoder rotary revolutions virtual), p0419 (Fine resolution absolute value Gx_XIST2 (in bits))

Remedy: - reduce the fine resolution (p0419).

- reduce the multiturn resolution (p0412).

See also: p0412 (Measuring gear absolute encoder rotary revolutions virtual), p0419 (Fine resolution absolute value Gx_XIST2 (in bits))

A07557 (F) Encoder 1: Reference point coordinate not in the permissible range

Message value: %1
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The reference point coordinate received when adjusting the encoder via connector input CI:p2599 lies outside the half of the encoder range and cannot be set as actual axis position. The maximum permissible value is displayed in the supplementary information.
Remedy: Set the reference point coordinate less than the value from the supplementary information.

See also: p2598 (EPOS reference point coordinate signal source)

Reaction upon F: OFF1 (OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

A07558 (F) Encoder 2: Reference point coordinate not in the permissible range

Message value: %1
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The reference point coordinate received when adjusting the encoder via connector input CI:p2599 lies outside the half of the encoder range and cannot be set as actual axis position. The maximum permissible value is displayed in the supplementary information.
Remedy: Set the reference point coordinate less than the value from the supplementary information.

See also: p2598 (EPOS reference point coordinate signal source)

Reaction upon F: OFF1 (OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

A07559 (F) Encoder 3: Reference point coordinate not in the permissible range

Message value: %1
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The reference point coordinate received when adjusting the encoder via connector input CI:p2599 lies outside the half of the encoder range and cannot be set as actual axis position. The maximum permissible value is displayed in the supplementary information.
Remedy: Set the reference point coordinate less than the value from the supplementary information.
See also: p2598 (EPOS reference point coordinate signal source)
Reaction upon F: OFF1 (OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

F07560 Drive encoder: Number of pulses is not to the power of two

Message value: Encoder data set: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: Infeed: OFF2 (NONE, OFF1)
Servo: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Vector: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Hla: OFF2 (NONE, OFF1, OFF3, STOP2)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: For rotary absolute encoders, the pulse number in p0408 must be to the power of two.
Fault value (r0949, interpret decimal):
The fault value includes the encoder data set number involved.
Remedy: - check the parameterization (p0408, p0404.1, r0458.5).
- upgrade the Sensor Module firmware if necessary

F07561 Drive encoder: Number of multiturn pulses is not to the power of two

Message value: Encoder data set: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: Infeed: OFF2 (NONE, OFF1)
Servo: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Vector: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Hla: OFF2 (NONE, OFF1, OFF3, STOP2)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The multiturn resolution in p0421 must be to the power of two.
Fault value (r0949, interpret decimal):
The fault value includes the encoder data set number involved.
Remedy: - check the parameterization (p0421, p0404.1, r0458.5).
- upgrade the Sensor Module firmware if necessary

F07562 (A) Drive, encoder: Position tracking, incremental encoder not possible

Message value: Fault cause: %1, component number: %2, encoder data set: %3
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: Infeed: OFF2 (NONE, OFF1)
Servo: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Vector: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Hla: OFF2 (NONE, OFF1, OFF3, STOP2)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The requested position tracking for incremental encoders is not supported.
Fault value (r0949, interpret hexadecimal):
ccccbbaa hex
aa = encoder data set
bb = component number
cccc = fault cause
cccc = 00 hex = 0 dec
The encoder type does not support the "Position tracking incremental encoder" function.
cccc = 01 hex = 1 dec
Position tracking cannot be activated because the memory of the internal NVRAM is not sufficient or a Control Unit does not have an NVRAM.
cccc = 04 hex = 4 dec
A linear encoder is used that does not support the "position tracking" function.
See also: p0404 (Encoder configuration effective), p0411 (Measuring gear configuration), r0456 (Encoder configuration supported)
Remedy: - check the encoder parameterization (p0400, p0404).
- use a Control Unit with sufficient NVRAM.
- if required, de-select position tracking for the incremental encoder (p0411.3 = 0).
Reaction upon A: NONE
Acknowl. upon A: NONE

F07563 (A) Drive encoder: XIST1_ERW configuration incorrect

Message value: Fault cause: %1, encoder data set: %2
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: Infeed: OFF2 (NONE, OFF1)
Servo: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Vector: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Hla: OFF2 (NONE, OFF1, OFF3, STOP2)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: An incorrect configuration was identified for the "Absolute position for incremental encoder" function.
Fault value (r0949, interpret decimal):
Fault cause:
1 (= 01 hex):
The "Absolute value for incremental encoder" function is not supported (r0459.13 = 0).
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
yyxx dec: yy = fault cause, xx = encoder data set
See also: r0459, p4652
Remedy: For fault value = 1:
- upgrade the Sensor Module firmware version.
- check the mode (p4652 = 1, 3 requires the property r0459.13 = 1).

Reaction upon A: NONE
Acknowl. upon A: NONE

A07565 (F, N) Drive: Encoder error in PROFIdrive encoder interface 1

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 1 **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: An encoder error was signaled for encoder 1 via the PROFIdrive encoder interface (G1_ZSW.15).
Alarm value (r2124, interpret decimal):
Error code from G1_XIST2, refer to the description regarding r0483.
Note:
This alarm is only output if p0480[0] is not equal to zero.
Encoder control word Gn_STW signal source (p0480[0...2], n = encoder 1, 2, 3)
Encoder status word Gn_ZSW (r0481[0...2], n = encoder 1, 2, 3)
Remedy: Acknowledge the encoder error using the encoder control word (G1_STW.15 = 1).
Reaction upon F: Infeed: NONE (OFF1, OFF2)
Servo: NONE (OFF1, OFF2, OFF3)
Vector: NONE (OFF1, OFF2, OFF3)
Hla: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A07566 (F, N) Drive: Encoder error in PROFIdrive encoder interface 2

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 2 **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: An encoder error was signaled for encoder 2 via the PROFIdrive encoder interface (G2_ZSW.15).
Alarm value (r2124, interpret decimal):
Error code from G2_XIST2, refer to the description regarding r0483.
Note:
This alarm is only output if p0480[1] is not equal to zero.
Encoder control word Gn_STW signal source (p0480[0...2], n = encoder 1, 2, 3)
Encoder status word Gn_ZSW (r0481[0...2], n = encoder 1, 2, 3)
Remedy: Acknowledge the encoder error using the encoder control word (G2_STW.15 = 1).
Reaction upon F: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A07567 (F, N) Drive: Encoder error in PROFIdrive encoder interface 3

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 3 **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: An encoder error was signaled for encoder 3 via the PROFIdrive encoder interface (G3_ZSW.15).
Alarm value (r2124, interpret decimal):
Error code from G3_XIST2, refer to the description regarding r0483.
Note:
This alarm is only output if p0480[2] is not equal to zero.
Encoder control word Gn_STW signal source (p0480[0...2], n = encoder 1, 2, 3)
Encoder status word Gn_ZSW (r0481[0...2], n = encoder 1, 2, 3)
Remedy: Acknowledge the encoder error using the encoder control word (G3_STW.15 = 1).
Reaction upon F: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A07569 (F) Enc identification active

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: During encoder identification (waiting) with p0400 = 10100, the encoder could still not be identified.
Either the wrong encoder has been installed or no encoder has been installed, the wrong encoder cable has been connected or no encoder cable has been connected to the Sensor Module, or the DRIVE-CLiQ component has not been connected.
Note:
Encoder identification must be supported by the encoder and is possible in the following cases:
- Encoder with EnDat interface.
- Encoder with SSI interface.
- Motor with DRIVE-CLiQ.
Remedy: - check and, if necessary, connect the encoder / encoder cable.
- check and, if necessary, establish the DRIVE-CLiQ connection.
- for SSI encoders, carry out the required operator actions (see the Function Manual).
- in the case of encoders that cannot be identified (e.g. encoders without EnDat interface), enter the correct encoder type in p0400.
Reaction upon F: Infeed: NONE (OFF1, OFF2)
Servo: NONE (OFF1, OFF2, OFF3)
Vector: NONE (OFF1, OFF2, OFF3)
Hla: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

N07570 (F) Encoder identification data transfer running

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: NONE
Cause: The encoder type was automatically determined using p0400 = 10100.

Note:

This fault causes the pulses to be suppressed - this is necessary to transfer the encoder parameterization to p0400 and the following.

See also: p0400 (Encoder type selection)

Remedy: Acknowledge the fault without taking additional measures.
Reaction upon F: OFF2
Acknowl. upon F: IMMEDIATELY

F07575 Drive: Motor encoder not ready

Message value: -
Message class: Actual position/speed value incorrect or not available (11)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 1 **Propagation:** GLOBAL
Reaction: Infeed: OFF2

Servo: OFF2 (ENCODER)

Vector: OFF2 (ENCODER)

Hla: OFF2 (ENCODER)

Acknowledge: IMMEDIATELY
Cause: The motor encoder signals that it is not ready.

- initialization of encoder 1 (motor encoder) was unsuccessful.
- the function "parking encoder" is active (encoder control word G1_STW.14 = 1).
- the encoder interface (Sensor Module) is deactivated (p0145).
- the Sensor Module is defective.

Remedy: Evaluate other queued faults via encoder 1.

A07576 Drive: Encoderless operation due to a fault active

Message value: -
Message class: Actual position/speed value incorrect or not available (11)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: Encoderless operation is active due to a fault (r1407.13 = 1).

Note:

The behavior for faults has been set to ENCODER fault response in p0491.

See also: p0491 (Motor encoder fault response ENCODER)

Remedy:
- remove the cause of a possible encoder fault.
- carry out a POWER ON (switch-off/switch-on) for all components.

A07577 (F) Encoder 1: Measuring probe evaluation not possible

Message value: %1
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: When evaluating the measuring probe, an error occurred.
Alarm value (r2124, interpret decimal):
6: The input terminal for the measuring probe is not set.
4098: Error when initializing the measuring probe.
4100: The measuring pulse frequency is too high.
4200: The PROFIBUS clock cycle is not a multiple of integer of the position controller clock cycle.
Remedy: Deactivate the measuring probe evaluation (BI: p2509 = 0 signal).
For alarm value = 6:
Set the input terminal for the measuring probe (p0488, p0489 or p2517, p2518).
For alarm value = 4098:
Check the Control Unit hardware.
For alarm value = 4100:
Reduce the frequency of the measuring pulses at the measuring probe.
For alarm value = 4200:
Set the clock cycle ratio between the PROFIBUS clock cycle and the position controller clock cycle to an integer multiple.
Reaction upon F: OFF1
Acknowl. upon F: IMMEDIATELY

A07578 (F) Encoder 2: Measuring probe evaluation not possible

Message value: %1
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: When evaluating the measuring probe, an error occurred.
Alarm value (r2124, interpret decimal):
6: The input terminal for the measuring probe is not set.
4098: Error when initializing the probe.
4100: The measuring pulse frequency is too high.
4200: The PROFIBUS clock cycle is not a multiple of integer of the position controller clock cycle.
Remedy: Deactivate the measuring probe evaluation (BI: p2509 = 0 signal).
For alarm value = 6:
Set the input terminal for the measuring probe (p0488, p0489 or p2517, p2518).
For alarm value = 4098:
Check the Control Unit hardware.
For alarm value = 4100:
Reduce the frequency of the measuring pulses at the measuring probe.
For alarm value = 4200:
Set the clock cycle ratio between the PROFIBUS clock cycle and the position controller clock cycle to an integer multiple.
Reaction upon F: OFF1
Acknowl. upon F: IMMEDIATELY

A07579 (F) Encoder 3: Measuring probe evaluation not possible

Message value: %1
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: When evaluating the measuring probe, an error occurred.
Alarm value (r2124, interpret decimal):
6: The input terminal for the measuring probe is not set.
4098: Error when initializing the probe.
4100: The measuring pulse frequency is too high.
4200: The PROFIBUS clock cycle is not a multiple of integer of the position controller clock cycle.
Remedy: Deactivate the measuring probe evaluation (BI: p2509 = 0 signal).
For alarm value = 6:
Set the input terminal for the measuring probe (p0488, p0489 or p2517, p2518).
For alarm value = 4098:
Check the Control Unit hardware.
For alarm value = 4100:
Reduce the frequency of the measuring pulses at the measuring probe.
For alarm value = 4200:
Set the clock cycle ratio between the PROFIBUS clock cycle and the position controller clock cycle to an integer multiple.
Reaction upon F: OFF1
Acknowl. upon F: IMMEDIATELY

A07580 (F, N) Drive: No Sensor Module with matching component number

Message value: Encoder data set: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: A Sensor Module with the component number specified in p0141 was not found.
Alarm value (r2124, interpret decimal):
Encoder data set involved (index of p0141).
Remedy: Correct parameter p0141.
Reaction upon F: Infeed: OFF1 (NONE, OFF2)
Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Hla: OFF1 (NONE, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

A07581 (F) Encoder 1: Position actual value preprocessing error

Message value: -
Message class: Actual position/speed value incorrect or not available (11)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: Encoder 1 **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: An error has occurred during the position actual value preprocessing.

Remedy: Check the encoder for the position actual value preprocessing.
See also: p2502 (LR encoder assignment)
Reaction upon F: OFF1 (OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

A07582 (F) Encoder 2: Position actual value preprocessing error

Message value: -
Message class: Actual position/speed value incorrect or not available (11)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: Encoder 2 **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: An error has occurred during the position actual value preprocessing.
Remedy: Check the encoder for the position actual value preprocessing.
See also: p2502 (LR encoder assignment)
Reaction upon F: OFF1 (OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

A07583 (F) Encoder 3: Position actual value preprocessing error

Message value: -
Message class: Actual position/speed value incorrect or not available (11)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: Encoder 3 **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: An error has occurred during the position actual value preprocessing.
Remedy: Check the encoder for the position actual value preprocessing.
See also: p2502 (LR encoder assignment)
Reaction upon F: OFF1 (OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

A07584 Encoder 1: Position setting value activated

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: Encoder 1 **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: While the binector input p2514 has a 1 signal, the position actual value is set to the value received via connector input p2515. A possible system deviation cannot be corrected.
Remedy: Not necessary.
The alarm is automatically withdrawn with binector input p2514 = 0 signal.

A07585 Encoder 2: Position setting value activated

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: Encoder 2 **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: While the binector input p2514 has a 1 signal, the position actual value is set to the value received via connector input p2515. A possible system deviation cannot be corrected.
Remedy: Not necessary.
The alarm is automatically withdrawn with binector input p2514 = 0 signal.

A07586 Encoder 3: Position setting value activated

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: Encoder 3 **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: While the binector input p2514 has a 1 signal, the position actual value is set to the value received via connector input p2515. A possible system deviation cannot be corrected.
Remedy: Not necessary.
The alarm is automatically withdrawn with binector input p2514 = 0 signal.

A07587 Encoder 1: Position actual value preprocessing does not have a valid encoder

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: Encoder 1 **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The following problem has occurred during the position actual value preprocessing.
- an encoder data set has been assigned, however, the encoder data set does not contain any encoder data (p0400 = 0) or invalid data (e.g. p0408 = 0).
Remedy: Check the drive data sets, encoder data sets.
See also: p0187 (Encoder 1 encoder data set number), p0188 (Encoder 2 encoder data set number), p0189 (Encoder 3 encoder data set number), p0400 (Encoder type selection), p2502 (LR encoder assignment)

A07588 Encoder 2: Position actual value preprocessing does not have a valid encoder

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: Encoder 2 **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The following problem has occurred during the position actual value preprocessing.
- an encoder data set has been assigned, however, the encoder data set does not contain any encoder data (p0400 = 0) or invalid data (e.g. p0408 = 0).
Remedy: Check the drive data sets, encoder data sets.
See also: p0187 (Encoder 1 encoder data set number), p0188 (Encoder 2 encoder data set number), p0189 (Encoder 3 encoder data set number), p0400 (Encoder type selection), p2502 (LR encoder assignment)

A07589 Encoder 3: Position actual value preprocessing does not have a valid encoder

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: Encoder 3 **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The following problem has occurred during the position actual value preprocessing.
- an encoder data set has been assigned, however, the encoder data set does not contain any encoder data (p0400 = 0) or invalid data (e.g. p0408 = 0).
Remedy: Check the drive data sets, encoder data sets.
See also: p0187 (Encoder 1 encoder data set number), p0188 (Encoder 2 encoder data set number), p0189 (Encoder 3 encoder data set number), p0400 (Encoder type selection), p2502 (LR encoder assignment)

A07590 (F) Encoder 1: Drive Data Set changeover in operation

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: A Drive Data Set changeover (DDS) with a change of the mechanical relationships and the encoder assignment (p2502) was requested in operation.
Remedy: To changeover the drive data set, initially, exit the "operation" mode.
Reaction upon F: OFF1 (OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

A07591 (F) Encoder 2: Drive Data Set changeover in operation

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: A Drive Data Set changeover (DDS) with a change of the mechanical relationships and the encoder assignment (p2502) was requested in operation.
Remedy: To changeover the drive data set, initially, exit the "operation" mode.
Reaction upon F: OFF1 (OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

A07592 (F) Encoder 3: Drive Data Set changeover in operation

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: A Drive Data Set changeover (DDS) with a change of the mechanical relationships and the encoder assignment (p2502) was requested in operation.
Remedy: To changeover the drive data set, initially, exit the "operation" mode.
Reaction upon F: OFF1 (OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

A07593 (F, N) Encoder 1: Value range for position actual value exceeded

Message value: %1
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The value range (-2147483648 ... 2147483647) for the position actual value representation was exceeded.

When the overflow occurs, the "referenced" or "absolute encoder adjusted" status is reset.

Alarm value (r2124, interpret decimal):

1: The position actual value (r2521) has exceeded the value range.

2: The encoder position actual value Gn_XIST2 (r0483) or the absolute value after the load gear (r2723) has exceeded the value range.

3: The maximum encoder value multiplied by the factor to convert the absolute position (r0483, r2723) from increments to length units (LU) has exceeded the value range for displaying the position actual value.

Remedy: If required, reduce the traversing range or position resolution.
For alarm value = 3:
Reducing the position resolution and conversion factor:
- reduce the length unit (LU) per load revolution for rotary encoders (p2506).
- increase the fine resolution of absolute position actual values (p0419).

Reaction upon F: OFF1 (OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A07594 (F, N) Encoder 2: Value range for position actual value exceeded

Message value: %1
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The value range (-2147483648 ... 2147483647) for the position actual value representation was exceeded.
When the overflow occurs, the "referenced" or "absolute encoder adjusted" status is reset.
Alarm value (r2124, interpret decimal):
1: The position actual value (r2521) has exceeded the value range.
2: The encoder position actual value Gn_XIST2 (r0483) or the absolute value after the load gear (r2723) has exceeded the value range.
3: The maximum encoder value times the factor to convert the absolute position (r0483 and/or r2723) from increments to length units (LU) has exceeded the value range for displaying the position actual value.
Remedy: If required, reduce the traversing range or position resolution.
For alarm value = 3:
Reducing the position resolution and conversion factor:
- reduce the length unit (LU) per load revolution for rotary encoders (p2506).
- increase the fine resolution of absolute position actual values (p0419).

Reaction upon F: OFF1 (OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A07595 (F, N) Encoder 3: Value range for position actual value exceeded

Message value: %1
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The value range (-2147483648 ... 2147483647) for the position actual value representation was exceeded.
When the overflow occurs, the "referenced" or "absolute encoder adjusted" status is reset.
Alarm value (r2124, interpret decimal):
1: The position actual value (r2521) has exceeded the value range.
2: The encoder position actual value Gn_XIST2 (r0483) or the absolute value after the load gear (r2723) has exceeded the value range.
3: The maximum encoder value times the factor to convert the absolute position (r0483 and/or r2723) from increments to length units (LU) has exceeded the value range for displaying the position actual value.
Remedy: If required, reduce the traversing range or position resolution.
For alarm value = 3:
Reducing the position resolution and conversion factor:
- reduce the length unit (LU) per load revolution for rotary encoders (p2506).
- increase the fine resolution of absolute position actual values (p0419).

Reaction upon F: OFF1 (OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A07596 (F, N) Encoder 1: Reference function interrupted

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: An activated reference function (reference mark search or measuring probe evaluation) was interrupted.
- an encoder fault has occurred (Gn_ZSW.15 = 1).
- position actual value was set during an activated reference function.
- simultaneously activate reference mark search and measuring probe evaluation (BI: p2508 and BI: p2509 = 1 signal).
- activated reference function (reference mark search or measuring probe evaluation) was deactivated (BI: p2508 and BI: p2509 = 0 signal).

Remedy: - check the causes and resolve.
- reset the control (BI: p2508 and BI: p2509 = 0 signal) and activate the requested function.

Reaction upon F: OFF1 (OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A07597 (F, N) Encoder 2: Reference function interrupted

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: An activated reference function (reference mark search or measuring probe evaluation) was interrupted.
- an encoder fault has occurred (Gn_ZSW.15 = 1).
- position actual value was set during an activated reference function.
- simultaneously activate reference mark search and measuring probe evaluation (BI: p2508 and BI: p2509 = 1 signal).
- activated reference function (reference mark search or measuring probe evaluation) was deactivated (BI: p2508 and BI: p2509 = 0 signal).

Remedy: - check the causes and resolve.
- reset the control (BI: p2508 and BI: p2509 = 0 signal) and activate the requested function.

Reaction upon F: OFF1 (OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A07598 (F, N)	**Encoder 3: Reference function interrupted**		
Message value:	-		
Message class:	Application/technological function faulted (17)		
Drive object:	SERVO, SERVO_AC, VECTOR, VECTOR_AC		
Component:	None	**Propagation:**	GLOBAL
Reaction:	NONE		
Acknowledge:	NONE		

Cause: An activated reference function (reference mark search or measuring probe evaluation) was interrupted.

- an encoder fault has occurred (Gn_ZSW.15 = 1).

- position actual value was set during an activated reference function.

- simultaneously activate reference mark search and measuring probe evaluation (BI: p2508 and BI: p2509 = 1 signal).

- activated reference function (reference mark search or measuring probe evaluation) was deactivated (BI: p2508 and BI: p2509 = 0 signal).

Remedy: - check the causes and resolve.

- reset the control (BI: p2508 and BI: p2509 = 0 signal) and activate the requested function.

Reaction upon F: OFF1 (OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

F07599 (A)	**Encoder 1: Adjustment not possible**		
Message value:	Drive data set: %1		
Message class:	Error in the parameterization / configuration / commissioning procedure (18)		
Drive object:	SERVO, SERVO_AC, VECTOR, VECTOR_AC		
Component:	Encoder 1	**Propagation:**	GLOBAL
Reaction:	OFF1 (NONE, OFF2, OFF3)		
Acknowledge:	IMMEDIATELY		

Cause: The maximum encoder value multiplied by the factor to convert the absolute position (r0483 and/or r2723) from increments to length units (LU - Length Unit) has exceeded the value range (-2147483648 ... 2147483647) for displaying the position actual value.

Fault value (r0949, interpret decimal):

Number of the drive data set.

Remedy: If the value for the maximum possible absolute position (LU) is greater than 4294967296, then it is not possible to make an adjustment due to an overflow.

For rotary encoders, the maximum possible absolute position (LU) is calculated as follows:

1. Motor encoder without position tracking:

p2506 * p0433 * p2505 / (p0432 * p2504)

p2506 * p0433 * p2505 * p0421 / (p0432 * p2504) for multiturn encoders

2. Motor encoder with position tracking for measuring gear

p2506 * p0412 * p2505 / p2504

3. Motor encoder with position tracking for load gear:

p2506 * p2721 * p0433 / p0432

4. Motor encoder with position tracking for load and measuring gear:

p2506 * p2721

5. Direct encoder without position tracking:

p2506 * p0433 / p0432

p2506 * p0433 * p0421 / p0432 for multiturn encoders

6. Direct encoder with position tracking for measuring gear:

p2506 * p0412

For a linear encoder, the following must be maintained:

- p0407 * p2503 / (2^p0419 * 10^7) <= 1.0

Reaction upon A: NONE
Acknowl. upon A: NONE

F07600 (A)	**Encoder 2: Adjustment not possible**
Message value:	Drive data set: %1
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Drive object:	SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component:	Encoder 2 **Propagation:** GLOBAL
Reaction:	OFF1 (NONE, OFF2, OFF3)
Acknowledge:	IMMEDIATELY
Cause:	The maximum encoder value times the factor to convert the absolute position (r0483 and/or r2723) from increments to length units (LU) has exceeded the value range (-2147483648 ... 2147483647) for displaying the position actual value.
Remedy:	If the value for the maximum possible absolute position (LU) is greater than 4294967296, then it is not possible to make an adjustment due to an overflow. For rotary encoders, the maximum possible absolute position (LU) is calculated as follows: 1. Motor encoder without position tracking: p2506 * p0433 * p2505 / (p0432 * p2504) p2506 * p0433 * p2505 * p0421 / (p0432 * p2504) for multiturn encoders 2. Motor encoder with position tracking for measuring gear p2506 * p0412 * p2505 / p2504 3. Motor encoder with position tracking for load gear: p2506 * p2721 * p0433 / p0432 4. Motor encoder with position tracking for load and measuring gear: p2506 * p2721 5. Direct encoder without position tracking: p2506 * p0433 / p0432 p2506 * p0433 * p0421 / p0432 for multiturn encoders 6. Direct encoder with position tracking for measuring gear: p2506 * p0412 For a linear encoder, the following must be maintained: - p0407 * p2503 / (2^p0419 * 10^7) <= 1.0
Reaction upon A:	NONE
Acknowl. upon A:	NONE

F07601 (A)	**Encoder 3: Adjustment not possible**
Message value:	Drive data set: %1
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Drive object:	SERVO, SERVO_AC, VECTOR, VECTOR_AC
Component:	Encoder 3 **Propagation:** GLOBAL
Reaction:	OFF1 (NONE, OFF2, OFF3)
Acknowledge:	IMMEDIATELY
Cause:	The maximum encoder value times the factor to convert the absolute position (r0483 and/or r2723) from increments to length units (LU) has exceeded the value range (-2147483648 ... 2147483647) for displaying the position actual value.
Remedy:	If the value for the maximum possible absolute position (LU) is greater than 4294967296, then it is not possible to make an adjustment due to an overflow. For rotary encoders, the maximum possible absolute position (LU) is calculated as follows: 1. Motor encoder without position tracking: p2506 * p0433 * p2505 / (p0432 * p2504) p2506 * p0433 * p2505 * p0421 / (p0432 * p2504) for multiturn encoders 2. Motor encoder with position tracking for measuring gear p2506 * p0412 * p2505 / p2504 3. Motor encoder with position tracking for load gear: p2506 * p2721 * p0433 / p0432 4. Motor encoder with position tracking for load and measuring gear: p2506 * p2721

5. Direct encoder without position tracking:
p2506 * p0433 / p0432
p2506 * p0433 * p0421 / p0432 for multiturn encoders
6. Direct encoder with position tracking for measuring gear:
p2506 * p0412
For a linear encoder, the following must be maintained:
- p0407 * p2503 / (2^p0419 * 10^7) <= 1.0

Reaction upon A: NONE
Acknowl. upon A: NONE

F07750 Drive: Parameter invalid

Message value: Parameter: %1, Index: %2, fault cause: %3
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA
Component: Control Unit (CU) **Propagation:** DRIVE
Reaction: OFF1 (OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: A parameter value has been set that is not valid, or was not correctly entered.
Fault value (r0949, interpret hexadecimal):
ccbbaaaa hex: cc = fault cause, bb = index, aaaa = parameter
cc = 0: parameter has the value zero that is not permitted.
cc = 1: piston rod greater than piston diameter.
cc = 2: cylinder without piston rod (p0311 = 0 and p0312 = 0).
cc = 3: position overflow possible in the traversing range (check p0407 and p0313 and if required, reduce p0418).
Remedy: Set the specified parameters to a correct value.

F07751 Drive: valve does not respond

Message value: -
Message class: General drive fault (19)
Drive object: HLA
Component: Control Unit (CU) **Propagation:** DRIVE
Reaction: OFF2 (NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY
Cause: A valve with a valve feedback signal was parameterized (p0218.2 = 1), however the valve does not follow the setpoint.
Remedy: - correct the configuration for the valve without valve feedback signal (p0218.2 = 0).
- check the valve natural frequency (p0216).
- for the incorrect sign, invert the valve actual value (p0218.3).
- check the valve and valve connection.

F07752 (A) Drive: Piston position not possible

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA
Component: Control Unit (CU) **Propagation:** DRIVE
Reaction: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The piston was calibrated (p0476 not equal to 0) and the absolute position is available (p1407.3 = 1). However, the piston position (r0094) is not plausible (negative or higher than the stroke in p0313).

Remedy: - check position inversion (p0410.1).

- check direction convention: piston position (r0094) must be zero, if the piston is located at the A side. When moving from the A to the B side, velocity and position increase must be positive.

- check the piston calibration, and if required, recalibrate the piston with the piston at the A side (p1909.1 = 1).

- when replacing the encoder, recalibrate the piston.

- when shifting the machine zero point, recalibrate the piston.

Note:

Before acknowledging the fault, set p0476 = 0. Then calibrate the piston again (p1909.1 = 1 with the piston completely retracted or set p1959.2 = 1 and p1960 = 1).

See also: r0094, p0476 (Piston zero point calibration value)

Reaction upon A: NONE

Acknowl. upon A: NONE

F07753 (N, A) Drive: No valid pressure actual value available

Message value: -

Message class: General drive fault (19)

Drive object: HLA

Component: Control Unit (CU) **Propagation:** DRIVE

Reaction: OFF2 (NONE, OFF1, OFF3)

Acknowledge: IMMEDIATELY

Cause: - the "force controller", "force limiting" or "stiction compensation" is activated (p1400), and at least one of the two required pressure sensors for pressure actual value A or B is not supplying a valid value. The two pressure actual values A and B are required for the functions listed above.

- the system pressure adaptation function for the speed controller is activated (p1400.15 = 1) and no system pressure measured value (r0069) is available. A system pressure measured value is required for this function.

Remedy: - check pressure sensors and wiring for pressure actual values A and B (X241 or X242).

- check offset correction values for pressure actual values A and B (p0241, p0243).

- if required, deselect the function "force controller", "force limiting" or "stiction compensation" (p1400).

Reaction upon N: NONE

Acknowl. upon N: NONE

Reaction upon A: NONE

Acknowl. upon A: NONE

F07754 Drive: Incorrect shutoff valve configuration

Message value: %1

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Control Unit (CU) **Propagation:** GLOBAL

Reaction: OFF2

Acknowledge: IMMEDIATELY (POWER ON)

Cause: An incorrect shutoff valve configuration was detected.

Fault value (r0949, interpret decimal):

100:

Enable Safety Integrated (p9601/p9801), but p0218.0 = 0 (shutoff valve not available).

101:

The manipulated variable inhibit time is set less than the wait time to evaluate the feedback signal contacts when switching on the shutoff valve (p0230 < p9625[0]/p9825[0]).

102:

The manipulated variable inhibit time is set less than the wait time to evaluate the feedback signal contacts when switching off the shutoff valve (p0230 < p9625[1]/p9825[1]).

Remedy:	For fault value = 100:
	Check the enable of Safety Integrated and the shutoff valve (p9601/p9801, p0218.0).
	For fault value = 101:
	Set the manipulated variable inhibit time higher than the wait time to evaluate the feedback signal contacts when switching on the shutoff valve (p0230 > p9625[0]/p9825[0]).
	For fault value = 102:
	Set the manipulated variable inhibit time higher than the wait time to evaluate the feedback signal contacts when switching off the shutoff valve (p0230 > p9625[1]/p9825[1]).
	See also: p0230, p9625 (SI HLA shutoff valve wait time (CU)), p9825 (SI HLA shutoff valve wait time (MM))

F07755 (N, A) Drive: travel to fixed end stop without force controller

Message value: -
Message class: Application/technological function faulted (17)
Drive object: HLA
Component: Motor **Propagation:** DRIVE
Reaction: OFF3 (NONE, OFF1, OFF2)
Acknowledge: IMMEDIATELY
Cause: The function "Travel to fixed end stop" (p1545) was selected, although no "Force controller" or no "Force limiting" has been activated (p1400). With these settings, the drive would be traversed with maximum force against the end stop.
Remedy:
- if required, deactivate the "Travel to end stop" function (p1545).
- activate the force controller (p1400.14 = 1).

or

- activate force limiting, mode 1 or mode 2 (p1400.0 = 1, p1400.1 = 1).

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F07756 Drive: Filter natural frequency > Shannon frequency

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA
Component: Motor **Propagation:** DRIVE
Reaction: NONE (OFF1, OFF2, OFF3)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: One of the filter natural frequencies is greater than the Shannon frequency.
The Shannon frequency is calculated according to the following formula: 0.5 / p0115[0]
Fault value (r0949, interpret hexadecimal):
Bit 0: Manipulated variable filter 1 (p1658, p1660)
Bit 1: Manipulated variable filter 2 (p1663, p1665)
Bit 3: Manipulated variable filter (p1800, p1805)
Bit 4: Precontrol filter (p1721, p1727)
Remedy:
- reduce the numerator or denominator natural frequency of the current setpoint filter involved.
- reduce controller sampling time (p0115[0]).
- deactivate the filter involved

F07800	**Drive: No power unit present**
Message value:	-
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Drive object:	A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Power Module **Propagation:** GLOBAL
Reaction:	NONE
Acknowledge:	IMMEDIATELY
Cause:	The power unit parameters cannot be read or no parameters are stored in the power unit. It is possible that the DRIVE-CLiQ cable between the Control Unit and power unit is interrupted or defective. Note: This fault also occurs if an incorrect topology was selected in the commissioning tool and this parameterization is then downloaded to the Control Unit. See also: r0200 (Power unit code number actual)
Remedy:	- carry out a POWER ON (switch-off/switch-on) for all components. - check the DRIVE-CLiQ cable between the Control Unit and power unit. - check the power unit and replace if necessary. - check the Control Unit, and if required replace it. - after correcting the topology, the parameters must be again downloaded using the commissioning tool.

F07801	**Drive: Motor overcurrent**
Message value:	-
Message class:	Motor overload (8)
Drive object:	SERVO, SERVO_AC, SERVO_I_AC
Component:	Motor **Propagation:** GLOBAL
Reaction:	OFF2 (NONE, OFF1, OFF3)
Acknowledge:	IMMEDIATELY
Cause:	The permissible motor limit current was exceeded. - effective current limit set too low. - current controller not correctly set. - motor was braked with an excessively high stall torque correction factor. - U/f operation: Up ramp was set too short or the load is too high. - U/f operation: Short-circuit in the motor cable or ground fault. - U/f operation: Motor current does not match the current of Motor Module. Note: Synchronous motor: Limit current= 1.3 x p0323 Induction motor: Limit current= 1.3 x r0209
Remedy:	- check the current limits (p0323, p0640). - check the current controller (p1715, p1717). - reduce the stall torque correction factor (p0326). - increase the up ramp (p1318) or reduce the load. - check the motor and motor cables for short-circuit and ground fault. - check the Motor Module and motor combination.

F07801 Drive: Motor overcurrent

Message value: -
Message class: Motor overload (8)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Motor **Propagation:** GLOBAL
Reaction: OFF2 (NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY
Cause: The permissible motor limit current was exceeded.
- effective current limit set too low.
- current controller not correctly set.
- U/f operation: Up ramp was set too short or the load is too high.
- U/f operation: Short-circuit in the motor cable or ground fault.
- U/f operation: Motor current does not match current of power unit.
- Switch to rotating motor without flying restart function (p1200).

Note:
Limit current = 2 x minimum (p0640, 4 x p0305 x p0306) >= 2 x p0305 x p0306

Remedy:
- check the current limits (p0640).
- vector control: Check the current controller (p1715, p1717).
- U/f control: Check the current limiting controller (p1340 ... p1346).
- increase the up ramp (p1120) or reduce the load.
- check the motor and motor cables for short-circuit and ground fault.
- check the motor for the star-delta configuration and rating plate parameterization.
- check the power unit and motor combination.
- Choose "flying restart" function (p1200) if switched to rotating motor.

F07802 Drive: Infeed or power unit not ready

Message value: -
Message class: Infeed faulted (13)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2 (NONE)
Acknowledge: IMMEDIATELY
Cause: After an internal switch-on command, the infeed or drive does not signal ready.
- monitoring time is too short.
- DC link voltage is not present.
- associated infeed or drive of the signaling component is defective.
- supply voltage incorrectly set.

Remedy:
- increase the monitoring time (p0857).
- ensure that there is a DC link voltage. Check the DC link busbar. Enable the infeed.
- replace the associated infeed or drive of the signaling component.
- check the line supply voltage setting (p0210).

See also: p0857 (Power unit monitoring time)

A07805 (N) Infeed: Power unit overload I2t

Message value: -
Message class: Power electronics faulted (5)
Drive object: A_INF, B_INF, R_INF, S_INF
Component: Power Module **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The alarm threshold for I2t overload (p0294) of the power unit has been exceeded.
Remedy:
- reduce the continuous load.
- adapt the load duty cycle.

Reaction upon N: NONE
Acknowl. upon N: NONE

A07805 (N) Drive: Power unit overload I2t

Message value: -
Message class: Power electronics faulted (5)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The alarm threshold for I2t overload (p0294) of the power unit has been exceeded.
The response parameterized in p0290 becomes active.
See also: p0290 (Power unit overload response)
Remedy: - reduce the continuous load.
- adapt the load duty cycle.
- check the assignment of the rated currents of the motor and Motor Module.
Reaction upon N: NONE
Acknowl. upon N: NONE

F07807 Drive: Short-circuit/ground fault detected

Message value: %1
Message class: Ground fault / inter-phase short-circuit detected (7)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Motor **Propagation:** GLOBAL
Reaction: OFF2 (NONE)
Acknowledge: IMMEDIATELY
Cause: A phase-phase short-circuit or ground fault was detected at the motor-side output terminals of the converter.
Fault value (r0949, interpret decimal):
1: Short-circuit, phase UV.
2: Short-circuit, phase UW.
3: Short-circuit, phase VW.
4: Ground fault with overcurrent.
1yxxx: Ground fault with current in phase U detected (y = pulse number, xxxx = component of the current in phase V in per mille).
2yxxx: Ground fault with current in phase V detected (y = pulse number, xxxx = component of the current in phase U in per mille).
Note:
Also when interchanging the line and motor cables is identified as a motor-side short circuit.
The ground fault test only functions when the motor is stationary.
Connecting to a motor that is either not de-energized or partially de-energized is possibly detected as ground fault.
Remedy: - check the motor-side converter connection for a phase-phase short-circuit.
- rule-out interchanged line and motor cables.
- check for a ground fault.
For a ground fault the following applies:
- do not enable the pulses when connecting to a rotating motor without the "Flying restart" function activated (p1200).
- increase the de-energization time (p0347).
- increase pulse suppression delay time (p1228) to ensure standstill.
- if required, deactivate the monitoring (p1901).

F07808 (A) HF Damping Module: damping not ready

Message value: New message: %1
Message class: Power electronics faulted (5)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2 (NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY
Cause: When switching on or in the switched-on state, the HF Damping Module does not return a ready signal.

Remedy: - check the DRIVE-CLiQ wiring to the HF Damping Module.
- check the 24 V supply voltage.
- if required, replace the HF Damping Module.
Note:
HF Damping Module
Reaction upon A: NONE
Acknowl. upon A: NONE

F07810 Drive: Power unit EEPROM without rated data

Message value: -
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: No rated data are stored in the power unit EEPROM.
See also: p0205, r0206, p0206, r0207, p0207, r0208, p0208, r0209, p0209
Remedy: Replace the power unit or inform Siemens Customer Service.

F07815 Drive: Power unit has been changed

Message value: Parameter: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF
Component: Power Module **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The code number of the actual power unit does not match the saved number. This only occurs if the comparator in p9906 or p9908 is not at 2 (low) or 3 (minimum).
Fault value (r0949, interpret decimal):
Number of the incorrect parameter.
See also: r0200 (Power unit code number actual), p0201 (Power unit code number)
Remedy: Connect the original power unit and switch on the Control Unit again (POWER ON) or set p0201 to r0200 and exit commissioning with p0010 = 0.
For infeeds, the following applies:
Line reactors or line filters must be used that are specified for the new power unit. A line supply and DC link identification routine (p3410 = 5) must then be carried out. It is not possible to change the power unit without re-commissioning the system if the type of infeed (A_Infeed, B_Infeed, S_Infeed), the type of construction/design (booksize, chassis) or the voltage class differ between the old and new power units.
For inverters, the following applies:
If the new power unit is accepted, then if required, the current limit (p0640) can be reduced by a lower maximum current of the power unit (r0209) (torque limits stay the same).
If not only the power unit is changed, but also the motor, then the motor must be re-commissioned (e.g. using p0010 = 1). This is also necessary if motor data is still to be downloaded via DRIVE-CLiQ.
See also: r0200 (Power unit code number actual)

F07815 Drive: Power unit has been changed

Message value: Parameter: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: Power Module **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The code number of the actual power unit does not match the saved number. This only occurs if the comparator in p9906 or p9908 is not at 2 (low) or 3 (minimum).
Fault value (r0949, interpret decimal):
Number of the incorrect parameter.
See also: r0200 (Power unit code number actual), p0201 (Power unit code number)

Remedy: Connect the original power unit and switch on the Control Unit again (POWER ON) or set p0201 to r0200 and exit commissioning with p0010 = 0.

For infeeds, the following applies:

Line reactors or line filters must be used that are specified for the new power unit. A line supply and DC link identification routine (p3410 = 5) must then be carried out. It is not possible to change the power unit without re-commissioning the system if the type of infeed (A_Infeed, B_Infeed, S_Infeed), the type of construction/design (booksize, chassis) or the voltage class differ between the old and new power units.

For inverters, the following applies:

If the new power unit is accepted, then if required, the current limit (p0640) can be reduced by a lower maximum current of the power unit (r0209) (torque limits stay the same).

If not only the power unit is changed, but also the motor, then the motor must be re-commissioned (e.g. using p0010 = 1). This is also necessary if motor data is still to be downloaded via DRIVE-CLiQ.

If the comparison stage in p9906 is set to 2, 3, then commissioning can be exited (p0010 = 0) and the fault acknowledged.

See also: r0200 (Power unit code number actual)

F07815 Drive: Power unit has been changed

Message value: Parameter: %1

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Power Module **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: IMMEDIATELY

Cause: The code number of the actual power unit does not match the saved number. This only occurs if the comparator in p9906 or p9908 is not at 2 (low) or 3 (minimum).

Fault value (r0949, interpret decimal):

Number of the incorrect parameter.

See also: r0200 (Power unit code number actual), p0201 (Power unit code number)

Remedy: - Connect the original power unit and switch on the Control Unit again (POWER ON).

- set p0201 to r0200 and exit commissioning with p0010 = 0.

Note:

If the power unit type was changed (see r0203) or the motor replaced, then the motor must be recommissioned (e.g. using p0010 = 1, p3900 = 3, p1900 = 1, 2). This is also necessary if motor data is still to be downloaded via DRIVE-CLiQ.

If the new power unit is accepted, then if required, the current limit p0640 can be reduced by a lower maximum current of the power unit (r0209) (torque limits stay the same).

If the comparison stage in p9906 is set to 2, 3, then commissioning can be exited (p0010 = 0) and the fault acknowledged. This procedure is not recommended for different power unit types.

See also: r0200 (Power unit code number actual)

A07820 Drive: Temperature sensor not connected

Message value: %1

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: The temperature sensor for monitoring the motor temperature, specified in p0600, is not available.

Alarm value (r2124, interpret decimal):

1: p0601 = 10 (SME), but in p0600 - not evaluated via encoder is selected.

2: p0600 = 10 (BICO), but the signal source (p0603) is not interconnected.

3: p0601 = 11 (BICO), but in p0600 - not evaluated via BICO interconnection is selected (20 or 21).

4: p0601 = 11 (BICO) and p4610-p4613 > 0, but the associated signal source (p0608, p0609) is not interconnected.

5: Component with sensor evaluation not present or has been removed in the meantime.

6: Evaluation via Motor Module not possible (r0192.21).

Remedy: For alarm value = 1:
- in p0600 set an encoder with temperature sensor.

For alarm value = 2:
- interconnect p0603 with the temperature signal.

For alarm value = 3, 4:
- set the available temperature sensor (p0600, p0601).
- set p4610 ... p4613 = 0 (no sensor), or interconnect p0608 or p0609 with an external temperature signal.

For alarm value = 5:
- connect the component with the temperature sensor. Check the DRIVE-CLiQ connection.

For alarm value = 6:
- update the Motor Module firmware. Connect temperature sensor via encoder.

See also: p0600 (Motor temperature sensor for monitoring), p0601

A07821 Monitoring underspeed threshold fallen below alarm

Message value: -
Message class: Application/technological function faulted (17)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The alarm threshold for the lower speed was fallen below.

Note:
- the monitoring is activated using p2149.6 = 1.
- status bit r2197.1 = 1 indicates that the value has been fallen below.
- for closed-loop control without encoder, this alarm is only output for an excited motor (r0056.4 = 1); for closed-loop control with encoder, it is always output.
- for a separately excited synchronous motor in closed-loop torque control without an encoder (p1300 = 20, p1501 set), the monitoring for an underspeed condition is automatically activated internally.

See also: p2140, p2149, p2155, r2197

Remedy:
- check the parameterization (p2155, p2140).
- if required, reduce the load.
- switch-on additional unit for generator applications.

F07822 (N) Monitoring underspeed threshold fallen below fault

Message value: -
Message class: Application/technological function faulted (17)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** GLOBAL
Reaction: OFF2 (NONE, OFF1)
Acknowledge: IMMEDIATELY
Cause: The fault threshold for the lower speed was fallen below.

Note:
- the monitoring is activated using p2149.6 = 1.
- status bit r2199.0 = 1 indicates that the value has been fallen below.
- the fault is only output if the machine is excited (r0056.4 = 1).
- for a separately excited synchronous motor in closed-loop torque control without an encoder (p1300 = 20, p1501 = 1 signal), the monitoring for an underspeed condition is automatically activated internally.

See also: p2149, p2150, p2161, r2199

Remedy:
- check the parameterization (p2161, p2150).
- if required, reduce the load.
- switch-on additional unit for generator applications.

Reaction upon N: NONE
Acknowl. upon N: NONE

A07823 I2t monitoring alarm threshold exceeded

Message value: -
Message class: Application/technological function faulted (17)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: For the freely parameterizable I2t monitoring, the alarm threshold (p3243) was exceeded.

Note:

Status bit r2199.13 = 1 indicates that the value is exceeded.

See also: p3240 (I2t input value signal source), p3241 (Permissible I2t continuous value), p3242 (I2t maximum duration), p3243 (I2t alarm threshold), r3244 (Actual I2t integrator value)

Remedy: - check the received input value (p3240).

- if required, reduce the load.

- check the parameterization (p3241, p3242, p3243).

Note:

The alarm and status bit r2199.13 are reset if the I2t integrator value (r3244) falls below half of the value set in p3243.

F07824 I2t monitoring fault threshold exceeded

Message value: -
Message class: Application/technological function faulted (17)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** GLOBAL
Reaction: NONE (OFF1)
Acknowledge: IMMEDIATELY
Cause: For the freely parameterizable I2t monitoring, the fault threshold (100 %) was exceeded.

Note:

Status bit r2199.14 = 1 indicates that the value is exceeded.

See also: p3240 (I2t input value signal source), p3241 (Permissible I2t continuous value), p3242 (I2t maximum duration), p3243 (I2t alarm threshold), r3244 (Actual I2t integrator value)

Remedy: - check the received input value (p3240).

- if required, reduce the load.

- check the parameterization (p3241, p3242, p3243).

Note:

Fault and status bit r2199.14 are reset if the I2t integrator value (r3244) falls below a value of 99%.

A07825 (N) Drive: Simulation mode activated

Message value: -
Message class: Application/technological function faulted (17)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The simulation mode is activated.

The drive can only be switched on if the DC link voltage is less than 40 V.

Remedy: Not necessary.

The alarm is automatically withdrawn when the simulation mode is deactivated (p1272 = 0).

Reaction upon N: NONE
Acknowl. upon N: NONE

F07826 Drive: DC link voltage for simulation operation too high

Message value: -
Message class: Application/technological function faulted (17)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The simulation mode is activated and the DC link voltage is greater than the permissible value of 40 V.
Remedy: - switch out (disable) simulation mode (p1272 = 0) and acknowledge the fault.
- reduce the input voltage in order to reach a DC link voltage below 40 V.

F07840 Drive: Infeed operation missing

Message value: -
Message class: Infeed faulted (13)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2 (NONE)
Acknowledge: IMMEDIATELY
Cause: The signal "infeed operation" is not present although the enable signals for the drive have been present for longer than the parameterized monitoring time (p0857).
- infeed not operational.
- interconnection of the binector input for the ready signal is either incorrect or missing (p0864).
- infeed is presently carrying out a line supply identification routine.
Remedy: - bring the infeed into an operational state.
- check the interconnection of the binector input for the signal "infeed operation" (p0864).
- increase the monitoring time (p0857).
- wait until the infeed has completed the line supply identification routine.
See also: p0857 (Power unit monitoring time), p0864

F07841 (A) Drive: Infeed operation withdrawn

Message value: -
Message class: Infeed faulted (13)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: Servo: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3)
Vector: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3)
Hla: OFF2 (NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY
Cause: The signal "infeed operation" was withdrawn in operation.
- interconnection of the binector input for the signal "infeed operation" is either incorrect or missing (p0864).
- the enable signals of the infeed were disabled.
- due to a fault, the infeed withdraws the signal "infeed operation".
Remedy: - check the interconnection of the binector input for the "infeed operation" signal (p0864).
- check the enable signals of the infeed and if required, enable.
- remove and acknowledge an infeed fault.
Note:
If this drive is intended to back up the DC link regeneratively, then the fault response must be parameterized for NONE, OFF1 or OFF3. so that the drive can continue to operate even after the infeed fails.
Reaction upon A: NONE
Acknowl. upon A: NONE

A07850 (F) External alarm 1

Message value: -
Message class: External measured value / signal state outside the permissible range (16)
Drive object: All objects
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The condition for "External alarm 1" is satisfied.
Note:
The "External alarm 1" is initiated by a 1/0 edge via binector input p2112.
See also: p2112 (External alarm 1)
Remedy: Eliminate the causes of this alarm.
Reaction upon F: Infeed: NONE (OFF1, OFF2)
Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY (POWER ON)

A07851 (F) External alarm 2

Message value: -
Message class: External measured value / signal state outside the permissible range (16)
Drive object: All objects
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The condition for "External alarm 2" is satisfied.
Note:
The "External alarm 2" is initiated by a 1/0 edge via binector input p2116.
See also: p2116 (External alarm 2)
Remedy: Eliminate the causes of this alarm.
Reaction upon F: Infeed: NONE (OFF1, OFF2)
Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY (POWER ON)

A07852 (F) External alarm 3

Message value: -
Message class: External measured value / signal state outside the permissible range (16)
Drive object: All objects
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The condition for "External alarm 3" is satisfied.
Note:
The "External alarm 3" is initiated by a 1/0 edge via binector input p2117.
See also: p2117 (External alarm 3)
Remedy: Eliminate the causes of this alarm.
Reaction upon F: Infeed: NONE (OFF1, OFF2)
Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY (POWER ON)

F07860 (A) External fault 1

Message value: -
Message class: External measured value / signal state outside the permissible range (16)
Drive object: All objects
Component: None **Propagation:** GLOBAL
Reaction: Infeed: OFF2 (NONE, OFF1)
Servo: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Vector: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Hla: OFF2 (NONE, OFF1, OFF3, STOP2)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The condition for "External fault 1" is satisfied.
Note:
The "External fault 1" is initiated by a 1/0 edge via binector input p2106.
See also: p2106 (External fault 1)
Remedy: - eliminate the causes of this fault.
- acknowledge fault.
Reaction upon A: NONE
Acknowl. upon A: NONE

F07861 (A) External fault 2

Message value: -
Message class: External measured value / signal state outside the permissible range (16)
Drive object: All objects
Component: None **Propagation:** GLOBAL
Reaction: Infeed: OFF2 (NONE, OFF1)
Servo: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Vector: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Hla: OFF2 (NONE, OFF1, OFF3, STOP2)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The condition for "External fault 2" is satisfied.
Note:
The "External fault 2" is initiated by a 1/0 edge via binector input p2107.
See also: p2107 (External fault 2)
Remedy: - eliminate the causes of this fault.
- acknowledge fault.
Reaction upon A: NONE
Acknowl. upon A: NONE

F07862 (A) External fault 3

Message value: -
Message class: External measured value / signal state outside the permissible range (16)
Drive object: All objects
Component: None **Propagation:** GLOBAL
Reaction: Infeed: OFF2 (NONE, OFF1)
Servo: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Vector: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Hla: OFF2 (NONE, OFF1, OFF3, STOP2)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The condition for "External fault 3" is satisfied.
Note:
The "External fault 3" is initiated by a 1/0 edge via the following parameters.
- AND logic operation, binector input p2108, p3111, p3112.
- switch-on delay p3110.
See also: p2108, p3110, p3111, p3112

Remedy: - eliminate the causes of this fault.
- acknowledge fault.

Reaction upon A: NONE

Acknowl. upon A: NONE

F07890 Internal voltage protection / internal armature short-circuit with STO active

Message value: -

Message class: Application/technological function faulted (17)

Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: OFF2

Acknowledge: IMMEDIATELY

Cause: The internal armature short-circuit (p1231 = 4) is not possible as Safe Torque Off (STO) is enabled. The pulses cannot be enabled.

Remedy: Switch out the internal armature short-circuit (p1231=0) or deactivate Safe Torque Off (p9501 = p9561 = 0).

Note:

STO: Safe Torque Off / SH: Safe standstill

F07898 Drive: flying restart unsuccessful due to excessively low flux

Message value: -

Message class: Motor overload (8)

Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Control Unit (CU) **Propagation:** GLOBAL

Reaction: OFF2

Acknowledge: IMMEDIATELY

Cause: While identifying the rotor position of a separately excited synchronous motor based on voltage measurement, after the excitation time had elapsed, the flux was too low.

Remedy: Increase the excitation time (p0346).

See also: p0346

A07899 (N) Drive: Stall monitoring not possible

Message value: Parameter: %1

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: Stall monitoring is not possible, because a change was made into the open-loop speed controlled mode before the wait time p2177 had expired.

This situation can only occur, if the following conditions apply:

p1300 = 20

p2177 > p1758

p1750.2 = 0

p1750.6 = 0

Remedy: - Deactivate the changeover into open-loop speed controlled operation when operating at the torque limit (p1750.6 = 0).

Condition:

No slow reversing through the open-loop speed controlled operating range p1755 within the time p1758 when operating at the torque limit.

- shorten the stall detection wait time (p2177 < p1758).
- Activate closed-loop controlled operation from standstill and higher (p1750.2 = 1).

Condition:

There is no active load, for example, a hoisting gear

- Use an operating mode with encoder (p1300 = 21).

Reaction upon N: NONE

Acknowl. upon N: NONE

F07900 (N, A) Drive: Motor blocked/speed controller at its limit

Message value: -
Message class: Application/technological function faulted (17)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC
Component: Motor **Propagation:** GLOBAL
Reaction: OFF2 (NONE, OFF1, OFF3, STOP2)
Acknowledge: IMMEDIATELY
Cause: Motor has been operating at the torque limit longer than the time specified in p2177 and below the speed threshold in p2175.

This signal can also be initiated if the speed actual value is oscillating and the speed controller output repeatedly goes to its limit.

See also: p2175, p2177

Remedy: - check that the motor can freely move.

- check the effective torque limit (r1538, r1539).

- check the parameter, message "Motor blocked" and if required, correct (p2175, p2177).

- check the inversion of the actual value (p0410).

- check the motor encoder connection.

- check the encoder pulse number (p0408).

- for SERVO with encoderless operation and motors with low power ratings (< 300 W), increase the pulse frequency (p1800).

- after de-selecting the "Basic positioner" (EPOS) function mode, check the motoring (p1528) and regenerative (p1529) torque limit and modify again.

- blocksize device: for encoderless operation and a current controller sampling time p0115[0] < 80 µs, either set the pulse frequency of p1800 = 1 / p0115[0] or increase the switchover speed of the model p1755.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F07900 (N, A) Drive: Motor blocked

Message value: -
Message class: Application/technological function faulted (17)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Motor **Propagation:** GLOBAL
Reaction: OFF2 (NONE, OFF1, OFF3, STOP2)
Acknowledge: IMMEDIATELY
Cause: Motor has been operating at the torque limit longer than the time specified in p2177 and below the speed threshold in p2175.

This signal can also be initiated if the speed actual value is oscillating and the speed controller output repeatedly goes to its limit.

If the simulation mode is enabled (p1272 = 1) and the closed-loop control with speed encoder activated (p1300 = 21), then the inhibit signal is generated if the encoder signal is not received from a motor that is driven with the torque setpoint of the closed-loop control.

See also: p2175, p2177

Remedy: - check that the motor can freely move.

- check the effective torque limit (r1538, r1539).

- check the parameter, message "Motor blocked" and if required, correct (p2175, p2177).

- check the inversion of the actual value (p0410).

- check the motor encoder connection.

- check the encoder pulse number (p0408).

- after de-selecting the "Basic positioner" (EPOS) function mode, check the motoring (p1528) and regenerative (p1529) torque limit and modify again.

- in the simulation mode and operation with speed encoder, the power unit to which the motor is connected must be switched on and must be supplied with the torque setpoint of the simulated closed-loop control. Otherwise, change over to encoderless control (see p1300).

- check the direction of rotation enable signals for a flying restart of the motor (p1110, p1111).

- for U/f control: check the current limits and acceleration times (p0640, p1120).

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F07901 Drive: Motor overspeed

Message value: -
Message class: Application/technological function faulted (17)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC
Component: Motor **Propagation:** GLOBAL
Reaction: Servo: OFF2 (IASC/DCBRK)
Hla: OFF2
Acknowledge: IMMEDIATELY
Cause: The maximum permissible speed was either positively or negatively exceeded.
The maximum permissible positive speed is formed as follows: Minimum (p1082, CI: p1085) + p2162
The maximum permissible negative speed is formed as follows: Maximum (-p1082, CI: 1088) - p2162
Remedy: The following applies for a positive direction of rotation:
- check r1084 and if required, correct p1082, CI:p1085 and p2162.
The following applies for a negative direction of rotation:
- check r1087 and if required, correct p1082, CI:p1088 and p2162.

F07901 Drive: Motor overspeed

Message value: -
Message class: Application/technological function faulted (17)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Motor **Propagation:** GLOBAL
Reaction: OFF2 (IASC/DCBRK)
Acknowledge: IMMEDIATELY
Cause: The maximum permissible speed was either positively or negatively exceeded.
The maximum permissible positive speed is formed as follows: Minimum (p1082, CI: p1085) + p2162
The maximum permissible negative speed is formed as follows: Maximum (-p1082, CI: 1088) - p2162
Remedy: The following applies for a positive direction of rotation:
- check r1084 and if required, correct p1082, CI:p1085 and p2162.
The following applies for a negative direction of rotation:
- check r1087 and if required, correct p1082, CI:p1088 and p2162.
Activate precontrol of the speed limiting controller (p1401.7 = 1).
Increase the hysteresis for the overspeed signal p2162. This upper limit is dependent upon the maximum motor speed p0322 and the maximum speed p1082 of the setpoint channel.

F07902 (N, A) Drive: Motor stalled

Message value: %1
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: Motor **Propagation:** GLOBAL
Reaction: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Acknowledge: IMMEDIATELY
Cause: The system has identified that the motor has stalled for a time longer than is set in p2178.
Fault value (r0949, interpret decimal):
1: Stall detection using r1408.11 (p1744, p0492).
2: Stall detection using r1408.12 (p1745) or via the flux difference (r0083 ... r0084).
3: Stall detection using r0056.11 (only for separately excited synchronous motors).
See also: p1744 (Motor model speed threshold stall detection), p2178 (Motor stalled delay time)

Remedy: For closed-loop speed and torque control with speed encoder, the following applies:

- check the speed signal (interrupted cable, polarity, pulse number, broken encoder shaft).

- check the speed encoder, if another speed encoder was selected using the data set changeover. This must be connected to the same motor that is controlled for the data set changeover.

If there is no fault, then the fault tolerance (p1744 and p0492) can be increased.

For closed-loop speed and torque control without speed encoder, the following applies:

- check whether the drive in the open-loop controlled mode (r1750.0) stalls under load. If yes, then increase the current setpoint using p1610.

- check whether the drive stalls due to the load if the speed setpoint is still zero. If yes, then increase the current setpoint using p1610.

- if the motor excitation (magnetizing) time (r0346) was significantly reduced, then it should be increased again.

- check the current limits (p0640, r0067). If the current limits are too low, then the drive cannot be magnetized.

- check the current controller (p1715, p1717) and the speed adaptation controller (p1764, p1767). If the dynamic response was significantly reduced, then this should be increased again.

- check the speed encoder, if another speed encoder was selected using the data set changeover. This must be connected to the motor that is controlled for the data set changeover.

If there is no fault, then the fault tolerance (p1745) or the delay time (p2178) can be increased.

For separately excited synchronous motors (closed-loop control with speed encoder), the following applies:

- check the speed signal (interrupted cable, polarity, pulse number).

- ensure the correct motor parameterization (rating plate and equivalent circuit diagram parameters).

- check the excitation equipment and the interface to the closed-loop control.

- encoder the highest possible dynamic response of the closed-loop excitation current control.

- check the speed control for any tendency to oscillate and if resonance effects occur, use a bandstop filter.

- do not exceed the maximum speed (p2162).

If there is no fault, then the delay time can be increased (p2178).

Reaction upon N: NONE

Acknowl. upon N: NONE

Reaction upon A: NONE

Acknowl. upon A: NONE

F07902 (N, A) Drive: Motor stalled

Message value: %1

Message class: Application/technological function faulted (17)

Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Motor **Propagation:** GLOBAL

Reaction: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)

Acknowledge: IMMEDIATELY

Cause: The system has identified that the motor has stalled for a time longer than is set in p2178.

Fault value (r0949, interpret decimal):

1: Stall detection using r1408.11 (p1744, p0492).

2: Stall detection using r1408.12 (p1745) or via the flux difference (r0083 ... r0084).

3: Stall detection using r0056.11 (only for separately excited synchronous motors).

See also: p1744 (Motor model speed threshold stall detection), p2178 (Motor stalled delay time)

Remedy: It should always be carefully ensured that the motor data identification (p1910) as well as the rotating measurement (p1960) were carried out (also refer to r3925). For synchronous motors with encoder, the encoder must have been adjusted (p1990).

For closed-loop speed and torque control with speed encoder, the following applies:

- check the speed signal (interrupted cable, polarity, pulse number, broken encoder shaft).

- check the speed encoder, if another speed encoder was selected using the data set changeover. This must be connected to the same motor that is controlled for the data set changeover.

If there is no fault, then the fault tolerance (p1744 or p0492) can be increased. For resolvers with a high signal ripple, for example p0492 should be increased and the speed signal smoothed (p1441, p1442).

If the stalled motor should take place in the range of the monitor model and for speeds of less than 30 % of the rated motor speed, then a change can be made directly from the current model into the flux impression (p1401.5 = 1). We therefore recommend that the time-controlled model change is switched in (p1750.4 = 1) or the model changeover limits are significantly increased (p1752 > 0.35 x p0311; p1753 = 5 %).

- check the speed encoder, if another speed encoder was selected using the data set changeover. This must be connected to the motor that is controlled for the data set changeover.

For closed-loop speed and torque control without speed encoder, the following applies:

- check whether the drive stalls solely due to the load in controlled mode (r1750.0) or when the speed setpoint is still zero. If so, increase the current setpoint via p1610 or set p1750.2 = 1 (sensorless vector control to standstill for passive loads).

- if the motor excitation time (p0346) was significantly reduced and the drive stalls when it is switched on and run immediately, p0346 should be increased again or quick magnetizing selected (p1401).

- check the current controller (p1715, p1717) and the speed adaptation controller (p1764, p1767). If the dynamic response was significantly reduced, then this should be increased again.

- if there is no fault, then the fault tolerance (p1745) or the delay time (p2178) can be increased.

The following generally apply for closed-loop and torque control:

- check whether the motor cables are disconnected.

- check the current limits (p0640, r0067, r0289). If the current limits are too low, then the drive cannot be magnetized.

- if the fault occurs with fault value 2 when the motor accelerates very quickly to the field weakening range, the deviation between the flux setpoint and flux actual value can be reduced and, in turn, the message prevented, by reducing p1596 or p1553.

For separately excited synchronous motors (closed-loop control with speed encoder), the following applies:

- check the speed signal (interrupted cable, polarity, pulse number).

- ensure the correct motor parameterization (rating plate and equivalent circuit diagram parameters).

- check the excitation equipment and the interface to the closed-loop control.

- encoder the highest possible dynamic response of the closed-loop excitation current control.

- check the speed control for any tendency to oscillate and if resonance effects occur, use a bandstop filter.

- do not exceed the maximum speed (p2162).

If there is no fault, then the delay time can be increased (p2178).

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

A07903 Drive: Motor speed deviation

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Motor **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The absolute value of the speed difference from the two setpoints (p2151, p2154) and the speed actual value (r2169) exceeds the tolerance threshold (p2163) longer than tolerated (p2164, p2166).

The alarm is only enabled for p2149.0 = 1.

Possible causes could be:

- the load torque is greater than the torque setpoint.
- when accelerating, the torque/current/power limit is reached. If the limits are not sufficient, then it is possible that the drive has been dimensioned too small.
- for closed-loop torque control, the speed setpoint does not track the speed actual value.
- for active Vdc controller.

For U/f control, the overload condition is detected as the Imax controller is active.

See also: p2149 (Monitoring configuration)

Remedy:
- increase p2163 and/or p2166.
- increase the torque/current/power limits.
- for closed-loop torque control: The speed setpoint should track the speed actual value.
- deactivate alarm with p2149.0 = 0.

F07904 (N, A) External armature short-circuit: Contactor feedback signal "Closed" missing

Message value: -
Message class: Application/technological function faulted (17)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2 (NONE)
Acknowledge: IMMEDIATELY
Cause: When closing, the contactor feedback signal (p1235) did not issue the signal "Closed" (r1239.1 = 1) within the monitoring time (p1236).

Remedy:
- check that the contactor feedback signal is correctly connected (p1235).
- check the logic of the contactor feedback signal (r1239.1 = 1: "Closed", r1239.1 = 0: "Open").
- increase the monitoring time (p1236).
- if required, set the external armature short-circuit without contactor feedback signal (p1231 = 2).

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F07905 (N, A) External armature short-circuit: Contactor feedback signal "Open" missing

Message value: -
Message class: Application/technological function faulted (17)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2 (NONE)
Acknowledge: IMMEDIATELY
Cause: When opening, the contactor feedback signal (p1235) did not issue the signal "Open" (r1239.1 = 0) within the monitoring time (p1236).

Remedy:
- check that the contactor feedback signal is correctly connected (p1235).
- check the logic of the contactor feedback signal (r1239.1 = 1: "Closed", r1239.1 = 0: "Open").
- increase the monitoring time (p1236).
- if required, set the external armature short-circuit without contactor feedback signal (p1231 = 2).

Reaction upon N:	NONE
Acknowl. upon N:	NONE
Reaction upon A:	NONE
Acknowl. upon A:	NONE

F07906 Armature short-circuit / internal voltage protection: Parameterization error

Message value: Fault cause: %1, motor data set: %2

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: OFF2

Acknowledge: IMMEDIATELY

Cause: The armature short-circuit is incorrectly parameterized.

Fault value (r0949, interpret decimal):

zzzzyyxx: zzzz = fault cause, xx = motor data set

zzzz = 0001 hex = 1 dec:

A permanent-magnet synchronous motor has not been selected.

zzzz = 0002 hex = 2 dec:

No induction motor selected.

zzzz = 0065 hex = 101 dec:

External armature short-circuit: Output (r1239.0) not wired.

zzzz = 0066 hex = 102 dec:

External armature short-circuit with contactor feedback signal: No feedback signal connected (BI:p1235). The feedback signal must be interconnected in all command data sets (CDS).

zzzz = 0067 hex = 103 dec:

External armature short-circuit without contactor feedback signal: Wait time when opening (p1237) is 0.

zzzz = 00C9 hex = 201 dec:

Internal voltage protection: The maximum output current of the Motor Module (r0209) is less than 1.8 x motor short-circuit current (r0331).

zzzz = 00CA hex = 202 dec:

Internal voltage protection: A Motor Module in booksize or chassis format is not being used.

zzzz = 00CB hex = 203 dec:

Internal voltage protection: The motor short-circuit current (p0320) is greater than the maximum motor current (p0323).

zzzz = 00CC hex = 204 dec:

Internal voltage protection: The activation (p1231 = 4) is not given for all motor data sets with synchronous motors (p0300 = 2xx, 4xx).

Remedy: For fault value = 1:

- an armature short-circuit / voltage protection is only permissible for permanent-magnetic synchronous motors. The highest position of the motor type in p0300 must either be 2 or 4.

For fault value = 101:

- the contactor for the external armature short-circuit configuration should be controlled using output signal r1239.0. For instance, the signal can be connected to an output terminal via binector input p0738. Before this fault can be acknowledged, p1231 must be set again.

For fault value = 102:

- if the external armature short circuit is selected with contactor feedback signal (p1231 = 1), then the feedback signal must be connected to an input terminal (e.g. r0722.x) and then interconnected to binector input p1235.
- alternatively, the external armature short-circuit without contactor feedback signal (p1231 = 2) can be selected.

For fault value = 103:

- if the external armature short-circuit without contactor feedback signal (p1231 = 2) is selected, then a delay time must be parameterized in p1237. This time must always be greater than the actual contactor opening time, as otherwise the Motor Module would be short-circuited!

For fault value = 201:

- a Motor Module with a higher maximum current or a motor with a lower short-circuit current must be used. The maximum Motor Module current must be higher than 1.8 x short-circuit current of the motor.

For fault value = 202:

- for internal voltage protection, use a Motor Module in booksize or chassis format.

For fault value = 203:

- for internal voltage protection, only use short-circuit proof motors.

For fault value = 204:

- the internal voltage protection must either be activated for all motor data sets with synchronous motors (p0300 = 2xx, 4xx) (p1231 = 3) or it must be deactivated for all motor data sets (p1231 not equal to 3). This therefore ensures that the protection cannot be accidentally withdrawn as a result of a data set changeover. The fault can only be acknowledged if this condition is fulfilled.

F07907 Internal armature short-circuit: Motor terminals are not at zero potential after pulse suppression

Message value: -

Message class: Application/technological function faulted (17)

Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Power Module **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: IMMEDIATELY

Cause: The function "Internal voltage protection" (p1231 = 3) was activated.

The following must be observed:

- when the internal voltage protection is active, after pulse suppression, all of the motor terminals are at half of the DC link voltage (without an internal voltage protection, the motor terminals are at zero potential)!

- it is only permissible to use motors that are short-circuit proof (p0320 < p0323).

- the Motor Module must be able to continually conduct 180% short-circuit current (r0331) of the motor (r0289).

- the internal voltage protection cannot be interrupted due to a fault response. If an overcurrent condition occurs during the active, internal voltage protection, then this can destroy the Motor Module and/or the motor.

- if the Motor Module does not support the autonomous, internal voltage protection (r0192.10 = 0), in order to ensure safe, reliable functioning when the line supply fails, an external 24 V power supply (UPS) must be used for the components.

- if the Motor Module does support the autonomous, internal voltage protection (r0192.10 = 1), in order to ensure safe, reliable functioning when the line supply fails, the 24 V power supply for the components must be provided through a Control Supply Module.

- if the internal voltage protection is active, it is not permissible that the motor is driven by the load for a longer period of time (e.g. as a result of loads that move the motor or another coupled motor).

Remedy: Not necessary.

This a note for the user.

A07908 Internal armature short-circuit active

Message value: -

Message class: Application/technological function faulted (17)

Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Power Module **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: The Motor Module signals that the motor is short-circuited through the power semiconductors (r1239.5 = 1). The pulses cannot be enabled. The internal armature short-circuit is selected (p1231 = 4):

Remedy: For synchronous motors, the armature short-circuit braking is activated with binector input p1230 = 1 signal.

See also: p1230 (Armature short-circuit / DC braking activation), p1231 (Armature short-circuit / DC braking configuration)

F07909 Internal voltage protection: Deactivation only effective after POWER ON

Message value: -

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: POWER ON

Cause: The deactivation of the internal voltage protection (p1231 not equal to 3) only becomes effective after POWER ON.

The status signal r1239.6 = 1 indicates that the internal voltage protection is ready.

Remedy: Not necessary.
This a note for the user.

A07910 (N) Drive: Motor overtemperature

Message value: %1
Message class: Motor overload (8)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: Motor **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: KTY84/PT1000:
The motor temperature has exceeded the alarm threshold (p0604, p0616).
PTC:
The response threshold of 1650 Ohm was exceeded.
Alarm value (r2124, interpret decimal):
this is the number of the temperature channel leading to the message.
See also: p0604, p0612, p0617, p0618, p0619, p0625, p0626, p0627, p0628
Remedy: - check the motor load.
- check the motor ambient temperature and cooling.
- check PTC or bimetallic NC contact.
- check the monitoring limits (p0604, p0605).
- activate/check the parameters of the motor temperature model (p0612, p0626 and following).
See also: p0612, p0617, p0618, p0619, p0625, p0626, p0627, p0628
Reaction upon N: NONE
Acknowl. upon N: NONE

A07910 (N) Drive: Motor overtemperature

Message value: %1
Message class: Motor overload (8)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Motor **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: KTY84/PT1000 or no sensor:
The measured motor temperature or temperature of motor temperature model 2 has exceeded the alarm threshold (p0604, p0616). The response parameterized in p0610 becomes active.
PTC or bimetallic NC contact:
The response threshold of 1650 Ohm was exceeded or the NC contact opened.
Alarm value (r2124, interpret decimal):
- SME not selected in p0601:
11: No output current reduction.
12: Output current reduction active.
- SME or TM120 selected in p0601 (p0601 = 10, 11):
this is the number of the temperature channel leading to the message.
See also: p0604 (Mot_temp_mod 2: sensor alarm threshold), p0610 (Motor overtemperature response)
Remedy: - check the motor load.
- check the motor ambient temperature and cooling.
- check PTC or bimetallic NC contact.
- check the monitoring limits (p0604, p0605).
- activate/check the parameters of the motor temperature model (p0612, p0626 and following).
See also: p0612, p0617, p0618, p0619, p0625, p0626, p0627, p0628
Reaction upon N: NONE
Acknowl. upon N: NONE

F07913 Excitation current outside the tolerance range

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The difference between the excitation current actual value and setpoint has exceeded the tolerance:
abs(r1641 - r1626) > p3201 + p3202
The cause of this fault is again reset for abs(r1641 - r1626) < p3201.
Remedy: - check the parameterization (p1640, p3201, p3202).
- check the interfaces to the excitation equipment (r1626, p1640).
- check the excitation equipment.

F07914 Flux out of tolerance

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The difference between the flux actual value and setpoint has exceeded the tolerance:
abs(r0084 - r1598) > p3204 + p3205
The cause of this fault is again reset for abs(r0084 - r1598) < p3204.
The fault is only issued after the delay time in p3206 has expired.
Remedy: - check the parameterization (p3204, p3205).
- check the interfaces to the excitation equipment (r1626, p1640).
- check the excitation equipment.
- check the flux control (p1590, p1592, p1597).
- check the control for oscillation and take the appropriate counter measures (e.g. optimize the speed control loop, parameterize a bandstop filter).

A07918 (N) Three-phase setpoint generator operation selected/active

Message value: -
Message class: Application/technological function faulted (17)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: Only for separately excited synchronous motors (p0300 = 5):
The actual open-loop/closed-loop control mode is I/f control (open-loop) with a fixed current (p1300 = 18).
The speed is entered via the setpoint channel and the current setpoint is given by the minimum current (p1620).
It must be ensured that in this mode, the control dynamic performance is very limited. This is the reason that longer ramp-up times should be set for the setpoint speed than for normal operation.
See also: p1620 (Stator current minimum)
Remedy: Select another open-loop/closed-loop control mode
See also: p1300 (Open-loop/closed-loop control operating mode)
Reaction upon N: NONE
Acknowl. upon N: NONE

A07920 Drive: Torque/speed too low

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Motor **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The torque deviates from the torque/speed envelope characteristic (too low).
See also: p2181 (Load monitoring response)
Remedy: - check the connection between the motor and load.
- adapt the parameterization corresponding to the load.

A07921 Drive: Torque/speed too high

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Motor **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The torque deviates from the torque/speed envelope characteristic (too high).
Remedy: - check the connection between the motor and load.
- adapt the parameterization corresponding to the load.

A07922 Drive: Torque/speed out of tolerance

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Motor **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The torque deviates from the torque/speed envelope characteristic.
Remedy: - check the connection between the motor and load.
- adapt the parameterization corresponding to the load.

F07923 Drive: Torque/speed too low

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Motor **Propagation:** GLOBAL
Reaction: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The torque deviates from the torque/speed envelope characteristic (too low).
Remedy: - check the connection between the motor and load.
- adapt the parameterization corresponding to the load.

F07924 Drive: Torque/speed too high

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Motor **Propagation:** GLOBAL
Reaction: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The torque deviates from the torque/speed envelope characteristic (too high).
Remedy: - check the connection between the motor and load.
- adapt the parameterization corresponding to the load.

F07925 Drive: Torque/speed out of tolerance

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Motor **Propagation:** GLOBAL
Reaction: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The torque deviates from the torque/speed envelope characteristic.
Remedy: - check the connection between the motor and load.
- adapt the parameterization corresponding to the load.

A07926 Drive: Envelope curve parameter invalid

Message value: Parameter: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: Invalid parameter values were entered for the envelope characteristic of the load monitoring.
The following rules apply for the speed thresholds:
p2182 < p2183 < p2184
The following rules apply for the torque thresholds:
p2185 > p2186
p2187 > p2188
p2189 > p2190
Load monitoring configuration and response must match.
It is not permissible that the individual load torque monitoring areas overlap.
Alarm value (r2124, interpret decimal):
Number of the parameter with the invalid value.
Note:
The load torque monitoring has not been activated as long as the alarm is active.
Remedy: - set the parameters for the load monitoring according to the applicable rules.
- if necessary, deactivate the load monitoring (p2181 = 0, p2193 = 0).

A07927 DC braking active

Message value: -
Message class: Application/technological function faulted (17)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Motor **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The motor is braked with DC current. DC braking is active.
1)
A message with response DCBRK is active. The motor is braked with the braking current set in p1232 for the duration set in in p1233. If the standstill threshold p1226 is undershot, then braking is prematurely canceled.
2)
DC braking has been activated at binector input p1230 with the DC braking set (p1230 = 4). Braking current p1232 is injected until this binector input becomes inactive.
Remedy: Not necessary.
This alarm is automatically withdrawn after DC braking.

F07928	**Internal voltage protection initiated**
Message value:	-
Message class:	Application/technological function faulted (17)
Drive object:	SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Power Module **Propagation:** GLOBAL
Reaction:	OFF2
Acknowledge:	IMMEDIATELY
Cause:	The Motor Module signals that the motor is short-circuited through the power semiconductors (r1239.5 = 1). The pulses cannot be enabled. The internal voltage protection is selected (p1231 = 3).
Remedy:	If the Motor Module supports the autonomous internal voltage protection (r0192.10 = 1), then the Motor Module automatically decides - using the DC link voltage - as to whether the armature short-circuit should be activated. The armature short-circuit is activated and response OFF2 is initiated if the DC link voltage exceeds 800 V. If the DC link voltage falls below 450 V, then the armature short-circuit is withdrawn. If the motor is still in a critical speed range, the armature short-circuit is re-activated once the DC link voltage exceeds the threshold of 800 V. If the autonomous (independent) internal voltage protection is active (r1239.5 = 1) and the line supply returns (450 V < DC link voltage < 800 V), the armature short-circuit is withdrawn after 3 minutes.

F07930	**Drive: Brake control error**
Message value:	%1
Message class:	Application/technological function faulted (17)
Drive object:	SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Motor **Propagation:** GLOBAL
Reaction:	OFF1 (NONE, OFF2, OFF3)
Acknowledge:	IMMEDIATELY
Cause:	The Control Unit has detected a brake control error. - motor cable is not shielded correctly. - defect in the brake control circuit of the Motor Module. Fault value (r0949, interpret decimal): 10, 11: Fault in "open holding brake" operation. - no brake connected or wire breakage (check whether brake opens for p1278 = 1). - ground fault in brake cable. - S120M: brake opened via terminal X4.1 for mounting purposes (this is only permissible when the power supply voltage is switched off). 20: Fault in "brake open" state. - short-circuit in brake winding. 30, 31: Fault in "close holding brake" operation. - no brake connected or wire breakage (check whether brake opens for p1278 = 1). - short-circuit in brake winding. 40: Fault in "brake closed" state. 50: Fault in the brake control circuit of the Control Unit or communication fault between the Control Unit and Motor Module (brake control diagnostics). 80: When using the Safe Brake Adapter (SBA), a fault has occurred in the brake control of the Control Unit. See also: p1278 (Brake control diagnostics evaluation)

Remedy:	- check the motor holding brake connection. - for a parallel connection, check the setting of the power unit data set to control the holding brake (p7015). - check the function of the motor holding brake. - check whether there is a DRIVE-CLiQ communication error between the Control Unit and the Motor Module involved and, if required, carry out a diagnostics routine for the faults identified. - check that the electrical cabinet design and cable routing are in compliance with EMC regulations (e.g. shield of the motor cable and brake conductors are connected with the shield connecting plate and the motor connectors are tightly screwed to the housing). - replace the Motor Module involved. Operation with Safe Brake Module: - check the Safe Brake Module connection. - replace the Safe Brake Module. Operation with Safe Brake Adapter (SBA): - check the SBA connection and if required, replace the SBA. See also: p1215 (Motor holding brake configuration), p1278 (Brake control diagnostics evaluation)

A07931 (F, N) Brake does not open

Message value:	-
Message class:	Application/technological function faulted (17)
Drive object:	SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Motor **Propagation:** GLOBAL
Reaction:	NONE
Acknowledge:	NONE
Cause:	This alarm is output for r1229.4 = 1. See also: p1216 (Motor holding brake opening time), r1229 (Motor holding brake status word)
Remedy:	- check the functionality of the motor holding brake. - check the feedback signal (p1223).
Reaction upon F:	NONE (OFF1, OFF2, OFF3)
Acknowl. upon F:	IMMEDIATELY
Reaction upon N:	NONE
Acknowl. upon N:	NONE

A07932 Brake does not close

Message value:	-
Message class:	Application/technological function faulted (17)
Drive object:	SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Motor **Propagation:** GLOBAL
Reaction:	NONE
Acknowledge:	NONE
Cause:	This alarm is output for r1229.5 = 1. For r1229.5 = 1, OFF1/OFF3 are suppressed to prevent the drive accelerating by a load that drives the motor - whereby OFF2 remains effective. See also: p1217 (Motor holding brake closing time), r1229 (Motor holding brake status word)
Remedy:	- check the functionality of the motor holding brake. - check the feedback signal (p1222).

F07934 (N) Drive: S120 Combi motor holding brake configuration

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE (OFF1, OFF2, OFF3)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: A connected motor holding brake has been detected with an S120 Combi. However, this brake has not been assigned to just one Combi feed drive and, therefore, brake control is not configured (correctly).

Fault value (r0949, interpret decimal):

0: No motor holding brake is assigned (p1215 = 0 or 3 on all S120 Combi feed drives).

1: More than one motor holding brake has been assigned (p1215 = 1 or 2 on more than one S120 Combi feed drive) - or there is more than one DRIVE-CLiQ motor with motor holding brake.

2: Brake was accidentally assigned to the spindle (p1215 = 1); this is not permitted for this software release.

3: An attempt was made to enable the function "Safe Brake Control" (SBC, p9602 = p9802 = 1) for the spindle. This is not permitted for this software release.

Remedy: Check whether the motor holding brake has been assigned to one S120 Combi feed drive exclusively (p1215 = 1 or 2).

The fault will only be withdrawn once the motor holding brake has been assigned to just one of the S120 Combi feed drives (p1215 = 1 or 2 for this one drive). From this point, the motor holding brake will be controlled by this drive.

See also: p1215 (Motor holding brake configuration)

Reaction upon N: NONE
Acknowl. upon N: NONE

F07935 (N) Drive: Incorrect motor holding brake configuration

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE (OFF1, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: An incorrect motor holding brake configuration was detected.

Fault value (r0949, interpret decimal):

0:

A motor holding brake was detected where the brake control has not been configured (p1215 = 0).

The brake control configuration was set to "motor holding brake the same as sequence control" (p1215 = 1) (only when commissioning for the first time).

For a chassis unit with Safe Brake Adapter (SBA), the interconnection p9621 = r9872.3 was established (only when commissioning for the first time).

For a parallel connection, the power unit was set in p7015, to which the motor holding brake is connected (only when commissioning for the first time).

1:

A motor holding brake was detected where the brake control has not been configured (p1215 = 0).

The brake control configuration was left at "No motor holding brake available" (p1215 = 0).

11:

The identification had detected more than one motor holding brake for a parallel connection.

12:

For the parallel connection, in p0121 there is no valid component number for the power unit data set that is set in p7015.

13:

With the "Safe Brake Control" (SBC) function activated, an attempt was made to change the value in p7015.

14:

For a parallel connection, the power units set in p7015 cannot be addressed.

Remedy: For fault value = 0:
- no remedy required.
For fault value = 1:
- if required change the motor holding brake configuration (p1215 = 1, 2).
- if this fault value unexpectedly occurs, then the motor connections should be checked in order to rule out that they have been interchanged.
For fault value = 11:
For a parallel connection, only connect one motor holding brake.
For fault value = 12:
Check the setting of the power unit data set for a parallel connection (p7015).
For fault value = 13:
Before changing p7015, deactivate the "Safe Brake Control" function (SBC) (p9602).
For fault value = 14:
Check whether the power unit supports the brake control for a parallel connection (r9771.14).
Check whether there is a DRIVE-CLiQ communication error between the Control Unit and the power unit involved and, if required, carry out a diagnostics routine for the faults identified.
See also: p1215 (Motor holding brake configuration)

Reaction upon N: NONE
Acknowl. upon N: NONE

F07937 (N) Drive: Speed deviation between motor model and external speed

Message value: -
Message class: Application/technological function faulted (17)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Motor **Propagation:** GLOBAL
Reaction: OFF2 (NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY
Cause: The absolute value of the speed difference from the two actual values (r2169, r1443) exceeds the tolerance threshold (p3236) for longer than permitted (p3238).
Possible causes:
- the interconnection or scaling of the external encoder signal is incorrect (p1440, p2000).
- speed encoder for external encoder signal faulty.
- encoder signal's polarity or gain incorrect.
- smoothing time constant for model speed for monitoring too high (p2157).
- smoothing time constant or threshold values for monitoring too low (p3236, p3238).
If an external encoder signal is not being used:
- check speed signal r0061. For significant signal ripple, check the speed encoder and if required increase p0492.
See also: p2149 (Monitoring configuration)

Remedy: - check that the external speed matches the motor speed (p1440, r1443).
- check the polarity of the external speed (r1443).
- check the interconnection of the connector input and the scaling of the signal (p1440, p2000).

Reaction upon N: NONE
Acknowl. upon N: NONE

F07940 Sync-line-drive: Synchronizing error

Message value: -
Message class: Application/technological function faulted (17)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: After synchronization has been completed, the phase difference (r3808) is greater than the threshold value, phase synchronism (p3813).
OFF1 or OFF3 response, while the closed-loop phase control is active (r3819.6 = 1) or synchronism reached (r3819.2 = 1).
The enable was withdrawn during the synchronizing procedure (p3802 = 0)

Remedy: If required increase the threshold value phase synchronism (p3813) for synchronizing the line supply to the drive.
Before OFF1 or OFF3, complete synchronizing (r03819.0 = 0).
Before withdrawing the enable signal (p3802 = 0), reach synchronism (r3819.2 = 1).
See also: p3813 (Sync-line-drive phase synchronism threshold value)

A07941 Sync-line-drive: Target frequency not permissible

Message value: Parameter: %1
Message class: Application/technological function faulted (17)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The target frequency is outside the permissible value range.
Alarm value (r2124, interpret decimal):
1084: Target frequency greater than the positive speed limit, f_sync > f_max (r1084).
1087: Target frequency less than the negative speed limit, f_sync < f_min (r1087).
Remedy: Fulfill the conditions for the target frequency for line-drive synchronization.
See also: r1084, r1087

A07942 Sync-line-drive: Setpoint frequency is completely different than the target frequency

Message value: -
Message class: Application/technological function faulted (17)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: There is a considerable difference between the setpoint frequency and the target frequency (f_set <> f_target). The deviation that can be tolerated is set in p3806.
Remedy: Not necessary.
The alarm is automatically withdrawn after the difference that can be tolerated between the setpoint and target frequencies (p3806) is reached.
See also: p3806 (Sync-line-drive frequency difference threshold value)

A07943 Sync-line-drive: Synchronization not permitted

Message value: Parameter: %1
Message class: Application/technological function faulted (17)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: Synchronization is not permitted.
Alarm value (r2124, interpret decimal):
1300: The control mode (p1300) has not been set to encoderless closed-loop speed control or U/f characteristic.
1910: Motor data identification activated.
1960: Speed controller optimization activated.
3801: Voltage Sensing Module (VSM) not found.
3845: Friction characteristic record activated.
Remedy: Fulfill the conditions for the line-drive synchronization.
For alarm value = 1300:
Set the control mode (p1300) to encoderless closed-loop speed control (p1300 = 20) or U/f characteristic (p1300 = 0 ... 19).
For alarm value = 1910:
Exit the motor data identification routine (p1910).
For alarm value = 1960:
Exit the speed controller optimization routine (p1960).

For alarm value = 3801:

Connect the Voltage Sensing Module (VSM), assign it to the synchronizing drive (see p9910, p0151) and enter the drive object number of the synchronizing drive in p3801. When connecting the VSM to a neighboring drive object, ensure that the same current controller sampling time p0115[0] exists as the one for the synchronizing drive.

For alarm value = 3845:

Exit the friction characteristic record (p3845).

F07950 (A) Drive: Incorrect motor parameter

Message value: Parameter: %1

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: SERVO, SERVO_AC, SERVO_I_AC

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: IMMEDIATELY

Cause: - the motor parameters were incorrectly entered while commissioning (e.g. p0300 = 0, no motor)

- the braking resistor has still not been parameterized - commissioning cannot be completed.

Fault value (r0949, interpret decimal):

Parameter number involved.

300 (CU250S-2):

For this control mode, the motor type is not supported.

307:

The following motor parameters could be incorrect:

p0304, p0305, p0307, p0308, p0309

See also: p0300, p0301, p0304, p0305, p0307, p0310, p0311, p0314, p0315, p0316, p0320, p0322, p0323

Remedy: Compare the motor data with the rating plate data and if required, correct.

For fault value = 300 (CU250S-2):

Operate a motor type supported by the selected control mode.

Reaction upon A: NONE

Acknowl. upon A: NONE

F07950 (A) Drive: Incorrect motor parameter

Message value: Parameter: %1

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: IMMEDIATELY

Cause: - the motor parameters were incorrectly entered while commissioning (e.g. p0300 = 0, no motor)

- the braking resistor has still not been parameterized - commissioning cannot be completed.

Fault value (r0949, interpret decimal):

Parameter number involved.

300:

For this control mode, the motor type is not supported.

The synchronous-reluctance motor is not operated in the closed-loop speed/torque control mode.

307:

The following motor parameters could be incorrect:

p0304, p0305, p0307, p0308, p0309

See also: p0300, p0301, p0304, p0305, p0307, p0310, p0311, p0314, p0315, p0316, p0320, p0322, p0323

Remedy: Compare the motor data with the rating plate data and if required, correct.

For fault value = 300:

Operate a motor type supported by the selected control mode.

Reaction upon A: NONE

Acknowl. upon A: NONE

F07955 Drive: Motor has been changed

Message value: Parameter: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Motor **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The code number of the actual motor with DRIVE-CLiQ does not match the saved number.

Fault value (r0949, interpret decimal):

Number of the incorrect parameter.

See also: p0301 (Motor code number selection), r0302 (Motor code number of motor with DRIVE-CLiQ)

Remedy: Connect the original motor, switch on the Control Unit again (POWER ON) and exit quick commissioning with p0010 = 0.

Or set p0300 = 10000 (load the parameters from the motor with DRIVE-CLiQ) and re-commission.

Quick commissioning (p0010 = 1) is automatically exited with p3900 > 0.

If quick commissioning was exited with p0010 = 0, then an automatic controller calculation (p0340 = 1) is not carried out.

F07956 (A) Drive: Motor code does not match the list (catalog) motor

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Motor **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The motor code of the connected motor with DRIVE-CLiQ does not match the possible list motor types (see selection in p0300).

The connected motor with DRIVE-CLiQ might not be supported by this firmware version.

Fault value (r0949, interpret decimal):

Motor code of the connected motor with DRIVE-CLiQ.

Note:

The first three digits of the motor code generally correspond to the list motor type.

Remedy: Use a motor with DRIVE-CLiQ and the matching motor code.
Reaction upon A: NONE
Acknowl. upon A: NONE

A07960 Drive: Incorrect friction characteristic

Message value: Parameter: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The friction characteristic is incorrect.

Alarm value (r2124, interpret decimal):

1:

Incorrect parameter format.

1538:

The friction torque is greater than the maximum from the upper effective torque limit (p1538) and zero. This is the reason that the output of the friction characteristic (r3841) is limited to this value.

1539:

The friction torque is less than the minimum from the lower effective torque limit (p1539) and zero. This is the reason that the output of the friction characteristic (r3841) is limited to this value.

3820 ... 3829:

Incorrect parameter number. The speeds entered in the parameters for the friction characteristic do not correspond to the following condition:

0.0 < p3820 < p3821 < ... < p3829 <= p0322 or p1082, if p0322 = 0

Therefore the output of the friction characteristic (r3841) is set to zero.

3830 ... 3839:

Incorrect parameter number. The torques entered in the parameters for the friction characteristic do not correspond to the following condition:

0 <= p3830, p3831 ... p3839 <= p0333

Therefore the output of the friction characteristic (r3841) is set to zero.

See also: r3840 (Friction characteristic status word)

Remedy: Fulfill the conditions for the friction characteristic.

For alarm value = 1538:

Check the upper effective torque limit (e.g. in the field weakening range).

For alarm value = 1539:

Check the lower effective torque limit (e.g. in the field weakening range).

For alarm value = 3820 ... 3839:

Fulfill the conditions to set the parameters of the friction characteristic.

If the motor data (e.g. the maximum speed p0322) are changed during commissioning (p0010 = 1, 3), then the technological limits and threshold values, dependent on this, must be re-calculated by selecting p0340= 5.

A07961 Drive: Friction characteristic record activated

Message value: -

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: The automatic friction characteristic record is activated.

The friction characteristic is recorded at the next switch-on command.

When plotting the friction characteristic, it is not possible to save the parameters (p0971, p0977).

Remedy: Not necessary.

The alarm is automatically withdrawn after the friction characteristic recording has been successfully completed or recording has been deactivated (p3845 = 0).

F07963 Drive: Friction characteristic record interrupted

Message value: Parameter: %1

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: OFF1

Acknowledge: IMMEDIATELY

Cause: The conditions to record the friction characteristic are not fulfilled.

Fault value (r0949, interpret decimal):

0046: Missing enable signals (r0046).

1082: The highest speed value to be approached (p3829) is greater than the maximum speed (p1082).

1084: The highest speed value to be approached (p3829) is greater than the maximum speed (r1084, p1083, p1085).

1087: The highest speed value to be approached (p3829) is greater than the maximum speed (r1087, p1086, p1088).

1110: Friction characteristic record, negative direction selected (p3845) and negative direction inhibited (p1110).

1111: Friction characteristic record, positive direction selected (p3845) and positive direction inhibited (p1111).

1198: Friction characteristic record selected (p3845 > 0) and negative (p1110) and positive directions (p1111) inhibited (r1198).

1300: The control mode (p1300) has not been set to closed-loop speed control.

1755: For encoderless closed-loop control (p1300 = 20), the lowest speed value to be approached (p3820) is less than or equal to the changeover speed, open-loop controlled operation (p1755).

1910: Motor data identification activated.

1960: Speed controller optimization activated.
3820 ... 3829: speed (p382x) cannot be approached.
3840: Friction characteristic incorrect.
3845: Friction characteristic record de-selected.

Remedy: Fulfill the conditions to record the friction characteristic.
For fault value = 0046:
- establish missing enable signals.
For fault value = 1082, 1084, 1087:
- Select the highest speed value to be approached (p3829) less than or equal to the maximum speed (p1082, r1084, r1087).
- Re-calculate the speed points along the friction characteristic (p0340 = 5).
For fault value = 1110:
- Select the friction characteristic record, positive direction (p3845).
For fault value = 1111:
- Select the friction characteristic record, negative direction (p3845).
For fault value = 1198:
- Enable the permitted direction (p1110, p1111, r1198).
For fault value = 1300:
- set the control mode (p1300) on the closed-loop speed control (p1300 = 20, 21).
For fault value = 1755:
- For encoderless closed-loop speed control (p1300 = 20) select the lowest speed value to be approached (p3820) greater than the changeover speed of open-loop controlled operation (p1755).
- Re-calculate the speed points along the friction characteristic (p0340 = 5).
For fault value = 1910:
- Exit the motor data identification routine (p1910).
For fault value = 1960:
- Exit the speed controller optimization routine (p1960).
For fault value 3820 ... 3829:
- check the load at speed p382x.
- check the speed signal (r0063) for oscillation at speed p382x. Check the settings of the speed controller if applicable.
For fault value = 3840:
- Make the friction characteristic error-free (p3820 ... p3829, p3830 ... p3839, p3840).
For fault value = 3845:
- Activate the friction characteristic record (p3845).

A07965 (N) Drive: Save required

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The angular commutation offset (p0431) was re-defined and has still not been saved.
In order to permanently accept the new value, it must be saved in a non-volatile fashion (p0971, p0977).
See also: p0431 (Angular commutation offset), p1990 (Encoder adjustment determine angular commutation offset)
Remedy: Not necessary.
This alarm is automatically withdrawn after the data has been saved.
See also: p0971 (Save drive object parameters), p0977 (Save all parameters)
Reaction upon N: NONE
Acknowl. upon N: NONE

F07966 Drive: Check the commutation angle

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2 (NONE)
Acknowledge: IMMEDIATELY
Cause: The speed actual value was inverted and the associated angular commutation offset is not equal to zero and is therefore possibly incorrect.
Remedy: Angular commutation offset after the actual value inversion or determine it again (p1990=1).

F07967 Drive: Automatic encoder adjustment/pole position identification incorrect

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2 (NONE, OFF1)
Acknowledge: IMMEDIATELY
Cause: A fault has occurred during the automatic encoder adjustment or the pole position identification.

Only for internal Siemens troubleshooting.
Remedy: Carry out a POWER ON.

F07968 Drive: Lq-Ld measurement incorrect

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: A fault has occurred during the Lq-Ld measurement.

Fault value (r0949, interpret decimal):

10: Stage 1: The ratio between the measured current and zero current is too low.

12: Stage 1: The maximum current was exceeded.

15: Second harmonic too low.

16: Drive converter too small for the measuring technique.

17: Abort due to pulse inhibit.

Remedy: For fault value = 10:

Check whether the motor is correctly connected.

Replace the power unit involved.

Deactivate technique (p1909).

For fault value = 12:

Check whether motor data have been correctly entered.

Deactivate technique (p1909).

For fault value = 16:

Deactivate technique (p1909).

For fault value = 17:

Repeat technique.

F07969 Drive: Incorrect pole position identification

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: A fault has occurred during the pole position identification routine.
Fault value (r0949, interpret decimal):
1: Current controller limited
2: Motor shaft locked.
4: Encoder speed signal not plausible.
10: Stage 1: The ratio between the measured current and zero current is too low.
11: Stage 2: The ratio between the measured current and zero current is too low.
12: Stage 1: The maximum current was exceeded.
13: Stage 2: The maximum current was exceeded.
14: Current difference to determine the +d axis too low.
15: Second harmonic too low.
16: Drive converter too small for the measuring technique.
17: Abort due to pulse inhibit.
18: First harmonic too low.
20: Pole position identification requested with the motor shaft rotating and activated "flying restart" function.
Remedy: For fault value = 1:
- check whether the motor is correctly connected.
- check whether motor data have been correctly entered.
- replace the Motor Module involved.
For fault value = 2:
- open the motor holding brake (p1215 = 2) and bring the motor into a no-load condition.
For fault value = 4:
- check whether the encoder pulse number (p0408) and gearbox ratio (p0432, p0433) are correct.
- check whether the motor pole pair number is correct (p0314).
For fault value = 10:
- when selecting p1980 = 4: increase the value for p0325.
- when selecting p1980 = 1: increase the value for p0329.
- check whether the motor is correctly connected.
- replace the Motor Module involved.
For fault value = 11:
- increase the value for p0329.
- check whether the motor is correctly connected.
- replace the Motor Module involved.
For fault value = 12:
- when selecting p1980 = 4: reduce the value for p0325.
- when selecting p1980 = 1: reduce the value for p0329 (minimum, p0305).
- if p0329 = p0305: then reduce p0356, p0357.
- check whether motor data have been correctly entered.
For fault value = 13:
- reduce the value for p0329.
- check whether motor data have been correctly entered.
For fault value = 14:
- increase the value for p0329.
- motor not sufficiently anisotropic, change the technique (p1980 = 1, 10).
For fault value = 15:
- increase the value for p0325.
- motor not sufficiently anisotropic, change the technique (p1980 = 1, 10).

For fault value = 16:

- deactivate the technique (p1982).

For fault value = 17:

- the same as fault value 12 – or repeat the technique.

For fault value = 18:

- increase the value for p0329.
- saturation not sufficient, change the technique (p1980 = 10).

For fault value = 20:

- before carrying out a pole position identification routine ensure that the motor shaft is absolutely stationary (zero speed).

F07970 Drive: Automatic encoder adjustment incorrect

Message value: %1

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: OFF2 (NONE)

Acknowledge: IMMEDIATELY

Cause: A fault has occurred during the automatic encoder adjustment.

Fault value (r0949, interpret decimal):

1: Current controller limited

2: Motor shaft locked.

4: Encoder speed signal not plausible.

5: De-select U/f (p1300) or deactivate encoder calibration (p1990).

10: Stage 1: The ratio between the measured current and zero current is too low.

11: Stage 2: The ratio between the measured current and zero current is too low.

12: Stage 1: The maximum current was exceeded.

13: Stage 2: The maximum current was exceeded.

14: Current difference to determine the +d axis too low.

15: Second harmonic too low.

16: Drive converter too small for the measuring technique.

17: Abort due to pulse inhibit.

24: only for separately excited synchronous motors:

a) After the monitoring time has expired, the setpoint/actual value deviation of the excitation current is more than 50 % of the no-load excitation current during the excitation buildup phase.

b) At the end of the magnetizing phase, the setpoint/actual value deviation of the excitation current is more than 10 % of the no-load excitation current.

Remedy: For fault value = 1:

Check whether the motor is correctly connected.

Check whether motor data have been correctly entered.

Replace the power unit involved.

For fault value = 2:

Open the motor holding brake (p1215 = 2) and bring the motor into a no-load condition.

For fault value = 4:

Check whether the speed actual value inversion is correct (p0410.0).

Check whether the motor is correctly connected.

Check whether the encoder pulse number (p0408) and gearbox factor (p0432, p0433) are correct.

Check whether the motor pole pair number is correct (p0314).

For fault value = 5:

Deselect U/f (p1300) or deactivate encoder calibration (p1990).

For fault value = 10:

Increase the value for p0325.

Check whether the motor is correctly connected.

Replace the power unit involved.

For fault value = 11:
Increase the value for p0329.
Check whether the motor is correctly connected.
Replace the power unit involved.
For fault value = 12:
Reduce the value for p0325.
Check whether motor data have been correctly entered.
For fault value = 13:
Reduce the value for p0329.
Check whether motor data have been correctly entered.
For fault value = 14:
Increase the value for p0329.
For fault value = 15:
Increase the value for p0325.
For fault value = 16:
Deactivate technique (p1982).
For fault value = 17:
Repeat technique.
For fault value = 24:
Check the excitation equipment.
If there is no error, then extend the runtime for the automatic encoder calibration via p1999. Repeat technique.

A07971 (N) Drive: Angular commutation offset determination activated

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The automatic determination of the angular commutation offset (encoder adjustment) is activated (p1990 = 1).
Note:
The automatic determination is carried out at the next switch-on command.
For SERVO and fault F07414 present, the following applies:
The determination of the angular commutation offset is automatically activated (p1990 = 1), if a pole position identification technique is set in p1980.
See also: p1990 (Encoder adjustment determine angular commutation offset)
Remedy: Not necessary.
The alarm is automatically withdrawn after successful determination or for the setting p1990 = 0.
Reaction upon N: NONE
Acknowl. upon N: NONE

A07971 (N) Drive: Angular commutation offset determination activated

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The automatic determination of the angular commutation offset (encoder adjustment) is activated (p1990 = 1, 3).
Note:
The automatic determination is carried out at the next switch-on command.
See also: p1990 (Encoder adjustment determine angular commutation offset)
Remedy: Not necessary.
The alarm is automatically withdrawn after successful determination or for the setting p1990 = 0.

Reaction upon N: NONE
Acknowl. upon N: NONE

A07975 (N) Drive: Travel to the zero mark - setpoint input expected

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The zero mark must be evaluated in order to adjust the encoder.
It is expected that a speed or torque setpoint is entered.
See also: p1990 (Encoder adjustment determine angular commutation offset)
Remedy: Not necessary.
This alarm is automatically withdrawn after the zero mark has been detected.
Reaction upon N: NONE
Acknowl. upon N: NONE

A07976 Drive: Fine encoder calibration activated

Message value: Parameter: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The alarm indicates the phases of the fine encoder calibration using the alarm value.
Alarm value (interpret decimal):
1: Fine encoder calibration active.
2: Rotating measurement started (set the setpoint speed > 40 % rated motor speed).
3: Rotating measurement lies within the speed and torque range.
4: Rotating measurement successful: pulse inhibit can be initiated to accept the values.
5: Fine encoder calibration is calculated.
10: Speed too low, rotating measurement interrupted.
12: Torque too high, rotating measurement interrupted.
See also: p1905 (Parameter tuning selection)
Remedy: For alarm value = 10:
Increase the speed.
For alarm value = 12:
Bring the drive into a no-load condition.

A07978 (N) Drive: activated ESM mode waits for the end of motor identification

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The ESM mode and the motor data identification routine is activated.
The motor must have been completely commissioned before the ESM mode becomes active.
The motor data identification routine is performed at the next switch-on command and then the ESM mode becomes active.
See also: p1910
Remedy: Not necessary.
The alarm is automatically withdrawn after the motor data identification has been successfully completed or for the setting p1900 = 0.

Reaction upon N: NONE
Acknowl. upon N: NONE

A07979 (F, N) Drive: pole position identification calibration required

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: Control Unit (CU) **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The pole position identification was not successful as the calibration values for the current measurement are not correct.
Remedy: Replace the Motor Module involved.
Reaction upon F: OFF2 (NONE)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A07980 Drive: Rotating measurement activated

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The rotating measurement is activated. For the rotating measurement, the motor can accelerate up to the maximum speed and with maximum torque. Only the parameterized current limit (p0640) and the maximum speed (p1082) are effective. The behavior of the motor can be influenced using the direction inhibit (p1959.14, p1959.15) and the ramp-up/ramp-down time (p1958).

The rotating measurement is carried out at the next switch-on command.

See also: p1960

Remedy: Not necessary.

The alarm is automatically withdrawn after the rotating measurement has been successfully completed or for the setting p1960 = 0.

Note:

If a POWER ON or a warm restart is performed with motor data identification selected, the motor data identification request will be lost. If motor data identification is required, it will need to be selected again manually following ramp-up.

A07980 Drive: Rotating measurement activated

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The rotating measurement (automatic speed controller optimization) is activated.

The rotating measurement is carried out at the next switch-on command.

Note:

During the rotating measurement it is not possible to save the parameters (p0971, p0977).

See also: p1960

Remedy: Not necessary.

The alarm is automatically withdrawn after the speed controller optimization has been successfully completed or for the setting p1900 = 0.

A07981	**Drive: Enable signals for the rotating measurement missing**		
Message value:	-		
Message class:	Error in the parameterization / configuration / commissioning procedure (18)		
Drive object:	VECTOR, VECTOR_AC, VECTOR_I_AC		
Component:	None	**Propagation:**	GLOBAL
Reaction:	NONE		
Acknowledge:	NONE		
Cause:	The rotating measurement cannot be started due to missing enable signals. For p1959.13 = 1, the following applies: - enable signals for the ramp-function generator missing (see p1140 ... p1142). - enable signals for the speed controller integrator missing (see p1476, p1477).		
Remedy:	- acknowledge faults that are present. - establish missing enable signals. See also: r0002, r0046		

F07982	**Drive: Rotating measurement encoder test**		
Message value:	%1		
Message class:	Error in the parameterization / configuration / commissioning procedure (18)		
Drive object:	VECTOR, VECTOR_AC, VECTOR_I_AC		
Component:	None	**Propagation:**	GLOBAL
Reaction:	OFF1 (NONE, OFF2)		
Acknowledge:	IMMEDIATELY		
Cause:	A fault has occurred during the encoder test. Fault value (r0949, interpret decimal): 1: The speed did not reach a steady-state condition. 2: The speed setpoint was not able to be approached as the minimum limiting is active. 3: The speed setpoint was not able to be approached as the suppression (skip) bandwidth is active. 4: The speed setpoint was not able to be approached as the maximum limiting is active. 5: The encoder does not supply a signal. 6: Incorrect polarity. 7: Incorrect pulse number. 8: Noise in the encoder signal or speed controller unstable. 9: Voltage Sensing Module (VSM) incorrectly connected.		
Remedy:	For fault value = 1: - check the motor parameters. - carry out a motor data identification routine (p1910). - if required, reduce the dynamic factor (p1967 < 25 %). For fault value = 2: - adapt the speed setpoint (p1965) or adapt the minimum limit (p1080). For fault value = 3: - adapt the speed setpoint (p1965) or suppression (skip) bandwidths (p1091 ... p1094, p1101). For fault value = 4: - adapt the speed setpoint (p1965) or maximum limit (p1082, p1083 and p1086). For fault value = 5: - check the encoder connection. If required, replace the encoder. For fault value = 6: - check the connection assignment of the encoder cable. Adapt the polarity (p0410). For fault value = 7: - adapt the pulse number (p0408). For fault value = 8: - check the encoder connection and encoder cable. It is possible that there is a problem associated with the ground connection. - reduce the dynamic response of the speed controller (p1460, p1462 and p1470, p1472).		

For fault value = 9:
- check the connections of the Voltage Sensing Module (VSM).
Note:
The encoder test can be switched out (disabled) using p1959.0.
See also: p1959

F07983 Drive: Rotating measurement saturation characteristic

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF1 (NONE, OFF2)
Acknowledge: IMMEDIATELY
Cause: A fault has occurred while determining the saturation characteristic.
Fault value (r0949, interpret decimal):
1: The speed did not reach a steady-state condition.
2: The rotor flux did not reach a steady-state condition.
3: The adaptation circuit did not reach a steady-state condition.
4: The adaptation circuit was not enabled.
5: Field weakening active.
6: The speed setpoint was not able to be approached as the minimum limiting is active.
7: The speed setpoint was not able to be approached as the suppression (skip) bandwidth is active.
8: The speed setpoint was not able to be approached as the maximum limiting is active.
9: Several values of the determined saturation characteristic are not plausible.
10: Saturation characteristic could not be sensibly determined because load torque too high.
Remedy: For fault value = 1:
- the total drive moment of inertia is far higher than that of the motor (p0341, p0342).
De-select rotating measurement (p1960), enter the moment of inertia p0342, re-calculate the speed controller p0340 = 4 and repeat the measurement.
For fault value = 1 ... 2:
- increase the measuring speed (p1961) and repeat the measurement.
For fault value = 1 ... 4:
- check the motor parameters (rating plate data). After the change: Calculate p0340 = 3.
- check the moment of inertia (p0341, p0342). After the change: Calculate p0340 = 3.
- carry out a motor data identification routine (p1910).
- if required, reduce the dynamic factor (p1967 < 25 %).
For fault value = 5:
- the speed setpoint (p1961) is too high. Reduce the speed.
For fault value = 6:
- adapt the speed setpoint (p1961) or minimum limiting (p1080).
For fault value = 7:
- adapt the speed setpoint (p1961) or suppression (skip) bandwidths (p1091 ... p1094, p1101).
For fault value = 8:
- adapt the speed setpoint (p1961) or maximum limit (p1082, p1083 and p1086).
For fault value = 9, 10:
- the measurement was carried out at an operating point where the load torque is too high. Select a more suitable operating point, either by changing the speed setpoint (p1961) or by reducing the load torque. The load torque may not be varied while making measurements.
Note:
The saturation characteristic identification routine can be disabled using p1959.1.
See also: p1959

F07984 Drive: Speed controller optimization, moment of inertia

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF1 (NONE, OFF2)
Acknowledge: IMMEDIATELY
Cause: A fault has occurred while identifying the moment of inertia.

Fault value (r0949, interpret decimal):

1: The speed did not reach a steady-state condition.

2: The speed setpoint was not able to be approached as the minimum limiting is active.

3. The speed setpoint was not able to be approached as the suppression (skip) bandwidth is active.

4. The speed setpoint was not able to be approached as the maximum limiting is active.

5: It is not possible to increase the speed by 10% as the minimum limiting is active.

6: It is not possible to increase the speed by 10% as the suppression (skip) bandwidth is active.

7: It is not possible to increase the speed by 10% as the maximum limiting is active.

8: The torque difference after the speed setpoint step is too low in order to be able to still reliably identify the moment of inertia.

9: Too few data to be able to reliably identify the moment of inertia.

10: After the setpoint step, the speed either changed too little or in the incorrect direction.

11: The identified moment of inertia is not plausible. The measured moment of inertia is less than the 0.05x or greater than 500x the preset moment of inertia of the motor p0341.

Remedy: For fault value = 1:

- check the motor parameters (rating plate data). After the change: Calculate p0340 = 3.
- check the moment of inertia (p0341, p0342). After the change: Calculate p0340 = 3.
- carry out a motor data identification routine (p1910).
- if required, reduce the dynamic factor (p1967 < 25 %).

For fault value = 2, 5:

- adapt the speed setpoint (p1965) or adapt the minimum limit (p1080).

For fault value = 3, 6:

- adapt the speed setpoint (p1965) or suppression (skip) bandwidths (p1091 ... p1094, p1101).

For fault value = 4, 7:

- adapt the speed setpoint (p1965) or maximum limit (p1082, p1083 and p1086).

For fault value = 8:

- the total drive moment of inertia is far higher than that of the motor (refer to p0341, p0342). De-select rotating measurement (p1960), enter the moment of inertia p0342, re-calculate the speed controller p0340 = 4 and repeat the measurement.

For fault value = 9:

- check the moment of inertia (p0341, p0342). After the change, re-calculate (p0340 = 3 or 4).

For fault value = 10:

- check the moment of inertia (p0341, p0342). After the change: Calculate p0340 = 3.

For fault value = 11:

- reduce the moment of inertia of the motor p0341 (e.g. factor of 0.2) or increase (e.g. factor of 5) and repeat the measurement.

Note:

The moment of inertia identification routine can be disabled using p1959.2.

See also: p1959

F07985 Drive: Speed controller optimization (oscillation test)

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF1 (NONE, OFF2)
Acknowledge: IMMEDIATELY
Cause: A fault has occurred during the vibration test.
Fault value (r0949, interpret decimal):
1: The speed did not reach a steady-state condition.
2: The speed setpoint was not able to be approached as the minimum limiting is active.
3: The speed setpoint was not able to be approached as the suppression (skip) bandwidth is active.
4: The speed setpoint was not able to be approached as the maximum limiting is active.
5: Torque limits too low for a torque step.
6: No suitable speed controller setting was found.
Remedy: For fault value = 1:
- check the motor parameters (rating plate data). After the change: Calculate p0340 = 3.
- check the moment of inertia (p0341, p0342). After the change: Calculate p0340 = 3.
- carry out a motor data identification routine (p1910).
- if required, reduce the dynamic factor (p1967 < 25 %).
For fault value = 2:
- adapt the speed setpoint (p1965) or adapt the minimum limit (p1080).
For fault value = 3:
- adapt the speed setpoint (p1965) or suppression (skip) bandwidths (p1091 ... p1101).
For fault value = 4:
- adapt the speed setpoint (p1965) or maximum limit (p1082, p1083 and p1086).
For fault value = 5:
- increase the torque limits (e.g. p1520, p1521).
For fault value = 6:
- reduce the dynamic factor (p1967).
- disable the vibration test (p1959.4 = 0) and repeat the rotating measurement.
See also: p1959

F07986 Drive: Rotating measurement ramp-function generator

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF1 (NONE, OFF2)
Acknowledge: IMMEDIATELY
Cause: During the rotating measurements, problems with the ramp-function generator occurred.
Fault value (r0949, interpret decimal):
1: The positive and negative directions are inhibited.
Remedy: For fault value = 1:
Enable the direction (p1110 or p1111).

A07987 Drive: Rotating measurement, no encoder available

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: No encoder available. The rotating measurement was carried out without encoder.
Remedy: Connect encoder or select p1960 = 1, 3.

F07988 Drive: Rotating measurement, no configuration selected

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2 (NONE, OFF1)
Acknowledge: IMMEDIATELY
Cause: When configuring the rotating measurement (p1959), no function was selected.
Remedy: Select at least one function for automatic optimization of the speed controller (p1959).
See also: p1959

F07989 Drive: Rotating measurement leakage inductance (q-axis)

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF1 (NONE, OFF2)
Acknowledge: IMMEDIATELY
Cause: An error has occurred while measuring the dynamic leakage inductance.
Fault value (r0949, interpret decimal):
1: The speed did not reach a steady-state condition.
2: The speed setpoint was not able to be approached as the minimum limiting is active.
3: The speed setpoint was not able to be approached as the suppression (skip) bandwidth is active.
4: The speed setpoint was not able to be approached as the maximum limiting is active.
5: The 100% flux setpoint was not reached.
6: No Lq measurement possible because field weakening is active.
7: Speed actual value exceeds the maximum speed p1082 or 75% of the rated motor speed.
8: Speed actual value is below 2 % of the rated motor speed.
Remedy: For fault value = 1:
- check the motor parameters.
- carry out a motor data identification routine (p1910).
- if required, reduce the dynamic factor (p1967 < 25 %).
For fault value = 2:
- adapt the speed setpoint (p1965) or adapt the minimum limit (p1080).
For fault value = 3:
- adapt the speed setpoint (p1965) or suppression (skip) bandwidths (p1091 ... p1094, p1101).
For fault value = 4:
- adapt the speed setpoint (p1965) or maximum limit (p1082, p1083 and p1086).
For fault value = 5:
- flux setpoint p1570 = 100 % and current setpoint p1610 = 0 % kept during the Lq measurement.
For fault value = 6:
- reduce the regenerative load so that the drive does not reach field weakening when accelerating.
- reduce p1965 so that the q leakage inductance is recorded at lower speeds.
For fault value = 7:
- increase p1082, if this is technically permissible.
- reduce p1965 so that the q leakage inductance is recorded at lower speeds.
For fault value = 8:
- reduce the load when motoring so that the drive is not braked.
- increase p1965 so that the measurement may be taken at higher speeds.
Note:
The measurement of the q leakage inductance can be disabled using p1959.5. If only p1959.5 is set, then only this measurement is carried out if p1960 is set to 1, 2 and the drive is switched on.
See also: p1959

F07990	**Drive: Incorrect motor data identification**
Message value:	%1
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Drive object:	SERVO, SERVO_AC, SERVO_I_AC
Component:	Motor **Propagation:** GLOBAL
Reaction:	OFF2 (NONE, OFF1)
Acknowledge:	IMMEDIATELY
Cause:	A fault has occurred during the identification routine. Fault value (r0949, interpret decimal): 10: Data set changeover during motor data identification. 101: Voltage amplitude even at 30% maximum current amplitude is too low to measure the inductance. 102, 104: Voltage limiting while measuring the inductance. 103: Maximum frequency exceeded during the rotating inductance measurement. 110: Motor not finely synchronized before the rotating measurement. 111: The zero mark is not received within 2 revolutions. 112:Fine synchronization is not realized within 8 seconds after the zero mark has been passed. 113: The power, torque or current limit is zero. 115: U/f control is active. 120: Error when evaluating the magnetizing inductance. 125: Cable resistance greater than the total resistance. 126: Series inductance greater than the total leakage inductance. 127: Identified leakage inductance negative. 128: Identified stator resistance negative. 129: Identified rotor resistance negative. 130: Drive data set changeover during the motor data identification routine. 140: The setpoint channel inhibits both directions. 160: Accelerating time when determining kT, moment of inertia or reluctance torque too short or too long. 161: When measuring the kT characteristic, constants kT1, kT3, kT5 and kT7 were not able to be determined (p0645 ... p0648), as too few points were measured. 165: The current limit was reduced below the measurement current while determining the reluctance torque. 173: Internal problem. 180: identification speed (maximum speed, rated speed, 0.9 x p0348) less than p1755 or no DC link voltage available. 181: Zero speed at the end of the measurement of periodic position errors. 182: No complete mechanical revolution at to the end of the measurement of periodic position errors. 190: Speed setpoint not equal to zero. 191: An actual speed of zero is not reached. 192: Speed setpoint not reached. 193: Inadmissible motion of the motor when identifying the voltage emulation error. 194: Supplementary torque (r1515) not equal to zero. 195: Closed-loop torque control active. 200, 201: Not possible to identify the voltage emulation error characteristic of the drive converter (p1952, p1953).
Remedy:	For fault value = 10: - do not initiate a data set changeover during the motor data identification. For fault value = 101: - increase current limit (p0640) or torque limit (p1520, p1521). - check current controller gain (p1715). - reduce current controller sampling time (p0115). It may be impossible to completely identify the L characteristic, as required current amplitude is too high. - suppress meas. (p1909, p1959). For fault value = 102, 104: - reduce current limit (p0640). - check current controller P gain. - suppress meas. (p1909, p1959).

For fault value = 103:
- increase external moment of inertia (if possible).
- reduce current controller sampling time (p0115).
- suppress meas. (p1909, p1959).
For fault value = 110:
- before rotating measurement, traverse motor over zero mark.
For fault value = 111:
- it is possible that encoder does not have zero mark. Correct setting in p0404.15.
- encoder pulse number was incorrectly entered. Correct setting in p0408.
- if zero mark signal is defective, replace encoder.
For fault value = 112:
- upgrade encoder software.
For fault value = 113:
- check the limits (p0640, p1520, p1521, p1530, p1531), correct the zero values.
For fault value = 115:
- de-select U/f control (p1317 = 0).
For fault value = 120:
- check current controller P gain (p1715) and if required, reduce.
- increase the pulse frequency (p1800).
For fault value = 125:
- reduce cable resistance (p0352).
For fault value = 126:
- reduce series inductance (p0353).
For fault = 127, 128, 129:
- it is possible that current controller is oscillating. Reduce the P gain (p1715).
- if required, reduce the current limit (p0640).
For fault value = 130:
- do not initiate a drive data set changeover during motor ident. routine.
For fault value = 140:
- before the measurement, enable at least one direction (p1110 = 0 or p1111 = 0 or p1959.14 = 1 or p1959.15 = 1).
For fault value = 160:
- extend accelerating time when determining kT, moment of inertia and reluctance torque, e.g. by increasing max. speed (p1082), increasing moment of inertia or reducing max. current (p0640).
- in encoderless operation with load moment of inertia, parameterize the load moment of inertia (p1498).
- reduce the ramp-up time (p1958).
- increase speed controller P-gain (p1460).
- suppress meas. (p1959).
For fault value = 161:
- reduce the ramp-up time (p1958).
- increase max. speed (p1082).
- reduce current limit (p0640).
- if required, do not activate the kT characteristic (p1780.9 = 0).
For fault value = 165:
- decrease max. current (p0640).
For fault value = 173:
-
For fault value = 180:
- switch-on the infeed
- increase max. speed (p1082).
- reduce p1755.
- suppress meas. (p1909, p1959).

For fault value = 181, 182:
- increase max. speed (p1082).
- if required, deactivate the measurement (p1959.0 = 0).
Note:
- to measure periodic position errors, the encoder must have absolute position information (unique zero mark, distance-coded zero marks, absolute encoder, 1-pole resolver p5263.10).
For fault value = 190:
- set speed setpoint to zero.
For fault value = 191:
- do not start motor data identification routine while motor is still rotating.
For fault value = 192:
- check closed-loop speed control (motor rotor may be locked or closed-loop speed control is not functioning).
- for p1215 = 1, 3 (brake the same as the sequence control) check the control sense (p0410.0).
- ensure that enable signals are present during measurement.
- remove any pulling loads from motor.
- increase max. current (p0640).
- reduce max. speed (p1082).
- suppress meas. (p1959).
For fault value = 193:
- the motor has moved through more than 5 ° electrical (r0093). Lock motor rotor at one of these pole position angles (r0093): 90 °, 210 ° or 330 ° (+/-5 °) and then start identification.
For fault value = 194:
- switch out all supplementary torques (e.g. CI: p1511).
- for hanging/suspended axes: Lock motor rotor at one of these pole position angles (r0093): 90 °, 210 ° or 330 ° (+/-1 °) and then start identification.
For fault value = 195:
- de-select closed-loop torque control (p1300 = 21 or 20, or set the signal source in p1501 to a 0 signal).
For fault value = 200, 201:
- set pulse frequency to 0.5 x current controller frequency (e.g. 4 kHz for a current controller sampling time = 125 us).
- reduce cable length between Motor Module and motor.
- read-out measured values (r1950, r1951) and therefore determine suitable values for p1952, p1953 according to your own estimation.

F07990 Drive: Incorrect motor data identification

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Motor **Propagation:** GLOBAL
Reaction: OFF2 (NONE, OFF1)
Acknowledge: IMMEDIATELY
Cause: A fault has occurred during the identification routine.
Fault value (r0949, interpret decimal):
1: Current limit value reached.
2: Identified stator resistance lies outside the expected range 0.02 ... 100% of Zn.
3: Identified rotor resistance lies outside the expected range 0.1 ... 100% of Zn. Separately excited synchronous motors: damping resistance outside 1.0 ...15 % of Zn.
4: Identified stator reactance lies outside the expected range 50 ... 900 % of Zn. Separately excited synchronous motors: stator reactance outside 20 ...500 % of Zn.
5: Identified magnetizing reactance lies outside the expected range 50 ... 900 % of Zn. Separately excited synchronous motors: magnetizing reactance outside 20 ...500 % of Zn.
6: Identified rotor time constant lies outside the expected range 10 ms ... 5 s. Separately excited synchronous motors: damping time constant outside of 5 ms ... 1 s.
7: Identified total leakage reactance lies outside the expected range 4 ... 100 % of Zn.
8: Identified stator leakage reactance lies outside the expected range 2 ... 50% of Zn. Separately excited synchronous motors: stator leakage reactance outside 2 ...40 % of Zn.
9: Identified rotor leakage reactance lies outside the expected range 2 ... 50% of Zn. Separately excited synchronous motors: damping leakage reactance outside 1.5 ...20 % of Zn.

10: Motor has been incorrectly connected.

11: Motor shaft rotates.

12: Ground fault detected.

15: Pulse inhibit occurred during motor data identification.

16: During the Rs measurement an error occurred when activating one or several power modules connected in parallel.

17: After the Rs measurement an error occurred when activating one or several power modules connected in parallel.

20: Identified threshold voltage of the semiconductor devices lies outside the expected range 0 ... 10 V.

30: Current controller in voltage limiting.

40: At least one identification contains errors. The identified parameters are not saved to prevent inconsistencies.

50: The selected sampling time is too low for the motor identification (p0115[0]).

70: Identification of the circle center point canceled (reluctance motor).

Note:

Percentage values are referred to the rated motor impedance:

Zn = Vmot.nom / sqrt(3) / Imot,nom

Remedy: For fault value = 1 ... 40:

- check whether motor data have been correctly entered in p0300, p0304 ... p0311.

- is there an appropriate relationship between the motor power rating and that of the Motor Module? The ratio of the Motor Module to the rated motor current should not be less than 0.5 and not be greater than 4.

- check connection type (star-delta).

For fault value = 11 in addition:

- deactivate oscillation monitoring (p1909.7 = 1).

For fault value = 2:

- for parallel circuits, check the motor winding system in p7003. If, for power units connected in parallel, a motor is specified with a single-winding system (p7003 = 0), although a multi-winding system is being used, then a large proportion of the stator resistance is interpreted as feeder cable resistance and entered in p0352.

For fault value = 4, 7:

- check whether inductances are correctly set in p0233 and p0353.

- check whether motor has been correctly connected (star-delta).

- set p1909.0 = 1.

For fault value = 12:

- check the power cable connections.

- check the motor.

- check the CT.

For fault value = 50:

- perform a motor data identification with a higher sampling time, and after this, change to the required higher sampling time (p0115[0]).

F07990 Drive: Identification incorrect

Message value: %1

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: HLA

Component: Motor **Propagation:** GLOBAL

Reaction: OFF1 (NONE, OFF2)

Acknowledge: IMMEDIATELY

Cause: A fault has occurred during the identification routine.

Fault value (r0949, interpret decimal):

1: piston calibration without absolute position (p1407.3 = 0).

2: determining the control sense without moving in both directions.

3: determining the control sense without a clear result.

4: determining the valve offset without moving.

5: traversing range identification without absolute position or piston calibration.

6: the measured piston stroke differs from the parameterized piston stroke (p0313) by more than 20 %.

7: For the characteristic measurement, the drive comes to a standstill before reaching the parameterized free distance.

8: The loop gain of the force controller is incorrect. At the positive end stop, pA (r0067) < pB (r0068).

10: There are less than 10 measuring points not equal to zero on one of the two characteristic sides (r1962). The measured characteristic is not evaluated.

100: Position and speed actual value inversion differ (p0410).

101: Start of measuring range > end of measuring range (p1955[0] > p1955[1]).

102: Minimum measuring travel > maximum measuring travel (p1956[0] > p1956[1]).

190: Velocity setpoint is not zero.

Remedy: For fault value = 1:

- reference (home) the drive before calibrating the piston (p1407.3 must be = 1).

For fault value = 2, 3:

- drive must be able to be moved.
- check system pressure and shutoff valves.
- increase the settling time (p1958[1]).

For fault value = 4:

- drive must be able to be moved.
- check system pressure and shutoff valves.

For fault value = 5:

- reference (home) the drive before the traversing range identification (p1407.3 must be = 1) and calibrate the piston (p1909.1 = 1 or p1959.2 = 1 and p1960 = 1).

For fault value = 6:

- there is an obstruction in the traversing range. If necessary, remove the obstruction. If the measuring travel with obstruction is sufficient, no measure has to be applied.
- the piston stroke was incorrectly parameterized. If the actual piston stroke is less than the parameterized stroke, correct it (p0313). A piston stroke that has been parameterized too low, is automatically corrected.
- the selected search voltage is not sufficient for one direction in order to overcome the existing piston or guide friction. Check the setting of the search voltage to identify the valve characteristic, and if required, increase (p1955[2, 3]).

For fault value = 7:

- piston calibration was incorrectly carried out. Correct the piston calibration or automatically calibrate it (p1959.2 = 1 and p1960 = 1).
- the minimum or maximum parameterized measuring travel cannot be traversed as there is an obstruction in the path or the piston stroke was incorrectly parameterized. If required, correct the measuring travel (p1956[0], p1956[1]), correct the piston stroke or automatically calibrate it (p1959.x = 1 and p1960 = 1).
- drive cannot be traversed, because the shutoff valve does not open, the system pressure is not available, encoder or valve are not connected. Check the shutoff valve, system pressure, encoder and valve connection.

For fault value = 8:

- interchange the connectors of pressure sensors A and B or invert the direction of motion (p1820, p0410) and repeat the complete moving measurement.
- check the reference values for pressure sensors (p0240, p0242).

For fault value = 10:

- check the connection between the encoder and cylinder.
- measuring distance too short, if required lengthen (p1956[0], p1956[1]).
- measuring time too long, if required shorten (p1958[0], p1958[1], p1958[2]).
- increase the number of measuring points to a minimum of 20 (p1957[0]).

For fault value = 100:

- set the position and speed actual value inversion the same (p0410 = 0 or p0410 = 3).

For fault value = 101:

- start of measuring range must be parameterized less than the end of measuring range (p1955[0] > p1955[1]).

For fault value = 102:

- minimum measuring distance must be parameterized less than the maximum measuring distance (p1956[0] > p1956[1]).

For fault value = 190:

- during the identification, the velocity setpoint must be zero.

A07991 (N) Drive: Motor data identification activated

Message value: -

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: SERVO, SERVO_AC, SERVO_I_AC

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: The motor data identification routine is activated.

The motor data identification routine is carried out at the next switch-on command.

See also: p1910, p1960

Remedy: Not necessary.

The alarm is automatically withdrawn after the motor data identification routine has been successfully completed or for the setting p1910 = 0 or p1960 = 0.

If a POWER ON or a warm restart is performed with motor data identification selected, the motor data identification request will be lost. If motor data identification is required, it will need to be selected again manually following ramp-up.

Reaction upon N: NONE

Acknowl. upon N: NONE

A07991 (N) Drive: Motor data identification activated

Message value: -

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: The motor data identification routine is activated.

The motor data identification routine is carried out at the next switch-on command.

If rotating measurement is selected (see p1900, p1960), it will not be possible to save the parameter assignment. Once motor data identification has been completed or deactivated, the option to save the parameter assignment will be made available again.

See also: p1910

Remedy: Not necessary.

The alarm is automatically withdrawn after the motor data identification has been successfully completed or for the setting p1900 = 0.

Reaction upon N: NONE

Acknowl. upon N: NONE

A07991 (N) Drive: Data identification activated

Message value: -

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: HLA

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: Data identification is activated.

Data identification is performed at the next switch-on command. When doing this, the drive moves.

See also: p1910, p1960

Remedy: Not necessary.

The alarm is automatically withdrawn after the data identification routine has been successfully completed or for the setting p1910 = 0 or p1960 = 0.

If a POWER ON or a warm restart is performed with motor data identification selected, the motor data identification request will be lost. If motor data identification is required, it will need to be selected again manually following ramp-up.

Reaction upon N: NONE

Acknowl. upon N: NONE

F07993 Drive: Incorrect direction of rotation of the field or encoder actual value inversion

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2 (NONE)
Acknowledge: IMMEDIATELY
Cause: Either the direction of the rotating field or the encoder actual value has an incorrect sign. The motor data identification automatically changed the actual value inversion (p0410) in order to correct the control sense. This can result in a direction of rotation change.

Note:

To acknowledge this fault, the correctness of the direction of rotation must first be acknowledged with p1910 = -2.

Remedy: Check the direction of rotation (also for the position controller, if one is being used).

If the direction of rotation is correct, the following applies:

No additional measures are required (except set p1910 = -2 and acknowledge fault).

If the direction of rotation is incorrect, the following applies:

To change the direction of rotation, two phases must be interchanged and the motor identification routine must be repeated.

A07994 (F, N) Drive: motor data identification not performed

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The "vector control" mode has been selected and a motor data identification has still not been performed.

The alarm is initiated when changing the drive data set (see r0051) in the following cases:

- vector control is parameterized in the actual drive data set (p1300 >= 20).

and

- motor data identification has still not been performed in the actual drive data set (see r3925).

Note:

For SINAMICS G120, a check is made and an alarm is output also when exiting commissioning and when the system powers up.

Remedy: - Perform motor data identification (see p1900).

- if required, parameterize "U/f control" (p1300 < 20).

- switch over to a drive data set, in which the conditions do not apply.

Reaction upon F: NONE (OFF2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

F07995 Drive: Pole position identification not successful

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The pole position identification routine was unsuccessful.

Fault value (r0949, interpret decimal):

1: No current is established.

2: The starting current is not zero.

3: The selected max. distance was exceeded (p1981).

4x: The measuring signal does not permit a clear evaluation.

5: The max. current was exceeded during the measurement.

6: The current measurement must be re-calibrated.

7x: The Sensor Module does not support the pole position identification routine.

8: The pole position identification routine current required is greater than the max. current.

9: The set pole position identification routine current is zero.

10: Data set changeover during the pole position identification.

11: The encoder adjustment to determine the commutation angle is active (p1990 = 1) and the encoder without zero mark is not finely synchronized or does not have any valid data.

100: motion-based pole position identification, 1st and 2nd Measurements differ. Motor blocked or current (p1993) too low.

101: Motion-based position position identification, insufficient motion, motor blocked or current (p1993) too low.

102: Motion-based pole position identification, brake is being used and is closed. The motion-based position position identification in conjunction with the brake is not permitted.

103: Motion-based pole position identification without encoder.

104: Motion-based pole position identification, speed actual value not zero after stabilizing time.

200: Elasticity-based pole position identification, internal error in the arctan calculation (0/0).

201: Elasticity-based pole position identification, too few measuring points that can be evaluated.

202: Elasticity-based pole position identification, outliers in the measurement series.

203: Elasticity-based pole position identification, maximum rotation without current.

204: Elasticity-based pole position identification, no positive edge found.

205: Elasticity-based pole position identification, the result of the Fourier transformation differs by more than 480 ° electrical / p3093 from the rough estimate.

206: Elasticity-based pole position identification, plausibility test unsuccessful.

207: Elasticity-based pole position identification, no negative measured value found.

It is possible that all measured values are identical. The expected deflection was not able to be reached, either because the expectation is too high or not enough current was able to be established.

208: Elasticity-based pole position identification, measuring current is 0.

209: Elasticity-based pole position identification, the selected max. distance was exceeded (p3095).

210: Elasticity-based pole position identification without encoder.

250 ... 260:

Elasticity-based pole position identification, more than 3 attempts have been made and fault value 200 ... 210 output.

Example:

Fault value= 253 --> more than 3 attempts have been made and fault value 203 output.

Remedy: For fault value = 1:

- check the motor connection and DC link voltage.
- for the following parameters, set practical values that are not zero (p0325, p0329).

For fault value = 1, 2:

- in the case of a large computing time load (e.g. 6 drives with Safety Integrated), set the computing dead time of the current controller to late transfers (p0117 = 3).

For fault value = 3:

- increase the max. distance (p1981).
- reduce the currents for the pole position identification routine (p0325, p0329).
- stop the motor in order to carry out the pole position identification routine.

For fault value = 5:

- reduce the currents for the pole position identification routine (p0325, p0329).

For fault value = 6:

- re-calibrate the Motor Module.

For fault value = 8:

- reduce the currents for the pole position identification routine (p0329, p0325, p1993).
- the power unit cannot provide the necessary pole position identification routine current (p0209 < p0329, p0325, p1993), replace the power unit with a power unit with a higher max. current.

For fault value = 9:

- enter a value not equal to zero in the pole position identification routine current (p0329, p0325, p1993).

For fault value = 10:

- do not initiate a data set changeover during the pole position identification.

For fault value = 11:

- for incremental encoders without commutation with zero mark (p0404.15 = 0), it does not make sense to adjust the encoder to determine the commutation angle (p1990 = 1). In this case, the function should be de-selected (p1990 = 0) or, for an encoder with suitable zero mark, commutation with zero mark should be selected (p0404.15 = 1).
- for absolute encoders, only adjust the encoder to determine the commutation angle (p1990 = 1) if the encoder supplies commutation information and is finely synchronized (p1992.8 = 1 and p1992.10 = 1). The encoder is possibly parked, deactivated (p0145), not ready for operation or signals a fault condition.
- de-select the encoder adjustment to determine the commutation angle (set p1990 to 0).

For fault value = 40 ... 49:

- increase the currents for the pole position identification routine (p0325, p0329).
- stop the motor in order to carry out the pole position identification routine.
- select another technique for pole position identification routine (p1980).
- use another motor, absolute encoder or Hall sensors.

For fault value = 70 ... 79:

- upgrade the software in the Sensor Module.

For fault value = 100, 101:

- check and ensure that the motor is free to move.
- increase the current for motion-based pole position identification (p1993).

For fault value = 102:

- if the motor is to be operated with a brake: Select a different technique to identify the pole position (p1980).
- if the motor can be operated without a brake: Open the brake (p1215 = 2).

For fault value = 103:

- the motion-based pole position identification can only be carried out using an encoder. Connect an encoder or select another technique for pole position identification routine (p1980).

For fault value = 104:

- pole position identification, increase the smoothing time, motion-based (p1997).
- pole position identification, increase the rise time, motion-based (p1994).
- pole position identification, check the gain, motion-based (p1995).
- pole position identification, check the integral time, motion-based (p1996).
- for motor encoders with track A/B sq-wave (p0404.3 = 1) and flank time measurement (p0430.20 = 0), disable the integral time (p1996 = 0).

For fault value = 200:

- check parameter setting (p3090 ... p3096).

For fault value = 201:

- check parameter setting (p3090 ... p3096).
- reduce p3094.

For fault value = 202:

- check parameter setting (p3090 ... p3096).
- fault has occurred during the identification. Repeat the measurement.
- check the brake or brake control.

For fault value = 203:

- check the brake or brake control.
- check the measuring current (p3096).
- increase p3094.

For fault value = 204:

- check parameter setting (p3090 ... p3096).

For fault value = 205:

- check parameter setting (p3090 ... p3096).

For fault value = 206:

- check parameter setting (p3090 ... p3096).
- fault has occurred during the identification. Repeat the measurement.
- check the brake or brake control.

For fault value = 207:

- reduce the expected deflection (p3094).
- increase the measuring current (p3096).

For fault value = 208:

- set the measuring current (p3096).

For fault value = 209:

- check parameter setting p3095.

- check the brake or brake control.

For fault value = 210:

- the elasticity-based pole position identification can only be carried out using an encoder. Connect an encoder or select another technique for pole position identification routine (p1980).

For fault value = 250 ... 260:

- check parameter setting (p3090 ... p3096, p1980).

F07996 Drive: Pole position identification routine not carried out

Message value: -

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: SERVO, SERVO_AC, SERVO_I_AC

Component: None **Propagation:** GLOBAL

Reaction: ENCODER (OFF2)

Acknowledge: IMMEDIATELY

Cause: In operation, the operating mode that requires a pole position identification was changed over, which is not possible in this state.

- the drive was changed over, flying, from encoderless operation to operation with encoder without having previously carried out a pole position identification for the encoder. p1404 is then at a value between zero and the max. speed and the pulses in the speed range above p1404 were enabled without a pole position ident. routine having been previously carried out in operation with encoder.

- in operation, an EDS changeover was made to an encoder where it is necessary to carry out a pole position identification. However, this has still not been carried out (p1982 = 1 or 2 and p1992.7 = 0).

Remedy: - for a flying changeover between operation with and without encoder with pole position identification after POWER ON or commissioning (p0010 not equal to zero) enable the pulses once at zero speed. This means that the pole position identification routine is carried out and the result is available for operation.

- carry out the EDS changeover with the pulses inhibited, or, before the changeover, carry out a pole position identification using this data set.

A07998 Drive: Motor data identification active on another drive

Message value: %1

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: SERVO, SERVO_AC, SERVO_I_AC

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: The motor data identification is activated on the drive object specified in the alarm value, and interlocks the other drive objects so they cannot be switched on.

Alarm value (r2124, interpret decimal):

Drive object with the active motor data identification.

See also: p1910, p1960

Remedy: - wait for the complete execution of the motor data identification of the drive object designated in the alarm value.

- deselect the motor data identification for the drive object designated in the alarm value (p1910 = 0 or p1960 = 0).

A07999	**Drive: Motor data identification cannot be activated**		
Message value:	%1		
Message class:	Error in the parameterization / configuration / commissioning procedure (18)		
Drive object:	SERVO, SERVO_AC, SERVO_I_AC		
Component:	None	**Propagation:**	GLOBAL
Reaction:	NONE		
Acknowledge:	NONE		
Cause:	Closed-loop control is enabled on a SERVO drive object type. To select motor data identification, pulses must be suppressed for all SERVO drive objects. Alarm value (r2124, interpret decimal): Drive object with enabled closed-loop control.		
Remedy:	Withdraw the pulse enable on all drives and re-activate the motor data identification.		

F08000 (N, A)	**TB: +/-15 V power supply faulted**		
Message value:	%1		
Message class:	Supply voltage fault (undervoltage) (3)		
Drive object:	All objects		
Component:	Controller Extension (CX)	**Propagation:**	LOCAL
Reaction:	Infeed: NONE (OFF1, OFF2) Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2) Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2) Hla: NONE (OFF1, OFF2, OFF3, STOP2)		
Acknowledge:	IMMEDIATELY (POWER ON)		
Cause:	Terminal Board 30 detects an incorrect internal power supply voltage. Fault value (r0949, interpret decimal): 0: Error when testing the monitoring circuit. 1: Fault in normal operation.		
Remedy:	- replace Terminal Board 30. - replace Control Unit.		
Reaction upon N:	NONE		
Acknowl. upon N:	NONE		
Reaction upon A:	NONE		
Acknowl. upon A:	NONE		

F08010 (N, A)	**TB: Analog-digital converter**		
Message value:	-		
Message class:	Hardware/software error (1)		
Drive object:	All objects		
Component:	Controller Extension (CX)	**Propagation:**	LOCAL
Reaction:	Infeed: NONE (OFF1, OFF2) Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2) Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2) Hla: NONE (OFF1, OFF2)		
Acknowledge:	IMMEDIATELY (POWER ON)		
Cause:	The analog/digital converter on Terminal Board 30 has not supplied any converted data.		
Remedy:	- check the power supply. - replace Terminal Board 30.		
Reaction upon N:	NONE		
Acknowl. upon N:	NONE		
Reaction upon A:	NONE		
Acknowl. upon A:	NONE		

F08500 (A) COMM BOARD: Monitoring time configuration expired

Message value: %1
Message class: Communication error to the higher-level control system (9)
Drive object: A_INF, B_INF, CU_LINK, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: Infeed: OFF1 (OFF2)
Servo: OFF1 (OFF2, OFF3)
Vector: OFF1 (OFF2, OFF3)
Hla: OFF1 (OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The monitoring time for the configuration has expired.
Fault value (r0949, interpret decimal):
0: The transfer time of the send configuration data has been exceeded.
1: The transfer time of the receive configuration data has been exceeded.
Remedy: Check communications link.
Reaction upon A: NONE
Acknowl. upon A: NONE

F08501 (N, A) PN/COMM BOARD: Setpoint timeout

Message value: -
Message class: Communication error to the higher-level control system (9)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM150, TM15DI_DO, TM31, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: Infeed: OFF1 (OFF2)
Servo: OFF3 (IASC/DCBRK, NONE, OFF1, OFF2, STOP2)
Vector: OFF3 (IASC/DCBRK, NONE, OFF1, OFF2, STOP2)
Hla: OFF3 (NONE, OFF1, OFF2, STOP2)
Acknowledge: IMMEDIATELY
Cause: The reception of setpoints from the COMM BOARD has been interrupted.
- bus connection interrupted.
- controller switched off.
- controller set into the STOP state.
- COMM BOARD defective.

Remedy: - Restore the bus connection and set the controller to RUN.
- if the error is repeated, check the update time set in the bus configuration (HW Config).

See also: p8840 (COMM BOARD monitoring time)
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F08502 (A) PN/COMM BOARD: Monitoring time sign-of-life expired

Message value: -

Message class: Communication error to the higher-level control system (9)

Drive object: A_INF, B_INF, CU_LINK, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: Infeed: OFF1 (OFF2)
Servo: OFF1 (OFF2, OFF3)
Vector: OFF1 (OFF2, OFF3)
Hla: OFF1 (OFF2, OFF3)

Acknowledge: IMMEDIATELY

Cause: The monitoring time for the sign-of-life counter has expired.
The connection to the COMM BOARD was interrupted.

Remedy: - check communications link.
- check COMM BOARD.

Reaction upon A: NONE

Acknowl. upon A: NONE

A08504 (F) PN/COMM BOARD: Internal cyclic data transfer error

Message value: %1

Message class: Communication error to the higher-level control system (9)

Drive object: A_INF, B_INF, CU_LINK, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: The cyclic actual and/or setpoint values were not transferred within the specified times.
Alarm value (r2124, interpret decimal):
Only for internal Siemens troubleshooting.

Remedy: Check the parameterizing telegram (Ti, To, Tdp, etc.).

Reaction upon F: Infeed: NONE (OFF1, OFF2)
Servo: NONE (OFF1, OFF2, OFF3)
Vector: NONE (OFF1, OFF2, OFF3)
Hla: NONE (OFF1, OFF2, OFF3)

Acknowl. upon F: IMMEDIATELY

F08510 (A) PN/COMM BOARD: Send configuration data invalid

Message value: %1

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: A_INF, B_INF, CU_LINK, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: Infeed: OFF1 (OFF2)
Servo: OFF1 (OFF2, OFF3)
Vector: OFF1 (OFF2, OFF3)
Hla: OFF1 (OFF2, OFF3)

Acknowledge: IMMEDIATELY

Cause: COMM BOARD did not accept the send-configuration data.
Fault value (r0949, interpret decimal):
Return value of the send-configuration data check.

Remedy: Check the send configuration data.

Reaction upon A: NONE

Acknowl. upon A: NONE

A08511 (F) PN/COMM BOARD: Receive configuration data invalid

Message value: %1

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: A_INF, B_INF, CU_LINK, CU_S_AC_DP, CU_S_AC_PN, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: The drive unit did not accept the receive configuration data.

Alarm value (r2124, interpret decimal):

Return value of the receive configuration data check.

1: Connection established to more drive objects than configured in the device. The drive objects for process data exchange and their sequence are defined in p0978.

2: Too many PZD data words for output or input to a drive object. The number of possible PZD items in a drive object is determined by the number of indices in r2050/p2051 for PZD IF1, and in r8850/p8851 for PZD IF2.

3: Uneven number of bytes for input or output.

4: Setting data for synchronization not accepted. For more information, see A01902.

5: Cyclic operation not active.

17: CBE20 Shared Device: Configuration of the F-CPU has been changed.

223: Illegal clock synchronization for the PZD interface set in p8815[0].

500: Illegal PROFIsafe configuration for the interface set in p8815[1].

501: PROFIsafe parameter error (e.g. F_dest).

503: PROFIsafe connection is rejected as long as there is no isochronous connection (p8969).

Additional values:

Only for internal Siemens troubleshooting.

Remedy: Check the receive configuration data.

For alarm value = 1, 2:

- check the list of the drive objects with process data exchange (p0978). With p0978[x] = 0, all of the following drive objects in the list are excluded from the process data exchange.

For alarm value = 2:

- check the number of data words for output and input to a drive object.

For alarm value = 17:

- CBE20 Shared Device: Unplug/plug A-CPU.

For alarm value = 223, 500:

- check the setting in p8839 and p8815.
- ensure that only one PZD interface is operated in clock synchronism or with PROFIsafe.

For alarm value = 501:

- check the set PROFIsafe address (p9610).

Reaction upon F: Infeed: NONE (OFF1, OFF2)

Servo: NONE (OFF1, OFF2, OFF3)

Vector: NONE (OFF1, OFF2, OFF3)

Hla: NONE (OFF1, OFF2, OFF3)

Acknowl. upon F: IMMEDIATELY

A08520 (F) PN/COMM BOARD: Non-cyclic channel error

Message value: %1

Message class: Communication error to the higher-level control system (9)

Drive object: A_INF, B_INF, CU_LINK, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: The memory or the buffer status of the non-cyclic channel has an error.

Alarm value (r2124, interpret decimal):

0: Error in the buffer status.

1: Error in the memory.

Remedy: Check communications link.

Reaction upon F: Infeed: NONE (OFF1, OFF2)

Servo: NONE (OFF1, OFF2, OFF3)

Vector: NONE (OFF1, OFF2, OFF3)

Hla: NONE (OFF1, OFF2, OFF3)

Acknowl. upon F: IMMEDIATELY

A08526 (F) PN/COMM BOARD: No cyclic connection

Message value: -

Message class: Communication error to the higher-level control system (9)

Drive object: A_INF, B_INF, CU_LINK, CU_S_AC_DP, CU_S_AC_PN, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: There is no cyclic connection to the control.

Remedy: Establish the cyclic connection and activate the control with cyclic operation.

For PROFINET, check the parameters "Name of Station" and "IP of Station" (r61000, r61001).

If a CBE20 is inserted and PROFIBUS is to communicate via PZD Interface 1, then this must be parameterized using the STARTER commissioning tool or directly using p8839.

Reaction upon F: NONE (OFF1)

Acknowl. upon F: IMMEDIATELY

A08530 (F) PN/COMM BOARD: Message channel error

Message value: %1

Message class: Communication error to the higher-level control system (9)

Drive object: A_INF, B_INF, CU_LINK, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: The memory or the buffer status of the message channel has an error.

Alarm value (r2124, interpret decimal):

0: Error in the buffer status.

1: Error in the memory.

Remedy: Check communications link.

Reaction upon F: Infeed: NONE (OFF1, OFF2)

Servo: NONE (OFF1, OFF2, OFF3)

Vector: NONE (OFF1, OFF2, OFF3)

Hla: NONE (OFF1, OFF2, OFF3)

Acknowl. upon F: IMMEDIATELY

A08531 (F) CBE20 POWER ON required

Message value: -

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: A_INF, B_INF, CU_LINK, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Control Unit (CU) **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: At least one parameter of the CBE20 (e.g. a parameter associated with SINAMICS Link) was changed as a result of a project download. A POWER ON is required to activate the values.

Note:

CBE20: Communication Board Ethernet 20

See also: p8811 (SINAMICS Link project selection), p8812 (SINAMICS Link clock cycle settings), p8835 (CBE20 firmware selection), p8836 (SINAMICS link node address)

Remedy: Back up the parameters and carry out a POWER ON (switch-off/switch-on).

Reaction upon F: Infeed: NONE (OFF1, OFF2)

Servo: NONE (OFF1, OFF2, OFF3)

Vector: NONE (OFF1, OFF2, OFF3)

Hla: NONE (OFF1, OFF2, OFF3)

Acknowl. upon F: IMMEDIATELY

A08550 PZD Interface Hardware assignment error

Message value: %1

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: A_INF, B_INF, CU_I, CU_I_D410, CU_LINK, CU_S_AC_DP, CU_S_AC_PN, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: The assignment of the hardware to the PZD interface has been incorrectly parameterized.

Alarm value (r2124, interpret decimal):

1: Only one of the two indices is not equal to 99 (automatic).

2: Both PZD interfaces are assigned to the same hardware.

3: Assigned COMM BOARD missing.

4: CBC10 is assigned to interface 1.

See also: p8839 (PZD interface hardware assignment)

Remedy: Check the parameterization and if required, correct (p8839).

A08555 Modbus TCP: commissioning error

Message value: %1

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: CU_S_AC_DP, CU_S_AC_PN, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: A setting for the "Modbus TCP" protocol is incorrect.

Alarm value (r2124, interpret decimal):

1: Modbus simultaneously activated on the onboard interface (p2030) and CBE20 (p8835). CBE20 is not activated.

2: A drive object supported by Modbus is not available under p0978[0]. Modbus is not activated.

3: drive object SERVO is under p0978[0] - and FM bit LINMOT is set, Modbus is not activated.

3: drive object SERVO with activated linear motor function is under p0978[0]. Modbus is not activated.

See also: p0978 (List of drive objects), p2030 (Field bus interface protocol selection), p8835 (CBE20 firmware selection)

Remedy: For alarm value = 1:
Check the parameterization and if required, correct (p2030, p8835).
For alarm value = 2, 3:
Appropriately resort the list of drive objects in p0978.
Modbus supports the following drive object: SERVO (without linear motor), VECTOR

A08560 IE: Syntax error in configuration file

Message value: -

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: A_INF, B_INF, CU_LINK, CU_S_AC_DP, CU_S_AC_PN, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: A syntax error has been detected in the ASCII configuration file for the Industrial Ethernet interface (X127). The saved configuration file has not been loaded.
Note:
IE: Industrial Ethernet

Remedy: - Check the interface configuration (p8900 and following), correct if necessary, and activate (p8905 = 1).
- Save the parameters for interface configuration (e.g. p8905 = 2)
or
- reinitialize the station using the "Edit Ethernet node" screen form (e.g. with STARTER commissioning tool).
See also: p8905 (Activate IE interface configuration)

A08561 IE: Consistency error affecting adjustable parameters

Message value: %1

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: A_INF, B_INF, CU_LINK, CU_S_AC_DP, CU_S_AC_PN, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: A consistency error was detected when activating the configuration (p8905) for the Industrial Ethernet interface (X127).
Alarm value (r2124, interpret decimal):
0: general consistency error
1: error in the IP configuration (IP address, subnet mask or standard gateway).
2: Error in the station names.
5: standard gateway is also set at the PROFINET onboard interface.
6: the station name is also set at the PROFINET onboard interface.
7: IP address is located in the same subnet as the IP address of the PROFINET onboard interface.
Note:
For alarm value = 0, 1, 2, 5, 7 the following applies: the configuration was not changed.
For alarm value = 6 the following applies: The new configuration was however activated.
IE: Industrial Ethernet
See also: p8900 (IE Name of Station), p8901 (IE IP address), p8902 (IE default gateway), p8903 (IE Subnet Mask)

Remedy: - check the required interface configuration (p8900 and following), correct if necessary, and activate (p8905).
or
- reinitialize the station using the "Edit Ethernet node" screen form (e.g. with STARTER commissioning tool).
See also: p8905 (Activate IE interface configuration)

A08562 PROFINET: Syntax error in configuration file

Message value: -

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: A_INF, B_INF, CU_LINK, CU_S_AC_DP, CU_S_AC_PN, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: A syntax error has been detected in the ASCII configuration file for the onboard PROFINET interface. The saved configuration file has not been loaded.

Remedy: - Check the interface configuration (p8920 and following), correct if necessary, and activate (p8925 = 1).

- Save the parameters for interface configuration (e.g. p8925 = 2).

or

- reinitialize the station using the "Edit Ethernet node" screen form (e.g. with STARTER commissioning tool).

See also: p8925 (Activate PN interface configuration)

A08563 PROFINET: Consistency error affecting adjustable parameters

Message value: %1

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: A_INF, B_INF, CU_LINK, CU_S_AC_DP, CU_S_AC_PN, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: A consistency error was detected when activating the configuration (p8925) for the PROFINET interface.

Alarm value (r2124, interpret decimal):

0: general consistency error

1: error in the IP configuration (IP address, subnet mask or standard gateway).

2: Error in the station names.

3: DHCP was not able to be activated, as a cyclic PROFINET connection already exists.

4: a cyclic PROFINET connection is not possible as DHCP is activated.

5: standard gateway is also set at the Industrial Ethernet interface (X127).

6: standard station name is also set at the Industrial Ethernet interface (X127).

7: IP address is located in the same subnet as the IP address of the Industrial Ethernet interface (X127).

Note:

For alarm value = 0, 1, 2, 3, 4, 5, 7, the following applies: the configuration was not changed.

For alarm value = 6 the following applies: The new configuration was however activated.

DHCP: Dynamic Host Configuration Protocol

See also: p8920 (PN Name of Station), p8921 (PN IP address), p8922 (PN Default Gateway), p8923 (PN Subnet Mask)

Remedy: - check the required interface configuration (p8940 and following), correct if necessary, and activate (p8945).

or

- reinitialize the station using the "Edit Ethernet node" screen form (e.g. with STARTER commissioning tool).

See also: p8925 (Activate PN interface configuration)

A08564 PN/COMM BOARD: syntax error in the configuration file

Message value: -

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: A_INF, B_INF, CU_LINK, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: A syntax error has been detected in the ASCII configuration file for the Communication Board Ethernet 20/25 (CBE20/CBE25). The saved configuration file has not been loaded.

Remedy: - check the CBE2x configuration (p8940 and following), correct if necessary, and activate (p8945 = 2).

- reinitialize the CBE2x (e.g. using the STARTER commissioning tool)

Note:

The configuration is not applied until the next POWER ON!

See also: p8945 (CBE2x activate interface configuration)

A08565 PNCOMM BOARD: Consistency error affecting adjustable parameters

Message value: %1

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: A_INF, B_INF, CU_LINK, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: A consistency error was detected when activating the configuration (p8945) for the Communication Board Ethernet 20/25 (CBE20/CBE25).

Alarm value (r2124, interpret decimal):

0: general consistency error

1: error in the IP configuration (IP address, subnet mask or standard gateway).

2: Error in the station names.

3: DHCP was not able to be activated, as a cyclic PROFINET connection already exists.

4: a cyclic PROFINET connection is not possible as DHCP is activated.

Note:

For all alarm values, the following applies: currently set configuration has not been activated.

DHCP: Dynamic Host Configuration Protocol

See also: p8940 (CBE2x Name of Station), p8941 (CBE2x IP address), p8942 (CBE2x Default Gateway), p8943 (CBE2x Subnet Mask), p8944 (CBE2x DHCP Mode)

Remedy: - check the required interface configuration (p8940 and following), correct if necessary, and activate (p8945).

or

- reinitialize the station using the "Edit Ethernet node" screen form (e.g. with STARTER commissioning tool).

See also: p8945 (CBE2x activate interface configuration)

F08700 (A) CAN: Communications error

Message value: %1

Message class: Communication error to the higher-level control system (9)

Drive object: A_INF, B_INF, CU_LINK, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: Infeed: NONE (OFF1, OFF2)

Servo: OFF3 (NONE, OFF1, OFF2)

Vector: OFF3 (NONE, OFF1, OFF2)

Hla: OFF3 (NONE, OFF1, OFF2)

Acknowledge: IMMEDIATELY

Cause: A CAN communications error has occurred.

Fault value (r0949, interpret decimal):

1: The error counter for the send telegrams has exceeded the BUS OFF value 255. The bus disables the CAN controller.

- bus cable short circuit.
- incorrect baud rate.
- incorrect bit timing.

2: The master no longer interrogated the CAN node status longer than for its "life time". The "life time" is obtained from the "guard time" (p8604[0]) multiplied by the "life time factor" (p8604[1]).

- bus cable interrupted.
- bus cable not connected.
- incorrect baud rate.
- incorrect bit timing.
- master fault.

Note:

The fault response can be set as required using p8641.

See also: p8604 (CAN life guarding), p8641 (CAN Abort Connection Option Code)

Remedy:
- check the bus cable
- check the baud rate (p8622).
- check the bit timing (p8623).
- check the master.

The CAN controller must be manually restarted with p8608 = 1 after the cause of the fault has been resolved!

See also: p8608 (CAN Clear Bus Off Error), p8622 (CAN bit rate), p8623 (CAN Bit Timing selection)

Reaction upon A: NONE

Acknowl. upon A: NONE

F08701 CAN: NMT state change

Message value: %1

Message class: Communication error to the higher-level control system (9)

Drive object: A_INF, B_INF, CU_LINK, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: Infeed: OFF2

Servo: OFF3

Vector: OFF3

Hla: OFF3

Acknowledge: IMMEDIATELY

Cause: A CANopen NMT state transition from "operational" to "pre-operational" or after "stopped".

Fault value (r0949, interpret decimal):

1: CANopen NMT state transition from "operational" to "pre-operational".

2: CANopen NMT state transition from "operational" to "stopped".

Note:

In the NMT state "pre-operational", process data cannot be transferred and in the NMT state "stopped", no process data and no service data can be transferred.

Remedy: Not necessary.

Acknowledge the fault and continue operation.

F08702 (A) CAN: RPDO Timeout

Message value: -

Message class: Communication error to the higher-level control system (9)

Drive object: A_INF, B_INF, CU_LINK, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: Infeed: OFF2 (NONE, OFF1)

Servo: OFF3 (NONE, OFF1, OFF2)

Vector: OFF3 (NONE, OFF1, OFF2)

Hla: OFF3 (NONE, OFF1, OFF2)

Acknowledge: IMMEDIATELY

Cause: The monitoring time of the CANopen RPDO telegram has expired because the bus connection was either interrupted or the CANopen Master was switched-off.

See also: p8699 (CAN: RPDO monitoring time)

Remedy: - check the bus cable

- check the master.

- If required, increase the monitoring time (p8699).

Reaction upon A: NONE

Acknowl. upon A: NONE

F08703 (A) CAN: Maximum number of drive objects exceeded

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, CU_LINK, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: Infeed: OFF2 (NONE, OFF1)
Servo: OFF3 (NONE, OFF1, OFF2)
Vector: OFF3 (NONE, OFF1, OFF2)
Hla: OFF3 (NONE, OFF1, OFF2)
Acknowledge: IMMEDIATELY
Cause: The maximum number of 8 drive objects with the "CAN" function module was exceeded.
Note:
In the CANopen standard, a maximum of 8 CANopen device modules (drive objects with function module "CAN") are defined for each CANopen slave.
Remedy: - New commissioning of maximum 8 drive objects with the "CAN" function module in the topology.
- For the drive objects, if required, deselect the "CAN" function module (r0108.29).
Reaction upon A: NONE
Acknowl. upon A: NONE

A08751 (N) CAN: Telegram loss

Message value: %1
Message class: Communication error to the higher-level control system (9)
Drive object: A_INF, B_INF, CU_LINK, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The CAN controller has lost a receive message.
Alarm value (r2124, interpret decimal):
Hardware channel in the CAN controller.
0: Firmware version < 5.2 (no reference to the original hardware channel).
1: NMT command message
2: SYNC message
3: NMT error control message
7 ... 31: RPDO message
32: SDO message
Remedy: - increase the cycle times of the received messages.
- CANopen reduce sampling time (p8848).
See also: p8848 (IF2 PZD sampling time)
Reaction upon N: NONE
Acknowl. upon N: NONE

A08752 CAN: Error counter for error passive exceeded

Message value: -
Message class: Communication error to the higher-level control system (9)
Drive object: A_INF, B_INF, CU_LINK, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The error counter for the send or receive telegrams has exceeded the value 127.

Remedy: - check the bus cable
- set a higher baud rate (p8622).
- check the bit timing and if required optimize (p8623).
See also: p8622 (CAN bit rate), p8623 (CAN Bit Timing selection)

A08753 CAN: Message buffer overflow

Message value: %1
Message class: Communication error to the higher-level control system (9)
Drive object: A_INF, B_INF, CU_LINK, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: A message buffer overflow.
Alarm value (r2124, interpret decimal):
1: Non-cyclic send buffer (SDO response buffer) overflow.
2: Non-cyclic receive buffer (SDO receive buffer) overflow.
3: Cyclic send buffer (PDO send buffer) overflow.
Remedy: - check the bus cable.
- set a higher baud rate (p8622).
- check the bit timing and if required optimize (p8623).
For alarm value = 2:
- reduce the cycle times of the SDO receive messages.
- SDO request from master only after SDO feedback for previous SDO request.
See also: p8622 (CAN bit rate), p8623 (CAN Bit Timing selection)

A08754 CAN: Incorrect communications mode

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, CU_LINK, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: In the "operational" mode, an attempt was made to change parameters p8700 ... p8737.
Remedy: Change to the "pre-operational" or "stopped" mode.

A08755 CAN: Object cannot be mapped

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, CU_LINK, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The CANopen object is not provided for the Process Data Object (PDO) Mapping.
Remedy: Use a CANopen object intended for the PDO mapping or enter 0.
The following objects can be mapped in the Receive Process Data Object (RPDO) or Transmit Process Data Object (TPDO):
- RPDO: 6040 hex, 6060 hex, 60FF hex, 6071 hex; 5800 hex - 580F hex; 5820 hex - 5827 hex
- TPDO: 6041 hex, 6061 hex, 6063 hex, 6069 hex, 606B hex, 606C hex, 6074 hex; 5810 hex - 581F hex; 5830 hex - 5837 hex
Only sub-index 0 of the specified objects can be mapped.

Note:

As long as A08755 is present, the COB-ID cannot be set to valid.

A08756 CAN: Number of mapped bytes exceeded

Message value: -

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: A_INF, B_INF, CU_LINK, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: The number of bytes of the mapped objects exceeds the telegram size for net data. A max. of 8 bytes is permissible.

Remedy: Map fewer objects or objects with a smaller data type.

See also: p8710, p8711, p8712, p8713, p8714, p8715, p8716, p8717, p8730, p8731, p8732, p8733, p8734, p8735, p8736, p8737

A08757 CAN: Set COB-ID invalid

Message value: -

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: A_INF, B_INF, CU_LINK, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: For online operation, the appropriate COB-ID must be set invalid before mapping.

Example:

Mapping for RPDO 1 should be changed (p8710[0]).

--> set p8700[0] = C00006E0 hex (invalid COB-ID)

--> set p8710[0] as required.

--> p8700[0] enter a valid COB-ID

Remedy: Set the COB-ID to invalid.

A08758 CAN: Maximum number of valid PDO exceeded

Message value: %1

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: A_INF, B_INF, CU_LINK, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: An attempt was made to exceed the maximum number of valid PDO.

Alarm value (r2124, interpret decimal):

1:

An attempt was made to exceed the total number of valid RPDO of all CANopen supported drive objects.

As a result of the hardware, the limit is 25 valid RPDO.

2:

An attempt was made to exceed the total number of valid TPDO of all CANopen supported drive objects.

The limit is defined by the following ratio:

CAN sampling time (p8848) / CAN minimum processing time (r8739)

Note:

RPDO: Receive Process Data Object

TPDO: Transmit Process Data Object

See also: r8739 (Minimum CAN processing time), r8742 (CAN PDO available number)

Remedy: Comply with the limit for the maximum number of valid RPDO or TPDO.
Apply one of the following options to delete the alarm:
- successfully write to the COB ID index of a PDO communication parameter (p870x[0], p872x[0]).
- change CANopen NMT state.
- execute CANopen NMT command reset node.
- execute CANopen NMT command reset communication.
- carry out a warm restart (p0009 = 30, p0976 = 2).
- carry out a POWER ON (switch-off/switch-on).
Note:
The remaining available RPDO or TPDO are indicated in r8742.

A08759 CAN: PDO COB-ID already available

Message value: Parameter: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, CU_LINK, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: An existing PDO COB-ID was allocated.
Alarm value (r2124, interpret decimal):
Parameter number.
Note:
The COB-ID is included in index zero (p870x[0], p872x[0]).
Remedy: Select another PDO COB-ID.

A08760 CAN: maximum size of the IF PZD exceeded

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, CU_LINK, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The maximum size of the IF PZD was exceeded.
Alarm value (r2124, interpret decimal):
1: error for IF PZD receive.
2: error for IF PZD send.
Note:
IF: interface
Remedy: Map fewer process data in PDO.
Apply one of the following options to delete the alarm:
- POWER ON (switch-off/switch-on).
- carry out a warm restart (p0009 = 30, p0976 = 2).
- execute CANopen NMT command reset node.
- change CANopen NMT state.
- delete alarm buffer [0...7] (p2111 = 0).

A08800 **PROFIenergy energy-saving mode active**

Message value: %1
Message class: Communication error to the higher-level control system (9)
Drive object: A_INF, B_INF, CU_LINK, CU_S_AC_DP, CU_S_AC_PN, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The PROFIenergy energy-saving mode is active

Alarm value (r2124, interpret decimal):

Mode ID of the active PROFIenergy energy-saving mode.

See also: r5600 (Pe energy-saving mode ID)

Remedy: The alarm is automatically withdrawn when the energy-saving mode is exited.

Note:

The energy-saving mode is exited after the following events:

- the PROFIenergy command end_pause is received from the higher-level control.
- the higher-level control has changed into the STOP operating state.
- the PROFINET connection to the higher-level control has been disconnected.

A09000 **Webserver security: password not set for administrator**

Message value: -
Message class: General drive fault (19)
Drive object: A_INF, B_INF, CU_LINK, CU_S_AC_DP, CU_S_AC_PN, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: A password must be allocated to activate an "Administrator" as user in the web server with extended rights. There is no password for the "Administrator".
Remedy: Enter the password for user "Administrator"

F13000 **License not adequate**

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: Control Unit (CU) **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: - for the drive unit, the options that require a license are being used but the licenses are not sufficient.

- an error occurred when checking the existing licenses.

Fault value (r0949, decimal interpretation):

0:

The existing license is not sufficient.

1:

An adequate license was not able to be determined as the memory card with the required licensing data was withdrawn in operation.

2:

An adequate license was not able to be determined as there is no licensing data available on the memory card.

3:

An adequate license was not able to be determined as there is a checksum error in the license key.

4:

An internal error occurred when checking the license.

Remedy: For fault value = 0:
Additional licenses are required and these must be activated (p9920, p9921).
For fault value = 1:
With the system powered down, re-insert the memory card that matches the system.
For fault value = 2:
Enter and activate the license key (p9920, p9921).
For fault value = 3:
Compare the license key (p9920) entered with the license key on the certificate of license.
Re-enter the license key and activate (p9920, p9921).
For fault value = 4:
- carry out a POWER ON.
- upgrade firmware to later version.
- contact Technical Support.
Note:
An overview of the drive device functions requiring a license can be displayed using a commissioning tool in the online mode. Depending on the commissioning tool, you can obtain the necessary licenses (serial number, license Key, Trial License Mode).

A13001 Error in license checksum

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, CU_LINK, CU_S_AC_DP, CU_S_AC_PN, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: When checking the checksum of the license key, an error was detected.
Remedy: Compare the license key (p9920) entered with the license key on the certificate of license.
Re-enter the license key and activate (p9920, p9921).

F13009 Licensing Technology Extension not licensed

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: OFF1
Acknowledge: IMMEDIATELY
Cause: At least one Technology Extension that requires a license does not have a license.
Note:
Refer to r4955 and p4955 for information about the installed Technology Extensions.
Remedy: - enter and activate the license key for Technology Extensions that require a license (p9920, p9921).
- if necessary, deactivate Technology Extensions that are not licensed (p4956).
See also: p9920 (Licensing enter license key), p9921 (Licensing activate license key)

F13010 Licensing function module not licensed

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, CU_LINK, CU_S_AC_DP, CU_S_AC_PN, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** LOCAL
Reaction: OFF1
Acknowledge: IMMEDIATELY
Cause: At least one function module requiring a license is not licensed.

Fault value (r0949, interpret hexadecimal):

Bit x = 1: The corresponding function module does not have a license.

Note:

Assigning bit number to function module, see p0108 or r0108.

Remedy: - enter and activate the license key for function modules that require a license license (p9920, p9921).

- if necessary, deactivate unlicensed function modules (p0108, r0108).

See also: p9920 (Licensing enter license key), p9921 (Licensing activate license key)

F13020 Licensing not sufficient in the control

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, CU_I, CU_I_D410, CU_LINK, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** DRIVE
Reaction: OFF1
Acknowledge: IMMEDIATELY
Cause: For the drive unit, the options that require a license are being used but the licenses are not sufficient.
Remedy: - enter and activate the license key for options that require a license.

- if necessary, deactivate unlicensed options.

A13021 License for 600 Hz is not sufficient

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: Control Unit (CU) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: You have parameterized speeds that result in output frequencies >550Hz. For SINAMICS drives, output frequencies >550Hz are only possible after enabling the corresponding high output frequency license. Without license, the SINAMICS output frequencies are limited to 550 Hz (independent of any other parameterization).
Remedy: - enter and activate the license key for 600Hz.

- if required deactivate use of 600 Hz

A13030 Trial License activated

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, CU_LINK, CU_S_AC_DP, CU_S_AC_PN, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The "Trial License" function was activated. One of the available periods is expiring.

See also: p9918 (Licensing active Trial License), r9919 (Licensing Trial License status)

Remedy: Not necessary.
The alarm is automatically withdrawn after the periods have expired.

A13031 Trial License period expired

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, CU_LINK, CU_S_AC_DP, CU_S_AC_PN, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: One of the available periods of the "Trial License" function has expired.
See also: p9918 (Licensing active Trial License), r9919 (Licensing Trial License status)
Remedy: - if required, start an additional period (p9918 = 1).
- deactivate functions requiring a license.
- appropriately license the drive unit.
Note:
A license that is not adequate will only become evident after the next time the system runs up.

A13032 Trial License last period activated

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, CU_LINK, CU_S_AC_DP, CU_S_AC_PN, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The "Trial License" function was activated. The last of the available periods is expiring.
See also: p9918 (Licensing active Trial License), r9919 (Licensing Trial License status)
Remedy: Not necessary.
The alarm is automatically withdrawn after the last period has expired.

A13033 Trial License last period expired

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, CU_LINK, CU_S_AC_DP, CU_S_AC_PN, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The last period of the "Trial License" function has expired. No additional periods available.
See also: p9918 (Licensing active Trial License), r9919 (Licensing Trial License status)
Remedy: - deactivate functions requiring a license.
- appropriately license the drive unit.
Note:
A license that is not adequate will only become evident after the next time the system runs up.

F13100 Know-how protection: Copy protection error

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: Control Unit (CU) **Propagation:** GLOBAL
Reaction: OFF1
Acknowledge: IMMEDIATELY
Cause: The know-how protection with copy protection for the memory card is active.
An error has occurred when checking the memory card.
Fault value (r0949, interpret decimal):
0: A memory card is not inserted.
2: An invalid memory card is inserted.
3: The memory card is being used in another Control Unit.
12: An invalid memory card is inserted (OEM input incorrect, p7769).
13: The memory card is being used in another Control Unit (OEM input incorrect, p7759).
See also: p7765 (KHP configuration)
Remedy: For fault value = 0:
- insert the correct memory card and carry out POWER ON.
For fault value = 2, 3, 12, 13:
- contact the responsible OEM.
- Deactivate copy protection (p7765) and acknowledge the fault (p3981).
- Deactivate know-how protection (p7766 ... p7768) and acknowledge the fault (p3981).
Note:
In general, the copy protection can only be changed when know-how protection is deactivated.
KHP: Know-How Protection
See also: p3981 (Acknowledge drive object faults), p7765 (KHP configuration)

F13101 Know-how protection: Copy protection cannot be activated

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: Control Unit (CU) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: An error occurred when attempting to activate the copy protection for the memory card.
Fault value (r0949, interpret decimal):
0: A memory card is not inserted.
Note:
KHP: Know-How Protection
Remedy: - insert the memory card and carry out POWER ON.
- Try to activate copy protection again (p7765).
See also: p7765 (KHP configuration)

F13102 Know-how protection: Consistency error of the protected data

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Component: Control Unit (CU) **Propagation:** GLOBAL
Reaction: OFF1
Acknowledge: IMMEDIATELY
Cause: An error was identified when checking the consistency of the protected files. As a consequence, the project on the memory card cannot be run.

Fault value (r0949, interpret hexadecimal):

yyyyxxxx hex: yyyy = object number, xxxx = fault cause

xxxx = 1:

A file has a checksum error.

xxxx = 2:

The files are not consistent with one another.

xxxx = 3:

The project files, which were loaded into the file system via load (download from the memory card), are inconsistent.

Note:

KHP: Know-How Protection

Remedy: - Replace the project on the memory card or replace project files for download from the memory card.

- Restore the factory setting and download again.

F30001 Power unit: Overcurrent

Message value: Fault cause: %1 bin
Message class: Power electronics faulted (5)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The power unit has detected an overcurrent condition.

- closed-loop control is incorrectly parameterized.
- motor has a short-circuit or fault to ground (frame).
- U/f operation: Up ramp set too low.
- U/f operation: Rated motor current is significantly greater than that of the Motor Module.
- infeed: High discharge and post-charging currents for line voltage dip.
- infeed: High post-charging currents for overload when motoring and DC link voltage dip.
- infeed: Short-circuit currents at switch-on as there is no commutating reactor.
- power cables are not correctly connected.
- the power cables exceed the maximum permissible length.
- power unit defective.
- line phase interrupted.

Additional causes for a parallel switching device (r0108.15 = 1):

- a power unit has tripped (switched off) due to a ground fault.
- the closed-loop circulating current control is either too slow or has been set too fast.

Fault value (r0949, interpret bitwise binary):

Bit 0: Phase U.

Bit 1: Phase V.

Bit 2: Phase W.

Bit 3: Overcurrent in the DC link.

Note:

Fault value = 0 means that the phase with overcurrent is not recognized (e.g. for blocksize device).

Remedy: - check the motor data - if required, carry out commissioning.
- check the motor circuit configuration (star/delta).
- U/f operation: Increase up ramp.
- U/f operation: Check the assignment of the rated currents of the motor and Motor Module.
- infeed: Check the line supply quality.
- infeed: Reduce the motor load.
- infeed: Check the correct connection of the line filter and the line commutating reactor.
- check the power cable connections.
- check the power cables for short-circuit or ground fault.
- check the length of the power cables.
- replace power unit.
- check the line supply phases.
For a parallel switching device (r0108.15 = 1) the following additionally applies:
- check the ground fault monitoring thresholds (p0287).
- check the setting of the closed-loop circulating current control (p7036, p7037).

F30002 Power unit: DC link voltage overvoltage

Message value: %1
Message class: DC link overvoltage (4)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The power unit has detected overvoltage in the DC link.
- motor regenerates too much energy.
- device supply voltage too high.
- when operating with a Voltage Sensing Module (VSM), the phase assignment L1, L2, L3 at the VSM differs from the phase assignment at the power unit.
- line phase interrupted.
Fault value (r0949, interpret decimal):
DC link voltage at the time of trip [0.1 V].
Remedy: - increase the ramp-down time
- activate the DC link voltage controller (p1240)
- use a brake resistor or Active Line Module
- increase the current limit of the infeed or use a larger module (for the Active Line Module)
- check the device supply voltage
- check and correct the phase assignment at the VSM and at the power unit
- check the line supply phases.
See also: p0210 (Drive unit line supply voltage), p1240 (Vdc controller or Vdc monitoring configuration)

F30002 Power unit: DC link voltage overvoltage

Message value: %1
Message class: DC link overvoltage (4)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The power unit has detected overvoltage in the DC link.
- motor regenerates too much energy.
- device supply voltage too high.
- when operating with a Voltage Sensing Module (VSM), the phase assignment L1, L2, L3 at the VSM differs from the phase assignment at the power unit.
- line phase interrupted.
Fault value (r0949, interpret decimal):
DC link voltage at the time of trip [0.1 V].

Remedy: - increase the ramp-down time
- activate the DC link voltage controller
- use a brake resistor or Active Line Module
- increase the current limit of the infeed or use a larger module (for the Active Line Module)
- check the device supply voltage
- check and correct the phase assignment at the VSM and at the power unit
- check the line supply phases.
- set the rounding times (p1130, p1136). This is particularly recommended in U/f operation to relieve the DC link voltage controller with rapid ramp-down times of the ramp-function generator.
See also: p0210 (Drive unit line supply voltage), p1240 (Vdc controller or Vdc monitoring configuration)

F30003 Power unit: DC link voltage undervoltage

Message value: -
Message class: Infeed faulted (13)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The power unit has detected an undervoltage condition in the DC link.
- line supply failure
- line supply voltage below the permissible value.
- line supply infeed failed or interrupted.
- line phase interrupted.
Note:
The monitoring threshold for undervoltage in the DC link is indicated in r0296.
Remedy: - check the line supply voltage
- check the line supply infeed and observe the fault messages relating to it (if there are any)
- check the line supply phases.
- check the line supply voltage setting (p0210).
- booksize units: check the setting of p0278.
Note:
The ready signal for the infeed (r0863) must be interconnected to the associated drive inputs (p0864).
See also: p0210 (Drive unit line supply voltage)

F30004 Power unit: Overtemperature heat sink AC inverter

Message value: %1
Message class: Power electronics faulted (5)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The temperature of the power unit heat sink has exceeded the permissible limit value.
- insufficient cooling, fan failure.
- overload.
- ambient temperature too high.
- pulse frequency too high.
Fault value (r0949, interpret decimal):
Temperature [0.01 °C].
Remedy: - check whether the fan is running.
- check the fan elements.
- check whether the ambient temperature is in the permissible range.
- check the motor load.
- reduce the pulse frequency if this is higher than the rated pulse frequency.

Notice:
This fault can only be acknowledged after the alarm threshold for alarm A05000 has been undershot.
See also: p1800

F30005 Power unit: Overload I2t

Message value: %1
Message class: Power electronics faulted (5)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The power unit was overloaded (r0036 = 100 %).
- the permissible rated power unit current was exceeded for an inadmissibly long time.
- the permissible load duty cycle was not maintained.
Fault value (r0949, interpret decimal):
I2t [100 % = 16384].
Remedy: - reduce the continuous load.
- adapt the load duty cycle.
- check the motor and power unit rated currents.
See also: r0036, r0206, p0206, p0307

F30005 Power unit: Overload I2t

Message value: %1
Message class: Power electronics faulted (5)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The power unit was overloaded (r0036 = 100 %).
- the permissible rated power unit current was exceeded for an inadmissibly long time.
- the permissible load duty cycle was not maintained.
Fault value (r0949, interpret decimal):
I2t [100 % = 16384].
Remedy: - reduce the continuous load.
- adapt the load duty cycle.
- check the motor and power unit rated currents.
- increase p0294
See also: r0036, r0206, p0206, p0307

F30006 Power unit: Thyristor Control Board

Message value: -
Message class: Power electronics faulted (5)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The Thyristor Control Board (TCB) of the Basic Line Module signals a fault.
- there is no line supply voltage.
- the line contactor is not closed.
- the line supply voltage is too low.
- line supply frequency outside the permissible range (45 ... 66 Hz).
- there is a DC link short-circuit.
- there is a DC link short-circuit (during the precharging phase).
- the motor either has a short-circuit or insulation fault (from an inverter connected to the DC link).
- voltage supply for the Thyristor Control Board outside the nominal range (5 ... 18 V) and line voltage >30 V.
- there is an internal fault in the Thyristor Control Board.

Remedy: The faults must be saved in the Thyristor Control Board and must be acknowledged. To do this, the supply voltage of the Thyristor Control Board must be switched out for at least 10 s!
- check the line supply voltage
- check or energize the line contactor.
- check the monitoring time and, if required, increase (p0857).
- if required, observe additional power unit messages/signals.
- check the DC link regarding short-circuit or ground fault.
- check the motor regarding short-circuit or ground fault.
- evaluate diagnostic LEDs for the Thyristor Control Board.

F30008 Power unit: Sign-of-life error cyclic data

Message value: -
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** LOCAL
Reaction: Infeed: NONE (OFF1, OFF2)
Servo: NONE (OFF1, OFF2, OFF3)
Vector: NONE (OFF1, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The Control Unit has not punctually updated the cyclic setpoint telegram to the power unit. The number of consecutive tolerated sign of life errors has exceeded the fault threshold (p7789) set in the power unit.
Remedy:
- for projects with the VECTOR drive object, check whether p0117 = 6 has been set on the Control Unit.
- increase the fault threshold (p7789).
- check the Motor Module, and if required replace.

See also: p0117 (Current controller computing dead time mode)

A30010 (F) Power unit: Sign-of-life error cyclic data

Message value: -
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: A DRIVE-CLiQ communication error has occurred between the Control Unit and the power unit involved.
The cyclic setpoint telegrams of the Control Unit were not received on time by the power unit for at least one clock cycle.
Remedy: Check the Motor Module and if required, replace.

Reaction upon F:	Infeed: NONE (OFF1, OFF2) Servo: NONE (OFF1, OFF2, OFF3) Vector: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F:	IMMEDIATELY (POWER ON)

F30011 Power unit: Line phase failure in main circuit

Message value: %1

Message class: Network fault (2)

Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Power Module **Propagation:** LOCAL

Reaction: OFF2 (OFF1)

Acknowledge: IMMEDIATELY

Cause: At the power unit, the DC link voltage ripple has exceeded the permissible limit value.

Possible causes:

- a line phase has failed.

- the 3 line phases are inadmissibly asymmetrical.

- the capacitance of the DC link capacitor forms a resonance frequency with the line inductance and the reactor integrated in the power unit.

- the fuse of a phase of a main circuit has ruptured.

- a motor phase has failed.

- for power units operated on a single phase, the permissible active power was exceeded.

Fault value (r0949, interpret decimal):

Only for internal Siemens troubleshooting.

Remedy: - check the main circuit fuses.

- check whether a single-phase load is distorting the line voltages.

- Detune the resonant frequency with the line inductance by using an upstream line reactor.

- Dampen the resonant frequency with the line inductance by switching over the DC link voltage compensation in the software (see p1810) – or increase the smoothing (see p1806). However, this can have a negative impact on the torque ripple at the motor output.

- check the motor feeder cables.

F30012 Power unit: Temperature sensor wire breakage

Message value: %1

Message class: Power electronics faulted (5)

Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Power Module **Propagation:** LOCAL

Reaction: OFF1 (OFF2)

Acknowledge: IMMEDIATELY

Cause: The connection to a temperature sensor in the power unit is interrupted.

Fault value (r0949, interpret hexadecimal):

Bit 0: Module slot (electronics slot)

Bit 1: Air intake

Bit 2: Inverter 1

Bit 3: Inverter 2

Bit 4: Inverter 3

Bit 5: Inverter 4

Bit 6: Inverter 5

Bit 7: Inverter 6

Bit 8: Rectifier 1

Bit 9: Rectifier 2

Bit14: capacitor air discharge

Bit15: liquid intake

Remedy: Contact Technical Support.

F30013	**Power unit: Temperature sensor short circuit**		
Message value:	%1		
Message class:	Power electronics faulted (5)		
Drive object:	A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC		
Component:	Power Module	**Propagation:**	LOCAL
Reaction:	OFF1 (OFF2)		
Acknowledge:	IMMEDIATELY		
Cause:	A temperature sensor in the power unit is short-circuited. Fault value (r0949, interpret hexadecimal): Bit 0: Module slot (electronics slot) Bit 1: Air intake Bit 2: Inverter 1 Bit 3: Inverter 2 Bit 4: Inverter 3 Bit 5: Inverter 4 Bit 6: Inverter 5 Bit 7: Inverter 6 Bit 8: Rectifier 1 Bit 9: Rectifier 2 Bit14: capacitor air discharge Bit15: liquid intake		
Remedy:	Contact Technical Support.		

F30015 (N, A)	**Power unit: Phase failure motor cable**		
Message value:	-		
Message class:	Application/technological function faulted (17)		
Drive object:	SERVO, SERVO_AC, SERVO_I_AC		
Component:	Motor	**Propagation:**	GLOBAL
Reaction:	OFF2 (NONE, OFF1, OFF3)		
Acknowledge:	IMMEDIATELY		
Cause:	A phase failure in the motor feeder cable was detected. The signal can also be output in the following case: - the motor is correctly connected, however the closed-speed control is instable and therefore an oscillating torque is generated. Note: Chassis power units do not feature phase failure monitoring.		
Remedy:	- check the motor feeder cables. - check the speed controller settings.		
Reaction upon N:	NONE		
Acknowl. upon N:	NONE		
Reaction upon A:	NONE		
Acknowl. upon A:	NONE		

F30015 (N, A)	Power unit: Phase failure motor cable		
Message value:	-		
Message class:	Application/technological function faulted (17)		
Drive object:	VECTOR, VECTOR_AC, VECTOR_I_AC		
Component:	Motor	**Propagation:**	GLOBAL
Reaction:	OFF2 (NONE, OFF1, OFF3)		
Acknowledge:	IMMEDIATELY		
Cause:	A phase failure in the motor feeder cable was detected. The signal can also be output in the following cases: - the motor is correctly connected, but the drive has stalled in U/f control. In this case, a current of 0 A is possibly measured in one phase due to asymmetry of the currents. - the motor is correctly connected, however the closed-speed control is instable and therefore an oscillating torque is generated. Note: Chassis power units do not feature phase failure monitoring.		
Remedy:	- check the motor feeder cables. - increase the ramp-up or ramp-down time (p1120) if the drive has stalled in U/f control. - check the speed controller settings.		
Reaction upon N:	NONE		
Acknowl. upon N:	NONE		
Reaction upon A:	NONE		
Acknowl. upon A:	NONE		

A30016 (N)	Power unit: Load supply switched off		
Message value:	%1		
Message class:	Network fault (2)		
Drive object:	SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC		
Component:	Power Module	**Propagation:**	GLOBAL
Reaction:	NONE		
Acknowledge:	NONE		
Cause:	The DC link voltage is too low. Alarm value (r2124, interpret decimal): DC link voltage at the time of the trip [V].		
Remedy:	- switch on load supply. - check the line supply if necessary.		
Reaction upon N:	NONE		
Acknowl. upon N:	NONE		

F30017	Power unit: Hardware current limit has responded too often		
Message value:	Fault cause: %1 bin		
Message class:	Power electronics faulted (5)		
Drive object:	A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC		
Component:	Power Module	**Propagation:**	LOCAL
Reaction:	OFF2		
Acknowledge:	IMMEDIATELY		
Cause:	The hardware current limitation in the relevant phase (see A30031, A30032, A30033) has responded too often. The number of times the limit has been exceeded depends on the design and type of power unit. For infeed units, the following applies: - closed-loop control is incorrectly parameterized. - load on the infeed is too high. - Voltage Sensing Module incorrectly connected. - line reactor missing or the incorrect type. - power unit defective.		

The following applies to Motor Modules:
- closed-loop control is incorrectly parameterized.
- fault in the motor or in the power cables.
- the power cables exceed the maximum permissible length.
- motor load too high
- power unit defective.
Fault value (r0949, interpret binary):
Bit 3: phase U
Bit 4: phase V
Bit 5: phase W
Additional bits:
Only for internal Siemens troubleshooting.
Note:
Fault value = 0 means that the phase with current limiting is not recognized (e.g. for blocksize device).

Remedy: For infeed units, the following applies:
- check the controller settings and reset and identify the controller if necessary (p0340 = 2, p3410 = 5)
- reduce the load and increase the DC link capacitance or use a higher-rating infeed if necessary
- check the connection of the optional Voltage Sensing Module
- check the connection and technical data of the line reactor
- check the power cables for short-circuit or ground fault.
- replace power unit.
The following applies to Motor Modules:
- check the motor data and if required, recalculate the controller parameters (p0340 = 3). As an alternative, run a motor data identification (p1910 = 1, p1960 = 1).
- check the motor circuit configuration (star-delta).
- check the motor load.
- check the power cable connections.
- check the power cables for short-circuit or ground fault.
- check the length of the power cables.
- replace power unit.

F30017 Power unit: 26.5 V supply voltage fault

Message value: %1
Message class: Power electronics faulted (5)
Drive object: HLA
Component: Power Module **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: For a drive that has been enabled, it has been identified that the 26.5 V supply voltage for the Hydraulic Module has a fault (X271).
Permissible range: 26.0 ... 27.0 V
Fault value (r0949, interpret decimal):
Voltage value [0.1 V].
Remedy: - check the 26.5 V supply voltage (X271).

F30020 Power unit: Configuration not supported

Message value: fault cause: %1, additional information: %2
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: A configuration is requested that is not supported by the power unit.

Fault value (r0949, interpret hexadecimal):

yyyyxxxx hex: xxxx = fault cause, yyyy = additional information (internal Siemens)

xxxx = 0: Autonomous operation is requested but is not supported.

xxxx = 1: The requested DRIVE-CLiQ timing is not permissible.

xxxx = 2: A PM260 has been detected with PS-ASIC version 2. This combination is not supported.

xxxx = 3: Initialization was not able to be successfully completed. It is possible that the Control Unit was withdrawn from the Power Module before or during power up.

xxxx = 4: The combination of power unit and Control Unit or Control Unit Adapter is not supported.

xxxx = 5: The higher current controller dynamic performance is not supported.

Remedy: For fault cause = 0:

If required, deactivate an active internal voltage protection (p1231).

For fault cause = 1:

Update the Control Unit firmware or change the DRIVE-CLiQ topology.

For fault cause = 2:

Replace the power unit with a PM260 with PS-ASIC version 3 (or higher).

For fault cause = 3, 4:

Insert a Control Unit or Control Unit Adapter (CUAxx) on an appropriate Power Module and perform a POWER ON for the Control Unit or the Control Unit Adapter.

For fault cause = 5:

- use a booksize format power unit.

- for a Double Motor Module operate the two drive controls with the same current controller sampling time (p0115[0]). Otherwise, the higher current controller dynamics can only be activated on the drive with the longer sampling time.

- if required, de-select the higher current controller dynamic performance (p1810.11 = 0). After deselecting the computing dead time, recalculate the controller gains (p0340 = 4). If required, optimize the speed controller.

See also: p0115, p1231, p1810

F30021 Power unit: Ground fault

Message value: %1
Message class: Ground fault / inter-phase short-circuit detected (7)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The power has detected a ground fault.

Possible causes:

- ground fault in the power cables.

- ground fault at the motor.

- CT defective.

- when the brake closes, this causes the hardware DC current monitoring to respond.

- short-circuit at the braking resistor.

- the closed-loop circulating current control for devices connected in parallel (r0108.15 = 1) is either too slow or has been set too fast.

Note:

For power units, a ground fault is also emulated in r3113.5.

Fault value (r0949, interpret decimal):
0:
- the hardware DC current monitoring has responded.
- short-circuit at the braking resistor.
> 0:
Absolute value, total current amplitude [20479 = r0209 * 1.4142].

Remedy:
- check the power cable connections.
- check the motor.
- check the CT.
- check the cables and contacts of the brake connection (a wire is possibly broken).
- check the braking resistor.
For parallel switching devices (r0108.15 = 1) the following additionally applies:
- check the ground fault monitoring thresholds (p0287).
- check the setting of the closed-loop circulating current control (p7036, p7037).
See also: p0287 (Ground fault monitoring shutdown threshold)

F30022 Power unit: Monitoring U_ce

Message value: Fault cause: %1 bin
Message class: Ground fault / inter-phase short-circuit detected (7)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: POWER ON
Cause: In the power unit, the monitoring of the collector-emitter voltage (U_ce) of the semiconductor has responded.
Possible causes:
- fiber-optic cable interrupted.
- power supply of the IGBT gating module missing.
- short-circuit at the power unit output.
- defective semiconductor in the power unit.
Fault value (r0949, interpret binary):
Bit 0: Short-circuit in phase U
Bit 1: Short circuit in phase V
Bit 2: Short-circuit in phase W
Bit 3: Light transmitter enable defective
Bit 4: U_ce group fault signal interrupted
See also: r0949 (Fault value)

Remedy:
- check the fiber-optic cable and if required, replace.
- check the power supply of the IGBT gating module (24 V).
- check the power cable connections.
- select the defective semiconductor and replace.

F30024 Power unit: Overtemperature thermal model

Message value: -
Message class: Power electronics faulted (5)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The temperature difference between the heat sink and chip has exceeded the permissible limit value.
- the permissible load duty cycle was not maintained.
- insufficient cooling, fan failure.
- overload.
- ambient temperature too high.
- pulse frequency too high.
See also: r0037

Remedy: - adapt the load duty cycle.
- check whether the fan is running.
- check the fan elements.
- check whether the ambient temperature is in the permissible range.
- check the motor load.
- reduce the pulse frequency if this is higher than the rated pulse frequency.

F30024 Power unit: Overtemperature thermal model

Message value: -
Message class: Power electronics faulted (5)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The temperature difference between the heat sink and chip has exceeded the permissible limit value.
- the permissible load duty cycle was not maintained.
- insufficient cooling, fan failure.
- overload.
- ambient temperature too high.
- pulse frequency too high.
See also: r0037
Remedy: - adapt the load duty cycle.
- check whether the fan is running.
- check the fan elements.
- check whether the ambient temperature is in the permissible range.
- check the motor load.
- reduce the pulse frequency if this is higher than the rated pulse frequency.
- if DC braking is active: reduce braking current (p1232).

F30025 Power unit: Chip overtemperature

Message value: %1
Message class: Power electronics faulted (5)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The chip temperature of the semiconductor has exceeded the permissible limit value.
- the permissible load duty cycle was not maintained.
- insufficient cooling, fan failure.
- overload.
- ambient temperature too high.
- pulse frequency too high.
Fault value (r0949, interpret decimal):
Temperature difference between the heat sink and chip [0.01 °C].
Remedy: - adapt the load duty cycle.
- check whether the fan is running.
- check the fan elements.
- check whether the ambient temperature is in the permissible range.
- check the motor load.
- reduce the pulse frequency if this is higher than the rated pulse frequency.
Notice:
This fault can only be acknowledged after the alarm threshold for alarm A05001 has been undershot.
See also: r0037

F30027 **Power unit: Precharging DC link time monitoring**

Message value: Enable signals: %1, Status: %2
Message class: Infeed faulted (13)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The power unit DC link was not able to be precharged within the expected time.

1) There is no line supply voltage connected.

2) The line contactor/line side switch has not been closed.

3) The line supply voltage is too low.

4) Line supply voltage incorrectly set (p0210).

5) The precharging resistors are overheated as there were too many precharging operations per time unit.

6) The precharging resistors are overheated as the DC link capacitance is too high.

7) The precharging resistors are overheated because when there is no "ready for operation" (r0863.0) of the infeed unit, power is taken from the DC link.

8) The precharging resistors are overheated as the line contactor was closed during the DC link fast discharge through the Braking Module.

9) The DC link has either a ground fault or a short-circuit.

10) The precharging circuit is possibly defective (only for chassis units).

11) Infeed is defective and/or fuse has ruptured in the Motor Module (only Booksize units).

Fault value (r0949, interpret binary):

yyyyxxxx hex:

yyyy = power unit state

0: Fault status (wait for OFF and fault acknowledgment).

1: Restart inhibit (wait for OFF).

2: Overvoltage condition detected -> change into the fault state.

3: Undervoltage condition detected -> change into the fault state.

4: Wait for bridging contactor to open -> change into the fault state.

5: Wait for bridging contactor to open -> change into restart inhibit.

6: Wait for bypass contactor to open

7: Commissioning.

8: Ready for precharging.

9: Precharging started, DC link voltage lower than the minimum switch-on voltage

10: Precharging, DC link voltage end of precharging still not detected

11: Wait for the end of the de-bounce time of the main contactor after precharging has been completed.

12: Precharging completed, ready for pulse enable.

13: It was detected that the STO terminal was energized at the power unit

xxxx = Missing internal enable signals, power unit (inverted bit-coded, FFFF hex -> all internal enable signals available)

Bit 0: Power supply of the IGBT gating shut down.

Bit 1: Ground fault detected.

Bit 2: Peak current intervention.

Bit 3: I2t exceeded.

Bit 4. Thermal model overtemperature calculated.

Bit 5: (heat sink, gating module, power unit) overtemperature measured.

Bit 6: Reserved.

Bit 7: Overvoltage detected.

Bit 8: Power unit has completed precharging, ready for pulse enable.

Bit 9: STO terminal missing.

Bit 10: Overcurrent detected.

Bit 11: Armature short-circuit active.

Bit 12: DRIVE-CLiQ fault active.

Bit 13: Vce fault detected, transistor de-saturated due to overcurrent/short-circuit.

Bit 14: Undervoltage detected.

See also: p0210 (Drive unit line supply voltage)

Remedy: In general:

- check the line supply voltage at the input terminals.
- check the line supply voltage setting (p0210).

For booksize drive units, the following applies:

- wait (approx. 8 minutes) until the precharging resistors have cooled down. For this purpose, preferably disconnect the infeed unit from the line supply.

For 5):

- carefully observe the permissible precharging frequency (refer to the appropriate Equipment Manual).

For 6):

- check the total capacitance of the DC link and reduce in accordance with the maximum permissible DC link capacitance if necessary (refer to the appropriate Equipment Manual)

For 7):

- interconnect the ready-for-operation signal from the infeed unit (r0863.0) in the enable logic of the drives connected to this DC link

For 8):

- check the connections of the external line contactor. The line contactor must be open during DC link fast discharge.

For 9):

- check the DC link for ground faults or short circuits.

For 11):

- check the DC link voltage of the infeed (r0070) and Motor Modules (r0070).

If the DC link voltage generated by the infeed (or external) is not displayed for the Motor Modules (r0070), then a fuse has ruptured in the Motor Module.

See also: p0210 (Drive unit line supply voltage)

A30030 Power unit: Internal overtemperature alarm

Message value: %1

Message class: Power electronics faulted (5)

Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Power Module **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: The temperature inside the drive converter has exceeded the permissible temperature limit.

- insufficient cooling, fan failure.
- overload.
- ambient temperature too high.

Alarm value (r2124, interpret decimal):

Only for internal Siemens troubleshooting.

Remedy:

- possibly use an additional fan.
- check whether the ambient temperature is in the permissible range.

Notice:

This alarm is automatically withdrawn once the permissible temperature limit value has been fallen below minus 5 K.

A30031 Power unit: Hardware current limiting in phase U

Message value: -
Message class: Power electronics faulted (5)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: Hardware current limit for phase U responded. The pulsing in this phase is inhibited for one pulse period.
- closed-loop control is incorrectly parameterized.
- fault in the motor or in the power cables.
- the power cables exceed the maximum permissible length.
- motor load too high
- power unit defective.

Note:
Alarm A30031 is always output if, for a Power Module, the hardware current limiting of phase U, V or W responds.

Remedy: - check the motor data and if required, recalculate the control parameters (p0340 = 3). As an alternative, run a motor data identification (p1910 = 1, p1960 = 1).
- check the motor circuit configuration (star/delta).
- check the motor load.
- check the power cable connections.
- check the power cables for short-circuit or ground fault.
- check the length of the power cables.

A30032 Power unit: Hardware current limiting in phase V

Message value: -
Message class: Power electronics faulted (5)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: Hardware current limit for phase V responded. The pulsing in this phase is inhibited for one pulse period.
- closed-loop control is incorrectly parameterized.
- fault in the motor or in the power cables.
- the power cables exceed the maximum permissible length.
- motor load too high
- power unit defective.

Note:
Alarm A30031 is always output if, for a Power Module, the hardware current limiting of phase U, V or W responds.

Remedy: Check the motor data and if required, recalculate the control parameters (p0340 = 3). As an alternative, run a motor data identification (p1910 = 1, p1960 = 1).
- check the motor circuit configuration (star/delta).
- check the motor load.
- check the power cable connections.
- check the power cables for short-circuit or ground fault.
- check the length of the power cables.

A30033 Power unit: Hardware current limiting in phase W

Message value: -
Message class: Power electronics faulted (5)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: Hardware current limit for phase W responded. The pulsing in this phase is inhibited for one pulse period.
- closed-loop control is incorrectly parameterized.
- fault in the motor or in the power cables.
- the power cables exceed the maximum permissible length.
- motor load too high
- power unit defective.

Note:
Alarm A30031 is always output if, for a Power Module, the hardware current limiting of phase U, V or W responds.

Remedy:
- check the motor data and if required, recalculate the control parameters (p0340 = 3). As an alternative, run a motor data identification (p1910 = 1, p1960 = 1).
- check the motor circuit configuration (star/delta).
- check the motor load.
- check the power cable connections.
- check the power cables for short-circuit or ground fault.
- check the length of the power cables.

A30034 Power unit: Internal overtemperature

Message value: %1
Message class: Power electronics faulted (5)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The alarm threshold for internal overtemperature has been reached.
If the temperature inside the unit continues to increase, fault F30036 may be triggered.
- ambient temperature might be too high.
- insufficient cooling, fan failure.

Alarm value (r2124, interpret decimal):
Only for internal Siemens troubleshooting.

Remedy:
- check the ambient temperature.
- check the fan for the inside of the unit.

F30035 Power unit: Air intake overtemperature

Message value: %1
Message class: Power electronics faulted (5)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: OFF1 (OFF2)
Acknowledge: IMMEDIATELY
Cause: The air intake in the power unit has exceeded the permissible temperature limit.
For air-cooled power units, the temperature limit is at 55 °C.
- ambient temperature too high.
- insufficient cooling, fan failure.

Fault value (r0949, interpret decimal):
Temperature [0.01 °C].

Remedy: - check whether the fan is running.
- check the fan elements.
- check whether the ambient temperature is in the permissible range.
Notice:
This fault can only be acknowledged after the alarm threshold for alarm A05002 has been undershot.

F30036 Power unit: Internal overtemperature

Message value: %1
Message class: Power electronics faulted (5)
Drive object: All objects
Component: Power Module **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The temperature inside the drive converter has exceeded the permissible temperature limit.
- insufficient cooling, fan failure.
- overload.
- ambient temperature too high.
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.
Remedy: - check whether the fan is running.
- check the fan elements.
- check whether the ambient temperature is in the permissible range.
Notice:
This fault can only be acknowledged once the permissible temperature limit minus 5 K has been fallen below.

F30037 Power unit: Rectifier overtemperature

Message value: %1
Message class: Power electronics faulted (5)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The temperature in the rectifier of the power unit has exceeded the permissible temperature limit.
- insufficient cooling, fan failure.
- overload.
- ambient temperature too high.
- line supply phase failure.
Fault value (r0949, interpret decimal):
Temperature [0.01 °C].
Remedy: - check whether the fan is running.
- check the fan elements.
- check whether the ambient temperature is in the permissible range.
- check the motor load.
- check the line supply phases.
Notice:
This fault can only be acknowledged after the alarm threshold for alarm A05004 has been undershot.

A30038 Power unit: Capacitor fan monitoring

Message value: %1
Message class: Infeed faulted (13)
Drive object: B_INF
Component: Power Module **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The capacitor fan signals a fault.
Remedy: Replace the capacitor fan in the power unit.

F30039 Power unit: Failure capacitor fan

Message value: %1
Message class: Infeed faulted (13)
Drive object: B_INF
Component: Power Module **Propagation:** GLOBAL
Reaction: OFF1
Acknowledge: IMMEDIATELY
Cause: The capacitor fan has failed.
Remedy: Replace the capacitor fan in the power unit.

F30040 Power unit: Undervolt 24 V

Message value: %1
Message class: Supply voltage fault (undervoltage) (3)
Drive object: A_INF, B_INF, R_INF, S_INF
Component: Power Module **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The undervoltage threshold of the 24 V power supply for the power unit was fallen below for longer than 3 ms.
Note:
- for booksize power units, the undervoltage threshold is 15 V.
- for all other power units, the undervoltage threshold depends on the power unit, and is not displayed.

Fault value (r0949, interpret decimal):
24 V voltage [0.1 V].

Remedy:
- check the power supply of the power unit.
- carry out a POWER ON (switch-off/switch-on) for the component.

F30040 Power unit: Undervolt 24/48 V

Message value: Channel: %1, voltage: %2 [0.1 V]
Message class: Supply voltage fault (undervoltage) (3)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The undervoltage threshold of the 24 V power supply for the power unit was fallen below for longer than 3 ms.
Note:
- for booksize power units, the undervoltage threshold is 15 V.
- for CU310-2, CUA31 and CUA32 the undervoltage threshold is 16 V.
- for all other power units (e.g. S120M), the undervoltage threshold depends on the power unit, and is not displayed.

Fault value (r0949, interpret hexadecimal):
yyxxxx hex: yy = channel, xxxx = voltage [0.1 V]
yy = 0: 24 V power supply
yy = 1: 48 V power supply

Remedy:
- check the power supply of the power unit.
- carry out a POWER ON (switch-off/switch-on) for the component.

F30040 **Power unit: Undervolt 24 V**

Message value: %1
Message class: Supply voltage fault (undervoltage) (3)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The undervoltage threshold of the 24 V power supply for the power unit was fallen below for longer than 3 ms.
Note:
- for booksize power units, the undervoltage threshold is 15 V.
- for CU310-2, CUA31 and CUA32 the undervoltage threshold is 16 V.
- for all other power units, the undervoltage threshold depends on the power unit, and is not displayed.

Fault value (r0949, interpret decimal):
24 V voltage [0.1 V].
Remedy:
- check the power supply of the power unit.
- carry out a POWER ON (switch-off/switch-on) for the component.

A30041 (F) **Power unit: Undervoltage 24 V alarm**

Message value: %1
Message class: Supply voltage fault (undervoltage) (3)
Drive object: A_INF, B_INF, R_INF, S_INF
Component: Power Module **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: For the power unit power supply, the lower threshold has been violated.
Alarm value (r2124, interpret hexadecimal):
Only for internal Siemens troubleshooting.
Remedy:
- check the power supply of the power unit.
- carry out a POWER ON (switch-off/switch-on) for the component.

Reaction upon F: NONE (OFF1, OFF2)
Acknowl. upon F: IMMEDIATELY (POWER ON)

A30041 (F) **Power unit: Undervolt 24/48 V alarm**

Message value: Channel: %1, voltage: %2 [0.1 V]
Message class: Supply voltage fault (undervoltage) (3)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: For the power unit power supply, the lower threshold has been violated.
Alarm value (r2124, interpret hexadecimal):
yyxxxx hex: yy = channel, xxxx = voltage [0.1 V]
yy = 0: 24 V power supply
yy = 1: 48 V power supply
Remedy:
- check the power supply of the power unit.
- carry out a POWER ON (switch-off/switch-on) for the component.

Reaction upon F: NONE (OFF1, OFF2)
Acknowl. upon F: IMMEDIATELY (POWER ON)

A30041 (F) Power unit: Undervoltage 24 V alarm

Message value: %1
Message class: Supply voltage fault (undervoltage) (3)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: For the power unit power supply, the lower threshold has been violated.
Alarm value (r2124, interpret decimal):
24 V voltage [0.1 V].
Remedy: - check the power supply of the power unit.
- carry out a POWER ON (switch-off/switch-on) for the component.
Reaction upon F: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY (POWER ON)

A30042 Power unit: Fan has reached the maximum operating hours

Message value: %1
Message class: Power electronics faulted (5)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The maximum operating time of at least one fan will soon be reached, or has already been exceeded.
Alarm value (r2124, interpret binary):
Bit 0 = 1:
The operating hours counter of the heat sink fan will reach the maximum operating time in 500 hours. After 500 hours has elapsed, bit 0 is cleared and bit 2 is set in the alarm value.
Bit 1 = 1:
The wear counter of the heat sink fan has reached 99 %. The remaining service life is 1%. After this 1% has elapsed, bit 1 is cleared and bit 2 is set in the alarm value.
Bit 2 = 1:
The operating hours counter of the heat sink fan has exceeded the maximum operating time - and/or the wear counter has exceeded 100%.
Bit 8 = 1:
The operating hours counter of the fan inside the device will reach the maximum operating time in 500 hours. After 500 hours has elapsed, bit 8 is cleared and bit 10 is set in the alarm value.
Bit 10 = 1:
The operating hours counter of the fan inside the device has exceeded the maximum operating time.
Remedy: For the fan involved, carry out the following:
- replace the fan.
- reset the operating hours counter (p0251, p0254).
See also: p0251 (Power unit heat sink fan operating hours counter), p0252 (Power unit heat sink fan operating time maximum), p0254 (Operating hours counter power unit fan inside the converter), r0277 (Power unit heat sink fan wear counter)

F30043 Power unit: Overvolt 24 V

Message value: %1
Message class: Supply voltage fault (overvoltage) (3)
Drive object: A_INF, B_INF, R_INF, S_INF, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: POWER ON
Cause: For the power unit power supply, the upper threshold has been violated.
Fault value (r0949, interpret decimal):
24 V voltage [0.1 V].
Remedy: Check the power supply of the power unit.

F30043 **Power unit: Overvolt 24/48 V**

Message value: Channel: %1, voltage: %2 [0.1 V]
Message class: Supply voltage fault (overvoltage) (3)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: POWER ON
Cause: For the power unit power supply, the upper threshold has been violated.
Fault value (r0949, interpret hexadecimal):
yyxxxx hex: yy = channel, xxxx = voltage [0.1 V]
yy = 0: 24 V power supply
yy = 1: 48 V power supply
Remedy: Check the power supply of the power unit.

A30044 (F) **Power unit: Overvoltage 24 V alarm**

Message value: %1
Message class: Supply voltage fault (overvoltage) (3)
Drive object: A_INF, B_INF, R_INF, S_INF
Component: Power Module **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: For the power unit power supply, the upper threshold has been violated.
Alarm value (r2124, interpret decimal):
Only for internal Siemens troubleshooting.
Remedy: Check the power supply of the power unit.
Reaction upon F: NONE (OFF1, OFF2)
Acknowl. upon F: IMMEDIATELY (POWER ON)

A30044 (F) **Power unit: Overvolt 24/48 V alarm**

Message value: Channel: %1, voltage: %2 [0.1 V]
Message class: Supply voltage fault (overvoltage) (3)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: For the power unit power supply, the upper threshold has been violated.
Alarm value (r2124, interpret hexadecimal):
yyxxxx hex: yy = channel, xxxx = voltage [0.1 V]
yy = 0: 24 V power supply
yy = 1: 48 V power supply
Remedy: Check the power supply of the power unit.
Reaction upon F: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY (POWER ON)

A30044 (F) **Power unit: Overvoltage 24 V alarm**

Message value: %1
Message class: Supply voltage fault (overvoltage) (3)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: For the power unit power supply, the upper threshold has been violated.
Alarm value (r2124, interpret decimal):
24 V voltage [0.1 V].

Remedy: Check the power supply of the power unit.
Reaction upon F: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY (POWER ON)

F30045 Power unit: Supply undervoltage

Message value: %1
Message class: Supply voltage fault (undervoltage) (3)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: Power supply fault in the power unit.
- the voltage monitor signals an undervoltage fault on the module.
The following applies for CU31x:
- the voltage monitoring on the DAC board signals an undervoltage fault on the module.
Remedy: - check the power supply of the power unit.
- carry out a POWER ON (switch-off/switch-on) for the component.
- replace the module if necessary.

F30045 Power unit: Supply undervoltage

Message value: %1
Message class: Supply voltage fault (undervoltage) (3)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: Power supply fault in the power unit.
- the voltage monitor signals an undervoltage fault on the module.
The following applies for CU31x:
- the voltage monitoring on the DAC board signals an undervoltage fault on the module.
For S120M, the following applies:
- this message is displayed for undervoltage or overvoltage.
Remedy: - check the power supply of the power unit.
- carry out a POWER ON (switch-off/switch-on) for the component.
- replace the module if necessary.

A30046 (F) Power unit: Undervoltage alarm

Message value: %1
Message class: Power electronics faulted (5)
Drive object: A_INF, B_INF, R_INF, S_INF
Component: Power Module **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: Before the last restart, a problem occurred at the power unit power supply.
The voltage monitor in the internal FPGA of the PSA signals an undervoltage fault on the module.
Alarm value (r2124, interpret decimal):
Only for internal Siemens troubleshooting.
Remedy: - check the 24 V DC voltage supply to power unit.
- carry out a POWER ON (switch-off/switch-on) for the component.
- replace the module if necessary.
Reaction upon F: NONE (OFF1, OFF2)
Acknowl. upon F: IMMEDIATELY (POWER ON)

A30046 (F) Power unit: Undervoltage alarm

Message value: %1
Message class: Power electronics faulted (5)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: Before the last restart, a problem occurred at the power unit power supply.
The voltage monitor in the internal FPGA of the PSA signals an undervoltage fault on the module.
Alarm value (r2124, interpret decimal):
Register value of the voltage fault register.
Remedy: - check the 24 V DC voltage supply to power unit.
- carry out a POWER ON (switch-off/switch-on) for the component.
- replace the module if necessary.
Reaction upon F: Servo: NONE (OFF1, OFF2)
Vector: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY (POWER ON)

F30047 Cooling unit: Cooling medium flow rate too low

Message value: %1
Message class: Application/technological function faulted (17)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The flow rate of the cooling unit has fallen below the fault threshold.
Remedy: - check the feedback signals and parameter assignment (p0260 ... p0267).
- check the coolant feed.
- check the thermal conductivity of the coolant.
- check the coolant concentration.

A30048 Power unit: fan defective

Message value: Fault cause: %1 bin
Message class: External measured value / signal state outside the permissible range (16)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The feedback signal from a fan indicates a fault.
- fan defective.
- fan blocked.
- feedback signal inaccurate.
- fan power supply interrupted (only for r0193.13 = 1 and heat sink fan)
Alarm value (r2124, interpret binary):
Bit 0 = 1: heat sink fan
Bit 1 = 1: fan inside the device
Note:
- for firmware version < 5.1 of the power unit, the alarm value is always 0. The alarm then refers to the heat sink fan.
- for r0193.13 = 1, fault F30058 is output instead of this alarm for heat sink fans, if the pulses are inhibited or the fault occurs within 10 s after the fan runs up when the pulses are enabled.
- for r0193.13 = 1, fault F30059 is output instead of this alarm for fans inside the unit, if the air intake temperature (r0037[3]) has exceeded a specific threshold.

Remedy: - check the fan involved.
- if required, replace the fan.
- check the fan power supply and if required switch on (only for r0193.13 = 1 and heat sink fan)
Note:
If the alarm has been withdrawn, this does not necessarily mean that the cause of the fault has been resolved. It is also possible that the software switched off the fan, and therefore can no longer evaluate the feedback signal.

A30049 Power unit: Internal fan faulty

Message value: -
Message class: Auxiliary unit faulted (20)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The internal fan has failed.
Remedy: Check the internal fan and replace if necessary.

F30050 Power unit: 24 V supply overvoltage

Message value: -
Message class: Supply voltage fault (overvoltage) (3)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: POWER ON
Cause: The voltage monitor signals an overvoltage fault on the module.
Remedy: - check the 24 V power supply.
- replace the module if necessary.

F30051 Power unit: Motor holding brake short circuit detected

Message value: %1
Message class: External measured value / signal state outside the permissible range (16)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: A short-circuit at the motor holding brake terminals has been detected.
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.
Remedy: - check the motor holding brake for a short-circuit.
- check the connection and cable for the motor holding brake.

F30052 EEPROM data error

Message value: %1
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: POWER ON
Cause: EEPROM data error of the power unit module.
Fault value (r0949, interpret decimal):
0, 2, 3, 4:
The EEPROM data read in from the power unit module are incorrect.
1:
EEPROM data is not compatible to the firmware of the power unit application.
Additional values:
Only for internal Siemens troubleshooting.

Remedy: For fault value = 0, 2, 3, 4:
Replace the power unit module or update the EEPROM data.
For fault value = 1:
The following applies for CU31x and CUA31:
Update the firmware \SIEMENS\SINAMICS\CODE\SAC\cu31xi.ufw (cua31.ufw)

F30053 FPGA data faulty

Message value: %1
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: NONE
Acknowledge: POWER ON
Cause: The FPGA data of the power unit are faulty. This can be caused, for example, if a firmware update is interrupted.
Remedy: Replace the power unit or update of the FPGA data by updating the firmware.
Note:
If this fault occurs after a firmware update, then update the firmware again.

A30054 (F, N) Power unit: Undervoltage when opening the brake

Message value: %1
Message class: Supply voltage fault (undervoltage) (3)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: When the brake is being opened, it is detected that the power supply voltage is less than 21.4 V
Alarm value (r2124, interpret decimal):
Supply voltage fault [0.1 V].
Example:
Alarm value = 195 --> voltage = 19.5 V
Remedy: Check the 24 V voltage for stability and value.
Reaction upon F: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

F30055 Power unit: Braking chopper overcurrent

Message value: -
Message class: Braking Module faulted (14)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: An overcurrent condition has occurred in the braking chopper.
Remedy: - check whether the braking resistor has a short circuit.
- for an external braking resistor, check whether the resistor may have been dimensioned too small.
Note:
The braking chopper is only enabled again at pulse enable after the fault has been acknowledged.

A30057 Power unit: Line asymmetry

Message value: %1
Message class: Network fault (2)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: Frequencies have been detected on the DC link voltage that would suggest line asymmetry or failure of a line phase.

It is also possible that a motor phase has failed.

Fault F30011 is output if the alarm is present and at the latest after 5 minutes.

The precise duration depends on the power unit type and the particular frequencies. For booksize and chassis power units, the duration also depends on how long the alarm has been active.

Alarm value (r2124, interpret decimal):

Only for internal Siemens troubleshooting.

Remedy: - check the line phase connection.

- check the motor feeder cable connections.

If there is no phase failure of the line or motor, then line asymmetry is involved.

- reduce the power in order to avoid fault F30011.

F30058 (N, A) Power unit: heat sink fan defective

Message value: -
Message class: External measured value / signal state outside the permissible range (16)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** GLOBAL
Reaction: OFF2 (NONE, OFF1)
Acknowledge: IMMEDIATELY
Cause: The feedback signal from the heat sink fan signals a fault.

- fan defective.
- fan blocked.
- feedback signal inaccurate.
- fan power supply interrupted (only for r0193.13 = 1)

Remedy: - check the heat sink fan and replace if necessary.

- check the fan power supply and if required switch on (only for r0193.13 = 1)
- if you are using an external fan with feedback signal, check its wiring (X12.2 or X13.2).

Note:

- when using an external fan without feedback signal, check the wiring of the feedback signal terminal at the power unit with respect to ground and if necessary, setup (X12.1/2 or X13.1/2).
- if the fault can be acknowledged, this does not necessarily mean that the cause of the fault has been resolved. It is also possible that the software switched off the fan, and therefore can no longer evaluate the feedback signal.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F30059 Power unit: Internal fan faulty

Message value: -
Message class: Auxiliary unit faulted (20)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The internal power unit fan has failed and is possibly defective.

Remedy: Check the internal fan and replace if necessary.

Note:

If the fault can be acknowledged, this does not necessarily mean that the cause of the fault has been resolved. It is also possible that the software switched off the fan, and therefore can no longer evaluate the feedback signal.

F30060 (A) Precharge contactor state monitoring

Message value: Fault cause: %1 bin

Message class: Infeed faulted (13)

Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Power Module **Propagation:** LOCAL

Reaction: OFF2 (NONE, OFF1)

Acknowledge: IMMEDIATELY (POWER ON)

Cause: A feedback signal for the precharging contactor (ALM, SLM, BLM diode) or the line contactor (BLM thyristor) interconnected and the monitoring activated.

After switching-in/switching-out the contactor, a correct feedback signal was not received within the monitoring time set in p0255[0, 2].

Fault value (r0949, interpret binary):

Bit 0: The time set in p0255[0, 2] was exceeded when switching-in/switching-out the contactor.

Bit 1: The precharging contactor was opened while precharging or in the infeed mode (BLM thyristor).

Bit 2: The precharging contactor was switched-in in the OFF state or during infeed operation.

Remedy: - check the monitoring time setting (p0255[0, 2]).

- check the contactor wiring and activation.
- replace the contactor.

See also: p0255 (Power unit contactor monitoring time)

Reaction upon A: NONE

Acknowl. upon A: NONE

F30061 (A) Bridging contactor monitoring

Message value: Fault cause: %1 bin

Message class: Infeed faulted (13)

Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Power Module **Propagation:** LOCAL

Reaction: OFF2 (NONE, OFF1)

Acknowledge: IMMEDIATELY (POWER ON)

Cause: A feedback signal for the bypass contactor is interconnected and the monitoring activated.

After switching-in/switching-out the contactor, a correct feedback signal was not received within the monitoring time set in p0255[1, 3].

Fault value (r0949, interpret binary):

Bit 0: The time set in p0255[1, 3] was exceeded when switching-in/switching-out the contactor.

Bit 1: The bypass contactor was opened in operation.

Bit 2: The bypass contactor was switched-in in the OFF state or during precharging.

Remedy: - check the monitoring time setting (p0255[1, 3]).

- check the contactor wiring and activation.
- replace the contactor.

See also: p0255 (Power unit contactor monitoring time)

Reaction upon A: NONE

Acknowl. upon A: NONE

A30065 (F, N) Voltage measured values not plausible

Message value: %1
Message class: Power electronics faulted (5)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The voltage measurement is not supplying any plausible values
Alarm value (r2124, interpret bitwise binary):
Bit 1: Phase U.
Bit 2: Phase V.
Bit 3: Phase W.
Remedy: - Deactivate voltage measurement (p0247.0 = 0).
- Deactivate flying restart with voltage measurement (p0247.5 = 0) and deactivate fast flying restart (p1780.11 = 0).
Reaction upon F: NONE (OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A30066 (N) Power unit: overtemperature, alarm capacitor air discharge

Message value: %1
Message class: Overtemperature of the electronic components (6)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The air discharged from the DC link capacitor has exceeded the alarm threshold.
- ambient temperature too high.
- insufficient cooling, fan failure.
Alarm value (r2124, interpret decimal):
Temperature when reaching the alarm threshold [0.01 °C].
Note:
If operation is unchanged, then the permissible limit value can be exceeded. In this case, fault F30067 is output and the pulses inhibited.
Remedy: - check whether the fan is running.
- check the fan elements.
- check whether the ambient temperature is in the permissible range.
Note:
This alarm is only withdrawn after the alarm threshold has been fallen below - and the corresponding hysteresis.
Reaction upon N: NONE
Acknowl. upon N: NONE

F30067 Power unit: overtemperature, fault capacitor air discharge

Message value: %1
Message class: Overtemperature of the electronic components (6)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The air discharged from the DC link capacitor has exceeded the permissible limit.
- ambient temperature too high.
- insufficient cooling, fan failure.
Fault value (r0949, interpret decimal):
Temperature when reaching the limit value [0.01 °C].

Remedy: - check whether the fan is running.
- check the fan elements.
- check whether the ambient temperature is in the permissible range.
Note:
This fault can only be acknowledged after the limit value has been fallen below, and the corresponding hysteresis (5 K).

F30070 Cycle requested by the power unit module not supported

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: A cycle is requested that is not supported by the power unit.
Fault value (r0949, interpret hexadecimal):
0: The current control cycle is not supported.
1: The DRIVE-CLiQ cycle is not supported.
2: Internal timing problem (clearance between RX and TX instants too low).
3: Internal timing problem (TX instant too early).
Remedy: The power unit only supports the following cycles:
62.5 µs, 125 µs, 250 µs and 500 µs
For fault value = 0:
Set a permitted current control cycle.
For fault value = 1:
Set a permitted DRIVE-CLiQ cycle.
For fault value = 2, 3:
Contact the manufacturer (you may have an incompatible firmware version).

F30071 No new actual values received from the power unit

Message value: -
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The number of actual value telegrams from the power unit module that have failed has exceeded the permissible number.
Remedy: Check the interface (adjustment and locking) to the power unit module.

F30072 Setpoints can no longer be transferred to the power unit

Message value: -
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The following applies for CU31x and CUA31:
More than one setpoint telegram was not able to be transferred to the power unit module.
Remedy: The following applies for CU31x and CUA31:
Check the interface (adjustment and locking) to the power unit module.

A30073 (N) Actual value/setpoint preprocessing no longer synchronous

Message value: -
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: Communication with the power unit module is no longer in synchronism with the current control cycle.
Remedy: Wait until synchronization is re-established.
Reaction upon N: NONE
Acknowl. upon N: NONE

F30074 (A) Communication error between the Control Unit and Power Module

Message value: %1
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: Communications between the Control Unit (CU) and Power Module (PM) via the interface no longer possible. The CU may have been withdrawn or is incorrectly inserted.

Fault value (r0949, interpret hexadecimal):

0 hex:

- a Control Unit with external 24 V supply was withdrawn from the Power Module during operation.
- with the Power Module switched off, the external 24 V supply for the Control Unit was interrupted for some time.

1 hex:

The Control Unit was withdrawn from the Power Module during operation, although the encoderless safe motion monitoring functions are enabled. This is not supported. After re-inserting the Control Unit in operation, communications to the Power Module no longer possible.

20A hex:

The Control Unit was inserted on a Power Module, which has another code number.

20B hex:

The Control Unit was inserted on a Power Module, which although it has the same code number, has a different serial number.

601 hex:

The Control Unit was inserted on a Power Module, whose power/performance class (chassis unit) is not supported.

Remedy: Reinsert the Control Unit (CU) or the Control Unit Adapter (CUAxx) onto the original Power Module and continue operation. If required, carry out a POWER ON for the CU and/or the CUA.
Reaction upon A: NONE
Acknowl. upon A: NONE

F30075 Configuration of the power unit unsuccessful

Message value: %1
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: A communication error has occurred while configuring the power unit using the Control Unit. The cause is not clear.

Fault value (r0949, interpret decimal):

0:

The output filter initialization was unsuccessful.

1:

Activation/deactivation of the regenerative feedback functionality was unsuccessful.

Remedy:
- acknowledge the fault and continue operation.
- if the fault reoccurs, carry out a POWER ON (switch-off/switch-on).
- if required, replace the power unit.

F30080 Power unit: Current increasing too quickly

Message value: Fault cause: %1 bin
Message class: Power electronics faulted (5)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The power unit has detected an excessive rate of rise in the overvoltage range.
- closed-loop control is incorrectly parameterized.
- motor has a short-circuit or fault to ground (frame).
- U/f operation: Up ramp set too low.
- U/f operation: rated current of motor much greater than that of power unit.
- infeed: High discharge and post-charging currents for line voltage dip.
- infeed: High post-charging currents for overload when motoring and DC link voltage dip.
- infeed: Short-circuit currents at switch-on as there is no commutating reactor.
- power cables are not correctly connected.
- power cables exceed the maximum permissible length.
- power unit defective.

Additional causes for a parallel switching device (r0108.15 = 1):
- a power unit has tripped (switched off) due to a ground fault.
- the closed-loop circulating current control is either too slow or has been set too fast.

Fault value (r0949, interpret bitwise binary):
Bit 0: Phase U.
Bit 1: Phase V.
Bit 2: Phase W.

Remedy:
- check the motor data - if required, carry out commissioning.
- check the motor circuit configuration (star-delta)
- U/f operation: Increase up ramp.
- U/f operation: Check assignment of rated currents of motor and power unit.
- infeed: Check the line supply quality.
- infeed: Reduce the motor load.
- infeed: Correct connection of the line reactor.
- check the power cable connections.
- check the power cables for short-circuit or ground fault.
- check the length of the power cables.
- replace power unit.

For a parallel switching device (r0108.15 = 1) the following additionally applies:
- check the ground fault monitoring thresholds (p0287).
- check the setting of the closed-loop circulating current control (p7036, p7037).

F30081 Power unit: Switching operations too frequent

Message value: Fault cause: %1 bin
Message class: Power electronics faulted (5)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The power unit has executed too many switching operations for current limitation.
- closed-loop control is incorrectly parameterized.
- motor has a short-circuit or fault to ground (frame).
- U/f operation: Up ramp set too low.
- U/f operation: rated current of motor much greater than that of power unit.
- infeed: High discharge and post-charging currents for line voltage dip.
- infeed: High post-charging currents for overload when motoring and DC link voltage dip.
- infeed: Short-circuit currents at switch-on as there is no commutating reactor.
- power cables are not correctly connected.
- power cables exceed the maximum permissible length.
- power unit defective.

Additional causes for a parallel switching device (r0108.15 = 1):
- a power unit has tripped (switched off) due to a ground fault.
- the closed-loop circulating current control is either too slow or has been set too fast.

Fault value (r0949, interpret bitwise binary):
Bit 0: Phase U.
Bit 1: Phase V.
Bit 2: Phase W.

Remedy:
- check the motor data - if required, carry out commissioning.
- check the motor circuit configuration (star-delta)
- U/f operation: Increase up ramp.
- U/f operation: Check assignment of rated currents of motor and power unit.
- infeed: Check the line supply quality.
- infeed: Reduce the motor load.
- infeed: Correct connection of the line reactor.
- check the power cable connections.
- check the power cables for short-circuit or ground fault.
- check the length of the power cables.
- replace power unit.

For a parallel switching device (r0108.15 = 1) the following additionally applies:
- check the ground fault monitoring thresholds (p0287).
- check the setting of the closed-loop circulating current control (p7036, p7037).

F30105 PU: Actual value sensing fault

Message value: -
Message class: Power electronics faulted (5)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: At least one incorrect actual value channel was detected on the Power Stack Adapter (PSA).
The incorrect actual value channels are displayed in the following diagnostic parameters.
Remedy: Evaluate the diagnostic parameters.
If the actual value channel is incorrect, check the components and if required, replace.

F30314 Power unit: 24 V power supply overloaded by PM

Message value: -
Message class: Supply voltage fault (undervoltage) (3)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The 24 V power supply through the Power Module (PM) is overloaded.
An external 24 V power supply via X124 on the Control Unit is not connected.
Remedy: Connect an external 24 V power supply via X124 at the Control Unit.

A30315 (F) Power unit: 24 V power supply overloaded by PM

Message value: -
Message class: Supply voltage fault (undervoltage) (3)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The 24 V power supply through the Power Module (PM) is overloaded.
An external 24 V power supply via X124 on the Control Unit is not connected.
Remedy: Connect an external 24 V power supply via X124 at the Control Unit.
Reaction upon F: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY (POWER ON)

A30502 Power unit: DC link overvoltage

Message value: %1
Message class: DC link overvoltage (4)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The power unit has detected overvoltage in the DC link on a pulse inhibit.
- device supply voltage too high.
- line reactor incorrectly dimensioned.
Alarm value (r0949, interpret decimal):
DC link voltage [1 bit = 100 mV].
See also: r0070
Remedy: - check the device supply voltage (p0210).
- check the dimensioning of the line reactor.
See also: p0210 (Drive unit line supply voltage)

F30600 SI P2: STOP A initiated

Message value: %1
Message class: Safety monitoring channel has identified an error (10)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The drive-integrated "Safety Integrated" function in monitoring channel 2 has detected a fault and initiated a STOP A (STO via the safety switch-off signal path of monitoring channel 2).
- forced checking procedure (test stop) of the safety switch-off signal path of monitoring channel 2 unsuccessful.
- subsequent response to fault F30611 (defect in a monitoring channel).

Fault value (r0949, interpret decimal):
0: stop request from the Control Unit.
1005:
- STO active, although STO not selected and there is no internal STOP A active.
- For a Power Module with "STO via terminals at the Power Module" (STO_A/STO_B), these terminals are active (DIP switch to "ON"). However, the "STO via terminals at the Power Module" function has not been enabled (p9601.7 = p9801.7 = 0).
1010: STO inactive although STO is selected or an internal STOP A is present.
1011: internal error for STO deselected in monitoring channel 2.
1020: Internal software error in the "Internal voltage protection" function. The "internal voltage protection" function is withdrawn. A STOP A that cannot be acknowledged is initiated.
9999: Subsequent response to fault F30611.

Remedy:
- select Safe Torque Off and de-select again.
- carry out a POWER ON (switch-off/switch-on) for all components.
- replace the Motor Module involved.
For fault value = 1005:
- deactivate terminals STO_A/STO_B on the Power Module (set both DIP-switches to "OFF") or enable the "STO via terminals at the Power Module" function.
For fault value = 1020:
- upgrade the Motor Module software.
- replace the Motor Module.
For fault value = 9999:
- carry out diagnostics for fault F30611.
Note:
CU: Control Unit
MM: Motor Module
SI: Safety Integrated
STO: Safe Torque Off / SH: Safe standstill

F30600 SI P2: STOP A initiated

Message value: %1
Message class: Safety monitoring channel has identified an error (10)
Drive object: HLA
Component: None **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The drive-integrated "Safety Integrated" function in monitoring channel 2 has detected a fault and initiated a STOP A (STO via the safety switch-off signal path of monitoring channel 2).
- forced checking procedure (test stop) of the safety switch-off signal path of monitoring channel 2 unsuccessful.
- subsequent response to fault F30611 (defect in a monitoring channel).
Fault value (r0949, interpret decimal):
0: stop request from the Control Unit.
1005: STO active although STO not selected and there is no internal STOP A present.
1010: STO inactive although STO is selected or an internal STOP A is present.
9999: Subsequent response to fault F30611.

Remedy:
- select Safe Torque Off and de-select again.
- carry out a POWER ON (switch-off/switch-on) for all components.
- replace Hydraulic Module involved.
For fault value = 9999:
- carry out diagnostics for fault F30611.
Note:
CU: Control Unit
SI: Safety Integrated
STO: Safe Torque Off / SH: Safe standstill

F30611 (A) SI P2: Defect in a monitoring channel

Message value: %1

Message class: Safety monitoring channel has identified an error (10)

Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** LOCAL

Reaction: NONE (OFF1, OFF2, OFF3)

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The drive-integrated "Safety Integrated" function on processor 2 has detected a fault in the data cross-check between the two monitoring channels and has initiated a STOP F.

As a result of this fault, after the parameterized transition has expired (p9858), fault F30600 is output (SI MM: STOP A initiated).

Fault value (r0949, interpret decimal):

0: Stop request from another monitoring channel.

1 ... 999:

Number of the cross-compared data that resulted in this fault. This number is also displayed in r9895.

1: SI monitoring clock cycle (r9780, r9880).

2: SI enable safety functions (p9601, p9801). Crosswise data comparison is only carried out for the supported bits.

3: SI SGE changeover discrepancy time (p9650, p9850).

4: SI transition period STOP F to STOP A (p9658, p9858).

5: SI enable Safe Brake Control (p9602, p9802).

6: SI Motion enable, safety-relevant functions (p9501, internal value).

7: SI delay time of STO for Safe Stop 1 (p9652, p9852).

8: SI PROFIsafe address (p9610, p9810).

9: SI debounce time for STO/SBC/SS1 (p9651, p9851).

10: SI delay time for initiating STO for ESR (p9697, p9897).

11: SI Safe Brake Adapter mode, BICO interconnection (p9621, p9821).

12: SI Safe Brake Adapter relay ON time (p9622[0], p9822[0]).

13: SI Safe Brake Adapter relay OFF time (p9622[1], p9822[1]).

14: SI PROFIsafe telegram selection (p9611, p9811).

15: SI PROFIsafe bus failure response (p9612, p9812).

1000: Watchdog timer has expired.

Within the time of approx. 5 x p9650, alternatively, the following was defined:

- the signal at terminal EP of the Motor Module continually changed with time intervals less than or equal to the discrepancy time (p9650/p9850).

- via PROFIsafe/TM54F, STO (also as subsequent response) was continually selected and deselected with time intervals less than or equal to the discrepancy time (p9650/p9850).

- safe pulse cancellation (r9723.9 - also as subsequent response) was continually selected and deselected with time intervals less than or equal to the discrepancy time (p9650/p9850).

1001, 1002: Initialization error, change timer / check timer.

1950: Module temperature outside the permissible temperature range.

1951: Module temperature not plausible.

1952: S120M: hardware access fault.

2000: Status of the STO selection for both monitoring channels different.

2001: Feedback signal of STO shutdown for both monitoring channels different. This value can also subsequently occur as a result of other faults.

2002: Status of the delay timer SS1 for both monitoring channels different (status of the timer in p9650/p9850).

2003: Status of the STO terminal for both monitoring channels different.

6000 ... 6999:

Error in the PROFIsafe control.

For these fault values, the failsafe control signals (Failsafe Values) are transferred to the safety functions. If "STOP B after failure of the PROFIsafe communication" (p9812) is parameterized, the transfer of the Failsafe Values is delayed.

The significance of the individual message values is described in safety message C01611.

Remedy: For fault value = 1 ... 5 and 7 ... 999:
- check the cross data comparison that resulted in a STOP F.
- carry out a POWER ON (switch-off/switch-on) for all components.
- upgrade the Motor Module software.
- upgrade the Control Unit software.

For fault value = 6:
- carry out a POWER ON (switch-off/switch-on) for all components.
- upgrade the Motor Module software.
- upgrade the Control Unit software.

For fault value = 1000:
- check the wiring of the safety-relevant inputs (SGE) on the Control Unit (contact problems).
- PROFIsafe: Remove contact problems/faults at the PROFIBUS master/PROFINET controller.
- check the wiring of the failsafe inputs at the TM54F (contact problems).
- check the discrepancy time, and if required, increase the value (p9650/p9850).

For fault value = 1001, 1002:
- carry out a POWER ON (switch-off/switch-on) for all components.
- upgrade the Motor Module software.
- upgrade the Control Unit software.

For fault value = 1950:
- operate the module in the permissible range.
- check the module fan, replace the Motor Module involved.

For fault value = 1951:
- operate the module in the permissible range.
- replace the Motor Module involved.

For fault value = 1952:
- replace the Motor Module involved.

For fault value = 2000, 2001, 2002, 2003:
- check the discrepancy time, and if required, increase the value (p9650/p9850, p9652/p9852).
- check the wiring of the safety-relevant inputs (SGE) (contact problems).
- check why STO was selected in r9872. When the SMM functions are active (p9501 = 1), STO can also be selected using these functions.
- replace the Motor Module involved.
- diagnose the other active faults and resolve the causes.

Note:
This fault can be acknowledged after removing the cause of the error and after correct selection/deselection of STO.

For fault value = 6000 ... 6999:
Refer to the description of the message values in safety message C01611.

Note:
CU: Control Unit
EP: Enable Pulses (pulse enable)
ESR: Extended Stop and Retract
MM: Motor Module
SGE: Safety-relevant input
SI: Safety Integrated
SMM: Safe Motion Monitoring
SS1: Safe Stop 1 (corresponds to Stop Category 1 acc. to EN60204)
STO: Safe Torque Off / SH: Safe standstill

Reaction upon A: NONE
Acknowl. upon A: NONE

F30611 (A)	**SI P2: Defect in a monitoring channel**		
Message value:	%1		
Message class:	Safety monitoring channel has identified an error (10)		
Drive object:	HLA		
Component:	None	**Propagation:**	LOCAL
Reaction:	NONE (OFF1, OFF2, OFF3)		
Acknowledge:	IMMEDIATELY (POWER ON)		

Cause:

The drive-integrated "Safety Integrated" function on processor 2 has detected a fault in the data cross-check between the two monitoring channels and has initiated a STOP F.

As a result of this fault, after the parameterized transition has expired (p9858), fault F30600 is output (SI MM: STOP A initiated).

Fault value (r0949, interpret decimal):

0: Stop request from another monitoring channel.

1 ... 999:

Number of the cross-compared data that resulted in this fault. This number is also displayed in r9895.

1: SI monitoring clock cycle (r9780, r9880).

2: SI enable safety functions (p9601, p9801). Crosswise data comparison is only carried out for the supported bits.

3: SI SGE changeover discrepancy time (p9650, p9850).

4: SI transition period STOP F to STOP A (p9658, p9858).

6: SI Motion enable, safety-relevant functions (p9501, internal value).

7: SI delay time of STO for Safe Stop 1 (p9652, p9852).

8: SI PROFIsafe address (p9610, p9810).

9: SI debounce time for STO/SBC/SS1 (p9651, p9851).

10: SI delay time for initiating STO for ESR (p9697, p9897).

11: SI HLA shutoff valve feedback signal contact configuration (p9626, p9826).

12: SI HLA shutoff valve wait time switch-on (p9625[0], p9825[0]).

13: SI HLA shutoff valve wait time switch-off (p9625[1], p9825[1]).

14: SI PROFIsafe telegram selection (p9611, p9811).

15: SI PROFIsafe bus failure response (p9612, p9812).

1000: Watchdog timer has expired.

Within the time of approx. 5 x p9650, alternatively, the following was defined:

- the signal at terminal STO of the Hydraulic Module continually changed with time intervals less than or equal to the discrepancy time (p9650/p9850).

- via PROFIsafe/TM54F, STO (also as subsequent response) was continually selected and deselected with time intervals less than or equal to the discrepancy time (p9650/p9850).

1001, 1002: Initialization error, change timer / check timer.

1950: Module temperature outside the permissible temperature range.

1951: Module temperature not plausible.

2000: Status of the STO selection for both monitoring channels different.

2001: Feedback signal of STO shutdown for both monitoring channels different. This value can also subsequently occur as a result of other faults.

2002: Status of the delay timer SS1 for both monitoring channels different (status of the timer in p9650/p9850).

2003: Status of the STO terminal for both monitoring channels different.

6000 ... 6999:

Error in the PROFIsafe control.

For these fault values, the failsafe control signals (Failsafe Values) are transferred to the safety functions. If "STOP B after failure of the PROFIsafe communication" (p9812) is parameterized, the transfer of the Failsafe Values is delayed.

The significance of the individual message values is described in safety message C01611.

Remedy: For fault value = 1 ... 5 and 7 ... 999:
- check the cross data comparison that resulted in a STOP F.
- carry out a POWER ON (switch-off/switch-on) for all components.
- upgrade the Hydraulic Module software.
- upgrade the Control Unit software.

For fault value = 6:
- carry out a POWER ON (switch-off/switch-on) for all components.
- upgrade the Hydraulic Module software.
- upgrade the Control Unit software.

For fault value = 1000:
- check the wiring of the safety-relevant inputs (SGE) on the Control Unit (contact problems).
- PROFIsafe: Remove contact problems/faults at the PROFIBUS master/PROFINET controller.
- check the wiring of the failsafe inputs at the TM54F (contact problems).
- check the discrepancy time, and if required, increase the value (p9650/p9850).

For fault value = 1001, 1002:
- carry out a POWER ON (switch-off/switch-on) for all components.
- upgrade the Hydraulic Module software.
- upgrade the Control Unit software.

For fault value = 1950:
- operate the module in the permissible range.
- check the module fan, replace the Hydraulic Module involved.

For fault value = 1951:
- operate the module in the permissible range.
- replace Hydraulic Module involved.

For fault value = 2000, 2001, 2002, 2003:
- check the discrepancy time, and if required, increase the value (p9650/p9850, p9652/p9852).
- check the wiring of the safety-relevant inputs (SGE) (contact problems).
- check why STO was selected in r9872. When the SMM functions are active (p9501 = 1), STO can also be selected using these functions.
- replace Hydraulic Module involved.
- diagnose the other active faults and resolve the causes.

Note:
This fault can be acknowledged after removing the cause of the error and after correct selection/deselection of STO.

For fault value = 6000 ... 6999:
Refer to the description of the message values in safety message C01611.

Note:
CU: Control Unit
ESR: Extended Stop and Retract
HM: Hydraulic Module.
SGE: Safety-relevant input
SI: Safety Integrated
SMM: Safe Motion Monitoring
SS1: Safe Stop 1 (corresponds to Stop Category 1 acc. to EN60204)
STO: Safe Torque Off / SH: Safe standstill

Reaction upon A: NONE
Acknowl. upon A: NONE

N30620 (F, A)	**SI P2: Safe Torque Off active**		
Message value:	-		
Message class:	Safety monitoring channel has identified an error (10)		
Drive object:	HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC		
Component:	None	**Propagation:**	LOCAL
Reaction:	NONE		
Acknowledge:	NONE		
Cause:	The "Safe Torque Off" (STO) function of the basic functions has been selected in monitoring channel 2 using the input terminal and is active. Note: - this message does not result in a safety stop response. - this message is not output when STO is selected using the Extended Functions.		
Remedy:	Not necessary. Note: MM: Motor Module SI: Safety Integrated STO: Safe Torque Off / SH: Safe standstill		
Reaction upon F:	OFF2		
Acknowl. upon F:	IMMEDIATELY (POWER ON)		
Reaction upon A:	NONE		
Acknowl. upon A:	NONE		

N30621 (F, A)	**SI P2: Safe Stop 1 active**		
Message value:	-		
Message class:	Safety monitoring channel has identified an error (10)		
Drive object:	HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC		
Component:	Power Module	**Propagation:**	LOCAL
Reaction:	NONE		
Acknowledge:	NONE		
Cause:	The "Safe Stop 1" function (SS1) was selected in monitoring channel 2 and is active. Note: This message does not result in a safety stop response.		
Remedy:	Not necessary. Note: MM: Motor Module SI: Safety Integrated SS1: Safe Stop 1 (corresponds to Stop Category 1 acc. to EN60204)		
Reaction upon F:	NONE (OFF3)		
Acknowl. upon F:	IMMEDIATELY (POWER ON)		
Reaction upon A:	NONE		
Acknowl. upon A:	NONE		

F30625	**SI P2: Sign-of-life error in safety data**		
Message value:	%1		
Message class:	Hardware/software error (1)		
Drive object:	HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC		
Component:	None	**Propagation:**	LOCAL
Reaction:	OFF2		
Acknowledge:	IMMEDIATELY (POWER ON)		
Cause:	The drive-integrated "Safety Integrated" function in monitoring channel 2 has detected an error in the sign-of-life of the safety data between the two monitoring channels and initiated a STOP A. - there is either a DRIVE-CLiQ communication error or communication has failed. - a time slice overflow of the safety software has occurred. - the enable of the safety functions in both monitoring channels is inconsistent (p9601 = 0, p9801 <> 0).		

Fault value (r0949, interpret decimal):

Only for internal Siemens troubleshooting.

Remedy: - select Safe Torque Off and de-select again.

- carry out a POWER ON (switch-off/switch-on) for all components.

- check whether there is a DRIVE-CLiQ communication error between the two monitoring channels and, if required, carry out a diagnostics routine for the faults identified.

- de-select all drive functions that are not absolutely necessary.

- reduce the number of drives.

- check the electrical cabinet design and cable routing for EMC compliance

- check the enable of the safety functions for both of the monitoring channels and if required, correct (p9601, p9801).

Note:

P2: processor 2

SI: Safety Integrated

F30630 SI P2: Brake control error

Message value: %1

Message class: Safety monitoring channel has identified an error (10)

Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** LOCAL

Reaction: OFF2

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The "Safety Integrated" function integrated in the drive on the Motor Module (MM) has detected a brake control error and initiated a STOP A.

- motor cable is not shielded correctly.

- defect in the brake control circuit of the Motor Module.

Fault value (r0949, interpret decimal):

10:

Fault in "open holding brake" operation.

- parameter p1278 incorrectly set.

- no brake connected or wire breakage (check whether brake releases for p1278 = 1 and p9602/p9802 = 0 (SBC deactivated)).

- ground fault in brake cable.

30:

Fault in "close holding brake" operation.

- no brake connected or wire breakage (check whether brake releases for p1278 = 1 and p9602/p9802 = 0 (SBC deactivated)).

- short-circuit in brake winding.

40:

Fault in "brake closed" state.

60, 70:

Fault in the brake control circuit of the Control Unit or communication fault between the Control Unit and Motor Module (brake control).

81: Safe Brake Adapter: Fault in "brake closed" state.

82: Safe Brake Adapter: Fault for the operation "open brake".

83: Safe Brake Adapter: Fault for the operation "close brake".

84, 85:

Safe Brake Adapter:

Fault in the brake control circuit of the Control Unit or communication fault between the Control Unit and Motor Module (brake control).

90:

Brake released for service purposes (X4).

91:

Fault in "open holding brake" operation.

- no brake connected or wire breakage (check whether brake releases for p1278 = 1 and p9602/p9802 = 0 (SBC deactivated)).

Remedy:
- check parameter p1278 (for SBC, only p1278 = 0 is permissible).
- select Safe Torque Off and de-select again.
- check the motor holding brake connection.
- check the function of the motor holding brake.
- check whether there is a DRIVE-CLiQ communication error between the Control Unit and the Motor Module involved and, if required, carry out a diagnostics routine for the faults identified.
- check that the electrical cabinet design and cable routing are in compliance with EMC regulations (e.g. shield of the motor cable and brake conductors are connected with the shield connecting plate and the motor connectors are tightly screwed to the housing).
- replace the Motor Module involved.

Operation with Safe Brake Module or Safe Brake Adapter:
- check the Safe Brake Module or Safe Brake Adapter connection.
- Replace the Safe Brake Module or Safe Brake Adapter.

Note:
MM: Motor Module
SBC: Safe Brake Control
SI: Safety Integrated

F30631 Brake control: External release active

Message value: -
Message class: External measured value / signal state outside the permissible range (16)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: For mounting purposes, the brake is supplied with voltage via terminal X4.1 and released.
Remedy: If required, again remove the power supply at X4.1.

F30632 SI P2: shutoff valve control/feedback signal error

Message value: %1
Message class: Safety monitoring channel has identified an error (10)
Drive object: HLA
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The drive-integrated "Safety Integrated" function on the Hydraulic Module (monitoring channel 2) has detected a fault for the control/feedback signal of the shutoff valve and initiated a STOP A.

Possible causes:
- shutoff valve either not connected or not correctly connected (X272).
- feedback signal of the shutoff valve either not connected or not correctly connected (X281/X282).
- feedback signal of the shutoff valve incorrectly set (p9626/p9826).
- shutoff valve defective.
- Hydraulic Module defective.

Fault value (r0949, interpret decimal):
10:
Fault in the "Open shutoff valve" operation.
30:
Fault in the "Close shutoff valve" operation.
40:
Fault in the "Shutoff valve closed" state.
60, 70:
Fault in the control of the cutoff valve or communication error between the Control Unit and the Hydraulic Module.
81:
Feedback signal of the shutoff valve: Fault in the "Shutoff valve closed" state.
82:
Feedback signal of the shutoff valve: Fault when "Opening shutoff valve".

83:
Feedback signal of the shutoff valve: Fault when "Closing shutoff valve".
84:
Feedback signal of the shutoff valve: Fault in the control of the shutoff valve or communication error between the Control Unit and the Hydraulic Module.

Remedy: - check the shutoff valve connection (X272).
- check the feedback signals of the shutoff valve (X281, X282).
- check the configuration of the feedback signals of the shutoff valve (p9626/p9826).
- check for EMC-compliant control cabinet design and cable routing (e.g. use shielded cables and connect the shield).
- if necessary, replace the shutoff valve.
- if necessary, replace the Hydraulic Module.
See also: p9626 (SI HLA shutoff valve feedback signal contact configuration (CU)), p9826 (SI HLA shutoff valve feedback signal contact configuration (MM))

A30640 (F) SI P2: Fault in the switch-off signal path of the second channel

Message value: %1
Message class: Safety monitoring channel has identified an error (10)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The Motor Module has detected a communication error with the higher-level control or the TM54F to transfer the safety-relevant information or there is a communication error between Motor Modules connected in parallel.
Note:
This fault results in a STOP A that can be acknowledged.
Alarm value (r2124, interpret decimal):
Only for internal Siemens troubleshooting.

Remedy: For the higher-level control, the following applies:
- check the PROFIsafe address in the higher-level control and Motor Modules and if required, align.
- save all parameters (p0977 = 1).
- carry out a POWER ON (switch-off/switch-on) for all components.
For TM54F, carry out the following steps:
- start the copy function for the node identifier (p9700 = 1D hex).
- acknowledge hardware CRC (p9701 = EC hex).
- save all parameters (p0977 = 1).
- carry out a POWER ON (switch-off/switch-on) for all components.
For a parallel connection, the following applies:
- check the PROFIsafe address in both monitoring channels and if required, align.
- save all parameters (p0977 = 1).
- carry out a POWER ON (switch-off/switch-on) for all components.
The following generally applies:
- upgrade the Motor Module software.
Note:
MM: Motor Module
SI: Safety Integrated
See also: p9810 (SI PROFIsafe address (Motor Module))

Reaction upon F: NONE (OFF2)
Acknowl. upon F: IMMEDIATELY (POWER ON)

A30640 (F)	**SI P2: Fault in the switch-off signal path of the second channel**		
Message value:	%1		
Message class:	Safety monitoring channel has identified an error (10)		
Drive object:	HLA		
Component:	None	**Propagation:**	LOCAL
Reaction:	NONE		
Acknowledge:	NONE		

Cause: The Hydraulic Module has detected a communications error with the higher-level control or the TM54F to transfer the safety-relevant information.
Note:
This fault results in a STOP A that can be acknowledged.
Alarm value (r2124, interpret decimal):
Only for internal Siemens troubleshooting.

Remedy: For the higher-level control, the following applies:
- check the PROFIsafe address in the higher-level control and Hydraulic Module and if required, align.
- save all parameters (p0977 = 1).
- carry out a POWER ON (switch-off/switch-on) for all components.

For TM54F, carry out the following steps:
- start the copy function for the node identifier (p9700 = 1D hex).
- acknowledge hardware CRC (p9701 = EC hex).
- save all parameters (p0977 = 1).
- carry out a POWER ON (switch-off/switch-on) for all components.

For a parallel connection, the following applies:
- check the PROFIsafe address in both monitoring channels and if required, align.
- save all parameters (p0977 = 1).
- carry out a POWER ON (switch-off/switch-on) for all components.

The following generally applies:
- upgrade the Hydraulic Module software.

Note:
MM: Motor Module
SI: Safety Integrated
See also: p9810 (SI PROFIsafe address (Motor Module))

Reaction upon F: NONE (OFF2)
Acknowl. upon F: IMMEDIATELY (POWER ON)

F30649	**SI P2: Internal software error**		
Message value:	%1		
Message class:	Hardware/software error (1)		
Drive object:	HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC		
Component:	Power Module	**Propagation:**	LOCAL
Reaction:	OFF2		
Acknowledge:	IMMEDIATELY (POWER ON)		

Cause: An internal error in the Safety Integrated software in monitoring channel 2 has occurred.
Note:
This fault results in a STOP A that cannot be acknowledged.
Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.

Remedy:
- carry out a POWER ON (switch-off/switch-on) for all components.
- re-commission the Safety Integrated function and carry out a POWER ON.
- upgrade the Motor Module/Hydraulic Module software.
- contact Technical Support.
- replace the Motor Module/Hydraulic Module.

Note:
MM: Motor Module
SI: Safety Integrated

F30650	**SI P2: Acceptance test required**
Message value:	%1
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Drive object:	HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Power Module **Propagation:** LOCAL
Reaction:	OFF2
Acknowledge:	IMMEDIATELY (POWER ON)

Cause:

The "Safety Integrated" function on monitoring channel 2 requires an acceptance test.

Note:

This fault results in a STOP A that can be acknowledged.

Fault value (r0949, interpret decimal):

130: Safety parameters for monitoring channel 2 not available.

Note:

This fault value is always output when Safety Integrated is commissioned for the first time.

1000: Reference and actual checksum in monitoring channel 2 are not identical (booting).

- as a result of the changed current controller sampling time (p0115[0]), the clock cycle time for the Safety Integrated Basic Functions (r9880) was adapted.

- safety parameters set offline and loaded into the Control Unit.

- a download was made to the SINAMICS, whose firmware versions in monitoring channel 2 did not correspond to the latest version. The request to switch off the DRIVE-CLiQ component A1007 was present after the download.

- at least one checksum-checked piece of data is defective.

2000: Reference and actual checksum in monitoring channel 2 are not identical (commissioning mode).

- reference checksum on monitoring channel 2 incorrectly entered (p9899 not equal to r9898).

2003: Acceptance test is required as a safety parameter has been changed.

2005: The safety logbook has identified that the safety checksums have changed. An acceptance test is required.

3003: Acceptance test is required as a hardware-related safety parameter has been changed.

9999: Subsequent response of another safety-related fault that occurred when booting that requires an acceptance test.

Remedy:

For fault value = 130:

- carry out safety commissioning routine.

For fault value = 1000:

- check the Safety Integrated Basic Functions (r9880) and adapt the reference checksum (p9899).

- again carry out safety commissioning routine.

- Using STARTER, activate the safety parameters for the drive involved (change settings, copy parameters, activate settings).

- switch off and switch on the drive unit and DRIVE-CLiQ components. If A30650 is still present, repeat the download.

- replace the memory card or Control Unit.

For fault value = 2000:

- check the safety parameters on monitoring channel 2 and adapt the reference checksum (p9899).

For fault value = 2003, 2005:

- carry out an acceptance test and generate an acceptance report.

The procedure when carrying out an acceptance test as well as an example of the acceptance report are provided in the following literature:

SINAMICS S120 Function Manual Safety Integrated

For fault value = 3003:

- carry out the function checks for the modified hardware and generate an acceptance report.

The procedure when carrying out an acceptance test as well as an example of the acceptance report are provided in the following literature:

SINAMICS S120 Function Manual Safety Integrated

For fault value = 9999:

- carry out diagnostics for the other safety-related fault that is present.

Note:

MM: Motor Module

SI: Safety Integrated

See also: p9799 (SI reference checksum SI parameters (Control Unit)), p9899 (SI reference checksum SI parameters (Motor Module))

F30651 SI P2: Synchronization with Control Unit unsuccessful

Message value: %1
Message class: Hardware/software error (1)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The drive-integrated "Safety Integrated" function requires synchronization of the safety time slices in both monitoring channels. This synchronization routine was unsuccessful.

Note:

This fault results in a STOP A that cannot be acknowledged.

Fault value (r0949, interpret decimal):

Only for internal Siemens troubleshooting.

Remedy: - carry out a POWER ON (switch-off/switch-on) for all components.

- upgrade the Motor Module/Hydraulic Module software.
- upgrade the Control Unit software.

Note:

MM: Motor Module

SI: Safety Integrated

F30652 SI P2: Illegal monitoring clock cycle

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The Safety Integrated monitoring clock cycle cannot be maintained due to the communication conditions requested in the system.

Note:

This fault results in a STOP A that cannot be acknowledged.

Fault value (r0949, interpret decimal):

Only for internal Siemens troubleshooting.

Remedy: - if fault F01652 simultaneously occurs, apply the remedy/countermeasure described there.

- upgrade the firmware of the Motor Module/Hydraulic Module to a later version.

Note:

MM: Motor Module

P2: processor 2

SI: Safety Integrated

F30655 SI P2: Align monitoring functions

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: An error has occurred when aligning the Safety Integrated monitoring functions of both monitoring channels. No common set of supported SI monitoring functions was able to be determined.

- there is either a DRIVE-CLiQ communication error or communication has failed.
- Safety Integrated software releases on the Control Unit and Motor Module/Hydraulic Module are not compatible with one another.

Note:

This fault results in a STOP A that cannot be acknowledged.

	Fault value (r0949, interpret hexadecimal): Only for internal Siemens troubleshooting.
Remedy:	- carry out a POWER ON (switch-off/switch-on) for all components. - upgrade the Motor Module/Hydraulic Module software. - upgrade the Control Unit software. - check the electrical cabinet design and cable routing for EMC compliance Note: CU: Control Unit MM: Motor Module SI: Safety Integrated

F30656 SI P2: Motor Module parameter error

Message value:	%1
Message class:	Hardware/software error (1)
Drive object:	HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	None **Propagation:** LOCAL
Reaction:	OFF2
Acknowledge:	IMMEDIATELY (POWER ON)
Cause:	When accessing the Safety Integrated parameters for monitoring channel 2 in the non-volatile memory, an error has occurred. Note: This fault results in a STOP A that can be acknowledged. Fault value (r0949, interpret decimal): 129: - safety parameters for monitoring channel 2 corrupted. - drive with enabled safety functions was possibly copied offline using the commissioning tool and the project downloaded. 131: Internal software error on the Control Unit. 255: Internal Motor Module/Hydraulic Module software error.
Remedy:	- re-commission the safety functions. - upgrade the Control Unit software. - upgrade the Motor Module/Hydraulic Module software. - replace the memory card or Control Unit. For fault value = 129: - activate the safety commissioning mode (p0010 = 95). - adapt the PROFIsafe address (p9610). - start the copy function for SI parameters (p9700 = D0 hex). - acknowledge data change (p9701 = DC hex). - exit the safety commissioning mode (p0010 = 0). - save all parameters (p0977 = 1 or "copy RAM to ROM"). - carry out a POWER ON (switch-off/switch-on) for all components. Note: MM: Motor Module SI: Safety Integrated

F30657 SI P2: PROFIsafe telegram number invalid

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: POWER ON
Cause: The PROFIsafe telegram number set in p9811 is not valid.

When PROFIsafe is enabled (p9801.3 = 1), then a telegram number greater than zero must be entered in p9811.

Note:

This fault does not result in a safety stop response.

See also: p9611 (SI PROFIsafe telegram selection (Control Unit)), p60022 (PROFIsafe telegram selection)

Remedy: Check the telegram number setting (p9811).

F30659 SI P2: Write request for parameter rejected

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The write request for one or several Safety Integrated parameters in monitoring channel 2 was rejected.

Note:

This fault does not result in a safety stop response.

Fault value (r0949, interpret decimal):

10: An attempt was made to enable the STO function although this cannot be supported.

11: An attempt was made to enable the SBC function although this cannot be supported.

13: An attempt was made to enable the SS1 function although this cannot be supported.

14: An attempt was made to enable the safe motion monitoring function with the higher-level control, although this cannot be supported.

15: An attempt was made to enable the motion monitoring functions integrated in the drive although these cannot be supported.

16: An attempt was made to enable the PROFIsafe communication - although this cannot be supported or the version of the PROFIsafe driver used on both monitoring channels is different.

18: An attempt was made to enable the PROFIsafe function for Basic Functions although this cannot be supported.

19: For ESR, an attempt was made to enable the delay for pulse suppression, although this cannot be supported.

27: An attempt was made to activate the Basic Functions by controlling via TM54F although this cannot be supported.

28: An attempt was made to enable the "STO via terminals at the Power Module" function although this cannot be supported.

29: An attempt was made to parameterize the stop response for PROFIsafe failure to STOP B although this is not supported.

See also: r9771 (SI common functions (Control Unit)), r9871 (SI common functions (Motor Module))

Remedy: For fault value = 10, 11, 13, 14, 15, 16, 18, 19, 27:

- check whether there are faults in the safety function alignment between the two monitoring channels (F01655, F30655) and if required, carry out diagnostics for the faults involved.
- use a Motor Module that supports the required function.
- upgrade the Motor Module software.
- upgrade the Control Unit software.

For fault value = 28:

- use the power unit with the feature "STO via terminals at the Power Module".

For fault value = 29:

- use a Motor Module that supports the required function.
- upgrade the Motor Module software.
- upgrade the Control Unit software.
- If required, parameterize the stop response for PROFIsafe failure to STOP A (p9612 = p9812 = 0).

Note:
CU: Control Unit
ESR: Extended Stop and Retract
MM: Motor Module
SBC: Safe Brake Control
SI: Safety Integrated
SS1: Safe Stop 1 (corresponds to Stop Category 1 acc. to EN60204)
STO: Safe Torque Off / SH: Safe standstill

F30659 SI P2: Write request for parameter rejected

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA
Component: None **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The write request for one or several Safety Integrated parameters in monitoring channel 2 was rejected.

Note:
This fault does not result in a safety stop response.
Fault value (r0949, interpret decimal):
10: An attempt was made to enable the STO function although this cannot be supported.
13: An attempt was made to enable the SS1 function although this cannot be supported.
14: An attempt was made to enable the safe motion monitoring function with the higher-level control, although this cannot be supported.
15: An attempt was made to enable the motion monitoring functions integrated in the drive although these cannot be supported.
16: An attempt was made to enable the PROFIsafe communication - although this cannot be supported or the version of the PROFIsafe driver used on both monitoring channels is different.
18: An attempt was made to enable the PROFIsafe function for Basic Functions although this cannot be supported.
19: For ESR, an attempt was made to enable the delay for pulse suppression, although this cannot be supported.
27: An attempt was made to activate the Basic Functions by controlling via TM54F although this cannot be supported.
29: An attempt was made to parameterize the fault response for PROFIsafe failure to STOP B although this cannot be supported.
33: Safety functions without selection are not supported (p9601.5, p9801.5).
See also: r9771 (SI common functions (Control Unit)), r9871 (SI common functions (Motor Module))

Remedy: For fault value = 10, 13, 14, 15, 16, 18, 19:
- check whether there are faults in the safety function alignment between the two monitoring channels (F01655, F30655) and if required, carry out diagnostics for the faults involved.
- use a Hydraulic Module that supports the required function.
- upgrade the Hydraulic Module software.
- upgrade the Control Unit software.

For fault value = 29:
- check whether p9612 and p9812 are set; if required, correct the settings.
- use a Hydraulic Module that supports the required function.
- upgrade the Hydraulic Module software.
- upgrade the Control Unit software.

Note:
SI: Safety Integrated
SS1: Safe Stop 1 (corresponds to Stop Category 1 acc. to EN60204)
STO: Safe Torque Off / SH: Safe standstill

F30664 Error while booting

Message value: %1

Message class: Hardware/software error (1)

Drive object: A_INF, B_INF, CU_LINK, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: OFF2

Acknowledge: POWER ON

Cause: An error has occurred during booting.

Fault value (r0949, interpret hexadecimal):

Only for internal Siemens troubleshooting.

Remedy: - carry out a POWER ON (switch-off/switch-on).

- upgrade firmware to later version.

- contact Technical Support.

F30665 SI P2: System is defective

Message value: %1

Message class: Hardware/software error (1)

Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Power Module **Propagation:** GLOBAL

Reaction: OFF2

Acknowledge: IMMEDIATELY

Cause: A system defect was detected before the last boot or in the actual one. The system might have been rebooted (reset).

Fault value (r0949, interpret hexadecimal):

2 hex:

- parameters p9500 and p9300 are not the same (if Safety message C30711 is displayed at the same time).

200000 hex, 400000 hex:

- fault in the actual booting/operation.

Additional values:

- defect before the last time that the system booted.

Remedy: - carry out a POWER ON (switch-off/switch-on).

- upgrade firmware to later version.

- contact Technical Support.

For fault value = 2:

- check parameters p9500 and p9300 to see if they are the same (if Safety message C30711 is displayed at the same time).

For fault value = 400000 hex:

- ensure that the Control Unit is connected to the Power Module.

A30666 (F) SI Motion P2: Steady-state (static) 1 signal at the F-DI for safe acknowledgment

Message value: -

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Power Module **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: A logical 1 signal is present at the F-DI configured in p10106 for more than 10 seconds.

If, at the F-DI no acknowledgment was performed for safe acknowledgment, then a steady-state logical and 0 signal must be present. This avoids unintentional safety-relevant acknowledgment (or the "Internal Event Acknowledge" signal) if a wire breaks or one of the two digital inputs bounces.

Remedy: Set the failsafe digital input (F-DI) to a logical 0 signal (p10106).

Note:

F-DI: Failsafe Digital Input

Reaction upon F:	NONE
Acknowl. upon F:	IMMEDIATELY

F30672 SI P2: Control Unit software incompatible

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The existing Control Unit software does not support the safe drive-based motion monitoring function.

Note:

This fault results in a STOP A that cannot be acknowledged.

Fault value (r0949, interpret decimal):

Only for internal Siemens troubleshooting.

Remedy: - check whether there are faults in the safety function alignment between the two monitoring channels (F01655, F30655) and if required, carry out diagnostics for the faults involved.

- use a Control Unit that supports the safe motion monitoring function.
- upgrade the Control Unit software.

Note:

SI: Safety Integrated

F30674 SI Motion P2: Safety function not supported by PROFIsafe telegram

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: POWER ON
Cause: The monitoring function enabled in p9301 and p9801 is not supported by the currently set PROFIsafe telegram (p9811).

Note:

This fault does not result in a safety stop response.

Fault value (r0949, interpret bitwise binary):

Bit 18 = 1:

SS2E via PROFIsafe is not supported (p9301.18).

Bit 24 = 1:

Transfer SLS limit value via PROFIsafe not supported (p9301.24).

Bit 25 = 1:

Transfer safe position (SP) via PROFIsafe is not supported (p9301.25).

Bit 26 = 1:

Gearbox stage switchover via PROFIsafe is not supported (p9301.26).

Bit 28 = 1:

SCA via PROFIsafe is not supported (p9301.28).

Remedy: - deselect the monitoring function involved (p9301, p9801).

- set the matching PROFIsafe telegram (p9811).

Note:

SCA: Safe Cam

SI: Safety Integrated

SLS: Safely-Limited Speed

SP: Safe Position

SS2E: Safe Stop 2 external (Safe Stop 2 with external stop, external STOP D)

F30680 **SI Motion P2: Checksum error safety monitoring functions**

Message value: %1
Message class: Safety monitoring channel has identified an error (10)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The actual checksum calculated by the Motor Module/Hydraulic Module and entered in r9398 via the safety-relevant parameters does not match the reference checksum saved in p9399 at the last machine acceptance.

Safety-relevant parameters have been changed or a fault is present.

Note:

This fault results in a STOP A that can be acknowledged.

Fault value (r0949, interpret decimal):

0: Checksum error for SI parameters for motion monitoring.

1: Checksum error for SI parameters for component assignment.

Remedy: - check the safety-relevant parameters and if required, correct.

- set the reference checksum to the actual checksum.
- execute the function "Copy RAM to ROM".
- perform a POWER ON if safety parameters requiring a POWER ON have been modified.
- carry out an acceptance test.

F30681 **SI Motion P1: Incorrect parameter value**

Message value: Parameter: %1, supplementary information: %2
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The parameter cannot be parameterized with this value.

Note:

This message does not result in a safety stop response.

Fault value (r0949, interpret decimal):

yyyyxxxx dec: yyyy = supplementary information, xxxx = parameter

yyyy = 0:

No additional information available.

xxxx = 9301:

It is not permissible to enable the function "n < nx hysteresis and filtering" (p9301.16) in conjunction with the function "Extended functions without selection" (p9801.5).

xxxx = 9301 and yyyy = 8:

Referencing via SCC (p9301.27 = 1) is enabled without enabling absolute motion monitoring functions (p9301.1 or p9301.2).

xxxx = 9301 and yyyy = 14:

"Synchronous safe position via PROFIsafe" is enabled (p9301.29 = 1), without enabling "Safe position via PROFIsafe" (p9301.25).

xxxx = 9301 and yyyy = 17:

"Synchronous safe position via PROFIsafe" is enabled (p9301.29 = 1) and "Safety without encoder" is enabled (p9306).

xxxx = 9301 and yyyy = 19:

SLA (p9301.20 = 1) is enabled with encoderless actual value sensing (p9306 equal to 1 or 3).

xxxx = 9301 and yyyy = 20:

SLA (p9301.20 = 1) is enabled with a 2-encoder system (p9326 not equal to 1).

xxxx = 9334 or 9335:

The limit values of SLP have been set too high (absolute values).

xxxx = 9347:

The hysteresis tolerance is not permissible.

xxxx = 9378:

SLA is enabled (p9301.20 = 1). Acceleration limit is too low (p9378). Acceleration resolution is no longer sufficient (r9790). The minimum limit is the 3x acceleration resolution.

xxxx = 9385:

For Safety without encoder and synchronous motor, p9385 must be set to 4.

xxxx = 9801 and yyyy = 1:

If motion monitoring functions integrated in the drive (p9801.2 = 1) and extended functions without selection (p9801.5 = 1) are activated, then PROFIsafe (p9801.3 = 1) is not possible.

xxxx = 9801 and yyyy = 2:

Extended functions without selection (p9801.5 =1) are enabled without enabling motion monitoring functions integrated in the drive (p9801.2).

xxxx = 9801 and yyyy = 3:

Onboard F-DI are enabled without enabling motion monitoring functions integrated in the drive (p9801.2).

xxxx = 9801 and yyyy = 5:

Transfer of the SLS limit value via PROFIsafe (p9301.24) has been enabled, without enabling PROFIsafe.

xxxx = 9801 and yyyy = 6:

Transfer of the safe position via PROFIsafe (p9301.25) has been enabled without enabling PROFIsafe.

xxxx = 9801 and yyyy = 7:

Safe switchover of the gearbox stages (p9301.26 = 1) has been enabled without enabling PROFIsafe.

xxxx = 9801 and yyyy = 11:

SS2E (p9301.18 = 1) is enabled without enabling PROFIsafe.

xxxx = 9801 and yyyy = 12:

SCA (p9301.28 = 1) is enabled without enabling PROFIsafe.

xxxx = 9801 and yyyy = 18:

SLA (p9301.20 = 1) is enabled without enabling PROFIsafe.

Remedy: Correct parameter (if required, also on another monitoring channel, p9601).

Note:

For different values in the two monitoring channels, start the copy function for SI parameters on the drive (p9700 = 57 hex).

For xxxx = 9301:

Correct parameters p9501.16 and p9301.16 or deselect the extended functions without selection (p9801.5).

For xxxx = 9301 and yyyy = 14:

Inhibit "Synchronous safe position via PROFIsafe" function (p9301.29 = 0), or enable "Safe position via PROFIsafe" (p9301.25).

For xxxx = 9301 and yyyy = 17:

Inhibit "Synchronous safe position via PROFIsafe" function (p9301.29 = 0), or set "Safety with encoder" (p9306).

For xxxx = 9301 and yyyy = 19:

Inhibit SLA (p9301.20) or activate actual value sensing with encoder (p9306 equal to 0 or 2).

For xxxx = 9301 and yyyy = 20:

Inhibit SLA (p9301.20) or activate a single-encoder system (p9326 equal to 5).

If xxxx = 9501 and yyyy = 8:

Inhibit referencing via SCC (p9501.27 = 1) or enable an absolute motion monitoring function (p9501.1 or p9501.2).

For xxxx = 9317:

Further, p9316.0 should be checked.

If xxxx = 9334 or 9335:

Reduce the limit values (absolute values) of SLP.

For xxxx = 9347:

With hysteresis/filtering enabled (p9301.16 = 1), the following applies:

- set parameters p9346 and p9347 according to the following rule: p9347 <= 0.75 x p9346;

- the following rule must also be adhered to when actual value synchronization (p9301.3 = 1) is enabled: p9347 >= p9349;

For xxxx = 9378:

- observe the information in r9790.

For xxxx = 9801:

yyyy = 1:

Only enable motion monitoring functions integrated in the drive (p9801.2 = 1) and extended functions without selection (p9801.5 = 1) – or only PROFIsafe (p9801.3 = 1).

yyyy = 2, 3:

Enable motion monitoring functions integrated in the drive (p9801.2 = 1).

yyyy = 5:

To transfer the SLS limit values via PROFIsafe (p9301.24 = 1), also enable PROFIsafe (p9801.3 =1) and motion monitoring functions integrated in the drive (p9801.2 = 1).

yyyy = 6:

For the safe position via PROFIsafe (p9301.25 = 1), also enable PROFIsafe (p9801.3 =1) and motion monitoring functions integrated in the drive (p9801.2 = 1).

yyyy = 7:

For safe switchover of gearbox stages (p9301.26 = 1) also enable PROFIsafe (p9801.3 =1) and motion monitoring functions integrated in the drive (p9801.2 = 1).

yyyy = 18:

For Safely-Limited Acceleration monitoring (p9301.20 = 1), also enable PROFIsafe (p9801.3 = 1) and the motion monitoring functions integrated in the drive (p9801.2 = 1).

F30681 SI Motion P1: Incorrect parameter value

Message value: Parameter: %1, supplementary information: %2

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: HLA

Component: None **Propagation:** GLOBAL

Reaction: OFF2

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The parameter cannot be parameterized with this value.

Note:

This message does not result in a safety stop response.

Fault value (r0949, interpret decimal):

yyyyxxxx dec: yyyy = supplementary information, xxxx = parameter

yyyy = 0:

No additional information available.

xxxx = 9301:

It is not permissible to enable the function "n < nx hysteresis and filtering" (p9301.16) in conjunction with the function "Extended functions without selection" (p9801.5).

xxxx = 9301 and yyyy = 8:

Referencing via SCC (p9301.27 = 1) is enabled without enabling absolute motion monitoring functions (p9301.1 or p9301.2).

xxxx = 9301 and yyyy = 11:

Safe function SS2E (p9301.18 = 1) is enabled without enabling PROFIsafe.

xxxx = 9301 and yyyy = 14:

"Synchronous safe position via PROFIsafe" is enabled (p9301.29 = 1), without enabling "Safe position via PROFIsafe" (p9301.25).

xxxx = 9301 and yyyy = 17:

"Synchronous safe position via PROFIsafe" is enabled (p9301.29 = 1) and "Safety without encoder" is enabled (p9306).

xxxx = 9301 and yyyy = 19:

SLA (p9301.20 = 1) is enabled with encoderless actual value sensing (p9306 equal to 1 or 3).

xxxx = 9301 and yyyy = 20:

SLA (p9301.20 = 1) is enabled with a 2-encoder system (p9326 not equal to 1).

xxxx = 9801 and yyyy = 12: SCA (p9301.28 = 1) is enabled without enabling PROFIsafe.

xxxx = 9334 or 9335:

The limit values of SLP have been set too high (absolute values).

xxxx = 9378:

SLA is enabled (p9301.20 = 1). Acceleration limit is too low (p9378). Acceleration resolution is no longer sufficient (r9790) (the minimum limit is 3x of the acceleration resolution).

xxxx = 9801 and yyyy = 1:

If motion monitoring functions integrated in the drive (p9801.2 = 1) and extended functions without selection (p9801.5 = 1) are activated, then PROFIsafe (p9801.3 = 1) is not possible.

xxxx = 9801 and yyyy = 2:

Extended functions without selection (p9801.5 =1) are enabled without enabling motion monitoring functions integrated in the drive (p9801.2).

xxxx = 9801 and yyyy = 5:

Transfer of the SLS limit value via PROFIsafe (p9301.24) has been enabled, without enabling PROFIsafe.

xxxx = 9801 and yyyy = 6:

Transfer of the safe position via PROFIsafe (p9301.25) has been enabled without enabling PROFIsafe.

xxxx = 9801 and yyyy = 7:

Safe switchover of the gearbox stages (p9301.26 = 1) has been enabled without enabling PROFIsafe.

xxxx = 9801 and yyyy = 18:

SLA (p9301.20 = 1) is enabled without enabling PROFIsafe.

Remedy: Correct parameter (if required, also on another monitoring channel, p9601).

Note:

For different values in the two monitoring channels, start the copy function for SI parameters on the drive (p9700 = 57 hex).

For xxxx = 9301:

Correct parameters p9501.16 and p9301.16 or deselect the extended functions without selection (p9801.5).

For xxxx = 9301 and yyyy = 14:

Inhibit "Synchronous safe position via PROFIsafe" function (p9301.29 = 0), or enable "Safe position via PROFIsafe" (p9301.25).

For xxxx = 9301 and yyyy = 17:

Inhibit "Synchronous safe position via PROFIsafe" function (p9301.29 = 0), or set "Safety with encoder" (p9306).

For xxxx = 9301 and yyyy = 19:

Inhibit SLA (p9301.20) or activate actual value sensing with encoder (p9306 equal to 0 or 2).

For xxxx = 9301 and yyyy = 20:

Inhibit SLA (p9301.20) or activate a single-encoder system (p9326 equal to 1).

If xxxx = 9501 and yyyy = 8:

Inhibit referencing via SCC (p9501.27 = 1) or enable an absolute motion monitoring function (p9501.1 or p9501.2).

For xxxx = 9501 and yyyy = 11: inhibit SS2E (p9501.18) or enable PROFIsafe.

For xxxx = 9501 and yyyy = 12: inhibit SCA (p9501.28) or enable PROFIsafe.

For xxxx = 9317:

Further, p9316.0 should be checked.

If xxxx = 9334 or 9335:

Reduce the limit values (absolute values) of SLP.

For xxxx = 9378:

- observe the information in r9790.

For xxxx = 9801:

yyyy = 1:

Only enable motion monitoring functions integrated in the drive (p9801.2 = 1) and extended functions without selection (p9801.5 = 1) – or only PROFIsafe (p9801.3 = 1).

yyyy = 2:

Enable motion monitoring functions integrated in the drive (p9801.2 = 1).

yyyy = 5:

To transfer the SLS limit values via PROFIsafe (p9301.24 = 1), also enable PROFIsafe (p9801.3 =1) and motion monitoring functions integrated in the drive (p9801.2 = 1).

yyyy = 6:

For the safe position via PROFIsafe (p9301.25 = 1), also enable PROFIsafe (p9801.3 =1) and motion monitoring functions integrated in the drive (p9801.2 = 1).

yyyy = 7:

For safe switchover of gearbox stages (p9301.26 = 1) also enable PROFIsafe (p9801.3 =1) and motion monitoring functions integrated in the drive (p9801.2 = 1).

yyyy = 18:
For Safely-Limited Acceleration monitoring (p9301.20 = 1), also enable PROFIsafe (p9801.3 = 1) and the motion monitoring functions integrated in the drive (p9801.2 = 1).

F30682 SI Motion P2: Monitoring function not supported

Message value: %1

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: OFF2

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The monitoring function enabled in p9301, p9501, p9601, p9801, p9306, p9506, p9307 or p9507 is not supported in this firmware version.

Note:
This message does not result in a safety stop response.
Fault value (r0949, interpret decimal):
1: Monitoring function SLP not supported (p9301.1).
2: Monitoring function SCA not supported (p9301.7 and p9301.8 ... 15).
3: Monitoring function SLS override not supported (p9301.5).
4: Monitoring function external ESR activation not supported (p9301.4).
5: Monitoring function F-DI in PROFIsafe not supported (p9301.30).
6: Enable actual value synchronization not supported (p9301.3).
9: Monitoring function not supported by the firmware or enable bit not used.
12: This Control Unit does not support operation of safety functions with a higher-level control (e.g. SINUMERIK).
14: Monitoring function SLA and ncSI not supported.
24: Monitoring function SDI not supported.
26: Hysteresis and filtering for SSM monitoring function without an encoder not supported (p9301.16).
27: This hardware does not support onboard F-DI and F-DO.
30: The firmware version of the Motor Module is older than the version of the Control Unit.
33: Safety functions without selection not supported (p9601.5, p9801.5).
34: This module does not support safe position via PROFIsafe.
36: Function "SS1E" not supported.
39: This module or software version of the CU/MM does not support safe gearbox stage switchover (p9501.26).
44: this module/this software version does not support referencing via the Safety Control Channel (p9501.27).
45: De-activating SOS/SLS during an external STOP A is not supported (p9301.23).
50: Shortening the switchover times for SOS (p9569/p9369, p9567/p9367) is not supported.
52: "SBR with encoder" function is not supported (p9306 = 2).
53: function SS2E not supported (p9301.18).
54: SCA function not supported (p9301.28).
57: "Synchronous transfer safe position via PROFIsafe" function not supported (p9301.29).
58: "SLA" function not supported (p9301.20).

Remedy: - deselect monitoring function involved (p9301, p9501, p9601, p9801, p9307, p9507, p9506, p9306).
- Upgrade the Motor Module firmware.

Note:
ESR: Extended Stop and Retract
F-DI: Failsafe Digital Input
SBR: Safe Brake Ramp (safe brake ramp monitoring)
SCA: Safe Cam / SN: Safe software cam
SDI: Safe Direction (safe motion direction)
SI: Safety Integrated
SLP: Safely-Limited Position / SE: Safe software limit switches
SLS: Safely-Limited Speed / SG: Safely reduced speed
SP: Safe Position

SS1E: Safe Stop 1 External (Safe Stop 1 with external stop)
SS2E: Safe Stop 2 external (Safe Stop 2 with external stop, external STOP D)
See also: p9301, p9501, p9503, p9601, p9801, r9871

F30682 SI Motion P2: Monitoring function not supported

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The monitoring function enabled in p9301, p9501, p9601 or p9801 is not supported in this firmware version.
Note:
This message does not result in a safety stop response.
Fault value (r0949, interpret decimal):
2: Monitoring function SCA not supported (p9301.7 and p9301.8 ... 15).
3: Monitoring function SLS override not supported (p9301.5).
6: Enable actual value synchronization not supported (p9301.3).
9: Monitoring function not supported by the firmware or enable bit not used.
12: This Control Unit does not support operation of safety functions with a higher-level control (e.g. SINUMERIK).
14: Monitoring function SLA and ncSI not supported.
30: The firmware version of the Hydraulic Module is older than the version of the Control Unit.
50: Shortening the switchover times for SOS (p9569/p9369, p9567/p9367) is not supported.
53: Function SS2E not supported (p9306 = 18).
54: SCA function not supported (p9301.28).
57: "Synchronous transfer safe position" function not supported (p9301.29).
58: "Safety limited acceleration" function (SLA) not supported (p9301.20).
Remedy: - de-select the monitoring function involved (p9301, p9501, p9601, p9801).
- upgrade the Hydraulic Module firmware.
Note:
SCA: Safe Cam / SN: Safe software cam
SI: Safety Integrated
SLS: Safely-Limited Speed / SG: Safely reduced speed
SS2E: Safety Stop 2 external (external STOP D)
See also: p9301, p9501, p9503, p9601, p9801, r9871

F30683 SI Motion P2: SOS/SLS enable missing

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The safety-relevant basic function "SOS/SLS" is not enabled in p9301 although other safety-relevant monitoring functions are enabled.
Note:
This message does not result in a safety stop response.
Remedy: Enable the function "SOS/SLS" (p9301.0) and carry out a POWER ON.
Note:
SI: Safety Integrated
SLS: Safely-Limited Speed / SG: Safely reduced speed
SOS: Safe Operating Stop / SBH: Safe operating stop
See also: p9301 (SI Motion enable safety functions (Motor Module))

F30684 SI Motion P2: Safely-Limited Position limit values interchanged

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: For the function "Safely-Limited Position" (SLP), a lower value is in p9334 than in p9335.
Note:
This fault does not result in a safety stop response.
Fault value (r0949, interpret decimal):
1: Limit values SLP1 interchanged.
2: Limit values SLP2 interchanged.
See also: p9334, p9335
Remedy: - correct the lower and upper limit values (p9335, p9334).
- carry out a POWER ON (switch-off/switch-on).
Note:
SI: Safety Integrated
SLP: Safely-Limited Position / SE: Safe software limit switches

F30685 SI Motion P2: Safely-Limited Speed limit value too high

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The limit value for the function "Safely-Limited Speed" (SLS) is greater than the speed that corresponds to an encoder limit frequency of 500 kHz.
Note:
This message does not result in a safety stop response.
Fault value (r0949, interpret decimal):
Maximum permissible speed.
Remedy: Correct the limit values for SLS and carry out a POWER ON.
Note:
SI: Safety Integrated
SLS: Safely-Limited Speed / SG: Safely reduced speed
See also: p9331 (SI Motion SLS limit values (Motor Module))

F30686 SI Motion: Illegal parameterization cam position

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: At least one enabled "Safety Cam" (SCA) is parameterized in p9336 or p9337 too close to the tolerance range around the modulo position.
- the minus position value of a cam must be greater than the lower modulo limit + cam tolerance (p9340) + position tolerance (p9342).
- the plus position value of a cam must be less than the upper modulo limit - cam tolerance (p9340) - position tolerance (p9342).
- when the modulo position is parameterized (p9305 > 0), the lower modulo limit = 0, the upper modulo limit = p9305.
- the cam length of cam x = p9336[x] - p9337[x] is less than the cam tolerance + position tolerance (= p9340 + p9342).
This also means that cams of the minus position value must be less than the plus position value.

	Note:
	This fault does not result in a safety stop response.
	Fault value (r0949, interpret decimal):
	Number of the "Safe Cam" with an illegal position.
	See also: p9501 (SI Motion enable safety functions (Control Unit))
Remedy:	Correct the cam position and carry out a POWER ON.
	Note:
	SCA: Safe Cam
	SI: Safety Integrated
	See also: p9536, p9537

F30688 SI Motion P2: Actual value synchronization not permissible

Message value: -

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: OFF2

Acknowledge: IMMEDIATELY (POWER ON)

Cause:

- it is not permissible to enable actual value synchronization for a 1-encoder system.

- it is not permissible to simultaneously enable actual value synchronization and a monitoring function with absolute reference (SCA/SLP).

- it is not permissible to simultaneously enable actual value synchronization and safe position via PROFIsafe.

Note:

This fault results in a STOP A that cannot be acknowledged.

Remedy:

- either deselect the "actual value synchronization" function or parameterize a 2-encoder system.

- either deselect the function "actual value synchronization" or the monitoring functions with absolute reference (SCA/SLP) and carry out a POWER ON.

- either deselect the "actual value synchronization" function or do not enable "Safe position via PROFIsafe".

Note:

SCA: Safe Cam / SN: Safe software cam

SI: Safety Integrated

SLP: Safely-Limited Position / SE: Safe software limit switches

SP: Safe Position

See also: p9501 (SI Motion enable safety functions (Control Unit)), p9526 (SI Motion encoder assignment second channel)

F30692 SI Motion P2: Parameter value not permitted for encoderless

Message value: Parameter: %1

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: OFF2

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The parameter cannot be parameterized with this value if encoderless motion monitoring functions have been parameterized in p9306.

Note:

This message does not result in a safety stop response.

Fault value (r0949, interpret decimal):

Parameter number with the incorrect value.

See also: p9301 (SI Motion enable safety functions (Motor Module))

Remedy:

- correct the parameter specified in the fault value.

- if necessary, deselect encoderless motion monitoring functions (p9306).

See also: p9301 (SI Motion enable safety functions (Motor Module)), p9501 (SI Motion enable safety functions (Control Unit))

A30693 (F)	**SI P2: Safety parameter settings changed, warm restart/POWER ON required**
Message value:	%1
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Drive object:	HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	None **Propagation:** GLOBAL
Reaction:	NONE
Acknowledge:	NONE
Cause:	Safety parameters have been changed; these will only take effect following a warm restart or POWER ON. Alarm value (r2124, interpret decimal): Parameter number of the safety parameter which has changed, necessitating a warm restart or POWER ON.
Remedy:	- carry out a warm restart (p0009 = 30, p0976 = 2, 3). - carry out a POWER ON (switch-off/switch-on) for all components. Note: Before performing an acceptance test, a POWER ON must be carried out for all components.
Reaction upon F:	NONE (OFF1, OFF2, OFF3)
Acknowl. upon F:	POWER ON

C30700	**SI Motion P2: STOP A initiated**
Message value:	-
Message class:	Safety monitoring channel has identified an error (10)
Drive object:	HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	None **Propagation:** GLOBAL
Reaction:	OFF2
Acknowledge:	IMMEDIATELY (POWER ON)
Cause:	The drive is stopped via a STOP A (STO via the safety switch-off signal path of the Control Unit). Possible causes: - stop request from the Control Unit. - STO not active after a parameterized time (p9357) after test stop selection. - subsequent response to the message C30706 "SI Motion MM: SAM/SBR limit exceeded". - subsequent response to the message C30714 "SI Motion MM: Safely-Limited Speed exceeded". - subsequent response to the message C30701 "SI Motion MM: STOP B initiated". - subsequent response to the message C01715 "SI Motion CU: Safely-Limited Position exceeded". - subsequent response to the message C30716 "SI Motion MM: tolerance for safe motion direction exceeded".
Remedy:	- remove the cause to the fault on the Control Unit. - check the value in p9357, if required, increase the value. - check the switch-off signal path of the Control Unit (check DRIVE-CLiQ communication). - carry out a diagnostics routine for message C30706. - carry out a diagnostics routine for message C30714. - carry out a diagnostics routine for message C30701. - carry out a diagnostics routine for message C30715. - carry out a diagnostics routine for message C30716. - replace the Motor Module, Power Module or Hydraulic Module. - replace Control Unit. This message can be acknowledged without a POWER ON as follows (safe acknowledgment): - Terminal Module 54F (TM54F). - onboard F-DI (only CU310-2). - PROFIsafe. - machine control panel. Note: SAM: Safe Acceleration Monitor (safe acceleration monitoring) SBR: Safe Brake Ramp (safe brake ramp monitoring) SI: Safety Integrated

C30701 SI Motion P2: STOP B initiated

Message value: -
Message class: Safety monitoring channel has identified an error (10)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE (OFF3)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The drive is stopped via a STOP B (braking along the OFF3 ramp).

As a result of this fault, after the time parameterized in p9356 has expired or after the speed threshold parameterized in p9360 has been fallen below, message C30700 "SI Motion MM: STOP A initiated" is output.

Possible causes:

- stop request from the Control Unit.
- subsequent response to the message C30714 "SI Motion MM: Safely-Limited Speed exceeded".
- subsequent response to the message C30711 "SI Motion MM: Defect in a monitoring channel".
- subsequent response to the message C30707 "SI Motion MM: tolerance for safe operating stop exceeded".
- subsequent response to the message C01715 "SI Motion CU: Safely-Limited Position exceeded".
- subsequent response to the message C30716 "SI Motion MM: tolerance for safe motion direction exceeded".

Remedy:
- remove the cause to the fault on the Control Unit.
- carry out a diagnostics routine for message C30714.
- carry out a diagnostics routine for message C30711.
- carry out a diagnostics routine for message C30707.
- carry out a diagnostics routine for message C30715.
- carry out a diagnostics routine for message C30716.

This message can be acknowledged without a POWER ON as follows (safe acknowledgment):

- Terminal Module 54F (TM54F).
- onboard F-DI (only CU310-2).
- PROFIsafe.
- machine control panel.

Note:

SI: Safety Integrated

C30706 SI Motion P2: SAM/SBR limit exceeded

Message value: -
Message class: Safety monitoring channel has identified an error (10)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: Motion monitoring functions with encoder (p9306 = 0) or encoderless with set acceleration monitoring (SAM, p9306 = 3):

- after initiating STOP B (SS1) or STOP C (SS2), the speed has exceeded the selected tolerance.

Motion monitoring functions encoderless with set brake ramp monitoring (SBR p9306 = 1):

- after initiating STOP B (SS1) or SLS changeover to the lower speed level, the speed has exceeded the selected tolerance.

The drive is shut down by the message C30700 "SI Motion MM: STOP A initiated".

Remedy: Check the braking behavior and, if necessary, adapt the parameterization of the parameter settings of the "SAM" or the "SBR" function.

This message can be acknowledged without a POWER ON as follows (safe acknowledgment):

- Terminal Module 54F (TM54F).
- onboard F-DI (only CU310-2).
- PROFIsafe.
- machine control panel.

Note:
SAM: Safe Acceleration Monitor (safe acceleration monitoring)
SBR: Safe Brake Ramp (safe ramp monitoring)
SI: Safety Integrated
See also: p9348, p9381, p9382, p9383, p9548

C30706 SI Motion P2: SAM/SBR limit exceeded

Message value: -
Message class: Safety monitoring channel has identified an error (10)
Drive object: HLA
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: Motion monitoring functions with encoder (p9306 = 0):
- after initiating STOP B (SS1) or STOP C (SS2), the speed has exceeded the selected tolerance.
The drive is shut down by the message C30700 "SI Motion MM: STOP A initiated".
Remedy: Check the braking behavior and, if necessary, adapt the parameterization of the parameter settings of the "SAM" or the "SBR" function.
This message can be acknowledged without a POWER ON as follows (safe acknowledgment):
- Terminal Module 54F (TM54F).
- onboard F-DI (only CU310-2).
- PROFIsafe.
- machine control panel.
Note:
SAM: Safe Acceleration Monitor (safe acceleration monitoring)
SBR: Safe Brake Ramp (safe ramp monitoring)
SI: Safety Integrated
See also: p9348, p9381, p9382, p9383, p9548

C30707 SI Motion P2: Tolerance for safe operating stop exceeded

Message value: -
Message class: Safety monitoring channel has identified an error (10)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The actual position has distanced itself further from the target position than the standstill tolerance.
The drive is shut down by the message C30701 "SI Motion MM: STOP B initiated".
Remedy: - check whether safety faults are present and if required carry out the appropriate diagnostic routines for the particular faults.
- check whether the standstill tolerance matches the accuracy and control dynamic performance of the axis.
This message can be acknowledged without a POWER ON as follows (safe acknowledgment):
- Terminal Module 54F (TM54F).
- onboard F-DI (only CU310-2).
- PROFIsafe.
- machine control panel.
Note:
SI: Safety Integrated
SOS: Safe Operating Stop / SBH: Safe operating stop
See also: p9530 (SI Motion standstill tolerance (Control Unit))

C30708 SI Motion P2: STOP C initiated

Message value: -
Message class: Safety monitoring channel has identified an error (10)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: STOP2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The drive is stopped via a STOP C (braking along the OFF3 ramp).
"Safe Operating Stop" (SOS) is activated after the parameterized time has expired.
Possible causes:
- stop request from the higher-level control.
- subsequent response to the message C30714 "SI Motion MM: Safely-Limited Speed exceeded".
- subsequent response to the message C01715 "SI Motion CU: Safely-Limited Position exceeded".
- subsequent response to the message C30716 "SI Motion MM: tolerance for safe motion direction exceeded".
See also: p9552 (SI Motion transition time STOP C to SOS (SBH) (Control Unit))

Remedy: - remove the cause of the fault at the control.
- carry out a diagnostics routine for messages C30714, C30715, C30716.
This message can be acknowledged without a POWER ON as follows (safe acknowledgment):
- Terminal Module 54F (TM54F).
- onboard F-DI (only CU310-2).
- PROFIsafe.
- machine control panel.
Note:
SI: Safety Integrated
SOS: Safe Operating Stop / SBH: Safe operating stop

C30709 SI Motion P2: STOP D initiated

Message value: -
Message class: Safety monitoring channel has identified an error (10)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The drive is stopped via a STOP D (braking along the path).
"Safe Operating Stop" (SOS) is activated after the parameterized time has expired.
Possible causes:
- stop request from the Control Unit.
- subsequent response to the message C30714 "SI Motion MM: Safely-Limited Speed exceeded".
- subsequent response to the message C01715 "SI Motion CU: Safely-Limited Position exceeded".
- subsequent response to the message C30716 "SI Motion MM: tolerance for safe motion direction exceeded".
See also: p9353 (SI Motion transition time STOP D to SOS (Motor Module)), p9553 (SI Motion transition time STOP D to SOS (SBH) (Control Unit))

Remedy: - remove the cause of the fault at the control.
- carry out a diagnostics routine for messages C30714, C30715, C30716.
This message can be acknowledged without a POWER ON as follows (safe acknowledgment):
- Terminal Module 54F (TM54F).
- onboard F-DI (only CU310-2).
- PROFIsafe.
- machine control panel.
Note:
SI: Safety Integrated
SOS: Safe Operating Stop / SBH: Safe operating stop

C30710 SI Motion P2: STOP E initiated

Message value: -

Message class: Safety monitoring channel has identified an error (10)

Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The drive is stopped via a STOP E (retraction motion).

"Safe Operating Stop" (SOS) is activated after the parameterized time has expired.

Possible causes:

- stop request from the higher-level control.
- subsequent response to the message C30714 "SI Motion MM: Safely-Limited Speed exceeded".
- subsequent response to the message C01715 "SI Motion CU: Safely-Limited Position exceeded".
- subsequent response to the message C30716 "SI Motion MM: tolerance for safe motion direction exceeded".

See also: p9354 (SI Motion transition time STOP E to SOS (Motor Module)), p9554 (SI Motion transition time STOP E to SOS (SBH) (Control Unit))

Remedy: - remove the cause of the fault at the control.

- carry out a diagnostics routine for messages C30714, C30715, C30716.

This message can be acknowledged without a POWER ON as follows (safe acknowledgment):

- Terminal Module 54F (TM54F).
- onboard F-DI (only CU310-2).
- PROFIsafe.
- machine control panel.

Note:

SI: Safety Integrated

SOS: Safe Operating Stop / SBH: Safe operating stop

C30711 SI Motion P2: Defect in a monitoring channel

Message value: %1

Message class: Safety monitoring channel has identified an error (10)

Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: IMMEDIATELY (POWER ON)

Cause: When cross-comparing the two monitoring channels, the drive detected a difference between the input data or results of the monitoring functions and initiated a STOP F. One of the monitoring functions no longer reliably functions - i.e. safe operation is no longer possible.

If at least one monitoring function is active, then after the parameterized timer has expired, the message C30701 "SI Motion: STOP B initiated" is output. The message is output with message value 1031 when the Sensor Module hardware is replaced.

The following message values may also occur in the following cases if the cause that is explicitly mentioned does not apply:

- differently parameterized cycle times (p9500/p9300, p9511/p9311).
- differently parameterized axis types (p9502/p9302).
- excessively fast cycle times (p9500/p9300, p9511/p9311).
- incorrect synchronization.

Message value (r9749, interpret decimal):

0 ... 999:

Number of the cross-compared data that resulted in this message.

The significance of the individual message values is described in safety message C01711 of the Control Unit.

1000: Watchdog timer has expired. Too many signal changes have occurred at safety-relevant inputs.

1001: Initialization error of watchdog timer.

1002:

User agreement after the timer has expired different.

The user agreement is not consistent. After a time of 4 s has expired, the status of the user agreement is different in both monitoring channels.

1003: Reference tolerance exceeded. When the user agreement is set, the difference between the new reference point that has been determined after power up (absolute encoder) or reference point approach (distance-coded or incremental measuring system) and the safe actual position (saved value + traversing distance) is greater than the reference tolerance (p9344). In this case, the user agreement is withdrawn.

1004:

Plausibility error for user agreement.

1. If the user agreement has already been set, then the setting is initiated again. In this case, the user agreement is withdrawn.

2. The user agreement was set, although the axis has still not been referenced.

1005:

- for safe motion monitoring functions without encoder: pulses already suppressed for test stop selection.
- for safe motion monitoring functions with encoder: STO already active for test stop selection.

1011: Acceptance test status between the monitoring channels differ.

1012: Plausibility violation of the actual value from the encoder.

1014: fault when synchronizing the SGA for the "Safe cam" function

1015: Gearbox switchover (bit 27 in PROFIsafe telegram) takes longer than 2 min.

1020: Cyc. communication failure between the monit. channels.

1021: Cyc. communication failure between the monit. channel and Sensor Module.

1023: Error in the effectiveness test in the DRIVE-CLiQ encoder

1024: Sign-of-life error for HTL/TTL encoders.

1030: Encoder fault detected from another monitoring channel.

1031:

- data transfer error between the monitoring channel and the Sensor Module (p9526/p9326).
- the Sensor Module for the second channel was replaced.
- the encoder for the second channel has been incorrectly parameterized.

1040: Pulses suppressed with active encoderless monitoring functions.

1041: Current absolute value too low (encoderless)

1042: Current/voltage plausibility error

1043: Too many acceleration phases

1044: Actual current values plausibility error.

1045: CRC of the standstill position incorrect.

5000 ... 5140:

PROFIsafe message values.

For these message values, the failsafe control signals (Failsafe Values) are transferred to the safety functions.

The significance of the individual message values is described in safety message C01711 of the Control Unit.

6000 ... 6166:

PROFIsafe message values (PROFIsafe driver for PROFIBUS DP V1/V2 and PROFINET).

For these message values, the failsafe control signals (Failsafe Values) are transferred to the safety functions. If "Stop B after failure of the PROFISafe communication" (p9812) is parameterized, the transfer of the Failsafe Values is delayed.

The significance of the individual message values is described in safety fault F01611 of the Control Unit.

7000: Difference of the safe position is greater than the parameterized tolerance (p9542/p9342).

7001: Scaling value for the safe position in the 16 bit notation, too low (p9574/p9374).

7002: Cycle counter for transferring the safe position is different in both monitoring channels.

See also: p9555 (SI Motion transition time STOP F to STOP B (Control Unit)), r9725 (SI Motion diagnostics STOP F)

Remedy: For message value = 1002:

- perform safe acknowledgment, set the user agreement in both monitoring channels simultaneously (within 4 s).

For message value = 1003:

- check the mechanical system of the axis. It is possible that the axis was shifted when switched-off, and the last saved actual position no longer corresponds with the new actual position after the system has been powered up again.
- increase the tolerance for the actual value comparison when referencing (p9344).

Then check the actual values, perform a POWER ON and set the user agreement again.

For message value = 1004:

For 1., the following applies: Perform safe acknowledgment. Set the user agreement again.

For 2., the following applies: Perform safe acknowledgment. Only set the user agreement again if the axis has been referenced.

For message value = 1005:

- for safe motion monitoring functions without encoder: check the conditions for pulse enable.
- for safe motion monitoring functions with encoder: check the conditions for STO deselection.

Note:

For a Power Module, the test stop should always be performed for pulse enable (independent of whether with encoder or without encoder).

For message value = 1012:

- upgrade the Sensor Module firmware to a more recent version.
- for 1-encoder systems, the following applies: check the encoder parameters for equality (p9515/p9315, p9519/p9319, p9523/p9323, p9524/p9324, p9525/p9325, p9529/p9329).
- for a 1-encoder system and 2-encoder system the following applies: in order to correctly copy the encoder parameters from p04xx, p9700 must be set to 46 and p9701 must be set to 172.
- for DQI encoders the following applies: If required, upgrade the firmware version of the Control Unit to a more recent version, which is released for DQI encoders.
- check the electrical cabinet design and cable routing for EMC compliance
- carry out a POWER ON (switch-off/switch-on) for all components or a warm restart (p0009 = 30, p0976 = 2, 3).
- replace the hardware.

For message value = 1014:

- check the encoder actual value, if necessary increase the position tolerance (p9342) and/or cam tolerance (p9340).

For message value = 1024:

- check the communication link.
- if required, increase the monitoring cycle clock settings (p9500, p9511).
- carry out a POWER ON (switch-off/switch-on) for all components.
- replace the hardware.

For message value = 1030:

- check the encoder connection.
- if required, replace the encoder.

For message value = 1031:

When replacing a Sensor Module, carry out the following steps:

- start the copy function for the node identifier on the drive (p9700 = 1D hex).
- acknowledge the hardware CRC on the drive (p9701 = EC hex).
- save all parameters (p0977 = 1).
- carry out a POWER ON (switch-off/switch-on) for all components.

Adapt the encoder parameterization for the second channel as follows:

- set the encoder type (p0400).
- activate the safety commissioning mode (p0010 = 95).
- start the copy function for encoder parameters (p9700 = 46).
- exit the safety commissioning mode (p0010 = 0).
- save parameter in a non-volatile fashion (copy RAM to ROM).
- carry out a POWER ON (switch-off/switch-on) for all components.

The following always applies:

- check the encoder connection.
- if required, replace the encoder.

For message value = 1040:

- de-select encoderless monitoring functions, select and de-select STO.
- if monitoring function "SLS" is active, issue a pulse enable within 5 s of de-selecting STO.

For message value = 6000 ... 6999:

- the significance of the individual message values is described in safety fault F01611 of the Control Unit.

For other message values:

- the significance of the individual message values is described in safety message C01711.

This message can be acknowledged without a POWER ON as follows (safe acknowledgment):

- Terminal Module 54F (TM54F).
- onboard F-DI (only CU310-2).
- PROFIsafe.
- machine control panel.

See also: p9300 (SI Motion monitoring clock cycle (Motor Module)), p9500 (SI Motion monitoring clock cycle (Control Unit))

C30711 SI Motion P2: Defect in a monitoring channel

Message value: %1

Message class: Safety monitoring channel has identified an error (10)

Drive object: HLA

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: IMMEDIATELY (POWER ON)

Cause: When cross-comparing the two monitoring channels, the drive detected a difference between the input data or results of the monitoring functions and initiated a STOP F. One of the monitoring functions no longer reliably functions - i.e. safe operation is no longer possible.

If at least one monitoring function is active, then after the parameterized timer has expired, the message C30701 "SI Motion: STOP B initiated" is output. The message is output with message value 1031 when the Sensor Module hardware is replaced.

The following message values may also occur in the following cases if the cause that is explicitly mentioned does not apply:

- differently parameterized cycle times (p9500/p9300, p9511/p9311).
- excessively fast cycle times (p9500/p9300, p9511/p9311).
- incorrect synchronization.

Message value (r9749, interpret decimal):

0 ... 999:

Number of the cross-compared data that resulted in this message.

The significance of the individual message values is described in safety message C01711 of the Control Unit.

1000: Watchdog timer has expired. Too many signal changes have occurred at safety-relevant inputs.

1001: Initialization error of watchdog timer.

1002:

User agreement after the timer has expired different.

The user agreement is not consistent. After a time of 4 s has expired, the status of the user agreement is different in both monitoring channels.

1003: Reference tolerance exceeded. When the user agreement is set, the difference between the new reference point that has been determined after power up (absolute encoder) or reference point approach (distance-coded or incremental measuring system) and the safe actual position (saved value + traversing distance) is greater than the reference tolerance (p9344). In this case, the user agreement is withdrawn.

1004:

Plausibility error for user agreement.

1. If the user agreement has already been set, then the setting is initiated again. In this case, the user agreement is withdrawn.
2. The user agreement was set, although the axis has still not been referenced.

1005: STO already active for test stop selection.

1011: Acceptance test status between the monitoring channels differ.

1012: Plausibility violation of the actual value from the encoder.

1014: fault when synchronizing the SGA for the "Safe cam" function

1015: Gearbox switchover (bit 27 in PROFIsafe telegram) takes longer than 2 min.

1020: Cyc. communication failure between the monit. channels.

1021: Cyc. communication failure between the monit. channel and Sensor Module.

1023: Error in the effectiveness test in the DRIVE-CLiQ encoder

1024: Sign-of-life error for HTL/TTL encoders.

1030: Encoder fault detected from another monitoring channel.

1031:
- data transfer error between the monitoring channel and the Sensor Module (p9526/p9326).
- the Sensor Module for the second channel was replaced.
- the encoder for the second channel has been incorrectly parameterized.

1045: CRC of the standstill position incorrect.

5000 ... 5140:
PROFIsafe message values.
For these message values, the failsafe control signals (Failsafe Values) are transferred to the safety functions.
The significance of the individual message values is described in safety message C01711 of the Control Unit.

6000 ... 6166:
PROFIsafe message values (PROFIsafe driver for PROFIBUS DP V1/V2 and PROFINET).
For these message values, the failsafe control signals (Failsafe Values) are transferred to the safety functions.
The significance of the individual message values is described in safety fault F01611 of the Control Unit.

7000 ... 7002:
Message values of the "Safe position via PROFIsafe" function.

See also: p9555 (SI Motion transition time STOP F to STOP B (Control Unit)), r9725 (SI Motion diagnostics STOP F)

Remedy: For message value = 1002:
- perform safe acknowledgment, set the user agreement in both monitoring channels simultaneously (within 4 s).

For message value = 1003:
- check the mechanical system of the axis. It is possible that the axis was shifted when switched-off, and the last saved actual position no longer corresponds with the new actual position after the system has been powered up again.
- increase the tolerance for the actual value comparison when referencing (p9344).

Then check the actual values, perform a POWER ON and set the user agreement again.

For message value = 1004:
For 1., the following applies: Perform safe acknowledgment. Set the user agreement again.
For 2., the following applies: Perform safe acknowledgment. Only set the user agreement again if the axis has been referenced.

For message value = 1005:
- check the conditions for deselecting STO.

For message value = 1012:
- upgrade the Sensor Module firmware to a more recent version.
- for 1-encoder systems, the following applies: check the encoder parameters for equality (p9515/p9315, p9519/p9319, p9523/p9323, p9524/p9324, p9525/p9325, p9529/p9329).
- for a 1-encoder system and 2-encoder system the following applies: in order to correctly copy the encoder parameters from p04xx, p9700 must be set to 46 and p9701 must be set to 172.
- for DQI encoders the following applies: If required, upgrade the firmware version of the Control Unit to a more recent version, which is released for DQI encoders.
- check the electrical cabinet design and cable routing for EMC compliance
- carry out a POWER ON (switch-off/switch-on) for all components or a warm restart (p0009 = 30, p0976 = 2, 3).
- replace the hardware.

For message value = 1014:
- check the encoder actual value, if necessary increase the position tolerance (p9342) and/or cam tolerance (p9340).

For message value = 1024:
- check the communication link.
- increase the monitoring cycle clock settings (p9500, p9511).
- carry out a POWER ON (switch-off/switch-on) for all components.
- replace the hardware.

For message value = 1030:
- check the encoder connection.
- if required, replace the encoder.

For message value = 1031:
When replacing a Sensor Module, carry out the following steps:
- start the copy function for the node identifier on the drive (p9700 = 1D hex).
- acknowledge the hardware CRC on the drive (p9701 = EC hex).
- save all parameters (p0977 = 1).
- carry out a POWER ON (switch-off/switch-on) for all components.
Adapt the encoder parameterization for the second channel as follows:
- set the encoder type (p0400).
- activate the safety commissioning mode (p0010 = 95).
- start the copy function for encoder parameters (p9700 = 46).
- exit the safety commissioning mode (p0010 = 0).
- save parameter in a non-volatile fashion (copy RAM to ROM).
- carry out a POWER ON (switch-off/switch-on) for all components.
The following always applies:
- check the encoder connection.
- if required, replace the encoder.
For message value = 6000 ... 6999:
- the significance of the individual message values is described in safety fault F01611 of the Control Unit.
For other message values:
- the significance of the individual message values is described in safety message C01711.
Note:
This message can be acknowledged via the Terminal Module 54F (TM54F) or PROFIsafe.
See also: p9300 (SI Motion monitoring clock cycle (Motor Module)), p9500 (SI Motion monitoring clock cycle (Control Unit))

C30712 SI Motion P2: Defect in F-IO processing

Message value: %1
Message class: Safety monitoring channel has identified an error (10)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: When cross checking and comparing the two monitoring channels, the drive detected a difference between parameters or results of the F-IO processing and initiated a STOP F. One of the monitoring functions no longer reliably functions - i.e. safe operation is no longer possible.
The safety message C30711 with message value 0 is also displayed due to initiation of STOP F.
If at least one monitoring function is active, the safety message C30701 "SI Motion: STOP B initiated" is output after the parameterized timer has expired.
Message value (r9749, interpret decimal):
Number of the cross-compared data that resulted in this message.
Refer to the description of the message values in safety message C01712.
Remedy: - check parameterization in the parameters involved and correct if required.
- ensure equality by copying the SI data to the second channel and then carry out an acceptance test.
- check monitoring clock cycle for equality (p9500, p9300).
This message can be acknowledged without a POWER ON as follows (safe acknowledgment):
- onboard F-DI (only CU310-2).
- PROFIsafe.
- machine control panel.
See also: p9300 (SI Motion monitoring clock cycle (Motor Module)), p9500 (SI Motion monitoring clock cycle (Control Unit))

C30714 SI Motion P2: Safely-Limited Speed exceeded

Message value: %1
Message class: Safety monitoring channel has identified an error (10)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The drive had moved faster than that specified by the velocity limit value (p9331). The drive is stopped as a result of the configured stop response (p9363).

Message value (r9749, interpret decimal):

100: SLS1 exceeded.

200: SLS2 exceeded.

300: SLS3 exceeded.

400: SLS4 exceeded.

1000: Encoder limit frequency exceeded.

Remedy: - check the traversing/motion program in the control.

- check the limits for "SLS" function and if required, adapt (p9331).

This message can be acknowledged without a POWER ON as follows (safe acknowledgment):

- Terminal Module 54F (TM54F).
- onboard F-DI (only CU310-2).
- PROFIsafe.
- machine control panel.

Note:

SI: Safety Integrated

SLS: Safely-Limited Speed / SG: Safely reduced speed

See also: p9331 (SI Motion SLS limit values (Motor Module)), p9363 (SI Motion SLS stop response (Motor Module))

C30715 SI Motion P2: Safely-Limited Position exceeded

Message value: %1
Message class: Safety monitoring channel has identified an error (10)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The axis has moved past a parameterized position that is monitored by the "SLP" function.

Message value (r9749, interpret decimal):

10: SLP1 violated.

20: SLP2 violated.

Remedy: - check the traversing/motion program in the control.

- check the limits for "SLP" function and if required, adapt (p9534, p9535).

This message can be acknowledged without a POWER ON as follows (safe acknowledgment):

Prerequisite:

- deselect "SLP" function and retract the axis into the permitted position range.

Carry out a safe acknowledgment using one of the following options:

- Terminal Module 54F (TM54F).
- onboard F-DI (only CU310-2).
- PROFIsafe.
- machine control panel.

Note:

SI: Safety Integrated

SLP: Safely-Limited Position / SE: Safe software limit switches

See also: p9334, p9335

C30716 SI Motion P2: Tolerance for safe motion direction exceeded

Message value: %1

Message class: Safety monitoring channel has identified an error (10)

Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The tolerance for the "safe motion direction" function was exceeded. The drive is stopped as a result of the configured stop response (p9366).

Message value (r9749, interpret decimal):

0: Tolerance for the "safe motion direction positive" function exceeded.

1: Tolerance for the "safe motion direction negative" function exceeded.

Remedy: - check the traversing/motion program in the control.

- check the tolerance for "SDI" function and if required, adapt (p9364).

This message can be acknowledged without a POWER ON as follows (safe acknowledgment):

Prerequisite:

- deselect the "SDI" function and if required select again.

Carry out a safe acknowledgment using one of the following options:

- Terminal Module 54F (TM54F).
- onboard F-DI (only CU310-2).
- PROFIsafe.
- machine control panel.

Note:

SDI: Safe Direction (safe motion direction)

SI: Safety Integrated

See also: p9364, p9365, p9366

C30717 SI Motion P2: SLA limit exceeded

Message value: -

Message class: Safety monitoring channel has identified an error (10)

Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The acceleration limit for the "Safely-Limited Acceleration" function was exceeded. The drive is stopped as a result of the configured stop response (p9379).

Remedy: - check the traversing/motion program in the control.

- check the acceleration limit for the "SLA" function and if required, adapt (p9378).
- carry out a safe acknowledgment.

Note:

SI: Safety Integrated

SLA: Safely-Limited Acceleration

See also: p9378 (SI Motion SLA acceleration limit (MM)), p9379 (SI Motion SLA stop response (Motor Module))

C30730	SI Motion P2: Reference block for dynamic Safely-Limited Speed invalid
Message value:	%1
Message class:	Safety monitoring channel has identified an error (10)
Drive object:	HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	None **Propagation:** GLOBAL
Reaction:	NONE
Acknowledge:	IMMEDIATELY (POWER ON)
Cause:	The reference block transferred via PROFIsafe is negative. A reference block is used to generate a referred velocity limit value based on the reference quantity "Velocity limit value SLS1" (p9331[0]). The drive is stopped as a result of the configured stop response (p9363[0]). Message value (r9749, interpret decimal): requested, invalid reference block.
Remedy:	In the PROFIsafe telegram, input data S_SLS_LIMIT_IST must be corrected. This message can be acknowledged without a POWER ON as follows (safe acknowledgment): - PROFIsafe. Note: SI: Safety Integrated SLS: Safely-Limited Speed

C30770	SI Motion P2: Discrepancy error of the failsafe inputs/outputs
Message value:	%1
Message class:	Safety monitoring channel has identified an error (10)
Drive object:	SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	None **Propagation:** GLOBAL
Reaction:	NONE
Acknowledge:	IMMEDIATELY (POWER ON)
Cause:	The failsafe digital inputs/digital outputs (F-DI/F-DO) show a different state longer than that parameterized in p10002/p10102. Fault value (r0949, interpret hexadecimal): yyyyxxxx hex xxxx: Discrepancy error for failsafe digital inputs (F-DI). Bit 0: Discrepancy error for F-DI 0 Bit 1: Discrepancy error for F-DI 1 ... yyyy: Discrepancy error for failsafe digital outputs (F-DO). Bit 0: Discrepancy error for F-DO 0 ... Note: If several discrepancy errors occur consecutively, then this message is only signaled for the first error that occurs.
Remedy:	- check the wiring of the F-DI (contact problems). Note: This message can be acknowledged via F-DI or PROFIsafe (safe acknowledgment). Discrepancy errors of an F-DI can only be acknowledged if safe acknowledgment was carried out once after the cause of the error was resolved (p10106, acknowledgment via PROFIsafe, extended message acknowledgment). As long as safety acknowledgment was not carried out, the corresponding F-DI stays in the safe state internally. When the "Extended message acknowledgment" function (p9307.0) is active, the following applies: If the F-DI assigned for STO or SS1 is in a failsafe state due to a discrepancy error, then when deselecting via this F-DI, safe acknowledgment can no longer be executed. For cyclic switching operations at the F-DI, it may be necessary to adapt the discrepancy time to the switching frequency.

If the period of a cyclic switching pulse corresponds to twice the value of p10102, then the following formulas should be checked:

- p10102 < (tp / 2) - td (discrepancy time must be less than half the period minus the actual discrepancy time)
- p10102 >= p9300 (discrepancy time must be at least p9300)
- p10102 > td (discrepancy time must be greater than the switch discrepancy time that may actually occur)

td = possible actual discrepancy time (in ms) that can occur with a switching operation. This must correspond to at least 1 SI monitoring cycle (see p9300).

tp = period for a switching operation in ms.

When debounce p10017 is active, the discrepancy time is directly specified by the debounce time.

If the period of a cyclic switching pulse corresponds to twice the debounce time, then the following formulas should be checked.

- p11002 < p10117 + 1 ms - td
- p10102 > td
- p10102 >= p9300

Example:

For a 12 ms SI monitoring cycle and a switching frequency of 110 ms (p10117 = 0), the maximum discrepancy time which can be set is as follows:

p10102 <= (110/2 ms) - 12 ms = 43 ms

Rounded-off, p10102 <= 36 ms is obtained (since the discrepancy time can only be accepted as a whole SI monitoring cycle, the value will need to be rounded up or down to a whole SI monitoring cycle if the result is not an exact multiple of an SI monitoring cycle).

Note:

F-DI: Failsafe Digital Input

F-DO: Failsafe Digital Output

A30772 SI Motion P2: Test stop for failsafe digital outputs running

Message value: -

Message class: Safety monitoring channel has identified an error (10)

Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: The forced checking procedure (test stop) for the failsafe digital inputs is currently in progress.

Remedy: The alarm is automatically withdraw after successfully ending or canceling (when a fault condition occurs) the test stop.

Note:

F-DO: Failsafe Digital Output

F30773 SI Motion P2: Test stop failsafe digital output error

Message value: %1

Message class: Safety monitoring channel has identified an error (10)

Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: IMMEDIATELY (POWER ON)

Cause: A fault has occurred on processor 2 during the forced checking procedure (test stop) of the failsafe digital output.

Fault value (r0949, interpret hexadecimal):

RRRVWXYZ hex:

R: Reserved.

V: Actual state of the DO channel concerned (see X) on processor 2 (corresponds to the states read back from the hardware, bit 0 = DO 0, bit 1 = DO 1, etc.).

W: Required state of the DO channel concerned (see X, bit 0 = DO 0, bit 1 = DO 1, etc.).

X: DO channels involved, which indicate an error (bit 0 = DO 0, bit 1 = DO 1, etc.).

Y: Reason for the test stop fault.

Z: State of the test stop in which the fault has occurred.

Y: Reason for the test stop fault
Y = 1: Processor 1 in incorrect test stop state (internal fault).
Y = 2: Expected states of the DOs were not fulfilled (CU305: readback via DI 22 / CU240 readback DI 2).
Y = 3: Incorrect timer state on processor 1 (internal fault)
Y = 4: Expected states of the diag DOs were not fulfilled (CU305: internal readback on processor 2).
Y = 5: Expected states of the second diag DOs were not fulfilled (CU305: internal readback on processor 1).
X and V indicate the DI or Diag-DO state dependent upon the reason for the fault (2, 4 or 5).
In the event of multiple test stop faults, the first one that occurred is shown.

Z: Test stop state and associated test actions
Z = 0 ... 3: Synchronization phase of test stop between processor 1 and processor 2 no switching operations
Z = 4: DO + OFF and DO - OFF
Z = 5: Check to see if states are as expected
Z = 6: DO + ON and DO - ON
Z = 7: Check to see if states are as expected
Z = 8: DO + OFF and DO - ON
Z = 9: Check to see if states are as expected
Z = 10: DO + ON and DO - OFF
Z = 11: Check to see if states are as expected
Z = 12: DO + OFF and DO - OFF
Z = 13: Check to see if states are as expected
Z = 14: End of test stop

Diag expected states in table format:
Test stop state: Expectation Mode 1 / Mode 2 / Mode 3 / Mode 4
5: 0/-/-/1
7: 0/-/-/0
9: 0/-/-/0
11: 1/-/-/1
13: 0/-/-/1
Second diag expected states in table format:
Test stop state: Expectation Mode 1 / Mode 2 / Mode 3 / Mode 4
5: -/-/-/1
7: -/-/-/0
9: -/-/-/1
11: -/-/-/0
13: -/-/-/1
DI expected states in table format:
Test stop state: Expectation Mode 1 / Mode 2 / Mode 3 / Mode 4
5: -/1/1/-
7: -/0/0/-
9: -/0/1/-
11: -/0/1/-
13: -/1/1/-

Example:
Fault F01773 (P1) is signaled with fault value = 0001_0127 and fault F30773 (P2) is signaled with fault value 0000_0127.
This means that in state 7 (Z = 7) the state of the external readback signal was not set correctly (Y = 2) after DO-0 (X = 1) was switched to ON/ON.
Fault value 0001_0127 indicates that 0 was expected (W = 0) and 1 (V = 1) was read back from the hardware.
Fault value 0000_0127 on the processor 2 indicates that the states were as expected.
In the case of fault F30773, W and V are always identical; a value of 0 always means that 0 was expected at the readback input but was not present on processor 1.

Remedy: Check the wiring of the failsafe digital output (F-DO) and restart the test stop.
Note:
- the fault is withdrawn if the test stop is successfully completed.
- in the event of multiple test stop faults, the first one that occurred is shown. Once the test stop has been restarted the next queued test stop fault will be signaled (if there is one).
F-DO: Failsafe Digital Output

A30788 Automatic test stop: wait for STO deselection via SMM

Message value: -
Message class: Safety monitoring channel has identified an error (10)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Motor **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The automatic test stop was not able to be carried out after powering up.
Possible causes:
- the STO function is selected via Safety Extended Functions.
- a safety message is present, that resulted in a STO.
Remedy: - Deselect STO via Safety Extended Functions.
- remove the cause of the safety messages and acknowledge the messages.
The automatic test stop is performed after removing the cause.

C30797 SI Motion P2: Axis not safely referenced

Message value: %1
Message class: Safety monitoring channel has identified an error (10)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The standstill position saved before switching off does not match the actual position determined at switch-on.
Message value (r9749, interpret decimal):
1: Axis not safely referenced.
2: User agreement missing.
Remedy: If safe automatic referencing is not possible the user must issue a user agreement for the new position using the softkey. This mean that this position is then designated as safety-relevant.
Note:
SI: Safety Integrated

C30798 SI Motion P2: Test stop for motion monitoring functions running

Message value: -
Message class: Safety monitoring channel has identified an error (10)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The forced checking procedure (test stop) for the safe motion monitoring functions is currently in progress.
Remedy: Not necessary.
The message is automatically withdrawn when the test stop has been completed.
Note:
SI: Safety Integrated

C30799 SI Motion P2: Acceptance test mode active

Message value: -
Message class: Safety monitoring channel has identified an error (10)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The acceptance test mode is active.
This means the following:
- the setpoint velocity limiting is deactivated (r9733).
- the standard limit switches are deactivated during the acceptance test for function SLP (for EPOS internal, otherwise via r10234).

Remedy: Not necessary.
The message is automatically withdrawn when exiting the acceptance test mode.
Note:
SI: Safety Integrated
SLP: Safely-Limited Position

N30800 (F) Power unit: Group signal

Message value: -
Message class: Power electronics faulted (5)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: NONE
Cause: The power unit has detected at least one fault.
Remedy: Evaluate the other messages that are presently available.
Reaction upon F: OFF2
Acknowl. upon F: IMMEDIATELY

F30801 Power unit DRIVE-CLiQ: Sign-of-life missing

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Control Unit to the power unit concerned.
The computing time load might be too high.
Fault cause:
10 (= 0A hex):
The sign-of-life bit in the receive telegram is not set.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy:
- deselect functions that are not required.
- if required, increase the sampling times (p0112, p0115).
- replace the component involved (power unit, Control Unit).

F30802	**Power unit: Time slice overflow**
Message value:	%1
Message class:	Hardware/software error (1)
Drive object:	A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Power Module **Propagation:** LOCAL
Reaction:	OFF2
Acknowledge:	IMMEDIATELY
Cause:	A time slice overflow has occurred. Fault value (r0949, interpret decimal): xx: time slice number
Remedy:	- carry out a POWER ON (switch-off/switch-on) for all components. - upgrade firmware to later version. - contact Technical Support.

F30804 (N, A)	**Power unit: CRC**
Message value:	%1
Message class:	Hardware/software error (1)
Drive object:	A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Power Module **Propagation:** LOCAL
Reaction:	Infeed: OFF2 (OFF1) Servo: OFF2 (OFF1, OFF3) Vector: OFF2 (OFF1, OFF3) Hla: OFF2 (OFF1, OFF3)
Acknowledge:	IMMEDIATELY
Cause:	A checksum error (CRC error) has occurred for the power unit.
Remedy:	- carry out a POWER ON (switch-off/switch-on) for all components. - upgrade firmware to later version. - contact Technical Support.
Reaction upon N:	NONE
Acknowl. upon N:	NONE
Reaction upon A:	NONE
Acknowl. upon A:	NONE

F30805	**Power unit: EEPROM checksum error**
Message value:	%1
Message class:	Hardware/software error (1)
Drive object:	A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Power Module **Propagation:** LOCAL
Reaction:	OFF2
Acknowledge:	IMMEDIATELY
Cause:	Internal parameter data is corrupted. Fault value (r0949, interpret hexadecimal): 01: EEPROM access error. 02: Too many blocks in the EEPROM.
Remedy:	Replace the module.

F30809	**Power unit: Switching information not valid**
Message value:	-
Message class:	Hardware/software error (1)
Drive object:	A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Power Module **Propagation:** LOCAL
Reaction:	OFF2
Acknowledge:	IMMEDIATELY
Cause:	For 3P gating unit, the following applies: The last switching status word in the setpoint telegram is identified by the end ID. Such an end ID was not found.

Remedy: - carry out a POWER ON (switch-off/switch-on) for all components.
- upgrade firmware to later version.
- contact Technical Support.

A30810 (F) Power unit: Watchdog timer

Message value: -
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: When booting it was detected that the cause of the previous reset was an SAC watchdog timer overflow.
Remedy: - carry out a POWER ON (switch-off/switch-on) for all components.
- upgrade firmware to later version.
- contact Technical Support.
Reaction upon F: NONE (OFF2)
Acknowl. upon F: IMMEDIATELY

F30820 Power unit DRIVE-CLiQ: Telegram error

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Control Unit to the power unit concerned.
Fault cause:
1 (= 01 hex):
Checksum error (CRC error).
2 (= 02 hex):
Telegram is shorter than specified in the length byte or in the receive list.
3 (= 03 hex):
Telegram is longer than specified in the length byte or in the receive list.
4 (= 04 hex):
The length of the receive telegram does not match the receive list.
5 (= 05 hex):
The type of the receive telegram does not match the receive list.
6 (= 06 hex):
The address of the component in the telegram and in the receive list do not match.
7 (= 07 hex):
A SYNC telegram is expected - but the received telegram is not a SYNC telegram.
8 (= 08 hex):
No SYNC telegram is expected - but the received telegram is one.
9 (= 09 hex):
The error bit in the receive telegram is set.
16 (= 10 hex):
The receive telegram is too early.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: - carry out a POWER ON (switch-off/switch-on).
- check the electrical cabinet design and cable routing for EMC compliance
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).

F30835 Power unit DRIVE-CLiQ: Cyclic data transfer error

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Control Unit to the power unit concerned. The nodes do not send and receive in synchronism.

Fault cause:

33 (= 21 hex):

The cyclic telegram has not been received.

34 (= 22 hex):

Timeout in the telegram receive list.

64 (= 40 hex):

Timeout in the telegram send list.

Note regarding the message value:

The individual information is coded as follows in the message value (r0949/r2124):

0000yyxx hex: yy = component number, xx = error cause

Remedy: - carry out a POWER ON.

- replace the component involved (power unit, Control Unit).

F30836 Power unit DRIVE-CLiQ: Send error for DRIVE-CLiQ data

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Control Unit to the power unit concerned. Data were not able to be sent.

Fault cause:

65 (= 41 hex):

Telegram type does not match send list.

Note regarding the message value:

The individual information is coded as follows in the message value (r0949/r2124):

0000yyxx hex: yy = component number, xx = error cause

Remedy: Carry out a POWER ON.

F30837 Power unit DRIVE-CLiQ: Component fault

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: Fault detected on the DRIVE-CLiQ component concerned. Faulty hardware cannot be excluded.

Fault cause:

32 (= 20 hex):

Error in the telegram header.

35 (= 23 hex):

Receive error: The telegram buffer memory contains an error.

66 (= 42 hex):

Send error: The telegram buffer memory contains an error.

67 (= 43 hex):
Send error: The telegram buffer memory contains an error.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy: - check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
- check the electrical cabinet design and cable routing for EMC compliance
- if required, use another DRIVE-CLiQ socket (p9904).
- replace the component involved.

F30845 Power unit DRIVE-CLiQ: Cyclic data transfer error

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Control Unit to the power unit concerned.
Fault cause:
11 (= 0B hex):
Synchronization error during alternating cyclic data transfer.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: Carry out a POWER ON (switch-off/switch-on).

F30850 Power unit: Internal software error

Message value: %1
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: Infeed: OFF1 (NONE, OFF2)
Servo: OFF1 (NONE, OFF2, OFF3)
Vector: OFF1 (NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: POWER ON
Cause: An internal software error has occurred in the power unit.
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.
Remedy: - replace power unit.
- if required, upgrade the firmware in the power unit.
- contact Technical Support.

F30851 Power unit DRIVE-CLiQ (CU): Sign-of-life missing

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, CU_LINK, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: Infeed: OFF2 (NONE, OFF1)
Servo: OFF2 (NONE, OFF1, OFF3)
Vector: OFF2 (NONE, OFF1, OFF3)
Hla: OFF2 (NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the power unit to the Control Unit involved.
The DRIVE-CLiQ component did not set the sign-of-life to the Control Unit.
Fault cause:
10 (= 0A hex):
The sign-of-life bit in the receive telegram is not set.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: - deselect functions that are not required.
- if required, increase the sampling times (p0112, p0115).
- replace the component involved (power unit, Control Unit).

A30853 Power unit: Sign-of-life error cyclic data

Message value: -
Message class: General drive fault (19)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The power unit has detected that the cyclic setpoint telegrams of the Control Unit have not been updated on time. At least two sign-of-life errors have occurred within the window set in p7788.
Remedy: - reduce the size of the window (p7788) for monitoring.
- check the Motor Module, and if required replace.

F30860 Power unit DRIVE-CLiQ (CU): Telegram error

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, CU_LINK, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the power unit to the Control Unit involved.
Fault cause:
1 (= 01 hex):
Checksum error (CRC error).
2 (= 02 hex):
Telegram is shorter than specified in the length byte or in the receive list.
3 (= 03 hex):
Telegram is longer than specified in the length byte or in the receive list.
4 (= 04 hex):
The length of the receive telegram does not match the receive list.
5 (= 05 hex):
The type of the receive telegram does not match the receive list.

6 (= 06 hex):
The address of the power unit in the telegram and in the receive list do not match.
9 (= 09 hex):
The DRIVE-CLiQ communication from the DRIVE-CLiQ component involved to the Control Unit signals that the supply voltage has failed.
16 (= 10 hex):
The receive telegram is too early.
17 (= 11 hex):
CRC error and the receive telegram is too early.
18 (= 12 hex):
The telegram is shorter than that specified in the length byte or in the receive list and the receive telegram is too early.
19 (= 13 hex):
The telegram is longer than that specified in the length byte or in the receive list and the receive telegram is too early.
20 (= 14 hex):
The length of the receive telegram does not match the receive list and the receive telegram is too early.
21 (= 15 hex):
The type of the receive telegram does not match the receive list and the receive telegram is too early.
22 (= 16 hex):
The address of the power unit in the telegram and in the receive list does not match and the receive telegram is too early.
25 (= 19 hex):
The error bit in the receive telegram is set and the receive telegram is too early.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy: - carry out a POWER ON (switch-off/switch-on).
- check the electrical cabinet design and cable routing for EMC compliance
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).

F30875 Power unit: power supply voltage failed

Message value: Component number: %1, fault cause: %2
Message class: Supply voltage fault (undervoltage) (3)
Drive object: A_INF, B_INF, CU_LINK, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The DRIVE-CLiQ communication from the DRIVE-CLiQ component involved to the Control Unit signals that the supply voltage has failed.
Fault cause:
9 (= 09 hex):
The power supply voltage for the components has failed.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy: - carry out a POWER ON (switch-off/switch-on).
- check the power supply voltage wiring for the DRIVE-CLiQ component (interrupted cable, contacts, ...).
- check the dimensioning of the power supply for the DRIVE-CLiQ component.

F30885 CU DRIVE-CLiQ (CU): Cyclic data transfer error

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, CU_LINK, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the power unit to the Control Unit involved.
The nodes do not send and receive in synchronism.
Fault cause:
26 (= 1A hex):
Sign-of-life bit in the receive telegram not set and the receive telegram is too early.
33 (= 21 hex):
The cyclic telegram has not been received.
34 (= 22 hex):
Timeout in the telegram receive list.
64 (= 40 hex):
Timeout in the telegram send list.
98 (= 62 hex):
Error at the transition to cyclic operation.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: - check the power supply voltage of the component involved.
- carry out a POWER ON.
- replace the component involved.

F30886 PU DRIVE-CLiQ (CU): Error when sending DRIVE-CLiQ data

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, CU_LINK, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the power unit to the Control Unit involved.
Data were not able to be sent.
Fault cause:
65 (= 41 hex):
Telegram type does not match send list.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: Carry out a POWER ON.

F30887 Power unit DRIVE-CLiQ (CU): Component fault

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, CU_LINK, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: Fault detected on the DRIVE-CLiQ component (power unit) involved. Faulty hardware cannot be excluded.
Fault cause:
32 (= 20 hex):
Error in the telegram header.
35 (= 23 hex):
Receive error: The telegram buffer memory contains an error.
66 (= 42 hex):
Send error: The telegram buffer memory contains an error.
67 (= 43 hex):
Send error: The telegram buffer memory contains an error.
96 (= 60 hex):
Response received too late during runtime measurement.
97 (= 61 hex):
Time taken to exchange characteristic data too long.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: - check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
- check the electrical cabinet design and cable routing for EMC compliance
- if required, use another DRIVE-CLiQ socket (p9904).
- replace the component involved.

F30895 PU DRIVE-CLiQ (CU): Alternating cyclic data transfer error

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, CU_LINK, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: Infeed: OFF2 (NONE, OFF1)
Servo: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Vector: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Hla: OFF2 (NONE, OFF1, OFF3, STOP2)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the power unit to the Control Unit involved.
Fault cause:
11 (= 0B hex):
Synchronization error during alternating cyclic data transfer.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: Carry out a POWER ON.

F30896 Power unit DRIVE-CLiQ (CU): Inconsistent component properties

Message value:	Component number: %1
Message class:	Internal (DRIVE-CLiQ) communication error (12)
Drive object:	A_INF, B_INF, CU_LINK, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Power Module **Propagation:** LOCAL
Reaction:	Infeed: OFF2 (NONE, OFF1) Servo: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2) Vector: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2) Hla: OFF2 (NONE, OFF1, OFF3, STOP2)
Acknowledge:	IMMEDIATELY
Cause:	The properties of the DRIVE-CLiQ component (power unit), specified by the fault value, have changed in an incompatible fashion with respect to the properties when booted. One cause can be, e.g. that a DRIVE-CLiQ cable or DRIVE-CLiQ component has been replaced. Fault value (r0949, interpret decimal): Component number.
Remedy:	- carry out a POWER ON. - when a component is replaced, the same component type and if possible the same firmware version should be used. - when a cable is replaced, only cables whose length is the same as or as close as possible to the length of the original cables should be used (ensure compliance with the maximum cable length).

F30899 (N, A) Power unit: Unknown fault

Message value:	New message: %1
Message class:	Power electronics faulted (5)
Drive object:	A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Power Module **Propagation:** LOCAL
Reaction:	Infeed: NONE (OFF1, OFF2) Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2) Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2) Hla: NONE (OFF1, OFF2, OFF3, STOP2)
Acknowledge:	IMMEDIATELY (POWER ON)
Cause:	A fault occurred on the power unit that cannot be interpreted by the Control Unit firmware. This can occur if the firmware on this component is more recent than the firmware on the Control Unit. Fault value (r0949, interpret decimal): Fault number. Note: If required, the significance of this new fault can be read about in a more recent description of the Control Unit.
Remedy:	- replace the firmware on the power unit by an older firmware version (r0128). - upgrade the firmware on the Control Unit (r0018).
Reaction upon N:	NONE
Acknowl. upon N:	NONE
Reaction upon A:	NONE
Acknowl. upon A:	NONE

F30903 Power unit: I2C bus error occurred

Message value: %1
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: Infeed: NONE (OFF1, OFF2)
Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowledge: IMMEDIATELY
Cause: Communications error with an EEPROM or an analog/digital converter.
Fault value (r0949, interpret hexadecimal):
80000000 hex:
- internal software error.
00000001 hex ... 0000FFFF hex:
- module fault.

Remedy: For fault value = 80000000 hex:
- upgrade firmware to later version.

For fault value = 00000001 hex ... 0000FFFF hex:
- replace the module.

F30907 Power unit: FPGA configuration unsuccessful

Message value: -
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: Infeed: OFF2 (NONE, OFF1)
Servo: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Acknowledge: IMMEDIATELY
Cause: During initialization within the power unit, an internal software error has occurred.
Remedy:
- if required, upgrade the firmware in the power unit.
- replace power unit.
- contact Technical Support.

A30919 Power unit: Temperature monitoring failed

Message value: %1
Message class: Overtemperature of the electronic components (6)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The temperature monitoring in the power unit has failed.
Fault-free operation of the drive system is no longer guaranteed.
Alarm value (r2124, interpret hexadecimal):
Bit 0: Sensor 1 for the internal temperature can no longer be evaluated.
Bit 1: Sensor 2 for the internal temperature can no longer be evaluated.
Remedy: Replace the power unit immediately.

A30920 (F)	**Power unit: Temperature sensor fault**
Message value:	%1
Message class:	Power electronics faulted (5)
Drive object:	A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Power Module **Propagation:** LOCAL
Reaction:	NONE
Acknowledge:	NONE
Cause:	When evaluating the temperature sensor, an error occurred. Alarm value (r2124, interpret decimal): 1: Wire breakage or sensor not connected. KTY: R > 1630 Ohm, PT100: R > 375 Ohm, PT1000: R > 1720 Ohm 2: Measured resistance too low. PTC: R < 20 Ohm, KTY: R < 50 Ohm, PT100: R < 30 Ohm, PT1000: R < 603 Ohm Note: A temperature sensor is connected to the following terminals: - "Booksize" format: X21.1/.2 or X22.1/.2 - "Chassis" format: X41.4/.3 Information on temperature sensors is provided in the following literature for example: SINAMICS S120 Function Manual Drive Functions
Remedy:	- make sure that the sensor is connected correctly. - replace the sensor.
Reaction upon F:	Infeed: NONE (OFF1, OFF2) Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2) Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F:	IMMEDIATELY

A30930 (N)	**Power unit: Component trace has saved data**
Message value:	-
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Drive object:	A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Power Module **Propagation:** GLOBAL
Reaction:	NONE
Acknowledge:	NONE
Cause:	Trace data was saved in the component.
Remedy:	Not necessary. Note: For p7792= 1, the trace data of the component can be written to the memory card. See also: p7792 (Upload component trace data)
Reaction upon N:	NONE
Acknowl. upon N:	NONE

F30950	**Power unit: Internal software error**
Message value:	%1
Message class:	Hardware/software error (1)
Drive object:	A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Power Module **Propagation:** LOCAL
Reaction:	OFF2
Acknowledge:	POWER ON
Cause:	An internal software error has occurred. Fault value (r0949, interpret decimal): Information about the fault source. Only for internal Siemens troubleshooting.
Remedy:	- if necessary, upgrade the firmware in the power unit to a later version. - contact Technical Support.

A30999 (F, N) Power unit: Unknown alarm

Message value: New message: %1
Message class: Power electronics faulted (5)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Power Module **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: An alarm occurred on the power unit that cannot be interpreted by the Control Unit firmware.
This can occur if the firmware on this component is more recent than the firmware on the Control Unit.
Alarm value (r2124, interpret decimal):
Alarm number.
Note:
If required, the significance of this new alarm can be read about in a more recent description of the Control Unit.
Remedy: - replace the firmware on the power unit by an older firmware version (r0128).
- upgrade the firmware on the Control Unit (r0018).
Reaction upon F: Infeed: NONE (OFF1, OFF2)
Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

F31100 (N, A) Encoder 1: Zero mark distance error

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 1 **Propagation:** LOCAL
Reaction: Infeed: NONE (OFF1, OFF2)
Servo: ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, STOP2)
Vector: ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, STOP2)
Hla: ENCODER (NONE, OFF1, OFF2, OFF3, STOP2)
Acknowledge: PULSE INHIBIT
Cause: The measured zero mark distance does not correspond to the parameterized zero mark distance.
For distance-coded encoders, the zero mark distance is determined from zero marks detected pairs. This means that if a zero mark is missing, depending on the pair generation, this cannot result in a fault and also has no effect in the system.
The zero mark distance for the zero mark monitoring is set in p0425 (rotary encoder) or p0424 (linear encoder).
Fault value (r0949, interpret decimal):
Last measured zero mark distance in increments (4 increments = 1 encoder pulse).
The sign designates the direction of motion when detecting the zero mark distance.
See also: p0491 (Motor encoder fault response ENCODER)
Remedy: - check that the encoder cables are routed in compliance with EMC.
- check the plug connections.
- check the encoder type (encoder with equidistant zero marks).
- adapt the parameter for the distance between zero marks (p0424, p0425).
- if message output above speed threshold, reduce filter time if necessary (p0438).
- replace the encoder or encoder cable.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31101 (N, A)	**Encoder 1: Zero mark failed**
Message value:	%1
Message class:	Actual position/speed value incorrect or not available (11)
Drive object:	A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Encoder 1 **Propagation:** LOCAL
Reaction:	Infeed: NONE (OFF1, OFF2) Servo: ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, STOP2) Vector: ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, STOP2) Hla: ENCODER (NONE, OFF1, OFF2, OFF3, STOP2)
Acknowledge:	PULSE INHIBIT
Cause:	The 1.5 x parameterized zero mark distance was exceeded. The zero mark distance for the zero mark monitoring is set in p0425 (rotary encoder) or p0424 (linear encoder). Fault value (r0949, interpret decimal): Number of increments after POWER ON or since the last zero mark that was detected (4 increments = 1 encoder pulse). See also: p0491 (Motor encoder fault response ENCODER)
Remedy:	- check that the encoder cables are routed in compliance with EMC. - check the plug connections. - check the encoder type (encoder with equidistant zero marks). - adapt the parameter for the clearance between zero marks (p0425). - if message output above speed threshold, reduce filter time if necessary (p0438). - when p0437.1 is active, check p4686. - replace the encoder or encoder cable.
Reaction upon N:	NONE
Acknowl. upon N:	NONE
Reaction upon A:	NONE
Acknowl. upon A:	NONE

F31103 (N, A)	**Encoder 1: Signal level zero mark (track R) outside tolerance**
Message value:	R track: %1
Message class:	Actual position/speed value incorrect or not available (11)
Drive object:	A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Encoder 1 **Propagation:** GLOBAL
Reaction:	Infeed: NONE Servo: ENCODER (IASC/DCBRK, NONE) Vector: ENCODER (IASC/DCBRK, NONE) Hla: ENCODER (NONE)
Acknowledge:	PULSE INHIBIT
Cause:	The zero mark signal level (track R) does not lie within the tolerance bandwidth for encoder 1. The fault can be initiated when the unipolar voltage level is exceeded (RP/RN) or if the differential amplitude is undershot. Fault value (r0949, interpret hexadecimal): yyyyxxxx hex: yyyy = 0, xxxx = Signal level, track R (16 bits with sign) The response thresholds of the unipolar signal levels of the encoder are between < 1400 mV and > 3500 mV. The response threshold for the differential signal level of the encoder is < -1600 mV. A signal level of 500 mV peak value corresponds to the numerical value 5333 hex = 21299 dec.

Note:

The analog value of the amplitude error is not measured at the same time with the hardware fault output by the Sensor Module.

The fault value can only be represented between -32768 ... 32767 dec (-770 ... 770 mV).

The signal level is not evaluated unless the following conditions are satisfied:

- Sensor Module properties available (r0459.31 = 1).
- monitoring active (p0437.31 = 1).

See also: p0491 (Motor encoder fault response ENCODER)

Remedy:

- check the speed range; frequency characteristic (amplitude characteristic) of the measuring equipment might not be sufficient for the speed range
- check that the encoder cables and shielding are routed in compliance with EMC.
- check the plug connections and contacts of the encoder cable.
- check the encoder type (encoder with zero marks).
- check whether the zero mark is connected and the signal cables RP and RN have been connected correctly (not connected with the incorrect polarity).
- replace the encoder cable.
- if the coding disk is soiled or the lighting aged, replace the encoder.

Reaction upon N: NONE

Acknowl. upon N: NONE

Reaction upon A: NONE

Acknowl. upon A: NONE

F31110 (N, A) Encoder 1: Serial communications error

Message value: Fault cause: %1 bin

Message class: Actual position/speed value incorrect or not available (11)

Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Encoder 1 **Propagation:** LOCAL

Reaction:

Infeed: NONE

Servo: ENCODER (IASC/DCBRK, NONE)

Vector: ENCODER (IASC/DCBRK, NONE)

Hla: ENCODER (NONE)

Acknowledge: PULSE INHIBIT

Cause:

There is an error in the transfer of the serial communication protocol between the encoder and internal or external evaluation module.

Fault value (r0949, interpret binary):

For an EnDat 2.1 encoder, the significance of the fault value is as follows:

Bit 0: Alarm bit in the position protocol.

Bit 1: Incorrect quiescent level on the data line.

Bit 2: Encoder does not respond (does not supply a start bit within 50 ms).

Bit 3: CRC error: The checksum in the protocol from the encoder does not match the data.

Bit 4: Encoder acknowledgment error: The encoder incorrectly understood the task (request) or cannot execute it.

Bit 5: Internal error in the serial driver: An illegal mode command was requested.

Bit 6: Timeout when cyclically reading.

Bit 7: Timeout for the register communication.

Bit 8: Protocol is too long (e.g. > 64 bits).

Bit 9: Receive buffer overflow.

Bit 10: Frame error when reading twice.

Bit 11: Parity error.

Bit 12: Data line signal level error during the monoflop time.

Bit 13: Data line incorrect.

Bit 14: Fault for the register communication.

Bit 15: Internal communication error.

Note:

For an EnDat 2.2 encoder, the significance of the fault value for F3x135 (x = 1, 2, 3) is described.

Remedy: For fault value, bit 0 = 1:
- Enc defect F31111 may provide additional details.
For fault value, bit 1 = 1:
- incorrect encoder type / replace the encoder or encoder cable.
For fault value, bit 2 = 1:
- incorrect encoder type / replace the encoder or encoder cable.
For fault value, bit 3 = 1:
- EMC / connect the cable shield, replace the encoder or encoder cable.
For fault value, bit 4 = 1:
- EMC / connect the cable shield, replace the encoder or encoder cable, replace the Sensor Module.
For fault value, bit 5 = 1:
- EMC / connect the cable shield, replace the encoder or encoder cable, replace the Sensor Module.
For fault value, bit 6 = 1:
- Update Sensor Module firmware.
For fault value, bit 7 = 1:
- incorrect encoder type / replace the encoder or encoder cable.
For fault value, bit 8 = 1:
- check parameterization (p0429.2).
For fault value, bit 9 = 1:
- EMC / connect the cable shield, replace the encoder or encoder cable, replace the Sensor Module.
For fault value, bit 10 = 1:
- check parameterization (p0429.2, p0449).
For fault value, bit 11 = 1:
- check parameterization (p0436).
For fault value, bit 12 = 1:
- check parameterization (p0429.6).
For fault value, bit 13 = 1:
- check data line.
For fault value, bit 14 = 1:
- incorrect encoder type / replace the encoder or encoder cable.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31111 (N, A) Encoder 1: Encoder signals an internal error (detailed information)

Message value: Fault cause: %1 bin, additional information: %2
Message class: Actual position/speed value incorrect or not available (11)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 1 **Propagation:** LOCAL
Reaction: Infeed: NONE
Servo: ENCODER (IASC/DCBRK, NONE)
Vector: ENCODER (IASC/DCBRK, NONE)
Hla: ENCODER (NONE)
Acknowledge: PULSE INHIBIT
Cause: The encoder error word provides detailed information (error bit).
For p0404.8 = 0, the following applies:
Fault value for internal Siemens troubleshooting.
For p0404.8 = 1, the following applies:
Fault value (r0949, interpret binary):
yyyyxxxx hex: yyyy = supplementary information, xxxx = fault cause
yyyy = 0:
Bit 0: Lighting system failed.
Bit 1: Signal amplitude too low.

Bit 2: Position value incorrect.
Bit 3: Encoder power supply overvoltage condition.
Bit 4: Encoder power supply undervoltage condition.
Bit 5: Encoder power supply overcurrent condition.
Bit 6: The battery must be changed.
See also: p0491 (Motor encoder fault response ENCODER)

Remedy: For yyyy = 0:
For fault value, bit 0 = 1:
Encoder is defective. Replace the encoder, where the motor encoder has a direct DRIVE-CLiQ socket: Replace the motor.
For fault value, bit 1 = 1:
Encoder is defective. Replace the encoder, where the motor encoder has a direct DRIVE-CLiQ socket: Replace the motor.
For fault value, bit 2 = 1:
Encoder is defective. Replace the encoder, where the motor encoder has a direct DRIVE-CLiQ socket: Replace the motor.
For fault value, bit 3 = 1:
5 V power supply voltage fault.
When using an SMC: Check the plug-in cable between the encoder and SMC or replace the SMC.
When a motor encoder with a direct DRIVE-CLiQ connection is used: Replace the motor.
For fault value, bit 4 = 1:
5 V power supply voltage fault.
When using an SMC: Check the plug-in cable between the encoder and SMC or replace the SMC.
When using a motor with DRIVE-CLiQ: Replace the motor.
For fault value, bit 5 = 1:
Encoder is defective. Replace the encoder, where the motor encoder has a direct DRIVE-CLiQ socket: Replace the motor.
For fault value, bit 6 = 1:
The battery must be changed (only for encoders with battery back-up).
For yyyy = 1:
Encoder is defective. Replace encoder.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31112 (N, A) Encoder 1: Encoder signals an internal error

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 1 **Propagation:** LOCAL
Reaction: Infeed: NONE
Servo: ENCODER (IASC/DCBRK, NONE)
Vector: ENCODER (IASC/DCBRK, NONE)
Hla: ENCODER (NONE)
Acknowledge: PULSE INHIBIT
Cause: The encoder signals an internal error via serial protocol.
Fault value (r0949, interpret binary):
Bit 0: Fault bit in the position protocol.
Remedy: For fault value, bit 0 = 1:
In the case of an EnDat encoder, F31111 may provide further details.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31115 (N, A)	**Encoder 1: Signal level track A or B too low**
Message value:	A track: %1, B-track: %2
Message class:	Actual position/speed value incorrect or not available (11)
Drive object:	A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Encoder 1 **Propagation:** LOCAL
Reaction:	Infeed: NONE Servo: ENCODER (IASC/DCBRK, NONE) Vector: ENCODER (IASC/DCBRK, NONE) Hla: ENCODER (NONE)
Acknowledge:	PULSE INHIBIT
Cause:	The signal level (root from A^2 + B^2) of the encoder falls below the permissible limit value. Fault value (r0949, interpret hexadecimal): yyyyxxxx hex: yyyy = Signal level, track B (16 bits with sign). xxxx = Signal level, track A (16 bits with sign). The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV -25/+20 %). The response threshold is < 170 mV (input frequency <= 256 kHz) or < 120 mV (input frequency > 256 kHz). A signal level of 500 mV peak value corresponds to the numerical value 5333 hex = 21299 dec. Note for Sensor Modules for resolvers (e.g. SMC10): The nominal signal level is at 2900 mV (2.0 Vrms). The response threshold is < 1070 mV. A signal level of 2900 mV peak value corresponds to the numerical value 6666 hex = 26214 dec. Note: The analog values of the amplitude error are not measured at the same time with the hardware fault output by the Sensor Module. See also: p0491 (Motor encoder fault response ENCODER)
Remedy:	- check that the encoder cables and shielding are routed in compliance with EMC. - check the plug connections. - replace the encoder or encoder cable. - check the Sensor Module (e.g. contacts). The following applies to measuring systems without their own bearing system: - adjust the scanning head and check the bearing system of the measuring wheel. The following applies for measuring systems with their own bearing system: - ensure that the encoder housing is not subject to any axial force.
Reaction upon N:	NONE
Acknowl. upon N:	NONE
Reaction upon A:	NONE
Acknowl. upon A:	NONE

F31116 (N, A) Encoder 1: Signal level track A or B too low

Message value: A track: %1, B-track: %2
Message class: Actual position/speed value incorrect or not available (11)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 1 **Propagation:** LOCAL
Reaction: Infeed: NONE
Servo: ENCODER (IASC/DCBRK, NONE)
Vector: ENCODER (IASC/DCBRK, NONE)
Hla: ENCODER (NONE)
Acknowledge: IMMEDIATELY
Cause: The signal level of the rectified encoder signals A and B of the encoder fall below the permissible limit value.
Fault value (r0949, interpret hexadecimal):
yyyyxxxx hex:
yyyy = Signal level, track B (16 bits with sign).
xxxx = Signal level, track A (16 bits with sign).
The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV -25/+20 %).
The response threshold is < 130 mV.
A signal level of 500 mV peak value corresponds to the numerical value 5333 hex = 21299 dec.
Note:
The analog values of the amplitude error are not measured at the same time with the hardware fault output by the Sensor Module.
See also: p0491 (Motor encoder fault response ENCODER)
Remedy: - check that the encoder cables and shielding are routed in compliance with EMC.
- check the plug connections.
- replace the encoder or encoder cable.
- check the Sensor Module (e.g. contacts).
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31117 (N, A) Encoder 1: Inversion error signals A/B/R

Message value: Fault cause: %1 bin
Message class: Actual position/speed value incorrect or not available (11)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 1 **Propagation:** LOCAL
Reaction: Infeed: NONE
Servo: ENCODER (IASC/DCBRK, NONE)
Vector: ENCODER (IASC/DCBRK, NONE)
Hla: ENCODER (NONE)
Acknowledge: IMMEDIATELY
Cause: For a square-wave encoder (bipolar, double ended) signals A*, B* and R* are not inverted with respect to signals A, B and R.
Fault value (r0949, interpret binary):
Bits 0 ... 15: Only for internal Siemens troubleshooting.
Bit 16: Error track A.
Bit 17: Error track B.
Bit 18: Error track R.
Note:
For SMC30 (only Article No. 6SL3055-0AA00-5CA0 and 6SL3055-0AA00-5CA1), CUA32, and CU310, the following applies:
A square-wave encoder without track R is used and track monitoring (p0405.2 = 1) is activated.
See also: p0491 (Motor encoder fault response ENCODER)

Remedy: - check the encoder/cable.

- Does the encoder supply signals and the associated inverted signals?

Note:

For SMC30 (only Article Number 6SL3055-0AA00-5CA0 and 6SL3055-0AA00-5CA1), the following applies:

- check the setting of p0405 (p0405.2 = 1 is only possible if the encoder is connected at X520).

For a square-wave encoder without track R, the following jumpers must be set for the connection at X520 (SMC30) or X23 (CUA32, CU310):

- pin 10 (reference signal R) <--> pin 7 (encoder power supply, ground)
- pin 11 (reference signal R inverted) <--> pin 4 (encoder power supply)

Reaction upon N: NONE

Acknowl. upon N: NONE

Reaction upon A: NONE

Acknowl. upon A: NONE

F31118 (N, A) Encoder 1: Speed change not plausible

Message value: %1

Message class: Actual position/speed value incorrect or not available (11)

Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Encoder 1 **Propagation:** LOCAL

Reaction: Infeed: NONE

Servo: ENCODER (IASC/DCBRK, NONE)

Vector: ENCODER (IASC/DCBRK, NONE)

Hla: ENCODER (NONE)

Acknowledge: PULSE INHIBIT

Cause: For an HTL/TTL encoder, the speed change has exceeded the value in p0492 over several sampling cycles.

The change to the averaged speed actual value - if applicable - is monitored in the current controller sampling time.

Encoder 1 is used as motor encoder and can be effective has fault response to change over to encoderless operation.

Fault value (r0949, interpret decimal):

Only for internal Siemens troubleshooting.

See also: p0491, p0492

Remedy: - check the tachometer feeder cable for interruptions.

- check the grounding of the tachometer shielding.
- if required, increase the maximum speed difference per sampling cycle (p0492).

Reaction upon N: NONE

Acknowl. upon N: NONE

Reaction upon A: NONE

Acknowl. upon A: NONE

F31120 (N, A)	**Encoder 1: Encoder power supply fault**
Message value:	Fault cause: %1 bin
Message class:	Actual position/speed value incorrect or not available (11)
Drive object:	A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Encoder 1 **Propagation:** LOCAL
Reaction:	Infeed: NONE Servo: ENCODER (IASC/DCBRK, NONE) Vector: ENCODER (IASC/DCBRK, NONE) Hla: ENCODER (NONE)
Acknowledge:	PULSE INHIBIT
Cause:	An encoder power supply fault was detected. Fault value (r0949, interpret binary): Bit 0: Undervoltage condition on the sense line. Bit 1: Overcurrent condition for the encoder power supply. Bit 2: Overcurrent condition for encoder power supply on cable resolver excitation negative. Bit 3: Overcurrent condition for encoder power supply on cable resolver excitation positive. Bit 4: The 24 V power supply through the Power Module (PM) is overloaded. Bit 5: Overcurrent at the EnDat connection of the converter. Bit 6: Overvoltage at the EnDat connection of the converter. Bit 7: Hardware fault at the EnDat connection of the converter. Note: If the encoder cables 6FX2002-2EQ00-.... and 6FX2002-2CH00-.... are interchanged, this can result in the encoder being destroyed because the pins of the operating voltage are reversed. See also: p0491 (Motor encoder fault response ENCODER)
Remedy:	For fault value, bit 0 = 1: - correct encoder cable connected? - check the plug connections of the encoder cable. - SMC30: Check the parameterization (p0404.22). For fault value, bit 1 = 1: - correct encoder cable connected? - replace the encoder or encoder cable. For fault value, bit 2 = 1: - correct encoder cable connected? - replace the encoder or encoder cable. For fault value, bit 3 = 1: - correct encoder cable connected? - replace the encoder or encoder cable. For fault value, bit 5 = 1: - Measuring unit correctly connected at the converter? - Replace the measuring unit or the cable to the measuring unit. For fault value, bit 6, 7 = 1: - Replace the defective EnDat 2.2 converter.
Reaction upon N:	NONE
Acknowl. upon N:	NONE
Reaction upon A:	NONE
Acknowl. upon A:	NONE

F31121 (N, A) Encoder 1: Determined commutation position incorrect

Message value: -
Message class: Actual position/speed value incorrect or not available (11)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 1 **Propagation:** LOCAL
Reaction: Infeed: NONE
Servo: ENCODER (NONE)
Vector: ENCODER (NONE)
Hla: ENCODER (NONE)
Acknowledge: PULSE INHIBIT
Cause: A commutation position actual value sensing error was detected.
See also: p0491 (Motor encoder fault response ENCODER)
Remedy: Replace the motor with DRIVE-CLiQ or the appropriate Sensor Module.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31122 Encoder 1: Sensor Module hardware fault

Message value: %1
Message class: Supply voltage fault (undervoltage) (3)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 1 **Propagation:** GLOBAL
Reaction: Infeed: NONE
Servo: ENCODER
Vector: ENCODER
Hla: ENCODER
Acknowledge: IMMEDIATELY
Cause: An internal Sensor Module hardware fault was detected.
Fault value (r0949, interpret decimal):
1: Reference voltage error.
2: Internal undervoltage.
3: Internal overvoltage.
Remedy: Replace the motor with DRIVE-CLiQ or the appropriate Sensor Module.

F31123 (N, A) Encoder 1: Signal level A/B outside tolerance

Message value: Fault cause: %1 bin
Message class: Actual position/speed value incorrect or not available (11)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 1 **Propagation:** LOCAL
Reaction: Infeed: NONE
Servo: ENCODER (IASC/DCBRK, NONE)
Vector: ENCODER (IASC/DCBRK, NONE)
Hla: ENCODER (NONE)
Acknowledge: PULSE INHIBIT
Cause: The unipolar level (AP/AN or BP/BN) for encoder 1 is outside the permissible tolerance.
Fault value (r0949, interpret binary):
Bit 0 = 1: Either AP or AN outside the tolerance.
Bit 16 = 1: Either BP or BN outside the tolerance.
The unipolar nominal signal level of the encoder must lie in the range 2500 mV +/- 500 mV.
The response thresholds are < 1700 mV and > 3300 mV.

	Note:
	The signal level is not evaluated unless the following conditions are satisfied:
	- Sensor Module properties available (r0459.31 = 1).
	- monitoring active (p0437.31 = 1).
	See also: p0491 (Motor encoder fault response ENCODER)
Remedy:	- make sure that the encoder cables and shielding are installed in an EMC-compliant manner.
	- check the plug connections and contacts of the encoder cable.
	- check the short-circuit of a signal cable with mass or the operating voltage.
	- replace the encoder cable.
Reaction upon N:	NONE
Acknowl. upon N:	NONE
Reaction upon A:	NONE
Acknowl. upon A:	NONE

F31125 (N, A) Encoder 1: Signal level track A or B too high

Message value:	A track: %1, B-track: %2
Message class:	Actual position/speed value incorrect or not available (11)
Drive object:	A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Encoder 1 **Propagation:** LOCAL
Reaction:	Infeed: NONE
	Servo: ENCODER (IASC/DCBRK, NONE)
	Vector: ENCODER (IASC/DCBRK, NONE)
	Hla: ENCODER (NONE)
Acknowledge:	PULSE INHIBIT
Cause:	The signal level (root from A^2 + B^2) of the encoder exceeds the permissible limit value.
	Fault value (r0949, interpret hexadecimal):
	yyyyxxxx hex:
	yyyy = Signal level, track B (16 bits with sign).
	xxxx = Signal level, track A (16 bits with sign).
	The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV -25/+20 %).
	The response threshold is > 750 mV.
	A signal level of 500 mV peak value corresponds to the numerical value 5333 hex = 21299 dec.
	Note for Sensor Modules for resolvers (e.g. SMC10):
	The nominal signal level is at 2900 mV (2.0 Vrms).
	The response threshold is > 3582 mV.
	A signal level of 2900 mV peak value corresponds to the numerical value 6666 hex = 26214 dec.
	Note:
	The analog values of the amplitude error are not measured at the same time with the hardware fault output by the Sensor Module.
	See also: p0491 (Motor encoder fault response ENCODER)
Remedy:	- check that the encoder cables and shielding are routed in compliance with EMC.
	- replace the encoder or encoder cable.
Reaction upon N:	NONE
Acknowl. upon N:	NONE
Reaction upon A:	NONE
Acknowl. upon A:	NONE

F31126 (N, A) Encoder 1: Signal level track A or B too high

Message value: Amplitude: %1, Angle: %2

Message class: Actual position/speed value incorrect or not available (11)

Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Encoder 1 **Propagation:** LOCAL

Reaction: Infeed: NONE

Servo: ENCODER (IASC/DCBRK, NONE)

Vector: ENCODER (IASC/DCBRK, NONE)

Hla: ENCODER (NONE)

Acknowledge: PULSE INHIBIT

Cause: The signal level (|A| + |B|) of the encoder exceeds the permissible limit value.

Fault value (r0949, interpret hexadecimal):

yyyyxxxx hex:

yyyy = Angle

xxxx = amplitude, i.e. root of A^2 + B^2 (16 bits without sign)

The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV -25/+20 %).

The response threshold for (|A| + |B|) is > 1120 mV or the root of (A^2 + B^2) > 955 mV.

A signal level of 500 mV peak value corresponds to the numerical value of 299A hex = 10650 dec.

The angle 0 ... FFFF hex corresponds to 0 ... 360 degrees of the fine position. Zero degrees is present at the negative zero crossover of track B.

Note:

The analog values of the amplitude error are not measured at the same time with the hardware fault output by the Sensor Module.

See also: p0491 (Motor encoder fault response ENCODER)

Remedy: - check that the encoder cables and shielding are routed in compliance with EMC.

- replace the encoder or encoder cable.

Reaction upon N: NONE

Acknowl. upon N: NONE

Reaction upon A: NONE

Acknowl. upon A: NONE

F31129 (N, A) Encoder 1: Position difference hall sensor/track C/D and A/B too large

Message value: %1

Message class: Actual position/speed value incorrect or not available (11)

Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Encoder 1 **Propagation:** LOCAL

Reaction: Infeed: NONE

Servo: ENCODER (IASC/DCBRK, NONE)

Vector: ENCODER (IASC/DCBRK, NONE)

Hla: ENCODER (NONE)

Acknowledge: PULSE INHIBIT

Cause: The error for track C/D is greater than +/-15 ° mechanical or +/-60 ° electrical or the error for the Hall signals is greater than +/-60 ° electrical.

One period of track C/D corresponds to 360 ° mechanical.

One period of the Hall signal corresponds to 360 ° electrical.

The monitoring responds if, for example, Hall sensors are connected as equivalent for the C/D tracks with the incorrect rotational sense or supply values that are not accurate enough.

After the fine synchronization using one reference mark or 2 reference marks for distance-coded encoders, this fault is no longer initiated, but instead, Alarm A31429.

	Fault value (r0949, interpret decimal):
	For track C/D, the following applies:
	Measured deviation as mechanical angle (16 bits with sign, 182 dec corresponds to 1 °).
	For Hall signals, the following applies:
	Measured deviation as electrical angle (16 bits with sign, 182 dec corresponds to 1 °).
	See also: p0491 (Motor encoder fault response ENCODER)
Remedy:	- track C or D not connected. - correct the direction of rotation of the Hall sensor possibly connected as equivalent for track C/D. - check that the encoder cables are routed in compliance with EMC. - check the adjustment of the Hall sensor.
Reaction upon N:	NONE
Acknowl. upon N:	NONE
Reaction upon A:	NONE
Acknowl. upon A:	NONE

F31130 (N, A) Encoder 1: Zero mark and position error from the coarse synchronization

Message value:	Angular deviation, electrical: %1, angle, mechanical: %2
Message class:	Actual position/speed value incorrect or not available (11)
Drive object:	A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Encoder 1 **Propagation:** LOCAL
Reaction:	Infeed: NONE Servo: ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, STOP2) Vector: ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, STOP2) Hla: ENCODER (NONE, OFF1, OFF2, OFF3, STOP2)
Acknowledge:	PULSE INHIBIT
Cause:	After initializing the pole position using track C/D, Hall signals or pole position identification routine, the zero mark was detected outside the permissible range. For distance-coded encoders, the test is carried out after passing 2 zero marks. Fine synchronization was not carried out. When initializing via track C/D (p0404) then it is checked whether the zero mark occurs in an angular range of +/-18 ° mechanical. When initializing via Hall sensors (p0404) or pole position identification (p1982) it is checked whether the zero mark occurs in an angular range of +/-60 ° electrical. Fault value (r0949, interpret hexadecimal): yyyyxxxx hex yyyy: Determined mechanical zero mark position (can only be used for track C/D). xxxx: Deviation of the zero mark from the expected position as electrical angle. Scaling: 32768 dec = 180 ° See also: p0491 (Motor encoder fault response ENCODER)
Remedy:	- check p0431 and, if necessary, correct (trigger via p1990 = 1 if necessary). - check that the encoder cables are routed in compliance with EMC. - check the plug connections. - if the Hall sensor is used as an equivalent for track C/D, check the connection. - check the connection of track C or D. - replace the encoder or encoder cable.
Reaction upon N:	NONE
Acknowl. upon N:	NONE
Reaction upon A:	NONE
Acknowl. upon A:	NONE

F31131 (N, A) Encoder 1: Position deviation incremental/absolute too high

Message value: %1

Message class: Actual position/speed value incorrect or not available (11)

Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Encoder 1 **Propagation:** LOCAL

Reaction: Infeed: NONE

Servo: ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, STOP2)

Vector: ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, STOP2)

Hla: ENCODER (NONE, OFF1, OFF2, OFF3, STOP2)

Acknowledge: PULSE INHIBIT

Cause: Absolute encoder:

When cyclically reading the absolute position, an excessively high difference to the incremental position was detected. The absolute position that was read is rejected.

Limit value for the deviation:

- EnDat encoder: Is supplied from the encoder and is a minimum of 2 quadrants (e.g. EQI 1325 > 2 quadrants, EQN 1325 > 50 quadrants).

- other encoders: 15 pulses = 60 quadrants.

Incremental encoder:

When the zero pulse is passed, a deviation in the incremental position was detected.

For equidistant zero marks, the following applies:

- the first zero mark passed supplies the reference point for all subsequent checks. The other zero marks must have n times the distance referred to the first zero mark.

For distance-coded zero marks, the following applies:

- the first zero mark pair supplies the reference point for all subsequent checks. The other zero mark pairs must have the expected distance to the first zero mark pair.

Fault value (r0949, interpret decimal):

Deviation in quadrants (1 pulse = 4 quadrants).

See also: p0491 (Motor encoder fault response ENCODER)

Remedy:

- check that the encoder cables are routed in compliance with EMC.
- check the plug connections.
- replace the encoder or encoder cable.
- check whether the coding disk is dirty or there are strong ambient magnetic fields.
- adapt the parameter for the clearance between zero marks (p0425).
- if message output above speed threshold, reduce filter time if necessary (p0438).

Reaction upon N: NONE

Acknowl. upon N: NONE

Reaction upon A: NONE

Acknowl. upon A: NONE

F31135	**Encoder 1: Fault when determining the position (single turn)**
Message value:	Fault cause: %1 bin
Message class:	Actual position/speed value incorrect or not available (11)
Drive object:	A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Encoder 1 **Propagation:** GLOBAL
Reaction:	Infeed: NONE Servo: ENCODER (IASC/DCBRK, NONE) Vector: ENCODER (IASC/DCBRK, NONE) Hla: ENCODER (NONE)
Acknowledge:	PULSE INHIBIT
Cause:	The encoder has identified a position determination fault (singleturn) and supplies status information bit by bit in an internal status/fault word. Some of these bits cause this fault to be triggered. Other bits are status displays. The status/fault word is displayed in the fault value. Note regarding the bit designation: The first designation is valid for DRIVE-CLiQ encoders, the second for EnDat 2.2 encoders. Fault value (r0949, interpret binary): Bit 0: F1 (safety status display). Bit 1: F2 (safety status display). Bit 2: Reserved (lighting). Bit 3: Reserved (signal amplitude). Bit 4: Reserved (position value). Bit 5: Reserved (overvoltage). Bit 6: Reserved (undervoltage)/hardware fault EnDat supply (--> F3x110, x = 1, 2, 3). Bit 7: Reserved (overcurrent)/EnDat encoder withdrawn when not in the parked state (--> F3x110, x = 1, 2, 3). Bit 8: Reserved (battery)/overcurrent EnDat supply (--> F3x110, x = 1, 2, 3). Bit 9: Reserved/overvoltage EnDat supply (--> F3x110, x = 1, 2, 3). Bit 11: Reserved/internal communication error (--> F3x110, x = 1, 2, 3). Bit 12: Reserved/internal communication error (--> F3x110, x = 1, 2, 3). Bit 13: Reserved/internal communication error (--> F3x110, x = 1, 2, 3). Bit 14: Reserved/internal communication error (--> F3x110, x = 1, 2, 3). Bit 15: Internal communication error (--> F3x110, x = 1, 2, 3). Bit 16: Lighting (--> F3x135, x = 1, 2, 3). Bit 17: Signal amplitude (--> F3x135, x = 1, 2, 3). Bit 18: Singleturn position 1 (--> F3x135, x = 1, 2, 3). Bit 19: Overvoltage (--> F3x135, x = 1, 2, 3). Bit 20: Undervoltage (--> F3x135, x = 1, 2, 3). Bit 21: Overcurrent (--> F3x135, x = 1, 2, 3). Bit 22: Temperature exceeded (--> F3x405, x = 1, 2, 3). Bit 23: Singleturn position 2 (safety status display). Bit 24: Singleturn system (--> F3x135, x = 1, 2, 3). Bit 25: Singleturn power down (--> F3x135, x = 1, 2, 3) Bit 26: Multiturn position 1 (--> F3x136, x = 1, 2, 3). Bit 27: Multiturn position 2 (--> F3x136, x = 1, 2, 3). Bit 28: Multiturn system (--> F3x136, x = 1, 2, 3). Bit 29: Multiturn power down (--> F3x136, x = 1, 2, 3). Bit 30: Multiturn overflow/underflow (--> F3x136, x = 1, 2, 3). Bit 31: Multiturn battery (reserved).
Remedy:	- determine the detailed cause of the fault using the fault value. - replace the encoder if necessary. Note: An EnDat 2.2 encoder may only be removed and inserted in the "Park" state. If an EnDat 2.2 encoder was removed when not in the "Park" state, then after inserting the encoder, a POWER ON (switch-off/switch-on) is necessary to acknowledge the fault.

F31136	**Encoder 1: Fault when determining the position (multiturn)**
Message value:	Fault cause: %1 bin
Message class:	Actual position/speed value incorrect or not available (11)
Drive object:	A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Encoder 1 **Propagation:** GLOBAL
Reaction:	Infeed: NONE Servo: ENCODER (IASC/DCBRK, NONE) Vector: ENCODER (IASC/DCBRK, NONE) Hla: ENCODER (NONE)
Acknowledge:	PULSE INHIBIT

Cause:

The encoder has identified a position determination fault (multiturn) and supplies status information bit by bit in an internal status/fault word.

Some of these bits cause this fault to be triggered. Other bits are status displays. The status/fault word is displayed in the fault value.

Note regarding the bit designation:

The first designation is valid for DRIVE-CLiQ encoders, the second for EnDat 2.2 encoders.

Fault value (r0949, interpret binary):

Bit 0: F1 (safety status display).

Bit 1: F2 (safety status display).

Bit 2: Reserved (lighting).

Bit 3: Reserved (signal amplitude).

Bit 4: Reserved (position value).

Bit 5: Reserved (overvoltage).

Bit 6: Reserved (undervoltage)/hardware fault EnDat supply (--> F3x110, x = 1, 2, 3).

Bit 7: Reserved (overcurrent)/EnDat encoder withdrawn when not in the parked state (--> F3x110, x = 1, 2, 3).

Bit 8: Reserved (battery)/overcurrent EnDat supply (--> F3x110, x = 1, 2, 3).

Bit 9: Reserved/overvoltage EnDat supply (--> F3x110, x = 1, 2, 3).

Bit 11: Reserved/internal communication error (--> F3x110, x = 1, 2, 3).

Bit 12: Reserved/internal communication error (--> F3x110, x = 1, 2, 3).

Bit 13: Reserved/internal communication error (--> F3x110, x = 1, 2, 3).

Bit 14: Reserved/internal communication error (--> F3x110, x = 1, 2, 3).

Bit 15: Internal communication error (--> F3x110, x = 1, 2, 3).

Bit 16: Lighting (--> F3x135, x = 1, 2, 3).

Bit 17: Signal amplitude (--> F3x135, x = 1, 2, 3).

Bit 18: Singleturn position 1 (--> F3x135, x = 1, 2, 3).

Bit 19: Overvoltage (--> F3x135, x = 1, 2, 3).

Bit 20: Undervoltage (--> F3x135, x = 1, 2, 3).

Bit 21: Overcurrent (--> F3x135, x = 1, 2, 3).

Bit 22: Temperature exceeded (--> F3x405, x = 1, 2, 3).

Bit 23: Singleturn position 2 (safety status display).

Bit 24: Singleturn system (--> F3x135, x = 1, 2, 3).

Bit 25: Singleturn power down (--> F3x135, x = 1, 2, 3)

Bit 26: Multiturn position 1 (--> F3x136, x = 1, 2, 3).

Bit 27: Multiturn position 2 (--> F3x136, x = 1, 2, 3).

Bit 28: Multiturn system (--> F3x136, x = 1, 2, 3).

Bit 29: Multiturn power down (--> F3x136, x = 1, 2, 3).

Bit 30: Multiturn overflow/underflow (--> F3x136, x = 1, 2, 3).

Bit 31: Multiturn battery (reserved).

Remedy:

- determine the detailed cause of the fault using the fault value.
- replace the encoder if necessary.

Note:

An EnDat 2.2 encoder may only be removed and inserted in the "Park" state.

If an EnDat 2.2 encoder was removed when not in the "Park" state, then after inserting the encoder, a POWER ON (switch-off/switch-on) is necessary to acknowledge the fault.

F31137	**Encoder 1: Fault when determining the position (single turn)**
Message value:	Fault cause: %1 bin
Message class:	Hardware/software error (1)
Drive object:	A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Encoder 1 **Propagation:** GLOBAL
Reaction:	Infeed: NONE Servo: ENCODER (IASC/DCBRK, NONE) Vector: ENCODER (IASC/DCBRK, NONE) Hla: ENCODER (NONE)
Acknowledge:	PULSE INHIBIT

Cause:

A position determination fault has occurred in the DRIVE-CLiQ encoder.

Fault value (r0949, interpret binary):

yyxxxxxx hex: yy = encoder version, xxxxxx = bit coding of the fault cause

----

For yy = 8 (0000 1000 bin), the following applies:

Bit 1: Signal monitoring (sin/cos).

Bit 8: F1 (safety status display) error position word 1.

Bit 9: F2 (safety status display) error position word 2.

Bit 16: LED monitoring.

Bit 17: Fault when determining the position (multiturn).

Bit 23: Temperature outside the limit values.

For yy = 11 (0000 1011 bin), the following applies:

Bit 0: Position word 1 difference between rotation counter and software counter (XC_ERR).

Bit 1: Position word 1 track error of the incremental signals (LIS_ERR).

Bit 2: Position word 1 error when aligning between incremental track signals and absolute value (ST_ERR).

Bit 3: Maximum permissible temperature exceeded (TEMP_ERR).

Bit 4: Power supply overvoltage (MON_OVR_VOLT).

Bit 5: Power supply overcurrent (MON_OVR_CUR).

Bit 6: Power supply undervoltage (MON_UND_VOLT).

Bit 7: Rotation error counter (MT_ERR).

Bit 8: F1 (safety status display) error position word 1.

Bit 9: F2 (safety status display) error position word 2.

Bit 11: Position word 1 status bit: singleturn position OK (ADC_ready).

Bit 12: Position word 1 status bit: rotation counter OK (MT_ready).

Bit 13: Position word 1 memory error (MEM_ERR).

Bit 14: Position word 1 absolute position error (MLS_ERR).

Bit 15: position word 1 LED error, lighting unit error (LED_ERR).

Bit 18: Position word 2 error when aligning between incremental track signals and absolute value (ST_ERR).

Bit 21: Position word 2 memory error (MEM_ERR).

Bit 22: Position word 2 absolute position error (MLS_ERR).

Bit 23: position word 2 LED error, lighting unit error (LED_ERR).

For yy = 12 (0000 1100 bin), the following applies:

Bit 8: encoder fault.

Bit 10: error in the internal position data transport.

For yy = 14 (0000 1110 bin), the following applies:

Bit 0: Position word 1 temperature outside limit value.

Bit 1: Position word 1 position determination error (multiturn).

Bit 2: Position word 1 FPGA error.

Bit 3: Position word 1 velocity error.

Bit 4: Position word 1 communication error between FPGAs/error in the incremental signal.

Bit 5: Position word 1 timeout absolute value/error when determining the position (singleturn).

Bit 6: Position word 1 internal hardware fault (clock/power monitor IC/power).
Bit 7: Position word 1 internal error (FPGA communication/FPGA parameterization/self-test/software).
Bit 8: F1 (safety status display) error position word 1.
Bit 9: F2 (safety status display) error position word 2.
Bit 16: Position word 2 temperature outside limit value.
Bit 17: Position word 2 position determination error (multiturn).
Bit 18: Position word 2 FPGA error.
Bit 19: Position word 2 velocity error.
Bit 20: Position word 2 communication error between FPGAs.
Bit 21: Position word 2 position determination error (singleturn).
Bit 22: Position word 2 internal hardware fault (clock/power monitor IC/power).
Bit 23: Position word 2 internal error (self-test/software).

Note:
For an encoder version that is not described here, please contact the encoder manufacturer for more detailed information on the bit coding.

Remedy: - determine the detailed cause of the fault using the fault value.
- if required, replace the DRIVE-CLiQ encoder.

F31138 Encoder 1: Fault when determining the position (multiturn)

Message value: Fault cause: %1 bin
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 1 **Propagation:** GLOBAL
Reaction: Infeed: NONE
Servo: ENCODER (IASC/DCBRK, NONE)
Vector: ENCODER (IASC/DCBRK, NONE)
Hla: ENCODER (NONE)
Acknowledge: PULSE INHIBIT
Cause: A position determination fault has occurred in the DRIVE-CLiQ encoder.
Fault value (r0949, interpret binary):
yyxxxxxx hex: yy = encoder version, xxxxxx = bit coding of the fault cause
----
For yy = 8 (0000 1000 bin), the following applies:
Bit 1: Signal monitoring (sin/cos).
Bit 8: F1 (safety status display) error position word 1.
Bit 9: F2 (safety status display) error position word 2.
Bit 16: LED monitoring.
Bit 17: Fault when determining the position (multiturn).
Bit 23: Temperature outside the limit values.

For yy = 11 (0000 1011 bin), the following applies:
Bit 0: Position word 1 difference between rotation counter and software counter (XC_ERR).
Bit 1: Position word 1 track error of the incremental signals (LIS_ERR).
Bit 2: Position word 1 error when aligning between incremental track signals and absolute value (ST_ERR).
Bit 3: Maximum permissible temperature exceeded (TEMP_ERR).
Bit 4: Power supply overvoltage (MON_OVR_VOLT).
Bit 5: Power supply overcurrent (MON_OVR_CUR).
Bit 6: Power supply undervoltage (MON_UND_VOLT).
Bit 7: Rotation error counter (MT_ERR).
Bit 8: F1 (safety status display) error position word 1.
Bit 9: F2 (safety status display) error position word 2.
Bit 11: Position word 1 status bit: singleturn position OK (ADC_ready).
Bit 12: Position word 1 status bit: rotation counter OK (MT_ready).

Bit 13: Position word 1 memory error (MEM_ERR).
Bit 14: Position word 1 absolute position error (MLS_ERR).
Bit 15: position word 1 LED error, lighting unit error (LED_ERR).
Bit 18: Position word 2 error when aligning between incremental track signals and absolute value (ST_ERR).
Bit 21: Position word 2 memory error (MEM_ERR).
Bit 22: Position word 2 absolute position error (MLS_ERR).
Bit 23: position word 2 LED error, lighting unit error (LED_ERR).

For yy = 14 (0000 1110 bin), the following applies:
Bit 0: Position word 1 temperature outside limit value.
Bit 1: Position word 1 position determination error (multiturn).
Bit 2: Position word 1 FPGA error.
Bit 3: Position word 1 velocity error.
Bit 4: Position word 1 communication error between FPGAs/error in the incremental signal.
Bit 5: Position word 1 timeout absolute value/error when determining the position (singleturn).
Bit 6: Position word 1 internal hardware fault (clock/power monitor IC/power).
Bit 7: Position word 1 internal error (FPGA communication/FPGA parameterization/self-test/software).
Bit 8: F1 (safety status display) error position word 1.
Bit 9: F2 (safety status display) error position word 2.
Bit 16: Position word 2 temperature outside limit value.
Bit 17: Position word 2 position determination error (multiturn).
Bit 18: Position word 2 FPGA error.
Bit 19: Position word 2 velocity error.
Bit 20: Position word 2 communication error between FPGAs.
Bit 21: Position word 2 position determination error (singleturn).
Bit 22: Position word 2 internal hardware fault (clock/power monitor IC/power).
Bit 23: Position word 2 internal error (self-test/software).

Note:
For an encoder version that is not described here, please contact the encoder manufacturer for more detailed information on the bit coding.

Remedy: - determine the detailed cause of the fault using the fault value.
- if required, replace the DRIVE-CLiQ encoder.

F31142 (N, A) Encoder 1: Battery voltage fault

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 1 **Propagation:** LOCAL
Reaction: Infeed: ENCODER (NONE, OFF1, OFF2)
Servo: ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, STOP2)
Vector: ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, STOP2)
Hla: ENCODER (NONE, OFF1, OFF2, OFF3, STOP2)
Acknowledge: IMMEDIATELY
Cause: When switched-off, the encoder uses a battery to back up the multiturn information. The battery voltage is no longer sufficient to check the multiturn information.
Remedy: Replace battery.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31150 (N, A) Encoder 1: Initialization error

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 1 **Propagation:** LOCAL
Reaction: Infeed: NONE
Servo: ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, STOP2)
Vector: ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, STOP2)
Hla: ENCODER (NONE, OFF1, OFF2, OFF3, STOP2)
Acknowledge: PULSE INHIBIT
Cause: Encoder functionality selected in p0404 cannot be executed.
Fault value (r0949, interpret hexadecimal):
Encoder malfunction.
The bit assignment corresponds to that of p0404 (e.g. bit 5 set: Error track C/D).
See also: p0404 (Encoder configuration effective), p0491 (Motor encoder fault response ENCODER)
Remedy: - check that p0404 is correctly set.
- check the encoder type used (incremental/absolute) and for SMCxx, the encoder cable.
- if relevant, note additional fault messages that describe the fault in detail.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31151 (N, A) Encoder 1: Encoder speed for initialization AB too high

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 1 **Propagation:** LOCAL
Reaction: Infeed: NONE
Servo: ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, STOP2)
Vector: ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, STOP2)
Hla: ENCODER (NONE, OFF1, OFF2, OFF3, STOP2)
Acknowledge: PULSE INHIBIT
Cause: The encoder speed is too high while initializing the Sensor Module.
Remedy: Reduce the speed of the encoder accordingly during initialization.
If necessary, deactivate monitoring (p0437.29).
See also: p0437 (Sensor Module configuration extended)
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31152 (N, A) Encoder 1: Max. signal frequency (track A/B) exceeded

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 1 **Propagation:** LOCAL
Reaction: Infeed: ENCODER (NONE, OFF1, OFF2)
Servo: ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, STOP2)
Vector: ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, STOP2)
Hla: ENCODER (NONE, OFF1, OFF2, OFF3, STOP2)
Acknowledge: PULSE INHIBIT
Cause: The maximum signal frequency of the encoder evaluation has been exceeded.
Fault value (r0949, interpret decimal):
Actual signal frequency in Hz.
See also: p0408
Remedy: - reduce the speed.
- Use an encoder with a lower pulse number (p0408).
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31153 (N, A) Encoder 1: Identification error

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 1 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: An error has occurred when identifying the encoder (waiting) p0400 = 10100.
The connected encoder was not able to be identified.
Fault value (r0949, interpret hexadecimal):
Bit 0: Data length incorrect.
See also: p0400 (Encoder type selection)
Remedy: Manually configure the encoder according to the data sheet.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31160 (N, A) Encoder 1: Analog sensor channel A failed

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 1 **Propagation:** LOCAL
Reaction: Infeed: ENCODER (NONE)
Servo: ENCODER (IASC/DCBRK, NONE)
Vector: ENCODER (IASC/DCBRK, NONE)
Hla: ENCODER (NONE)
Acknowledge: PULSE INHIBIT
Cause: The input voltage of the analog sensor is outside the permissible limits.
Fault value (r0949, interpret decimal):
1: Input voltage outside detectable measuring range.
2: Input voltage outside the measuring range set in (p4673).
3: The absolute value of the input voltage has exceeded the range limit (p4676).
Remedy: For fault value = 1:
- check the output voltage of the analog sensor.
For fault value = 2:
- check the voltage setting for each encoder period (p4673).
For fault value = 3:
- check the range limit setting and increase it if necessary (p4676).

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31161 (N, A) Encoder 1: Analog sensor channel B failed

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 1 **Propagation:** LOCAL
Reaction: Infeed: ENCODER (NONE)
Servo: ENCODER (IASC/DCBRK, NONE)
Vector: ENCODER (IASC/DCBRK, NONE)
Hla: ENCODER (NONE)
Acknowledge: PULSE INHIBIT
Cause: The input voltage of the analog sensor is outside the permissible limits.
Fault value (r0949, interpret decimal):
1: Input voltage outside detectable measuring range.
2: Input voltage outside the selected measuring range (p4675).
3: The absolute value of the input voltage has exceeded the range limit (p4676).
Remedy: For fault value = 1:
- check the output voltage of the analog sensor.
For fault value = 2:
- check the voltage setting for each encoder period (p4675).
For fault value = 3:
- check the range limit setting and increase it if necessary (p4676).

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31163 (N, A) Encoder 1: Analog sensor position value exceeds limit value

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 1 **Propagation:** LOCAL
Reaction: Infeed: ENCODER (NONE)
Servo: ENCODER (IASC/DCBRK, NONE)
Vector: ENCODER (IASC/DCBRK, NONE)
Hla: ENCODER (NONE)
Acknowledge: PULSE INHIBIT
Cause: The position value has exceeded the permissible range of -0.5 ... +0.5.
Fault value (r0949, interpret decimal):
1: Position value from the LVDT sensor.
2: Position value from the encoder characteristic.
Remedy: For fault value = 1:
- check the LVDT ratio (p4678).
- check the reference signal connection at track B.
For fault value = 2:
- check the coefficients of the characteristic (p4663 ... p4666).

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

A31400 (F, N) Encoder 1: Zero mark distance error (alarm threshold exceeded)

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 1 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The measured zero mark distance does not correspond to the parameterized zero mark distance.
For distance-coded encoders, the zero mark distance is determined from zero marks detected pairs. This means that if a zero mark is missing, depending on the pair generation, this cannot result in a fault and also has no effect in the system.
The zero mark distance for the zero mark monitoring is set in p0425 (rotary encoder) or p0424 (linear encoder).
Alarm value (r2124, interpret decimal):
Last measured zero mark distance in increments (4 increments = 1 encoder pulse).
The sign designates the direction of motion when detecting the zero mark distance.
Remedy: - check that the encoder cables are routed in compliance with EMC.
- check the plug connections.
- check the encoder type (encoder with equidistant zero marks).
- adapt the parameter for the distance between zero marks (p0424, p0425).
- replace the encoder or encoder cable.

Reaction upon F: Infeed: NONE (OFF1, OFF2)
Servo: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (ENCODER, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A31401 (F, N)	**Encoder 1: Zero mark failed (alarm threshold exceeded)**		
Message value:	%1		
Message class:	Actual position/speed value incorrect or not available (11)		
Drive object:	A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC		
Component:	Encoder 1	**Propagation:**	LOCAL
Reaction:	NONE		
Acknowledge:	NONE		
Cause:	The 1.5x parameterized zero mark distance was exceeded without a zero mark being detected. The zero mark distance for the zero mark monitoring is set in p0425 (rotary encoder) or p0424 (linear encoder). Alarm value (r2124, interpret decimal): Number of increments after POWER ON or since the last zero mark that was detected (4 increments = 1 encoder pulse).		
Remedy:	- check that the encoder cables are routed in compliance with EMC. - check the plug connections. - check the encoder type (encoder with equidistant zero marks). - adapt the parameter for the clearance between zero marks (p0425). - replace the encoder or encoder cable.		
Reaction upon F:	Infeed: NONE (OFF1, OFF2) Servo: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2) Vector: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2) Hla: NONE (ENCODER, OFF1, OFF2, OFF3, STOP2)		
Acknowl. upon F:	IMMEDIATELY		
Reaction upon N:	NONE		
Acknowl. upon N:	NONE		

F31405 (N, A)	**Encoder 1: Temperature in the encoder evaluation exceeded**		
Message value:	%1		
Message class:	Overtemperature of the electronic components (6)		
Drive object:	A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC		
Component:	Sensor Module Encoder 1	**Propagation:**	LOCAL
Reaction:	Infeed: NONE (OFF1, OFF2) Servo: ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, STOP2) Vector: ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, STOP2) Hla: ENCODER (NONE, OFF1, OFF2, OFF3, STOP2)		
Acknowledge:	IMMEDIATELY (POWER ON)		
Cause:	An inadmissibly high temperature was detected in the encoder electronics or the encoder evaluation. Fault value (r0949, interpret hexadecimal): yyxxxx hex: yy = temperature sensor number, xxxx = measured module temperature in 0.1 °C.		
Remedy:	Reduce the ambient temperature for the DRIVE-CLiQ connection of the motor.		
Reaction upon N:	NONE		
Acknowl. upon N:	NONE		
Reaction upon A:	NONE		
Acknowl. upon A:	NONE		

A31407 (F, N) Encoder 1: Function limit reached

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 1 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The encoder has reached one of its function limits. A service is recommended.

Alarm value (r2124, interpret decimal):

1: Incremental signals

3: Absolute track

4: Code connection

Remedy: Perform service. Replace the encoder if necessary.

Note:

The actual functional reserve of an encoder can be displayed via r4651.

See also: p4650 (Encoder functional reserve component number), r4651 (Encoder functional reserve)

Reaction upon F: Infeed: NONE (OFF1, OFF2)

Servo: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)

Vector: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)

Hla: NONE (ENCODER, OFF1, OFF2, OFF3, STOP2)

Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A31410 (F, N) Encoder 1: Communication error (encoder and Sensor Module)

Message value: Fault cause: %1 bin
Message class: Actual position/speed value incorrect or not available (11)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 1 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: Serial communication protocol transfer error between the encoder and evaluation module.

Alarm value (r2124, interpret binary):

Bit 0: Alarm bit in the position protocol.

Bit 1: Incorrect quiescent level on the data line.

Bit 2: Encoder does not respond (does not supply a start bit within 50 ms).

Bit 3: CRC error: The checksum in the protocol from the encoder does not match the data.

Bit 4: Encoder acknowledgment error: The encoder incorrectly understood the task (request) or cannot execute it.

Bit 5: Internal error in the serial driver: An illegal mode command was requested.

Bit 6: Timeout when cyclically reading.

Bit 8: Protocol is too long (e.g. > 64 bits).

Bit 9: Receive buffer overflow.

Bit 10: Frame error when reading twice.

Bit 11: Parity error.

Bit 12: Data line signal level error during the monoflop time.

Remedy:
- check that the encoder cables are routed in compliance with EMC.
- check the plug connections.
- replace encoder.

Reaction upon F: Infeed: NONE (OFF1, OFF2)
Servo: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (ENCODER, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A31411 (F, N) Encoder 1: Encoder signals an internal alarm (detailed information)

Message value: Fault cause: %1 bin, additional information: %2
Message class: Actual position/speed value incorrect or not available (11)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 1 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The absolute encoder fault word includes alarm bits that have been set.
Alarm value (r2124, interpret binary):
yyyyxxxx hex: yyyy = supplementary information, xxxx = fault cause
yyyy = 0:
Bit 0: Frequency exceeded (speed too high).
Bit 1: Temperature exceeded.
Bit 2: Control reserve, lighting system exceeded.
Bit 3: Battery discharged.
Bit 4: Reference point passed.
yyyy = 1:
Bit 0: Signal amplitude outside the control range.
Bit 1: Error multiturn interface
Bit 2: Internal data error (singleturn/multiturn not with single steps).
Bit 3: Error EEPROM interface.
Bit 4: SAR_converter error.
Bit 5: Fault for the register data transfer.
Bit 6: Internal error identified at the error pin (nErr).
Bit 7: Temperature threshold exceeded or fallen below.
See also: p0491 (Motor encoder fault response ENCODER)
Remedy: Replace encoder.
Reaction upon F: Infeed: NONE (OFF1, OFF2)
Servo: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (ENCODER, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A31412 (F, N) Encoder 1: Encoder signals an internal alarm

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 1 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The encoder signals an internal alarm via serial protocol.
Alarm value (r2124, interpret binary):
Bit 0: Fault bit in the position protocol.
Bit 1: Alarm bit in the position protocol.

Remedy: - carry out a POWER ON (switch-off/switch-on) for all components.
- check that the encoder cables are routed in compliance with EMC.
- check the plug connections.
- replace encoder.

Reaction upon F: Infeed: NONE (OFF1, OFF2)
Servo: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (ENCODER, OFF1, OFF2, OFF3, STOP2)

Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A31414 (F, N) Encoder 1: Signal level track C or D out of tolerance

Message value: C track: %1, D track: %2
Message class: Actual position/speed value incorrect or not available (11)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 1 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The signal level (C^2 + D^2) of track C or D of the encoder or from the Hall signals, is not within the tolerance bandwidth.
Alarm value (r2124, interpret hexadecimal):
yyyyxxxx hex:
yyyy = Signal level, track D (16 bits with sign).
xxxx = Signal level, track C (16 bits with sign).
The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV -25/+20 %).
The response thresholds are < 230 mV (observe the frequency response of the encoder) and > 750 mV.
A signal level of 500 mV peak value corresponds to the numerical value 5333 hex = 21299 dec.
Note:
If the amplitude is not within the tolerance bandwidth, then it cannot be used to initialize the start position.

Remedy: - check that the encoder cables are routed in compliance with EMC.
- check the plug connections.
- replace the encoder or encoder cable.
- check the Sensor Module (e.g. contacts).
- check the Hall sensor box.

Reaction upon F: Infeed: NONE (OFF1, OFF2)
Servo: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (ENCODER, OFF1, OFF2, OFF3, STOP2)

Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

N31415 (F, A) Encoder 1: Signal level track A or B outside tolerance (alarm)

Message value: Amplitude: %1, Angle: %2
Message class: Actual position/speed value incorrect or not available (11)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 1 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The signal level (root from A^2 + B^2) of the encoder is outside the permissible tolerance.

Alarm value (r2124, interpret hexadecimal):

yyyyxxxx hex:

yyyy = Angle

xxxx = amplitude, i.e. root of A^2 + B^2 (16 bits without sign)

The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV -25/+20 %).

The response threshold is < 230 mV (observe the frequency response of the encoder).

A signal level of 500 mV peak value corresponds to the numerical value 299A hex = 10650 dec.

The angle 0 ... FFFF hex corresponds to 0 ... 360 degrees of the fine position. Zero degrees is present at the negative zero crossover of track B.

Note for Sensor Modules for resolvers (e.g. SMC10):

The nominal signal level is at 2900 mV (2.0 Vrms). The response threshold is < 1414 mV (1.0 Vrms).

A signal level of 2900 mV peak value corresponds to the numerical value 3333 hex = 13107 dec.

Note:

The analog values of the amplitude error are not measured at the same time with the hardware fault output by the Sensor Module.

See also: p0491 (Motor encoder fault response ENCODER)

Remedy:
- check the speed range, frequency characteristic (amplitude characteristic) of the measuring equipment is not sufficient for the speed range.
- check that the encoder cables and shielding are routed in compliance with EMC.
- check the plug connections.
- replace the encoder or encoder cable.
- check the Sensor Module (e.g. contacts).
- if the coding disk is soiled or the lighting aged, replace the encoder.

Reaction upon F: Infeed: NONE (OFF1, OFF2)
Servo: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (ENCODER, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon A: NONE
Acknowl. upon A: NONE

A31418 (F, N) Encoder 1: Speed change not plausible (alarm)

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 1 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: For an HTL/TTL encoder, the speed change has exceeded the value in p0492 over several sampling cycles.

The change to the averaged speed actual value - if applicable - is monitored in the current controller sampling time.

Alarm value (r2124, interpret decimal):

Only for internal Siemens troubleshooting.

See also: p0492

Remedy: - check the tachometer feeder cable for interruptions.
- check the grounding of the tachometer shielding.
- if required, increase the setting of p0492.

Reaction upon F: Infeed: NONE (OFF1, OFF2)
Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (OFF1, OFF2, OFF3, STOP2)

Acknowl. upon F: IMMEDIATELY

Reaction upon N: NONE

Acknowl. upon N: NONE

A31419 (F, N) Encoder 1: Track A or B outside tolerance

Message value: %1

Message class: Actual position/speed value incorrect or not available (11)

Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Encoder 1 **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: The amplitude/phase/offset correction for track A or B is at the limit.
Amplitude error correction: Amplitude B / Amplitude A = 0.78 ... 1.27
Phase: <84 degrees or >96 degrees
SMC20: Offset correction: +/-140 mV
SMC10: Offset correction: +/-650 mV
Alarm value (r2124, interpret hexadecimal):
xxxx1: Minimum of the offset correction, track B
xxxx2: Maximum of the offset correction, track B
xxx1x: Minimum of the offset correction, track A
xxx2x: Maximum of the offset correction, track A
xx1xx: Minimum of the amplitude correction, track B/A
xx2xx: Maximum of the amplitude correction, track B/A
x1xxx: Minimum of the phase error correction
x2xxx: Maximum of the phase error correction
1xxxx: Minimum of the cubic correction
2xxxx: Maximum of the cubic correction
See also: p0491 (Motor encoder fault response ENCODER)

Remedy: - check mechanical mounting tolerances for encoders without their own bearings (e.g. toothed-wheel encoders).
- check the plug connections (also the transition resistance).
- check the encoder signals.
- replace the encoder or encoder cable.

Reaction upon F: Infeed: NONE (OFF1, OFF2)
Servo: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (ENCODER, OFF1, OFF2, OFF3, STOP2)

Acknowl. upon F: IMMEDIATELY

Reaction upon N: NONE

Acknowl. upon N: NONE

A31421 (F, N) Encoder 1: Determined commutation position incorrect (alarm)

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 1 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: A commutation position actual value sensing error was detected.

Alarm value (r2124, interpret decimal):

3: The absolute position of the serial protocol and track A/B differ by half an encoder pulse. The absolute position must have its zero position in the quadrants in which both tracks are negative. In the case of a fault, the position can be incorrect by one encoder pulse.

Remedy: For alarm value = 3:

- For a standard encoder with cable, contact the manufacturer where relevant.
- correct the assignment of the tracks to the position value that is serially transferred. To do this, the two tracks must be connected, inverted, at the Sensor Module (interchange A with A* and B with B*) or, for a programmable encoder, check the zero offset of the position.

Reaction upon F: Infeed: NONE (OFF1, OFF2)
Servo: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (ENCODER, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A31422 (F, N) Encoder 1: Pulses per revolution square-wave encoder outside tolerance bandwidth

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 1 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The measured zero mark distance does not correspond to the parameterized zero mark distance.

This alarm is triggered with active square-wave encoder PPR correction and re-parameterized fault 31131 if the accumulator contains larger values than p4683 or p4684.

The zero mark distance for zero mark monitoring is set in p0425 (rotary encoder).

Alarm value (r2124, interpret decimal):

accumulated differential pulses in encoder pulses.

See also: p0491 (Motor encoder fault response ENCODER)

Remedy:

- check that the encoder cables are routed in compliance with EMC.
- check the plug connections.
- check the encoder type (encoder with equidistant zero marks).
- adapt the parameter for the distance between zero marks (p0424, p0425).
- replace the encoder or encoder cable.

Reaction upon F: Infeed: NONE (OFF1, OFF2)
Servo: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (ENCODER, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A31429 (F, N) Encoder 1: Position difference hall sensor/track C/D and A/B too large

Message value: %1

Message class: Actual position/speed value incorrect or not available (11)

Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Encoder 1 **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: The error for track C/D is greater than +/-15 ° mechanical or +/-60 ° electrical or the error for the Hall signals is greater than +/-60 ° electrical.

One period of track C/D corresponds to 360 ° mechanical.

One period of the Hall signal corresponds to 360 ° electrical.

The monitoring responds if, for example, Hall sensors are connected as equivalent for the C/D tracks with the incorrect rotational sense or supply values that are not accurate enough.

Alarm value (r2124, interpret decimal):

For track C/D, the following applies:

Measured deviation as mechanical angle (16 bits with sign, 182 dec corresponds to 1 °).

For Hall signals, the following applies:

Measured deviation as electrical angle (16 bits with sign, 182 dec corresponds to 1 °).

See also: p0491 (Motor encoder fault response ENCODER)

Remedy:

- track C or D not connected.
- correct the direction of rotation of the Hall sensor possibly connected as equivalent for track C/D.
- check that the encoder cables are routed in compliance with EMC.
- check the adjustment of the Hall sensor.

Reaction upon F: Infeed: NONE (OFF1, OFF2)

Servo: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)

Vector: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)

Hla: NONE (ENCODER, OFF1, OFF2, OFF3, STOP2)

Acknowl. upon F: IMMEDIATELY

Reaction upon N: NONE

Acknowl. upon N: NONE

A31431 (F, N) Encoder 1: Position deviation incremental/absolute too high (alarm)

Message value: %1

Message class: Actual position/speed value incorrect or not available (11)

Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Encoder 1 **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: When the zero pulse is passed, a deviation in the incremental position was detected.

For equidistant zero marks, the following applies:

- the first zero mark passed supplies the reference point for all subsequent checks. The other zero marks must have n times the distance referred to the first zero mark.

For distance-coded zero marks, the following applies:

- the first zero mark pair supplies the reference point for all subsequent checks. The other zero mark pairs must have the expected distance to the first zero mark pair.

Alarm value (r2124, interpret decimal):

Deviation in quadrants (1 pulse = 4 quadrants).

See also: p0491 (Motor encoder fault response ENCODER)

Remedy:

- check that the encoder cables are routed in compliance with EMC.
- check the plug connections.
- replace the encoder or encoder cable.
- Clean coding disk or remove strong magnetic fields.

Reaction upon F:	Infeed: NONE (OFF1, OFF2) Servo: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2) Vector: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2) Hla: NONE (ENCODER, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F:	IMMEDIATELY
Reaction upon N:	NONE
Acknowl. upon N:	NONE

A31432 (F, N) Encoder 1: Rotor position adaptation corrects deviation

Message value: %1

Message class: Actual position/speed value incorrect or not available (11)

Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Encoder 1 **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: On track A/B, pulses have been lost or too many have been counted. These pulses are presently being corrected.

Alarm value (r2124, interpret decimal):

Last measured deviation of zero mark in increments (4 increments = 1 encoder pulse).

The sign designates the direction of motion when detecting the zero mark distance.

Remedy:
- check that the encoder cables are routed in compliance with EMC.
- check the plug connections.
- replace the encoder or encoder cable.
- check encoder limit frequency.
- adapt the parameter for the distance between zero marks (p0424, p0425).

Reaction upon F: Infeed: NONE (OFF1, OFF2)
Servo: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (ENCODER, OFF1, OFF2, OFF3, STOP2)

Acknowl. upon F: IMMEDIATELY

Reaction upon N: NONE

Acknowl. upon N: NONE

A31442 (F, N) Encoder 1: Battery voltage alarm threshold reached

Message value: -

Message class: Actual position/speed value incorrect or not available (11)

Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Encoder 1 **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: When switched-off, the encoder uses a battery to back up the multiturn information. The multiturn information can no longer be buffered if the battery voltage drops even further.

Remedy: Replace battery.

Reaction upon F: Infeed: NONE (OFF1, OFF2)
Servo: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (ENCODER, OFF1, OFF2, OFF3, STOP2)

Acknowl. upon F: IMMEDIATELY

Reaction upon N: NONE

Acknowl. upon N: NONE

A31443 (F, N) Encoder 1: Signal level track C/D outside tolerance (alarm)

Message value: Fault cause: %1 bin
Message class: Actual position/speed value incorrect or not available (11)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 1 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The unipolar level (CP/CN or DP/DN) for encoder 1 is outside the permissible tolerance.
Alarm value (r2124, interpret binary):
Bit 0 = 1: Either CP or CN outside the tolerance.
Bit 16 = 1: Either DP or DN outside the tolerance.
The unipolar nominal signal level of the encoder must lie in the range 2500 mV +/- 500 mV.
The response thresholds are < 1700 mV and > 3300 mV.
Note:
The signal level is not evaluated unless the following conditions are satisfied:
- Sensor Module properties available (r0459.31 = 1).
- monitoring active (p0437.31 = 1).
See also: p0491 (Motor encoder fault response ENCODER)
Remedy: - check that the encoder cables and shielding are routed in compliance with EMC.
- check the plug connections and contacts of the encoder cable.
- are the C/D tracks connected correctly (have the signal cables CP and CN or DP and DN been interchanged)?
- replace the encoder cable.
Reaction upon F: Infeed: NONE
Servo: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (ENCODER, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A31460 (N) Encoder 1: Analog sensor channel A failed

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 1 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The input voltage of the analog sensor is outside the permissible limits.
Alarm value (r2124, interpret decimal):
1: Input voltage outside detectable measuring range.
2: Input voltage outside measuring range set in p4673.
3: The absolute value of the input voltage has exceeded the range limit (p4676).
Remedy: For alarm value = 1:
- check the output voltage of the analog sensor.
For alarm value = 2:
- check the voltage setting for each encoder period (p4673).
For alarm value = 3:
- check the range limit setting and increase it if necessary (p4676).
Reaction upon N: NONE
Acknowl. upon N: NONE

A31461 (N) Encoder 1: Analog sensor channel B failed

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 1 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The input voltage of the analog sensor is outside the permissible limits.
Alarm value (r2124, interpret decimal):
1: Input voltage outside detectable measuring range.
2: Input voltage outside the selected measuring range (p4675).
3: The absolute value of the input voltage has exceeded the range limit (p4676).
Remedy: For alarm value = 1:
- check the output voltage of the analog sensor.
For alarm value = 2:
- check the voltage setting for each encoder period (p4675).
For alarm value = 3:
- check the range limit setting and increase it if necessary (p4676).
Reaction upon N: NONE
Acknowl. upon N: NONE

A31462 (N) Encoder 1: Analog sensor no channel active

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 1 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: Channel A and B are not activated for the analog sensor.
Remedy: - activate channel A and/or channel B (p4670).
- check the encoder configuration (p0404.17).
See also: p4670 (Analog sensor configuration)
Reaction upon N: NONE
Acknowl. upon N: NONE

A31463 (N) Encoder 1: Analog sensor position value exceeds limit value

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 1 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The position value has exceeded the permissible range of -0.5 ... +0.5.
Alarm value (r2124, interpret decimal):
1: Position value from the LVDT sensor.
2: Position value from the encoder characteristic.
Remedy: For alarm value = 1:
- check the LVDT ratio (p4678).
- check the reference signal connection at track B.
For alarm value = 2:
- check the coefficients of the characteristic (p4663 ... p4666).

Reaction upon N: NONE
Acknowl. upon N: NONE

A31470 (F, N) Encoder 1: Encoder signals an internal error (X521.7)

Message value: -
Message class: Actual position/speed value incorrect or not available (11)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 1 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: For the Sensor Module Cabinet 30 (SMC30), a dirty encoder is signaled via a 0 signal at terminal X521.7.
Remedy: - check the plug connections.
- replace the encoder or encoder cable.

Reaction upon F: Infeed: NONE (OFF1, OFF2)
Servo: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (ENCODER, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

F31500 (N, A) Encoder 1: Position tracking traversing range exceeded

Message value: -
Message class: Actual position/speed value incorrect or not available (11)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: Infeed: OFF1 (NONE, OFF2)
Servo: OFF1 (NONE, OFF2, OFF3)
Vector: OFF1 (NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: For a configured linear axis without modulo correction, the drive/encoder has exceeded the maximum possible traversing range. The value should be read in p0412 and interpreted as the number of motor revolutions.

For p0411.0 = 1, the maximum traversing range for the configured linear axis is defined to be 64x (+/- 32x) of p0421.

For p0411.3 = 1, the maximum traversing range for the configured linear axis is preset (default value) to the highest possible value and is +/-p0412/2 (rounded off to complete revolutions). The highest possible value depends on the pulse number (p0408) and the fine resolution (p0419).

Remedy: The fault should be resolved as follows:
- select encoder commissioning (p0010 = 4).
- reset the position tracking as follows (p0411.2 = 1).
- deselect encoder commissioning (p0010 = 0).
The fault should then be acknowledged and the absolute encoder adjusted.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31501 (N, A) Encoder 1: Position tracking encoder position outside tolerance window

Message value: %1

Message class: Actual position/speed value incorrect or not available (11)

Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: Infeed: OFF1 (NONE, OFF2)
Servo: OFF1 (NONE, OFF2, OFF3)
Vector: OFF1 (NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)

Acknowledge: IMMEDIATELY

Cause: When switched off, the drive/encoder was moved through a distance greater than was parameterized in the tolerance window. It is possible that there is no longer any reference between the mechanical system and encoder.

Fault value (r0949, interpret decimal):

Deviation (difference) to the last encoder position in increments of the absolute value.

The sign designates the traversing direction.

Note:

The deviation (difference) found is also displayed in r0477.

See also: p0413 (Measuring gear position tracking tolerance window), r0477 (Measuring gear position difference)

Remedy: Reset the position tracking as follows:

- select encoder commissioning (p0010 = 4).
- reset the position tracking as follows (p0411.2 = 1).
- deselect encoder commissioning (p0010 = 0).

The fault should then be acknowledged and, if necessary, the absolute encoder adjusted (p2507).

See also: p0010, p2507

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31502 (N, A) Encoder 1: Encoder with measuring gear without valid signals

Message value: -

Message class: Actual position/speed value incorrect or not available (11)

Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Sensor Module Encoder 1 **Propagation:** GLOBAL

Reaction: Infeed: OFF1 (OFF2)
Servo: OFF1 (OFF2, OFF3)
Vector: OFF1 (OFF2, OFF3)
Hla: OFF1 (OFF2, OFF3)

Acknowledge: IMMEDIATELY

Cause: The encoder with measuring gear no longer provides any valid signals.

Remedy: It must be ensured that all of the encoders, with mounted measuring gear, provide valid actual values in operation.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31503 (N, A) Encoder 1: Position tracking cannot be reset

Message value: -
Message class: Actual position/speed value incorrect or not available (11)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: Infeed: OFF1 (NONE, OFF2)
Servo: OFF1 (NONE, OFF2, OFF3)
Vector: OFF1 (NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The position tracking for the measuring gear cannot be reset.
Remedy: The fault should be resolved as follows:
- select encoder commissioning (p0010 = 4).
- reset the position tracking as follows (p0411.2 = 1).
- deselect encoder commissioning (p0010 = 0).

The fault should then be acknowledged and the absolute encoder adjusted.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

A31700 Encoder 1: Functional safety monitoring initiated

Message value: Fault cause: %1 bin
Message class: Safety monitoring channel has identified an error (10)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 1 **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: Functional safety was activated. Self-test of the DRIVE-CLiQ encoder has detected a fault.
Alarm value (r2124, interpret binary):
Bit x = 1: Effectivity test x unsuccessful.
Remedy: Replace encoder.

N31800 (F) Encoder 1: Group signal

Message value: -
Message class: Actual position/speed value incorrect or not available (11)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** LOCAL
Reaction: Infeed: OFF2 (NONE)
Servo: ENCODER (IASC/DCBRK, NONE)
Vector: ENCODER (IASC/DCBRK, NONE)
Hla: ENCODER (NONE)
Acknowledge: NONE
Cause: The motor encoder has detected at least one fault.
See also: p0491 (Motor encoder fault response ENCODER)
Remedy: Evaluate the other messages that are presently available.
Reaction upon F: Infeed: OFF2 (NONE)
Servo: ENCODER (IASC/DCBRK, NONE)
Vector: ENCODER (IASC/DCBRK, NONE)
Hla: ENCODER (NONE)
Acknowl. upon F: IMMEDIATELY

F31801 (N, A) Encoder 1 DRIVE-CLiQ: Sign-of-life missing

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** LOCAL
Reaction: Infeed: OFF2 (NONE)
Servo: ENCODER (IASC/DCBRK, NONE)
Vector: ENCODER (IASC/DCBRK, NONE)
Hla: ENCODER (NONE)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Control Unit to the encoder involved.
Fault cause:
10 (= 0A hex):
The sign-of-life bit in the receive telegram is not set.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
See also: p0491 (Motor encoder fault response ENCODER)
Remedy: - check the electrical cabinet design and cable routing for EMC compliance
- replace the component involved.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31802 (N, A) Encoder 1: Time slice overflow

Message value: %1
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 1 **Propagation:** LOCAL
Reaction: Infeed: OFF2 (NONE)
Servo: ENCODER (IASC/DCBRK, NONE)
Vector: ENCODER (IASC/DCBRK, NONE)
Hla: ENCODER (NONE)
Acknowledge: IMMEDIATELY
Cause: A time slice overflow has occurred in encoder 1.
Fault value (r0949, interpret hexadecimal):
yx hex: y = function involved (Siemens-internal fault diagnostics), x = time slice involved
x = 9:
Time slice overflow of the fast (current controller clock cycle) time slice.
x = A:
Time slice overflow of the average time slice.
x = C:
Time slice overflow of the slow time slice.
yx = 3E7:
Timeout when waiting for SYNO (e.g. unexpected return to non-cyclic operation).
See also: p0491 (Motor encoder fault response ENCODER)
Remedy: Increase the current controller sampling time
Note:
For a current controller sampling time = 31.25 µs, use an SMx20 with Article No. 6SL3055-0AA00-5xA3.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31804 (N, A) Encoder 1: Sensor Module checksum error

Message value: %1
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 1 **Propagation:** LOCAL
Reaction: Infeed: OFF2 (NONE)
Servo: ENCODER (IASC/DCBRK, NONE)
Vector: ENCODER (IASC/DCBRK, NONE)
Hla: ENCODER (NONE)
Acknowledge: POWER ON (IMMEDIATELY)
Cause: A checksum error has occurred when reading-out the program memory on the Sensor Module.
Fault value (r0949, interpret hexadecimal):
yyyyxxxx hex
yyyy: Memory area involved.
xxxx: Difference between the checksum at POWER ON and the actual checksum.
See also: p0491 (Motor encoder fault response ENCODER)
Remedy: - carry out a POWER ON (switch-off/switch-on).
- upgrade firmware to later version (>= V2.6 HF3, >= V4.3 SP2, >= V4.4).
- check whether the permissible ambient temperature for the component is maintained.
- replace the Sensor Module.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31805 (N, A) Encoder 1: EEPROM checksum error

Message value: %1
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 1 **Propagation:** LOCAL
Reaction: Infeed: OFF2 (NONE)
Servo: ENCODER (IASC/DCBRK, NONE)
Vector: ENCODER (IASC/DCBRK, NONE)
Hla: ENCODER (NONE)
Acknowledge: IMMEDIATELY
Cause: Data in the EEPROM corrupted .
Fault value (r0949, interpret hexadecimal):
01: EEPROM access error.
02: Too many blocks in the EEPROM.
See also: p0491 (Motor encoder fault response ENCODER)
Remedy: Replace the module.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31806 (N, A)	**Encoder 1: Initialization error**
Message value:	%1
Message class:	Actual position/speed value incorrect or not available (11)
Drive object:	A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Sensor Module Encoder 1 **Propagation:** LOCAL
Reaction:	Infeed: OFF2 (NONE) Servo: ENCODER (IASC/DCBRK, NONE) Vector: ENCODER (IASC/DCBRK, NONE) Hla: ENCODER (NONE)
Acknowledge:	PULSE INHIBIT
Cause:	The encoder was not successfully initialized. Fault value (r0949, interpret hexadecimal): Bit 0, 1: Encoder initialization with the motor rotating has failed (deviation involving coarse and fine position in encoder pulses/4). Bit 2: Mid-voltage matching for track A unsuccessful. Bit 3: Mid-voltage matching for track B unsuccessful. Bit 4: Mid-voltage matching for acceleration input unsuccessful. Bit 5: Mid-voltage matching for track safety A unsuccessful. Bit 6: Mid-voltage matching for track safety B unsuccessful. Bit 7: Mid-voltage matching for track C unsuccessful. Bit 8: Mid-voltage matching for track D unsuccessful. Bit 9: Mid-voltage matching for track R unsuccessful. Bit 10: The difference in mid-voltages between A and B is too great (> 0.5 V) Bit 11: The difference in mid-voltages between C and D is too great (> 0.5 V) Bit 12: The difference in mid-voltages between safety A and safety B is too great (> 0.5 V) Bit 13: The difference in mid-voltages between A and safety B is too great (> 0.5 V) Bit 14: The difference in mid-voltages between B and safety A is too great (> 0.5 V) Bit 15: The standard deviation of the calculated mid-voltages is too great (> 0.3 V) Bit 16: Internal fault - fault when reading a register (CAFE) Bit 17: Internal fault - fault when writing a register (CAFE) Bit 18: Internal fault: No mid-voltage matching available Bit 19: Internal error - ADC access error. Bit 20: Internal error - no zero crossover found. Bit 28: Error while initializing the EnDat 2.2 measuring unit. Bit 29: Error when reading out the data from the EnDat 2.2 measuring unit. Bit 30: EEPROM checksum of the EnDat 2.2 measuring unit incorrect. Bit 31: Data of the EnDat 2.2 measuring unit inconsistent. Note: Bit 0, 1: Up to 6SL3055-0AA00-5*A0 Bits 2 ... 20: 6SL3055-0AA00-5*A1 and higher See also: p0491 (Motor encoder fault response ENCODER)
Remedy:	Acknowledge fault. If the fault cannot be acknowledged: Bits 2 ... 9: Check encoder power supply. Bits 2 ... 14: Check the corresponding cable. Bit 15 with no other bits: Check track R, check settings in p0404. Bit 28: Check the cable between the EnDat 2.2 converter and the measuring unit. Bit 29 ... 31: Replace the defective measuring unit.
Reaction upon N:	NONE
Acknowl. upon N:	NONE
Reaction upon A:	NONE
Acknowl. upon A:	NONE

A31811 (F, N) Encoder 1: Encoder serial number changed

Message value: -

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Encoder 1 **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: The serial number of the motor encoder of a synchronous motor has changed. The change was only checked for encoders with serial number (e.g. EnDat encoders) and build-in motors (e.g. p0300 = 401) or third-party motors (p0300 = 2).

Cause 1:

- the encoder was replaced.

Cause 2:

- a third-party, built-in or linear motor was re-commissioned.

Cause 3:

- the motor with integrated and adjusted encoder was replaced.

Cause 4:

- the firmware was updated to a version that checks the encoder serial number.

Note:

With closed-loop position control, the serial number is accepted when starting the adjustment (p2507 = 2).

When the encoder is adjusted (p2507 = 3), the serial number is checked for changes and if required, the adjustment is reset (p2507 = 1).

Proceed as follows to hide serial number monitoring:

- set the following serial numbers for the corresponding Encoder Data Set: p0441= FF, p0442 = 0, p0443 = 0, p0444 = 0, p0445 = 0.

- parameterize F07414 as message type N (p2118, p2119).

See also: p0491 (Motor encoder fault response ENCODER)

Remedy: For causes 1, 2:

Carry out an automatic adjustment using the pole position identification routine. Acknowledge fault. Initiate the pole position identification routine with p1990 = 1. Then check that the pole position identification routine is correctly executed.

SERVO:

If a pole position identification technique is selected in p1980, and if p0301 does not contain a motor type with an encoder adjusted in the factory, then p1990 is automatically activated.

or

Set the adjustment via p0431. In this case, the new serial number is automatically accepted.

or

Mechanically adjust the encoder. Accept the new serial number with p0440 = 1.

For causes 3, 4:

Accept the new serial number with p0440 = 1.

Reaction upon F: Infeed: OFF2 (NONE)

Servo: NONE (ENCODER, OFF2)

Vector: NONE (ENCODER, OFF2)

Hla: NONE (ENCODER, OFF2)

Acknowl. upon F: IMMEDIATELY

Reaction upon N: NONE

Acknowl. upon N: NONE

F31812 (N, A) Encoder 1: Requested cycle or RX-/TX timing not supported

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 1 **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: A cycle requested from the Control Unit or RX/TX timing is not supported.
Fault value (r0949, interpret decimal):
0: Application cycle is not supported.
1: DRIVE-CLiQ cycle is not supported.
2: Distance between RX and TX instants in time too low.
3: TX instant in time too early.
Remedy: Carry out a POWER ON (switch-off/switch-on) for all components.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31813 Encoder 1: Hardware logic unit failed

Message value: Fault cause: %1 bin
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 1 **Propagation:** GLOBAL
Reaction: Infeed: NONE
Servo: ENCODER (IASC/DCBRK, NONE)
Vector: ENCODER (IASC/DCBRK, NONE)
Hla: ENCODER (NONE)
Acknowledge: PULSE INHIBIT
Cause: The logic unit of the DRIVE-CLiQ encoder has failed.
Fault value (r0949, interpret binary):
Bit 0: ALU watchdog has responded.
Bit 1: ALU has detected a sign-of-life error.
Remedy: When the error reoccurs, replace the encoder.

F31820 (N, A) Encoder 1 DRIVE-CLiQ: Telegram error

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 1 **Propagation:** LOCAL
Reaction: Infeed: OFF2
Servo: ENCODER (IASC/DCBRK, NONE)
Vector: ENCODER (IASC/DCBRK, NONE)
Hla: ENCODER (NONE)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Control Unit to the encoder concerned.
Fault cause:
1 (= 01 hex):
Checksum error (CRC error).
2 (= 02 hex):
Telegram is shorter than specified in the length byte or in the receive list.

3 (= 03 hex):
Telegram is longer than specified in the length byte or in the receive list.
4 (= 04 hex):
The length of the receive telegram does not match the receive list.
5 (= 05 hex):
The type of the receive telegram does not match the receive list.
6 (= 06 hex):
The address of the component in the telegram and in the receive list do not match.
7 (= 07 hex):
A SYNC telegram is expected - but the received telegram is not a SYNC telegram.
8 (= 08 hex):
No SYNC telegram is expected - but the received telegram is one.
9 (= 09 hex):
The error bit in the receive telegram is set.
16 (= 10 hex):
The receive telegram is too early.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
See also: p0491 (Motor encoder fault response ENCODER)

Remedy: - carry out a POWER ON (switch-off/switch-on).
- check the electrical cabinet design and cable routing for EMC compliance
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31835 (N, A) Encoder 1 DRIVE-CLiQ: Cyclic data transfer error

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 1 **Propagation:** LOCAL
Reaction: Infeed: OFF2
Servo: ENCODER (IASC/DCBRK, NONE)
Vector: ENCODER (IASC/DCBRK, NONE)
Hla: ENCODER (NONE)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Control Unit to the encoder concerned. The nodes do not send and receive in synchronism.
Fault cause:
33 (= 21 hex):
The cyclic telegram has not been received.
34 (= 22 hex):
Timeout in the telegram receive list.
64 (= 40 hex):
Timeout in the telegram send list.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
See also: p0491 (Motor encoder fault response ENCODER)

Remedy: - carry out a POWER ON.
- replace the component involved.

Reaction upon N:	NONE
Acknowl. upon N:	NONE
Reaction upon A:	NONE
Acknowl. upon A:	NONE

F31836 (N, A) Encoder 1 DRIVE-CLiQ: Send error for DRIVE-CLiQ data

Message value: Component number: %1, fault cause: %2

Message class: Internal (DRIVE-CLiQ) communication error (12)

Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Sensor Module Encoder 1 **Propagation:** LOCAL

Reaction: Infeed: OFF2
Servo: ENCODER (IASC/DCBRK, NONE)
Vector: ENCODER (IASC/DCBRK, NONE)
Hla: ENCODER (NONE)

Acknowledge: IMMEDIATELY

Cause: A DRIVE-CLiQ communication error has occurred from the Control Unit to the encoder involved. Data were not able to be sent.

Fault cause:

65 (= 41 hex):

Telegram type does not match send list.

Note regarding the message value:

The individual information is coded as follows in the message value (r0949/r2124):

0000yyxx hex: yy = component number, xx = error cause

See also: p0491 (Motor encoder fault response ENCODER)

Remedy: Carry out a POWER ON.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31837 (N, A) Encoder 1 DRIVE-CLiQ: Component fault

Message value: Component number: %1, fault cause: %2

Message class: Internal (DRIVE-CLiQ) communication error (12)

Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Sensor Module Encoder 1 **Propagation:** LOCAL

Reaction: Infeed: OFF2
Servo: ENCODER (IASC/DCBRK, NONE)
Vector: ENCODER (IASC/DCBRK, NONE)
Hla: ENCODER (NONE)

Acknowledge: IMMEDIATELY

Cause: Fault detected on the DRIVE-CLiQ component concerned. Faulty hardware cannot be excluded.

Fault cause:

32 (= 20 hex):

Error in the telegram header.

35 (= 23 hex):

Receive error: The telegram buffer memory contains an error.

66 (= 42 hex):

Send error: The telegram buffer memory contains an error.

67 (= 43 hex):

Send error: The telegram buffer memory contains an error.

Note regarding the message value:

The individual information is coded as follows in the message value (r0949/r2124):

0000yyxx hex: yy = component number, xx = error cause

See also: p0491 (Motor encoder fault response ENCODER)

Remedy: - check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
- check the electrical cabinet design and cable routing for EMC compliance
- if required, use another DRIVE-CLiQ socket (p9904).
- replace the component involved.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31845 (N, A) Encoder 1 DRIVE-CLiQ: Cyclic data transfer error

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 1 **Propagation:** LOCAL
Reaction: Infeed: OFF2
Servo: ENCODER (IASC/DCBRK, NONE)
Vector: ENCODER (IASC/DCBRK, NONE)
Hla: ENCODER (NONE)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Control Unit to the encoder involved.
Fault cause:
11 (= 0B hex):
Synchronization error during alternating cyclic data transfer.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
See also: p0491 (Motor encoder fault response ENCODER)
Remedy: Carry out a POWER ON (switch-off/switch-on).

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31850 (N, A) Encoder 1: Encoder evaluation internal software error

Message value: %1
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 1 **Propagation:** LOCAL
Reaction: Infeed: OFF2 (NONE)
Servo: ENCODER (IASC/DCBRK, NONE)
Vector: ENCODER (IASC/DCBRK, NONE)
Hla: ENCODER (NONE)
Acknowledge: POWER ON
Cause: An internal software error has occurred in the Sensor Module of encoder 1.
Fault value (r0949, interpret decimal):
1: Background time slice is blocked.
2: Checksum over the code memory is not OK.
10000: OEM memory of the EnDat encoder contains data that cannot be interpreted.
11000 ... 11499: Descriptive data from EEPROM incorrect.
11500 ... 11899: Calibration data from EEPROM incorrect.
11900 ... 11999: Configuration data from EEPROM incorrect.
12000 ... 12008: communication with analog/digital converter faulted.
16000: DRIVE-CLiQ encoder initialization application error.
16001: DRIVE-CLiQ encoder initialization ALU error.

16002: DRIVE-CLiQ encoder HISI / SISI initialization error.
16003: DRIVE-CLiQ encoder safety initialization error.
16004: DRIVE-CLiQ encoder internal system error.
See also: p0491 (Motor encoder fault response ENCODER)

Remedy: - replace the Sensor Module.
- if required, upgrade the firmware in the Sensor Module.
- contact Technical Support.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31851 (N, A) Encoder 1 DRIVE-CLiQ (CU): Sign-of-life missing

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 1 **Propagation:** LOCAL
Reaction: Infeed: NONE (OFF1, OFF2)
Servo: ENCODER (IASC/DCBRK, NONE)
Vector: ENCODER (IASC/DCBRK, NONE)
Hla: ENCODER (NONE)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Sensor Module (encoder 1) involved to the Control Unit.
The DRIVE-CLiQ component did not set the sign-of-life to the Control Unit.
Fault cause:
10 (= 0A hex):
The sign-of-life bit in the receive telegram is not set.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: - Upgrade the firmware of the component involved.
- carry out a POWER ON (switch-off/switch-on) for the component involved.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31860 (N, A) Encoder 1 DRIVE-CLiQ (CU): Telegram error

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 1 **Propagation:** LOCAL
Reaction: Infeed: NONE (OFF1, OFF2)
Servo: ENCODER (IASC/DCBRK, NONE)
Vector: ENCODER (IASC/DCBRK, NONE)
Hla: ENCODER (NONE)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Sensor Module (encoder 1) involved to the Control Unit.
Fault cause:
1 (= 01 hex):
Checksum error (CRC error).
2 (= 02 hex):
Telegram is shorter than specified in the length byte or in the receive list.

3 (= 03 hex):
Telegram is longer than specified in the length byte or in the receive list.
4 (= 04 hex):
The length of the receive telegram does not match the receive list.
5 (= 05 hex):
The type of the receive telegram does not match the receive list.
6 (= 06 hex):
The address of the power unit in the telegram and in the receive list do not match.
9 (= 09 hex):
The DRIVE-CLiQ communication from the DRIVE-CLiQ component involved to the Control Unit signals that the supply voltage has failed.
16 (= 10 hex):
The receive telegram is too early.
17 (= 11 hex):
CRC error and the receive telegram is too early.
18 (= 12 hex):
The telegram is shorter than that specified in the length byte or in the receive list and the receive telegram is too early.
19 (= 13 hex):
The telegram is longer than that specified in the length byte or in the receive list and the receive telegram is too early.
20 (= 14 hex):
The length of the receive telegram does not match the receive list and the receive telegram is too early.
21 (= 15 hex):
The type of the receive telegram does not match the receive list and the receive telegram is too early.
22 (= 16 hex):
The address of the power unit in the telegram and in the receive list does not match and the receive telegram is too early.
25 (= 19 hex):
The error bit in the receive telegram is set and the receive telegram is too early.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy: - carry out a POWER ON (switch-off/switch-on).
- check the electrical cabinet design and cable routing for EMC compliance
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31875 (N, A) Encoder 1: power supply voltage failed

Message value: Component number: %1, fault cause: %2
Message class: Supply voltage fault (undervoltage) (3)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 1 **Propagation:** LOCAL
Reaction: Infeed: OFF2
Servo: ENCODER (IASC/DCBRK, NONE)
Vector: ENCODER (IASC/DCBRK, NONE)
Hla: ENCODER (NONE)
Acknowledge: IMMEDIATELY
Cause: The DRIVE-CLiQ communication from the DRIVE-CLiQ component involved to the Control Unit signals that the supply voltage has failed.
Fault cause:
9 (= 09 hex):
The power supply voltage for the components has failed.

	Note regarding the message value:
	The individual information is coded as follows in the message value (r0949/r2124):
	0000yyxx hex: yy = component number, xx = error cause
Remedy:	- carry out a POWER ON (switch-off/switch-on).
	- check the power supply voltage wiring for the DRIVE-CLiQ component (interrupted cable, contacts, ...).
	- check the dimensioning of the power supply for the DRIVE-CLiQ component.
Reaction upon N:	NONE
Acknowl. upon N:	NONE
Reaction upon A:	NONE
Acknowl. upon A:	NONE

F31885 (N, A) Encoder 1 DRIVE-CLiQ (CU): Cyclic data transfer error

Message value: Component number: %1, fault cause: %2

Message class: Internal (DRIVE-CLiQ) communication error (12)

Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Sensor Module Encoder 1 **Propagation:** LOCAL

Reaction: Infeed: NONE (OFF1, OFF2)
Servo: ENCODER (IASC/DCBRK, NONE)
Vector: ENCODER (IASC/DCBRK, NONE)
Hla: ENCODER (NONE)

Acknowledge: IMMEDIATELY

Cause: A DRIVE-CLiQ communication error has occurred from the Sensor Module (encoder 1) involved to the Control Unit.
The nodes do not send and receive in synchronism.
Fault cause:
26 (= 1A hex):
Sign-of-life bit in the receive telegram not set and the receive telegram is too early.
33 (= 21 hex):
The cyclic telegram has not been received.
34 (= 22 hex):
Timeout in the telegram receive list.
64 (= 40 hex):
Timeout in the telegram send list.
98 (= 62 hex):
Error at the transition to cyclic operation.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy: - check the power supply voltage of the component involved.
- carry out a POWER ON.
- replace the component involved.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31886 (N, A) Encoder 1 DRIVE-CLiQ (CU): Error when sending DRIVE-CLiQ data

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 1 **Propagation:** LOCAL
Reaction: Infeed: NONE (OFF1, OFF2)
Servo: ENCODER (IASC/DCBRK, NONE)
Vector: ENCODER (IASC/DCBRK, NONE)
Hla: ENCODER (NONE)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Sensor Module (encoder 1) involved to the Control Unit.
Data were not able to be sent.
Fault cause:
65 (= 41 hex):
Telegram type does not match send list.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: - carry out a POWER ON.
- check whether the firmware version of the encoder (r0148) matches the firmware version of Control Unit (r0018).
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31887 (N, A) Encoder 1 DRIVE-CLiQ (CU): Component fault

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 1 **Propagation:** LOCAL
Reaction: Infeed: NONE (OFF1, OFF2)
Servo: ENCODER (IASC/DCBRK, NONE)
Vector: ENCODER (IASC/DCBRK, NONE)
Hla: ENCODER (NONE)
Acknowledge: IMMEDIATELY
Cause: Fault detected on the DRIVE-CLiQ component involved (Sensor Module for encoder 1). Faulty hardware cannot be excluded.
Fault cause:
32 (= 20 hex):
Error in the telegram header.
35 (= 23 hex):
Receive error: The telegram buffer memory contains an error.
66 (= 42 hex):
Send error: The telegram buffer memory contains an error.
67 (= 43 hex):
Send error: The telegram buffer memory contains an error.
96 (= 60 hex):
Response received too late during runtime measurement.
97 (= 61 hex):
Time taken to exchange characteristic data too long.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy: - check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
- check the electrical cabinet design and cable routing for EMC compliance
- if required, use another DRIVE-CLiQ socket (p9904).
- replace the component involved.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31895 (N, A) Encoder 1 DRIVE-CLiQ (CU): Alternating cyclic data transfer error

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 1 **Propagation:** LOCAL
Reaction: Infeed: NONE (OFF1, OFF2)
Servo: ENCODER (IASC/DCBRK, NONE)
Vector: ENCODER (IASC/DCBRK, NONE)
Hla: ENCODER (NONE)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Sensor Module (encoder 1) involved to the Control Unit.
Fault cause:
11 (= 0B hex):
Synchronization error during alternating cyclic data transfer.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: Carry out a POWER ON.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31896 (N, A) Encoder 1 DRIVE-CLiQ (CU): Inconsistent component properties

Message value: Component number: %1
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 1 **Propagation:** LOCAL
Reaction: Infeed: NONE (OFF1, OFF2)
Servo: OFF2 (ENCODER, IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Vector: OFF2 (ENCODER, IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Hla: OFF2 (ENCODER, NONE, OFF1, OFF3, STOP2)
Acknowledge: IMMEDIATELY
Cause: The properties of the DRIVE-CLiQ component (Sensor Module for encoder 1), specified by the fault value, have changed in an incompatible fashion with respect to the properties when booted. One cause can be, e.g. that a DRIVE-CLiQ cable or DRIVE-CLiQ component has been replaced.
Fault value (r0949, interpret decimal):
Component number.
Remedy: - carry out a POWER ON.
- when a component is replaced, the same component type and if possible the same firmware version should be used.
- when a cable is replaced, only cables whose length is the same as or as close as possible to the length of the original cables should be used (ensure compliance with the maximum cable length).

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31899 (N, A) Encoder 1: Unknown fault

Message value: New message: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 1 **Propagation:** GLOBAL
Reaction: Infeed: OFF2 (NONE, OFF1)
Servo: ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, STOP2)
Vector: ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, STOP2)
Hla: ENCODER (NONE, OFF1, OFF2, OFF3, STOP2)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: A fault occurred on the Sensor Module for encoder 1 that cannot be interpreted by the Control Unit firmware.
This can occur if the firmware on this component is more recent than the firmware on the Control Unit.
Fault value (r0949, interpret decimal):
Fault number.
Note:
If required, the significance of this new fault can be read about in a more recent description of the Control Unit.
See also: p0491 (Motor encoder fault response ENCODER)
Remedy: - replace the firmware on the Sensor Module by an older firmware version (r0148).
- upgrade the firmware on the Control Unit (r0018).
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

A31902 (F, N) Encoder 1: SPI-BUS error occurred

Message value: %1
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 1 **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: Error when operating the internal SPI bus.
Alarm value (r2124, interpret hexadecimal):
Only for internal Siemens troubleshooting.
Remedy: - replace the Sensor Module.
- if required, upgrade the firmware in the Sensor Module.
- contact Technical Support.
Reaction upon F: Infeed: NONE (OFF1, OFF2)
Servo: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (ENCODER, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A31903 (F, N)	**Encoder 1: I2C-BUS error occurred**		
Message value:	%1		
Message class:	Hardware/software error (1)		
Drive object:	A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC		
Component:	Sensor Module Encoder 1	**Propagation:**	GLOBAL
Reaction:	NONE		
Acknowledge:	NONE		
Cause:	Error when operating the internal I2C bus. Alarm value (r2124, interpret hexadecimal): Only for internal Siemens troubleshooting.		
Remedy:	- replace the Sensor Module. - if required, upgrade the firmware in the Sensor Module. - contact Technical Support.		
Reaction upon F:	Infeed: NONE (OFF1, OFF2) Servo: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2) Vector: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2) Hla: NONE (ENCODER, OFF1, OFF2, OFF3, STOP2)		
Acknowl. upon F:	IMMEDIATELY		
Reaction upon N:	NONE		
Acknowl. upon N:	NONE		

F31905 (N, A)	**Encoder 1: Encoder parameterization error**		
Message value:	Parameter: %1, supplementary information: %2		
Message class:	Error in the parameterization / configuration / commissioning procedure (18)		
Drive object:	A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC		
Component:	Sensor Module Encoder 1	**Propagation:**	GLOBAL
Reaction:	Infeed: OFF2 (NONE, OFF1) Servo: ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, STOP2) Vector: ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, STOP2) Hla: ENCODER (NONE, OFF1, OFF2, OFF3, STOP2)		
Acknowledge:	IMMEDIATELY		
Cause:	An error was identified in the encoder parameterization. It is possible that the parameterized encoder type does not match the connected encoder. The parameter involved can be determined as follows: - determine the parameter number using the fault value (r0949). - determine the parameter index (p0187). Fault value (r0949, interpret decimal): yyyyxxxx dec: yyyy = supplementary information, xxxx = parameter xxxx = 421: For an EnDat/SSI encoder, the absolute position in the protocol must be less than or equal to 30 bits. yyyy = 0: No additional information available. yyyy = 1: The component does not support HTL level (p0405.1 = 0) combined with track monitoring A/B <> -A/B (p0405.2 = 1). yyyy = 2: A code number for an identified encoder has been entered into p0400, however, no identification was carried out. Please start a new encoder identification. yyyy = 3: A code number for an identified encoder has been entered into p0400, however, no identification was carried out. Please select a listed encoder in p0400 with a code number < 10000. yyyy = 4: This component does not support SSI encoders (p0404.9 = 1) without track A/B.		

yyyy = 5:
For SQW encoder, value in p4686 greater than in p0425.
yyyy = 6:
DRIVE-CLiQ encoder cannot be used with this firmware version.
yyyy = 7:
For an SQW encoder, the XIST1 correction (p0437.2) is only permitted for equidistant zero marks.
yyyy = 8:
The motor pole pair width is not supported by the linear scale being used.
yyyy = 9:
The length of the position in the EnDat protocol may be a maximum of 32 bits.
yyyy = 10:
The connected encoder is not supported.
yyyy = 11:
The hardware does not support track monitoring.
See also: p0491 (Motor encoder fault response ENCODER)

Remedy: - check whether the connected encoder type matches the encoder that has been parameterized.
- correct the parameter specified by the fault value (r0949) and p0187.
- re parameter number = 314:
- check the pole pair number and measuring gear ratio. The quotient of the "pole pair number" divided by the "measuring gear ratio" must be less than or equal to 1000 ((r0313 * p0433) / p0432 <= 1000).

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31912 Encoder 1: Device combination is not permissible

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 1 **Propagation:** GLOBAL
Reaction: Infeed: ENCODER (NONE)
Servo: ENCODER (IASC/DCBRK, NONE)
Vector: ENCODER (IASC/DCBRK, NONE)
Hla: ENCODER (NONE)
Acknowledge: PULSE INHIBIT
Cause: The selected device combination is not supported.
Fault value (r0949, interpret decimal):
1003:
The connected measuring unit cannot be operated with the EnDat 2.2 converter. For instance, the measuring unit has a pulse number/resolution of 2^n.
1005:
The type of measuring unit (incremental) is not supported by the EnDat 2.2 converter.
1006:
The maximum duration of the EnDat transfer (31.25 μs) was exceeded.
2001:
The set combination of current controller cycle, DP cycle and Safety cycle is not supported by the EnDat 2.2 converter.
2002:
The resolution of the linear measuring unit does not match the pole pair width of the linear motor
Pole pair width, minimum = p0422 * 2^20

Remedy: For fault value = 1003, 1005, 1006:
- Use a measuring unit that is permissible.
For fault value = 2001:
- set a permissible cycle combination (if required, use standard settings).
For fault value = 2002:
- Use a measuring unit with a lower resolution (p0422).

A31915 (F, N) Encoder 1: Encoder configuration error

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 1 **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The configuration for encoder 1 is incorrect.
Alarm value (r2124, interpret decimal):
1:
Re-parameterization between fault/alarm is not permissible.
419:
When the fine resolution Gx_XIST2 is configured, the encoder identifies a maximum possible absolute position actual value (r0483) that can no longer be represented within 32 bits.
Remedy: For alarm value = 1:
No re-parameterization between fault/alarm.
For alarm value = 419:
Reduce the fine resolution (p0419) or deactivate the monitoring (p0437.25), if the complete multiturn range is not required.
Reaction upon F: Infeed: NONE (OFF1, OFF2)
Servo: NONE (ENCODER, IASC/DCBRK)
Vector: NONE (ENCODER, IASC/DCBRK)
Hla: NONE (ENCODER)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

F31916 (N, A) Encoder 1: Encoder parameterization error

Message value: Parameter: %1, supplementary information: %2
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 1 **Propagation:** GLOBAL
Reaction: Infeed: OFF2 (NONE, OFF1)
Servo: ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, STOP2)
Vector: ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, STOP2)
Hla: ENCODER (NONE, OFF1, OFF2, OFF3, STOP2)
Acknowledge: IMMEDIATELY
Cause: An encoder parameter was detected as being incorrect.
It is possible that the parameterized encoder type does not match the connected encoder.
The parameter involved can be determined as follows:
- determine the parameter number using the fault value (r0949).
- determine the parameter index (p0187).
Fault value (r0949, interpret decimal):
Parameter number.
See also: p0491 (Motor encoder fault response ENCODER)
Remedy: - check whether the connected encoder type matches the encoder that has been parameterized.
- correct the parameter specified by the fault value (r0949) and p0187.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31916 (N, A) Encoder 1: Encoder parameterization error

Message value: Parameter: %1, supplementary information: %2
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: ENC
Component: Sensor Module Encoder 1 **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: A parameter of encoder 1 was detected as being incorrect.
In the case of the ENCODER drive object, the selected encoder type (rotary/linear) might not match the function module setting (r0108.12).
The parameter involved can be determined as follows:
- determine the parameter number using the fault value (r0949).
- determine the parameter index (p0187).
Fault value (r0949, interpret decimal):
Parameter number.
See also: p0491 (Motor encoder fault response ENCODER)
Remedy: - check whether the connected encoder type matches the encoder that has been parameterized.
- correct the parameter specified by the fault value (r0949) and p0187.
- if a linear encoder has been selected in parameter p0400/p0404, the "linear encoder" function module has to be activated (r0108.12 = 1)
- if a rotary encoder has been selected in parameter p0400/p0404, the "linear encoder" function module should not be activated (r0108.12 = 0)

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

A31920 (F, N) Encoder 1: Temperature sensor fault (motor)

Message value: Fault cause: %1, channel number: %2
Message class: External measured value / signal state outside the permissible range (16)
Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 1 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The motor detected a fault when evaluating the temperature sensor.
Fault cause:
1 (= 01 hex):
Wire breakage or sensor not connected.
KTY: R > 1630 Ohm, PT1000: R > 1720 Ohm
2 (= 02 hex):
Measured resistance too low.
PTC: R < 20 Ohm, KTY: R < 50 Ohm, PT1000: R < 603 Ohm
Additional values:
Only for internal Siemens troubleshooting.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = channel number, xx = error cause
See also: p0491 (Motor encoder fault response ENCODER)

Remedy: - check that the encoder cable is the correct type and is correctly connected.
- check the temperature sensor selection in p0600 to p0603.
- replace the Sensor Module (hardware defect or incorrect calibration data).

Reaction upon F: Infeed: NONE (OFF1, OFF2)
Servo: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (ENCODER, OFF1, OFF2, OFF3, STOP2)

Acknowl. upon F: IMMEDIATELY

Reaction upon N: NONE

Acknowl. upon N: NONE

A31930 (N) Encoder 1: Data logger has saved data

Message value: -

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Sensor Module Encoder 1 **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: For the activated function "Data logger" (p0437.0 = 1) a fault has occurred with the Sensor Module. This alarm indicates that the diagnostics data corresponding to the fault was saved on the memory card.
The diagnostics data is saved in the following folder:
/USER/SINAMICS/DATA/SMTRC00.BIN
...
/USER/SINAMICS/DATA/SMTRC07.BIN
/USER/SINAMICS/DATA/SMTRCIDX.TXT
The following information is contained in the TXT file:
- Display of the last written BIN file.
- Number of write operations that are still possible (from 10000 downwards).
Note:
Only Siemens can evaluate the BIN files.

Remedy: Not necessary.
This alarm is automatically withdrawn.
The data logger is ready to record the next fault case.

Reaction upon N: NONE

Acknowl. upon N: NONE

A31940 (F, N) Encoder 1: Spindle sensor S1 voltage incorrect

Message value: %1

Message class: Application/technological function faulted (17)

Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Encoder 1 **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: The voltage of analog sensor S1 is outside the permissible range.
Alarm value (r2124, interpret decimal):
Signal level from sensor S1.
Note:
A signal level of 500 mV corresponds to the numerical value 500 dec.

Remedy: - check the clamped tool.
- check the tolerance and if required, adapt (p5040).
- check the thresholds and if required, adapt (p5041).
- check analog sensor S1 and connections.
See also: p5040 (Spindle voltage threshold values tolerance), p5041 (Spindle voltage threshold values)

Reaction upon F:	Infeed: NONE (OFF1, OFF2) Servo: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2) Vector: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2) Hla: NONE (ENCODER, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F:	IMMEDIATELY
Reaction upon N:	NONE
Acknowl. upon N:	NONE

F31950 Encoder 1: Internal software error

Message value: %1

Message class: Hardware/software error (1)

Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Sensor Module Encoder 1 **Propagation:** LOCAL

Reaction: ENCODER (OFF2)

Acknowledge: POWER ON

Cause: An internal software error has occurred.

Fault value (r0949, interpret decimal):

The fault value contains information regarding the fault source.

Only for internal Siemens troubleshooting.

Remedy: - if necessary, upgrade the firmware in the Sensor Module to a later version.

- contact Technical Support.

A31999 (F, N) Encoder 1: Unknown alarm

Message value: New message: %1

Message class: Actual position/speed value incorrect or not available (11)

Drive object: A_INF, B_INF, ENC, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Sensor Module Encoder 1 **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: A alarm has occurred on the Sensor Module for encoder 1 that cannot be interpreted by the Control Unit firmware.

This can occur if the firmware on this component is more recent than the firmware on the Control Unit.

Alarm value (r2124, interpret decimal):

Alarm number.

Note:

If required, the significance of this new alarm can be read about in a more recent description of the Control Unit.

See also: p0491 (Motor encoder fault response ENCODER)

Remedy: - replace the firmware on the Sensor Module by an older firmware version (r0148).

- upgrade the firmware on the Control Unit (r0018).

Reaction upon F:	Infeed: NONE (OFF1, OFF2) Servo: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2) Vector: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2) Hla: NONE (ENCODER, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F:	IMMEDIATELY (POWER ON)
Reaction upon N:	NONE
Acknowl. upon N:	NONE

F32100 (N, A)	**Encoder 2: Zero mark distance error**		
Message value:	%1		
Message class:	Actual position/speed value incorrect or not available (11)		
Drive object:	HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC		
Component:	Encoder 2	**Propagation:**	LOCAL
Reaction:	Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2) Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2) Hla: OFF1 (NONE, OFF2, OFF3, STOP2)		
Acknowledge:	PULSE INHIBIT		
Cause:	The measured zero mark distance does not correspond to the parameterized zero mark distance. For distance-coded encoders, the zero mark distance is determined from zero marks detected pairs. This means that if a zero mark is missing, depending on the pair generation, this cannot result in a fault and also has no effect in the system. The zero mark distance for the zero mark monitoring is set in p0425 (rotary encoder) or p0424 (linear encoder). Fault value (r0949, interpret decimal): Last measured zero mark distance in increments (4 increments = 1 encoder pulse). The sign designates the direction of motion when detecting the zero mark distance.		
Remedy:	- check that the encoder cables are routed in compliance with EMC. - check the plug connections. - check the encoder type (encoder with equidistant zero marks). - adapt the parameter for the distance between zero marks (p0424, p0425). - if message output above speed threshold, reduce filter time if necessary (p0438). - replace the encoder or encoder cable.		
Reaction upon N:	NONE		
Acknowl. upon N:	NONE		
Reaction upon A:	NONE		
Acknowl. upon A:	NONE		

F32101 (N, A)	**Encoder 2: Zero mark failed**		
Message value:	%1		
Message class:	Actual position/speed value incorrect or not available (11)		
Drive object:	HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC		
Component:	Encoder 2	**Propagation:**	LOCAL
Reaction:	Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2) Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2) Hla: OFF1 (NONE, OFF2, OFF3, STOP2)		
Acknowledge:	PULSE INHIBIT		
Cause:	The 1.5 x parameterized zero mark distance was exceeded. The zero mark distance for the zero mark monitoring is set in p0425 (rotary encoder) or p0424 (linear encoder). Fault value (r0949, interpret decimal): Number of increments after POWER ON or since the last zero mark that was detected (4 increments = 1 encoder pulse).		
Remedy:	- check that the encoder cables are routed in compliance with EMC. - check the plug connections. - check the encoder type (encoder with equidistant zero marks). - adapt the parameter for the clearance between zero marks (p0425). - if message output above speed threshold, reduce filter time if necessary (p0438). - when p0437.1 is active, check p4686. - replace the encoder or encoder cable.		
Reaction upon N:	NONE		
Acknowl. upon N:	NONE		
Reaction upon A:	NONE		
Acknowl. upon A:	NONE		

F32103 (N, A) Encoder 2: Signal level zero track (track R) outside tolerance

Message value: R track: %1

Message class: Actual position/speed value incorrect or not available (11)

Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Encoder 2 **Propagation:** LOCAL

Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)

Acknowledge: IMMEDIATELY

Cause: The zero mark signal level (track R) does not lie within the tolerance bandwidth for encoder 2.

The fault can be initiated when the unipolar voltage level is exceeded (RP/RN) or if the differential amplitude is undershot.

Fault value (r0949, interpret hexadecimal):

yyyyxxxx hex: yyyy = 0, xxxx = Signal level, track R (16 bits with sign)

The response thresholds of the unipolar signal levels of the encoder are between < 1400 mV and > 3500 mV.

The response threshold for the differential signal level of the encoder is < -1600 mV.

A signal level of 500 mV peak value corresponds to the numerical value 5333 hex = 21299 dec.

Note:

The analog value of the amplitude error is not measured at the same time with the hardware fault output by the Sensor Module.

The fault value can only be represented between -32768 ... 32767 dec (-770 ... 770 mV).

The signal level is not evaluated unless the following conditions are satisfied:

- Sensor Module properties available (r0459.31 = 1).
- monitoring active (p0437.31 = 1).

Remedy:

- check the speed range; frequency characteristic (amplitude characteristic) of the measuring equipment might not be sufficient for the speed range
- check that the encoder cables and shielding are routed in compliance with EMC.
- check the plug connections and contacts of the encoder cable.
- check the encoder type (encoder with zero marks).
- check whether the zero mark is connected and the signal cables RP and RN have been connected correctly (not connected with the incorrect polarity).
- replace the encoder cable.
- if the coding disk is soiled or the lighting aged, replace the encoder.

Reaction upon N: NONE

Acknowl. upon N: NONE

Reaction upon A: NONE

Acknowl. upon A: NONE

F32110 (N, A) Encoder 2: Serial communications error

Message value: Fault cause: %1 bin

Message class: Actual position/speed value incorrect or not available (11)

Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Encoder 2 **Propagation:** LOCAL

Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)

Acknowledge: PULSE INHIBIT

Cause: There is an error in the transfer of the serial communication protocol between the encoder and internal or external evaluation module.

Fault value (r0949, interpret binary):

For an EnDat 2.1 encoder, the significance of the fault value is as follows:

Bit 0: Alarm bit in the position protocol.

Bit 1: Incorrect quiescent level on the data line.

Bit 2: Encoder does not respond (does not supply a start bit within 50 ms).

Bit 3: CRC error: The checksum in the protocol from the encoder does not match the data.

Bit 4: Encoder acknowledgment error: The encoder incorrectly understood the task (request) or cannot execute it.
Bit 5: Internal error in the serial driver: An illegal mode command was requested.
Bit 6: Timeout when cyclically reading.
Bit 7: Timeout for the register communication.
Bit 8: Protocol is too long (e.g. > 64 bits).
Bit 9: Receive buffer overflow.
Bit 10: Frame error when reading twice.
Bit 11: Parity error.
Bit 12: Data line signal level error during the monoflop time.
Bit 13: Data line incorrect.
Bit 14: Fault for the register communication.
Bit 15: Internal communication error.
Note:
For an EnDat 2.2 encoder, the significance of the fault value for F3x135 (x = 1, 2, 3) is described.

Remedy: For fault value, bit 0 = 1:
- Enc defect F31111 may provide additional details.
For fault value, bit 1 = 1:
- incorrect encoder type / replace the encoder or encoder cable.
For fault value, bit 2 = 1:
- incorrect encoder type / replace the encoder or encoder cable.
For fault value, bit 3 = 1:
- EMC / connect the cable shield, replace the encoder or encoder cable.
For fault value, bit 4 = 1:
- EMC / connect the cable shield, replace the encoder or encoder cable, replace the Sensor Module.
For fault value, bit 5 = 1:
- EMC / connect the cable shield, replace the encoder or encoder cable, replace the Sensor Module.
For fault value, bit 6 = 1:
- Update Sensor Module firmware.
For fault value, bit 7 = 1:
- incorrect encoder type / replace the encoder or encoder cable.
For fault value, bit 8 = 1:
- check parameterization (p0429.2).
For fault value, bit 9 = 1:
- EMC / connect the cable shield, replace the encoder or encoder cable, replace the Sensor Module.
For fault value, bit 10 = 1:
- check parameterization (p0429.2, p0449).
For fault value, bit 11 = 1:
- check parameterization (p0436).
For fault value, bit 12 = 1:
- check parameterization (p0429.6).
For fault value, bit 13 = 1:
- check data line.
For fault value, bit 14 = 1:
- incorrect encoder type / replace the encoder or encoder cable.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32111 (N, A)	**Encoder 2: Encoder signals an internal error (detailed information)**
Message value:	Fault cause: %1 bin, additional information: %2
Message class:	Actual position/speed value incorrect or not available (11)
Drive object:	HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Encoder 2 **Propagation:** LOCAL
Reaction:	Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3) Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3) Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge:	PULSE INHIBIT
Cause:	The encoder error word provides detailed information (error bit). For p0404.8 = 0, the following applies: Fault value for internal Siemens troubleshooting. For p0404.8 = 1, the following applies: Fault value (r0949, interpret binary): yyyyxxxx hex: yyyy = supplementary information, xxxx = fault cause yyyy = 0: Bit 0: Lighting system failed. Bit 1: Signal amplitude too low. Bit 2: Position value incorrect. Bit 3: Encoder power supply overvoltage condition. Bit 4: Encoder power supply undervoltage condition. Bit 5: Encoder power supply overcurrent condition. Bit 6: The battery must be changed.
Remedy:	For yyyy = 0: For fault value, bit 0 = 1: Encoder is defective. Replace the encoder, where the motor encoder has a direct DRIVE-CLiQ socket: Replace the motor. For fault value, bit 1 = 1: Encoder is defective. Replace the encoder, where the motor encoder has a direct DRIVE-CLiQ socket: Replace the motor. For fault value, bit 2 = 1: Encoder is defective. Replace the encoder, where the motor encoder has a direct DRIVE-CLiQ socket: Replace the motor. For fault value, bit 3 = 1: 5 V power supply voltage fault. When using an SMC: Check the plug-in cable between the encoder and SMC or replace the SMC. When a motor encoder with a direct DRIVE-CLiQ connection is used: Replace the motor. For fault value, bit 4 = 1: 5 V power supply voltage fault. When using an SMC: Check the plug-in cable between the encoder and SMC or replace the SMC. When using a motor with DRIVE-CLiQ: Replace the motor. For fault value, bit 5 = 1: Encoder is defective. Replace the encoder, where the motor encoder has a direct DRIVE-CLiQ socket: Replace the motor. For fault value, bit 6 = 1: The battery must be changed (only for encoders with battery back-up). For yyyy = 1: Encoder is defective. Replace encoder.
Reaction upon N:	NONE
Acknowl. upon N:	NONE
Reaction upon A:	NONE
Acknowl. upon A:	NONE

F32112 (N, A) Encoder 2: Encoder signals an internal error

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC
Component: Encoder 2 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: PULSE INHIBIT
Cause: The encoder signals a set error bit via the serial protocol.
Fault value (r0949, interpret binary):
Bit 0: Fault bit in the position protocol.
Remedy: For fault value, bit 0 = 1:
In the case of an EnDat encoder, F31111 may provide further details.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32115 (N, A) Encoder 2: Signal level track A or B too low

Message value: A track: %1, B-track: %2
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 2 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: PULSE INHIBIT
Cause: The signal level (root from A^2 + B^2) of the encoder falls below the permissible limit value.
Fault value (r0949, interpret hexadecimal):
yyyyxxxx hex:
yyyy = Signal level, track B (16 bits with sign).
xxxx = Signal level, track A (16 bits with sign).
The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV -25/+20 %).
The response threshold is < 170 mV (input frequency <= 256 kHz) or < 120 mV (input frequency > 256 kHz).
A signal level of 500 mV peak value corresponds to the numerical value 5333 hex = 21299 dec.
Note for Sensor Modules for resolvers (e.g. SMC10):
The nominal signal level is at 2900 mV (2.0 Vrms). The response threshold is < 1070 mV.
A signal level of 2900 mV peak value corresponds to the numerical value 6666 hex = 26214 dec.
Note:
The analog values of the amplitude error are not measured at the same time with the hardware fault output by the Sensor Module.
Remedy: - check that the encoder cables and shielding are routed in compliance with EMC.
- check the plug connections.
- replace the encoder or encoder cable.
- check the Sensor Module (e.g. contacts).
The following applies to measuring systems without their own bearing system:
- adjust the scanning head and check the bearing system of the measuring wheel.
The following applies for measuring systems with their own bearing system:
- ensure that the encoder housing is not subject to any axial force.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32116 (N, A) Encoder 2: Signal level track A or B too low

Message value: A track: %1, B-track: %2
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 2 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The signal level of the rectified encoder signals A and B of the encoder fall below the permissible limit value.
Fault value (r0949, interpret hexadecimal):
yyyyxxxx hex:
yyyy = Signal level, track B (16 bits with sign).
xxxx = Signal level, track A (16 bits with sign).
The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV -25/+20 %).
The response threshold is < 130 mV.
A signal level of 500 mV peak value corresponds to the numerical value 5333 hex = 21299 dec.
Note:
The analog values of the amplitude error are not measured at the same time with the hardware fault output by the Sensor Module.
Remedy: - check that the encoder cables and shielding are routed in compliance with EMC.
- check the plug connections.
- replace the encoder or encoder cable.
- check the Sensor Module (e.g. contacts).
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32117 (N, A) Encoder 2: Inversion error signals A/B/R

Message value: Fault cause: %1 bin
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 2 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: For a square-wave encoder (bipolar, double ended) signals A*, B* and R* are not inverted with respect to signals A, B and R.
Fault value (r0949, interpret binary):
Bits 0 ... 15: Only for internal Siemens troubleshooting.
Bit 16: Error track A.
Bit 17: Error track B.
Bit 18: Error track R.
Note:
For SMC30 (only Article No. 6SL3055-0AA00-5CA0 and 6SL3055-0AA00-5CA1), CUA32, and CU310, the following applies:
A square-wave encoder without track R is used and track monitoring (p0405.2 = 1) is activated.

Remedy: - check the encoder/cable.
- Does the encoder supply signals and the associated inverted signals?
Note:
For SMC30 (only Article Number 6SL3055-0AA00-5CA0 and 6SL3055-0AA00-5CA1), the following applies:
- check the setting of p0405 (p0405.2 = 1 is only possible if the encoder is connected at X520).
For a square-wave encoder without track R, the following jumpers must be set for the connection at X520 (SMC30) or X23 (CUA32, CU310):
- pin 10 (reference signal R) <--> pin 7 (encoder power supply, ground)
- pin 11 (reference signal R inverted) <--> pin 4 (encoder power supply)

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32118 (N, A) Encoder 2: Speed change not plausible

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 2 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: PULSE INHIBIT
Cause: For an HTL/TTL encoder, the speed change has exceeded the value in p0492 over several sampling cycles.
The change to the averaged speed actual value - if applicable - is monitored in the current controller sampling time.
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.
See also: p0492
Remedy: - check the tachometer feeder cable for interruptions.
- check the grounding of the tachometer shielding.
- if required, increase the maximum speed difference per sampling cycle (p0492).

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32120 (N, A) Encoder 2: Encoder power supply fault

Message value: Fault cause: %1 bin
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 2 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: PULSE INHIBIT
Cause: An encoder power supply fault was detected.
Fault value (r0949, interpret binary):
Bit 0: Undervoltage condition on the sense line.
Bit 1: Overcurrent condition for the encoder power supply.
Bit 2: Overcurrent condition for encoder power supply on cable resolver excitation negative.
Bit 3: Overcurrent condition for encoder power supply on cable resolver excitation positive.
Bit 4: The 24 V power supply through the Power Module (PM) is overloaded.
Bit 5: Overcurrent at the EnDat connection of the converter.
Bit 6: Overvoltage at the EnDat connection of the converter.
Bit 7: Hardware fault at the EnDat connection of the converter.

Note:
If the encoder cables 6FX2002-2EQ00-.... and 6FX2002-2CH00-.... are interchanged, this can result in the encoder being destroyed because the pins of the operating voltage are reversed.

Remedy: For fault value, bit 0 = 1:
- correct encoder cable connected?
- check the plug connections of the encoder cable.
- SMC30: Check the parameterization (p0404.22).

For fault value, bit 1 = 1:
- correct encoder cable connected?
- replace the encoder or encoder cable.

For fault value, bit 2 = 1:
- correct encoder cable connected?
- replace the encoder or encoder cable.

For fault value, bit 3 = 1:
- correct encoder cable connected?
- replace the encoder or encoder cable.

For fault value, bit 5 = 1:
- Measuring unit correctly connected at the converter?
- Replace the measuring unit or the cable to the measuring unit.

For fault value, bit 6, 7 = 1:
- Replace the defective EnDat 2.2 converter.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32121 (N, A) Encoder 2: Determined commutation position incorrect

Message value: -
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 2 **Propagation:** LOCAL
Reaction: OFF1 (NONE, OFF2, OFF3)
Acknowledge: PULSE INHIBIT
Cause: A commutation position actual value sensing error was detected.
Remedy: Replace the motor with DRIVE-CLiQ or the appropriate Sensor Module.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32122 Encoder 2: Sensor Module hardware fault

Message value: %1
Message class: Supply voltage fault (undervoltage) (3)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 2 **Propagation:** GLOBAL
Reaction: OFF1
Acknowledge: IMMEDIATELY
Cause: An internal Sensor Module hardware fault was detected.
Fault value (r0949, interpret decimal):
1: Reference voltage error.
2: Internal undervoltage.
3: Internal overvoltage.
Remedy: Replace the motor with DRIVE-CLiQ or the appropriate Sensor Module.

F32123 (N, A) Encoder 2: Signal level A/B outside tolerance

Message value: Fault cause: %1 bin
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 2 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The unipolar level (AP/AN or BP/BN) for encoder 2 is outside the permissible tolerance.
Fault value (r0949, interpret binary):
Bit 0 = 1: Either AP or AN outside the tolerance.
Bit 16 = 1: Either BP or BN outside the tolerance.
The unipolar nominal signal level of the encoder must lie in the range 2500 mV +/- 500 mV.
The response thresholds are < 1700 mV and > 3300 mV.
Note:
The signal level is not evaluated unless the following conditions are satisfied:
- Sensor Module properties available (r0459.31 = 1).
- monitoring active (p0437.31 = 1).

Remedy: - make sure that the encoder cables and shielding are installed in an EMC-compliant manner.
- check the plug connections and contacts of the encoder cable.
- check the short-circuit of a signal cable with mass or the operating voltage.
- replace the encoder cable.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32125 (N, A) Encoder 2: Signal level track A or B too high

Message value: A track: %1, B-track: %2
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 2 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Hla: OFF1 (NONE, OFF2, OFF3, STOP2)
Acknowledge: PULSE INHIBIT
Cause: The signal level (root from A^2 + B^2) of the encoder exceeds the permissible limit value.
Fault value (r0949, interpret hexadecimal):
yyyyxxxx hex:
yyyy = Signal level, track B (16 bits with sign).
xxxx = Signal level, track A (16 bits with sign).
The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV -25/+20 %).
The response threshold is > 750 mV.
A signal level of 500 mV peak value corresponds to the numerical value 5333 hex = 21299 dec.
Note for Sensor Modules for resolvers (e.g. SMC10):
The nominal signal level is at 2900 mV (2.0 Vrms).
The response threshold is > 3582 mV.
A signal level of 2900 mV peak value corresponds to the numerical value 6666 hex = 26214 dec.
Note:
The analog values of the amplitude error are not measured at the same time with the hardware fault output by the Sensor Module.

Remedy: - check that the encoder cables and shielding are routed in compliance with EMC.
- replace the encoder or encoder cable.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32126 (N, A) Encoder 2: Signal level track A or B too high

Message value: Amplitude: %1, Angle: %2
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 2 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Hla: OFF1 (NONE, OFF2, OFF3, STOP2)
Acknowledge: PULSE INHIBIT
Cause: The signal level (|A| + |B|) of the encoder exceeds the permissible limit value.
Fault value (r0949, interpret hexadecimal):
yyyyxxxx hex:
yyyy = Angle
xxxx = amplitude, i.e. root of A^2 + B^2 (16 bits without sign)
The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV -25/+20 %).
The response threshold for (|A| + |B|) is > 1120 mV or the root of (A^2 + B^2) > 955 mV.
A signal level of 500 mV peak value corresponds to the numerical value of 299A hex = 10650 dec.
The angle 0 ... FFFF hex corresponds to 0 ... 360 degrees of the fine position. Zero degrees is present at the negative zero crossover of track B.
Note:
The analog values of the amplitude error are not measured at the same time with the hardware fault output by the Sensor Module.
Remedy: - check that the encoder cables and shielding are routed in compliance with EMC.
- replace the encoder or encoder cable.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32129 (N, A) Encoder 2: Position difference hall sensor/track C/D and A/B too large

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 2 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: PULSE INHIBIT
Cause: The error for track C/D is greater than +/-15 ° mechanical or +/-60 ° electrical or the error for the Hall signals is greater than +/-60 ° electrical.
One period of track C/D corresponds to 360 ° mechanical.
One period of the Hall signal corresponds to 360 ° electrical.
The monitoring responds if, for example, Hall sensors are connected as equivalent for the C/D tracks with the incorrect rotational sense or supply values that are not accurate enough.
After the fine synchronization using one reference mark or 2 reference marks for distance-coded encoders, this fault is no longer initiated, but instead, Alarm A32429.
Fault value (r0949, interpret decimal):
For track C/D, the following applies:
Measured deviation as mechanical angle (16 bits with sign, 182 dec corresponds to 1 °).
For Hall signals, the following applies:
Measured deviation as electrical angle (16 bits with sign, 182 dec corresponds to 1 °).

Remedy: - track C or D not connected.
- correct the direction of rotation of the Hall sensor possibly connected as equivalent for track C/D.
- check that the encoder cables are routed in compliance with EMC.
- check the adjustment of the Hall sensor.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32130 (N, A) Encoder 2: Zero mark and position error from the coarse synchronization

Message value: Angular deviation, electrical: %1, angle, mechanical: %2
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 2 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Hla: OFF1 (NONE, OFF2, OFF3, STOP2)
Acknowledge: PULSE INHIBIT
Cause: After initializing the pole position using track C/D, Hall signals or pole position identification routine, the zero mark was detected outside the permissible range. For distance-coded encoders, the test is carried out after passing 2 zero marks. Fine synchronization was not carried out.

When initializing via track C/D (p0404) then it is checked whether the zero mark occurs in an angular range of +/-18 ° mechanical.

When initializing via Hall sensors (p0404) or pole position identification (p1982) it is checked whether the zero mark occurs in an angular range of +/-60 ° electrical.

Fault value (r0949, interpret hexadecimal):
yyyyxxxx hex
yyyy: Determined mechanical zero mark position (can only be used for track C/D).
xxxx: Deviation of the zero mark from the expected position as electrical angle.
Scaling: 32768 dec = 180 °

Remedy: - check that the encoder cables are routed in compliance with EMC.
- check the plug connections.
- if the Hall sensor is used as an equivalent for track C/D, check the connection.
- check the connection of track C or D.
- replace the encoder or encoder cable.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32131 (N, A) Encoder 2: Position deviation incremental/absolute too high

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 2 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Hla: OFF1 (NONE, OFF2, OFF3, STOP2)
Acknowledge: PULSE INHIBIT
Cause: Absolute encoder:

When cyclically reading the absolute position, an excessively high difference to the incremental position was detected. The absolute position that was read is rejected.

Limit value for the deviation:

- EnDat encoder: Is supplied from the encoder and is a minimum of 2 quadrants (e.g. EQI 1325 > 2 quadrants, EQN 1325 > 50 quadrants).
- other encoders: 15 pulses = 60 quadrants.

Incremental encoder:
When the zero pulse is passed, a deviation in the incremental position was detected.
For equidistant zero marks, the following applies:
- the first zero mark passed supplies the reference point for all subsequent checks. The other zero marks must have n times the distance referred to the first zero mark.
For distance-coded zero marks, the following applies:
- the first zero mark pair supplies the reference point for all subsequent checks. The other zero mark pairs must have the expected distance to the first zero mark pair.
Fault value (r0949, interpret decimal):
Deviation in quadrants (1 pulse = 4 quadrants).

Remedy:
- check that the encoder cables are routed in compliance with EMC.
- check the plug connections.
- replace the encoder or encoder cable.
- check whether the coding disk is dirty or there are strong ambient magnetic fields.
- adapt the parameter for the clearance between zero marks (p0425).
- if message output above speed threshold, reduce filter time if necessary (p0438).

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32135 Encoder 2: Fault when determining the position (single turn)

Message value: Fault cause: %1 bin
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 2 **Propagation:** GLOBAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: PULSE INHIBIT
Cause: The encoder has identified a position determination fault (singleturn) and supplies status information bit by bit in an internal status/fault word.
Some of these bits cause this fault to be triggered. Other bits are status displays. The status/fault word is displayed in the fault value.
Note regarding the bit designation:
The first designation is valid for DRIVE-CLiQ encoders, the second for EnDat 2.2 encoders.
Fault value (r0949, interpret binary):
Bit 0: F1 (safety status display).
Bit 1: F2 (safety status display).
Bit 2: Reserved (lighting).
Bit 3: Reserved (signal amplitude).
Bit 4: Reserved (position value).
Bit 5: Reserved (overvoltage).
Bit 6: Reserved (undervoltage)/hardware fault EnDat supply (--> F3x110, x = 1, 2, 3).
Bit 7: Reserved (overcurrent)/EnDat encoder withdrawn when not in the parked state (--> F3x110, x = 1, 2, 3).
Bit 8: Reserved (battery)/overcurrent EnDat supply (--> F3x110, x = 1, 2, 3).
Bit 9: Reserved/overvoltage EnDat supply (--> F3x110, x = 1, 2, 3).
Bit 11: Reserved/internal communication error (--> F3x110, x = 1, 2, 3).
Bit 12: Reserved/internal communication error (--> F3x110, x = 1, 2, 3).
Bit 13: Reserved/internal communication error (--> F3x110, x = 1, 2, 3).
Bit 14: Reserved/internal communication error (--> F3x110, x = 1, 2, 3).
Bit 15: Internal communication error (--> F3x110, x = 1, 2, 3).
Bit 16: Lighting (--> F3x135, x = 1, 2, 3).
Bit 17: Signal amplitude (--> F3x135, x = 1, 2, 3).
Bit 18: Singleturn position 1 (--> F3x135, x = 1, 2, 3).
Bit 19: Overvoltage (--> F3x135, x = 1, 2, 3).

Bit 20: Undervoltage (--> F3x135, x = 1, 2, 3).
Bit 21: Overcurrent (--> F3x135, x = 1, 2, 3).
Bit 22: Temperature exceeded (--> F3x405, x = 1, 2, 3).
Bit 23: Singleturn position 2 (safety status display).
Bit 24: Singleturn system (--> F3x135, x = 1, 2, 3).
Bit 25: Singleturn power down (--> F3x135, x = 1, 2, 3)
Bit 26: Multiturn position 1 (--> F3x136, x = 1, 2, 3).
Bit 27: Multiturn position 2 (--> F3x136, x = 1, 2, 3).
Bit 28: Multiturn system (--> F3x136, x = 1, 2, 3).
Bit 29: Multiturn power down (--> F3x136, x = 1, 2, 3).
Bit 30: Multiturn overflow/underflow (--> F3x136, x = 1, 2, 3).
Bit 31: Multiturn battery (reserved).

Remedy: - determine the detailed cause of the fault using the fault value.
- replace the encoder if necessary.
Note:
An EnDat 2.2 encoder may only be removed and inserted in the "Park" state.
If an EnDat 2.2 encoder was removed when not in the "Park" state, then after inserting the encoder, a POWER ON (switch-off/switch-on) is necessary to acknowledge the fault.

F32136 Encoder 2: Fault when determining the position (multiturn)

Message value: Fault cause: %1 bin
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 2 **Propagation:** GLOBAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: PULSE INHIBIT
Cause: The encoder has identified a position determination fault (multiturn) and supplies status information bit by bit in an internal status/fault word.
Some of these bits cause this fault to be triggered. Other bits are status displays. The status/fault word is displayed in the fault value.
Note regarding the bit designation:
The first designation is valid for DRIVE-CLiQ encoders, the second for EnDat 2.2 encoders.
Fault value (r0949, interpret binary):
Bit 0: F1 (safety status display).
Bit 1: F2 (safety status display).
Bit 2: Reserved (lighting).
Bit 3: Reserved (signal amplitude).
Bit 4: Reserved (position value).
Bit 5: Reserved (overvoltage).
Bit 6: Reserved (undervoltage)/hardware fault EnDat supply (--> F3x110, x = 1, 2, 3).
Bit 7: Reserved (overcurrent)/EnDat encoder withdrawn when not in the parked state (--> F3x110, x = 1, 2, 3).
Bit 8: Reserved (battery)/overcurrent EnDat supply (--> F3x110, x = 1, 2, 3).
Bit 9: Reserved/overvoltage EnDat supply (--> F3x110, x = 1, 2, 3).
Bit 11: Reserved/internal communication error (--> F3x110, x = 1, 2, 3).
Bit 12: Reserved/internal communication error (--> F3x110, x = 1, 2, 3).
Bit 13: Reserved/internal communication error (--> F3x110, x = 1, 2, 3).
Bit 14: Reserved/internal communication error (--> F3x110, x = 1, 2, 3).
Bit 15: Internal communication error (--> F3x110, x = 1, 2, 3).
Bit 16: Lighting (--> F3x135, x = 1, 2, 3).
Bit 17: Signal amplitude (--> F3x135, x = 1, 2, 3).
Bit 18: Singleturn position 1 (--> F3x135, x = 1, 2, 3).
Bit 19: Overvoltage (--> F3x135, x = 1, 2, 3).
Bit 20: Undervoltage (--> F3x135, x = 1, 2, 3).
Bit 21: Overcurrent (--> F3x135, x = 1, 2, 3).

Bit 22: Temperature exceeded (--> F3x405, x = 1, 2, 3).
Bit 23: Singleturn position 2 (safety status display).
Bit 24: Singleturn system (--> F3x135, x = 1, 2, 3).
Bit 25: Singleturn power down (--> F3x135, x = 1, 2, 3)
Bit 26: Multiturn position 1 (--> F3x136, x = 1, 2, 3).
Bit 27: Multiturn position 2 (--> F3x136, x = 1, 2, 3).
Bit 28: Multiturn system (--> F3x136, x = 1, 2, 3).
Bit 29: Multiturn power down (--> F3x136, x = 1, 2, 3).
Bit 30: Multiturn overflow/underflow (--> F3x136, x = 1, 2, 3).
Bit 31: Multiturn battery (reserved).

Remedy: - determine the detailed cause of the fault using the fault value.
- replace the encoder if necessary.
Note:
An EnDat 2.2 encoder may only be removed and inserted in the "Park" state.
If an EnDat 2.2 encoder was removed when not in the "Park" state, then after inserting the encoder, a POWER ON (switch-off/switch-on) is necessary to acknowledge the fault.

F32137 Encoder 2: Fault when determining the position (single turn)

Message value: Fault cause: %1 bin
Message class: Hardware/software error (1)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 2 **Propagation:** GLOBAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: PULSE INHIBIT
Cause: A position determination fault has occurred in the DRIVE-CLiQ encoder.
Fault value (r0949, interpret binary):
yyxxxxxx hex: yy = encoder version, xxxxxx = bit coding of the fault cause
----
For yy = 8 (0000 1000 bin), the following applies:
Bit 1: Signal monitoring (sin/cos).
Bit 8: F1 (safety status display) error position word 1.
Bit 9: F2 (safety status display) error position word 2.
Bit 16: LED monitoring.
Bit 17: Fault when determining the position (multiturn).
Bit 23: Temperature outside the limit values.

For yy = 11 (0000 1011 bin), the following applies:
Bit 0: Position word 1 difference between rotation counter and software counter (XC_ERR).
Bit 1: Position word 1 track error of the incremental signals (LIS_ERR).
Bit 2: Position word 1 error when aligning between incremental track signals and absolute value (ST_ERR).
Bit 3: Maximum permissible temperature exceeded (TEMP_ERR).
Bit 4: Power supply overvoltage (MON_OVR_VOLT).
Bit 5: Power supply overcurrent (MON_OVR_CUR).
Bit 6: Power supply undervoltage (MON_UND_VOLT).
Bit 7: Rotation error counter (MT_ERR).
Bit 8: F1 (safety status display) error position word 1.
Bit 9: F2 (safety status display) error position word 2.
Bit 11: Position word 1 status bit: singleturn position OK (ADC_ready).
Bit 12: Position word 1 status bit: rotation counter OK (MT_ready).
Bit 13: Position word 1 memory error (MEM_ERR).
Bit 14: Position word 1 absolute position error (MLS_ERR).
Bit 15: position word 1 LED error, lighting unit error (LED_ERR).
Bit 18: Position word 2 error when aligning between incremental track signals and absolute value (ST_ERR).

Bit 21: Position word 2 memory error (MEM_ERR).
Bit 22: Position word 2 absolute position error (MLS_ERR).
Bit 23: position word 2 LED error, lighting unit error (LED_ERR).

For yy = 12 (0000 1100 bin), the following applies:
Bit 8: encoder fault.
Bit 10: error in the internal position data transport.

For yy = 14 (0000 1110 bin), the following applies:
Bit 0: Position word 1 temperature outside limit value.
Bit 1: Position word 1 position determination error (multiturn).
Bit 2: Position word 1 FPGA error.
Bit 3: Position word 1 velocity error.
Bit 4: Position word 1 communication error between FPGAs/error in the incremental signal.
Bit 5: Position word 1 timeout absolute value/error when determining the position (singleturn).
Bit 6: Position word 1 internal hardware fault (clock/power monitor IC/power).
Bit 7: Position word 1 internal error (FPGA communication/FPGA parameterization/self-test/software).
Bit 8: F1 (safety status display) error position word 1.
Bit 9: F2 (safety status display) error position word 2.
Bit 16: Position word 2 temperature outside limit value.
Bit 17: Position word 2 position determination error (multiturn).
Bit 18: Position word 2 FPGA error.
Bit 19: Position word 2 velocity error.
Bit 20: Position word 2 communication error between FPGAs.
Bit 21: Position word 2 position determination error (singleturn).
Bit 22: Position word 2 internal hardware fault (clock/power monitor IC/power).
Bit 23: Position word 2 internal error (self-test/software).

Note:
For an encoder version that is not described here, please contact the encoder manufacturer for more detailed information on the bit coding.

Remedy: - determine the detailed cause of the fault using the fault value.
- if required, replace the DRIVE-CLiQ encoder.

F32138 Encoder 2: Fault when determining the position (multiturn)

Message value: Fault cause: %1 bin
Message class: Hardware/software error (1)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 2 **Propagation:** GLOBAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: PULSE INHIBIT
Cause: A position determination fault has occurred in the DRIVE-CLiQ encoder.
Fault value (r0949, interpret binary):
yyxxxxxx hex: yy = encoder version, xxxxxx = bit coding of the fault cause
----
For yy = 8 (0000 1000 bin), the following applies:
Bit 1: Signal monitoring (sin/cos).
Bit 8: F1 (safety status display) error position word 1.
Bit 9: F2 (safety status display) error position word 2.
Bit 16: LED monitoring.
Bit 17: Fault when determining the position (multiturn).
Bit 23: Temperature outside the limit values.

For yy = 11 (0000 1011 bin), the following applies:
Bit 0: Position word 1 difference between rotation counter and software counter (XC_ERR).
Bit 1: Position word 1 track error of the incremental signals (LIS_ERR).
Bit 2: Position word 1 error when aligning between incremental track signals and absolute value (ST_ERR).
Bit 3: Maximum permissible temperature exceeded (TEMP_ERR).
Bit 4: Power supply overvoltage (MON_OVR_VOLT).
Bit 5: Power supply overcurrent (MON_OVR_CUR).
Bit 6: Power supply undervoltage (MON_UND_VOLT).
Bit 7: Rotation error counter (MT_ERR).
Bit 8: F1 (safety status display) error position word 1.
Bit 9: F2 (safety status display) error position word 2.
Bit 11: Position word 1 status bit: singleturn position OK (ADC_ready).
Bit 12: Position word 1 status bit: rotation counter OK (MT_ready).
Bit 13: Position word 1 memory error (MEM_ERR).
Bit 14: Position word 1 absolute position error (MLS_ERR).
Bit 15: position word 1 LED error, lighting unit error (LED_ERR).
Bit 18: Position word 2 error when aligning between incremental track signals and absolute value (ST_ERR).
Bit 21: Position word 2 memory error (MEM_ERR).
Bit 22: Position word 2 absolute position error (MLS_ERR).
Bit 23: position word 2 LED error, lighting unit error (LED_ERR).

For yy = 14 (0000 1110 bin), the following applies:
Bit 0: Position word 1 temperature outside limit value.
Bit 1: Position word 1 position determination error (multiturn).
Bit 2: Position word 1 FPGA error.
Bit 3: Position word 1 velocity error.
Bit 4: Position word 1 communication error between FPGAs/error in the incremental signal.
Bit 5: Position word 1 timeout absolute value/error when determining the position (singleturn).
Bit 6: Position word 1 internal hardware fault (clock/power monitor IC/power).
Bit 7: Position word 1 internal error (FPGA communication/FPGA parameterization/self-test/software).
Bit 8: F1 (safety status display) error position word 1.
Bit 9: F2 (safety status display) error position word 2.
Bit 16: Position word 2 temperature outside limit value.
Bit 17: Position word 2 position determination error (multiturn).
Bit 18: Position word 2 FPGA error.
Bit 19: Position word 2 velocity error.
Bit 20: Position word 2 communication error between FPGAs.
Bit 21: Position word 2 position determination error (singleturn).
Bit 22: Position word 2 internal hardware fault (clock/power monitor IC/power).
Bit 23: Position word 2 internal error (self-test/software).

Note:
For an encoder version that is not described here, please contact the encoder manufacturer for more detailed information on the bit coding.

Remedy: - determine the detailed cause of the fault using the fault value.
- if required, replace the DRIVE-CLiQ encoder.

F32142 (N, A) Encoder 2: Battery voltage fault

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 2 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Hla: OFF1 (NONE, OFF2, OFF3, STOP2)
Acknowledge: IMMEDIATELY
Cause: When switched-off, the encoder uses a battery to back up the multiturn information. The battery voltage is no longer sufficient to check the multiturn information.
Remedy: Replace battery.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32150 (N, A) Encoder 2: Initialization error

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 2 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Hla: OFF1 (NONE, OFF2, OFF3, STOP2)
Acknowledge: PULSE INHIBIT
Cause: Encoder functionality selected in p0404 cannot be executed.
Fault value (r0949, interpret hexadecimal):
Encoder malfunction.
The bit assignment corresponds to that of p0404 (e.g. bit 5 set: Error track C/D).
Remedy: - check that p0404 is correctly set.
- check the encoder type used (incremental/absolute) and for SMCxx, the encoder cable.
- if relevant, note additional fault messages that describe the fault in detail.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32151 (N, A) Encoder 2: Encoder speed for initialization AB too high

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 2 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Hla: OFF1 (NONE, OFF2, OFF3, STOP2)
Acknowledge: PULSE INHIBIT
Cause: The encoder speed is too high while initializing the Sensor Module.
Remedy: Reduce the speed of the encoder accordingly during initialization.
If necessary, deactivate monitoring (p0437.29).
See also: p0437 (Sensor Module configuration extended)
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32152 (N, A)	**Encoder 2: Max. signal frequency (track A/B) exceeded**
Message value:	%1
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Drive object:	HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Sensor Module Encoder 2 **Propagation:** LOCAL
Reaction:	Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2) Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2) Hla: OFF1 (NONE, OFF2, OFF3, STOP2)
Acknowledge:	PULSE INHIBIT
Cause:	The maximum signal frequency of the encoder evaluation has been exceeded. Fault value (r0949, interpret decimal): Actual input frequency in Hz. See also: p0408
Remedy:	- reduce the speed. - Use an encoder with a lower pulse number (p0408).
Reaction upon N:	NONE
Acknowl. upon N:	NONE
Reaction upon A:	NONE
Acknowl. upon A:	NONE

F32153 (N, A)	**Encoder 2: Identification error**
Message value:	%1
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Drive object:	HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Sensor Module Encoder 2 **Propagation:** LOCAL
Reaction:	NONE
Acknowledge:	IMMEDIATELY
Cause:	An error has occurred when identifying the encoder (waiting) p0400 = 10100. The connected encoder was not able to be identified. Fault value (r0949, interpret hexadecimal): Bit 0: Data length incorrect. See also: p0400 (Encoder type selection)
Remedy:	Manually configure the encoder according to the data sheet.
Reaction upon N:	NONE
Acknowl. upon N:	NONE
Reaction upon A:	NONE
Acknowl. upon A:	NONE

F32160 (N, A)	**Encoder 2: Analog sensor channel A failed**
Message value:	%1
Message class:	Actual position/speed value incorrect or not available (11)
Drive object:	HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Encoder 2 **Propagation:** LOCAL
Reaction:	Servo: OFF1 (IASC/DCBRK, NONE) Vector: OFF1 (IASC/DCBRK, NONE) Hla: OFF1 (NONE)
Acknowledge:	PULSE INHIBIT
Cause:	The input voltage of the analog sensor is outside the permissible limits. Fault value (r0949, interpret decimal): 1: Input voltage outside detectable measuring range. 2: Input voltage outside the measuring range set in (p4673). 3: The absolute value of the input voltage has exceeded the range limit (p4676).

Remedy: For fault value = 1:
- check the output voltage of the analog sensor.
For fault value = 2:
- check the voltage setting for each encoder period (p4673).
For fault value = 3:
- check the range limit setting and increase it if necessary (p4676).

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32161 (N, A) Encoder 2: Analog sensor channel B failed

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 2 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE)
Vector: OFF1 (IASC/DCBRK, NONE)
Hla: OFF1 (NONE)
Acknowledge: PULSE INHIBIT
Cause: The input voltage of the analog sensor is outside the permissible limits.
Fault value (r0949, interpret decimal):
1: Input voltage outside detectable measuring range.
2: Input voltage outside the selected measuring range (p4675).
3: The absolute value of the input voltage has exceeded the range limit (p4676).
Remedy: For fault value = 1:
- check the output voltage of the analog sensor.
For fault value = 2:
- check the voltage setting for each encoder period (p4675).
For fault value = 3:
- check the range limit setting and increase it if necessary (p4676).

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32163 (N, A) Encoder 2: Analog sensor position value exceeds limit value

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 2 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE)
Vector: OFF1 (IASC/DCBRK, NONE)
Hla: OFF1 (NONE)
Acknowledge: PULSE INHIBIT
Cause: The position value has exceeded the permissible range of -0.5 ... +0.5.
Fault value (r0949, interpret decimal):
1: Position value from the LVDT sensor.
2: Position value from the encoder characteristic.
Remedy: For fault value = 1:
- check the LVDT ratio (p4678).
- check the reference signal connection at track B.
For fault value = 2:
- check the coefficients of the characteristic (p4663 ... p4666).

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

A32400 (F, N) Encoder 2: Zero mark distance error (alarm threshold exceeded)

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 2 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The measured zero mark distance does not correspond to the parameterized zero mark distance.

For distance-coded encoders, the zero mark distance is determined from zero marks detected pairs. This means that if a zero mark is missing, depending on the pair generation, this cannot result in a fault and also has no effect in the system.

The zero mark distance for the zero mark monitoring is set in p0425 (rotary encoder) or p0424 (linear encoder).

Alarm value (r2124, interpret decimal):

Last measured zero mark distance in increments (4 increments = 1 encoder pulse).

The sign designates the direction of motion when detecting the zero mark distance.

Remedy:
- check that the encoder cables are routed in compliance with EMC.
- check the plug connections.
- check the encoder type (encoder with equidistant zero marks).
- adapt the parameter for the distance between zero marks (p0424, p0425).
- replace the encoder or encoder cable.

Reaction upon F: Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A32401 (F, N) Encoder 2: Zero mark failed (alarm threshold exceeded)

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 2 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The 1.5x parameterized zero mark distance was exceeded without a zero mark being detected.

The zero mark distance for the zero mark monitoring is set in p0425 (rotary encoder) or p0424 (linear encoder).

Alarm value (r2124, interpret decimal):

Number of increments after POWER ON or since the last zero mark that was detected (4 increments = 1 encoder pulse).

Remedy:
- check that the encoder cables are routed in compliance with EMC.
- check the plug connections.
- check the encoder type (encoder with equidistant zero marks).
- adapt the parameter for the clearance between zero marks (p0425).
- replace the encoder or encoder cable.

Reaction upon F: Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

F32405 (N, A) Encoder 2: Temperature in the encoder evaluation exceeded

Message value: %1
Message class: Overtemperature of the electronic components (6)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 2 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Hla: OFF1 (NONE, OFF2, OFF3, STOP2)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: An inadmissibly high temperature was detected in the encoder electronics or the encoder evaluation.
Fault value (r0949, interpret hexadecimal):
yyxxxx hex: yy = temperature sensor number, xxxx = measured module temperature in 0.1 °C.
Remedy: Reduce the ambient temperature for the DRIVE-CLiQ connection of the motor.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

A32407 (F, N) Encoder 2: Function limit reached

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 2 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The encoder has reached one of its function limits. A service is recommended.
Alarm value (r2124, interpret decimal):
1: Incremental signals
3: Absolute track
4: Code connection
Remedy: Perform service. Replace the encoder if necessary.
Note:
The actual functional reserve of an encoder can be displayed via r4651.
See also: p4650 (Encoder functional reserve component number), r4651 (Encoder functional reserve)
Reaction upon F: Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A32410 (F, N) Encoder 2: Communication error (encoder and Sensor Module)

Message value: Fault cause: %1 bin
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 2 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: Serial communication protocol transfer error between the encoder and evaluation module.
Alarm value (r2124, interpret binary):
Bit 0: Alarm bit in the position protocol.
Bit 1: Incorrect quiescent level on the data line.
Bit 2: Encoder does not respond (does not supply a start bit within 50 ms).
Bit 3: CRC error: The checksum in the protocol from the encoder does not match the data.
Bit 4: Encoder acknowledgment error: The encoder incorrectly understood the task (request) or cannot execute it.

Bit 5: Internal error in the serial driver: An illegal mode command was requested.
Bit 6: Timeout when cyclically reading.
Bit 8: Protocol is too long (e.g. > 64 bits).
Bit 9: Receive buffer overflow.
Bit 10: Frame error when reading twice.
Bit 11: Parity error.
Bit 12: Data line signal level error during the monoflop time.

Remedy: - check that the encoder cables are routed in compliance with EMC.
- check the plug connections.
- replace encoder.

Reaction upon F: Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (OFF1, OFF2, OFF3, STOP2)

Acknowl. upon F: IMMEDIATELY

Reaction upon N: NONE

Acknowl. upon N: NONE

A32411 (F, N) Encoder 2: Encoder signals an internal alarm (detailed information)

Message value: Fault cause: %1 bin, additional information: %2

Message class: Actual position/speed value incorrect or not available (11)

Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Encoder 2 **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: The absolute encoder fault word includes alarm bits that have been set.
Alarm value (r2124, interpret binary):
yyyyxxxx hex: yyyy = supplementary information, xxxx = fault cause
yyyy = 0:
Bit 0: Frequency exceeded (speed too high).
Bit 1: Temperature exceeded.
Bit 2: Control reserve, lighting system exceeded.
Bit 3: Battery discharged.
Bit 4: Reference point passed.
yyyy = 1:
Bit 0: Signal amplitude outside the control range.
Bit 1: Error multiturn interface
Bit 2: Internal data error (singleturn/multiturn not with single steps).
Bit 3: Error EEPROM interface.
Bit 4: SAR converter error.
Bit 5: Fault for the register data transfer.
Bit 6: Internal error identified at the error pin (nErr).
Bit 7: Temperature threshold exceeded or fallen below.

Remedy: Replace encoder.

Reaction upon F: Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (OFF1, OFF2, OFF3, STOP2)

Acknowl. upon F: IMMEDIATELY

Reaction upon N: NONE

Acknowl. upon N: NONE

A32412 (F, N) Encoder 2: Encoder signals an internal alarm

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 2 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The encoder signals an internal alarm via serial protocol.
Alarm value (r2124, interpret binary):
Bit 0: Fault bit in the position protocol.
Bit 1: Alarm bit in the position protocol.
Remedy: - carry out a POWER ON (switch-off/switch-on) for all components.
- check that the encoder cables are routed in compliance with EMC.
- check the plug connections.
- replace encoder.
Reaction upon F: Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A32414 (F, N) Encoder 2: Signal level track C or D out of tolerance

Message value: C track: %1, D track: %2
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 2 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The signal level (C^2 + D^2) of track C or D of the encoder or from the Hall signals, is not within the tolerance bandwidth.
Alarm value (r2124, interpret hexadecimal):
yyyyxxxx hex:
yyyy = Signal level, track D (16 bits with sign).
xxxx = Signal level, track C (16 bits with sign).
The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV -25/+20 %).
The response thresholds are < 230 mV (observe the frequency response of the encoder) and > 750 mV.
A signal level of 500 mV peak value corresponds to the numerical value 5333 hex = 21299 dec.
Note:
If the amplitude is not within the tolerance bandwidth, then it cannot be used to initialize the start position.
Remedy: - check that the encoder cables are routed in compliance with EMC.
- check the plug connections.
- replace the encoder or encoder cable.
- check the Sensor Module (e.g. contacts).
- check the Hall sensor box.
Reaction upon F: Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

N32415 (F, A) Encoder 2: Signal level track A or B outside tolerance (alarm)

Message value: Amplitude: %1, Angle: %2
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 2 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The signal level (root from A^2 + B^2) of the encoder is outside the permissible tolerance.

Alarm value (r2124, interpret hexadecimal):

yyyyxxxx hex:

yyyy = Angle

xxxx = amplitude, i.e. root of A^2 + B^2 (16 bits without sign)

The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV -25/+20 %).

The response threshold is < 230 mV (observe the frequency response of the encoder).

A signal level of 500 mV peak value corresponds to the numerical value 299A hex = 10650 dec.

The angle 0 ... FFFF hex corresponds to 0 ... 360 degrees of the fine position. Zero degrees is present at the negative zero crossover of track B.

Note for Sensor Modules for resolvers (e.g. SMC10):

The nominal signal level is at 2900 mV (2.0 Vrms). The response threshold is < 1414 mV (1.0 Vrms).

A signal level of 2900 mV peak value corresponds to the numerical value 3333 hex = 13107 dec.

Note:

The analog values of the amplitude error are not measured at the same time with the hardware fault output by the Sensor Module.

Remedy:
- check the speed range, frequency characteristic (amplitude characteristic) of the measuring equipment is not sufficient for the speed range.
- check that the encoder cables and shielding are routed in compliance with EMC.
- check the plug connections.
- replace the encoder or encoder cable.
- check the Sensor Module (e.g. contacts).
- if the coding disk is soiled or the lighting aged, replace the encoder.

Reaction upon F: Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon A: NONE
Acknowl. upon A: NONE

A32418 (F, N) Encoder 2: Speed change not plausible (alarm)

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 2 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: For an HTL/TTL encoder, the speed change has exceeded the value in p0492 over several sampling cycles.

The change to the averaged speed actual value - if applicable - is monitored in the current controller sampling time.

Alarm value (r2124, interpret decimal):

Only for internal Siemens troubleshooting.

See also: p0492

Remedy:
- check the tachometer feeder cable for interruptions.
- check the grounding of the tachometer shielding.
- if required, increase the setting of p0492.

Reaction upon F: Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A32419 (F, N) Encoder 2: Track A or B outside tolerance

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 2 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The amplitude/phase/offset correction for track A or B is at the limit.
Amplitude error correction: Amplitude B / Amplitude A = 0.78 ... 1.27
Phase: <84 degrees or >96 degrees
SMC20: Offset correction: +/-140 mV
SMC10: Offset correction: +/-650 mV
Alarm value (r2124, interpret hexadecimal):
xxxx1: Minimum of the offset correction, track B
xxxx2: Maximum of the offset correction, track B
xxx1x: Minimum of the offset correction, track A
xxx2x: Maximum of the offset correction, track A
xx1xx: Minimum of the amplitude correction, track B/A
xx2xx: Maximum of the amplitude correction, track B/A
x1xxx: Minimum of the phase error correction
x2xxx: Maximum of the phase error correction
1xxxx: Minimum of the cubic correction
2xxxx: Maximum of the cubic correction
Remedy: - check mechanical mounting tolerances for encoders without their own bearings (e.g. toothed-wheel encoders).
- check the plug connections (also the transition resistance).
- check the encoder signals.
- replace the encoder or encoder cable.
Reaction upon F: Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A32421 (F, N) Encoder 2: Determined commutation position incorrect (alarm)

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 2 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: A commutation position actual value sensing error was detected.
Alarm value (r2124, interpret decimal):
3: The absolute position of the serial protocol and track A/B differ by half an encoder pulse. The absolute position must have its zero position in the quadrants in which both tracks are negative. In the case of a fault, the position can be incorrect by one encoder pulse.

Remedy: For alarm value = 3:

- For a standard encoder with cable, contact the manufacturer where relevant.

- correct the assignment of the tracks to the position value that is serially transferred. To do this, the two tracks must be connected, inverted, at the Sensor Module (interchange A with A* and B with B*) or, for a programmable encoder, check the zero offset of the position.

Reaction upon F: Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)

Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)

Hla: NONE (OFF1, OFF2, OFF3, STOP2)

Acknowl. upon F: IMMEDIATELY

Reaction upon N: NONE

Acknowl. upon N: NONE

A32422 (F, N) Encoder 2: Pulses per revolution square-wave encoder outside tolerance bandwidth

Message value: %1

Message class: Actual position/speed value incorrect or not available (11)

Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Encoder 2 **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: The measured zero mark distance does not correspond to the parameterized zero mark distance.

This alarm is triggered with active square-wave encoder PPR correction and re-parameterized fault 31131 if the accumulator contains larger values than p4683 or p4684.

The zero mark distance for zero mark monitoring is set in p0425 (rotary encoder).

Alarm value (r2124, interpret decimal):

accumulated differential pulses in encoder pulses.

Remedy: - check that the encoder cables are routed in compliance with EMC.

- check the plug connections.

- check the encoder type (encoder with equidistant zero marks).

- adapt the parameter for the distance between zero marks (p0424, p0425).

- replace the encoder or encoder cable.

Reaction upon F: Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)

Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)

Hla: NONE (OFF1, OFF2, OFF3, STOP2)

Acknowl. upon F: IMMEDIATELY

Reaction upon N: NONE

Acknowl. upon N: NONE

A32429 (F, N) Encoder 2: Position difference hall sensor/track C/D and A/B too large

Message value: %1

Message class: Actual position/speed value incorrect or not available (11)

Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Encoder 2 **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: The error for track C/D is greater than +/-15 ° mechanical or +/-60 ° electrical or the error for the Hall signals is greater than +/-60 ° electrical.

One period of track C/D corresponds to 360 ° mechanical.

One period of the Hall signal corresponds to 360 ° electrical.

The monitoring responds if, for example, Hall sensors are connected as equivalent for the C/D tracks with the incorrect rotational sense or supply values that are not accurate enough.

Alarm value (r2124, interpret decimal):

For track C/D, the following applies:

Measured deviation as mechanical angle (16 bits with sign, 182 dec corresponds to 1 °).

For Hall signals, the following applies:

Measured deviation as electrical angle (16 bits with sign, 182 dec corresponds to 1 °).

Remedy: - track C or D not connected.
- correct the direction of rotation of the Hall sensor possibly connected as equivalent for track C/D.
- check that the encoder cables are routed in compliance with EMC.
- check the adjustment of the Hall sensor.

Reaction upon F: Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (OFF1, OFF2, OFF3, STOP2)

Acknowl. upon F: IMMEDIATELY

Reaction upon N: NONE

Acknowl. upon N: NONE

A32431 (F, N) Encoder 2: Position deviation incremental/absolute too high (alarm)

Message value: %1

Message class: Actual position/speed value incorrect or not available (11)

Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Encoder 2 **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: When the zero pulse is passed, a deviation in the incremental position was detected.
For equidistant zero marks, the following applies:
- the first zero mark passed supplies the reference point for all subsequent checks. The other zero marks must have n times the distance referred to the first zero mark.
For distance-coded zero marks, the following applies:
- the first zero mark pair supplies the reference point for all subsequent checks. The other zero mark pairs must have the expected distance to the first zero mark pair.
Alarm value (r2124, interpret decimal):
Deviation in quadrants (1 pulse = 4 quadrants).

Remedy: - check that the encoder cables are routed in compliance with EMC.
- check the plug connections.
- replace the encoder or encoder cable.
- Clean coding disk or remove strong magnetic fields.

Reaction upon F: Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (OFF1, OFF2, OFF3, STOP2)

Acknowl. upon F: IMMEDIATELY

Reaction upon N: NONE

Acknowl. upon N: NONE

A32432 (F, N) Encoder 2: Rotor position adaptation corrects deviation

Message value: %1

Message class: Actual position/speed value incorrect or not available (11)

Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Encoder 2 **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: On track A/B, pulses have been lost or too many have been counted. These pulses are presently being corrected.
Alarm value (r2124, interpret decimal):
Last measured deviation of zero mark in increments (4 increments = 1 encoder pulse).
The sign designates the direction of motion when detecting the zero mark distance.

Remedy: - check that the encoder cables are routed in compliance with EMC.
- check the plug connections.
- replace the encoder or encoder cable.
- check encoder limit frequency.
- adapt the parameter for the distance between zero marks (p0424, p0425).

Reaction upon F: Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A32442 (F, N) Encoder 2: Battery voltage alarm threshold reached

Message value: -
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 2 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: When switched-off, the encoder uses a battery to back up the multiturn information. The multiturn information can no longer be buffered if the battery voltage drops even further.
Remedy: Replace battery.
Reaction upon F: Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A32443 (F, N) Encoder 2: Signal level track C/D outside tolerance (alarm)

Message value: Fault cause: %1 bin
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 2 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The unipolar level (CP/CN or DP/DN) for encoder 2 is outside the permissible tolerance.
Alarm value (r2124, interpret binary):
Bit 0 = 1: Either CP or CN outside the tolerance.
Bit 16 = 1: Either DP or DN outside the tolerance.
The unipolar nominal signal level of the encoder must lie in the range 2500 mV +/- 500 mV.
The response thresholds are < 1700 mV and > 3300 mV.
Note:
The signal level is not evaluated unless the following conditions are satisfied:
- Sensor Module properties available (r0459.31 = 1).
- monitoring active (p0437.31 = 1).

Remedy:
- check that the encoder cables and shielding are routed in compliance with EMC.
- check the plug connections and contacts of the encoder cable.
- are the C/D tracks connected correctly (have the signal cables CP and CN or DP and DN been interchanged)?
- replace the encoder cable.

Reaction upon F: Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A32460 (N) Encoder 2: Analog sensor channel A failed

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 2 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The input voltage of the analog sensor is outside the permissible limits.
Alarm value (r2124, interpret decimal):
1: Input voltage outside detectable measuring range.
2: Input voltage outside measuring range set in p4673.
3: The absolute value of the input voltage has exceeded the range limit (p4676).
Remedy: For alarm value = 1:
- check the output voltage of the analog sensor.
For alarm value = 2:
- check the voltage setting for each encoder period (p4673).
For alarm value = 3:
- check the range limit setting and increase it if necessary (p4676).
Reaction upon N: NONE
Acknowl. upon N: NONE

A32461 (N) Encoder 2: Analog sensor channel B failed

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 2 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The input voltage of the analog sensor is outside the permissible limits.
Alarm value (r2124, interpret decimal):
1: Input voltage outside detectable measuring range.
2: Input voltage outside the selected measuring range (p4675).
3: The absolute value of the input voltage has exceeded the range limit (p4676).
Remedy: For alarm value = 1:
- check the output voltage of the analog sensor.
For alarm value = 2:
- check the voltage setting for each encoder period (p4675).
For alarm value = 3:
- check the range limit setting and increase it if necessary (p4676).
Reaction upon N: NONE
Acknowl. upon N: NONE

A32462 (N) Encoder 2: Analog sensor no channel active

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 2 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: Channel A and B are not activated for the analog sensor.
Remedy: - activate channel A and/or channel B (p4670).
- check the encoder configuration (p0404.17).
See also: p4670 (Analog sensor configuration)
Reaction upon N: NONE
Acknowl. upon N: NONE

A32463 (N) Encoder 2: Analog sensor position value exceeds limit value

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 2 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The position value has exceeded the permissible range of -0.5 ... +0.5.
Alarm value (r2124, interpret decimal):
1: Position value from the LVDT sensor.
2: Position value from the encoder characteristic.
Remedy: For alarm value = 1:
- check the LVDT ratio (p4678).
- check the reference signal connection at track B.
For alarm value = 2:
- check the coefficients of the characteristic (p4663 ... p4666).

Reaction upon N: NONE
Acknowl. upon N: NONE

A32470 (F, N) Encoder 2: Encoder signals an internal error (X521.7)

Message value: -
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 2 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: For the Sensor Module Cabinet 30 (SMC30), a dirty encoder is signaled via a 0 signal at terminal X521.7.
Remedy: - check the plug connections.
- replace the encoder or encoder cable.

Reaction upon F: Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

F32500 (N, A) Encoder 2: Position tracking traversing range exceeded

Message value: -
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: For a configured linear axis without modulo correction, the drive/encoder has exceeded the maximum possible traversing range. The value should be read in p0412 and interpreted as the number of motor revolutions.
For p0411.0 = 1, the maximum traversing range for the configured linear axis is defined to be 64x (+/- 32x) of p0421.
For p0411.3 = 1, the maximum traversing range for the configured linear axis is preset (default value) to the highest possible value and is +/-p0412/2 (rounded off to complete revolutions). The highest possible value depends on the pulse number (p0408) and the fine resolution (p0419).
Remedy: The fault should be resolved as follows:
- select encoder commissioning (p0010 = 4).
- reset the position tracking as follows (p0411.2 = 1).
- deselect encoder commissioning (p0010 = 0).
The fault should then be acknowledged and the absolute encoder adjusted.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32501 (N, A) Encoder 2: Position tracking encoder position outside tolerance window

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: When switched off, the drive/encoder was moved through a distance greater than was parameterized in the tolerance window. It is possible that there is no longer any reference between the mechanical system and encoder.

Fault value (r0949, interpret decimal):

Deviation (difference) to the last encoder position in increments of the absolute value.

The sign designates the traversing direction.

Note:

The deviation (difference) found is also displayed in r0477.

See also: p0413 (Measuring gear position tracking tolerance window), r0477 (Measuring gear position difference)

Remedy: Reset the position tracking as follows:

- select encoder commissioning (p0010 = 4).
- reset the position tracking as follows (p0411.2 = 1).
- deselect encoder commissioning (p0010 = 0).

The fault should then be acknowledged and, if necessary, the absolute encoder adjusted (p2507).

See also: p0010, p2507

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32502 (N, A) Encoder 2: Encoder with measuring gear without valid signals

Message value: -
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 2 **Propagation:** GLOBAL
Reaction: OFF1 (OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The encoder with measuring gear no longer provides any valid signals.
Remedy: It must be ensured that all of the encoders, with mounted measuring gear, provide valid actual values in operation.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32503 (N, A) Encoder 2: Position tracking cannot be reset

Message value: -
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The position tracking for the measuring gear cannot be reset.

Remedy: The fault should be resolved as follows:
- select encoder commissioning (p0010 = 4).
- reset the position tracking as follows (p0411.2 = 1).
- deselect encoder commissioning (p0010 = 0).

The fault should then be acknowledged and the absolute encoder adjusted.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

A32700 Encoder 2: Effectivity test does not supply the expected value

Message value: Fault cause: %1 bin
Message class: Safety monitoring channel has identified an error (10)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 2 **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The DRIVE-CLiQ encoder fault word supplies fault bits that have been set.
Alarm value (r2124, interpret binary):
Bit x = 1: Effectivity test x unsuccessful.
Remedy: Replace encoder.

N32800 (F) Encoder 2: Group signal

Message value: -
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: NONE
Cause: The motor encoder has detected at least one fault.
Remedy: Evaluates other actual messages.
Reaction upon F: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

F32801 (N, A) Encoder 2 DRIVE-CLiQ: Sign-of-life missing

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Control Unit to the encoder involved.
Fault cause:
10 (= 0A hex):
The sign-of-life bit in the receive telegram is not set.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy: - check the electrical cabinet design and cable routing for EMC compliance
- replace the component involved.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32802 (N, A) Encoder 2: Time slice overflow

Message value: %1
Message class: Hardware/software error (1)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 2 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: A time slice overflow has occurred in encoder 2.
Fault value (r0949, interpret hexadecimal):
yx hex: y = function involved (Siemens-internal fault diagnostics), x = time slice involved
x = 9:
Time slice overflow of the fast (current controller clock cycle) time slice.
x = A:
Time slice overflow of the average time slice.
x = C:
Time slice overflow of the slow time slice.
yx = 3E7:
Timeout when waiting for SYNO (e.g. unexpected return to non-cyclic operation).
Remedy: Increase the current controller sampling time
Note:
For a current controller sampling time = 31.25 µs, use an SMx20 with Article No. 6SL3055-0AA00-5xA3.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32804 (N, A) Encoder 2: Sensor Module checksum error

Message value: %1
Message class: Hardware/software error (1)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 2 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: POWER ON (IMMEDIATELY)
Cause: A checksum error has occurred when reading-out the program memory on the Sensor Module.
Fault value (r0949, interpret hexadecimal):
yyyyxxxx hex
yyyy: Memory area involved.
xxxx: Difference between the checksum at POWER ON and the actual checksum.
Remedy: - carry out a POWER ON (switch-off/switch-on).
- upgrade firmware to later version (>= V2.6 HF3, >= V4.3 SP2, >= V4.4).
- check whether the permissible ambient temperature for the component is maintained.
- replace the Sensor Module.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32805 (N, A) Encoder 2: EEPROM checksum error

Message value: %1
Message class: Hardware/software error (1)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 2 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: Data in the EEPROM corrupted .
Fault value (r0949, interpret hexadecimal):
01: EEPROM access error.
02: Too many blocks in the EEPROM.
Remedy: Replace the module.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32806 (N, A) Encoder 2: Initialization error

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 2 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: PULSE INHIBIT
Cause: The encoder was not successfully initialized.
Fault value (r0949, interpret hexadecimal):
Bit 0, 1: Encoder initialization with the motor rotating has failed (deviation involving coarse and fine position in encoder pulses/4).
Bit 2: Mid-voltage matching for track A unsuccessful.
Bit 3: Mid-voltage matching for track B unsuccessful.
Bit 4: Mid-voltage matching for acceleration input unsuccessful.
Bit 5: Mid-voltage matching for track safety A unsuccessful.
Bit 6: Mid-voltage matching for track safety B unsuccessful.
Bit 7: Mid-voltage matching for track C unsuccessful.
Bit 8: Mid-voltage matching for track D unsuccessful.
Bit 9: Mid-voltage matching for track R unsuccessful.
Bit 10: The difference in mid-voltages between A and B is too great (> 0.5 V)
Bit 11: The difference in mid-voltages between C and D is too great (> 0.5 V)
Bit 12: The difference in mid-voltages between safety A and safety B is too great (> 0.5 V)
Bit 13: The difference in mid-voltages between A and safety B is too great (> 0.5 V)
Bit 14: The difference in mid-voltages between B and safety A is too great (> 0.5 V)
Bit 15: The standard deviation of the calculated mid-voltages is too great (> 0.3 V)
Bit 16: Internal fault - fault when reading a register (CAFE)
Bit 17: Internal fault - fault when writing a register (CAFE)
Bit 18: Internal fault: No mid-voltage matching available
Bit 19: Internal error - ADC access error.

Bit 20: Internal error - no zero crossover found.
Bit 28: Error while initializing the EnDat 2.2 measuring unit.
Bit 29: Error when reading out the data from the EnDat 2.2 measuring unit.
Bit 30: EEPROM checksum of the EnDat 2.2 measuring unit incorrect.
Bit 31: Data of the EnDat 2.2 measuring unit inconsistent.
Note:
Bit 0, 1: Up to 6SL3055-0AA00-5*A0
Bits 2 ... 20: 6SL3055-0AA00-5*A1 and higher

Remedy: Acknowledge fault.
If the fault cannot be acknowledged:
Bits 2 ... 9: Check encoder power supply.
Bits 2 ... 14: Check the corresponding cable.
Bit 15 with no other bits: Check track R, check settings in p0404.
Bit 28: Check the cable between the EnDat 2.2 converter and the measuring unit.
Bit 29 ... 31: Replace the defective measuring unit.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

A32811 (F, N) Encoder 2: Encoder serial number changed

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 2 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The encoder serial number has changed. The change is only checked for encoders with serial number (e.g. EnDat encoders).
- the encoder was replaced.
Note:
With closed-loop position control, the serial number is accepted when starting the adjustment (p2507 = 2).
When the encoder is adjusted (p2507 = 3), the serial number is checked for changes and if required, the adjustment is reset (p2507 = 1).
Proceed as follows to hide serial number monitoring:
- set the following serial numbers for the corresponding Encoder Data Set: p0441= FF, p0442 = 0, p0443 = 0, p0444 = 0, p0445 = 0.

Remedy: Mechanically adjust the encoder. Accept the new serial number with p0440 = 1.

Reaction upon F: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

F32812 (N, A) Encoder 2: Requested cycle or RX-/TX timing not supported

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 2 **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: A cycle requested from the Control Unit or RX/TX timing is not supported.
Fault value (r0949, interpret decimal):
0: Application cycle is not supported.
1: DRIVE-CLiQ cycle is not supported.
2: Distance between RX and TX instants in time too low.
3: TX instant in time too early.

Remedy:	Carry out a POWER ON (switch-off/switch-on) for all components.
Reaction upon N:	NONE
Acknowl. upon N:	NONE
Reaction upon A:	NONE
Acknowl. upon A:	NONE

F32813 Encoder 2: Hardware logic unit failed

Message value:	Fault cause: %1 bin
Message class:	Hardware/software error (1)
Drive object:	HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Sensor Module Encoder 2 **Propagation:** GLOBAL
Reaction:	Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3) Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3) Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge:	PULSE INHIBIT
Cause:	The logic unit of the DRIVE-CLiQ encoder has failed. Fault value (r0949, interpret binary): Bit 0: ALU watchdog has responded. Bit 1: ALU has detected a sign-of-life error.
Remedy:	When the error reoccurs, replace the encoder.

F32820 (N, A) Encoder 2 DRIVE-CLiQ: Telegram error

Message value:	Component number: %1, fault cause: %2
Message class:	Internal (DRIVE-CLiQ) communication error (12)
Drive object:	HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Sensor Module Encoder 2 **Propagation:** LOCAL
Reaction:	Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3) Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3) Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge:	IMMEDIATELY
Cause:	A DRIVE-CLiQ communication error has occurred from the Control Unit to the encoder concerned. Fault cause: 1 (= 01 hex): Checksum error (CRC error). 2 (= 02 hex): Telegram is shorter than specified in the length byte or in the receive list. 3 (= 03 hex): Telegram is longer than specified in the length byte or in the receive list. 4 (= 04 hex): The length of the receive telegram does not match the receive list. 5 (= 05 hex): The type of the receive telegram does not match the receive list. 6 (= 06 hex): The address of the component in the telegram and in the receive list do not match. 7 (= 07 hex): A SYNC telegram is expected - but the received telegram is not a SYNC telegram. 8 (= 08 hex): No SYNC telegram is expected - but the received telegram is one. 9 (= 09 hex): The error bit in the receive telegram is set. 16 (= 10 hex): The receive telegram is too early. Note regarding the message value: The individual information is coded as follows in the message value (r0949/r2124): 0000yyxx hex: yy = component number, xx = error cause

Remedy: - carry out a POWER ON (switch-off/switch-on).
- check the electrical cabinet design and cable routing for EMC compliance
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32835 (N, A) Encoder 2 DRIVE-CLiQ: Cyclic data transfer error

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 2 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Control Unit to the encoder concerned. The nodes do not send and receive in synchronism.

Fault cause:

33 (= 21 hex):

The cyclic telegram has not been received.

34 (= 22 hex):

Timeout in the telegram receive list.

64 (= 40 hex):

Timeout in the telegram send list.

Note regarding the message value:

The individual information is coded as follows in the message value (r0949/r2124):

0000yyxx hex: yy = component number, xx = error cause

Remedy: - carry out a POWER ON.
- replace the component involved.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32836 (N, A) Encoder 2 DRIVE-CLiQ: Send error for DRIVE-CLiQ data

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 2 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Control Unit to the encoder involved. Data were not able to be sent.

Fault cause:

65 (= 41 hex):

Telegram type does not match send list.

Note regarding the message value:

The individual information is coded as follows in the message value (r0949/r2124):

0000yyxx hex: yy = component number, xx = error cause

Remedy: Carry out a POWER ON.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32837 (N, A) Encoder 2 DRIVE-CLiQ: Component fault

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 2 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: Fault detected on the DRIVE-CLiQ component concerned. Faulty hardware cannot be excluded.
Fault cause:
32 (= 20 hex):
Error in the telegram header.
35 (= 23 hex):
Receive error: The telegram buffer memory contains an error.
66 (= 42 hex):
Send error: The telegram buffer memory contains an error.
67 (= 43 hex):
Send error: The telegram buffer memory contains an error.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: - check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
- check the electrical cabinet design and cable routing for EMC compliance
- if required, use another DRIVE-CLiQ socket (p9904).
- replace the component involved.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32845 (N, A) Encoder 2 DRIVE-CLiQ: Cyclic data transfer error

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 2 **Propagation:** GLOBAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Control Unit to the encoder involved.
Fault cause:
11 (= 0B hex):
Synchronization error during alternating cyclic data transfer.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: Carry out a POWER ON (switch-off/switch-on).

Reaction upon N:	NONE
Acknowl. upon N:	NONE
Reaction upon A:	NONE
Acknowl. upon A:	NONE

F32850 (N, A) Encoder 2: Encoder evaluation internal software error

Message value: %1
Message class: Hardware/software error (1)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 2 **Propagation:** GLOBAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: POWER ON
Cause: An internal software error has occurred in the Sensor Module of encoder 2.
Fault value (r0949, interpret decimal):
1: Background time slice is blocked.
2: Checksum over the code memory is not OK.
10000: OEM memory of the EnDat encoder contains data that cannot be interpreted.
11000 ... 11499: Descriptive data from EEPROM incorrect.
11500 ... 11899: Calibration data from EEPROM incorrect.
11900 ... 11999: Configuration data from EEPROM incorrect.
12000 ... 12008: communication with analog/digital converter faulted.
16000: DRIVE-CLiQ encoder initialization application error.
16001: DRIVE-CLiQ encoder initialization ALU error.
16002: DRIVE-CLiQ encoder HISI / SISI initialization error.
16003: DRIVE-CLiQ encoder safety initialization error.
16004: DRIVE-CLiQ encoder internal system error.
Remedy: - replace the Sensor Module.
- if required, upgrade the firmware in the Sensor Module.
- contact Technical Support.

Reaction upon N:	NONE
Acknowl. upon N:	NONE
Reaction upon A:	NONE
Acknowl. upon A:	NONE

F32851 (N, A) Encoder 2 DRIVE-CLiQ (CU): Sign-of-life missing

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 2 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Sensor Module (encoder 2) involved to the Control Unit.
The DRIVE-CLiQ component did not set the sign-of-life to the Control Unit.
Fault cause:
10 (= 0A hex):
The sign-of-life bit in the receive telegram is not set.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: - Upgrade the firmware of the component involved.
- carry out a POWER ON (switch-off/switch-on) for the component involved.

Reaction upon N:	NONE
Acknowl. upon N:	NONE
Reaction upon A:	NONE
Acknowl. upon A:	NONE

F32860 (N, A) Encoder 2 DRIVE-CLiQ (CU): Telegram error

Message value: Component number: %1, fault cause: %2

Message class: Internal (DRIVE-CLiQ) communication error (12)

Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Sensor Module Encoder 2 **Propagation:** LOCAL

Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)

Acknowledge: IMMEDIATELY

Cause: A DRIVE-CLiQ communication error has occurred from the Sensor Module (encoder 2) involved to the Control Unit.
Fault cause:
1 (= 01 hex):
Checksum error (CRC error).
2 (= 02 hex):
Telegram is shorter than specified in the length byte or in the receive list.
3 (= 03 hex):
Telegram is longer than specified in the length byte or in the receive list.
4 (= 04 hex):
The length of the receive telegram does not match the receive list.
5 (= 05 hex):
The type of the receive telegram does not match the receive list.
6 (= 06 hex):
The address of the power unit in the telegram and in the receive list do not match.
9 (= 09 hex):
The DRIVE-CLiQ communication from the DRIVE-CLiQ component involved to the Control Unit signals that the supply voltage has failed.
16 (= 10 hex):
The receive telegram is too early.
17 (= 11 hex):
CRC error and the receive telegram is too early.
18 (= 12 hex):
The telegram is shorter than that specified in the length byte or in the receive list and the receive telegram is too early.
19 (= 13 hex):
The telegram is longer than that specified in the length byte or in the receive list and the receive telegram is too early.
20 (= 14 hex):
The length of the receive telegram does not match the receive list and the receive telegram is too early.
21 (= 15 hex):
The type of the receive telegram does not match the receive list and the receive telegram is too early.
22 (= 16 hex):
The address of the power unit in the telegram and in the receive list does not match and the receive telegram is too early.
25 (= 19 hex):
The error bit in the receive telegram is set and the receive telegram is too early.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy: - carry out a POWER ON (switch-off/switch-on).
- check the electrical cabinet design and cable routing for EMC compliance
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32875 (N, A) Encoder 2: power supply voltage failed

Message value: Component number: %1, fault cause: %2
Message class: Supply voltage fault (undervoltage) (3)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 2 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The DRIVE-CLiQ communication from the DRIVE-CLiQ component involved to the Control Unit signals that the supply voltage has failed.
Fault cause:
9 (= 09 hex):
The power supply voltage for the components has failed.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: - carry out a POWER ON (switch-off/switch-on).
- check the power supply voltage wiring for the DRIVE-CLiQ component (interrupted cable, contacts, ...).
- check the dimensioning of the power supply for the DRIVE-CLiQ component.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32885 (N, A) Encoder 2 DRIVE-CLiQ (CU): Cyclic data transfer error

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 2 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Sensor Module (encoder 2) involved to the Control Unit.
The nodes do not send and receive in synchronism.
Fault cause:
26 (= 1A hex):
Sign-of-life bit in the receive telegram not set and the receive telegram is too early.
33 (= 21 hex):
The cyclic telegram has not been received.
34 (= 22 hex):
Timeout in the telegram receive list.
64 (= 40 hex):
Timeout in the telegram send list.
98 (= 62 hex):
Error at the transition to cyclic operation.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy: - check the power supply voltage of the component involved.
- carry out a POWER ON.
- replace the component involved.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32886 (N, A) Encoder 2 DRIVE-CLiQ (CU): Error when sending DRIVE-CLiQ data

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 2 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Sensor Module (encoder 2) involved to the Control Unit.
Data were not able to be sent.
Fault cause:
65 (= 41 hex):
Telegram type does not match send list.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: Carry out a POWER ON.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32887 (N, A) Encoder 2 DRIVE-CLiQ (CU): Component fault

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 2 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: Fault detected on the DRIVE-CLiQ component involved (Sensor Module for encoder 2). Faulty hardware cannot be excluded.
Fault cause:
32 (= 20 hex):
Error in the telegram header.
35 (= 23 hex):
Receive error: The telegram buffer memory contains an error.
66 (= 42 hex):
Send error: The telegram buffer memory contains an error.
67 (= 43 hex):
Send error: The telegram buffer memory contains an error.
96 (= 60 hex):
Response received too late during runtime measurement.
97 (= 61 hex):
Time taken to exchange characteristic data too long.

	Note regarding the message value:
	The individual information is coded as follows in the message value (r0949/r2124):
	0000yyxx hex: yy = component number, xx = error cause
Remedy:	- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
	- check the electrical cabinet design and cable routing for EMC compliance
	- if required, use another DRIVE-CLiQ socket (p9904).
	- replace the component involved.
Reaction upon N:	NONE
Acknowl. upon N:	NONE
Reaction upon A:	NONE
Acknowl. upon A:	NONE

F32895 (N, A) Encoder 2 DRIVE-CLiQ (CU): Alternating cyclic data transfer error

Message value:	Component number: %1, fault cause: %2
Message class:	Internal (DRIVE-CLiQ) communication error (12)
Drive object:	HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Sensor Module Encoder 2 **Propagation:** LOCAL
Reaction:	Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
	Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
	Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge:	IMMEDIATELY
Cause:	A DRIVE-CLiQ communication error has occurred from the Sensor Module (encoder 2) involved to the Control Unit.
	Fault cause:
	11 (= 0B hex):
	Synchronization error during alternating cyclic data transfer.
	Note regarding the message value:
	The individual information is coded as follows in the message value (r0949/r2124):
	0000yyxx hex: yy = component number, xx = error cause
Remedy:	Carry out a POWER ON.
Reaction upon N:	NONE
Acknowl. upon N:	NONE
Reaction upon A:	NONE
Acknowl. upon A:	NONE

F32896 (N, A) Encoder 2 DRIVE-CLiQ (CU): Inconsistent component properties

Message value:	Component number: %1
Message class:	Internal (DRIVE-CLiQ) communication error (12)
Drive object:	HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Sensor Module Encoder 2 **Propagation:** LOCAL
Reaction:	Servo: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
	Vector: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
	Hla: OFF2 (NONE, OFF1, OFF3, STOP2)
Acknowledge:	IMMEDIATELY
Cause:	The properties of the DRIVE-CLiQ component (Sensor Module for encoder 2), specified by the fault value, have changed in an incompatible fashion with respect to the properties when booted. One cause can be, e.g. that a DRIVE-CLiQ cable or DRIVE-CLiQ component has been replaced.
	Fault value (r0949, interpret decimal):
	Component number.
Remedy:	- carry out a POWER ON.
	- when a component is replaced, the same component type and if possible the same firmware version should be used.
	- when a cable is replaced, only cables whose length is the same as or as close as possible to the length of the original cables should be used (ensure compliance with the maximum cable length).
Reaction upon N:	NONE
Acknowl. upon N:	NONE

Reaction upon A: NONE
Acknowl. upon A: NONE

F32899 (N, A) Encoder 2: Unknown fault

Message value: New message: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 2 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Hla: OFF1 (NONE, OFF2, OFF3, STOP2)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: A fault occurred on the Sensor Module for encoder 2 that cannot be interpreted by the Control Unit firmware.
This can occur if the firmware on this component is more recent than the firmware on the Control Unit.
Fault value (r0949, interpret decimal):
Fault number.
Note:
If required, the significance of this new fault can be read about in a more recent description of the Control Unit.
Remedy: - replace the firmware on the Sensor Module by an older firmware version (r0148).
- upgrade the firmware on the Control Unit (r0018).
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

A32902 (F, N) Encoder 2: SPI-BUS error occurred

Message value: %1
Message class: Hardware/software error (1)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 2 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: Error when operating the internal SPI bus.
Alarm value (r2124, interpret hexadecimal):
Only for internal Siemens troubleshooting.
Remedy: - replace the Sensor Module.
- if required, upgrade the firmware in the Sensor Module.
- contact Technical Support.
Reaction upon F: Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A32903 (F, N) Encoder 2: I2C-BUS error occurred

Message value: %1
Message class: Hardware/software error (1)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC
Component: Sensor Module Encoder 2 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: Error when operating the internal I2C bus.
Alarm value (r2124, interpret hexadecimal):
Only for internal Siemens troubleshooting.

Remedy: - replace the Sensor Module.
- if required, upgrade the firmware in the Sensor Module.
- contact Technical Support.

Reaction upon F: Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (OFF1, OFF2, OFF3, STOP2)

Acknowl. upon F: IMMEDIATELY

Reaction upon N: NONE

Acknowl. upon N: NONE

F32905 (N, A) Encoder 2: Encoder parameterization error

Message value: Parameter: %1, supplementary information: %2

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Sensor Module Encoder 2 **Propagation:** LOCAL

Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Hla: OFF1 (NONE, OFF2, OFF3, STOP2)

Acknowledge: IMMEDIATELY

Cause: An error was identified in the encoder parameterization.

It is possible that the parameterized encoder type does not match the connected encoder.

The parameter involved can be determined as follows:

- determine the parameter number using the fault value (r0949).
- determine the parameter index (p0187).

Fault value (r0949, interpret decimal):

yyyyxxxx dec: yyyy = supplementary information, xxxx = parameter

xxxx = 421:

For an EnDat/SSI encoder, the absolute position in the protocol must be less than or equal to 30 bits.

yyyy = 0:

No additional information available.

yyyy = 1:

The component does not support HTL level (p0405.1 = 0) combined with track monitoring A/B <> -A/B (p0405.2 = 1).

yyyy = 2:

A code number for an identified encoder has been entered into p0400, however, no identification was carried out. Please start a new encoder identification.

yyyy = 3:

A code number for an identified encoder has been entered into p0400, however, no identification was carried out. Please select a listed encoder in p0400 with a code number < 10000.

yyyy = 4:

This component does not support SSI encoders (p0404.9 = 1) without track A/B.

yyyy = 5:

For SQW encoder, value in p4686 greater than in p0425.

yyyy = 6:

DRIVE-CLiQ encoder cannot be used with this firmware version.

yyyy = 7:

For an SQW encoder, the XIST1 correction (p0437.2) is only permitted for equidistant zero marks.

yyyy = 8:

The motor pole pair width is not supported by the linear scale being used.

yyyy = 9:

The length of the position in the EnDat protocol may be a maximum of 32 bits.

yyyy = 10:

The connected encoder is not supported.

yyyy = 11:

The hardware does not support track monitoring.

Remedy: - check whether the connected encoder type matches the encoder that has been parameterized.
- correct the parameter specified by the fault value (r0949) and p0187.
- re parameter number = 314:
- check the pole pair number and measuring gear ratio. The quotient of the "pole pair number" divided by the "measuring gear ratio" must be less than or equal to 1000 ((r0313 * p0433) / p0432 <= 1000).

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32912 Encoder 2: Device combination is not permissible

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 2 **Propagation:** GLOBAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE)
Vector: OFF1 (IASC/DCBRK, NONE)
Hla: OFF1 (NONE)
Acknowledge: PULSE INHIBIT
Cause: The selected device combination is not supported.
Fault value (r0949, interpret decimal):
1003:
The connected measuring unit cannot be operated with the EnDat 2.2 converter. For instance, the measuring unit has a pulse number/resolution of 2^n.
1005:
The type of measuring unit (incremental) is not supported by the EnDat 2.2 converter.
1006:
The maximum duration of the EnDat transfer (31.25 µs) was exceeded.
2001:
The set combination of current controller cycle, DP cycle and Safety cycle is not supported by the EnDat 2.2 converter.
2002:
The resolution of the linear measuring unit does not match the pole pair width of the linear motor
Pole pair width, minimum = p0422 * 2^20
Remedy: For fault value = 1003, 1005, 1006:
- Use a measuring unit that is permissible.
For fault value = 2001:
- set a permissible cycle combination (if required, use standard settings).
For fault value = 2002:
- Use a measuring unit with a lower resolution (p0422).

A32915 (F, N) Encoder 2: Encoder configuration error

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 2 **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The configuration for encoder 2 is incorrect.
Alarm value (r2124, interpret decimal):
1:
Re-parameterization between fault/alarm is not permissible.
419:
When the fine resolution Gx_XIST2 is configured, the encoder identifies a maximum possible absolute position actual value (r0483) that can no longer be represented within 32 bits.

Remedy:	For alarm value = 1:
	No re-parameterization between fault/alarm.
	For alarm value = 419:
	Reduce the fine resolution (p0419) or deactivate the monitoring (p0437.25), if the complete multiturn range is not required.
Reaction upon F:	Servo: NONE (IASC/DCBRK)
	Vector: NONE (IASC/DCBRK)
	Hla: NONE
Acknowl. upon F:	IMMEDIATELY
Reaction upon N:	NONE
Acknowl. upon N:	NONE

F32916 (N, A) Encoder 2: Encoder parameterization error

Message value:	Parameter: %1, supplementary information: %2
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Drive object:	HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Sensor Module Encoder 2 **Propagation:** GLOBAL
Reaction:	Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
	Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
	Hla: OFF1 (NONE, OFF2, OFF3, STOP2)
Acknowledge:	IMMEDIATELY
Cause:	An encoder parameter was detected as being incorrect.
	It is possible that the parameterized encoder type does not match the connected encoder.
	The parameter involved can be determined as follows:
	- determine the parameter number using the fault value (r0949).
	- determine the parameter index (p0187).
	Fault value (r0949, interpret decimal):
	Parameter number.
Remedy:	- check whether the connected encoder type matches the encoder that has been parameterized.
	- correct the parameter specified by the fault value (r0949) and p0187.
Reaction upon N:	NONE
Acknowl. upon N:	NONE
Reaction upon A:	NONE
Acknowl. upon A:	NONE

A32920 (F, N) Encoder 2: Temperature sensor fault (motor)

Message value:	Fault cause: %1, channel number: %2
Message class:	External measured value / signal state outside the permissible range (16)
Drive object:	HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Sensor Module Encoder 2 **Propagation:** LOCAL
Reaction:	NONE
Acknowledge:	NONE
Cause:	The motor detected a fault when evaluating the temperature sensor.
	Fault cause:
	1 (= 01 hex):
	Wire breakage or sensor not connected.
	KTY: R > 1630 Ohm, PT1000: R > 1720 Ohm
	2 (= 02 hex):
	Measured resistance too low.
	PTC: R < 20 Ohm, KTY: R < 50 Ohm, PT1000: R < 603 Ohm
	Additional values:
	Only for internal Siemens troubleshooting.
	Note regarding the message value:
	The individual information is coded as follows in the message value (r0949/r2124):
	0000yyxx hex: yy = channel number, xx = error cause

Remedy: - check that the encoder cable is the correct type and is correctly connected.
- check the temperature sensor selection in p0600 to p0603.
- replace the Sensor Module (hardware defect or incorrect calibration data).

Reaction upon F: Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (OFF1, OFF2, OFF3, STOP2)

Acknowl. upon F: IMMEDIATELY

Reaction upon N: NONE

Acknowl. upon N: NONE

A32930 (N) Encoder 2: Data logger has saved data

Message value: -

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Sensor Module Encoder 2 **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: For the activated function "Data logger" (p0437.0 = 1) a fault has occurred with the Sensor Module. This alarm indicates that the diagnostics data corresponding to the fault was saved on the memory card.
The diagnostics data is saved in the following folder:
/USER/SINAMICS/DATA/SMTRC00.BIN
...
/USER/SINAMICS/DATA/SMTRC07.BIN
/USER/SINAMICS/DATA/SMTRCIDX.TXT
The following information is contained in the TXT file:
- Display of the last written BIN file.
- Number of write operations that are still possible (from 10000 downwards).
Note:
Only Siemens can evaluate the BIN files.

Remedy: Not necessary.
This alarm is automatically withdrawn.
The data logger is ready to record the next fault case.

Reaction upon N: NONE

Acknowl. upon N: NONE

A32940 (F, N) Encoder 2: Spindle sensor S1 voltage incorrect

Message value: %1

Message class: Application/technological function faulted (17)

Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Encoder 2 **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: The voltage of analog sensor S1 is outside the permissible range.
Alarm value (r2124, interpret decimal):
Signal level from sensor S1.
Note:
A signal level of 500 mV corresponds to the numerical value 500 dec.

Remedy: - check the clamped tool.
- check the tolerance and if required, adapt (p5040).
- check the thresholds and if required, adapt (p5041).
- check analog sensor S1 and connections.
See also: p5040 (Spindle voltage threshold values tolerance), p5041 (Spindle voltage threshold values)

Reaction upon F:	Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2) Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2) Hla: NONE (OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F:	IMMEDIATELY
Reaction upon N:	NONE
Acknowl. upon N:	NONE

F32950 Encoder 2: Internal software error

Message value: %1
Message class: Hardware/software error (1)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 2 **Propagation:** LOCAL
Reaction: OFF1 (OFF2)
Acknowledge: POWER ON
Cause: An internal software error has occurred.
Fault value (r0949, interpret decimal):
Information about the fault source.
Only for internal Siemens troubleshooting.
Remedy: - if necessary, upgrade the firmware in the Sensor Module to a later version.
- contact Technical Support.

A32999 (F, N) Encoder 2: Unknown alarm

Message value: New message: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 2 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: A alarm has occurred on the Sensor Module for encoder 2 that cannot be interpreted by the Control Unit firmware.
This can occur if the firmware on this component is more recent than the firmware on the Control Unit.
Alarm value (r2124, interpret decimal):
Alarm number.
Note:
If required, the significance of this new alarm can be read about in a more recent description of the Control Unit.
Remedy: - replace the firmware on the Sensor Module by an older firmware version (r0148).
- upgrade the firmware on the Control Unit (r0018).
Reaction upon F: Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

F33100 (N, A) Encoder 3: Zero mark distance error

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 3 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Hla: OFF1 (NONE, OFF2, OFF3, STOP2)
Acknowledge: PULSE INHIBIT
Cause: The measured zero mark distance does not correspond to the parameterized zero mark distance.
For distance-coded encoders, the zero mark distance is determined from zero marks detected pairs. This means that if a zero mark is missing, depending on the pair generation, this cannot result in a fault and also has no effect in the system.
The zero mark distance for the zero mark monitoring is set in p0425 (rotary encoder) or p0424 (linear encoder).
Fault value (r0949, interpret decimal):
Last measured zero mark distance in increments (4 increments = 1 encoder pulse).
The sign designates the direction of motion when detecting the zero mark distance.
Remedy: - check that the encoder cables are routed in compliance with EMC.
- check the plug connections.
- check the encoder type (encoder with equidistant zero marks).
- adapt the parameter for the distance between zero marks (p0424, p0425).
- if message output above speed threshold, reduce filter time if necessary (p0438).
- replace the encoder or encoder cable.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33101 (N, A) Encoder 3: Zero mark failed

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 3 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Hla: OFF1 (NONE, OFF2, OFF3, STOP2)
Acknowledge: PULSE INHIBIT
Cause: The 1.5 x parameterized zero mark distance was exceeded.
The zero mark distance for the zero mark monitoring is set in p0425 (rotary encoder) or p0424 (linear encoder).
Fault value (r0949, interpret decimal):
Number of increments after POWER ON or since the last zero mark that was detected (4 increments = 1 encoder pulse).
Remedy: - check that the encoder cables are routed in compliance with EMC.
- check the plug connections.
- check the encoder type (encoder with equidistant zero marks).
- adapt the parameter for the clearance between zero marks (p0425).
- if message output above speed threshold, reduce filter time if necessary (p0438).
- when p0437.1 is active, check p4686.
- replace the encoder or encoder cable.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33103 (N, A)	**Encoder 3: Signal level zero track (track R) outside tolerance**
Message value:	R track: %1
Message class:	Actual position/speed value incorrect or not available (11)
Drive object:	HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Encoder 3 **Propagation:** LOCAL
Reaction:	Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3) Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3) Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge:	IMMEDIATELY
Cause:	The zero mark signal level (track R) does not lie within the tolerance bandwidth for encoder 1. The fault can be initiated when the unipolar voltage level is exceeded (RP/RN) or if the differential amplitude is undershot. Fault value (r0949, interpret hexadecimal): yyyyxxxx hex: yyyy = 0, xxxx = Signal level, track R (16 bits with sign) The response thresholds of the unipolar signal levels of the encoder are between < 1400 mV and > 3500 mV. The response threshold for the differential signal level of the encoder is < -1600 mV. A signal level of 500 mV peak value corresponds to the numerical value 5333 hex = 21299 dec. Note: The analog value of the amplitude error is not measured at the same time with the hardware fault output by the Sensor Module. The fault value can only be represented between -32768 ... 32767 dec (-770 ... 770 mV). The signal level is not evaluated unless the following conditions are satisfied: - Sensor Module properties available (r0459.31 = 1). - monitoring active (p0437.31 = 1).
Remedy:	- check the speed range; frequency characteristic (amplitude characteristic) of the measuring equipment might not be sufficient for the speed range - check that the encoder cables and shielding are routed in compliance with EMC. - check the plug connections and contacts of the encoder cable. - check the encoder type (encoder with zero marks). - check whether the zero mark is connected and the signal cables RP and RN have been connected correctly (not connected with the incorrect polarity). - replace the encoder cable. - if the coding disk is soiled or the lighting aged, replace the encoder.
Reaction upon N:	NONE
Acknowl. upon N:	NONE
Reaction upon A:	NONE
Acknowl. upon A:	NONE

F33110 (N, A)	**Encoder 3: Serial communications error**
Message value:	Fault cause: %1 bin
Message class:	Actual position/speed value incorrect or not available (11)
Drive object:	HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Encoder 3 **Propagation:** LOCAL
Reaction:	Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3) Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3) Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge:	PULSE INHIBIT
Cause:	There is an error in the transfer of the serial communication protocol between the encoder and internal or external evaluation module. Fault value (r0949, interpret binary): For an EnDat 2.1 encoder, the significance of the fault value is as follows: Bit 0: Alarm bit in the position protocol. Bit 1: Incorrect quiescent level on the data line. Bit 2: Encoder does not respond (does not supply a start bit within 50 ms). Bit 3: CRC error: The checksum in the protocol from the encoder does not match the data.

Bit 4: Encoder acknowledgment error: The encoder incorrectly understood the task (request) or cannot execute it.
Bit 5: Internal error in the serial driver: An illegal mode command was requested.
Bit 6: Timeout when cyclically reading.
Bit 7: Timeout for the register communication.
Bit 8: Protocol is too long (e.g. > 64 bits).
Bit 9: Receive buffer overflow.
Bit 10: Frame error when reading twice.
Bit 11: Parity error.
Bit 12: Data line signal level error during the monoflop time.
Bit 13: Data line incorrect.
Bit 14: Fault for the register communication.
Bit 15: Internal communication error.
Note:
For an EnDat 2.2 encoder, the significance of the fault value for F3x135 (x = 1, 2, 3) is described.

Remedy: For fault value, bit 0 = 1:
- Enc defect F31111 may provide additional details.
For fault value, bit 1 = 1:
- incorrect encoder type / replace the encoder or encoder cable.
For fault value, bit 2 = 1:
- incorrect encoder type / replace the encoder or encoder cable.
For fault value, bit 3 = 1:
- EMC / connect the cable shield, replace the encoder or encoder cable.
For fault value, bit 4 = 1:
- EMC / connect the cable shield, replace the encoder or encoder cable, replace the Sensor Module.
For fault value, bit 5 = 1:
- EMC / connect the cable shield, replace the encoder or encoder cable, replace the Sensor Module.
For fault value, bit 6 = 1:
- Update Sensor Module firmware.
For fault value, bit 7 = 1:
- incorrect encoder type / replace the encoder or encoder cable.
For fault value, bit 8 = 1:
- check parameterization (p0429.2).
For fault value, bit 9 = 1:
- EMC / connect the cable shield, replace the encoder or encoder cable, replace the Sensor Module.
For fault value, bit 10 = 1:
- check parameterization (p0429.2, p0449).
For fault value, bit 11 = 1:
- check parameterization (p0436).
For fault value, bit 12 = 1:
- check parameterization (p0429.6).
For fault value, bit 13 = 1:
- check data line.
For fault value, bit 14 = 1:
- incorrect encoder type / replace the encoder or encoder cable.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33111 (N, A) Encoder 3: Encoder signals an internal error (detailed information)

Message value: Fault cause: %1 bin, additional information: %2
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 3 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: PULSE INHIBIT
Cause: The encoder error word provides detailed information (error bit).
For p0404.8 = 0, the following applies:
Fault value for internal Siemens troubleshooting.
For p0404.8 = 1, the following applies:
Fault value (r0949, interpret binary):
yyyyxxxx hex: yyyy = supplementary information, xxxx = fault cause
yyyy = 0:
Bit 0: Lighting system failed.
Bit 1: Signal amplitude too low.
Bit 2: Position value incorrect.
Bit 3: Encoder power supply overvoltage condition.
Bit 4: Encoder power supply undervoltage condition.
Bit 5: Encoder power supply overcurrent condition.
Bit 6: The battery must be changed.
Remedy: For yyyy = 0:
For fault value, bit 0 = 1:
Encoder is defective. Replace the encoder, where the motor encoder has a direct DRIVE-CLiQ socket: Replace the motor.
For fault value, bit 1 = 1:
Encoder is defective. Replace the encoder, where the motor encoder has a direct DRIVE-CLiQ socket: Replace the motor.
For fault value, bit 2 = 1:
Encoder is defective. Replace the encoder, where the motor encoder has a direct DRIVE-CLiQ socket: Replace the motor.
For fault value, bit 3 = 1:
5 V power supply voltage fault.
When using an SMC: Check the plug-in cable between the encoder and SMC or replace the SMC.
When a motor encoder with a direct DRIVE-CLiQ connection is used: Replace the motor.
For fault value, bit 4 = 1:
5 V power supply voltage fault.
When using an SMC: Check the plug-in cable between the encoder and SMC or replace the SMC.
When using a motor with DRIVE-CLiQ: Replace the motor.
For fault value, bit 5 = 1:
Encoder is defective. Replace the encoder, where the motor encoder has a direct DRIVE-CLiQ socket: Replace the motor.
For fault value, bit 6 = 1:
The battery must be changed (only for encoders with battery back-up).
For yyyy = 1:
Encoder is defective. Replace encoder.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33112 (N, A) Encoder 3: Encoder signals an internal error

Message value: %1

Message class: Actual position/speed value incorrect or not available (11)

Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Encoder 3 **Propagation:** LOCAL

Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)

Acknowledge: PULSE INHIBIT

Cause: The encoder signals a set error bit via the serial protocol.
Fault value (r0949, interpret binary):
Bit 0: Fault bit in the position protocol.

Remedy: For fault value, bit 0 = 1:
In the case of an EnDat encoder, F31111 may provide further details.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33115 (N, A) Encoder 3: Signal level track A or B too low

Message value: A track: %1, B-track: %2

Message class: Actual position/speed value incorrect or not available (11)

Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Encoder 3 **Propagation:** LOCAL

Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)

Acknowledge: PULSE INHIBIT

Cause: The signal level (root from A^2 + B^2) of the encoder falls below the permissible limit value.
Fault value (r0949, interpret hexadecimal):
yyyyxxxx hex:
yyyy = Signal level, track B (16 bits with sign).
xxxx = Signal level, track A (16 bits with sign).
The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV -25/+20 %).
The response threshold is < 170 mV (input frequency <= 256 kHz) or < 120 mV (input frequency > 256 kHz).
A signal level of 500 mV peak value corresponds to the numerical value 5333 hex = 21299 dec.
Note for Sensor Modules for resolvers (e.g. SMC10):
The nominal signal level is at 2900 mV (2.0 Vrms). The response threshold is < 1070 mV.
A signal level of 2900 mV peak value corresponds to the numerical value 6666 hex = 26214 dec.
Note:
The analog values of the amplitude error are not measured at the same time with the hardware fault output by the Sensor Module.

Remedy: - check that the encoder cables and shielding are routed in compliance with EMC.
- check the plug connections.
- replace the encoder or encoder cable.
- check the Sensor Module (e.g. contacts).
The following applies to measuring systems without their own bearing system:
- adjust the scanning head and check the bearing system of the measuring wheel.
The following applies for measuring systems with their own bearing system:
- ensure that the encoder housing is not subject to any axial force.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33116 (N, A) Encoder 3: Signal level track A or B too low

Message value: A track: %1, B-track: %2
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 3 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The signal level of the rectified encoder signals A and B of the encoder fall below the permissible limit value.
Fault value (r0949, interpret hexadecimal):
yyyyxxxx hex:
yyyy = Signal level, track B (16 bits with sign).
xxxx = Signal level, track A (16 bits with sign).
The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV -25/+20 %).
The response threshold is < 130 mV.
A signal level of 500 mV peak value corresponds to the numerical value 5333 hex = 21299 dec.
Note:
The analog values of the amplitude error are not measured at the same time with the hardware fault output by the Sensor Module.
Remedy: - check that the encoder cables and shielding are routed in compliance with EMC.
- check the plug connections.
- replace the encoder or encoder cable.
- check the Sensor Module (e.g. contacts).
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33117 (N, A) Encoder 3: Inversion error signals A/B/R

Message value: Fault cause: %1 bin
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 3 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: For a square-wave encoder (bipolar, double ended) signals A*, B* and R* are not inverted with respect to signals A, B and R.
Fault value (r0949, interpret binary):
Bits 0 ... 15: Only for internal Siemens troubleshooting.
Bit 16: Error track A.
Bit 17: Error track B.
Bit 18: Error track R.
Note:
For SMC30 (only Article No. 6SL3055-0AA00-5CA0 and 6SL3055-0AA00-5CA1), CUA32, and CU310, the following applies:
A square-wave encoder without track R is used and track monitoring (p0405.2 = 1) is activated.

Remedy: - check the encoder/cable.

- Does the encoder supply signals and the associated inverted signals?

Note:

For SMC30 (only Article Number 6SL3055-0AA00-5CA0 and 6SL3055-0AA00-5CA1), the following applies:

- check the setting of p0405 (p0405.2 = 1 is only possible if the encoder is connected at X520).

For a square-wave encoder without track R, the following jumpers must be set for the connection at X520 (SMC30) or X23 (CUA32, CU310):

- pin 10 (reference signal R) <--> pin 7 (encoder power supply, ground)
- pin 11 (reference signal R inverted) <--> pin 4 (encoder power supply)

Reaction upon N: NONE

Acknowl. upon N: NONE

Reaction upon A: NONE

Acknowl. upon A: NONE

F33118 (N, A) Encoder 3: Speed change not plausible

Message value: %1

Message class: Actual position/speed value incorrect or not available (11)

Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Encoder 3 **Propagation:** LOCAL

Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)

Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)

Hla: OFF1 (NONE, OFF2, OFF3)

Acknowledge: PULSE INHIBIT

Cause: For an HTL/TTL encoder, the speed change has exceeded the value in p0492 over several sampling cycles.

The change to the averaged speed actual value - if applicable - is monitored in the current controller sampling time.

Fault value (r0949, interpret decimal):

Only for internal Siemens troubleshooting.

See also: p0492

Remedy: - check the tachometer feeder cable for interruptions.

- check the grounding of the tachometer shielding.
- if required, increase the maximum speed difference per sampling cycle (p0492).

Reaction upon N: NONE

Acknowl. upon N: NONE

Reaction upon A: NONE

Acknowl. upon A: NONE

F33120 (N, A) Encoder 3: Encoder power supply fault

Message value: Fault cause: %1 bin

Message class: Actual position/speed value incorrect or not available (11)

Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Encoder 3 **Propagation:** LOCAL

Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)

Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)

Hla: OFF1 (NONE, OFF2, OFF3)

Acknowledge: PULSE INHIBIT

Cause: An encoder power supply fault was detected.

Fault value (r0949, interpret binary):

Bit 0: Undervoltage condition on the sense line.

Bit 1: Overcurrent condition for the encoder power supply.

Bit 2: Overcurrent condition for encoder power supply on cable resolver excitation negative.

Bit 3: Overcurrent condition for encoder power supply on cable resolver excitation positive.

Bit 4: The 24 V power supply through the Power Module (PM) is overloaded.

Bit 5: Overcurrent at the EnDat connection of the converter.

Bit 6: Overvoltage at the EnDat connection of the converter.

Bit 7: Hardware fault at the EnDat connection of the converter.

Note:
If the encoder cables 6FX2002-2EQ00-.... and 6FX2002-2CH00-.... are interchanged, this can result in the encoder being destroyed because the pins of the operating voltage are reversed.

Remedy: For fault value, bit 0 = 1:
- correct encoder cable connected?
- check the plug connections of the encoder cable.
- SMC30: Check the parameterization (p0404.22).

For fault value, bit 1 = 1:
- correct encoder cable connected?
- replace the encoder or encoder cable.

For fault value, bit 2 = 1:
- correct encoder cable connected?
- replace the encoder or encoder cable.

For fault value, bit 3 = 1:
- correct encoder cable connected?
- replace the encoder or encoder cable.

For fault value, bit 5 = 1:
- Measuring unit correctly connected at the converter?
- Replace the measuring unit or the cable to the measuring unit.

For fault value, bit 6, 7 = 1:
- Replace the defective EnDat 2.2 converter.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33121 (N, A) Encoder 3: Determined commutation position incorrect

Message value: -
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 3 **Propagation:** LOCAL
Reaction: OFF1 (NONE, OFF2, OFF3)
Acknowledge: PULSE INHIBIT
Cause: A commutation position actual value sensing error was detected.
Remedy: Replace the motor with DRIVE-CLiQ or the appropriate Sensor Module.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33122 Encoder 3: Sensor Module hardware fault

Message value: %1
Message class: Supply voltage fault (undervoltage) (3)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 3 **Propagation:** GLOBAL
Reaction: OFF1
Acknowledge: IMMEDIATELY
Cause: An internal Sensor Module hardware fault was detected.
Fault value (r0949, interpret decimal):
1: Reference voltage error.
2: Internal undervoltage.
3: Internal overvoltage.
Remedy: Replace the motor with DRIVE-CLiQ or the appropriate Sensor Module.

F33123 (N, A) Encoder 3: Signal level A/B outside tolerance

Message value: Fault cause: %1 bin
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 3 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The unipolar level (AP/AN or BP/BN) for encoder 3 is outside the permissible tolerance.
Fault value (r0949, interpret binary):
Bit 0 = 1: Either AP or AN outside the tolerance.
Bit 16 = 1: Either BP or BN outside the tolerance.
The unipolar nominal signal level of the encoder must lie in the range 2500 mV +/- 500 mV.
The response thresholds are < 1700 mV and > 3300 mV.
Note:
The signal level is not evaluated unless the following conditions are satisfied:
- Sensor Module properties available (r0459.31 = 1).
- monitoring active (p0437.31 = 1).
Remedy: - make sure that the encoder cables and shielding are installed in an EMC-compliant manner.
- check the plug connections and contacts of the encoder cable.
- check the short-circuit of a signal cable with mass or the operating voltage.
- replace the encoder cable.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33125 (N, A) Encoder 3: Signal level track A or B too high

Message value: A track: %1, B-track: %2
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 3 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Hla: OFF1 (NONE, OFF2, OFF3, STOP2)
Acknowledge: PULSE INHIBIT
Cause: The signal level (root from A^2 + B^2) of the encoder exceeds the permissible limit value.
Fault value (r0949, interpret hexadecimal):
yyyyxxxx hex:
yyyy = Signal level, track B (16 bits with sign).
xxxx = Signal level, track A (16 bits with sign).
The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV -25/+20 %).
The response threshold is > 750 mV.
A signal level of 500 mV peak value corresponds to the numerical value 5333 hex = 21299 dec.
Note for Sensor Modules for resolvers (e.g. SMC10):
The nominal signal level is at 2900 mV (2.0 Vrms).
The response threshold is > 3582 mV.
A signal level of 2900 mV peak value corresponds to the numerical value 6666 hex = 26214 dec.
Note:
The analog values of the amplitude error are not measured at the same time with the hardware fault output by the Sensor Module.
Remedy: - check that the encoder cables and shielding are routed in compliance with EMC.
- replace the encoder or encoder cable.

Reaction upon N:	NONE
Acknowl. upon N:	NONE
Reaction upon A:	NONE
Acknowl. upon A:	NONE

F33126 (N, A) Encoder 3: Signal level track A or B too high

Message value: Amplitude: %1, Angle: %2

Message class: Actual position/speed value incorrect or not available (11)

Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Encoder 3 **Propagation:** LOCAL

Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)

Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)

Hla: OFF1 (NONE, OFF2, OFF3, STOP2)

Acknowledge: PULSE INHIBIT

Cause: The signal level (|A| + |B|) of the encoder exceeds the permissible limit value.

Fault value (r0949, interpret hexadecimal):

yyyyxxxx hex:

yyyy = Angle

xxxx = amplitude, i.e. root of A^2 + B^2 (16 bits without sign)

The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV -25/+20 %).

The response threshold for (|A| + |B|) is > 1120 mV or the root of (A^2 + B^2) > 955 mV.

A signal level of 500 mV peak value corresponds to the numerical value of 299A hex = 10650 dec.

The angle 0 ... FFFF hex corresponds to 0 ... 360 degrees of the fine position. Zero degrees is present at the negative zero crossover of track B.

Note:

The analog values of the amplitude error are not measured at the same time with the hardware fault output by the Sensor Module.

Remedy: - check that the encoder cables and shielding are routed in compliance with EMC.

- replace the encoder or encoder cable.

Reaction upon N:	NONE
Acknowl. upon N:	NONE
Reaction upon A:	NONE
Acknowl. upon A:	NONE

F33129 (N, A) Encoder 3: Position difference hall sensor/track C/D and A/B too large

Message value: %1

Message class: Actual position/speed value incorrect or not available (11)

Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Encoder 3 **Propagation:** LOCAL

Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)

Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)

Hla: OFF1 (NONE, OFF2, OFF3)

Acknowledge: PULSE INHIBIT

Cause: The error for track C/D is greater than +/-15 ° mechanical or +/-60 ° electrical or the error for the Hall signals is greater than +/-60 ° electrical.

One period of track C/D corresponds to 360 ° mechanical.

One period of the Hall signal corresponds to 360 ° electrical.

The monitoring responds if, for example, Hall sensors are connected as equivalent for the C/D tracks with the incorrect rotational sense or supply values that are not accurate enough.

After the fine synchronization using one reference mark or 2 reference marks for distance-coded encoders, this fault is no longer initiated, but instead, Alarm A33429.

Fault value (r0949, interpret decimal):

For track C/D, the following applies:

Measured deviation as mechanical angle (16 bits with sign, 182 dec corresponds to 1 °).

For Hall signals, the following applies:

Measured deviation as electrical angle (16 bits with sign, 182 dec corresponds to 1 °).

Remedy: - track C or D not connected.
- correct the direction of rotation of the Hall sensor possibly connected as equivalent for track C/D.
- check that the encoder cables are routed in compliance with EMC.
- check the adjustment of the Hall sensor.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33130 (N, A) Encoder 3: Zero mark and position error from the coarse synchronization

Message value: Angular deviation, electrical: %1, angle, mechanical: %2
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 3 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Hla: OFF1 (NONE, OFF2, OFF3, STOP2)
Acknowledge: PULSE INHIBIT
Cause: After initializing the pole position using track C/D, Hall signals or pole position identification routine, the zero mark was detected outside the permissible range. For distance-coded encoders, the test is carried out after passing 2 zero marks. Fine synchronization was not carried out.

When initializing via track C/D (p0404) then it is checked whether the zero mark occurs in an angular range of +/-18 ° mechanical.

When initializing via Hall sensors (p0404) or pole position identification (p1982) it is checked whether the zero mark occurs in an angular range of +/-60 ° electrical.

Fault value (r0949, interpret hexadecimal):
yyyyxxxx hex
yyyy: Determined mechanical zero mark position (can only be used for track C/D).
xxxx: Deviation of the zero mark from the expected position as electrical angle.
Scaling: 32768 dec = 180 °

Remedy: - check that the encoder cables are routed in compliance with EMC.
- check the plug connections.
- if the Hall sensor is used as an equivalent for track C/D, check the connection.
- check the connection of track C or D.
- replace the encoder or encoder cable.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33131 (N, A) Encoder 3: Position deviation incremental/absolute too high

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 3 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Hla: OFF1 (NONE, OFF2, OFF3, STOP2)
Acknowledge: PULSE INHIBIT
Cause: Absolute encoder:

When cyclically reading the absolute position, an excessively high difference to the incremental position was detected. The absolute position that was read is rejected.

Limit value for the deviation:
- EnDat encoder: Is supplied from the encoder and is a minimum of 2 quadrants (e.g. EQI 1325 > 2 quadrants, EQN 1325 > 50 quadrants).
- other encoders: 15 pulses = 60 quadrants.

Incremental encoder:
When the zero pulse is passed, a deviation in the incremental position was detected.
For equidistant zero marks, the following applies:
- the first zero mark passed supplies the reference point for all subsequent checks. The other zero marks must have n times the distance referred to the first zero mark.
For distance-coded zero marks, the following applies:
- the first zero mark pair supplies the reference point for all subsequent checks. The other zero mark pairs must have the expected distance to the first zero mark pair.
Fault value (r0949, interpret decimal):
Deviation in quadrants (1 pulse = 4 quadrants).

Remedy: - check that the encoder cables are routed in compliance with EMC.
- check the plug connections.
- replace the encoder or encoder cable.
- check whether the coding disk is dirty or there are strong ambient magnetic fields.
- adapt the parameter for the clearance between zero marks (p0425).
- if message output above speed threshold, reduce filter time if necessary (p0438).

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33135 Encoder 3: Fault when determining the position (singleturn)

Message value: Fault cause: %1 bin
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 3 **Propagation:** GLOBAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: PULSE INHIBIT
Cause: The encoder has identified a position determination fault (singleturn) and supplies status information bit by bit in an internal status/fault word.
Some of these bits cause this fault to be triggered. Other bits are status displays. The status/fault word is displayed in the fault value.
Note regarding the bit designation:
The first designation is valid for DRIVE-CLiQ encoders, the second for EnDat 2.2 encoders.
Fault value (r0949, interpret binary):
Bit 0: F1 (safety status display).
Bit 1: F2 (safety status display).
Bit 2: Reserved (lighting).
Bit 3: Reserved (signal amplitude).
Bit 4: Reserved (position value).
Bit 5: Reserved (overvoltage).
Bit 6: Reserved (undervoltage)/hardware fault EnDat supply (--> F3x110, x = 1, 2, 3).
Bit 7: Reserved (overcurrent)/EnDat encoder withdrawn when not in the parked state (--> F3x110, x = 1, 2, 3).
Bit 8: Reserved (battery)/overcurrent EnDat supply (--> F3x110, x = 1, 2, 3).
Bit 9: Reserved/overvoltage EnDat supply (--> F3x110, x = 1, 2, 3).
Bit 11: Reserved/internal communication error (--> F3x110, x = 1, 2, 3).
Bit 12: Reserved/internal communication error (--> F3x110, x = 1, 2, 3).
Bit 13: Reserved/internal communication error (--> F3x110, x = 1, 2, 3).
Bit 14: Reserved/internal communication error (--> F3x110, x = 1, 2, 3).
Bit 15: Internal communication error (--> F3x110, x = 1, 2, 3).
Bit 16: Lighting (--> F3x135, x = 1, 2, 3).
Bit 17: Signal amplitude (--> F3x135, x = 1, 2, 3).
Bit 18: Singleturn position 1 (--> F3x135, x = 1, 2, 3).
Bit 19: Overvoltage (--> F3x135, x = 1, 2, 3).

Bit 20: Undervoltage (--> F3x135, x = 1, 2, 3).
Bit 21: Overcurrent (--> F3x135, x = 1, 2, 3).
Bit 22: Temperature exceeded (--> F3x405, x = 1, 2, 3).
Bit 23: Singleturn position 2 (safety status display).
Bit 24: Singleturn system (--> F3x135, x = 1, 2, 3).
Bit 25: Singleturn power down (--> F3x135, x = 1, 2, 3)
Bit 26: Multiturn position 1 (--> F3x136, x = 1, 2, 3).
Bit 27: Multiturn position 2 (--> F3x136, x = 1, 2, 3).
Bit 28: Multiturn system (--> F3x136, x = 1, 2, 3).
Bit 29: Multiturn power down (--> F3x136, x = 1, 2, 3).
Bit 30: Multiturn overflow/underflow (--> F3x136, x = 1, 2, 3).
Bit 31: Multiturn battery (reserved).

Remedy: - determine the detailed cause of the fault using the fault value.
- replace the encoder if necessary.
Note:
An EnDat 2.2 encoder may only be removed and inserted in the "Park" state.
If an EnDat 2.2 encoder was removed when not in the "Park" state, then after inserting the encoder, a POWER ON (switch-off/switch-on) is necessary to acknowledge the fault.

F33136 Encoder 3: Fault when determining the position (multiturn)

Message value: Fault cause: %1 bin
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 3 **Propagation:** GLOBAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: PULSE INHIBIT
Cause: The encoder has identified a position determination fault (multiturn) and supplies status information bit by bit in an internal status/fault word.
Some of these bits cause this fault to be triggered. Other bits are status displays. The status/fault word is displayed in the fault value.
Note regarding the bit designation:
The first designation is valid for DRIVE-CLiQ encoders, the second for EnDat 2.2 encoders.
Fault value (r0949, interpret binary):
Bit 0: F1 (safety status display).
Bit 1: F2 (safety status display).
Bit 2: Reserved (lighting).
Bit 3: Reserved (signal amplitude).
Bit 4: Reserved (position value).
Bit 5: Reserved (overvoltage).
Bit 6: Reserved (undervoltage)/hardware fault EnDat supply (--> F3x110, x = 1, 2, 3).
Bit 7: Reserved (overcurrent)/EnDat encoder withdrawn when not in the parked state (--> F3x110, x = 1, 2, 3).
Bit 8: Reserved (battery)/overcurrent EnDat supply (--> F3x110, x = 1, 2, 3).
Bit 9: Reserved/overvoltage EnDat supply (--> F3x110, x = 1, 2, 3).
Bit 11: Reserved/internal communication error (--> F3x110, x = 1, 2, 3).
Bit 12: Reserved/internal communication error (--> F3x110, x = 1, 2, 3).
Bit 13: Reserved/internal communication error (--> F3x110, x = 1, 2, 3).
Bit 14: Reserved/internal communication error (--> F3x110, x = 1, 2, 3).
Bit 15: Internal communication error (--> F3x110, x = 1, 2, 3).
Bit 16: Lighting (--> F3x135, x = 1, 2, 3).
Bit 17: Signal amplitude (--> F3x135, x = 1, 2, 3).
Bit 18: Singleturn position 1 (--> F3x135, x = 1, 2, 3).
Bit 19: Overvoltage (--> F3x135, x = 1, 2, 3).
Bit 20: Undervoltage (--> F3x135, x = 1, 2, 3).
Bit 21: Overcurrent (--> F3x135, x = 1, 2, 3).

Bit 22: Temperature exceeded (--> F3x405, x = 1, 2, 3).
Bit 23: Singleturn position 2 (safety status display).
Bit 24: Singleturn system (--> F3x135, x = 1, 2, 3).
Bit 25: Singleturn power down (--> F3x135, x = 1, 2, 3)
Bit 26: Multiturn position 1 (--> F3x136, x = 1, 2, 3).
Bit 27: Multiturn position 2 (--> F3x136, x = 1, 2, 3).
Bit 28: Multiturn system (--> F3x136, x = 1, 2, 3).
Bit 29: Multiturn power down (--> F3x136, x = 1, 2, 3).
Bit 30: Multiturn overflow/underflow (--> F3x136, x = 1, 2, 3).
Bit 31: Multiturn battery (reserved).

Remedy: - determine the detailed cause of the fault using the fault value.
- replace the encoder if necessary.
Note:
An EnDat 2.2 encoder may only be removed and inserted in the "Park" state.
If an EnDat 2.2 encoder was removed when not in the "Park" state, then after inserting the encoder, a POWER ON (switch-off/switch-on) is necessary to acknowledge the fault.

F33137 Encoder 3: Fault when determining the position (singleturn)

Message value: Fault cause: %1 bin
Message class: Hardware/software error (1)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 3 **Propagation:** GLOBAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: PULSE INHIBIT
Cause: A position determination fault has occurred in the DRIVE-CLiQ encoder.
Fault value (r0949, interpret binary):
yyxxxxxx hex: yy = encoder version, xxxxxx = bit coding of the fault cause
----
For yy = 8 (0000 1000 bin), the following applies:
Bit 1: Signal monitoring (sin/cos).
Bit 8: F1 (safety status display) error position word 1.
Bit 9: F2 (safety status display) error position word 2.
Bit 16: LED monitoring.
Bit 17: Fault when determining the position (multiturn).
Bit 23: Temperature outside the limit values.

For yy = 11 (0000 1011 bin), the following applies:
Bit 0: Position word 1 difference between rotation counter and software counter (XC_ERR).
Bit 1: Position word 1 track error of the incremental signals (LIS_ERR).
Bit 2: Position word 1 error when aligning between incremental track signals and absolute value (ST_ERR).
Bit 3: Maximum permissible temperature exceeded (TEMP_ERR).
Bit 4: Power supply overvoltage (MON_OVR_VOLT).
Bit 5: Power supply overcurrent (MON_OVR_CUR).
Bit 6: Power supply undervoltage (MON_UND_VOLT).
Bit 7: Rotation error counter (MT_ERR).
Bit 8: F1 (safety status display) error position word 1.
Bit 9: F2 (safety status display) error position word 2.
Bit 11: Position word 1 status bit: singleturn position OK (ADC_ready).
Bit 12: Position word 1 status bit: rotation counter OK (MT_ready).
Bit 13: Position word 1 memory error (MEM_ERR).
Bit 14: Position word 1 absolute position error (MLS_ERR).
Bit 15: position word 1 LED error, lighting unit error (LED_ERR).
Bit 18: Position word 2 error when aligning between incremental track signals and absolute value (ST_ERR).

Bit 21: Position word 2 memory error (MEM_ERR).
Bit 22: Position word 2 absolute position error (MLS_ERR).
Bit 23: position word 2 LED error, lighting unit error (LED_ERR).

For yy = 12 (0000 1100 bin), the following applies:
Bit 8: encoder fault.
Bit 10: error in the internal position data transport.

For yy = 14 (0000 1110 bin), the following applies:
Bit 0: Position word 1 temperature outside limit value.
Bit 1: Position word 1 position determination error (multiturn).
Bit 2: Position word 1 FPGA error.
Bit 3: Position word 1 velocity error.
Bit 4: Position word 1 communication error between FPGAs/error in the incremental signal.
Bit 5: Position word 1 timeout absolute value/error when determining the position (singleturn).
Bit 6: Position word 1 internal hardware fault (clock/power monitor IC/power).
Bit 7: Position word 1 internal error (FPGA communication/FPGA parameterization/self-test/software).
Bit 8: F1 (safety status display) error position word 1.
Bit 9: F2 (safety status display) error position word 2.
Bit 16: Position word 2 temperature outside limit value.
Bit 17: Position word 2 position determination error (multiturn).
Bit 18: Position word 2 FPGA error.
Bit 19: Position word 2 velocity error.
Bit 20: Position word 2 communication error between FPGAs.
Bit 21: Position word 2 position determination error (singleturn).
Bit 22: Position word 2 internal hardware fault (clock/power monitor IC/power).
Bit 23: Position word 2 internal error (self-test/software).

Note:
For an encoder version that is not described here, please contact the encoder manufacturer for more detailed information on the bit coding.

Remedy: - determine the detailed cause of the fault using the fault value.
- if required, replace the DRIVE-CLiQ encoder.

F33138 Encoder 3: Fault when determining the position (multiturn)

Message value: Fault cause: %1 bin
Message class: Hardware/software error (1)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 3 **Propagation:** GLOBAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: PULSE INHIBIT
Cause: A position determination fault has occurred in the DRIVE-CLiQ encoder.
Fault value (r0949, interpret binary):
yyxxxxxx hex: yy = encoder version, xxxxxx = bit coding of the fault cause
----
For yy = 8 (0000 1000 bin), the following applies:
Bit 1: Signal monitoring (sin/cos).
Bit 8: F1 (safety status display) error position word 1.
Bit 9: F2 (safety status display) error position word 2.
Bit 16: LED monitoring.
Bit 17: Fault when determining the position (multiturn).
Bit 23: Temperature outside the limit values.

For yy = 11 (0000 1011 bin), the following applies:
Bit 0: Position word 1 difference between rotation counter and software counter (XC_ERR).
Bit 1: Position word 1 track error of the incremental signals (LIS_ERR).
Bit 2: Position word 1 error when aligning between incremental track signals and absolute value (ST_ERR).
Bit 3: Maximum permissible temperature exceeded (TEMP_ERR).
Bit 4: Power supply overvoltage (MON_OVR_VOLT).
Bit 5: Power supply overcurrent (MON_OVR_CUR).
Bit 6: Power supply undervoltage (MON_UND_VOLT).
Bit 7: Rotation error counter (MT_ERR).
Bit 8: F1 (safety status display) error position word 1.
Bit 9: F2 (safety status display) error position word 2.
Bit 11: Position word 1 status bit: singleturn position OK (ADC_ready).
Bit 12: Position word 1 status bit: rotation counter OK (MT_ready).
Bit 13: Position word 1 memory error (MEM_ERR).
Bit 14: Position word 1 absolute position error (MLS_ERR).
Bit 15: position word 1 LED error, lighting unit error (LED_ERR).
Bit 18: Position word 2 error when aligning between incremental track signals and absolute value (ST_ERR).
Bit 21: Position word 2 memory error (MEM_ERR).
Bit 22: Position word 2 absolute position error (MLS_ERR).
Bit 23: position word 2 LED error, lighting unit error (LED_ERR).

For yy = 14 (0000 1110 bin), the following applies:
Bit 0: Position word 1 temperature outside limit value.
Bit 1: Position word 1 position determination error (multiturn).
Bit 2: Position word 1 FPGA error.
Bit 3: Position word 1 velocity error.
Bit 4: Position word 1 communication error between FPGAs/error in the incremental signal.
Bit 5: Position word 1 timeout absolute value/error when determining the position (singleturn).
Bit 6: Position word 1 internal hardware fault (clock/power monitor IC/power).
Bit 7: Position word 1 internal error (FPGA communication/FPGA parameterization/self-test/software).
Bit 8: F1 (safety status display) error position word 1.
Bit 9: F2 (safety status display) error position word 2.
Bit 16: Position word 2 temperature outside limit value.
Bit 17: Position word 2 position determination error (multiturn).
Bit 18: Position word 2 FPGA error.
Bit 19: Position word 2 velocity error.
Bit 20: Position word 2 communication error between FPGAs.
Bit 21: Position word 2 position determination error (singleturn).
Bit 22: Position word 2 internal hardware fault (clock/power monitor IC/power).
Bit 23: Position word 2 internal error (self-test/software).

Note:
For an encoder version that is not described here, please contact the encoder manufacturer for more detailed information on the bit coding.

Remedy: - determine the detailed cause of the fault using the fault value.
- if required, replace the DRIVE-CLiQ encoder.

F33142 (N, A) Encoder 3: Battery voltage fault

Message value:	-
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Drive object:	HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Encoder 3 **Propagation:** LOCAL
Reaction:	Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2) Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2) Hla: OFF1 (NONE, OFF2, OFF3, STOP2)
Acknowledge:	IMMEDIATELY
Cause:	When switched-off, the encoder uses a battery to back up the multiturn information. The battery voltage is no longer sufficient to check the multiturn information.
Remedy:	Replace battery.
Reaction upon N:	NONE
Acknowl. upon N:	NONE
Reaction upon A:	NONE
Acknowl. upon A:	NONE

F33150 (N, A) Encoder 3: Initialization error

Message value:	%1
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Drive object:	HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Sensor Module Encoder 3 **Propagation:** LOCAL
Reaction:	Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2) Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2) Hla: OFF1 (NONE, OFF2, OFF3, STOP2)
Acknowledge:	PULSE INHIBIT
Cause:	Encoder functionality selected in p0404 cannot be executed. Fault value (r0949, interpret hexadecimal): Encoder malfunction. The bit assignment corresponds to that of p0404 (e.g. bit 5 set: Error track C/D).
Remedy:	- check that p0404 is correctly set. - check the encoder type used (incremental/absolute) and for SMCxx, the encoder cable. - if relevant, note additional fault messages that describe the fault in detail.
Reaction upon N:	NONE
Acknowl. upon N:	NONE
Reaction upon A:	NONE
Acknowl. upon A:	NONE

F33151 (N, A) Encoder 3: Encoder speed for initialization AB too high

Message value:	%1
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Drive object:	HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Sensor Module Encoder 3 **Propagation:** LOCAL
Reaction:	Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2) Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2) Hla: OFF1 (NONE, OFF2, OFF3, STOP2)
Acknowledge:	PULSE INHIBIT
Cause:	The encoder speed is too high while initializing the Sensor Module.
Remedy:	Reduce the speed of the encoder accordingly during initialization. If necessary, deactivate monitoring (p0437.29). See also: p0437 (Sensor Module configuration extended)
Reaction upon N:	NONE
Acknowl. upon N:	NONE
Reaction upon A:	NONE
Acknowl. upon A:	NONE

F33152 (N, A) Encoder 3: Max. signal frequency (track A/B) exceeded

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 3 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Hla: OFF1 (NONE, OFF2, OFF3, STOP2)
Acknowledge: PULSE INHIBIT
Cause: The maximum signal frequency of the encoder evaluation has been exceeded.
Fault value (r0949, interpret decimal):
Actual input frequency in Hz.
See also: p0408
Remedy: - reduce the speed.
- Use an encoder with a lower pulse number (p0408).
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33153 (N, A) Encoder 3: Identification error

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 3 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: An error has occurred when identifying the encoder (waiting) p0400 = 10100.
The connected encoder was not able to be identified.
Fault value (r0949, interpret hexadecimal):
Bit 0: Data length incorrect.
See also: p0400 (Encoder type selection)
Remedy: Manually configure the encoder according to the data sheet.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33160 (N, A) Encoder 3: Analog sensor channel A failed

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 3 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE)
Vector: OFF1 (IASC/DCBRK, NONE)
Hla: OFF1 (NONE)
Acknowledge: PULSE INHIBIT
Cause: The input voltage of the analog sensor is outside the permissible limits.
Fault value (r0949, interpret decimal):
1: Input voltage outside detectable measuring range.
2: Input voltage outside the measuring range set in (p4673).
3: The absolute value of the input voltage has exceeded the range limit (p4676).

Remedy: For fault value = 1:
- check the output voltage of the analog sensor.
For fault value = 2:
- check the voltage setting for each encoder period (p4673).
For fault value = 3:
- check the range limit setting and increase it if necessary (p4676).

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33161 (N, A) Encoder 3: Analog sensor channel B failed

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 3 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE)
Vector: OFF1 (IASC/DCBRK, NONE)
Hla: OFF1 (NONE)
Acknowledge: PULSE INHIBIT
Cause: The input voltage of the analog sensor is outside the permissible limits.
Fault value (r0949, interpret decimal):
1: Input voltage outside detectable measuring range.
2: Input voltage outside the selected measuring range (p4675).
3: The absolute value of the input voltage has exceeded the range limit (p4676).
Remedy: For fault value = 1:
- check the output voltage of the analog sensor.
For fault value = 2:
- check the voltage setting for each encoder period (p4675).
For fault value = 3:
- check the range limit setting and increase it if necessary (p4676).

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33163 (N, A) Encoder 3: Analog sensor position value exceeds limit value

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 3 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE)
Vector: OFF1 (IASC/DCBRK, NONE)
Hla: OFF1 (NONE)
Acknowledge: PULSE INHIBIT
Cause: The position value has exceeded the permissible range of -0.5 ... +0.5.
Fault value (r0949, interpret decimal):
1: Position value from the LVDT sensor.
2: Position value from the encoder characteristic.
Remedy: For fault value = 1:
- check the LVDT ratio (p4678).
- check the reference signal connection at track B.
For fault value = 2:
- check the coefficients of the characteristic (p4663 ... p4666).

Reaction upon N:	NONE
Acknowl. upon N:	NONE
Reaction upon A:	NONE
Acknowl. upon A:	NONE

A33400 (F, N) Encoder 3: Zero mark distance error (alarm threshold exceeded)

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 3 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The measured zero mark distance does not correspond to the parameterized zero mark distance.

For distance-coded encoders, the zero mark distance is determined from zero marks detected pairs. This means that if a zero mark is missing, depending on the pair generation, this cannot result in a fault and also has no effect in the system.

The zero mark distance for the zero mark monitoring is set in p0425 (rotary encoder) or p0424 (linear encoder).

Alarm value (r2124, interpret decimal):

Last measured zero mark distance in increments (4 increments = 1 encoder pulse).

The sign designates the direction of motion when detecting the zero mark distance.

Remedy:
- check that the encoder cables are routed in compliance with EMC.
- check the plug connections.
- check the encoder type (encoder with equidistant zero marks).
- adapt the parameter for the distance between zero marks (p0424, p0425).
- replace the encoder or encoder cable.

Reaction upon F: Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A33401 (F, N) Encoder 3: Zero mark failed (alarm threshold exceeded)

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 3 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The 1.5x parameterized zero mark distance was exceeded without a zero mark being detected.

The zero mark distance for the zero mark monitoring is set in p0425 (rotary encoder) or p0424 (linear encoder).

Alarm value (r2124, interpret decimal):

Number of increments after POWER ON or since the last zero mark that was detected (4 increments = 1 encoder pulse).

Remedy:
- check that the encoder cables are routed in compliance with EMC.
- check the plug connections.
- check the encoder type (encoder with equidistant zero marks).
- adapt the parameter for the clearance between zero marks (p0425).
- replace the encoder or encoder cable.

Reaction upon F: Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

F33405 (N, A)	**Encoder 3: Temperature in the encoder evaluation exceeded**
Message value:	%1
Message class:	Actual position/speed value incorrect or not available (11)
Drive object:	HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Sensor Module Encoder 3 **Propagation:** LOCAL
Reaction:	Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2) Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2) Hla: OFF1 (NONE, OFF2, OFF3, STOP2)
Acknowledge:	IMMEDIATELY (POWER ON)
Cause:	An inadmissibly high temperature was detected in the encoder electronics or the encoder evaluation. Fault value (r0949, interpret hexadecimal): yyxxxx hex: yy = temperature sensor number, xxxx = measured module temperature in 0.1 °C.
Remedy:	Reduce the ambient temperature for the DRIVE-CLiQ connection of the motor.
Reaction upon N:	NONE
Acknowl. upon N:	NONE
Reaction upon A:	NONE
Acknowl. upon A:	NONE

A33407 (F, N)	**Encoder 3: Function limit reached**
Message value:	%1
Message class:	Actual position/speed value incorrect or not available (11)
Drive object:	HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Encoder 3 **Propagation:** LOCAL
Reaction:	NONE
Acknowledge:	NONE
Cause:	The encoder has reached one of its function limits. A service is recommended. Alarm value (r2124, interpret decimal): 1: Incremental signals 3: Absolute track 4: Code connection
Remedy:	Perform service. Replace the encoder if necessary. Note: The actual functional reserve of an encoder can be displayed via r4651. See also: p4650 (Encoder functional reserve component number), r4651 (Encoder functional reserve)
Reaction upon F:	Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2) Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2) Hla: NONE (OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F:	IMMEDIATELY
Reaction upon N:	NONE
Acknowl. upon N:	NONE

A33410 (F, N)	**Encoder 3: Communication error (encoder and Sensor Module)**
Message value:	Fault cause: %1 bin
Message class:	Actual position/speed value incorrect or not available (11)
Drive object:	HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Encoder 3 **Propagation:** LOCAL
Reaction:	NONE
Acknowledge:	NONE
Cause:	Serial communication protocol transfer error between the encoder and evaluation module. Alarm value (r2124, interpret binary): Bit 0: Alarm bit in the position protocol. Bit 1: Incorrect quiescent level on the data line. Bit 2: Encoder does not respond (does not supply a start bit within 50 ms). Bit 3: CRC error: The checksum in the protocol from the encoder does not match the data. Bit 4: Encoder acknowledgment error: The encoder incorrectly understood the task (request) or cannot execute it.

	Bit 5: Internal error in the serial driver: An illegal mode command was requested.
	Bit 6: Timeout when cyclically reading.
	Bit 8: Protocol is too long (e.g. > 64 bits).
	Bit 9: Receive buffer overflow.
	Bit 10: Frame error when reading twice.
	Bit 11: Parity error.
	Bit 12: Data line signal level error during the monoflop time.
Remedy:	- check that the encoder cables are routed in compliance with EMC. - check the plug connections. - replace encoder.
Reaction upon F:	Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2) Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2) Hla: NONE (OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F:	IMMEDIATELY
Reaction upon N:	NONE
Acknowl. upon N:	NONE

A33411 (F, N) Encoder 3: Encoder signals an internal alarm (detailed information)

Message value:	Fault cause: %1 bin, additional information: %2
Message class:	Actual position/speed value incorrect or not available (11)
Drive object:	HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Encoder 3 **Propagation:** LOCAL
Reaction:	NONE
Acknowledge:	NONE
Cause:	The absolute encoder fault word includes alarm bits that have been set. Alarm value (r2124, interpret binary): yyyyxxxx hex: yyyy = supplementary information, xxxx = fault cause yyyy = 0: Bit 0: Frequency exceeded (speed too high). Bit 1: Temperature exceeded. Bit 2: Control reserve, lighting system exceeded. Bit 3: Battery discharged. Bit 4: Reference point passed. yyyy = 1: Bit 0: Signal amplitude outside the control range. Bit 1: Error multiturn interface Bit 2: Internal data error (singleturn/multiturn not with single steps). Bit 3: Error EEPROM interface. Bit 4: SAR converter error. Bit 5: Fault for the register data transfer. Bit 6: Internal error identified at the error pin (nErr). Bit 7: Temperature threshold exceeded or fallen below.
Remedy:	Replace encoder.
Reaction upon F:	Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2) Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2) Hla: NONE (OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F:	IMMEDIATELY
Reaction upon N:	NONE
Acknowl. upon N:	NONE

A33412 (F, N) Encoder 3: Encoder signals an internal alarm

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 3 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The encoder signals an internal alarm via serial protocol.
Alarm value (r2124, interpret binary):
Bit 0: Fault bit in the position protocol.
Bit 1: Alarm bit in the position protocol.
Remedy: - carry out a POWER ON (switch-off/switch-on) for all components.
- check that the encoder cables are routed in compliance with EMC.
- check the plug connections.
- replace encoder.
Reaction upon F: Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A33414 (F, N) Encoder 3: Signal level track C or D out of tolerance

Message value: C track: %1, D track: %2
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 3 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The signal level (C^2 + D^2) of track C or D of the encoder or from the Hall signals, is not within the tolerance bandwidth.
Alarm value (r2124, interpret hexadecimal):
yyyyxxxx hex:
yyyy = Signal level, track D (16 bits with sign).
xxxx = Signal level, track C (16 bits with sign).
The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV -25/+20 %).
The response thresholds are < 230 mV (observe the frequency response of the encoder) and > 750 mV.
A signal level of 500 mV peak value corresponds to the numerical value 5333 hex = 21299 dec.
Note:
If the amplitude is not within the tolerance bandwidth, then it cannot be used to initialize the start position.
Remedy: - check that the encoder cables are routed in compliance with EMC.
- check the plug connections.
- replace the encoder or encoder cable.
- check the Sensor Module (e.g. contacts).
- check the Hall sensor box.
Reaction upon F: Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

N33415 (F, A)	**Encoder 3: Signal level track A or B outside tolerance (alarm)**
Message value:	Amplitude: %1, Angle: %2
Message class:	Actual position/speed value incorrect or not available (11)
Drive object:	HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Encoder 3 **Propagation:** LOCAL
Reaction:	NONE
Acknowledge:	NONE
Cause:	The signal level (root from A^2 + B^2) of the encoder is outside the permissible tolerance. Alarm value (r2124, interpret hexadecimal): yyyyxxxx hex: yyyy = Angle xxxx = amplitude, i.e. root of A^2 + B^2 (16 bits without sign) The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV -25/+20 %). The response threshold is < 230 mV (observe the frequency response of the encoder). A signal level of 500 mV peak value corresponds to the numerical value 299A hex = 10650 dec. The angle 0 ... FFFF hex corresponds to 0 ... 360 degrees of the fine position. Zero degrees is present at the negative zero crossover of track B. Note for Sensor Modules for resolvers (e.g. SMC10): The nominal signal level is at 2900 mV (2.0 Vrms). The response threshold is < 1414 mV (1.0 Vrms). A signal level of 2900 mV peak value corresponds to the numerical value 3333 hex = 13107 dec. Note: The analog values of the amplitude error are not measured at the same time with the hardware fault output by the Sensor Module.
Remedy:	- check the speed range, frequency characteristic (amplitude characteristic) of the measuring equipment is not sufficient for the speed range. - check that the encoder cables and shielding are routed in compliance with EMC. - check the plug connections. - replace the encoder or encoder cable. - check the Sensor Module (e.g. contacts). - if the coding disk is soiled or the lighting aged, replace the encoder.
Reaction upon F:	Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2) Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2) Hla: NONE (OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F:	IMMEDIATELY
Reaction upon A:	NONE
Acknowl. upon A:	NONE

A33418 (F, N)	**Encoder 3: Speed change not plausible (alarm)**
Message value:	%1
Message class:	Actual position/speed value incorrect or not available (11)
Drive object:	HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Encoder 3 **Propagation:** LOCAL
Reaction:	NONE
Acknowledge:	NONE
Cause:	For an HTL/TTL encoder, the speed change has exceeded the value in p0492 over several sampling cycles. The change to the averaged speed actual value - if applicable - is monitored in the current controller sampling time. Alarm value (r2124, interpret decimal): Only for internal Siemens troubleshooting. See also: p0492
Remedy:	- check the tachometer feeder cable for interruptions. - check the grounding of the tachometer shielding. - if required, increase the setting of p0492.

Reaction upon F: Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A33419 (F, N) Encoder 3: Track A or B outside tolerance

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 3 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The amplitude/phase/offset correction for track A or B is at the limit.
Amplitude error correction: Amplitude B / Amplitude A = 0.78 ... 1.27
Phase: <84 degrees or >96 degrees
SMC20: Offset correction: +/-140 mV
SMC10: Offset correction: +/-650 mV
Alarm value (r2124, interpret hexadecimal):
xxxx1: Minimum of the offset correction, track B
xxxx2: Maximum of the offset correction, track B
xxx1x: Minimum of the offset correction, track A
xxx2x: Maximum of the offset correction, track A
xx1xx: Minimum of the amplitude correction, track B/A
xx2xx: Maximum of the amplitude correction, track B/A
x1xxx: Minimum of the phase error correction
x2xxx: Maximum of the phase error correction
1xxxx: Minimum of the cubic correction
2xxxx: Maximum of the cubic correction
Remedy: - check mechanical mounting tolerances for encoders without their own bearings (e.g. toothed-wheel encoders).
- check the plug connections (also the transition resistance).
- check the encoder signals.
- replace the encoder or encoder cable.
Reaction upon F: Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A33421 (F, N) Encoder 3: Determined commutation position incorrect (alarm)

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 3 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: A commutation position actual value sensing error was detected.
Alarm value (r2124, interpret decimal):
3: The absolute position of the serial protocol and track A/B differ by half an encoder pulse. The absolute position must have its zero position in the quadrants in which both tracks are negative. In the case of a fault, the position can be incorrect by one encoder pulse.

Remedy: For alarm value = 3:
- For a standard encoder with cable, contact the manufacturer where relevant.
- correct the assignment of the tracks to the position value that is serially transferred. To do this, the two tracks must be connected, inverted, at the Sensor Module (interchange A with A* and B with B*) or, for a programmable encoder, check the zero offset of the position.

Reaction upon F: Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (OFF1, OFF2, OFF3, STOP2)

Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A33422 (F, N) Encoder 3: Pulses per revolution square-wave encoder outside tolerance bandwidth

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 3 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The measured zero mark distance does not correspond to the parameterized zero mark distance.
This alarm is triggered with active square-wave encoder PPR correction and re-parameterized fault 31131 if the accumulator contains larger values than p4683 or p4684.
The zero mark distance for zero mark monitoring is set in p0425 (rotary encoder).
Alarm value (r2124, interpret decimal):
accumulated differential pulses in encoder pulses.

Remedy:
- check that the encoder cables are routed in compliance with EMC.
- check the plug connections.
- check the encoder type (encoder with equidistant zero marks).
- adapt the parameter for the distance between zero marks (p0424, p0425).
- replace the encoder or encoder cable.

Reaction upon F: Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (OFF1, OFF2, OFF3, STOP2)

Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A33429 (F, N) Encoder 3: Position difference hall sensor/track C/D and A/B too large

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 3 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The error for track C/D is greater than +/-15 ° mechanical or +/-60 ° electrical or the error for the Hall signals is greater than +/-60 ° electrical.
One period of track C/D corresponds to 360 ° mechanical.
One period of the Hall signal corresponds to 360 ° electrical.
The monitoring responds if, for example, Hall sensors are connected as equivalent for the C/D tracks with the incorrect rotational sense or supply values that are not accurate enough.
Alarm value (r2124, interpret decimal):
For track C/D, the following applies:
Measured deviation as mechanical angle (16 bits with sign, 182 dec corresponds to 1 °).
For Hall signals, the following applies:
Measured deviation as electrical angle (16 bits with sign, 182 dec corresponds to 1 °).

Remedy: - track C or D not connected.
- correct the direction of rotation of the Hall sensor possibly connected as equivalent for track C/D.
- check that the encoder cables are routed in compliance with EMC.
- check the adjustment of the Hall sensor.

Reaction upon F: Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (OFF1, OFF2, OFF3, STOP2)

Acknowl. upon F: IMMEDIATELY

Reaction upon N: NONE

Acknowl. upon N: NONE

A33431 (F, N) Encoder 3: Position deviation incremental/absolute too high (alarm)

Message value: %1

Message class: Actual position/speed value incorrect or not available (11)

Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Encoder 3 **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: When the zero pulse is passed, a deviation in the incremental position was detected.
For equidistant zero marks, the following applies:
- the first zero mark passed supplies the reference point for all subsequent checks. The other zero marks must have n times the distance referred to the first zero mark.
For distance-coded zero marks, the following applies:
- the first zero mark pair supplies the reference point for all subsequent checks. The other zero mark pairs must have the expected distance to the first zero mark pair.
Alarm value (r2124, interpret decimal):
Deviation in quadrants (1 pulse = 4 quadrants).

Remedy: - check that the encoder cables are routed in compliance with EMC.
- check the plug connections.
- replace the encoder or encoder cable.
- Clean coding disk or remove strong magnetic fields.

Reaction upon F: Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (OFF1, OFF2, OFF3, STOP2)

Acknowl. upon F: IMMEDIATELY

Reaction upon N: NONE

Acknowl. upon N: NONE

A33432 (F, N) Encoder 3: Rotor position adaptation corrects deviation

Message value: %1

Message class: Actual position/speed value incorrect or not available (11)

Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Encoder 3 **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: On track A/B, pulses have been lost or too many have been counted. These pulses are presently being corrected.
Alarm value (r2124, interpret decimal):
Last measured deviation of zero mark in increments (4 increments = 1 encoder pulse).
The sign designates the direction of motion when detecting the zero mark distance.

Remedy: - check that the encoder cables are routed in compliance with EMC.
- check the plug connections.
- replace the encoder or encoder cable.
- check encoder limit frequency.
- adapt the parameter for the distance between zero marks (p0424, p0425).

Reaction upon F:	Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2) Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2) Hla: NONE (OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F:	IMMEDIATELY
Reaction upon N:	NONE
Acknowl. upon N:	NONE

A33442 (F, N) Encoder 3: Battery voltage alarm threshold reached

Message value:	-
Message class:	Actual position/speed value incorrect or not available (11)
Drive object:	HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Encoder 3 **Propagation:** LOCAL
Reaction:	NONE
Acknowledge:	NONE
Cause:	When switched-off, the encoder uses a battery to back up the multiturn information. The multiturn information can no longer be buffered if the battery voltage drops even further.
Remedy:	Replace battery.
Reaction upon F:	Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2) Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2) Hla: NONE (OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F:	IMMEDIATELY
Reaction upon N:	NONE
Acknowl. upon N:	NONE

A33443 (F, N) Encoder 3: Signal level track C/D outside tolerance (alarm)

Message value:	Fault cause: %1 bin
Message class:	Actual position/speed value incorrect or not available (11)
Drive object:	HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Encoder 3 **Propagation:** LOCAL
Reaction:	NONE
Acknowledge:	NONE
Cause:	The unipolar level (CP/CN or DP/DN) for encoder 3 is outside the permissible tolerance. Alarm value (r2124, interpret binary): Bit 0 = 1: Either CP or CN outside the tolerance. Bit 16 = 1: Either DP or DN outside the tolerance. The unipolar nominal signal level of the encoder must lie in the range 2500 mV +/- 500 mV. The response thresholds are < 1700 mV and > 3300 mV. Note: The signal level is not evaluated unless the following conditions are satisfied: - Sensor Module properties available (r0459.31 = 1). - monitoring active (p0437.31 = 1).
Remedy:	- check that the encoder cables and shielding are routed in compliance with EMC. - check the plug connections and contacts of the encoder cable. - are the C/D tracks connected correctly (have the signal cables CP and CN or DP and DN been interchanged)? - replace the encoder cable.
Reaction upon F:	Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2) Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2) Hla: NONE (OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F:	IMMEDIATELY
Reaction upon N:	NONE
Acknowl. upon N:	NONE

A33460 (N) Encoder 3: Analog sensor channel A failed

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 3 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The input voltage of the analog sensor is outside the permissible limits.
Alarm value (r2124, interpret decimal):
1: Input voltage outside detectable measuring range.
2: Input voltage outside measuring range set in p4673.
3: The absolute value of the input voltage has exceeded the range limit (p4676).
Remedy: For alarm value = 1:
- check the output voltage of the analog sensor.
For alarm value = 2:
- check the voltage setting for each encoder period (p4673).
For alarm value = 3:
- check the range limit setting and increase it if necessary (p4676).
Reaction upon N: NONE
Acknowl. upon N: NONE

A33461 (N) Encoder 3: Analog sensor channel B failed

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 3 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The input voltage of the analog sensor is outside the permissible limits.
Alarm value (r2124, interpret decimal):
1: Input voltage outside detectable measuring range.
2: Input voltage outside the selected measuring range (p4675).
3: The absolute value of the input voltage has exceeded the range limit (p4676).
Remedy: For alarm value = 1:
- check the output voltage of the analog sensor.
For alarm value = 2:
- check the voltage setting for each encoder period (p4675).
For alarm value = 3:
- check the range limit setting and increase it if necessary (p4676).
Reaction upon N: NONE
Acknowl. upon N: NONE

A33462 (N) Encoder 3: Analog sensor no channel active

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 3 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: Channel A and B are not activated for the analog sensor.
Remedy: - activate channel A and/or channel B (p4670).
- check the encoder configuration (p0404.17).
See also: p4670 (Analog sensor configuration)
Reaction upon N: NONE
Acknowl. upon N: NONE

A33463 (N) Encoder 3: Analog sensor position value exceeds limit value

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 3 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The position value has exceeded the permissible range of -0.5 ... +0.5.
Alarm value (r2124, interpret decimal):
1: Position value from the LVDT sensor.
2: Position value from the encoder characteristic.
Remedy: For alarm value = 1:
- check the LVDT ratio (p4678).
- check the reference signal connection at track B.
For alarm value = 2:
- check the coefficients of the characteristic (p4663 ... p4666).
Reaction upon N: NONE
Acknowl. upon N: NONE

A33470 (F, N) Encoder 3: Encoder signals an internal error (X521.7)

Message value: -
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 3 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: For the Sensor Module Cabinet 30 (SMC30), a dirty encoder is signaled via a 0 signal at terminal X521.7.
Remedy: - check the plug connections.
- replace the encoder or encoder cable.
Reaction upon F: Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

F33500 (N, A) Encoder 3: Position tracking traversing range exceeded

Message value: -
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: For a configured linear axis without modulo correction, the drive/encoder has exceeded the maximum possible traversing range. The value should be read in p0412 and interpreted as the number of motor revolutions.
For p0411.0 = 1, the maximum traversing range for the configured linear axis is defined to be 64x (+/- 32x) of p0421.
For p0411.3 = 1, the maximum traversing range for the configured linear axis is preset (default value) to the highest possible value and is +/-p0412/2 (rounded off to complete revolutions). The highest possible value depends on the pulse number (p0408) and the fine resolution (p0419).
Remedy: The fault should be resolved as follows:
- select encoder commissioning (p0010 = 4).
- reset the position tracking as follows (p0411.2 = 1).
- deselect encoder commissioning (p0010 = 0).
The fault should then be acknowledged and the absolute encoder adjusted.

Reaction upon N:	NONE
Acknowl. upon N:	NONE
Reaction upon A:	NONE
Acknowl. upon A:	NONE

F33501 (N, A) Encoder 3: Position tracking encoder position outside tolerance window

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: When switched off, the drive/encoder was moved through a distance greater than was parameterized in the tolerance window. It is possible that there is no longer any reference between the mechanical system and encoder.

Fault value (r0949, interpret decimal):

Deviation (difference) to the last encoder position in increments of the absolute value.

The sign designates the traversing direction.

Note:

The deviation (difference) found is also displayed in r0477.

See also: p0413 (Measuring gear position tracking tolerance window), r0477 (Measuring gear position difference)

Remedy: Reset the position tracking as follows:

- select encoder commissioning (p0010 = 4).
- reset the position tracking as follows (p0411.2 = 1).
- deselect encoder commissioning (p0010 = 0).

The fault should then be acknowledged and, if necessary, the absolute encoder adjusted (p2507).

See also: p0010, p2507

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33502 (N, A) Encoder 3: Encoder with measuring gear without valid signals

Message value: -
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 3 **Propagation:** GLOBAL
Reaction: OFF1 (OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The encoder with measuring gear no longer provides any valid signals.
Remedy: It must be ensured that all of the encoders, with mounted measuring gear, provide valid actual values in operation.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33503 (N, A) Encoder 3: Position tracking cannot be reset

Message value: -
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The position tracking for the measuring gear cannot be reset.

Remedy:	The fault should be resolved as follows: - select encoder commissioning (p0010 = 4). - reset the position tracking as follows (p0411.2 = 1). - deselect encoder commissioning (p0010 = 0). The fault should then be acknowledged and the absolute encoder adjusted.
Reaction upon N:	NONE
Acknowl. upon N:	NONE
Reaction upon A:	NONE
Acknowl. upon A:	NONE

A33700 Encoder 3: Effectivity test does not supply the expected value

Message value:	Fault cause: %1 bin
Message class:	Safety monitoring channel has identified an error (10)
Drive object:	HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Sensor Module Encoder 3 **Propagation:** GLOBAL
Reaction:	NONE
Acknowledge:	NONE
Cause:	The DRIVE-CLiQ encoder fault word supplies fault bits that have been set. Alarm value (r2124, interpret binary): Bit x = 1: Effectivity test x unsuccessful.
Remedy:	Replace encoder.

N33800 (F) Encoder 3: Group signal

Message value:	-
Message class:	Actual position/speed value incorrect or not available (11)
Drive object:	HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	None **Propagation:** LOCAL
Reaction:	Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3) Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3) Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge:	NONE
Cause:	The motor encoder has detected at least one fault.
Remedy:	Evaluate the other messages that are presently available.
Reaction upon F:	Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3) Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3) Hla: OFF1 (NONE, OFF2, OFF3)
Acknowl. upon F:	IMMEDIATELY

F33801 (N, A) Encoder 3 DRIVE-CLiQ: Sign-of-life missing

Message value:	Component number: %1, fault cause: %2
Message class:	Internal (DRIVE-CLiQ) communication error (12)
Drive object:	HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Control Unit (CU) **Propagation:** LOCAL
Reaction:	Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3) Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3) Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge:	IMMEDIATELY
Cause:	A DRIVE-CLiQ communication error has occurred from the Control Unit to the encoder involved. Fault cause: 10 (= 0A hex): The sign-of-life bit in the receive telegram is not set. Note regarding the message value: The individual information is coded as follows in the message value (r0949/r2124): 0000yyxx hex: yy = component number, xx = error cause

Remedy: - check the electrical cabinet design and cable routing for EMC compliance
- replace the component involved.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33802 (N, A) Encoder 3: Time slice overflow

Message value: %1
Message class: Hardware/software error (1)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 3 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: A time slice overflow has occurred in encoder 3.
Fault value (r0949, interpret hexadecimal):
yx hex: y = function involved (Siemens-internal fault diagnostics), x = time slice involved
x = 9:
Time slice overflow of the fast (current controller clock cycle) time slice.
x = A:
Time slice overflow of the average time slice.
x = C:
Time slice overflow of the slow time slice.
yx = 3E7:
Timeout when waiting for SYNO (e.g. unexpected return to non-cyclic operation).
Remedy: Increase the current controller sampling time
Note:
For a current controller sampling time = 31.25 µs, use an SMx20 with Article No. 6SL3055-0AA00-5xA3.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33804 (N, A) Encoder 3: Sensor Module checksum error

Message value: %1
Message class: Hardware/software error (1)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 3 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: POWER ON (IMMEDIATELY)
Cause: A checksum error has occurred when reading-out the program memory on the Sensor Module.
Fault value (r0949, interpret hexadecimal):
yyyyxxxx hex
yyyy: Memory area involved.
xxxx: Difference between the checksum at POWER ON and the actual checksum.
Remedy: - carry out a POWER ON (switch-off/switch-on).
- upgrade firmware to later version (>= V2.6 HF3, >= V4.3 SP2, >= V4.4).
- check whether the permissible ambient temperature for the component is maintained.
- replace the Sensor Module.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33805 (N, A) Encoder 3: EEPROM checksum error

Message value: %1
Message class: Hardware/software error (1)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 3 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: Data in the EEPROM corrupted .
Fault value (r0949, interpret hexadecimal):
01: EEPROM access error.
02: Too many blocks in the EEPROM.
Remedy: Replace the module.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33806 (N, A) Encoder 3: Initialization error

Message value: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 3 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: PULSE INHIBIT
Cause: The encoder was not successfully initialized.
Fault value (r0949, interpret hexadecimal):
Bit 0, 1: Encoder initialization with the motor rotating has failed (deviation involving coarse and fine position in encoder pulses/4).
Bit 2: Mid-voltage matching for track A unsuccessful.
Bit 3: Mid-voltage matching for track B unsuccessful.
Bit 4: Mid-voltage matching for acceleration input unsuccessful.
Bit 5: Mid-voltage matching for track safety A unsuccessful.
Bit 6: Mid-voltage matching for track safety B unsuccessful.
Bit 7: Mid-voltage matching for track C unsuccessful.
Bit 8: Mid-voltage matching for track D unsuccessful.
Bit 9: Mid-voltage matching for track R unsuccessful.
Bit 10: The difference in mid-voltages between A and B is too great (> 0.5 V)
Bit 11: The difference in mid-voltages between C and D is too great (> 0.5 V)
Bit 12: The difference in mid-voltages between safety A and safety B is too great (> 0.5 V)
Bit 13: The difference in mid-voltages between A and safety B is too great (> 0.5 V)
Bit 14: The difference in mid-voltages between B and safety A is too great (> 0.5 V)
Bit 15: The standard deviation of the calculated mid-voltages is too great (> 0.3 V)
Bit 16: Internal fault - fault when reading a register (CAFE)
Bit 17: Internal fault - fault when writing a register (CAFE)
Bit 18: Internal fault: No mid-voltage matching available
Bit 19: Internal error - ADC access error.

Bit 20: Internal error - no zero crossover found.
Bit 28: Error while initializing the EnDat 2.2 measuring unit.
Bit 29: Error when reading out the data from the EnDat 2.2 measuring unit.
Bit 30: EEPROM checksum of the EnDat 2.2 measuring unit incorrect.
Bit 31: Data of the EnDat 2.2 measuring unit inconsistent.
Note:
Bit 0, 1: Up to 6SL3055-0AA00-5*A0
Bits 2 ... 20: 6SL3055-0AA00-5*A1 and higher

Remedy: Acknowledge fault.
If the fault cannot be acknowledged:
Bits 2 ... 9: Check encoder power supply.
Bits 2 ... 14: Check the corresponding cable.
Bit 15 with no other bits: Check track R, check settings in p0404.
Bit 28: Check the cable between the EnDat 2.2 converter and the measuring unit.
Bit 29 ... 31: Replace the defective measuring unit.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

A33811 (F, N) Encoder 3: Encoder serial number changed

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 3 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The encoder serial number has changed. The change is only checked for encoders with serial number (e.g. EnDat encoders).
- the encoder was replaced.
Note:
With closed-loop position control, the serial number is accepted when starting the adjustment (p2507 = 2).
When the encoder is adjusted (p2507 = 3), the serial number is checked for changes and if required, the adjustment is reset (p2507 = 1).
Proceed as follows to hide serial number monitoring:
- set the following serial numbers for the corresponding Encoder Data Set: p0441= FF, p0442 = 0, p0443 = 0, p0444 = 0, p0445 = 0.

Remedy: Mechanically adjust the encoder. Accept the new serial number with p0440 = 1.

Reaction upon F: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

F33812 (N, A) Encoder 3: Requested cycle or RX-/TX timing not supported

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 3 **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: A cycle requested from the Control Unit or RX/TX timing is not supported.
Fault value (r0949, interpret decimal):
0: Application cycle is not supported.
1: DRIVE-CLiQ cycle is not supported.
2: Distance between RX and TX instants in time too low.
3: TX instant in time too early.

Remedy: Carry out a POWER ON (switch-off/switch-on) for all components.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33813 Encoder 3: Hardware logic unit failed

Message value: Fault cause: %1 bin
Message class: Hardware/software error (1)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 3 **Propagation:** GLOBAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: PULSE INHIBIT
Cause: The logic unit of the DRIVE-CLiQ encoder has failed.
Fault value (r0949, interpret binary):
Bit 0: ALU watchdog has responded.
Bit 1: ALU has detected a sign-of-life error.
Remedy: When the error reoccurs, replace the encoder.

F33820 (N, A) Encoder 3 DRIVE-CLiQ: Telegram error

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 3 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Control Unit to the encoder concerned.
Fault cause:
1 (= 01 hex):
Checksum error (CRC error).
2 (= 02 hex):
Telegram is shorter than specified in the length byte or in the receive list.
3 (= 03 hex):
Telegram is longer than specified in the length byte or in the receive list.
4 (= 04 hex):
The length of the receive telegram does not match the receive list.
5 (= 05 hex):
The type of the receive telegram does not match the receive list.
6 (= 06 hex):
The address of the component in the telegram and in the receive list do not match.
7 (= 07 hex):
A SYNC telegram is expected - but the received telegram is not a SYNC telegram.
8 (= 08 hex):
No SYNC telegram is expected - but the received telegram is one.
9 (= 09 hex):
The error bit in the receive telegram is set.
16 (= 10 hex):
The receive telegram is too early.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy:	- carry out a POWER ON (switch-off/switch-on). - check the electrical cabinet design and cable routing for EMC compliance - check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
Reaction upon N:	NONE
Acknowl. upon N:	NONE
Reaction upon A:	NONE
Acknowl. upon A:	NONE

F33835 (N, A) Encoder 3 DRIVE-CLiQ: Cyclic data transfer error

Message value:	Component number: %1, fault cause: %2
Message class:	Internal (DRIVE-CLiQ) communication error (12)
Drive object:	HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Sensor Module Encoder 3 **Propagation:** LOCAL
Reaction:	Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3) Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3) Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge:	IMMEDIATELY
Cause:	A DRIVE-CLiQ communication error has occurred from the Control Unit to the encoder concerned. The nodes do not send and receive in synchronism. Fault cause: 33 (= 21 hex): The cyclic telegram has not been received. 34 (= 22 hex): Timeout in the telegram receive list. 64 (= 40 hex): Timeout in the telegram send list. Note regarding the message value: The individual information is coded as follows in the message value (r0949/r2124): 0000yyxx hex: yy = component number, xx = error cause
Remedy:	- carry out a POWER ON. - replace the component involved.
Reaction upon N:	NONE
Acknowl. upon N:	NONE
Reaction upon A:	NONE
Acknowl. upon A:	NONE

F33836 (N, A) Encoder 3 DRIVE-CLiQ: Send error for DRIVE-CLiQ data

Message value:	Component number: %1, fault cause: %2
Message class:	Internal (DRIVE-CLiQ) communication error (12)
Drive object:	HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Sensor Module Encoder 3 **Propagation:** LOCAL
Reaction:	Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3) Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3) Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge:	IMMEDIATELY
Cause:	A DRIVE-CLiQ communication error has occurred from the Control Unit to the encoder involved. Data were not able to be sent. Fault cause: 65 (= 41 hex): Telegram type does not match send list. Note regarding the message value: The individual information is coded as follows in the message value (r0949/r2124): 0000yyxx hex: yy = component number, xx = error cause
Remedy:	Carry out a POWER ON.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33837 (N, A) Encoder 3 DRIVE-CLiQ: Component fault

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 3 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: Fault detected on the DRIVE-CLiQ component concerned. Faulty hardware cannot be excluded.
Fault cause:
32 (= 20 hex):
Error in the telegram header.
35 (= 23 hex):
Receive error: The telegram buffer memory contains an error.
66 (= 42 hex):
Send error: The telegram buffer memory contains an error.
67 (= 43 hex):
Send error: The telegram buffer memory contains an error.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: - check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
- check the electrical cabinet design and cable routing for EMC compliance
- if required, use another DRIVE-CLiQ socket (p9904).
- replace the component involved.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33845 (N, A) Encoder 3 DRIVE-CLiQ: Cyclic data transfer error

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 3 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Control Unit to the encoder involved.
Fault cause:
11 (= 0B hex):
Synchronization error during alternating cyclic data transfer.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: Carry out a POWER ON (switch-off/switch-on).

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33850 (N, A) Encoder 3: Encoder evaluation internal software error

Message value: %1
Message class: Hardware/software error (1)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 3 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: POWER ON
Cause: An internal software error has occurred in the Sensor Module of encoder 3.
Fault value (r0949, interpret decimal):
1: Background time slice is blocked.
2: Checksum over the code memory is not OK.
10000: OEM memory of the EnDat encoder contains data that cannot be interpreted.
11000 ... 11499: Descriptive data from EEPROM incorrect.
11500 ... 11899: Calibration data from EEPROM incorrect.
11900 ... 11999: Configuration data from EEPROM incorrect.
12000 ... 12008: communication with analog/digital converter faulted.
16000: DRIVE-CLiQ encoder initialization application error.
16001: DRIVE-CLiQ encoder initialization ALU error.
16002: DRIVE-CLiQ encoder HISI / SISI initialization error.
16003: DRIVE-CLiQ encoder safety initialization error.
16004: DRIVE-CLiQ encoder internal system error.
Remedy: - replace the Sensor Module.
- if required, upgrade the firmware in the Sensor Module.
- contact Technical Support.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33851 (N, A) Encoder 3 DRIVE-CLiQ (CU): Sign-of-life missing

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 3 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Sensor Module (encoder 3) involved to the Control Unit.
The DRIVE-CLiQ component did not set the sign-of-life to the Control Unit.
Fault cause:
10 (= 0A hex):
The sign-of-life bit in the receive telegram is not set.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: - Upgrade the firmware of the component involved.
- carry out a POWER ON (switch-off/switch-on) for the component involved.

Reaction upon N:	NONE
Acknowl. upon N:	NONE
Reaction upon A:	NONE
Acknowl. upon A:	NONE

F33860 (N, A) Encoder 3 DRIVE-CLiQ (CU): Telegram error

Message value: Component number: %1, fault cause: %2

Message class: Internal (DRIVE-CLiQ) communication error (12)

Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Sensor Module Encoder 3 **Propagation:** LOCAL

Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)

Acknowledge: IMMEDIATELY

Cause: A DRIVE-CLiQ communication error has occurred from the Sensor Module (encoder 3) involved to the Control Unit.
Fault cause:
1 (= 01 hex):
Checksum error (CRC error).
2 (= 02 hex):
Telegram is shorter than specified in the length byte or in the receive list.
3 (= 03 hex):
Telegram is longer than specified in the length byte or in the receive list.
4 (= 04 hex):
The length of the receive telegram does not match the receive list.
5 (= 05 hex):
The type of the receive telegram does not match the receive list.
6 (= 06 hex):
The address of the power unit in the telegram and in the receive list do not match.
9 (= 09 hex):
The DRIVE-CLiQ communication from the DRIVE-CLiQ component involved to the Control Unit signals that the supply voltage has failed.
16 (= 10 hex):
The receive telegram is too early.
17 (= 11 hex):
CRC error and the receive telegram is too early.
18 (= 12 hex):
The telegram is shorter than that specified in the length byte or in the receive list and the receive telegram is too early.
19 (= 13 hex):
The telegram is longer than that specified in the length byte or in the receive list and the receive telegram is too early.
20 (= 14 hex):
The length of the receive telegram does not match the receive list and the receive telegram is too early.
21 (= 15 hex):
The type of the receive telegram does not match the receive list and the receive telegram is too early.
22 (= 16 hex):
The address of the power unit in the telegram and in the receive list does not match and the receive telegram is too early.
25 (= 19 hex):
The error bit in the receive telegram is set and the receive telegram is too early.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy: - carry out a POWER ON (switch-off/switch-on).
- check the electrical cabinet design and cable routing for EMC compliance
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33875 (N, A) Encoder 3: power supply voltage failed

Message value: Component number: %1, fault cause: %2
Message class: Supply voltage fault (undervoltage) (3)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 3 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The DRIVE-CLiQ communication from the DRIVE-CLiQ component involved to the Control Unit signals that the supply voltage has failed.
Fault cause:
9 (= 09 hex):
The power supply voltage for the components has failed.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: - carry out a POWER ON (switch-off/switch-on).
- check the power supply voltage wiring for the DRIVE-CLiQ component (interrupted cable, contacts, ...).
- check the dimensioning of the power supply for the DRIVE-CLiQ component.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33885 (N, A) Encoder 3 DRIVE-CLiQ (CU): Cyclic data transfer error

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 3 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Sensor Module (encoder 3) involved to the Control Unit.
The nodes do not send and receive in synchronism.
Fault cause:
26 (= 1A hex):
Sign-of-life bit in the receive telegram not set and the receive telegram is too early.
33 (= 21 hex):
The cyclic telegram has not been received.
34 (= 22 hex):
Timeout in the telegram receive list.
64 (= 40 hex):
Timeout in the telegram send list.
98 (= 62 hex):
Error at the transition to cyclic operation.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy: - check the power supply voltage of the component involved.
- carry out a POWER ON.
- replace the component involved.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33886 (N, A) Encoder 3 DRIVE-CLiQ (CU): Error when sending DRIVE-CLiQ data

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 3 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Sensor Module (encoder 3) involved to the Control Unit.
Data were not able to be sent.
Fault cause:
65 (= 41 hex):
Telegram type does not match send list.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: Carry out a POWER ON.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33887 (N, A) Encoder 3 DRIVE-CLiQ (CU): Component fault

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 3 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: Fault detected on the DRIVE-CLiQ component involved (Sensor Module for encoder 3). Faulty hardware cannot be excluded.
Fault cause:
32 (= 20 hex):
Error in the telegram header.
35 (= 23 hex):
Receive error: The telegram buffer memory contains an error.
66 (= 42 hex):
Send error: The telegram buffer memory contains an error.
67 (= 43 hex):
Send error: The telegram buffer memory contains an error.
96 (= 60 hex):
Response received too late during runtime measurement.
97 (= 61 hex):
Time taken to exchange characteristic data too long.

	Note regarding the message value:
	The individual information is coded as follows in the message value (r0949/r2124):
	0000yyxx hex: yy = component number, xx = error cause
Remedy:	- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
	- check the electrical cabinet design and cable routing for EMC compliance
	- if required, use another DRIVE-CLiQ socket (p9904).
	- replace the component involved.
Reaction upon N:	NONE
Acknowl. upon N:	NONE
Reaction upon A:	NONE
Acknowl. upon A:	NONE

F33895 (N, A) Encoder 3 DRIVE-CLiQ (CU): Alternating cyclic data transfer error

Message value: Component number: %1, fault cause: %2

Message class: Internal (DRIVE-CLiQ) communication error (12)

Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Sensor Module Encoder 3 **Propagation:** LOCAL

Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)

Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)

Hla: OFF1 (NONE, OFF2, OFF3)

Acknowledge: IMMEDIATELY

Cause: A DRIVE-CLiQ communication error has occurred from the Sensor Module (encoder 3) involved to the Control Unit.

Fault cause:

11 (= 0B hex):

Synchronization error during alternating cyclic data transfer.

Note regarding the message value:

The individual information is coded as follows in the message value (r0949/r2124):

0000yyxx hex: yy = component number, xx = error cause

Remedy: Carry out a POWER ON.

Reaction upon N: NONE

Acknowl. upon N: NONE

Reaction upon A: NONE

Acknowl. upon A: NONE

F33896 (N, A) Encoder 3 DRIVE-CLiQ (CU): Inconsistent component properties

Message value: Component number: %1

Message class: Internal (DRIVE-CLiQ) communication error (12)

Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Sensor Module Encoder 3 **Propagation:** LOCAL

Reaction: Servo: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)

Vector: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)

Hla: OFF2 (NONE, OFF1, OFF3, STOP2)

Acknowledge: IMMEDIATELY

Cause: The properties of the DRIVE-CLiQ component (Sensor Module for encoder 3), specified by the fault value, have changed in an incompatible fashion with respect to the properties when booted. One cause can be, e.g. that a DRIVE-CLiQ cable or DRIVE-CLiQ component has been replaced.

Fault value (r0949, interpret decimal):

Component number.

Remedy: - carry out a POWER ON.

- when a component is replaced, the same component type and if possible the same firmware version should be used.

- when a cable is replaced, only cables whose length is the same as or as close as possible to the length of the original cables should be used (ensure compliance with the maximum cable length).

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33899 (N, A) Encoder 3: Unknown fault

Message value: New message: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 3 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Hla: OFF1 (NONE, OFF2, OFF3, STOP2)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: A fault occurred on the Sensor Module for encoder 3 that cannot be interpreted by the Control Unit firmware.
This can occur if the firmware on this component is more recent than the firmware on the Control Unit.
Fault value (r0949, interpret decimal):
Fault number.
Note:
If required, the significance of this new fault can be read about in a more recent description of the Control Unit.
Remedy: - replace the firmware on the Sensor Module by an older firmware version (r0148).
- upgrade the firmware on the Control Unit (r0018).
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

A33902 (F, N) Encoder 3: SPI-BUS error occurred

Message value: %1
Message class: Hardware/software error (1)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 3 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: Error when operating the internal SPI bus.
Alarm value (r2124, interpret hexadecimal):
Only for internal Siemens troubleshooting.
Remedy: - replace the Sensor Module.
- if required, upgrade the firmware in the Sensor Module.
- contact Technical Support.
Reaction upon F: Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A33903 (F, N) Encoder 3: I2C-BUS error occurred

Message value: %1
Message class: Hardware/software error (1)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 3 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: Error when operating the internal I2C bus.
Alarm value (r2124, interpret hexadecimal):
Only for internal Siemens troubleshooting.
Remedy: - replace the Sensor Module.
- if required, upgrade the firmware in the Sensor Module.
- contact Technical Support.
Reaction upon F: Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

F33905 (N, A) Encoder 3: Encoder parameterization error

Message value: Parameter: %1, supplementary information: %2
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 3 **Propagation:** LOCAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Hla: OFF1 (NONE, OFF2, OFF3, STOP2)
Acknowledge: IMMEDIATELY
Cause: An error was identified in the encoder parameterization.
It is possible that the parameterized encoder type does not match the connected encoder.
The parameter involved can be determined as follows:
- determine the parameter number using the fault value (r0949).
- determine the parameter index (p0187).
Fault value (r0949, interpret decimal):
yyyyxxxx dec: yyyy = supplementary information, xxxx = parameter
xxxx = 421:
For an EnDat/SSI encoder, the absolute position in the protocol must be less than or equal to 30 bits.
yyyy = 0:
No additional information available.
yyyy = 1:
The component does not support HTL level (p0405.1 = 0) combined with track monitoring A/B <> -A/B (p0405.2 = 1).
yyyy = 2:
A code number for an identified encoder has been entered into p0400, however, no identification was carried out. Please start a new encoder identification.
yyyy = 3:
A code number for an identified encoder has been entered into p0400, however, no identification was carried out. Please select a listed encoder in p0400 with a code number < 10000.
yyyy = 4:
This component does not support SSI encoders (p0404.9 = 1) without track A/B.
yyyy = 5:
For SQW encoder, value in p4686 greater than in p0425.
yyyy = 6:
DRIVE-CLiQ encoder cannot be used with this firmware version.

yyyy = 7:
For an SQW encoder, the XIST1 correction (p0437.2) is only permitted for equidistant zero marks.
yyyy = 8:
The motor pole pair width is not supported by the linear scale being used.
yyyy = 9:
The length of the position in the EnDat protocol may be a maximum of 32 bits.
yyyy = 10:
The connected encoder is not supported.
yyyy = 11:
The hardware does not support track monitoring.

Remedy: - check whether the connected encoder type matches the encoder that has been parameterized.
- correct the parameter specified by the fault value (r0949) and p0187.
- re parameter number = 314:
- check the pole pair number and measuring gear ratio. The quotient of the "pole pair number" divided by the "measuring gear ratio" must be less than or equal to 1000 ((r0313 * p0433) / p0432 <= 1000).

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33912 Encoder 3: Device combination is not permissible

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 3 **Propagation:** GLOBAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE)
Vector: OFF1 (IASC/DCBRK, NONE)
Hla: OFF1 (NONE)
Acknowledge: PULSE INHIBIT
Cause: The selected device combination is not supported.
Fault value (r0949, interpret decimal):
1003:
The connected measuring unit cannot be operated with the EnDat 2.2 converter. For instance, the measuring unit has a pulse number/resolution of 2^n.
1005:
The type of measuring unit (incremental) is not supported by the EnDat 2.2 converter.
1006:
The maximum duration of the EnDat transfer (31.25 μs) was exceeded.
2001:
The set combination of current controller cycle, DP cycle and Safety cycle is not supported by the EnDat 2.2 converter.
2002:
The resolution of the linear measuring unit does not match the pole pair width of the linear motor
Pole pair width, minimum = p0422 * 2^20

Remedy: For fault value = 1003, 1005, 1006:
- Use a measuring unit that is permissible.
For fault value = 2001:
- set a permissible cycle combination (if required, use standard settings).
For fault value = 2002:
- Use a measuring unit with a lower resolution (p0422).

A33915 (F, N) Encoder 3: Encoder configuration error

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 3 **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The configuration for encoder 3 is incorrect.
Alarm value (r2124, interpret decimal):
1:
Re-parameterization between fault/alarm is not permissible.
419:
When the fine resolution Gx_XIST2 is configured, the encoder identifies a maximum possible absolute position actual value (r0483) that can no longer be represented within 32 bits.
Remedy: For alarm value = 1:
No re-parameterization between fault/alarm.
For alarm value = 419:
Reduce the fine resolution (p0419) or deactivate the monitoring (p0437.25), if the complete multiturn range is not required.
Reaction upon F: Servo: NONE (IASC/DCBRK)
Vector: NONE (IASC/DCBRK)
Hla: NONE
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

F33916 (N, A) Encoder 3: Encoder parameterization error

Message value: Parameter: %1, supplementary information: %2
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 3 **Propagation:** GLOBAL
Reaction: Servo: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Vector: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Hla: OFF1 (NONE, OFF2, OFF3, STOP2)
Acknowledge: IMMEDIATELY
Cause: An encoder parameter was detected as being incorrect.
It is possible that the parameterized encoder type does not match the connected encoder.
The parameter involved can be determined as follows:
- determine the parameter number using the fault value (r0949).
- determine the parameter index (p0187).
Fault value (r0949, interpret decimal):
Parameter number.
Remedy: - check whether the connected encoder type matches the encoder that has been parameterized.
- correct the parameter specified by the fault value (r0949) and p0187.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

A33920 (F, N) Encoder 3: Temperature sensor fault (motor)

Message value: Fault cause: %1, channel number: %2
Message class: External measured value / signal state outside the permissible range (16)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 3 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The motor detected a fault when evaluating the temperature sensor.
Fault cause:
1 (= 01 hex):
Wire breakage or sensor not connected.
KTY: R > 1630 Ohm, PT1000: R > 1720 Ohm
2 (= 02 hex):
Measured resistance too low.
PTC: R < 20 Ohm, KTY: R < 50 Ohm, PT1000: R < 603 Ohm
Additional values:
Only for internal Siemens troubleshooting.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = channel number, xx = error cause
Remedy: - check that the encoder cable is the correct type and is correctly connected.
- check the temperature sensor selection in p0600 to p0603.
- replace the Sensor Module (hardware defect or incorrect calibration data).
Reaction upon F: Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A33930 (N) Encoder 3: Data logger has saved data

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 3 **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: For the activated function "Data logger" (p0437.0 = 1) a fault has occurred with the Sensor Module. This alarm indicates that the diagnostics data corresponding to the fault was saved on the memory card.
The diagnostics data is saved in the following folder:
/USER/SINAMICS/DATA/SMTRC00.BIN
...
/USER/SINAMICS/DATA/SMTRC07.BIN
/USER/SINAMICS/DATA/SMTRCIDX.TXT
The following information is contained in the TXT file:
- Display of the last written BIN file.
- Number of write operations that are still possible (from 10000 downwards).
Note:
Only Siemens can evaluate the BIN files.
Remedy: Not necessary.
This alarm is automatically withdrawn.
The data logger is ready to record the next fault case.
Reaction upon N: NONE
Acknowl. upon N: NONE

A33940 (F, N) Encoder 3: Spindle sensor S1 voltage incorrect

Message value: %1
Message class: Application/technological function faulted (17)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Encoder 3 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The voltage of analog sensor S1 is outside the permissible range.
Alarm value (r2124, interpret decimal):
Signal level from sensor S1.
Note:
A signal level of 500 mV corresponds to the numerical value 500 dec.
Remedy: - check the clamped tool.
- check the tolerance and if required, adapt (p5040).
- check the thresholds and if required, adapt (p5041).
- check analog sensor S1 and connections.
See also: p5040 (Spindle voltage threshold values tolerance), p5041 (Spindle voltage threshold values)
Reaction upon F: Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

F33950 Encoder 3: Internal software error

Message value: %1
Message class: Hardware/software error (1)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 3 **Propagation:** LOCAL
Reaction: OFF1 (OFF2)
Acknowledge: POWER ON
Cause: An internal software error has occurred.
Fault value (r0949, interpret decimal):
Information about the fault source.
Only for internal Siemens troubleshooting.
Remedy: - if necessary, upgrade the firmware in the Sensor Module to a later version.
- contact Technical Support.

A33999 (F, N) Encoder 3: Unknown alarm

Message value: New message: %1
Message class: Actual position/speed value incorrect or not available (11)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Sensor Module Encoder 3 **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: A alarm has occurred on the Sensor Module for encoder 3 that cannot be interpreted by the Control Unit firmware.
This can occur if the firmware on this component is more recent than the firmware on the Control Unit.
Alarm value (r2124, interpret decimal):
Alarm number.
Note:
If required, the significance of this new alarm can be read about in a more recent description of the Control Unit.
Remedy: - replace the firmware on the Sensor Module by an older firmware version (r0148).
- upgrade the firmware on the Control Unit (r0018).

Reaction upon F: Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

F34207 (N, A) VSM: Temperature fault threshold exceeded

Message value: %1
Message class: Infeed faulted (13)
Drive object: A_INF, B_INF, R_INF, S_INF
Component: Voltage Sensing Module (VSM) **Propagation:** LOCAL
Reaction: OFF2 (NONE, OFF1)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The temperature (r3666) measured using the Voltage Sensing Module (VSM) has exceeded the threshold value (p3668).
Note:
This fault can only be output if the temperature evaluation was activated (p3665 > 0).
Fault value (r0949, interpret decimal):
Temperature actual value at the time of initiation [0.1 °C].
See also: r3666 (VSM temperature actual value), p3668
Remedy: - check the fan.
- reduce the power.
- check the temperature sensor type setting (p3665).
- infeed: check the line filter type setting (p0220).
See also: p3665 (VSM temperature evaluation sensor type)
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F34207 (N, A) VSM: Temperature fault threshold exceeded

Message value: %1
Message class: Infeed faulted (13)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Voltage Sensing Module (VSM) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The temperature (r3666) measured using the Voltage Sensing Module (VSM) has exceeded the threshold value (p3668).
Note:
This fault can only be output if the temperature evaluation was activated (p3665 > 0).
Fault value (r0949, interpret decimal):
Temperature actual value at the time of initiation [0.1 °C].
See also: r3666 (VSM temperature actual value), p3668
Remedy: - check the fan.
- reduce the power.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

A34211 (F, N) VSM: Temperature alarm threshold exceeded

Message value: %1
Message class: Infeed faulted (13)
Drive object: A_INF, B_INF, R_INF, S_INF
Component: Voltage Sensing Module (VSM) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The temperature (r3666) measured using the Voltage Sensing Module (VSM) has exceeded the threshold value (p3667).
Alarm value (r2124, interpret decimal):
Temperature actual value at the time of initiation [0.1 °C].
See also: r3666 (VSM temperature actual value), p3667
Remedy: - check the fan.
- reduce the power.
- check the temperature sensor type setting (p3665).
- infeed: check the line filter type setting (p0220).
See also: p3665 (VSM temperature evaluation sensor type)
Reaction upon F: NONE (OFF1, OFF2)
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

A34211 (F, N) VSM: Temperature alarm threshold exceeded

Message value: %1
Message class: Infeed faulted (13)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Voltage Sensing Module (VSM) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The temperature (r3666) measured using the Voltage Sensing Module (VSM) has exceeded the threshold value (p3667).
Alarm value (r2124, interpret decimal):
Temperature actual value at the time of initiation [0.1 °C].
See also: r3666 (VSM temperature actual value), p3667
Remedy: - check the fan.
- reduce the power.
Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

N34800 (F) VSM: Group signal

Message value: -
Message class: Infeed faulted (13)
Drive object: A_INF, B_INF, R_INF, S_INF, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** LOCAL
Reaction: Infeed: OFF2 (NONE, OFF1)
Vector: NONE (OFF1, OFF2, OFF3)
Acknowledge: NONE
Cause: The Voltage Sensing Module (VSM) has detected at least one fault.
Remedy: Evaluates other actual messages.
Reaction upon F: Infeed: OFF2 (NONE, OFF1)
Vector: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

F34801 (N, A) VSM DRIVE-CLiQ: Sign-of-life missing

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, R_INF, S_INF
Component: Control Unit (CU) **Propagation:** LOCAL
Reaction: OFF2 (NONE, OFF1)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communications error has occurred from the Control Unit to the Voltage Sensing Module (VSM).
Fault cause:
10 (= 0A hex):
The sign-of-life bit in the receive telegram is not set.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: - check the DRIVE-CLiQ connection.
- replace the Voltage Sensing Module (VSM).
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F34801 (N, A) VSM DRIVE-CLiQ: Sign-of-life missing

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** LOCAL
Reaction: NONE (OFF1, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communications error has occurred from the Control Unit to the Voltage Sensing Module (VSM).
Fault cause:
10 (= 0A hex):
The sign-of-life bit in the receive telegram is not set.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: - check the DRIVE-CLiQ connection.
- replace the component involved.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F34802 (N, A) VSM: Time slice overflow

Message value: -
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, R_INF, S_INF, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Voltage Sensing Module (VSM) **Propagation:** LOCAL
Reaction: Infeed: OFF2 (NONE, OFF1)
Vector: NONE (OFF1, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: A time slice overflow has occurred on the Voltage Sensing Module.
Remedy: Replace the Voltage Sensing Module.

Reaction upon N:	NONE
Acknowl. upon N:	NONE
Reaction upon A:	NONE
Acknowl. upon A:	NONE

F34803 VSM: Memory test

Message value: -
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, R_INF, S_INF, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Voltage Sensing Module (VSM) **Propagation:** LOCAL
Reaction: Infeed: OFF2 (NONE, OFF1)
Vector: NONE (OFF1, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: An error has occurred during the memory test on the Voltage Sensing Module.
Remedy: - check whether the permissible ambient temperature for the Voltage Sensing Module is being maintained.
- replace the Voltage Sensing Module.

F34804 (N, A) VSM: CRC

Message value: %1
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, R_INF, S_INF, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Voltage Sensing Module (VSM) **Propagation:** LOCAL
Reaction: Infeed: OFF2 (NONE, OFF1)
Vector: NONE (OFF1, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: A checksum error has occurred when reading-out the program memory on the Voltage Sensing Module (VSM).
Remedy: - check whether the permissible ambient temperature for the component is maintained.
- replace the Voltage Sensing Module.

Reaction upon N:	NONE
Acknowl. upon N:	NONE
Reaction upon A:	NONE
Acknowl. upon A:	NONE

F34805 (N, A) VSM: EEPROM checksum error

Message value: %1
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, R_INF, S_INF, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Voltage Sensing Module (VSM) **Propagation:** LOCAL
Reaction: Infeed: OFF2 (NONE, OFF1)
Vector: NONE (OFF1, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: Internal parameter data is corrupted.
Fault value (r0949, interpret hexadecimal):
01: EEPROM access error.
02: Too many blocks in the EEPROM.
Remedy: - check whether the permissible ambient temperature for the component is maintained.
- replace the Voltage Sensing Module (VSM).

Reaction upon N:	NONE
Acknowl. upon N:	NONE
Reaction upon A:	NONE
Acknowl. upon A:	NONE

F34806 VSM: Initialization

Message value: -
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, R_INF, S_INF, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Voltage Sensing Module (VSM) **Propagation:** LOCAL
Reaction: Infeed: OFF2 (NONE, OFF1)
Vector: NONE (OFF1, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: For the Voltage Sensing Module (VSM), a fault has occurred while initializing.
Remedy: Replace the Voltage Sensing Module.

A34807 (F, N) VSM: Sequence control time monitoring

Message value: -
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, R_INF, S_INF, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Voltage Sensing Module (VSM) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: Error, timeout in the sequence control on the Voltage Sensing Module (VSM).
Remedy: Replace the Voltage Sensing Module.
Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

F34820 VSM DRIVE-CLiQ: Telegram error

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, R_INF, S_INF, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Voltage Sensing Module (VSM) **Propagation:** LOCAL
Reaction: Infeed: OFF2 (NONE, OFF1)
Vector: NONE (OFF1, OFF2)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communications error has occurred from the Control Unit to the Voltage Sensing Module involved.
Fault cause:
1 (= 01 hex):
Checksum error (CRC error).
2 (= 02 hex):
Telegram is shorter than specified in the length byte or in the receive list.
3 (= 03 hex):
Telegram is longer than specified in the length byte or in the receive list.
4 (= 04 hex):
The length of the receive telegram does not match the receive list.
5 (= 05 hex):
The type of the receive telegram does not match the receive list.
6 (= 06 hex):
The address of the component in the telegram and in the receive list do not match.
7 (= 07 hex):
A SYNC telegram is expected - but the received telegram is not a SYNC telegram.
8 (= 08 hex):
No SYNC telegram is expected - but the received telegram is one.
9 (= 09 hex):
The error bit in the receive telegram is set.
16 (= 10 hex):
The receive telegram is too early.

Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy: - carry out a POWER ON (switch-off/switch-on).
- check the electrical cabinet design and cable routing for EMC compliance
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).

F34835 VSM DRIVE-CLiQ: Cyclic data transfer error

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, R_INF, S_INF, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Voltage Sensing Module (VSM) **Propagation:** LOCAL
Reaction: Infeed: OFF2 (NONE, OFF1)
Vector: NONE (OFF1, OFF2)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communications error has occurred from the Control Unit to the Voltage Sensing Module involved. The nodes do not send and receive in synchronism.
Fault cause:
33 (= 21 hex):
The cyclic telegram has not been received.
34 (= 22 hex):
Timeout in the telegram receive list.
64 (= 40 hex):
Timeout in the telegram send list.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: - carry out a POWER ON.
- replace the component involved.

F34836 VSM DRIVE-CLiQ: Send error for DRIVE-CLiQ data

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, R_INF, S_INF, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Voltage Sensing Module (VSM) **Propagation:** LOCAL
Reaction: Infeed: OFF2 (NONE, OFF1)
Vector: NONE (OFF1, OFF2)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communications error has occurred from the Control Unit to the Voltage Sensing Module. Data were not able to be sent.
Fault cause:
65 (= 41 hex):
Telegram type does not match send list.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: Carry out a POWER ON.

F34837 VSM DRIVE-CLiQ: Component fault

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, R_INF, S_INF, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Voltage Sensing Module (VSM) **Propagation:** LOCAL
Reaction: Infeed: OFF2 (NONE, OFF1)
Vector: NONE (OFF1, OFF2)
Acknowledge: IMMEDIATELY
Cause: Fault detected on the DRIVE-CLiQ component concerned. Faulty hardware cannot be excluded.
Fault cause:
32 (= 20 hex):
Error in the telegram header.
35 (= 23 hex):
Receive error: The telegram buffer memory contains an error.
66 (= 42 hex):
Send error: The telegram buffer memory contains an error.
67 (= 43 hex):
Send error: The telegram buffer memory contains an error.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: - check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
- check the electrical cabinet design and cable routing for EMC compliance
- if required, use another DRIVE-CLiQ socket (p9904).
- replace the component involved.

F34845 VSM DRIVE-CLiQ: Cyclic data transfer error

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, R_INF, S_INF, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Voltage Sensing Module (VSM) **Propagation:** LOCAL
Reaction: Infeed: OFF2 (NONE, OFF1)
Vector: NONE (OFF1, OFF2)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communications error has occurred from the Control Unit to the Voltage Sensing Module (VSM).
Fault cause:
11 (= 0B hex):
Synchronization error during alternating cyclic data transfer.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: Carry out a POWER ON.

F34850 VSM: Internal software error

Message value: %1
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, R_INF, S_INF, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Voltage Sensing Module (VSM) **Propagation:** LOCAL
Reaction: Infeed: OFF1 (NONE, OFF2)
Vector: OFF1 (NONE, OFF2, OFF3)
Acknowledge: POWER ON
Cause: An internal software error in the Voltage Sensing Module (VSM) has occurred.
Fault value (r0949, interpret decimal):
1: Background time slice is blocked.
2: Checksum over the code memory is not OK.

Remedy: - replace the Voltage Sensing Module (VSM).
- if required, upgrade the firmware in the Voltage Sensing Module.
- contact Technical Support.

F34851 VSM DRIVE-CLiQ (CU): Sign-of-life missing

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, CU_LINK, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Voltage Sensing Module (VSM) **Propagation:** LOCAL
Reaction: Infeed: OFF2 (NONE, OFF1)
Servo: NONE (OFF1, OFF2)
Vector: NONE (OFF1, OFF2)
Hla: NONE (OFF1, OFF2)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communications error has occurred from the Voltage Sensing Module involved (VSM) to the Control Unit.
The DRIVE-CLiQ component did not set the sign-of-life to the Control Unit.
Fault cause:
10 (= 0A hex):
The sign-of-life bit in the receive telegram is not set.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: Upgrade the firmware of the component involved.

F34860 VSM DRIVE-CLiQ (CU): Telegram error

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, CU_LINK, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Voltage Sensing Module (VSM) **Propagation:** LOCAL
Reaction: Infeed: OFF2 (NONE, OFF1)
Servo: NONE (OFF1, OFF2)
Vector: NONE (OFF1, OFF2)
Hla: NONE (OFF1, OFF2)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communications error has occurred from the Voltage Sensing Module involved (VSM) to the Control Unit.
Fault cause:
1 (= 01 hex):
Checksum error (CRC error).
2 (= 02 hex):
Telegram is shorter than specified in the length byte or in the receive list.
3 (= 03 hex):
Telegram is longer than specified in the length byte or in the receive list.
4 (= 04 hex):
The length of the receive telegram does not match the receive list.
5 (= 05 hex):
The type of the receive telegram does not match the receive list.
6 (= 06 hex):
The address of the power unit in the telegram and in the receive list do not match.
9 (= 09 hex):
The DRIVE-CLiQ communication from the DRIVE-CLiQ component involved to the Control Unit signals that the supply voltage has failed.

16 (= 10 hex):
The receive telegram is too early.
17 (= 11 hex):
CRC error and the receive telegram is too early.
18 (= 12 hex):
The telegram is shorter than that specified in the length byte or in the receive list and the receive telegram is too early.
19 (= 13 hex):
The telegram is longer than that specified in the length byte or in the receive list and the receive telegram is too early.
20 (= 14 hex):
The length of the receive telegram does not match the receive list and the receive telegram is too early.
21 (= 15 hex):
The type of the receive telegram does not match the receive list and the receive telegram is too early.
22 (= 16 hex):
The address of the power unit in the telegram and in the receive list does not match and the receive telegram is too early.
25 (= 19 hex):
The error bit in the receive telegram is set and the receive telegram is too early.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy: - carry out a POWER ON (switch-off/switch-on).
- check the electrical cabinet design and cable routing for EMC compliance
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).

F34875 VSM: power supply voltage failed

Message value: Component number: %1, fault cause: %2

Message class: Supply voltage fault (undervoltage) (3)

Drive object: A_INF, B_INF, CU_LINK, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Voltage Sensing Module (VSM) **Propagation:** LOCAL

Reaction: OFF2

Acknowledge: IMMEDIATELY

Cause: The DRIVE-CLiQ communication from the DRIVE-CLiQ component involved to the Control Unit signals that the supply voltage has failed.
Fault cause:
9 (= 09 hex):
The power supply voltage for the components has failed.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy: - carry out a POWER ON (switch-off/switch-on).
- check the power supply voltage wiring for the DRIVE-CLiQ component (interrupted cable, contacts, ...).
- check the dimensioning of the power supply for the DRIVE-CLiQ component.

F34885 VSM DRIVE-CLiQ (CU): Cyclic data transfer error

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, CU_LINK, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Voltage Sensing Module (VSM) **Propagation:** LOCAL
Reaction: Infeed: OFF2 (NONE, OFF1)
Servo: NONE (OFF1, OFF2)
Vector: NONE (OFF1, OFF2)
Hla: NONE (OFF1, OFF2)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communications error has occurred from the Voltage Sensing Module involved (VSM) to the Control Unit.
The nodes do not send and receive in synchronism.
Fault cause:
26 (= 1A hex):
Sign-of-life bit in the receive telegram not set and the receive telegram is too early.
33 (= 21 hex):
The cyclic telegram has not been received.
34 (= 22 hex):
Timeout in the telegram receive list.
64 (= 40 hex):
Timeout in the telegram send list.
98 (= 62 hex):
Error at the transition to cyclic operation.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: - check the power supply voltage of the component involved.
- carry out a POWER ON.
- replace the component involved.

F34886 VSM DRIVE-CLiQ (CU): Error when sending DRIVE-CLiQ data

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, CU_LINK, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Voltage Sensing Module (VSM) **Propagation:** LOCAL
Reaction: Infeed: OFF2 (NONE, OFF1)
Servo: NONE (OFF1, OFF2)
Vector: NONE (OFF1, OFF2)
Hla: NONE (OFF1, OFF2)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communications error has occurred from the Voltage Sensing Module involved (VSM) to the Control Unit.
Data were not able to be sent.
Fault cause:
65 (= 41 hex):
Telegram type does not match send list.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: Carry out a POWER ON.

F34887 VSM DRIVE-CLiQ (CU): Component fault

Message value: Component number: %1, fault cause: %2

Message class: Internal (DRIVE-CLiQ) communication error (12)

Drive object: A_INF, B_INF, CU_LINK, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Voltage Sensing Module (VSM) **Propagation:** LOCAL

Reaction: Infeed: OFF2 (NONE, OFF1)
Servo: NONE (OFF1, OFF2)
Vector: NONE (OFF1, OFF2)
Hla: NONE (OFF1, OFF2)

Acknowledge: IMMEDIATELY

Cause: Fault detected on the DRIVE-CLiQ component (Voltage Sensing Module) involved. Faulty hardware cannot be excluded.
Fault cause:
32 (= 20 hex):
Error in the telegram header.
35 (= 23 hex):
Receive error: The telegram buffer memory contains an error.
66 (= 42 hex):
Send error: The telegram buffer memory contains an error.
67 (= 43 hex):
Send error: The telegram buffer memory contains an error.
96 (= 60 hex):
Response received too late during runtime measurement.
97 (= 61 hex):
Time taken to exchange characteristic data too long.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy: - check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
- check the electrical cabinet design and cable routing for EMC compliance
- if required, use another DRIVE-CLiQ socket (p9904).
- replace the component involved.

F34895 VSM DRIVE-CLiQ (CU): Alternating cyclic data transfer error

Message value: Component number: %1, fault cause: %2

Message class: Internal (DRIVE-CLiQ) communication error (12)

Drive object: A_INF, B_INF, CU_LINK, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Voltage Sensing Module (VSM) **Propagation:** LOCAL

Reaction: Infeed: OFF2 (NONE, OFF1)
Servo: NONE (OFF1, OFF2)
Vector: NONE (OFF1, OFF2)
Hla: NONE (OFF1, OFF2)

Acknowledge: IMMEDIATELY

Cause: A DRIVE-CLiQ communications error has occurred from the Voltage Sensing Module involved (VSM) to the Control Unit.
Fault cause:
11 (= 0B hex):
Synchronization error during alternating cyclic data transfer.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy: Carry out a POWER ON.

F34896 VSM DRIVE-CLiQ (CU): Inconsistent component properties

Message value: Component number: %1
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, CU_LINK, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Voltage Sensing Module (VSM) **Propagation:** LOCAL
Reaction: Infeed: OFF2 (NONE, OFF1)
Servo: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Vector: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Hla: OFF2 (NONE, OFF1, OFF3, STOP2)
Acknowledge: IMMEDIATELY
Cause: The properties of the DRIVE-CLiQ component (Voltage Sensing Module), specified by the fault value, have changed in an incompatible fashion with respect to the properties when booted. One cause can be, e.g. that a DRIVE-CLiQ cable or DRIVE-CLiQ component has been replaced.
Fault value (r0949, interpret decimal):
Component number.
Remedy: - carry out a POWER ON.
- when a component is replaced, the same component type and if possible the same firmware version should be used.
- when a cable is replaced, only cables whose length is the same as or as close as possible to the length of the original cables should be used (ensure compliance with the maximum cable length).

F34899 (N, A) VSM: Unknown fault

Message value: New message: %1
Message class: Infeed faulted (13)
Drive object: A_INF, B_INF, R_INF, S_INF, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Voltage Sensing Module (VSM) **Propagation:** LOCAL
Reaction: Infeed: NONE (OFF1, OFF2)
Vector: NONE (OFF1, OFF2, OFF3)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: A fault occurred on the Voltage Sensing Module that cannot be interpreted by the Control Unit firmware.
This can occur if the firmware on this component is more recent than the firmware on the Control Unit.
Fault value (r0949, interpret decimal):
Fault number.
Note:
If required, the significance of this new fault can be read about in a more recent description of the Control Unit.
Remedy: - replace the firmware on the Voltage Sensing Module by an older firmware version (r0158).
- upgrade the firmware on the Control Unit (r0018).
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

A34903 (F, N) VSM: I2C bus error occurred

Message value: -
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, R_INF, S_INF
Component: Voltage Sensing Module (VSM) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: An error has occurred when accessing the module-internal I2C bus.
Remedy: Replace the Voltage Sensing Module (VSM).
Reaction upon F: NONE (OFF1, OFF2)
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

A34903 (F, N) VSM: I2C bus error occurred

Message value: -
Message class: Hardware/software error (1)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Voltage Sensing Module (VSM) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: An error has occurred when accessing the module-internal I2C bus.
Remedy: Replace the Terminal Module.
Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

A34904 (F, N) VSM: EEPROM

Message value: -
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, R_INF, S_INF, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Voltage Sensing Module (VSM) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: An error has occurred accessing the non-volatile memory on the Terminal Module.
Remedy: Replace the Voltage Sensing Module (VSM).
Reaction upon F: Infeed: NONE (OFF1, OFF2)
Vector: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

A34905 (F, N) VSM: Parameter access

Message value: -
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, R_INF, S_INF, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Voltage Sensing Module (VSM) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The Control Unit attempted to write an illegal parameter value to the Voltage Sensing Module (VSM).
Remedy: - check whether the firmware version of the VSM (r0158) matches the firmware version of Control Unit (r0018).
- if required, replace the Voltage Sensing Module.
Note:
The firmware versions that match each other are in the readme.txt file on the memory card.
Reaction upon F: Infeed: NONE (OFF1, OFF2)
Vector: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

F34920 (N, A) VSM: overtemperature or temperature sensor fault

Message value: %1
Message class: External measured value / signal state outside the permissible range (16)
Drive object: A_INF, B_INF, R_INF, S_INF
Component: Voltage Sensing Module (VSM) **Propagation:** LOCAL
Reaction: NONE (OFF1, OFF2)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: When evaluating the temperature sensor, a resistance value outside the permissible range was detected.
Fault value (r0949, interpret decimal):
1: overtemperature, wire breakage or sensor not connected.
KTY: R > 1630 Ohm, PT1000: R > 1720 Ohm
2: Measured resistance too low.
PTC: R < 20 Ohm, KTY: R < 50 Ohm, PT1000: R < 723 Ohm
Remedy: - make sure that the sensor is connected correctly.
- replace the sensor.
- allow to cool down and then check the ambient conditions, load cycle and cooling (fan fuse).
- check the temperature sensor type setting (p3665).
- infeed: check the line filter type setting (p0220).
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F34920 (N, A) VSM: overtemperature or temperature sensor fault

Message value: %1
Message class: External measured value / signal state outside the permissible range (16)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Voltage Sensing Module (VSM) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: When evaluating the temperature sensor, a resistance value outside the permissible range was detected.
Fault value (r0949, interpret decimal):
1: overtemperature, wire breakage or sensor not connected.
KTY: R > 1630 Ohm, PT1000: R > 1720 Ohm
2: Measured resistance too low.
PTC: R < 20 Ohm, KTY: R < 50 Ohm, PT1000: R < 723 Ohm
Remedy: - make sure that the sensor is connected correctly.
- replace the sensor.
- allow to cool down and then check the ambient conditions, load cycle and cooling (fan fuse).
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F34950 VSM: Internal software error

Message value: %1
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Voltage Sensing Module (VSM) **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: POWER ON
Cause: An internal software error in the Voltage Sensing Module (VSM) has occurred.
Fault value (r0949, interpret decimal):
Information about the fault source.
Only for internal Siemens troubleshooting.

Remedy: - if necessary, upgrade the firmware in the Voltage Sensing Module to a later version.
- contact Technical Support.

A34999 (F, N) VSM: Unknown alarm

Message value: New message: %1
Message class: Infeed faulted (13)
Drive object: A_INF, B_INF, R_INF, S_INF, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Voltage Sensing Module (VSM) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: A fault occurred on the Voltage Sensing Module (VSM) an alarm has occurred that cannot be interpreted by the Control Unit firmware.
This can occur if the firmware on this component is more recent than the firmware on the Control Unit.
Alarm value (r2124, interpret decimal):
Alarm number.
Note:
If required, the significance of this new alarm can be read about in a more recent description of the Control Unit.
Remedy: - replace the firmware on the Voltage Sensing Module by an older firmware version (r0148).
- upgrade the firmware on the Control Unit (r0018).
Reaction upon F: Infeed: NONE (OFF1, OFF2)
Vector: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

F35000 TM54F: Sampling time invalid

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: POWER ON
Cause: The set sampling time is invalid.
- not a multiple integer of the DP clock cycle.
Fault value (r0949, floating point):
Recommended valid sampling time.
Remedy: Adapt the sampling time (e.g. set the recommended valid sampling time).
See also: p10000 (SI TM54F communication clock cycle)

F35001 TM54F: Parameter value invalid

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The functionality of Safety Basic Functions via TM54F is used.
TM54F has been incorrectly parameterized (incorrect parameter assignment).
Only the following signals may be parameterized:
- STO active
- SS1 active
- internal event
- safe state

Possible causes:
- p10024 ... p10038 not set to 0 or 255.
- p10039, p10042 ... p10045 use signals from Safety Extended Functions.
Fault value (r0949, interpret binary):
Bits 0 ... 3 specifies for which drive group an illegal F-DI was parameterized:
Bit 0 = 1: drive group 1 error
Bit 1 = 1: drive group 2 error
Bit 2 = 1: drive group 3 error
Bit 3 = 1: drive group 4 error
Bits 4 ... 7 specifies for which F-DOs incorrect links were specified:
Bit 4 = 1: F-DO 0 error (p10042)
Bit 5 = 1: F-DO 1 error (p10043)
Bit 6 = 1: F-DO 2 error (p10044)
Bit 7 = 1: F-DO 3 error (p10045)

Remedy: - check the setting of the failsafe digital inputs (F-DI) for the Safety Extended Functions - and set to a value of 0 or 255 (p10024 ... p10039).
- check the setting of the signal sources for the failsafe digital outputs (F-DO) and if necessary, correct (p10042 ... p10045).
Note:
F-DI: Failsafe Digital Input
F-DO: Failsafe Digital Output

F35002 TM54F: Commissioning not possible

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The commissioning mode activation was rejected because at least one drive belonging to the TM54F is enabled for operation.
Fault value (r0949, interpret decimal):
Drive object number of the first drive found without pulse suppression/power inhibit.
Remedy: Withdraw the operating enable for the drive specified in the fault value.

F35003 TM54F: Acknowledgment on the Control Unit is required

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: A fault on the Terminal Module 54F (TM54) was acknowledged using the safe acknowledgment (p10006).
An additional acknowledgment is also required at the Control Unit.
Remedy: - acknowledge all faults on the Control Unit (BI: p2102).
or
- acknowledge all faults on the drive object TM54F (BI: p2103, p2104 or p2105).
Note:
A fault acknowledgment is triggered with a 0/1 signal.

F35004 TM54F: communication cycle invalid

Message value: Fault cause: %1 bin

Message class: Safety monitoring channel has identified an error (10)

Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Terminal Module (TM) **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: IMMEDIATELY

Cause: - the communication cycle specified in p10000[x] does not correspond with the monitoring cycle of the drive object, which was specified in p10010[x].

As long as this fault is present, Failsafe Values are activated in TM54F. All the drives are not enabled.

Fault value (r0949, interpret binary):

If a bit is set in the range bit 0 ... 5, then the following applies:

The communication cycle specified in p10000[x] does not correspond with the monitoring cycle of the drive object which was specified in p10010[x]. (if only p10000[0] used, then this value must be identical with all monitoring cycles of the drive objects used in p10010[0...5].)

Bit 0 = 1: p10000[0] does not correspond with the monitoring cycle of p10010[0]

Bit 1 = 1: p10000[1] does not correspond with the monitoring cycle of p10010[1]

..

Bit 5 = 1: p10000[5] does not correspond with the monitoring cycle of p10010[5]

If a bit is set in the range bit 16 ... 21, then the following applies:

Bit 16 = 1: p10000[0] has been selected too low.

Bit 17 = 1: p10000[1] has been selected too low.

..

Bit 21 = 1: p10000[5] has been selected too low.

When using an axis with Basic Safety Functions with TM54F, then the monitoring cycle should be greater than 500us + 8 * current controller clock cycles of the drive.

Note:

This error is also signaled if a drive controlled with TM54F is parameterized so that the basic functions are controlled via TM54F - and simultaneously the extended safety functions or ncSI have been parameterized.

The following applies for fault value = 0:

- since the firmware update of the TM54F it has not been switched off.
- the firmware of the connected TM54F is too old.

See also: p10010 (SI TM54F drive object assignment)

Remedy: For a fault value in the range from bit 0 ... 5:

- First check that all drives are entered in p10010,

extended safety functions or basic functions have been enabled via TM54F.

- Execute the copy function for TM54F(p9700 = 87).
- adapt the checksums for TM54F(p9701 = 172).
- copy RAM to ROM.
- carry out a POWER ON.

For a fault value in the range from bit 16 ... 21:

Increase the current controller sampling time of the corresponding drive, in order to avoid faults in operation.

- Execute the copy function for TM54F(p9700 = 87).
- adapt the checksums for TM54F(p9701 = 172).
- copy RAM to ROM.
- carry out a POWER ON.

F35005 TM54F:parallel connection not supported

Message value: Fault cause: %1 bin
Message class: Safety monitoring channel has identified an error (10)
Drive object: HLA, SERVO, SERVO_AC, SERVO_I_AC, VECTOR
Component: Terminal Module (TM) **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: POWER ON
Cause: The TM54F function with Basic Safety Functions is used. This function is not supported when power units are connected in parallel.

All drives of the TM54F assume Failsafe Values, and are not enabled.

See also: p10010 (SI TM54F drive object assignment)

Remedy: - deactivate parallel connection or TM54F with Basic Safety Functions.

- copy RAM to ROM.
- carry out a POWER ON (switch-off/switch-on).

F35006 TM54F: drive groups invalid

Message value: %1
Message class: Safety monitoring channel has identified an error (10)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Module (TM) **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: POWER ON
Cause: The functionality of the basic functions via TM54F is used.

Drive groups have been incorrectly parameterized (incorrect parameter assignment).

Fault value (r0949, interpret binary):

The value specifies in which drive group Basic Safety drives are mixed with Extended Safety drives.

Bit 0 = 1: drive group 1 error

Bit 1 = 1: drive group 2 error

Bit 2 = 1: drive group 3 error

Bit 3 = 1: drive group 4 error

As long as this fault is present, Failsafe Values are activated in TM54F. All the drives are not enabled.

Note:

-this error is also signaled if a drive controlled with TM54F is parameterized so that the basic functions are controlled via TM54F and simultaneously extended safety functions or ncSI have been parameterized.

Remedy: Corresponding to the fault value, p10011 should be checked to ensure that no Basic Safety drives are mixed with Extended Safety drives in a drive group.

F35009 TM54F: Safety commissioning drive incomplete

Message value: %1
Message class: Safety monitoring channel has identified an error (10)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, TM54F_MA, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Module (TM) **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: For Terminal Module 54F (TM54F), a drive object was assigned (p10010), for which no safety functions or faulty safety functions are parameterized (p9501, p9601).

Fault value (r0949, interpret bitwise binary):

Bit 0 = 1: drive 1 error

Bit 1 = 1: drive 2 error

Bit 2 = 1: drive 3 error

Bit 3 = 1: drive 4 error

Bit 4 = 1: drive 5 error

Bit 5 = 1: drive 6 error

Remedy: - carry out the safety commissioning of the drive involved and enable the safety functions for TM54F.
- commission the TM54F – and just set p9700 = 87d and p9701 = 172d.

F35011 TM54F: Drive object number assignment illegal

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: A drive object number was assigned twice. Each drive object number can be assigned only once.
Remedy: Correct the assignment of the drive object numbers.
See also: p10010 (SI TM54F drive object assignment)

A35012 TM54F: Test stop for failsafe digital inputs/outputs

Message value: -
Message class: Safety monitoring channel has identified an error (10)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Module (TM) **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The forced checking procedure (test stop) for the failsafe digital inputs/outputs (F-DI/F-DO) is currently in progress.
Remedy: The alarm is automatically withdraw after successfully ending or canceling (when a fault condition occurs) the test stop.
Note:
F-DI: Failsafe Digital Input
F-DO: Failsafe Digital Output

F35013 TM54F: Test stop error

Message value: %1
Message class: Safety monitoring channel has identified an error (10)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Module (TM) **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: A fault has been detected during the forced checking procedure (test stop) of the failsafe digital inputs/outputs on the TM54F. Failsafe control signals (Failsafe Values) are transferred to the safety functions.
Fault value (r0949, interpret hexadecimal):
aaaabbcc hex:
aaaa: DO or F-DI (dependent on test step cc), where the expected state was not assumed (bit 0 = F-DI 0 or F-DO 0, bit 1 = F-DI 1 or F-DO 1, etc.).
bb: Fault cause
bb = 01 hex: Internal fault.
bb = 02 hex: Fault when comparing the switching signals of the two channels (F-DI or DI).
bb = 03 hex: Internal fault.
bb = 04 hex: Fault when comparing the switching signals of the two channels (Diag-DO).

cc: State of the test stop in which the fault has occurred.
The display format is as follows:
Slave fault state: (test actions)(test actions) | corresponding step for the master: (test actions)(test actions) | Description
00 hex: (L1+OFF)(L2+ON) | 0A hex: ( )( ) | Synchronization / switching step
0A hex: (L1+OFF)(L2+ON) | 15 hex: ( )( ) | Wait step
15 hex: (L1+OFF)(L2+OFF) | 20 hex:( )( ) | 1.) F-DI 0 ... 4 check for 0 V 2.) Switch step to new level

20 hex: (L1+OFF)(L2+OFF) | 2B hex: ( )( ) | Wait step
2B hex: (L1+ON)(L2+ON) | 36 hex: ( )( ) | 1.) F-DI 5 ... 9 check for 0 V 2.) Switch step to new level
36 hex: (DO OFF)( ) | 41 hex: (DO OFF)( ) | Wait step / switching step
41 hex: (DO OFF)( ) | 4C hex: (DO OFF)( ) | Wait step
4C hex: (DO ON)( ) | 57 hex: (DO ON)( ) | 1.) Check diag-DO or diag-DI 2.) Switch step to new level
57 hex: (DO ON)( ) | 62 hex: (DO ON)( ) | Wait step
62 hex: (DO OFF)( ) | 6D hex: (DO ON)( ) | 1.) Check diag-DO or diag-DI 2.) Switch step
6D hex: (DO OFF)( ) | 78 hex: (DO ON)( ) | Wait step
78 hex: (DO ON)( ) | 83 hex: (DO OFF)( ) | 1.) Check diag-DO or diag-DI 2.) Switch step
83 hex: (DO ON)( ) | 8E hex: (DO OFF)( ) | Wait step
8E hex: (DO OFF)( ) | 99 hex: (DO OFF)( ) | 1.) Check diag-DO or diag-DI 2.) Switch step
99 hex: (DO OFF)( ) | A4 hex: (DO OFF)( ) | Wait step
A4 hex: (DO OFF)( ) | AF hex: (DO OFF)( ) | Check Diag-DO or Diag-DI
AF hex: (DO original state)() | C5 hex: (DO original state)() | Switching step
C5 hex: End of test

The expected states to be checked depend on the parameterized test mode (p10047).
The following expected states are tested in the test steps when testing the F-DOs:
The display format is as follows:
Test step (SL MA): Expected Diag-DO mode 1 | Expected DI 20 ... 23 mode 2 | Expected DI 20 ... 23 mode 3
(4C hex 57 hex): Diag-DO = 0 V | DI = 24 V | DI = 24 V
(62 hex 6D hex): Diag-DO = 0 V | DI = 0 V | DI = 0 V
(78 hex 83 hex): Diag-DO = 0 V | DI = 0 V | DI = 24 V
(8E hex 99 hex): Diag-DO = 24 V | DI = 0 V | DI = 24 V
(A4 hex AF hex): Diag-DO = 0 V | DI = 24 V | DI = 24 V
Example:
If an error with fault causes bb = 02 hex or 04 hex occurs in a test stop step, the test action for the fault took place in the previous test stop step. The expected states are tested in the next step.
Master signals fault value 0001_04AF and slave signals fault value 0001_04A4.
aaaa = 1 --> F-DO 0 is involved.
bb = 04 hex --> the test of the Diag-DO was unsuccessful.
cc = The expected states were tested in test stop step AF on the master and A4 on the slave.
The expected state Diag-DO = 0 V was checked in the table, i.e. Diag-DO was at 0 V instead of the expected 24 V. The associated test action took place in the previous step (99 hex DO OFF, A4 hex DO OFF). Both DOs were switched to OFF.

Remedy: Check the wiring of the F-DIs and F-DOs and restart the test stop.
Note:
The fault is withdrawn if the test stop is successfully completed.
For fault value = CCCCCCCC hex, DDDDDDDD hex, EEEEEEEE hex the following applies:
These fault values occur together with fault F35152. Possible countermeasure:
- check all parameters for the test stop.
- you should also check whether the firmware version of the TM54F matches that of the Control Unit.
- check p10001, p10017, p10046 and p10047.
A POWER ON must be carried out after correcting the parameters.
F-DI: Failsafe Digital Input
F-DO: Failsafe Digital Output

A35014 TM54F: Test stop for failsafe digital inputs/outputs

Message value: -

Message class: Safety monitoring channel has identified an error (10)

Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Terminal Module (TM) **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: The time set in p10003 for the forced checking procedure (test stop) for the digital inputs/outputs has been exceeded. A new forced checking procedure is required.

After the next time the forced checking procedure is selected, the message is withdrawn and the monitoring time is reset.

Note:

- this message does not result in a safety stop response.

- the test must be performed within a defined, maximum time interval (p10003, maximum of 8760 hours) in order to comply with the requirements as laid down in the standards for timely fault detection and the conditions to calculate the failure rates of safety functions (PFH value). Operation beyond this maximum time period is permissible if it can be ensured that the forced checking procedure is performed before persons enter the hazardous area and who are depending on the safety functions correctly functioning.

See also: p10003

Remedy: Carry out the forced checking procedure for the digital inputs/outputs.

The signal source to select the forced checking procedure is set via binector input p10007.

See also: p10007

A35015 TM54F: Motor/Hydraulic Module replaced or configuration inconsistent

Message value: Fault cause: %1 bin

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: Cyclic communication of at least one drive with the Terminal Module 54F (TM54F) is not active.

Possible causes:

- at least one Motor Module/Hydraulic Module was replaced (e.g. hardware was replaced).

- the parameterization of theTM54F (p10010) is inconsistent with the number of drives, which have drive-based motion monitoring functions activated with TM54F.

- For the signaled drive, it is not permissible that the "Safe motion monitoring without selection" (p9601.5 = 1) is parameterized.

- And activated drive has no communication via DRIVE-CLiQ.

- p10010 of the TM54F master module is not the same as p10010 of the TM54F slave module (in this case, F35051 is also output).

- in p10010 of the TM54F master or slave module, the number of a drive object was entered several times.

- the control of the Basis Functions via TM54F was parameterized, and simultaneously the Extended Safety Functions or ncSI were parameterized.

Alarm value (r2124, interpret binary):

yyyy yyyy xxxx xxxx bin

xxxx xxxx bin: inconsistent configuration

Bit 0 = 1: No communication with drive 1.

...

Bit 5 = 1: No communication with drive 6.

yyyy yyyy bin: Motor Module/Hydraulic Module replaced or a DRIVE-CLiQ cable of a Motor Module/Hydraulic Module not inserted.

Bit 8 = 1: Motor Module/Hydraulic Module from drive 1 was replaced or does not communicate.

...

Bit 13 = 1: Motor Module/Hydraulic Module from drive 6 was replaced or does not communicate.

Note:

When this alarm is active, none of the drives listed in the alarm value, which have drive-based motion monitoring functions operating with TM54F, are enabled.

For alarm value = 0:

The number of drive objects specified in p10010 is not equal to the number of drives that have drive-based motion monitoring functions that have been enabled.

See also: p10010 (SI TM54F drive object assignment)

Remedy: For all drive objects specified in p10010, check whether the drive-based motion monitoring functions with TM54F are enabled (p9601).

Check as to whether F35051 is also output and remove the cause.

Check whether each drive object number is listed only once in the indices of p10010.

Note:

If a drive was deactivated and activated without first having established the DRIVE-CLiQ connection, then this alarm is also output.

When replacing a Motor Module/Hydraulic Module, carry out the following steps:

- start the copy function for the node identifier on the TM54F (p9700 = 1D hex).
- acknowledge the hardware CRC on the TM54F (p9701 = EC hex).
- save all parameters (p0977 = 1).
- carry out a POWER ON (switch-off/switch-on) for all components.

For SINUMERIK, the following applies:

HMI supports the replacement of components with Safety functions (operating area "Diagnostics" --> Softkey "Alarm list" --> Softkey "Confirm SI HW" etc.).

The precise procedure is given in the following document:

SINUMERIK Function Manual Safety Integrated

A35016 TM54F: Net data communication with drive not established

Message value: -

Message class: Internal (DRIVE-CLiQ) communication error (12)

Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: The cyclic net data communication within the Terminal Module 54F (TM54F) is still not active for at least one drive.

Note:

This message is output after the TM54F master and TM54F slave have booted and is automatically withdrawn as soon as communications have been established.

Remedy: When replacing a Motor Module/Hydraulic Module, carry out the following steps:

- start the copy function for the node identifier on the TM54F (p9700 = 1D hex).
- acknowledge the hardware CRC on the TM54F (p9701 = EC hex).
- save all parameters (p0977 = 1).
- carry out a POWER ON (switch-off/switch-on) for all components.

The following always applies:

- for all drive objects specified in p10010, check whether the drive-based motion monitoring functions with TM54F are enabled (p9601).
- check whether fault F35150 is present and if required, remove the cause of this fault.

Note:

The communication status of the individual drives is indicated in r10055. The corresponding drive objects can be identified together with p10010.

See also: r10055 (SI TM54F communication status drive-specific)

F35040 TM54F: 24 V undervoltage

Message value: Fault cause: %1 bin
Message class: Supply voltage fault (undervoltage) (3)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Module (TM) **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: For the 24 V power supply for the Terminal Module 54F (TM54F) an undervoltage condition was detected.
As fault response failsafe input terminal signals are transferred to the motion monitoring functions.
Fault value (r0949, interpret binary):
Bit 0 = 1: Power supply undervoltage at connection X524.
Bit 1 = 1: Power supply undervoltage at connection X514.
Remedy: - check the 24 V DC power supply for the TM54F.
- carry out safe acknowledgment (p10006).

F35043 TM54F: 24 V overvoltage

Message value: -
Message class: Supply voltage fault (overvoltage) (3)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Module (TM) **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: For the 24 V power supply for the Terminal Module 54F (TM54F) an overvoltage condition was detected.
As fault response failsafe input terminal signals are transferred to the motion monitoring functions.
Remedy: - check the 24 V DC power supply for the TM54F.
- carry out safe acknowledgment (p10006).

F35051 TM54F: Defect in a monitoring channel

Message value: %1
Message class: Safety monitoring channel has identified an error (10)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The Terminal Module 54F (TM54F) has identified an error in the data cross check between the two control channels.
This can be the result of incorrect parameterization. However, a fault may have occurred, which was identified by the Safety Integrated software (e.g. defective hardware).
Perform the steps listed under "Remedy" in order to rule out any defective hardware.
As fault response failsafe input terminal signals are transferred to the motion monitoring functions.
Fault value (r0949, interpret hexadecimal):
aaaabbcc hex
aaaa: A value greater than zero indicates an internal software error.
bb: Data to be cross-compared that resulted in the error.
If specified, check the specified parameters to ensure that they are the same for both the TM54F master and TM54F slave.
bb = 00 hex: p10000[0]
bb = 01 hex: p10001
bb = 02 hex: p10002
bb = 03 hex: p10006
bb = 04 hex: p10008
bb = 05 hex: p10010
bb = 06 hex: p10011
bb = 07 hex: p10020

bb = 08 hex: p10021
bb = 09 hex: p10022
bb = 0A hex: p10023
bb = 0B hex: p10024
bb = 0C hex: p10025
bb = 0D hex: p10026
bb = 0E hex: p10027
bb = 0F hex: p10028
bb = 10 hex: p10036
bb = 11 hex: p10037
bb = 12 hex: p10038
bb = 13 hex: p10039
bb = 14 hex: p10040
bb = 15 hex: p10041
bb = 16 hex: p10042
bb = 17 hex: p10043
bb = 18 hex: p10044
bb = 19 hex: p10045
bb = 1A hex: p10046
bb = 1B hex: p10041
bb = 1C hex: p10046
bb = 1D ... 1F hex: p10017, p10002, p10000
bb = 20 ... 2A hex: p10040, p10046, p10047
bb = 2B hex: error in the data for test stop initialization
bb = 2C hex: error in the data for initializing the input/output calculation
bb = 2D ... 45 hex: error in the data for the output calculation p10042 ... p10045
bb = 46 ... 63 hex: error in the data for the calculation of drive group 1
bb = 64 ... 81 hex: error in the data for the calculation of drive group 2
bb = 82 ... 9F hex: error in the data for the calculation of drive group 3
bb = A0 ... BD hex: error in the data for the calculation of the drive group 4
bb = BE hex: debounce time of the failsafe inputs (F-DI) p10017
bb = BF hex: debounce time of the single-channel inputs (DI) p10017
bb = C0 hex: debounce time of the Diag inputs p10017
bb = C1 hex: error in the internal data for p10030 SDI positive
bb = C2 hex: error in the internal data for p10031 SDI negative
bb = C3 ... CA hex: error in the data to calculate the drive groups p10030 ... p10031
bb = CB hex: p10032
bb = CC hex: p10033
bb = CD hex: p10009
bb = CE ... CF error in the data for drive group 1 SLP parameter p10032 ... p10033
bb = D0 ... D1 error in the data for drive group 2 SLP parameter p10032 ... p10033
bb = D2 ... D3 error in the data for drive group 3 SLP parameter p10032 ... p10033
bb = D4 ... D5 error in the data for drive group 4 SLP parameter p10032 ... p10033
bb = D6 error in the data for initializing the retract function
bb = D7 error in the data for the retract function SLP
bb = D8 error in parameter p10000[1...5]
bb = D9 ... E3 error in the internal data of the axis communication
bb = E4 ... F2 error in the internal data of the discrepancy check
cc: indicates the index of the data to be cross-compared that resulted in the error.

Remedy: Carry out the following steps on the TM54F:
- check the specified parameters for incorrect parameterization.
- activate the safety commissioning mode (p0010 = 95).
- start the copy function for SI parameters (p9700 = 57 hex).
- acknowledge complete data change (p9701 = AC hex).
- exit the safety commissioning mode (p0010 = 0).
- save all parameters (p0977 = 1).
- carry out safe acknowledgment (p10006).

For an internal software error (aaaa > 0):
- For TM54F, upgrade the firmware to a later version.
- contact Technical Support.
- replace the TM54F.

F35052 (A) TM54F: Internal hardware error

Message value: %1

Message class: Hardware/software error (1)

Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Terminal Module (TM) **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: IMMEDIATELY (POWER ON)

Cause: An internal software/hardware error has been detected on the Terminal Module 54F (TM54F).

Fault value (r0949, interpret decimal):

Only for internal Siemens troubleshooting.

Remedy: - check the electrical cabinet design and cable routing for EMC compliance
- upgrade TM54F firmware to more recent version.
- contact Technical Support.
- replace the TM54F.

Reaction upon A: NONE

Acknowl. upon A: NONE

F35053 TM54F: Temperature fault threshold exceeded

Message value: %1

Message class: Overtemperature of the electronic components (6)

Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Terminal Module (TM) **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: IMMEDIATELY

Cause: The temperature measured using the temperature sensing on the TM54F has exceeded the threshold value to initiate this fault.

As fault response failsafe input terminal signals are transferred to the motion monitoring functions.

Fault value (r0949, interpret decimal):

Only for internal Siemens troubleshooting.

Remedy: - allow the TM54F to cool down.
- carry out safe acknowledgment (p10006).

A35054 TM54F: Temperature alarm threshold exceeded

Message value: %1
Message class: Overtemperature of the electronic components (6)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Module (TM) **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The temperature measured using the temperature sensing on the TM54F has exceeded the threshold value to initiate this alarm.
Remedy: - allow the TM54F to cool down.
- carry out safe acknowledgment (p10006).

A35075 (F) TM54F: Error during internal communication

Message value: %1
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Module (TM) **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: An internal communications error has occurred in the Terminal Module 54F (TM54F).
This message is also output in the following cases:
- parameter p10000 (TM54F master) is not set the same as p10000 (TM54F slave).
- parameter p10010 (TM54F master) is not set the same as p10010 (TM54F slave).

Alarm value (r2124, interpret decimal):
Only for internal Siemens diagnostics.

Remedy: For p10010/p10000 from the TM54F master not equal to the TM54F slave:
- start the copy function for the node identifier on the TM54F (p9700 = 1D hex).
- acknowledge the hardware CRC on the TM54F (p9701 = EC hex).
- save all parameters (p0977 = 1).
- carry out a POWER ON (switch-off/switch-on) for all components.

For internal communication errors:
- check the electrical cabinet design and cable routing for EMC compliance
- upgrade the software on the TM54F.
- contact Technical Support.
- replace the TM54F.

Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)

A35080 (F) TM54F: Checksum error safety parameters

Message value: %1
Message class: Safety monitoring channel has identified an error (10)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Module (TM) **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The calculated checksum entered in r10004 over the safety-relevant parameters does not match the reference checksum saved in p10005 at the last machine acceptance.
Fault value (r0949, interpret binary):
Bit 0 = 1: Checksum error for functional SI parameters.
Bit 1 = 1: Checksum error for SI parameters for component assignment.

Remedy: - check the safety-relevant parameters and if required, correct.
- set the reference checksum to the actual checksum.
- acknowledge the hardware replacement.
- carry out a POWER ON (switch-off/switch-on).
- carry out an acceptance test.

Reaction upon F: NONE

Acknowl. upon F: IMMEDIATELY (POWER ON)

A35081 (F) TM54F: Static (steady state) 1 signal at the F-DI for safe acknowledgment

Message value: -

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Terminal Module (TM) **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: A logical 1 signal is present at the F-DI configured in p10006 for more than 10 seconds.

If, at the F-DI no acknowledgment was performed for safe acknowledgment, then a steady-state logical and 0 signal must be present. This avoids unintentional safety-relevant acknowledgment (or the "Internal Event Acknowledge" signal) if a wire breaks or one of the two digital inputs bounces.

Remedy: Set the failsafe digital input (F-DI) to a logical 0 signal (p10006).

Note:

F-DI: Failsafe Digital Input

Reaction upon F: NONE

Acknowl. upon F: IMMEDIATELY

F35150 TM54F: Communication error

Message value: %1

Message class: Internal (DRIVE-CLiQ) communication error (12)

Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Terminal Module (TM) **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: IMMEDIATELY (POWER ON)

Cause: A communication error between the TM54F master and Control Unit or between the TM54F slave and the Motor Module/Hydraulic Module was detected.

Fault value (r0949, interpret hexadecimal):

Only for internal Siemens troubleshooting.

Remedy: When replacing a Motor Module/Hydraulic Module, carry out the following steps:
- start the copy function for the node identifier on the TM54F (p9700 = 1D hex).
- acknowledge the hardware CRC on the TM54F (p9701 = EC hex).
- save all parameters (p0977 = 1).
- carry out a POWER ON (switch-off/switch-on) for all components.

The following always applies:
- check the electrical cabinet design and cable routing for EMC compliance
- upgrade the software on the TM54F.
- contact Technical Support.
- replace the TM54F.

F35151	**TM54F: Discrepancy error**
Message value:	%1
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Drive object:	A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Terminal Module (TM) **Propagation:** GLOBAL
Reaction:	NONE
Acknowledge:	IMMEDIATELY

Cause:

The safe input terminals or output terminals have a different state for longer than the time parameterized in p10002 - or too many switching operations were carried out within a monitoring cycle p10002.

Fault value (r0949, interpret hexadecimal):

yyyyxxxx hex

xxxx: The safety-relevant input terminals F-DI indicate a discrepancy.

Bit 0: Discrepancy for F-DI 0

...

Bit 9: Discrepancy for F-DI 9

yyyy: The safety-relevant output terminals F-DO indicate a discrepancy.

Bit 0: Discrepancy for F-DO 0

...

Bit 3: Discrepancy for F-DO 3

Note:

If several discrepancy errors occur consecutively, then this fault is only signaled for the first error that occurs.

The following options are available to analyze all of the discrepancy errors:

- using the commissioning tool, evaluate the input states and output states of the TM54F. All discrepancy errors are displayed here.
- compare parameters p10051 and p10052 from the TM54F master and TM54F slave for discrepancy.

Remedy:

Check the wiring of the corresponding F-DI (contact problems).

If the wiring is correct and there is no wire breakage, then a check must be made as to whether the switching frequency at F-DI is too high and must therefore be reduced (switching pulses must have have a longer time between them).

The time interval between each signal edge at an F-DI must be at least equal to the discrepancy time before the input is switched again.

Discrepancy errors in the failsafe digital inputs (F-DI) can only be completely acknowledged if, after the cause of the error was resolved, safe acknowledgment was carried out (see p10006). As long as safety acknowledgment was not carried out, the corresponding F-DI stays in the safe state internally.

Sets the discrepancy time for fast switching operations at the F-DIs:

For fast switching operations at the failsafe digital inputs (F-DI), it may be necessary to adapt the discrepancy time to the switching frequency:

- the period of a cyclic switching pulse must be less than half of the discrepancy time (if necessary, round down).
- the time between two switching pulses should be longer than the discrepancy time (if necessary, round up).
- the discrepancy time must be at least r10003 (it must always be rounded up or down to be an integer multiple of the SI sampling time r10003). If a debounce time has been parameterized (p10017 > 0), then the shortest possible discrepancy time is directly specified using the debounce time.
- the period of a cyclic switching pulse must be less than half of the discrepancy time p10017 (if necessary, round down).
- the time between two fast switching pulses should be longer than the discrepancy time+p10017 (if necessary, round up).
- the discrepancy time must be at least r10003.

The debounce time must always be set less than the discrepancy time.

Example:

If the SI sampling cycle is 12 ms and the switching frequency is 110 ms (p10017 = 0), the maximum discrepancy time which can be set is as follows:

p10002 <= 110/2 ms - 12 ms = 43 ms --> rounded-off, the following is obtained p10002 <= 36 ms

Since the discrepancy time can only be accepted as a whole SI sampling time, the value will need to be rounded up or down to a whole SI sampling time value if it is not an exact integer multiple of an SI sampling time.

Basic secondary condition to set the discrepancy time:

The discrepancy time of the F-DIs must always be longer than the longest SI sampling time of all drives that use Safety Integrated with TM54F (p9780/p9500).

F-DI: Failsafe Digital Input

F-DO: Failsafe Digital Output

F35152 TM54F: Internal software error

Message value: %1

Message class: Hardware/software error (1)

Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Terminal Module (TM) **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: IMMEDIATELY

Cause: An internal software error has occurred in the Terminal Module 54F (TM54F).

The failsafe digital inputs and digital outputs (F-DI, F-DO) on the TM54F have been set to the safe state.

Fault value (r0949, interpret decimal):

Only for internal Siemens troubleshooting.

Note:

F-DI: Failsafe Digital Input

F-DO: Failsafe Digital Output

Remedy: Check that the firmware version of the TM54F matches the Control Unit's firmware version.

The automatic firmware update must be activated in the project.

Note:

This signal will also appear, for example, in conjunction with fault F35013. In this case you should check all the parameters for the test stop on the TM54F (p10001, p10003, p10007, p10041, p10046, p10047). In this case, a POWER ON is required after the parameters have been corrected.

A35200 (F, N) TM: Calibration data

Message value: %1

Message class: Hardware/software error (1)

Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Terminal Module (TM) **Propagation:** BICO

Reaction: NONE

Acknowledge: NONE

Cause: An error was detected in the calibration data of the Terminal Module.

Alarm value (r2124, interpret decimal):

ddcbaa dec: dd = component number, c = AI/AO, b = fault type, aa = number

c = 0: analog input (AI)

c = 1: analog output (AO)

b = 0: No calibration data available.

b = 1: Offset too high (> 100 mV).

Remedy: - carry out a POWER ON (switch-off/switch-on) for all components.

- replace the component if necessary.

Reaction upon F: NONE

Acknowl. upon F: IMMEDIATELY (POWER ON)

Reaction upon N: NONE

Acknowl. upon N: NONE

F35207 (N, A) TM: Temperature fault/alarm threshold channel 0 exceeded

Message value: %1

Message class: External measured value / signal state outside the permissible range (16)

Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Terminal Module (TM) **Propagation:** BICO

Reaction: Infeed: OFF2 (NONE, OFF1)

Servo: OFF2 (NONE, OFF1, OFF3)

Vector: OFF2 (NONE, OFF1, OFF3)

Hla: OFF2 (NONE, OFF1, OFF3)

Acknowledge: IMMEDIATELY (POWER ON)

Cause: For the temperature evaluation via the Terminal Module (TM), at least one of the following conditions to initiate this fault is fulfilled:

- alarm threshold has been exceeded longer than that set in the timer (p4102[0], p4103[0]).

or

- fault threshold exceeded (p4102[1]).

Note:

For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[0] = 1, 4), the following applies:

- if r4101[0] > 1650 ohms, the temperature r4105[0] = 250 °C
- if r4101[0] <= 1650 ohms, the temperature r4105[0] = -50 °C

The temperature actual value is displayed via connector output r4105[0] and can be interconnected.

Notice:

This fault only causes the drive to shut down if there is at least one BICO interconnection between the drive and the Terminal Module.

Fault value (r0949, interpret decimal):

Temperature actual value at the time of initiation [0.1 °C].

Remedy: - allow the temperature sensor to cool down to below p4102[1] - hysteresis (5 K, for TM150, can be set using p4118[0]).

- if required, set the fault response to NONE (p2100, p2101).

See also: p4102

Reaction upon N: NONE

Acknowl. upon N: NONE

Reaction upon A: NONE

Acknowl. upon A: NONE

F35208 (N, A) TM: Temperature fault/alarm threshold channel 1 exceeded

Message value: %1

Message class: External measured value / signal state outside the permissible range (16)

Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM150, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Terminal Module (TM) **Propagation:** BICO

Reaction: Infeed: OFF2 (NONE, OFF1)

Servo: OFF2 (NONE, OFF1, OFF3)

Vector: OFF2 (NONE, OFF1, OFF3)

Hla: OFF2 (NONE, OFF1, OFF3)

Acknowledge: IMMEDIATELY (POWER ON)

Cause: For the temperature evaluation via the Terminal Module (TM), at least one of the following conditions to initiate this fault is fulfilled:

- alarm threshold has been exceeded longer than that set in the timer (p4102[2], p4103[1]).

or

- fault threshold exceeded (p4102[3]).

Note:

For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[1] = 1, 4), the following applies:

- if r4101[1] > 1650 ohms, the temperature r4105[1] = 250 °C
- if r4101[1] <= 1650 ohms, the temperature r4105[1] = -50 °C

The temperature actual value is displayed via connector output r4105[1] and can be interconnected.

	Notice:
	This fault only causes the drive to shut down if there is at least one BICO interconnection between the drive and the Terminal Module.
	Fault value (r0949, interpret decimal):
	Temperature actual value at the time of initiation [0.1 °C].
Remedy:	- allow the temperature sensor to cool down to below p4102[3] - hysteresis (5 K, for TM150, can be set using p4118[1]).
	- if required, set the fault response to NONE (p2100, p2101).
	See also: p4102
Reaction upon N:	NONE
Acknowl. upon N:	NONE
Reaction upon A:	NONE
Acknowl. upon A:	NONE

F35209 (N, A) TM: Temperature fault/alarm threshold channel 2 exceeded

Message value:	%1
Message class:	External measured value / signal state outside the permissible range (16)
Drive object:	A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM150, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Terminal Module (TM) **Propagation:** BICO
Reaction:	Infeed: OFF2 (NONE, OFF1)
	Servo: OFF2 (NONE, OFF1, OFF3)
	Vector: OFF2 (NONE, OFF1, OFF3)
	Hla: OFF2 (NONE, OFF1, OFF3)
Acknowledge:	IMMEDIATELY (POWER ON)
Cause:	For the temperature evaluation via the Terminal Module (TM), at least one of the following conditions to initiate this fault is fulfilled:
	- alarm threshold has been exceeded longer than that set in the timer (p4102[4], p4103[2]).
	or
	- fault threshold exceeded (p4102[5]).
	Note:
	For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[2] = 1, 4), the following applies:
	- if r4101[2] > 1650 ohms, the temperature r4105[2] = 250 °C
	- if r4101[2] <= 1650 ohms, the temperature r4105[2] = -50 °C
	The temperature actual value is displayed via connector output r4105[2] and can be interconnected.
	Notice:
	This fault only causes the drive to shut down if there is at least one BICO interconnection between the drive and the Terminal Module.
	Fault value (r0949, interpret decimal):
	Temperature actual value at the time of initiation [0.1 °C].
Remedy:	- allow the temperature sensor to cool down to below p4102[5] - hysteresis (5 K, for TM150, can be set using p4118[2]).
	- if required, set the fault response to NONE (p2100, p2101).
	See also: p4102
Reaction upon N:	NONE
Acknowl. upon N:	NONE
Reaction upon A:	NONE
Acknowl. upon A:	NONE

F35210 (N, A) TM: Temperature fault/alarm threshold channel 3 exceeded

Message value: %1

Message class: External measured value / signal state outside the permissible range (16)

Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM150, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Terminal Module (TM) **Propagation:** BICO

Reaction: Infeed: OFF2 (NONE, OFF1)

Servo: OFF2 (NONE, OFF1, OFF3)

Vector: OFF2 (NONE, OFF1, OFF3)

Hla: OFF2 (NONE, OFF1, OFF3)

Acknowledge: IMMEDIATELY (POWER ON)

Cause: For the temperature evaluation via the Terminal Module (TM), at least one of the following conditions to initiate this fault is fulfilled:

- alarm threshold has been exceeded longer than that set in the timer (p4102[6], p4103[3]).

or

- fault threshold exceeded (p4102[7]).

Note:

For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[3] = 1, 4), the following applies:

- if r4101[3] > 1650 ohms, the temperature r4105[3] = 250 °C

- if r4101[3] <= 1650 ohms, the temperature r4105[3] = -50 °C

The temperature actual value is displayed via connector output r4105[3] and can be interconnected.

Notice:

This fault only causes the drive to shut down if there is at least one BICO interconnection between the drive and the Terminal Module.

Fault value (r0949, interpret decimal):

Temperature actual value at the time of initiation [0.1 °C].

Remedy: - allow the temperature sensor to cool down to below p4102[7] - hysteresis (5 K, for TM150, can be set using p4118[3]).

- if required, set the fault response to NONE (p2100, p2101).

See also: p4102

Reaction upon N: NONE

Acknowl. upon N: NONE

Reaction upon A: NONE

Acknowl. upon A: NONE

A35211 (F, N) TM: Temperature alarm threshold channel 0 exceeded

Message value: %1

Message class: External measured value / signal state outside the permissible range (16)

Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Terminal Module (TM) **Propagation:** BICO

Reaction: NONE

Acknowledge: NONE

Cause: The temperature measured using the temperature sensing of the Terminal Module (TM) (r4105[0]) has exceeded the threshold value to initiate this alarm (p4102[0]).

Note:

For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[0] = 1, 4), the following applies:

- if r4101[0] > 1650 ohms, the temperature r4105[0] = 250 °C

- if r4101[0] <= 1650 ohms, the temperature r4105[0] = -50 °C

Alarm value (r2124, interpret decimal):

Temperature actual value at the time of initiation [0.1 °C].

Remedy: Allow the temperature sensor to cool down to below p4102[0] - hysteresis (5 K, for TM150, can be set using p4118[0]).

See also: p4102

Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

A35212 (F, N) TM: Temperature alarm threshold channel 1 exceeded

Message value: %1
Message class: External measured value / signal state outside the permissible range (16)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM150, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Module (TM) **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: The temperature measured using the temperature sensing of the Terminal Module (TM) (r4105[1]) has exceeded the threshold value to initiate this alarm (p4102[2]).

Note:

For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[1] = 1, 4), the following applies:

- if r4101[1] > 1650 ohms, the temperature r4105[1] = 250 °C
- if r4101[1] <= 1650 ohms, the temperature r4105[1] = -50 °C

Alarm value (r2124, interpret decimal):

Temperature actual value at the time of initiation [0.1 °C].

Remedy: Allow the temperature sensor to cool down to below p4102[4] - hysteresis (5 K, for TM150, can be set using p4118[1]).

See also: p4102

Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

A35213 (F, N) TM: Temperature alarm threshold channel 2 exceeded

Message value: %1
Message class: External measured value / signal state outside the permissible range (16)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM150, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Module (TM) **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: The temperature measured using the temperature sensing of the Terminal Module (TM) (r4105[2]) has exceeded the threshold value to initiate this alarm (p4102[4]).

Note:

For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[2] = 1, 4), the following applies:

- if r4101[2] > 1650 ohms, the temperature r4105[2] = 250 °C
- if r4101[2] <= 1650 ohms, the temperature r4105[2] = -50 °C

Alarm value (r2124, interpret decimal):

Temperature actual value at the time of initiation [0.1 °C].

Remedy: Allow the temperature sensor to cool down to below p4102[4] - hysteresis (5 K, for TM150, can be set using p4118[2]).

See also: p4102

Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

A35214 (F, N) TM: Temperature alarm threshold channel 3 exceeded

Message value: %1

Message class: External measured value / signal state outside the permissible range (16)

Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM150, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Terminal Module (TM) **Propagation:** BICO

Reaction: NONE

Acknowledge: NONE

Cause: The temperature measured using the temperature sensing of the Terminal Module (TM) (r4105[3]) has exceeded the threshold value to initiate this alarm (p4102[6]).

Note:

For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[3] = 1, 4), the following applies:

- if r4101[3] > 1650 ohms, the temperature r4105[3] = 250 °C
- if r4101[3] <= 1650 ohms, the temperature r4105[3] = -50 °C

Alarm value (r2124, interpret decimal):

Temperature actual value at the time of initiation [0.1 °C].

Remedy: Allow the temperature sensor to cool down to below p4102[6] - hysteresis (5 K, for TM150, can be set using p4118[3]).

See also: p4102

Reaction upon F: NONE

Acknowl. upon F: IMMEDIATELY (POWER ON)

Reaction upon N: NONE

Acknowl. upon N: NONE

F35220 (N, A) TM: Frequency limit reached for signal output

Message value: -

Message class: Application/technological function faulted (17)

Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM15, TM15DI_DO, TM17, TM31, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Terminal Module (TM) **Propagation:** BICO

Reaction: Infeed: OFF1 (NONE, OFF2)

Servo: OFF1 (NONE, OFF2, OFF3)

Vector: OFF1 (NONE, OFF2, OFF3)

Hla: OFF1 (NONE, OFF2, OFF3)

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The signals output from the Terminal Module 41 (TM41) for tracks A/B have reached the limit frequency. The output signals are no longer in synchronism with the specified setpoint.

SIMOTION (p4400 = 0) operating mode:

- if the TM41 has been configured as the technology project, this fault is also output in response to short-circuited A/B signals in X520.

SINAMICS (p4400 = 1) operating mode:

- the fine resolution of TM41 in p0418 does not match that of the connector input that was interconnected at p4420
- the encoder position actual value r0479 interconnected at connector input p4420 has an excessively high actual speed
- the output signals correspond to a speed, which is greater than the maximum speed (r1082 of TM41).

Remedy: SIMOTION (p4400 = 0) operating mode:

- enter a lower speed setpoint (p1155).
- reduce the encoder pulse number (p0408).
- check track A/B for short-circuits.

SINAMICS (p4400 = 1) operating mode:

- enter a lower speed setpoint (p1155).
- reduce the encoder pulse number (p0408).

Notice:

The output signal is no longer monitored after changing the message type to "Alarm" (A).

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F35221 (N, A) TM: Setpoint - actual value deviation outside the tolerance range

Message value: -
Message class: Application/technological function faulted (17)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM15, TM15DI_DO, TM17, TM31, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Module (TM) **Propagation:** BICO
Reaction: Infeed: OFF1 (NONE, OFF2)
Servo: OFF1 (NONE, OFF2, OFF3)
Vector: OFF1 (NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The deviation between the setpoint and the output signals (track A/B) exceeds the tolerance of +/-3 %. The deviation between the internal and external measured value is too high (> 1000 pulses).
Remedy: - reduce the basic clock cycle (p0110, p0111).
- if required, replace the component (e.g. internal short-circuit).
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

A35222 (F, N) TM: Encoder pulse number not permissible

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM15, TM15DI_DO, TM17, TM31, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: The encoder pulse number entered does not match the permissible pulse number from a hardware perspective.
Alarm value (r2124, interpret decimal):
1: Encoder pulse number is too high.
2: Encoder pulse number is too low.
4: Encoder pulse number is less than the zero mark offset (p4426).
Remedy: - enter the encoder pulse number in the permissible range (p0408).
- if necessary, replace TM41 SAC with TM41 DAC.
Note:
TM41 SAC: Article No. = 6SL3055-0AA00-3PA0
TM41 DAC: Article No. = 6SL3055-0AA00-3PA1
The following applies for TM41 SAC:
- minimum/maximum value for p0408: 1000/8192
The following applies for TM41 DAC:
- minimum/maximum value for p0408: 1000/16384
See also: p0408
Reaction upon F: Infeed: OFF1 (NONE, OFF2)
Servo: OFF1 (NONE, OFF2, OFF3)
Vector: OFF1 (NONE, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

A35223 (F, N) TM: Zero mark offset not permissible

Message value: %1
Message class: Application/technological function faulted (17)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM15, TM15DI_DO, TM17, TM31, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: The entered zero mark offset is not permissible.

Alarm value (r2124, interpret decimal):

1: Zero mark offset is too high.

See also: p4426 (TM41 encoder emulation pulses for zero mark)

Remedy: Enter the zero mark offset in the permissible range (p4426).

Reaction upon F: Infeed: OFF1 (NONE, OFF2)

Servo: OFF1 (NONE, OFF2, OFF3)

Vector: OFF1 (NONE, OFF2, OFF3)

Hla: OFF1 (NONE, OFF2, OFF3)

Acknowl. upon F: IMMEDIATELY (POWER ON)

Reaction upon N: NONE

Acknowl. upon N: NONE

A35224 (N) TM: Zero mark synchronization interrupted

Message value: %1
Message class: Application/technological function faulted (17)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The zero mark synchronization with the encoder to be emulated was interrupted.

Alarm value (r2124, interpret decimal):

0: The encoder is not in the ready state (e.g. encoder parked)

1: An absolute encoder was connected.

2: The encoder r0479[0...2] interconnected via connector input: p4420 is already communicating with another TM41 (precisely one TM41 can be interconnected with a specific r0479[0...2]).

3: The BICO interconnection to Terminal Module 41 (TM41) was removed (CI: p4420 = 0 signal).

4: The encoder interconnected via connector input: p4420 has carried out an EDS changeover or has been re-parameterized (this operation is not supported, set p4420 to 0 and interconnect again).

5: The maximum number of revolutions of the encoder was exceeded.

6: Encoder in an invalid state.

7: Encoder in an invalid state.

8: Encoder in an invalid state (the encoder is not parameterized or the interconnected signal source is not in the cyclic state).

Remedy: Not necessary.

- if the encoder changes into the ready state, then a synchronization operation that was previously interrupted is carried out again.
- if the synchronization was interrupted due to the maximum permissible synchronization duration, then a new synchronization is not carried out.
- the alarm is only output, if, for an absolute encoder, the zero mark synchronization is set to the zero position (p4401.0 = 1 and p4401.1=0).

Reaction upon N: NONE

Acknowl. upon N: NONE

A35225 TM: Zero mark synchronization held - encoder not in the ready state

Message value: -
Message class: Application/technological function faulted (17)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The zero mark synchronization with the encoder to be emulated was held.
The encoder is not in the "ready" state.
Remedy: Bring the encoder into the "ready" state.

A35226 TM: Tracks A/B are deactivated

Message value: -
Message class: Application/technological function faulted (17)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Module (TM) **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: There is no frequency setpoint for the Terminal Module 41 (TM41). The output of tracks A/B has been held (frozen).
Possible causes:
- connector input p4420 is not interconnected.
- the leading encoder is not in the "ready" state (parking encoder or encoder data set not parameterized).
- TM41 has a fault.
- the TM41 is in the commissioning mode (p0010 > 0).
- the TM41 component is not connected to DRIVE-CLiQ.

Remedy:
- appropriately interconnect connector input p4420.
- bring the leading encoder into the "ready" state.
- remove any TM41 faults.

A35227 EDS changeover/encoder data set change not supported

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: Terminal Module 41 (TM41) does not support the following application cases:
- the encoder interconnected via connector input p4420 has carried out an EDS changeover.
- the encoder interconnected with the TM41 was re-parameterized so that the position actual value of the encoder must be newly interpreted.

For example, this is the case when changing the direction of rotation of the motor (p0410, p1821) or when changing the fine resolution (p0418). This may result in a sudden change in the position actual value of the encoder (position setpoint of the TM41), which must not be output at the TM41.
See also: p4420 (TM41 encoder emulation position setpoint)
Remedy: Set connector input p4420 = 0 and re-wire.

A35228 (F, N) TM: Sampling time p4099[3] invalid

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The sampling time set in p4099[3] for incremental encoder emulation in Terminal Module 41 (TM41) does not correspond to the valid value. To resolve the problem, correct the setting of p4099[3]. The system automatically performs a warm restart/sub-boot.

Alarm value (r2124, interpret decimal):

1:

A sampling time p4099[3] < 125 µs was set.

2:

An integer multiple of the DRIVE-CLiQ clock cycle was not entered in p4099[3].

3:

- in the SINAMICS mode (p4400 = 1), the sampling time in p4099[3] is not an integer multiple of the current controller sampling time (p0115[0]) of the drive object, which supplies the position setpoint (CI: p4420) for the incremental encoder simulation.
- the encoder interconnected via connector input p4420 (e.g. an SSI encoder) is sampled in a slower clock cycle.

Remedy:
- if necessary, cancel the BICO interconnection via connector input p4420.
- check the rules specified under cause for setting the sampling time in p4099[3].
- if necessary, set the BICO interconnection via connector input p4420 again.

Note:

Every time the BICO interconnection is reset via connector input p4420, the sampling time is checked in p4099[3] and, where necessary, this message is output.

Reaction upon F: OFF1 (NONE, OFF2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

F35229 TM: Time slice deactivated

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: Infeed: OFF1 (NONE, OFF2)
Servo: NONE
Vector: NONE
Hla: NONE
Acknowledge: IMMEDIATELY
Cause: The required value of a cycle time in p4099[0...2] is invalid.

The corresponding time slice was not activated.

Alarm value (r2124, interpret decimal):

0: Digital input/outputs (p4099[0])
1: Analog inputs (p4099[1])
3: Encoder emulation (p4099[3]).
4: Encoder emulation speed setpoint (p4099[3]).
5: Encoder emulation speed setpoint (p4099[3]).
6: Internal sequence control of the TM41 (internal error)

Remedy: Change the sampling time according to the alarm value.

Note:

The sampling time p4099[0] may not be zero.

F35230 TM: Hardware fault

Message value: %1
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM150, TM15DI_DO, TM31, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Module (TM) **Propagation:** GLOBAL
Reaction: Infeed: OFF1 (NONE, OFF2)
Servo: NONE
Vector: NONE
Hla: NONE
Acknowledge: POWER ON
Cause: The Terminal Module (TM) used has signaled internal errors.
Signals from this module may not be evaluated because they are very likely to be incorrect.
Remedy: If required, replace the Terminal Module.

A35231 TM: Master control by PLC missing

Message value: -
Message class: Communication error to the higher-level control system (9)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The "master control by PLC" signal was missing in operation.
- interconnection of the binector input for "master control by PLC" is incorrect (p0854).
- the higher-level control has withdrawn the "master control by PLC" signal.
- data transfer via the fieldbus (master/drive) was interrupted.
Note:
This alarm is only decisive in the "SIMOTION" operating mode (p4400 = 0).
In the "SINAMICS" operating mode (p4400 = 1), the setpoints at p4420 are evaluated independent of binector input p0854.
Remedy: - check the interconnection of the binector input for "master control by PLC" (p0854).
- check the "master control by PLC" signal and, if required, switch in.
- check the data transfer via the fieldbus (master/drive).
- check the setting of parameter p2037.

A35232 TM41: Zero mark no longer synchronous POWER ON required

Message value: -
Message class: Application/technological function faulted (17)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: SINAMICS (p4400 = 1) operating mode:
When parameterizing a Terminal Module 41 (TM41) or when operating a TM41 Module, an operating state was reached which required a POWER ON.
These include:
- changing the encoder pulse number (p0408).
- changing the fine resolution (p0418).
- withdrawing the DRIVE-CLiQ cable without first deactivating TM41 via p0105.
If this alarm was output, then the zero mark of the TM41 can no longer be output in synchronism to that of the encoder interconnected at p4420.
SIMOTION (p4400 = 0) operating mode:
A previously set zero mark position (p4426) no longer matches encoder position (r0479) due to the change in the pulse number (p0408).

Remedy: The incremental position at output X520 of TM41 can still be evaluated independent of the zero mark.
A POWER ON must be carried out if the TM41 zero mark is evaluated.

F35233 DRIVE-CLiQ component function not supported

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM150, TM31, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Module (TM) **Propagation:** BICO
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: A function requested by the Control Unit is not supported by a DRIVE-CLiQ component.
Fault value (r0949, interpret decimal):
1: Terminal Module 31 does not support the function "Timer for temperature evaluation" (X522.7/8, p4103 > 0.000).
4: The improved actual value resolution is not supported (p4401.4).
5: The improved setpoint resolution is not supported (p4401.5).
6: The residual value handling in the setpoint channel cannot be deactivated (p4401.6).
7: Output frequencies greater than 750 kHz cannot be activated (p4401.7).
Remedy: For fault value = 1:
- Deactivate timer for temperature evaluation (X522.7/8) (p4103 = 0.000).
- use Terminal Module 31 and the relevant firmware version to enable the "Timer for temperature evaluation" function (Article No. 6SL3055-0AA00-3AA1, firmware version 2.6 and higher).
See also: p4103, p4401 (TM41 encoder emulation mode)

F35400 (N, A) TM: Temperature fault/alarm threshold channel 4 exceeded

Message value: %1
Message class: External measured value / signal state outside the permissible range (16)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM150, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Module (TM) **Propagation:** BICO
Reaction: Infeed: OFF2 (NONE, OFF1)
Servo: OFF2 (NONE, OFF1, OFF3)
Vector: OFF2 (NONE, OFF1, OFF3)
Hla: OFF2 (NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: For the temperature evaluation via the Terminal Module 150 (TM150), at least one of the following conditions to initiate this fault is fulfilled:
- alarm threshold has been exceeded longer than that set in the timer (p4102[8], p4103[4]).
or
- fault threshold exceeded (p4102[9]).
Note:
For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[4] = 1, 4), the following applies:
- if r4101[4] > 1650 ohms, the temperature r4105[4] = 250 °C
- if r4101[4] <= 1650 ohms, the temperature r4105[4] = -50 °C
The temperature actual value is displayed via connector output r4105[4] and can be interconnected.
Notice:
This fault only causes the drive to shut down if there is at least one BICO interconnection between the drive and the Terminal Module.
Fault value (r0949, interpret decimal):
Temperature actual value at the time of initiation [0.1 °C].
Remedy: - allow the temperature sensor to cool down to below p4102[9] - hysteresis (p4118[4]).
- if required, set the fault response to NONE (p2100, p2101).
See also: p4102

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F35401 (N, A) TM: Temperature fault/alarm threshold channel 5 exceeded

Message value: %1
Message class: External measured value / signal state outside the permissible range (16)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM150, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Module (TM) **Propagation:** BICO
Reaction: Infeed: OFF2 (NONE, OFF1)
Servo: OFF2 (NONE, OFF1, OFF3)
Vector: OFF2 (NONE, OFF1, OFF3)
Hla: OFF2 (NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: For the temperature evaluation via the Terminal Module 150 (TM150), at least one of the following conditions to initiate this fault is fulfilled:
- alarm threshold has been exceeded longer than that set in the timer (p4102[10], p4103[5]).
or
- fault threshold exceeded (p4102[11]).
Note:
For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[5] = 1, 4), the following applies:
- if r4101[5] > 1650 ohms, the temperature r4105[5] = 250 °C
- if r4101[5] <= 1650 ohms, the temperature r4105[5] = -50 °C
The temperature actual value is displayed via connector output r4105[5] and can be interconnected.
Notice:
This fault only causes the drive to shut down if there is at least one BICO interconnection between the drive and the Terminal Module.
Fault value (r0949, interpret decimal):
Temperature actual value at the time of initiation [0.1 °C].
Remedy: - allow the temperature sensor to cool down to below p4102[11] - hysteresis (p4118[5]).
- if required, set the fault response to NONE (p2100, p2101).
See also: p4102
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F35402 (N, A) TM: Temperature fault/alarm threshold channel 6 exceeded

Message value: %1
Message class: External measured value / signal state outside the permissible range (16)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM150, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Module (TM) **Propagation:** BICO
Reaction: Infeed: OFF2 (NONE, OFF1)
Servo: OFF2 (NONE, OFF1, OFF3)
Vector: OFF2 (NONE, OFF1, OFF3)
Hla: OFF2 (NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: For the temperature evaluation via the Terminal Module 150 (TM150), at least one of the following conditions to initiate this fault is fulfilled:
- alarm threshold has been exceeded longer than that set in the timer (p4102[12], p4103[6]).
or
- fault threshold exceeded (p4102[13]).

Note:
For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[6] = 1, 4), the following applies:
- if r4101[6] > 1650 ohms, the temperature r4105[6] = 250 °C
- if r4101[6] <= 1650 ohms, the temperature r4105[6] = -50 °C
The temperature actual value is displayed via connector output r4105[6] and can be interconnected.
Notice:
This fault only causes the drive to shut down if there is at least one BICO interconnection between the drive and the Terminal Module.
Fault value (r0949, interpret decimal):
Temperature actual value at the time of initiation [0.1 °C].

Remedy: - allow the temperature sensor to cool down to below p4102[13] - hysteresis (p4118[6]).
- if required, set the fault response to NONE (p2100, p2101).
See also: p4102

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F35403 (N, A) TM: Temperature fault/alarm threshold channel 7 exceeded

Message value: %1
Message class: External measured value / signal state outside the permissible range (16)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM150, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Module (TM) **Propagation:** BICO
Reaction: Infeed: OFF2 (NONE, OFF1)
Servo: OFF2 (NONE, OFF1, OFF3)
Vector: OFF2 (NONE, OFF1, OFF3)
Hla: OFF2 (NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: For the temperature evaluation via the Terminal Module 150 (TM150), at least one of the following conditions to initiate this fault is fulfilled:
- alarm threshold has been exceeded longer than that set in the timer (p4102[14], p4103[7]).
or
- fault threshold exceeded (p4102[15]).
Note:
For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[7] = 1, 4), the following applies:
- if r4101[7] > 1650 ohms, the temperature r4105[7] = 250 °C
- if r4101[7] <= 1650 ohms, the temperature r4105[7] = -50 °C
The temperature actual value is displayed via connector output r4105[7] and can be interconnected.
Notice:
This fault only causes the drive to shut down if there is at least one BICO interconnection between the drive and the Terminal Module.
Fault value (r0949, interpret decimal):
Temperature actual value at the time of initiation [0.1 °C].

Remedy: - allow the temperature sensor to cool down to below p4102[15] - hysteresis (p4118[7]).
- if required, set the fault response to NONE (p2100, p2101).
See also: p4102

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F35404 (N, A) TM: Temperature fault/alarm threshold channel 8 exceeded

Message value: %1

Message class: External measured value / signal state outside the permissible range (16)

Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM150, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Terminal Module (TM) **Propagation:** BICO

Reaction: Infeed: OFF2 (NONE, OFF1)
Servo: OFF2 (NONE, OFF1, OFF3)
Vector: OFF2 (NONE, OFF1, OFF3)
Hla: OFF2 (NONE, OFF1, OFF3)

Acknowledge: IMMEDIATELY (POWER ON)

Cause: For the temperature evaluation via the Terminal Module 150 (TM150), at least one of the following conditions to initiate this fault is fulfilled:
- alarm threshold has been exceeded longer than that set in the timer (p4102[16], p4103[8]).
or
- fault threshold exceeded (p4102[17]).
Note:
For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[8] = 1, 4), the following applies:
- if r4101[8] > 1650 ohms, the temperature r4105[8] = 250 °C
- if r4101[8] <= 1650 ohms, the temperature r4105[8] = -50 °C
The temperature actual value is displayed via connector output r4105[8] and can be interconnected.
Notice:
This fault only causes the drive to shut down if there is at least one BICO interconnection between the drive and the Terminal Module.
Fault value (r0949, interpret decimal):
Temperature actual value at the time of initiation [0.1 °C].

Remedy: - allow the temperature sensor to cool down to below p4102[17] - hysteresis (p4118[8]).
- if required, set the fault response to NONE (p2100, p2101).
See also: p4102

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F35405 (N, A) TM: Temperature fault/alarm threshold channel 9 exceeded

Message value: %1

Message class: External measured value / signal state outside the permissible range (16)

Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM150, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Terminal Module (TM) **Propagation:** BICO

Reaction: Infeed: OFF2 (NONE, OFF1)
Servo: OFF2 (NONE, OFF1, OFF3)
Vector: OFF2 (NONE, OFF1, OFF3)
Hla: OFF2 (NONE, OFF1, OFF3)

Acknowledge: IMMEDIATELY (POWER ON)

Cause: For the temperature evaluation via the Terminal Module 150 (TM150), at least one of the following conditions to initiate this fault is fulfilled:
- alarm threshold has been exceeded longer than that set in the timer (p4102[18], p4103[9]).
or
- fault threshold exceeded (p4102[19]).
Note:
For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[9] = 1, 4), the following applies:
- if r4101[9] > 1650 ohms, the temperature r4105[9] = 250 °C
- if r4101[9] <= 1650 ohms, the temperature r4105[9] = -50 °C
The temperature actual value is displayed via connector output r4105[9] and can be interconnected.

Notice:
This fault only causes the drive to shut down if there is at least one BICO interconnection between the drive and the Terminal Module.
Fault value (r0949, interpret decimal):
Temperature actual value at the time of initiation [0.1 °C].

Remedy: - allow the temperature sensor to cool down to below p4102[19] - hysteresis (p4118[9]).
- if required, set the fault response to NONE (p2100, p2101).
See also: p4102

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F35406 (N, A) TM: Temperature fault/alarm threshold channel 10 exceeded

Message value: %1
Message class: External measured value / signal state outside the permissible range (16)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM150, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Module (TM) **Propagation:** BICO
Reaction: Infeed: OFF2 (NONE, OFF1)
Servo: OFF2 (NONE, OFF1, OFF3)
Vector: OFF2 (NONE, OFF1, OFF3)
Hla: OFF2 (NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: For the temperature evaluation via the Terminal Module 150 (TM150), at least one of the following conditions to initiate this fault is fulfilled:
- alarm threshold has been exceeded longer than that set in the timer (p4102[20], p4103[10]).
or
- fault threshold exceeded (p4102[21]).
Note:
For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[10] = 1, 4), the following applies:
- if r4101[10] > 1650 ohms, the temperature r4105[10] = 250 °C
- if r4101[10] <= 1650 ohms, the temperature r4105[10] = -50 °C
The temperature actual value is displayed via connector output r4105[10] and can be interconnected.
Notice:
This fault only causes the drive to shut down if there is at least one BICO interconnection between the drive and the Terminal Module.
Fault value (r0949, interpret decimal):
Temperature actual value at the time of initiation [0.1 °C].
Remedy: - allow the temperature sensor to cool down to below p4102[21] - hysteresis (p4118[10]).
- if required, set the fault response to NONE (p2100, p2101).
See also: p4102

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F35407 (N, A) TM: Temperature fault/alarm threshold channel 11 exceeded

Message value: %1

Message class: External measured value / signal state outside the permissible range (16)

Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM150, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Terminal Module (TM) **Propagation:** BICO

Reaction: Infeed: OFF2 (NONE, OFF1)

Servo: OFF2 (NONE, OFF1, OFF3)

Vector: OFF2 (NONE, OFF1, OFF3)

Hla: OFF2 (NONE, OFF1, OFF3)

Acknowledge: IMMEDIATELY (POWER ON)

Cause: For the temperature evaluation via the Terminal Module 150 (TM150), at least one of the following conditions to initiate this fault is fulfilled:

- alarm threshold has been exceeded longer than that set in the timer (p4102[22], p4103[11]).

or

- fault threshold exceeded (p4102[23]).

Note:

For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[11] = 1, 4), the following applies:

- if r4101[11] > 1650 ohms, the temperature r4105[11] = 250 °C
- if r4101[11] <= 1650 ohms, the temperature r4105[11] = -50 °C

The temperature actual value is displayed via connector output r4105[11] and can be interconnected.

Notice:

This fault only causes the drive to shut down if there is at least one BICO interconnection between the drive and the Terminal Module.

Fault value (r0949, interpret decimal):

Temperature actual value at the time of initiation [0.1 °C].

Remedy: - allow the temperature sensor to cool down to below p4102[23] - hysteresis (p4118[11]).

- if required, set the fault response to NONE (p2100, p2101).

See also: p4102

Reaction upon N: NONE

Acknowl. upon N: NONE

Reaction upon A: NONE

Acknowl. upon A: NONE

A35410 (F, N) TM: Temperature alarm threshold channel 4 exceeded

Message value: %1

Message class: External measured value / signal state outside the permissible range (16)

Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM150, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Terminal Module (TM) **Propagation:** BICO

Reaction: NONE

Acknowledge: NONE

Cause: The temperature (r4105[4]) measured using the temperature sensing of the Terminal Module 150 (TM150) has exceeded the threshold value to initiate this alarm (p4102[8]).

Note:

For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[4] = 1, 4), the following applies:

- if r4101[4] > 1650 ohms, the temperature r4105[4] = 250 °C
- if r4101[4] <= 1650 ohms, the temperature r4105[4] = -50 °C

Alarm value (r2124, interpret decimal):

Temperature actual value at the time of initiation [0.1 °C].

Remedy: Allow the temperature sensor to cool down to below p4102[8] - hysteresis (p4118[4]).

See also: p4102

Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

A35411 (F, N) TM: Temperature alarm threshold channel 5 exceeded

Message value: %1
Message class: External measured value / signal state outside the permissible range (16)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM150, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Module (TM) **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: The temperature (r4105[5]) measured using the temperature sensing of the Terminal Module 150 (TM150) has exceeded the threshold value to initiate this alarm (p4102[10]).

Note:

For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[5] = 1, 4), the following applies:

- if r4101[5] > 1650 ohms, the temperature r4105[5] = 250 °C
- if r4101[5] <= 1650 ohms, the temperature r4105[5] = -50 °C

Alarm value (r2124, interpret decimal):

Temperature actual value at the time of initiation [0.1 °C].

Remedy: Allow the temperature sensor to cool down to below p4102[10] - hysteresis (p4118[5]).

See also: p4102

Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

A35412 (F, N) TM: Temperature alarm threshold channel 6 exceeded

Message value: %1
Message class: External measured value / signal state outside the permissible range (16)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM150, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Module (TM) **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: The temperature (r4105[6]) measured using the temperature sensing of the Terminal Module 150 (TM150) has exceeded the threshold value to initiate this alarm (p4102[12]).

Note:

For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[6] = 1, 4), the following applies:

- if r4101[6] > 1650 ohms, the temperature r4105[6] = 250 °C
- if r4101[6] <= 1650 ohms, the temperature r4105[6] = -50 °C

Alarm value (r2124, interpret decimal):

Temperature actual value at the time of initiation [0.1 °C].

Remedy: Allow the temperature sensor to cool down to below p4102[12] - hysteresis (p4118[6]).

See also: p4102

Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

A35413 (F, N) TM: Temperature alarm threshold channel 7 exceeded

Message value: %1
Message class: External measured value / signal state outside the permissible range (16)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM150, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Module (TM) **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: The temperature (r4105[7]) measured using the temperature sensing of the Terminal Module 150 (TM150) has exceeded the threshold value to initiate this alarm (p4102[14]).

Note:

For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[7] = 1, 4), the following applies:

- if r4101[7] > 1650 ohms, the temperature r4105[7] = 250 °C

- if r4101[7] <= 1650 ohms, the temperature r4105[7] = -50 °C

Alarm value (r2124, interpret decimal):

Temperature actual value at the time of initiation [0.1 °C].

Remedy: Allow the temperature sensor to cool down to below p4102[14] - hysteresis (p4118[7]).

See also: p4102

Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

A35414 (F, N) TM: Temperature alarm threshold channel 8 exceeded

Message value: %1
Message class: External measured value / signal state outside the permissible range (16)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM150, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Module (TM) **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: The temperature (r4105[8]) measured using the temperature sensing of the Terminal Module 150 (TM150) has exceeded the threshold value to initiate this alarm (p4102[16]).

Note:

For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[8] = 1, 4), the following applies:

- if r4101[8] > 1650 ohms, the temperature r4105[8] = 250 °C

- if r4101[8] <= 1650 ohms, the temperature r4105[8] = -50 °C

Alarm value (r2124, interpret decimal):

Temperature actual value at the time of initiation [0.1 °C].

Remedy: Allow the temperature sensor to cool down to below p4102[16] - hysteresis (p4118[8]).

See also: p4102

Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

A35415 (F, N) TM: Temperature alarm threshold channel 9 exceeded

Message value: %1

Message class: External measured value / signal state outside the permissible range (16)

Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM150, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Terminal Module (TM) **Propagation:** BICO

Reaction: NONE

Acknowledge: NONE

Cause: The temperature (r4105[9]) measured using the temperature sensing of the Terminal Module 150 (TM150) has exceeded the threshold value to initiate this alarm (p4102[18]).

Note:

For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[9] = 1, 4), the following applies:

- if r4101[9] > 1650 ohms, the temperature r4105[9] = 250 °C

- if r4101[9] <= 1650 ohms, the temperature r4105[9] = -50 °C

Alarm value (r2124, interpret decimal):

Temperature actual value at the time of initiation [0.1 °C].

Remedy: Allow the temperature sensor to cool down to below p4102[18] - hysteresis (p4118[9]).

See also: p4102

Reaction upon F: NONE

Acknowl. upon F: IMMEDIATELY (POWER ON)

Reaction upon N: NONE

Acknowl. upon N: NONE

A35416 (F, N) TM: Temperature alarm threshold channel 10 exceeded

Message value: %1

Message class: External measured value / signal state outside the permissible range (16)

Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM150, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Terminal Module (TM) **Propagation:** BICO

Reaction: NONE

Acknowledge: NONE

Cause: The temperature (r4105[10]) measured using the temperature sensing of the Terminal Module 150 (TM150) has exceeded the threshold value to initiate this alarm (p4102[20]).

Note:

For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[10] = 1, 4), the following applies:

- if r4101[10] > 1650 ohms, the temperature r4105[10] = 250 °C

- if r4101[10] <= 1650 ohms, the temperature r4105[10] = -50 °C

Alarm value (r2124, interpret decimal):

Temperature actual value at the time of initiation [0.1 °C].

Remedy: Allow the temperature sensor to cool down to below p4102[20] - hysteresis (p4118[10]).

See also: p4102

Reaction upon F: NONE

Acknowl. upon F: IMMEDIATELY (POWER ON)

Reaction upon N: NONE

Acknowl. upon N: NONE

A35417 (F, N) TM: Temperature alarm threshold channel 11 exceeded

Message value: %1

Message class: External measured value / signal state outside the permissible range (16)

Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM150, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Terminal Module (TM) **Propagation:** BICO

Reaction: NONE

Acknowledge: NONE

Cause: The temperature (r4105[11]) measured using the temperature sensing of the Terminal Module 150 (TM150) has exceeded the threshold value to initiate this alarm (p4102[22]).

Note:

For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[11] = 1, 4), the following applies:

- if r4101[11] > 1650 ohms, the temperature r4105[11] = 250 °C

- if r4101[11] <= 1650 ohms, the temperature r4105[11] = -50 °C

Alarm value (r2124, interpret decimal):

Temperature actual value at the time of initiation [0.1 °C].

Remedy: Allow the temperature sensor to cool down to below p4102[22] - hysteresis (p4118[11]).

See also: p4102

Reaction upon F: NONE

Acknowl. upon F: IMMEDIATELY (POWER ON)

Reaction upon N: NONE

Acknowl. upon N: NONE

N35800 (F) TM: Group signal

Message value: -

Message class: General drive fault (19)

Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** BICO

Reaction: Infeed: OFF2 (NONE, OFF1)

Servo: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)

Vector: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)

Hla: OFF2 (NONE, OFF1, OFF3, STOP2)

Acknowledge: NONE

Cause: The Terminal Module has detected at least one fault.

Remedy: Evaluates other actual messages.

Reaction upon F: Infeed: OFF2 (NONE, OFF1)

Servo: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)

Vector: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)

Hla: OFF2 (NONE, OFF1, OFF3, STOP2)

Acknowl. upon F: IMMEDIATELY

F35801 (N, A) TM DRIVE-CLiQ: Sign-of-life missing

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** BICO
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred between the Control Unit and the Terminal Module involved.
Fault cause:
10 (= 0A hex):
The sign-of-life bit in the receive telegram is not set.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: - check the DRIVE-CLiQ connection.
- replace the component involved.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

A35802 (F, N) TM: Time slice overflow

Message value: -
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Module (TM) **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: A time slice overflow has occurred on the Terminal Module.
Remedy: Replace the Terminal Module.
Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

A35803 (F, N) TM: Memory test

Message value: -
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM15, TM15DI_DO, TM17, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Module (TM) **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: An error has occurred during the memory test on the Terminal Module.
Remedy: - check whether the permissible ambient temperature for the Terminal Module is being maintained.
- replace the Terminal Module.
Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

F35804 (N, A) TM: CRC

Message value: %1
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Module (TM) **Propagation:** BICO
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: A checksum error has occurred when reading-out the program memory on the Terminal Module.
Fault value (r0949, interpret hexadecimal):
Difference between the checksum at POWER ON and the actual checksum.
Remedy: - check whether the permissible ambient temperature for the component is maintained.
- replace the Terminal Module.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F35805 (N, A) TM: EEPROM checksum error

Message value: %1
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Module (TM) **Propagation:** BICO
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: Internal parameter data is corrupted.
Alarm value (r2124, interpret hexadecimal):
01: EEPROM access error.
02: Too many blocks in the EEPROM.
Remedy: - check whether the permissible ambient temperature for the component is maintained.
- replace the Terminal Module 31 (TM31).
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

A35807 (F, N) TM: Sequence control time monitoring

Message value: -
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM15, TM15DI_DO, TM17, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Module (TM) **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: Error, timeout, sequence control on the Terminal Module.
Remedy: Replace the Terminal Module.
Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

F35820 TM DRIVE-CLiQ: Telegram error

Message value: Component number: %1, fault cause: %2

Message class: Internal (DRIVE-CLiQ) communication error (12)

Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Terminal Module (TM) **Propagation:** BICO

Reaction: OFF1 (OFF2)

Acknowledge: IMMEDIATELY

Cause: A DRIVE-CLiQ communication error has occurred from the Control Unit to the Terminal Module involved.

Fault cause:

1 (= 01 hex):

Checksum error (CRC error).

2 (= 02 hex):

Telegram is shorter than specified in the length byte or in the receive list.

3 (= 03 hex):

Telegram is longer than specified in the length byte or in the receive list.

4 (= 04 hex):

The length of the receive telegram does not match the receive list.

5 (= 05 hex):

The type of the receive telegram does not match the receive list.

6 (= 06 hex):

The address of the component in the telegram and in the receive list do not match.

7 (= 07 hex):

A SYNC telegram is expected - but the received telegram is not a SYNC telegram.

8 (= 08 hex):

No SYNC telegram is expected - but the received telegram is one.

9 (= 09 hex):

The error bit in the receive telegram is set.

16 (= 10 hex):

The receive telegram is too early.

Note regarding the message value:

The individual information is coded as follows in the message value (r0949/r2124):

0000yyxx hex: yy = component number, xx = error cause

Remedy: - carry out a POWER ON (switch-off/switch-on).

- check the electrical cabinet design and cable routing for EMC compliance

- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).

F35835 TM DRIVE-CLiQ: Cyclic data transfer error

Message value: Component number: %1, fault cause: %2

Message class: Internal (DRIVE-CLiQ) communication error (12)

Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Terminal Module (TM) **Propagation:** BICO

Reaction: OFF1 (OFF2)

Acknowledge: IMMEDIATELY

Cause: A DRIVE-CLiQ communication error has occurred from the Control Unit to the Terminal Module involved. The nodes do not send and receive in synchronism.

Fault cause:

33 (= 21 hex):

The cyclic telegram has not been received.

34 (= 22 hex):

Timeout in the telegram receive list.

64 (= 40 hex):

Timeout in the telegram send list.

	Note regarding the message value:
	The individual information is coded as follows in the message value (r0949/r2124):
	0000yyxx hex: yy = component number, xx = error cause
Remedy:	- carry out a POWER ON.
	- replace the component involved.

F35836 TM DRIVE-CLiQ: Send error for DRIVE-CLiQ data

Message value: Component number: %1, fault cause: %2

Message class: Internal (DRIVE-CLiQ) communication error (12)

Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Terminal Module (TM) **Propagation:** BICO

Reaction: OFF1 (OFF2)

Acknowledge: IMMEDIATELY

Cause: A DRIVE-CLiQ communication error has occurred between the Control Unit and the Terminal Module involved. Data were not able to be sent.

Fault cause:

65 (= 41 hex):

Telegram type does not match send list.

Note regarding the message value:

The individual information is coded as follows in the message value (r0949/r2124):

0000yyxx hex: yy = component number, xx = error cause

Remedy: Carry out a POWER ON.

F35837 PTM DRIVE-CLiQ: Component fault

Message value: Component number: %1, fault cause: %2

Message class: Internal (DRIVE-CLiQ) communication error (12)

Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Terminal Module (TM) **Propagation:** BICO

Reaction: OFF1 (OFF2)

Acknowledge: IMMEDIATELY

Cause: Fault detected on the DRIVE-CLiQ component concerned. Faulty hardware cannot be excluded.

Fault cause:

32 (= 20 hex):

Error in the telegram header.

35 (= 23 hex):

Receive error: The telegram buffer memory contains an error.

66 (= 42 hex):

Send error: The telegram buffer memory contains an error.

67 (= 43 hex):

Send error: The telegram buffer memory contains an error.

Note regarding the message value:

The individual information is coded as follows in the message value (r0949/r2124):

0000yyxx hex: yy = component number, xx = error cause

Remedy:
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
- check the electrical cabinet design and cable routing for EMC compliance
- if required, use another DRIVE-CLiQ socket (p9904).
- replace the component involved.

F35845	**TM DRIVE-CLiQ: Cyclic data transfer error**		
Message value:	Component number: %1, fault cause: %2		
Message class:	Internal (DRIVE-CLiQ) communication error (12)		
Drive object:	A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC		
Component:	Terminal Module (TM)	**Propagation:**	BICO
Reaction:	OFF1 (OFF2)		
Acknowledge:	IMMEDIATELY		
Cause:	A DRIVE-CLiQ communication error has occurred between the Control Unit and the Terminal Module (TM) involved. Fault cause: 11 (= 0B hex): Synchronization error during alternating cyclic data transfer. Note regarding the message value: The individual information is coded as follows in the message value (r0949/r2124): 0000yyxx hex: yy = component number, xx = error cause		
Remedy:	Carry out a POWER ON.		

F35850	**TM: Internal software error**		
Message value:	%1		
Message class:	Hardware/software error (1)		
Drive object:	A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC		
Component:	Terminal Module (TM)	**Propagation:**	BICO
Reaction:	Infeed: OFF1 (NONE, OFF2) Servo: OFF1 (NONE, OFF2, OFF3) Vector: OFF1 (NONE, OFF2, OFF3) Hla: OFF1 (NONE, OFF2, OFF3)		
Acknowledge:	POWER ON		
Cause:	An internal software error in the Terminal Module (TM) has occurred. Fault value (r0949, interpret decimal): 1: Background time slice is blocked. 2: Checksum over the code memory is not OK.		
Remedy:	- replace the Terminal Module (TM). - if required, upgrade the firmware in the Terminal Module. - contact Technical Support.		

F35851	**TM DRIVE-CLiQ (CU): Sign-of-life missing**		
Message value:	Component number: %1, fault cause: %2		
Message class:	Internal (DRIVE-CLiQ) communication error (12)		
Drive object:	A_INF, B_INF, CU_LINK, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC		
Component:	Terminal Module (TM)	**Propagation:**	LOCAL
Reaction:	OFF1 (OFF2)		
Acknowledge:	IMMEDIATELY		
Cause:	A DRIVE-CLiQ communication error has occurred from the Terminal Module involved (TM) to the Control Unit. The DRIVE-CLiQ component did not set the sign-of-life to the Control Unit. Fault cause: 10 (= 0A hex): The sign-of-life bit in the receive telegram is not set. Note regarding the message value: The individual information is coded as follows in the message value (r0949/r2124): 0000yyxx hex: yy = component number, xx = error cause		
Remedy:	Upgrade the firmware of the component involved.		

F35860 **TM DRIVE-CLiQ (CU): Telegram error**

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, CU_LINK, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Module (TM) **Propagation:** LOCAL
Reaction: OFF1 (OFF2)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Terminal Module involved (TM) to the Control Unit.

Fault cause:

1 (= 01 hex):

Checksum error (CRC error).

2 (= 02 hex):

Telegram is shorter than specified in the length byte or in the receive list.

3 (= 03 hex):

Telegram is longer than specified in the length byte or in the receive list.

4 (= 04 hex):

The length of the receive telegram does not match the receive list.

5 (= 05 hex):

The type of the receive telegram does not match the receive list.

6 (= 06 hex):

The address of the power unit in the telegram and in the receive list do not match.

9 (= 09 hex):

The DRIVE-CLiQ communication from the DRIVE-CLiQ component involved to the Control Unit signals that the supply voltage has failed.

16 (= 10 hex):

The receive telegram is too early.

17 (= 11 hex):

CRC error and the receive telegram is too early.

18 (= 12 hex):

The telegram is shorter than that specified in the length byte or in the receive list and the receive telegram is too early.

19 (= 13 hex):

The telegram is longer than that specified in the length byte or in the receive list and the receive telegram is too early.

20 (= 14 hex):

The length of the receive telegram does not match the receive list and the receive telegram is too early.

21 (= 15 hex):

The type of the receive telegram does not match the receive list and the receive telegram is too early.

22 (= 16 hex):

The address of the power unit in the telegram and in the receive list does not match and the receive telegram is too early.

25 (= 19 hex):

The error bit in the receive telegram is set and the receive telegram is too early.

Note regarding the message value:

The individual information is coded as follows in the message value (r0949/r2124):

0000yyxx hex: yy = component number, xx = error cause

Remedy: - carry out a POWER ON (switch-off/switch-on).

- check the electrical cabinet design and cable routing for EMC compliance
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).

F35875 TM: power supply voltage failed

Message value: Component number: %1, fault cause: %2

Message class: Supply voltage fault (undervoltage) (3)

Drive object: A_INF, B_INF, CU_LINK, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Terminal Module (TM) **Propagation:** LOCAL

Reaction: OFF1 (OFF2)

Acknowledge: IMMEDIATELY

Cause: The DRIVE-CLiQ communication from the DRIVE-CLiQ component involved to the Control Unit signals that the supply voltage has failed.

Fault cause:

9 (= 09 hex):

The power supply voltage for the components has failed.

Note regarding the message value:

The individual information is coded as follows in the message value (r0949/r2124):

0000yyxx hex: yy = component number, xx = error cause

Remedy: - carry out a POWER ON (switch-off/switch-on).

- check the power supply voltage wiring for the DRIVE-CLiQ component (interrupted cable, contacts, ...).
- check the dimensioning of the power supply for the DRIVE-CLiQ component.

F35885 TM DRIVE-CLiQ (CU): Cyclic data transfer error

Message value: Component number: %1, fault cause: %2

Message class: Internal (DRIVE-CLiQ) communication error (12)

Drive object: A_INF, B_INF, CU_LINK, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Terminal Module (TM) **Propagation:** LOCAL

Reaction: OFF1 (OFF2)

Acknowledge: IMMEDIATELY

Cause: A DRIVE-CLiQ communication error has occurred from the Terminal Module involved (TM) to the Control Unit.

The nodes do not send and receive in synchronism.

Fault cause:

26 (= 1A hex):

Sign-of-life bit in the receive telegram not set and the receive telegram is too early.

33 (= 21 hex):

The cyclic telegram has not been received.

34 (= 22 hex):

Timeout in the telegram receive list.

64 (= 40 hex):

Timeout in the telegram send list.

98 (= 62 hex):

Error at the transition to cyclic operation.

Note regarding the message value:

The individual information is coded as follows in the message value (r0949/r2124):

0000yyxx hex: yy = component number, xx = error cause

Remedy: - check the power supply voltage of the component involved.

- carry out a POWER ON.
- replace the component involved.

F35886 **TM DRIVE-CLiQ (CU): Error when sending DRIVE-CLiQ data**

Message value: Component number: %1, fault cause: %2

Message class: Internal (DRIVE-CLiQ) communication error (12)

Drive object: A_INF, B_INF, CU_LINK, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Terminal Module (TM) **Propagation:** LOCAL

Reaction: OFF1 (OFF2)

Acknowledge: IMMEDIATELY

Cause: A DRIVE-CLiQ communication error has occurred from the Terminal Module involved (TM) to the Control Unit.

Data were not able to be sent.

Fault cause:

65 (= 41 hex):

Telegram type does not match send list.

Note regarding the message value:

The individual information is coded as follows in the message value (r0949/r2124):

0000yyxx hex: yy = component number, xx = error cause

Remedy: Carry out a POWER ON.

F35887 **TM DRIVE-CLiQ (CU): Component fault**

Message value: Component number: %1, fault cause: %2

Message class: Internal (DRIVE-CLiQ) communication error (12)

Drive object: A_INF, B_INF, CU_LINK, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Terminal Module (TM) **Propagation:** LOCAL

Reaction: OFF1 (OFF2)

Acknowledge: IMMEDIATELY

Cause: Fault detected on the DRIVE-CLiQ component (Terminal Module) involved. Faulty hardware cannot be excluded.

Fault cause:

32 (= 20 hex):

Error in the telegram header.

35 (= 23 hex):

Receive error: The telegram buffer memory contains an error.

66 (= 42 hex):

Send error: The telegram buffer memory contains an error.

67 (= 43 hex):

Send error: The telegram buffer memory contains an error.

96 (= 60 hex):

Response received too late during runtime measurement.

97 (= 61 hex):

Time taken to exchange characteristic data too long.

Note regarding the message value:

The individual information is coded as follows in the message value (r0949/r2124):

0000yyxx hex: yy = component number, xx = error cause

Remedy: - check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).

- check the electrical cabinet design and cable routing for EMC compliance
- if required, use another DRIVE-CLiQ socket (p9904).
- replace the component involved.

F35895 TM DRIVE-CLiQ (CU): Alternating cyclic data transfer error

Message value: Component number: %1, fault cause: %2

Message class: Internal (DRIVE-CLiQ) communication error (12)

Drive object: A_INF, B_INF, CU_LINK, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Terminal Module (TM) **Propagation:** LOCAL

Reaction: OFF1 (OFF2)

Acknowledge: IMMEDIATELY

Cause: A DRIVE-CLiQ communication error has occurred from the Terminal Module involved (TM) to the Control Unit.

Fault cause:

11 (= 0B hex):

Synchronization error during alternating cyclic data transfer.

Note regarding the message value:

The individual information is coded as follows in the message value (r0949/r2124):

0000yyxx hex: yy = component number, xx = error cause

Remedy: Carry out a POWER ON.

F35896 TM DRIVE-CLiQ (CU): Inconsistent component properties

Message value: Component number: %1

Message class: Internal (DRIVE-CLiQ) communication error (12)

Drive object: A_INF, B_INF, CU_LINK, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Terminal Module (TM) **Propagation:** LOCAL

Reaction: Infeed: OFF2 (NONE, OFF1)

Servo: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)

Vector: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)

Hla: OFF2 (NONE, OFF1, OFF3, STOP2)

Acknowledge: IMMEDIATELY

Cause: The properties of the DRIVE-CLiQ component (Terminal Module), specified by the fault value, have changed in an incompatible fashion with respect to the properties when booted. One cause can be, e.g. that a DRIVE-CLiQ cable or DRIVE-CLiQ component has been replaced.

Fault value (r0949, interpret decimal):

Component number.

Remedy: - carry out a POWER ON.

- when a component is replaced, the same component type and if possible the same firmware version should be used.

- when a cable is replaced, only cables whose length is the same as or as close as possible to the length of the original cables should be used (ensure compliance with the maximum cable length).

F35899 (N, A) TM: Unknown fault

Message value: New message: %1

Message class: General drive fault (19)

Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Terminal Module (TM) **Propagation:** BICO

Reaction: Infeed: NONE (OFF1, OFF2)

Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)

Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)

Hla: NONE (OFF1, OFF2, OFF3, STOP2)

Acknowledge: IMMEDIATELY (POWER ON)

Cause: A fault has occurred on the Terminal Module that cannot be interpreted by the Control Unit firmware.

This can occur if the firmware on this component is more recent than the firmware on the Control Unit.

Fault value (r0949, interpret decimal):

Fault number.

Note:

If required, the significance of this new fault can be read about in a more recent description of the Control Unit.

Remedy:	- replace the firmware on the Terminal Module by an older firmware version (r0158). - upgrade the firmware on the Control Unit (r0018).
Reaction upon N:	NONE
Acknowl. upon N:	NONE
Reaction upon A:	NONE
Acknowl. upon A:	NONE

A35903 (F, N) TM: I2C bus error occurred

Message value:	-
Message class:	Hardware/software error (1)
Drive object:	A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Terminal Module (TM) **Propagation:** BICO
Reaction:	NONE
Acknowledge:	NONE
Cause:	An error has occurred while accessing the internal I2C bus of the Terminal Module.
Remedy:	Replace the Terminal Module.
Reaction upon F:	NONE
Acknowl. upon F:	IMMEDIATELY (POWER ON)
Reaction upon N:	NONE
Acknowl. upon N:	NONE

A35904 (F, N) TM: EEPROM

Message value:	-
Message class:	Hardware/software error (1)
Drive object:	A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Terminal Module (TM) **Propagation:** BICO
Reaction:	NONE
Acknowledge:	NONE
Cause:	An error has occurred accessing the non-volatile memory on the Terminal Module.
Remedy:	Replace the Terminal Module.
Reaction upon F:	NONE
Acknowl. upon F:	IMMEDIATELY (POWER ON)
Reaction upon N:	NONE
Acknowl. upon N:	NONE

A35905 (F, N) TM: Parameter access

Message value:	-
Message class:	Hardware/software error (1)
Drive object:	A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Terminal Module (TM) **Propagation:** BICO
Reaction:	NONE
Acknowledge:	NONE
Cause:	The Control Unit attempted to write an illegal parameter value to the Terminal Module.
Remedy:	- check whether the firmware version of the Terminal Module (r0158) matches the firmware version of Control Unit (r0018). - if required, replace the Terminal Module. Note: The firmware versions that match each other are in the readme.txt file on the memory card.
Reaction upon F:	NONE
Acknowl. upon F:	IMMEDIATELY (POWER ON)
Reaction upon N:	NONE
Acknowl. upon N:	NONE

A35906 (F, N) TM: 24 V power supply missing

Message value: %1
Message class: Supply voltage fault (undervoltage) (3)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Module (TM) **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: The 24 V power supply for the digital outputs is missing.
Alarm value (r2124, interpret hexadecimal):
01: TM17 24 V power supply for DI/DO 0 ... 7 missing.
02: TM17 24 V power supply for DI/DO 8 ... 15 missing.
04: TM15 24 V power supply for DI/DO 0 ... 7 (X520) missing.
08: TM15 24 V power supply for DI/DO 8 ... 15 (X521) missing.
10: TM15 24 V power supply for DI/DO 16 ... 23 (X522) missing.
20: TM41 24 V power supply for DI/DO 0 ... 3 missing.
Remedy: Check the terminals for the power supply voltage (L1+, L2+, L3+, M or +24 V_1 for TM41).
Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

A35907 (F, N) TM: Hardware initialization error

Message value: %1
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Module (TM) **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: The Terminal Module was not successfully initialized.
Alarm value (r2124, interpret hexadecimal):
01: TM17 or TM41 - incorrect configuration request.
02: TM17 or TM41 - programming not successful.
04: TM17 or TM41 - invalid time stamp
Remedy: Carry out a POWER ON.
Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

A35910 (F, N) TM: Module overtemperature

Message value: -
Message class: Overtemperature of the electronic components (6)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Module (TM) **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: The temperature in the module has exceeded the highest permissible limit.
Remedy: - reduce the ambient temperature.
- replace the Terminal Module.

Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

A35911 (F, N) TM: Clock synchronous operation sign-of-life missing

Message value: -
Message class: Communication error to the higher-level control system (9)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: The maximum permissible number of errors in the master sign-of-life (clock synchronous operation) has been exceeded in cyclic operation.

When the alarm is output, the module outputs are reset up to the next synchronization.

Remedy: - check the physical bus configuration (terminating resistor, shielding, etc.).

- check the interconnection of the master sign-of-life (r4201 via p0915).

- check whether the master correctly sends the sign-of-life (e.g. set up a trace with r4201.12 ... r4201.15 and trigger signal r4301.9).

- check the bus and master for utilization level (e.g. bus cycle time Tdp was set too short).

Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

A35920 (F, N) TM: Error temperature sensor channel 0

Message value: %1
Message class: External measured value / signal state outside the permissible range (16)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Module (TM) **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: When evaluating the temperature sensor, an error occurred.

Alarm value (r2124, interpret decimal):

1: Wire breakage or sensor not connected.

KTY84: R > 1630 Ohm (TM150: R > 2170 Ohm), PT100: R > 194 Ohm, PT1000: R > 1720 Ohm (TM150: R > 1944 Ohm)

2: Measured resistance too low.

PTC thermistor: R < 20 Ohm, KTY84: R < 50 Ohm (TM150: R < 180 Ohm), PT100: R < 60 Ohm, PT1000: R < 603 Ohm

Remedy: - make sure that the sensor is connected correctly.

- replace the sensor.

Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

A35921 (F, N) TM: Error temperature sensor channel 1

Message value: %1
Message class: External measured value / signal state outside the permissible range (16)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM150, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Module (TM) **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: When evaluating the temperature sensor, an error occurred.

Alarm value (r2124, interpret decimal):

1: Wire breakage or sensor not connected.

KTY84: R > 1630 Ohm (TM150: R > 2170 Ohm), PT100: R > 194 Ohm, PT1000: R > 1720 Ohm (TM150: R > 1944 Ohm)

2: Measured resistance too low.

PTC thermistor: R < 20 Ohm, KTY84: R < 50 Ohm (TM150: R < 180 Ohm), PT100: R < 60 Ohm, PT1000: R < 603 Ohm

Remedy: - make sure that the sensor is connected correctly.

- replace the sensor.

Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

A35922 (F, N) TM: Error temperature sensor channel 2

Message value: %1
Message class: External measured value / signal state outside the permissible range (16)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM150, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Module (TM) **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: When evaluating the temperature sensor, an error occurred.

Alarm value (r2124, interpret decimal):

1: Wire breakage or sensor not connected.

KTY84: R > 1630 Ohm (TM150: R > 2170 Ohm), PT100: R > 194 Ohm, PT1000: R > 1720 Ohm (TM150: R > 1944 Ohm)

2: Measured resistance too low.

PTC thermistor: R < 20 Ohm, KTY84: R < 50 Ohm (TM150: R < 180 Ohm), PT100: R < 60 Ohm, PT1000: R < 603 Ohm

Remedy: - make sure that the sensor is connected correctly.

- replace the sensor.

Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

A35923 (F, N) TM: Error temperature sensor channel 3

Message value: %1

Message class: External measured value / signal state outside the permissible range (16)

Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM150, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Terminal Module (TM) **Propagation:** BICO

Reaction: NONE

Acknowledge: NONE

Cause: When evaluating the temperature sensor, an error occurred.

Alarm value (r2124, interpret decimal):

1: Wire breakage or sensor not connected.

KTY84: R > 1630 Ohm (TM150: R > 2170 Ohm), PT100: R > 194 Ohm, PT1000: R > 1720 Ohm (TM150: R > 1944 Ohm)

2: Measured resistance too low.

PTC thermistor: R < 20 Ohm, KTY84: R < 50 Ohm (TM150: R < 180 Ohm), PT100: R < 60 Ohm, PT1000: R < 603 Ohm

Remedy: - make sure that the sensor is connected correctly.

- replace the sensor.

Reaction upon F: NONE

Acknowl. upon F: IMMEDIATELY (POWER ON)

Reaction upon N: NONE

Acknowl. upon N: NONE

A35924 (F, N) TM: Error temperature sensor channel 4

Message value: %1

Message class: External measured value / signal state outside the permissible range (16)

Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM150, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Terminal Module (TM) **Propagation:** BICO

Reaction: NONE

Acknowledge: NONE

Cause: When evaluating the temperature sensor, an error occurred.

Alarm value (r2124, interpret decimal):

1: Wire breakage or sensor not connected.

KTY84: R > 2170 Ohm, PT100: R > 194 Ohm, PT1000: R > 1944 Ohm

2: Measured resistance too low.

PTC thermistor: R < 20 Ohm, KTY84: R < 180 Ohm, PT100: R < 60 Ohm, PT1000: R < 603 Ohm

Remedy: - make sure that the sensor is connected correctly.

- replace the sensor.

Reaction upon F: NONE

Acknowl. upon F: IMMEDIATELY (POWER ON)

Reaction upon N: NONE

Acknowl. upon N: NONE

A35925 (F, N) TM: Error temperature sensor channel 5

Message value: %1
Message class: External measured value / signal state outside the permissible range (16)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM150, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Module (TM) **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: When evaluating the temperature sensor, an error occurred.
Alarm value (r2124, interpret decimal):
1: Wire breakage or sensor not connected.
KTY84: R > 2170 Ohm, PT100: R > 194 Ohm, PT1000: R > 1944 Ohm
2: Measured resistance too low.
PTC thermistor: R < 20 Ohm, KTY84: R < 180 Ohm, PT100: R < 60 Ohm, PT1000: R < 603 Ohm
Remedy: - make sure that the sensor is connected correctly.
- replace the sensor.
Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

A35926 (F, N) TM: Error temperature sensor channel 6

Message value: %1
Message class: External measured value / signal state outside the permissible range (16)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM150, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Module (TM) **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: When evaluating the temperature sensor, an error occurred.
Alarm value (r2124, interpret decimal):
1: Wire breakage or sensor not connected.
KTY84: R > 2170 Ohm, PT100: R > 194 Ohm, PT1000: R > 1944 Ohm
2: Measured resistance too low.
PTC thermistor: R < 20 Ohm, KTY84: R < 180 Ohm, PT100: R < 60 Ohm, PT1000: R < 603 Ohm
Remedy: - make sure that the sensor is connected correctly.
- replace the sensor.
Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

A35927 (F, N) TM: Error temperature sensor channel 7

Message value: %1

Message class: External measured value / signal state outside the permissible range (16)

Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM150, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Terminal Module (TM) **Propagation:** BICO

Reaction: NONE

Acknowledge: NONE

Cause: When evaluating the temperature sensor, an error occurred.

Alarm value (r2124, interpret decimal):

1: Wire breakage or sensor not connected.

KTY84: R > 2170 Ohm, PT100: R > 194 Ohm, PT1000: R > 1944 Ohm

2: Measured resistance too low.

PTC thermistor: R < 20 Ohm, KTY84: R < 180 Ohm, PT100: R < 60 Ohm, PT1000: R < 603 Ohm

Remedy: - make sure that the sensor is connected correctly.

- replace the sensor.

Reaction upon F: NONE

Acknowl. upon F: IMMEDIATELY (POWER ON)

Reaction upon N: NONE

Acknowl. upon N: NONE

A35928 (F, N) TM: Error temperature sensor channel 8

Message value: %1

Message class: External measured value / signal state outside the permissible range (16)

Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM150, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Terminal Module (TM) **Propagation:** BICO

Reaction: NONE

Acknowledge: NONE

Cause: When evaluating the temperature sensor, an error occurred.

Alarm value (r2124, interpret decimal):

1: Wire breakage or sensor not connected.

KTY84: R > 2170 Ohm, PT100: R > 194 Ohm, PT1000: R > 1944 Ohm

2: Measured resistance too low.

PTC thermistor: R < 20 Ohm, KTY84: R < 180 Ohm, PT100: R < 60 Ohm, PT1000: R < 603 Ohm

Remedy: - make sure that the sensor is connected correctly.

- replace the sensor.

Reaction upon F: NONE

Acknowl. upon F: IMMEDIATELY (POWER ON)

Reaction upon N: NONE

Acknowl. upon N: NONE

A35929 (F, N) TM: Error temperature sensor channel 9

Message value: %1

Message class: External measured value / signal state outside the permissible range (16)

Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM150, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Terminal Module (TM) **Propagation:** BICO

Reaction: NONE

Acknowledge: NONE

Cause: When evaluating the temperature sensor, an error occurred.

Alarm value (r2124, interpret decimal):

1: Wire breakage or sensor not connected.

KTY84: R > 2170 Ohm, PT100: R > 194 Ohm, PT1000: R > 1944 Ohm

2: Measured resistance too low.

PTC thermistor: R < 20 Ohm, KTY84: R < 180 Ohm, PT100: R < 60 Ohm, PT1000: R < 603 Ohm

Remedy: - make sure that the sensor is connected correctly.

- replace the sensor.

Reaction upon F: NONE

Acknowl. upon F: IMMEDIATELY (POWER ON)

Reaction upon N: NONE

Acknowl. upon N: NONE

A35930 (F, N) TM: Error temperature sensor channel 10

Message value: %1

Message class: External measured value / signal state outside the permissible range (16)

Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM150, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Terminal Module (TM) **Propagation:** BICO

Reaction: NONE

Acknowledge: NONE

Cause: When evaluating the temperature sensor, an error occurred.

Alarm value (r2124, interpret decimal):

1: Wire breakage or sensor not connected.

KTY84: R > 2170 Ohm, PT100: R > 194 Ohm, PT1000: R > 1944 Ohm

2: Measured resistance too low.

PTC thermistor: R < 20 Ohm, KTY84: R < 180 Ohm, PT100: R < 60 Ohm, PT1000: R < 603 Ohm

Remedy: - make sure that the sensor is connected correctly.

- replace the sensor.

Reaction upon F: NONE

Acknowl. upon F: IMMEDIATELY (POWER ON)

Reaction upon N: NONE

Acknowl. upon N: NONE

A35931 (F, N) TM: Error temperature sensor channel 11

Message value: %1
Message class: External measured value / signal state outside the permissible range (16)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM150, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Module (TM) **Propagation:** BICO
Reaction: NONE
Acknowledge: NONE
Cause: When evaluating the temperature sensor, an error occurred.
Alarm value (r2124, interpret decimal):
1: Wire breakage or sensor not connected.
KTY84: R > 2170 Ohm, PT100: R > 194 Ohm, PT1000: R > 1944 Ohm
2: Measured resistance too low.
PTC thermistor: R < 20 Ohm, KTY84: R < 180 Ohm, PT100: R < 60 Ohm, PT1000: R < 603 Ohm
Remedy: - make sure that the sensor is connected correctly.
- replace the sensor.
Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

F35950 TM: Internal software error

Message value: %1
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Module (TM) **Propagation:** LOCAL
Reaction: OFF2 (NONE)
Acknowledge: POWER ON
Cause: An internal software error has occurred.
Fault value (r0949, interpret decimal):
Information about the fault source.
Only for internal Siemens troubleshooting.
Remedy: - if necessary, upgrade the firmware in the Terminal Module to a later version.
- contact Technical Support.

A35999 (F, N) TM: Unknown alarm

Message value: New message: %1
Message class: General drive fault (19)
Drive object: A_INF, B_INF, HLA, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Module (TM) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: An alarm has occurred on the Terminal Module that cannot be interpreted by the Control Unit firmware.
This can occur if the firmware on this component is more recent than the firmware on the Control Unit.
Alarm value (r2124, interpret decimal):
Alarm number.
Note:
If required, the significance of this new alarm can be read about in a more recent description of the Control Unit.
Remedy: - replace the firmware on the Terminal Module by an older firmware version (r0158).
- upgrade the firmware on the Control Unit (r0018).

Reaction upon F:	Infeed: NONE (OFF1, OFF2) Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2) Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2) Hla: NONE (OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F:	IMMEDIATELY (POWER ON)
Reaction upon N:	NONE
Acknowl. upon N:	NONE

F36207 (N, A) Hub: Overtemperature component

Message value: %1
Message class: Overtemperature of the electronic components (6)
Drive object: A_INF, B_INF, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Board (TB) **Propagation:** LOCAL
Reaction: NONE (OFF1, OFF2)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The temperature on the DRIVE-CLiQ Hub Module has exceeded the fault threshold.
Fault value (r0949, interpret decimal):
Actual temperature in 0.1 °C resolution.
Remedy: - check ambient temperature at component installation location.
- replace the component involved.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

A36211 (F, N) Hub: Overtemperature alarm component

Message value: %1
Message class: Overtemperature of the electronic components (6)
Drive object: A_INF, B_INF, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Board (TB) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The temperature on the DRIVE-CLiQ Hub Module has exceeded the alarm threshold.
Alarm value (r2124, interpret decimal):
Actual temperature in 0.1 °C resolution.
Remedy: - check ambient temperature at component installation location.
- replace the component involved.
Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

F36214 (N, A) Hub: overvoltage fault 24 V supply

Message value: %1
Message class: Supply voltage fault (overvoltage) (3)
Drive object: A_INF, B_INF, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Board (TB) **Propagation:** LOCAL
Reaction: NONE (OFF1, OFF2)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The 24 V power supply on the DRIVE-CLiQ Hub Module has exceeded the fault threshold.
Fault value (r0949, interpret decimal):
Actual operating voltage in 0.1 °C resolution

Remedy:	- check the supply voltage of the component involved. - replace the component involved.
Reaction upon N:	NONE
Acknowl. upon N:	NONE
Reaction upon A:	NONE
Acknowl. upon A:	NONE

F36216 (N, A) Hub: undervoltage fault 24 V supply

Message value:	%1		
Message class:	Supply voltage fault (undervoltage) (3)		
Drive object:	A_INF, B_INF, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC		
Component:	Terminal Board (TB)	**Propagation:**	LOCAL
Reaction:	NONE (OFF1, OFF2)		
Acknowledge:	IMMEDIATELY (POWER ON)		
Cause:	The 24 V power supply on the DRIVE-CLiQ Hub Module has undershot the fault threshold. Fault value (r0949, interpret decimal): Actual operating voltage in 0.1 °C resolution		
Remedy:	- check the supply voltage of the component involved. - replace the component involved.		
Reaction upon N:	NONE		
Acknowl. upon N:	NONE		
Reaction upon A:	NONE		
Acknowl. upon A:	NONE		

A36217 (N) Hub: undervoltage alarm 24 V supply

Message value:	%1		
Message class:	Supply voltage fault (undervoltage) (3)		
Drive object:	A_INF, B_INF, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC		
Component:	Terminal Board (TB)	**Propagation:**	LOCAL
Reaction:	NONE		
Acknowledge:	NONE		
Cause:	The 24 V power supply on the DRIVE-CLiQ Hub Module has undershot the alarm threshold. Alarm value (r2124, interpret decimal): Actual operating voltage in 0.1 °C resolution		
Remedy:	- check the supply voltage of the component involved. - replace the component involved.		
Reaction upon N:	NONE		
Acknowl. upon N:	NONE		

N36800 (F) Hub: Group signal

Message value:	-		
Message class:	General drive fault (19)		
Drive object:	A_INF, B_INF, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC		
Component:	None	**Propagation:**	GLOBAL
Reaction:	NONE		
Acknowledge:	NONE		
Cause:	The DRIVE-CLiQ Hub Module has detected at least one fault.		
Remedy:	Evaluates other actual messages.		
Reaction upon F:	NONE		
Acknowl. upon F:	IMMEDIATELY		

A36801 (F, N) Hub DRIVE-CLiQ: Sign-of-life missing

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: A DRIVE-CLiQ communications error has occurred from the Control Unit to the DRIVE-CLiQ Hub Module involved.
Fault cause:
10 (= 0A hex):
The sign-of-life bit in the receive telegram is not set.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: - check the DRIVE-CLiQ connection.
- replace the component involved.
Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A36802 (F, N) Hub: Time slice overflow

Message value: %1
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Board (TB) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: A time slice overflow has occurred on the DRIVE-CLiQ Hub Module.
Fault value (r0949, interpret decimal):
xx: Time slice number xx
Remedy: - reduce the current controller frequency.
- carry out a POWER ON (switch-off/switch-on) for all components.
- upgrade firmware to later version.
- contact Technical Support.
Reaction upon F: Infeed: OFF2 (NONE)
Servo: NONE
Vector: NONE
Hla: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

F36804 (N, A) Hub: Checksum error

Message value: %1
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Board (TB) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: A checksum error has occurred when reading out the program memory on the DRIVE-CLiQ Hub Module.
Fault value (r0949, interpret hexadecimal):
Difference between the checksum at POWER ON and the actual checksum.
Remedy: - check whether the permissible ambient temperature for the component is maintained.
- replace the DRIVE-CLiQ Hub Module.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F36805 (N, A) Hub: EEPROM checksum incorrect

Message value: %1
Message class: Hardware/software error (1)
Drive object: A_INF, B_INF, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Board (TB) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The internal parameter data on the DRIVE-CLiQ Hub Module is incorrect.
Alarm value (r2124, interpret hexadecimal):
01: EEPROM access error.
02: Too many blocks in the EEPROM.
Remedy: - check whether the permissible ambient temperature for the component is maintained.
- replace the DRIVE-CLiQ Hub Module.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F36820 Hub DRIVE-CLiQ: Telegram error

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Board (TB) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communications error has occurred from the Control Unit to the DRIVE-CLiQ Hub Module involved.
Fault cause:
1 (= 01 hex):
Checksum error (CRC error).
2 (= 02 hex):
Telegram is shorter than specified in the length byte or in the receive list.
3 (= 03 hex):
Telegram is longer than specified in the length byte or in the receive list.
4 (= 04 hex):
The length of the receive telegram does not match the receive list.

5 (= 05 hex):
The type of the receive telegram does not match the receive list.
6 (= 06 hex):
The address of the component in the telegram and in the receive list do not match.
7 (= 07 hex):
A SYNC telegram is expected - but the received telegram is not a SYNC telegram.
8 (= 08 hex):
No SYNC telegram is expected - but the received telegram is one.
9 (= 09 hex):
The error bit in the receive telegram is set.
16 (= 10 hex):
The receive telegram is too early.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy: - carry out a POWER ON (switch-off/switch-on).
- check the electrical cabinet design and cable routing for EMC compliance
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).

F36835 Hub DRIVE-CLiQ: Cyclic data transfer error

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Board (TB) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communications error has occurred from the Control Unit to the DRIVE-CLiQ Hub Module involved. The nodes do not send and receive in synchronism.
Fault cause:
33 (= 21 hex):
The cyclic telegram has not been received.
34 (= 22 hex):
Timeout in the telegram receive list.
64 (= 40 hex):
Timeout in the telegram send list.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy: - carry out a POWER ON.
- replace the component involved.

F36836 Hub DRIVE-CLiQ: Send error for DRIVE-CLiQ data

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Board (TB) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communications error has occurred from the Control Unit to the DRIVE-CLiQ Hub Module involved. Data were not able to be sent.
Fault cause:
65 (= 41 hex):
Telegram type does not match send list.

Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy: Carry out a POWER ON.

F36837 Hub DRIVE-CLiQ: Component fault

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Board (TB) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: Fault detected on the DRIVE-CLiQ component concerned. Faulty hardware cannot be excluded.
Fault cause:
32 (= 20 hex):
Error in the telegram header.
35 (= 23 hex):
Receive error: The telegram buffer memory contains an error.
66 (= 42 hex):
Send error: The telegram buffer memory contains an error.
67 (= 43 hex):
Send error: The telegram buffer memory contains an error.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: - check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
- check the electrical cabinet design and cable routing for EMC compliance
- if required, use another DRIVE-CLiQ socket (p9904).
- replace the component involved.

F36845 Hub DRIVE-CLiQ: Cyclic data transfer error

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Board (TB) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communications error has occurred from the Control Unit to the DRIVE-CLiQ Hub Module involved.
Fault cause:
11 (= 0B hex):
Synchronization error during alternating cyclic data transfer.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: Carry out a POWER ON.

F36851	**Hub DRIVE-CLiQ (CU): Sign-of-life missing**
Message value:	Component number: %1, fault cause: %2
Message class:	Internal (DRIVE-CLiQ) communication error (12)
Drive object:	A_INF, B_INF, CU_LINK, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Terminal Board (TB) **Propagation:** LOCAL
Reaction:	NONE
Acknowledge:	IMMEDIATELY
Cause:	DRIVE-CLiQ communication error from DRIVE-CLiQ Hub Module in question to Control Unit. The DRIVE-CLiQ component did not set the sign-of-life to the Control Unit. Fault cause: 10 (= 0A hex): The sign-of-life bit in the receive telegram is not set. Note regarding the message value: The individual information is coded as follows in the message value (r0949/r2124): 0000yyxx hex: yy = component number, xx = error cause
Remedy:	Upgrade the firmware of the component involved.

F36860	**Hub DRIVE-CLiQ (CU): Telegram error**
Message value:	Component number: %1, fault cause: %2
Message class:	Internal (DRIVE-CLiQ) communication error (12)
Drive object:	A_INF, B_INF, CU_LINK, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component:	Terminal Board (TB) **Propagation:** LOCAL
Reaction:	NONE
Acknowledge:	IMMEDIATELY
Cause:	DRIVE-CLiQ communication error from DRIVE-CLiQ Hub Module in question to Control Unit. Fault cause: 1 (= 01 hex): Checksum error (CRC error). 2 (= 02 hex): Telegram is shorter than specified in the length byte or in the receive list. 3 (= 03 hex): Telegram is longer than specified in the length byte or in the receive list. 4 (= 04 hex): The length of the receive telegram does not match the receive list. 5 (= 05 hex): The type of the receive telegram does not match the receive list. 6 (= 06 hex): The address of the power unit in the telegram and in the receive list do not match. 9 (= 09 hex): The DRIVE-CLiQ communication from the DRIVE-CLiQ component involved to the Control Unit signals that the supply voltage has failed. 16 (= 10 hex): The receive telegram is too early. 17 (= 11 hex): CRC error and the receive telegram is too early. 18 (= 12 hex): The telegram is shorter than that specified in the length byte or in the receive list and the receive telegram is too early. 19 (= 13 hex): The telegram is longer than that specified in the length byte or in the receive list and the receive telegram is too early. 20 (= 14 hex): The length of the receive telegram does not match the receive list and the receive telegram is too early.

21 (= 15 hex):
The type of the receive telegram does not match the receive list and the receive telegram is too early.
22 (= 16 hex):
The address of the power unit in the telegram and in the receive list does not match and the receive telegram is too early.
25 (= 19 hex):
The error bit in the receive telegram is set and the receive telegram is too early.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy: - carry out a POWER ON (switch-off/switch-on).
- check the electrical cabinet design and cable routing for EMC compliance
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).

F36875 HUB: power supply voltage failed

Message value: Component number: %1, fault cause: %2
Message class: Supply voltage fault (undervoltage) (3)
Drive object: A_INF, B_INF, CU_LINK, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Board (TB) **Propagation:** LOCAL
Reaction: OFF1 (OFF2)
Acknowledge: IMMEDIATELY
Cause: The DRIVE-CLiQ communication from the DRIVE-CLiQ component involved to the Control Unit signals that the supply voltage has failed.
Fault cause:
9 (= 09 hex):
The power supply voltage for the components has failed.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy: - carry out a POWER ON (switch-off/switch-on).
- check the power supply voltage wiring for the DRIVE-CLiQ component (interrupted cable, contacts, ...).
- check the dimensioning of the power supply for the DRIVE-CLiQ component.

F36885 Hub DRIVE-CLiQ (CU): Cyclic data transfer error

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, CU_LINK, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Board (TB) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: DRIVE-CLiQ communication error from DRIVE-CLiQ Hub Module in question to the Control Unit.
The nodes do not send and receive in synchronism.
Fault cause:
26 (= 1A hex):
Sign-of-life bit in the receive telegram not set and the receive telegram is too early.
33 (= 21 hex):
The cyclic telegram has not been received.
34 (= 22 hex):
Timeout in the telegram receive list.
64 (= 40 hex):
Timeout in the telegram send list.
98 (= 62 hex):
Error at the transition to cyclic operation.

Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy: - check the supply voltage of the component involved.
- carry out a POWER ON.
- replace the component involved.

F36886 Hub DRIVE-CLiQ (CU): Error when sending DRIVE-CLiQ data

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, CU_LINK, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Board (TB) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: DRIVE-CLiQ communication error from DRIVE-CLiQ Hub Module in question to Control Unit.
Data were not able to be sent.
Fault cause:
65 (= 41 hex):
Telegram type does not match send list.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: Carry out a POWER ON.

F36887 Hub DRIVE-CLiQ (CU): Component fault

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: A_INF, B_INF, CU_LINK, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Board (TB) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: Fault detected on the DRIVE-CLiQ component (DRIVE-CLiQ Hub Module) involved. Faulty hardware cannot be excluded.
Fault cause:
32 (= 20 hex):
Error in the telegram header.
35 (= 23 hex):
Receive error: The telegram buffer memory contains an error.
66 (= 42 hex):
Send error: The telegram buffer memory contains an error.
67 (= 43 hex):
Send error: The telegram buffer memory contains an error.
96 (= 60 hex):
Response received too late during runtime measurement.
97 (= 61 hex):
Time taken to exchange characteristic data too long.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: - check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
- check the electrical cabinet design and cable routing for EMC compliance
- if required, use another DRIVE-CLiQ socket (p9904).
- replace the component involved.

F36895 Hub DRIVE-CLiQ (CU): Alternating cyclic data transfer error

Message value: Component number: %1, fault cause: %2

Message class: Internal (DRIVE-CLiQ) communication error (12)

Drive object: A_INF, B_INF, CU_LINK, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Terminal Board (TB) **Propagation:** LOCAL

Reaction: NONE

Acknowledge: IMMEDIATELY

Cause: DRIVE-CLiQ communication error from DRIVE-CLiQ Hub Module in question to Control Unit.

Fault cause:

11 (= 0B hex):

Synchronization error during alternating cyclic data transfer.

Note regarding the message value:

The individual information is coded as follows in the message value (r0949/r2124):

0000yyxx hex: yy = component number, xx = error cause

Remedy: Carry out a POWER ON.

F36896 Hub DRIVE-CLiQ (CU): Inconsistent component properties

Message value: Component number: %1

Message class: Internal (DRIVE-CLiQ) communication error (12)

Drive object: A_INF, B_INF, CU_LINK, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Terminal Board (TB) **Propagation:** LOCAL

Reaction: NONE

Acknowledge: IMMEDIATELY

Cause: The properties of the DRIVE-CLiQ component (DRIVE-CLiQ Hub Module), specified by the fault value, have changed in an incompatible fashion with respect to the properties when booted. One cause can be, e.g. that a DRIVE-CLiQ cable or DRIVE-CLiQ component has been replaced.

Fault value (r0949, interpret decimal):

Component number.

Remedy: - carry out a POWER ON.

- when a component is replaced, the same component type and if possible the same firmware version should be used.

- when a cable is replaced, only cables whose length is the same as or as close as possible to the length of the original cables should be used (ensure compliance with the maximum cable length).

F36899 (N, A) Hub: Unknown fault

Message value: New message: %1

Message class: General drive fault (19)

Drive object: A_INF, B_INF, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: Terminal Board (TB) **Propagation:** LOCAL

Reaction: Infeed: NONE (OFF1, OFF2)

Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)

Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)

Hla: NONE (OFF1, OFF2, OFF3, STOP2)

Acknowledge: IMMEDIATELY (POWER ON)

Cause: A fault occurred on the DRIVE-CLiQ Hub Module that cannot be interpreted by the Control Unit firmware.

This can occur if the firmware on this component is more recent than the firmware on the Control Unit.

Fault value (r0949, interpret decimal):

Fault number.

Note:

If required, the significance of this new fault can be read about in a more recent description of the Control Unit.

Remedy: - replace the firmware on the DRIVE-CLiQ Hub Module with older firmware (r0158).

- upgrade the firmware on the Control Unit (r0018).

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F36950 Hub: Internal software error

Message value: %1
Message class: Hardware/software error (1)
Drive object: SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Board (TB) **Propagation:** LOCAL
Reaction: OFF2 (NONE)
Acknowledge: POWER ON
Cause: An internal software error has occurred.
Fault value (r0949, interpret decimal):
Information about the fault source.
Only for internal Siemens troubleshooting.
Remedy: - if required, upgrade the firmware in the DRIVE-CLiQ Hub Module to a more recent version.
- contact Technical Support.

A36999 (F, N) Hub: Unknown alarm

Message value: New message: %1
Message class: General drive fault (19)
Drive object: A_INF, B_INF, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TM41, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Terminal Board (TB) **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: An alarm occurred on the DRIVE-CLiQ Hub Module that cannot be interpreted by the Control Unit firmware.
This can occur if the firmware on this component is more recent than the firmware on the Control Unit.
Alarm value (r2124, interpret decimal):
Alarm number.
Note:
If required, the significance of this new alarm can be read about in a more recent description of the Control Unit.
Remedy: - replace the firmware on the DRIVE-CLiQ Hub Module with older firmware (r0158).
- upgrade the firmware on the Control Unit (r0018).
Reaction upon F: Infeed: NONE (OFF1, OFF2)
Servo: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Vector: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Hla: NONE (OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

F37001 HF Damping Module: overcurrent

Message value: Fault cause: %1 bin
Message class: General drive fault (19)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The power unit has detected an overcurrent condition.
- HF Choke Module or HF Damping Module defective.
- Resonance frequency of the output filter was excited.

	Fault value (r0949, interpret bitwise binary):
	Bit 0: Phase U.
	Bit 1: Phase V.
	Bit 2: Phase W.
Remedy:	- check HF Choke Module and HF Damping Module and if required, replace.
	- reduce the motor power in the proximity of the fault-generating frequency.
	Note:
	HF Choke Module (reactor module)
	HF Damping Module

F37002 HF Damping Module: Damping voltage too high

Message value: %1
Message class: General drive fault (19)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The damping voltage has reached an inadmissibly high value.
- a motor harmonic with a high amplitude has coincided with the resonance frequency of the output filter.
- the current controller excessively excites the resonance of the output filter.
Fault value (r0949, interpret decimal):
Damping voltage in the case of a fault [mV].
See also: r5171 (HF damping voltage actual value)
Remedy: - reduce the motor power in the proximity of the fault-generating frequency.
- check the current controller and if required, adapt.
- if required, use another motor.
Note:
HF Damping Module

F37003 HF Damping Module: Damping voltage not established

Message value: %1
Message class: General drive fault (19)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: A damping voltage was not able to be established.
Fault value (r0949, interpret decimal):
Damping voltage in the case of a fault [mV].
Remedy: Check the HF Damping Module wiring.
See also: r5171 (HF damping voltage actual value)

F37004 HF Damping Module: Heat sink overtemperature

Message value: %1
Message class: Power electronics faulted (5)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The temperature of the heat sink in the HF Damping Module has exceeded the permissible limit value.
- insufficient cooling, fan failure.
- overload.
- ambient temperature too high.
Fault value (r0949, interpret decimal):
Temperature [0.01 °C].

Remedy: - check whether the fan is running.
- check the fan elements.
- check whether the ambient temperature is in the permissible range.
Notice:
This fault can only be acknowledged after the alarm threshold for alarm A05000 has been undershot.
Note:
HF Damping Module

F37005 HF Damping Module: I2t overload

Message value: %1
Message class: Power electronics faulted (5)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The filter capacitor of the HF Damping Module was overloaded (r5173 = 100 %).
- the filter resonance frequency was excessively excited.
- the HF Choke Module is defective.
Fault value (r0949, interpret decimal):
I2t [100 % = 16384].
Remedy: - reduce the motor power in the proximity of the fault-generating frequency.
- the system should not stay in a steady-state condition in the vicinity of the fault-generating frequency.
- check the HF Choke Module and if required replace.
Note:
HF Choke Module (reactor module)
HF Damping Module
See also: r5173 (HF Damping Module I2t overload)

F37012 HF Damping Module: Heat sink temperature sensor wire breakage

Message value: %1
Message class: General drive fault (19)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** LOCAL
Reaction: OFF1 (OFF2)
Acknowledge: IMMEDIATELY
Cause: The connection to one of the heat sink temperature sensors in the HF Damping Module is interrupted.
Fault value (r0949, interpret hexadecimal):
Bit 0: HF Damping Module
Bit 1: HF Choke Module
Remedy: Contact the manufacturer.
Note:
HF Choke Module (reactor module)
HF Damping Module

F37013 HF Damping Module: Heat sink temperature sensor short-circuit

Message value: %1
Message class: General drive fault (19)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** LOCAL
Reaction: OFF1 (OFF2)
Acknowledge: IMMEDIATELY
Cause: The heat sink temperature sensor in the HF Damping Module is short-circuited.
Fault value (r0949, interpret hexadecimal):
Bit 0: HF Damping Module
Bit 1: HF Choke Module

Remedy: Contact the manufacturer.
Note:
HF Choke Module (reactor module)
HF Damping Module

F37024 HF Damping Module: Overtemperature thermal model

Message value: -
Message class: Power electronics faulted (5)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The temperature difference between the heat sink and chip has exceeded the permissible limit value.
- the permissible load duty cycle was not maintained.
- insufficient cooling, fan failure.
- overload.
- ambient temperature too high.
- pulse frequency too high.

See also: r0037

Remedy:
- adapt the load duty cycle.
- check whether the fan is running.
- check the fan elements.
- check whether the ambient temperature is in the permissible range.
- check the motor load.
- reduce the pulse frequency if this is higher than the rated pulse frequency.

F37025 HF Damping Module: Chip overtemperature

Message value: %1
Message class: Power electronics faulted (5)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The chip temperature has exceeded the permissible limit value.
- the permissible load duty cycle was not maintained.
- insufficient cooling, fan failure.
- overload.
- ambient temperature too high.
- pulse frequency too high.

Fault value (r0949, interpret decimal):
Temperature difference between the heat sink and chip [0.01 °C].

Remedy:
- adapt the load duty cycle.
- check whether the fan is running.
- check the fan elements.
- check whether the ambient temperature is in the permissible range.
- check the motor load.
- reduce the pulse frequency if this is higher than the rated pulse frequency.

Note:
HF Damping Module
See also: r0037

A37034 HF Damping Module: Internal overtemperature

Message value: %1
Message class: Power electronics faulted (5)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The alarm threshold for internal overtemperature has been reached.
If the temperature inside the unit continues to increase, fault F37036 may be triggered.
- ambient temperature might be too high.
- insufficient cooling, fan failure.
Fault value (r0949, interpret binary):
Bit 0 = 1: Control electronics range.
Bit 1 = 1: Power electronics range.
Remedy: - check the ambient temperature.
- check the fan for the inside of the unit.
Note:
HF Damping Module

F37036 HF Damping Module: Internal overtemperature

Message value: %1
Message class: Power electronics faulted (5)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The temperature inside the HF Damping Module has exceeded the permissible temperature limit.
- insufficient cooling, fan failure.
- overload.
- ambient temperature too high.
Fault value (r0949, interpret binary):
Bit 0 = 1: Control electronics range.
Bit 1 = 1: Power electronics range.
Remedy: - check whether the fan is running.
- check the fan elements.
- check whether the ambient temperature is in the permissible range.
Notice:
This fault can only be acknowledged once the permissible temperature limit minus 5 K has been undershot.
Note:
HF Damping Module

F37040 HF Damping Module: 24 V undervoltage

Message value: %1
Message class: Supply voltage fault (undervoltage) (3)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: Failure of the 24 V power supply for the HF Damping Module.
- the undervoltage threshold was undershot for longer than 3 ms.
Fault value (r0949, interpret decimal):
24 V voltage [0.1 V].

Remedy:	- check the 24 V DC voltage supply of the HF Damping Module. - carry out a POWER ON (switch-off/switch-on) for the component. Note: HF Damping Module		

A37041 (F) HF Damping Module: 24 V undervoltage alarm

Message value:	%1		
Message class:	Supply voltage fault (undervoltage) (3)		
Drive object:	SERVO, SERVO_AC, SERVO_I_AC		
Component:	None	**Propagation:**	LOCAL
Reaction:	NONE		
Acknowledge:	NONE		
Cause:	Fault in the 24 V power supply for the HF Damping Module. - the 16 V threshold was undershot.. Alarm value (r2124, interpret decimal): 24 V voltage [0.1 V].		
Remedy:	- check the 24 V DC voltage supply of the HF Damping Module. - carry out a POWER ON (switch-off/switch-on) for the component. Note: HF Damping Module		
Reaction upon F:	NONE (OFF1, OFF2, OFF3)		
Acknowl. upon F:	IMMEDIATELY (POWER ON)		

F37043 HF Damping Module: 24 V overvoltage

Message value:	-		
Message class:	Supply voltage fault (overvoltage) (3)		
Drive object:	SERVO, SERVO_AC, SERVO_I_AC		
Component:	None	**Propagation:**	LOCAL
Reaction:	OFF2		
Acknowledge:	POWER ON		
Cause:	Overvoltage of the 24 V power supply for the HF Damping Module. - the 31.5 V threshold was exceeded for more than 3 ms.		
Remedy:	Check the 24 V DC voltage supply of the HF Damping Module. Note: HF Damping Module		

A37044 (F) HF Damping Module: 24 V overvoltage alarm

Message value:	-		
Message class:	Supply voltage fault (overvoltage) (3)		
Drive object:	SERVO, SERVO_AC, SERVO_I_AC		
Component:	None	**Propagation:**	LOCAL
Reaction:	NONE		
Acknowledge:	NONE		
Cause:	Fault in the 24 V power supply for the HF Damping Module. - the 32.0 V threshold was exceeded.		
Remedy:	Check the 24 V DC voltage supply of the HF Damping Module. Note: HF Damping Module		
Reaction upon F:	NONE (OFF1, OFF2, OFF3)		
Acknowl. upon F:	IMMEDIATELY (POWER ON)		

F37045 HF Damping Module: Supply undervoltage

Message value: %1
Message class: Supply voltage fault (undervoltage) (3)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: Power supply fault in the HF Damping Module.
- the voltage monitor signals an undervoltage fault on the module.
Fault value (r0949, interpret decimal):
24 V voltage [0.1 V].
Remedy: - check the 24 V DC voltage supply of the HF Damping Module.
- carry out a POWER ON (switch-off/switch-on) for the component.
- replace the module if necessary.
Note:
HF Damping Module

A37049 HF Damping Module: Internal fan defective

Message value: -
Message class: General drive fault (19)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The internal fan of the HF Damping Module has failed.
Remedy: Check the internal fan of the HF Damping Module and replace if necessary.

F37050 HF Damping Module: 24 V overvoltage fault

Message value: -
Message class: Supply voltage fault (overvoltage) (3)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: POWER ON
Cause: The voltage monitor signals an overvoltage fault on the module.
Remedy: - check the 24 V power supply.
- replace the module if necessary.

F37052 HF Damping Module: EEPROM data error

Message value: %1
Message class: Hardware/software error (1)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: POWER ON
Cause: EEPROM data error of the HF Damping Module.
Fault value (r0949, interpret hexadecimal):
0: The EEPROM data read in from the HF Damping Module is inconsistent.
1: EEPROM data is not compatible to the firmware of the HF Damping Module.
Additional values:
Only for internal Siemens troubleshooting.

Remedy:	For fault value = 0: Replace the HF Damping Module or update the EEPROM data. For fault value = 1: If necessary, upgrade the firmware to a later version. Note: HF Damping Module		

A37056 (F) HF Damping Module: Heat sink overtemperature

Message value:	%1		
Message class:	Power electronics faulted (5)		
Drive object:	SERVO, SERVO_AC, SERVO_I_AC		
Component:	None	**Propagation:**	LOCAL
Reaction:	NONE		
Acknowledge:	NONE		
Cause:	The temperature of the HF Damping Module heat sink has exceeded the permissible limit value. - insufficient cooling, fan failure. - overload. - ambient temperature too high. Alarm value (r2124, interpret decimal): Temperature [0.01 °C].		
Remedy:	- check whether the fan is running. - check the fan elements. - check whether the ambient temperature is in the permissible range. Notice: This fault can only be acknowledged after the alarm threshold for alarm A05000 has been undershot. Note: HF Damping Module		
Reaction upon F:	NONE (OFF1, OFF2, OFF3)		
Acknowl. upon F:	IMMEDIATELY		

A37310 (F) HF Choke Module: Overtemperature

Message value:	%1		
Message class:	Power electronics faulted (5)		
Drive object:	SERVO, SERVO_AC, SERVO_I_AC		
Component:	None	**Propagation:**	LOCAL
Reaction:	NONE		
Acknowledge:	NONE		
Cause:	The temperature of the HF Choke Module heat sink has exceeded the permissible limit value. - insufficient cooling, fan failure. - overload. - ambient temperature too high. Alarm value (r2124, interpret decimal): Temperature [0.01 °C].		
Remedy:	- check whether the fan is running. - check the fan elements. - check whether the ambient temperature is in the permissible range. Notice: This fault can only be acknowledged after the alarm threshold for alarm A05000 has been undershot. Note: HF Choke Module (reactor module)		
Reaction upon F:	NONE (OFF1, OFF2, OFF3)		
Acknowl. upon F:	IMMEDIATELY		

F37311 HF Choke Module: Heat sink overtemperature

Message value: %1
Message class: Power electronics faulted (5)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The temperature of the HF Choke Module heat sink has exceeded the permissible limit value.
- insufficient cooling, fan failure.
- overload.
- ambient temperature too high.
Fault value (r0949, interpret decimal):
Temperature [0.01 °C].
Remedy: - check whether the fan is running.
- check the fan elements.
- check whether the ambient temperature is in the permissible range.
- check the motor load.
Notice:
This fault can only be acknowledged after this alarm threshold for alarm A05000 has been undershot.
Note:
HF Choke Module (reactor module)

A37312 (F) HF Choke Module: Overtemperature or fan failure

Message value: -
Message class: Power electronics faulted (5)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The HF Choke Module signals an overtemperature or fan failure.
Fault F37313 is output if the alarm is present for longer than 30 s.
Remedy: - the cable between the HF Choke Module and the HF Damping Module has been withdrawn or is defective (X21).
- check the fan of the HF Choke Module and replace if necessary.
- check whether the ambient temperature is in the permissible range.
Note:
HF Choke Module (reactor module)
HF Damping Module
Reaction upon F: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY (POWER ON)

F37313 HF Choke Module: Overtemperature or fan failure

Message value: -
Message class: Power electronics faulted (5)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: Alarm A37312 to display overtemperature or fan failure in the HF Choke Module was signaled for longer than 30 s.
Remedy: - the cable between the HF Choke Module and the HF Damping Module has been withdrawn or is defective (X21).
- check the fan of the HF Choke Module and replace if necessary.
- check whether the ambient temperature is in the permissible range.
Note:
HF Choke Module (reactor module)
HF Damping Module

A37502 (F) HF Damping Module: Damping voltage too high

Message value: %1
Message class: General drive fault (19)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: The damping voltage has exceeded the alarm threshold.
- a motor harmonic with a high amplitude has coincided with the resonance frequency of the output filter.
- the current controller excessively excites the resonance of the output filter.
If the damping voltage exceeds an inadmissibly high value, F37002 is output.
Alarm value (r2124, interpret decimal):
Damping voltage in the case of a fault [mV].
See also: r5171 (HF damping voltage actual value)
Remedy: - reduce the motor power in the proximity of the fault-generating frequency.
- check the current controller and if required, adapt.
- if required, use another motor.
Note:
HF Damping Module
Reaction upon F: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

N37800 (F) HF Damping Module: Group signal

Message value: -
Message class: General drive fault (19)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The HF Damping Module has detected at least one fault.
Remedy: Evaluates other actual messages.
Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY

A37801 (F, N) HF Damping Module: Sign-of-life missing

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: There is a DRIVE-CLiQ communication error between the Control Unit and the HF Damping Module.
Fault cause:
10 (= 0A hex):
The sign-of-life bit in the receive telegram is not set.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: - check the DRIVE-CLiQ connection.
- replace the component involved.
Note:
HF Damping Module

Reaction upon F:	NONE
Acknowl. upon F:	IMMEDIATELY
Reaction upon N:	NONE
Acknowl. upon N:	NONE

F37802 (N, A) HF Damping Module: time slice overflow

Message value: -
Message class: Hardware/software error (1)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: A time slice overflow has occurred.
Remedy:
- carry out a POWER ON (switch-off/switch-on) for all components.
- upgrade firmware to later version.
- contact Technical Support.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F37804 (N, A) HF Damping Module: CRC

Message value: %1
Message class: Hardware/software error (1)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** LOCAL
Reaction: OFF2 (OFF1, OFF3)
Acknowledge: IMMEDIATELY
Cause: A checksum error (CRC error) has occurred for the HF Damping Module.
Remedy:
- carry out a POWER ON (switch-off/switch-on) for all components.
- upgrade firmware to later version.
- contact Technical Support.

Note:
HF Damping Module

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F37805 HF Damping Module: EEPROM checksum incorrect

Message value: %1
Message class: Hardware/software error (1)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: Internal parameter data is corrupted.
Fault value (r0949, interpret hexadecimal):
01: EEPROM access error.
02: Too many blocks in the EEPROM.
Remedy: Replace the module.
Note:
HF Damping Module

F37820	**HF Damping Module: Telegram error**		
Message value:	Component number: %1, fault cause: %2		
Message class:	Internal (DRIVE-CLiQ) communication error (12)		
Drive object:	SERVO, SERVO_AC, SERVO_I_AC		
Component:	None	**Propagation:**	LOCAL
Reaction:	NONE		
Acknowledge:	IMMEDIATELY		

Cause:

A DRIVE-CLiQ communication error has occurred from the Control Unit to the damping module.

Fault cause:

1 (= 01 hex):

Checksum error (CRC error).

2 (= 02 hex):

Telegram is shorter than specified in the length byte or in the receive list.

3 (= 03 hex):

Telegram is longer than specified in the length byte or in the receive list.

4 (= 04 hex):

The length of the receive telegram does not match the receive list.

5 (= 05 hex):

The type of the receive telegram does not match the receive list.

6 (= 06 hex):

The address of the component in the telegram and in the receive list do not match.

7 (= 07 hex):

A SYNC telegram is expected - but the received telegram is not a SYNC telegram.

8 (= 08 hex):

No SYNC telegram is expected - but the received telegram is one.

9 (= 09 hex):

The error bit in the receive telegram is set.

16 (= 10 hex):

The receive telegram is too early.

Note regarding the message value:

The individual information is coded as follows in the message value (r0949/r2124):

0000yyxx hex: yy = component number, xx = error cause

Remedy:

- carry out a POWER ON (switch-off/switch-on).
- check the electrical cabinet design and cable routing for EMC compliance
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).

Note:

HF Damping Module

F37835	**HF Damping Module: Cyclic data transmission error**		
Message value:	Component number: %1, fault cause: %2		
Message class:	Internal (DRIVE-CLiQ) communication error (12)		
Drive object:	SERVO, SERVO_AC, SERVO_I_AC		
Component:	None	**Propagation:**	LOCAL
Reaction:	NONE		
Acknowledge:	IMMEDIATELY		

Cause:

There is a DRIVE-CLiQ communication error between the Control Unit and the HF Damping Module. The nodes do not send and receive in synchronism.

Fault cause:

33 (= 21 hex):

The cyclic telegram has not been received.

34 (= 22 hex):

Timeout in the telegram receive list.

64 (= 40 hex):

Timeout in the telegram send list.

Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy: - carry out a POWER ON.
- replace the component involved.
Note:
HF Damping Module

F37836 HF Damping Module: Send error for DRIVE-CLiQ data

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: There is a DRIVE-CLiQ communication error between the Control Unit and the HF Damping Module. Data were not able to be sent.
Fault cause:
65 (= 41 hex):
Telegram type does not match send list.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: Carry out a POWER ON.
Note:
HF Damping Module

F37837 HF Damping Module: Component faulted

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: Fault detected on the DRIVE-CLiQ component concerned. Faulty hardware cannot be excluded.
Fault cause:
32 (= 20 hex):
Error in the telegram header.
35 (= 23 hex):
Receive error: The telegram buffer memory contains an error.
66 (= 42 hex):
Send error: The telegram buffer memory contains an error.
67 (= 43 hex):
Send error: The telegram buffer memory contains an error.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: - check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
- check the electrical cabinet design and cable routing for EMC compliance
- if required, use another DRIVE-CLiQ socket (p9904).
- replace the component involved.
Note:
HF Damping Module

F37845 HF Damping Module: Cyclic data transmission error

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: There is a DRIVE-CLiQ communication error between the Control Unit and the HF Damping Module.
Fault cause:
11 (= 0B hex):
Synchronization error during alternating cyclic data transfer.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: Carry out a POWER ON.
Note:
HF Damping Module

F37850 HF Damping Module: Internal software error

Message value: %1
Message class: Hardware/software error (1)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** LOCAL
Reaction: OFF1 (NONE, OFF2, OFF3)
Acknowledge: POWER ON
Cause: An internal software error in the HF Damping Module has occurred.
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.
Remedy: - Replace the HF Damping Module
- if required, upgrade the firmware in the HF Damping Module.
- contact Technical Support.
Note:
HF Damping Module

F37851 HF Damping Module (CU): Sign-of-life missing

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: DRIVE-CLiQ communication error from the HF Damping Module to the Control Unit.
The DRIVE-CLiQ component did not set the sign-of-life to the Control Unit.
Fault cause:
10 (= 0A hex):
The sign-of-life bit in the receive telegram is not set.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: Upgrade the firmware of the component involved.
Note:
HF Damping Module

F37860	**HF Damping Module (CU): Telegram error**		
Message value:	Component number: %1, fault cause: %2		
Message class:	Internal (DRIVE-CLiQ) communication error (12)		
Drive object:	SERVO, SERVO_AC, SERVO_I_AC		
Component:	None	**Propagation:**	LOCAL
Reaction:	NONE		
Acknowledge:	IMMEDIATELY		

Cause:

DRIVE-CLiQ communication error from the HF Damping Module to the Control Unit.

Fault cause:

1 (= 01 hex):

Checksum error (CRC error).

2 (= 02 hex):

Telegram is shorter than specified in the length byte or in the receive list.

3 (= 03 hex):

Telegram is longer than specified in the length byte or in the receive list.

4 (= 04 hex):

The length of the receive telegram does not match the receive list.

5 (= 05 hex):

The type of the receive telegram does not match the receive list.

6 (= 06 hex):

The address of the power unit in the telegram and in the receive list do not match.

9 (= 09 hex):

The DRIVE-CLiQ communication from the DRIVE-CLiQ component involved to the Control Unit signals that the supply voltage has failed.

16 (= 10 hex):

The receive telegram is too early.

17 (= 11 hex):

CRC error and the receive telegram is too early.

18 (= 12 hex):

The telegram is shorter than that specified in the length byte or in the receive list and the receive telegram is too early.

19 (= 13 hex):

The telegram is longer than that specified in the length byte or in the receive list and the receive telegram is too early.

20 (= 14 hex):

The length of the receive telegram does not match the receive list and the receive telegram is too early.

21 (= 15 hex):

The type of the receive telegram does not match the receive list and the receive telegram is too early.

22 (= 16 hex):

The address of the power unit in the telegram and in the receive list does not match and the receive telegram is too early.

25 (= 19 hex):

The error bit in the receive telegram is set and the receive telegram is too early.

Note regarding the message value:

The individual information is coded as follows in the message value (r0949/r2124):

0000yyxx hex: yy = component number, xx = error cause

Remedy:

- carry out a POWER ON (switch-off/switch-on).
- check the electrical cabinet design and cable routing for EMC compliance
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).

Note:

HF Damping Module

F37875 HF Damping Module: power supply voltage failed

Message value: Component number: %1, fault cause: %2
Message class: Supply voltage fault (undervoltage) (3)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** LOCAL
Reaction: OFF1 (OFF2)
Acknowledge: IMMEDIATELY
Cause: The DRIVE-CLiQ communication from the DRIVE-CLiQ component involved to the Control Unit signals that the supply voltage has failed.

Fault cause:

9 (= 09 hex):

The power supply voltage for the components has failed.

Note regarding the message value:

The individual information is coded as follows in the message value (r0949/r2124):

0000yyxx hex: yy = component number, xx = error cause

Remedy: - carry out a POWER ON (switch-off/switch-on).

- check the power supply voltage wiring for the DRIVE-CLiQ component (interrupted cable, contacts, ...).

- check the dimensioning of the power supply for the DRIVE-CLiQ component.

F37885 HF Damping Module (CU): Cyclic data transmission error

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: DRIVE-CLiQ communication error from the damping module to the Control Unit.

The nodes do not send and receive in synchronism.

Fault cause:

26 (= 1A hex):

Sign-of-life bit in the receive telegram not set and the receive telegram is too early.

33 (= 21 hex):

The cyclic telegram has not been received.

34 (= 22 hex):

Timeout in the telegram receive list.

64 (= 40 hex):

Timeout in the telegram send list.

98 (= 62 hex):

Error at the transition to cyclic operation.

Note regarding the message value:

The individual information is coded as follows in the message value (r0949/r2124):

0000yyxx hex: yy = component number, xx = error cause

Remedy: - check the supply voltage of the component involved.

- carry out a POWER ON.

- replace the component involved.

Note:

HF Damping Module

F37886	**HF Damping Module (CU): Error when sending DRIVE-CLiQ data**		
Message value:	Component number: %1, fault cause: %2		
Message class:	Internal (DRIVE-CLiQ) communication error (12)		
Drive object:	SERVO, SERVO_AC, SERVO_I_AC		
Component:	None	**Propagation:**	LOCAL
Reaction:	NONE		
Acknowledge:	IMMEDIATELY		
Cause:	DRIVE-CLiQ communication error from the HF Damping Module to the Control Unit. Data were not able to be sent. Fault cause: 65 (= 41 hex): Telegram type does not match send list. Note regarding the message value: The individual information is coded as follows in the message value (r0949/r2124): 0000yyxx hex: yy = component number, xx = error cause		
Remedy:	Carry out a POWER ON. Note: HF Damping Module		

F37887	**HF Damping Module (CU): Component faulted**		
Message value:	Component number: %1, fault cause: %2		
Message class:	Internal (DRIVE-CLiQ) communication error (12)		
Drive object:	SERVO, SERVO_AC, SERVO_I_AC		
Component:	None	**Propagation:**	LOCAL
Reaction:	NONE		
Acknowledge:	IMMEDIATELY		
Cause:	Fault detected on the DRIVE-CLiQ component (HF Damping Module) involved. Faulty hardware cannot be excluded. Fault cause: 32 (= 20 hex): Error in the telegram header. 35 (= 23 hex): Receive error: The telegram buffer memory contains an error. 66 (= 42 hex): Send error: The telegram buffer memory contains an error. 67 (= 43 hex): Send error: The telegram buffer memory contains an error. 96 (= 60 hex): Response received too late during runtime measurement. 97 (= 61 hex): Time taken to exchange characteristic data too long. Note regarding the message value: The individual information is coded as follows in the message value (r0949/r2124): 0000yyxx hex: yy = component number, xx = error cause		
Remedy:	- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...). - check the electrical cabinet design and cable routing for EMC compliance - if required, use another DRIVE-CLiQ socket (p9904). - replace the component involved. Note: HF Damping Module		

F37895 HF Damping Module (CU): Alternating cyclic data transmission error

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: DRIVE-CLiQ communication error from the HF Damping Module to the Control Unit.

Fault cause:

11 (= 0B hex):

Synchronization error during alternating cyclic data transfer.

Note regarding the message value:

The individual information is coded as follows in the message value (r0949/r2124):

0000yyxx hex: yy = component number, xx = error cause

Remedy: Carry out a POWER ON.

Note:

HF Damping Module

F37896 HF Damping Module (CU): Component properties inconsistent

Message value: Component number: %1
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The properties of the DRIVE-CLiQ component (HF Damping Module), specified by the fault value, have changed in an incompatible fashion with respect to the properties when booted. One cause can be, e.g. that a DRIVE-CLiQ cable or DRIVE-CLiQ component has been replaced.

Fault value (r0949, interpret decimal):

Component number.

Remedy: - carry out a POWER ON.

- when a component is replaced, the same component type and if possible the same firmware version should be used.

- when a cable is replaced, only cables whose length is the same as or as close as possible to the length of the original cables should be used (ensure compliance with the maximum cable length).

Note:

HF Damping Module

F37899 (N, A) HF Damping Module: Unknown fault

Message value: New message: %1
Message class: General drive fault (19)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** LOCAL
Reaction: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: A fault has occurred on the HF Damping Module that cannot be interpreted by the Control Unit firmware.

This can occur if the firmware on this component is more recent than the firmware on the Control Unit.

Fault value (r0949, interpret decimal):

Fault number.

Note:

If required, the significance of this new fault can be read about in a more recent description of the Control Unit.

Remedy: - replace the firmware on the HF Damping Module by an older firmware version (r0168).

- upgrade the firmware on the Control Unit (r0018).

Note:

HF Damping Module

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F37903 HF Damping Module: I2C bus error occurred

Message value: %1
Message class: Hardware/software error (1)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** LOCAL
Reaction: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowledge: IMMEDIATELY
Cause: Communications error with an EEPROM or an analog/digital converter.
Fault value (r0949, interpret hexadecimal):
80000000 hex:
- internal software error.
00000001 hex ... 0000FFFF hex:
- module fault.

Remedy: For fault value = 80000000 hex:
- upgrade firmware to later version.
For fault value = 00000001 hex ... 0000FFFF hex:
- replace the module.
Note:
HF Damping Module

F37950 HF Damping Module: Internal software error

Message value: %1
Message class: Hardware/software error (1)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: POWER ON
Cause: An internal software error has occurred.
Fault value (r0949, interpret decimal):
Information about the fault source.
Only for internal Siemens troubleshooting.
Remedy: - if necessary, upgrade the firmware in the HF Damping Module to a later version.
- contact Technical Support.
Note:
HF Damping Module

A37999 (F, N) HF Damping Module: Unknown alarm

Message value: New message: %1
Message class: General drive fault (19)
Drive object: SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: An alarm has occurred on the HF Damping Module that cannot be interpreted by the Control Unit firmware.
This can occur if the firmware on this component is more recent than the firmware on the Control Unit.
Alarm value (r2124, interpret decimal):
Alarm number.
Note:
If required, the significance of this new alarm can be read about in a more recent description of the Control Unit.

Remedy: - replace the firmware on the HF Damping Module by an older firmware version (r0168).
- upgrade the firmware on the Control Unit (r0018).
Note:
HF Damping Module

Reaction upon F: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

F40000 Fault at DRIVE-CLiQ socket X100

Message value: %1
Message class: General drive fault (19)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: A fault has occurred at the drive object at the DRIVE-CLiQ socket X100.
Fault value (r0949, interpret decimal):
First fault that has occurred for this drive object.
Remedy: Evaluate the fault buffer of the specified object.

F40001 Fault at DRIVE-CLiQ socket X101

Message value: %1
Message class: General drive fault (19)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: A fault has occurred at the drive object at the DRIVE-CLiQ socket X101.
Fault value (r0949, interpret decimal):
First fault that has occurred for this drive object.
Remedy: Evaluate the fault buffer of the specified object.

F40002 Fault at DRIVE-CLiQ socket X102

Message value: %1
Message class: General drive fault (19)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: A fault has occurred at the drive object at the DRIVE-CLiQ socket X102.
Fault value (r0949, interpret decimal):
First fault that has occurred for this drive object.
Remedy: Evaluate the fault buffer of the specified object.

F40003 Fault at DRIVE-CLiQ socket X103

Message value: %1
Message class: General drive fault (19)
Drive object: All objects
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: A fault has occurred at the drive object at the DRIVE-CLiQ socket X103.
Fault value (r0949, interpret decimal):
First fault that has occurred for this drive object.
Remedy: Evaluate the fault buffer of the specified object.

F40004	**Fault at DRIVE-CLiQ socket X104**		
Message value:	%1		
Message class:	General drive fault (19)		
Drive object:	All objects		
Component:	None	**Propagation:**	LOCAL
Reaction:	NONE		
Acknowledge:	IMMEDIATELY		
Cause:	A fault has occurred at the drive object at the DRIVE-CLiQ socket X104. Fault value (r0949, interpret decimal): First fault that has occurred for this drive object.		
Remedy:	Evaluate the fault buffer of the specified object.		

F40005	**Fault at DRIVE-CLiQ socket X105**		
Message value:	%1		
Message class:	General drive fault (19)		
Drive object:	All objects		
Component:	None	**Propagation:**	LOCAL
Reaction:	NONE		
Acknowledge:	IMMEDIATELY		
Cause:	A fault has occurred at the drive object at the DRIVE-CLiQ socket X105. Fault value (r0949, interpret decimal): First fault that has occurred for this drive object.		
Remedy:	Evaluate the fault buffer of the specified object.		

A40100	**Alarm at DRIVE-CLiQ socket X100**		
Message value:	%1		
Message class:	General drive fault (19)		
Drive object:	All objects		
Component:	None	**Propagation:**	LOCAL
Reaction:	NONE		
Acknowledge:	NONE		
Cause:	An alarm has occurred at the drive object at the DRIVE-CLiQ socket X100. Alarm value (r2124, interpret decimal): First alarm that has occurred for this drive object.		
Remedy:	Evaluate the alarm buffer of the specified object.		

A40101	**Alarm at DRIVE-CLiQ socket X101**		
Message value:	%1		
Message class:	General drive fault (19)		
Drive object:	All objects		
Component:	None	**Propagation:**	LOCAL
Reaction:	NONE		
Acknowledge:	NONE		
Cause:	An alarm has occurred at the drive object at the DRIVE-CLiQ socket X101. Alarm value (r2124, interpret decimal): First alarm that has occurred for this drive object.		
Remedy:	Evaluate the alarm buffer of the specified object.		

A40102	**Alarm at DRIVE-CLiQ socket X102**		
Message value:	%1		
Message class:	General drive fault (19)		
Drive object:	All objects		
Component:	None	**Propagation:**	LOCAL
Reaction:	NONE		
Acknowledge:	NONE		
Cause:	An alarm has occurred at the drive object at the DRIVE-CLiQ socket X102. Alarm value (r2124, interpret decimal): First alarm that has occurred for this drive object.		
Remedy:	Evaluate the alarm buffer of the specified object.		

A40103	**Alarm at DRIVE-CLiQ socket X103**		
Message value:	%1		
Message class:	General drive fault (19)		
Drive object:	All objects		
Component:	None	**Propagation:**	LOCAL
Reaction:	NONE		
Acknowledge:	NONE		
Cause:	An alarm has occurred at the drive object at the DRIVE-CLiQ socket X103. Alarm value (r2124, interpret decimal): First alarm that has occurred for this drive object.		
Remedy:	Evaluate the alarm buffer of the specified object.		

A40104	**Alarm at DRIVE-CLiQ socket X104**		
Message value:	%1		
Message class:	General drive fault (19)		
Drive object:	All objects		
Component:	None	**Propagation:**	LOCAL
Reaction:	NONE		
Acknowledge:	NONE		
Cause:	An alarm has occurred at the drive object at the DRIVE-CLiQ socket X104. Alarm value (r2124, interpret decimal): First alarm that has occurred for this drive object.		
Remedy:	Evaluate the alarm buffer of the specified object.		

A40105	**Alarm at DRIVE-CLiQ socket X105**		
Message value:	%1		
Message class:	General drive fault (19)		
Drive object:	All objects		
Component:	None	**Propagation:**	LOCAL
Reaction:	NONE		
Acknowledge:	NONE		
Cause:	An alarm has occurred at the drive object at the DRIVE-CLiQ socket X105. Alarm value (r2124, interpret decimal): First alarm that has occurred for this drive object.		
Remedy:	Evaluate the alarm buffer of the specified object.		

F40799	**CX32: Configured transfer end time exceeded**		
Message value:	-		
Message class:	Internal (DRIVE-CLiQ) communication error (12)		
Drive object:	All objects		
Component:	None	**Propagation:**	LOCAL
Reaction:	NONE		
Acknowledge:	IMMEDIATELY		
Cause:	The configured transfer end time when transferring the cyclic actual values was exceeded.		
Remedy:	- carry out a POWER ON (switch-off/switch-on) for all components. - contact Technical Support.		

F40801	**CX32 DRIVE-CLiQ: Sign-of-life missing**		
Message value:	Component number: %1, fault cause: %2		
Message class:	Internal (DRIVE-CLiQ) communication error (12)		
Drive object:	All objects		
Component:	Control Unit (CU)	**Propagation:**	LOCAL
Reaction:	OFF2		
Acknowledge:	IMMEDIATELY		
Cause:	A DRIVE-CLiQ communications error has occurred from the Control Unit to the controller extension involved. Fault cause: 10 (= 0A hex): The sign-of-life bit in the receive telegram is not set. Note regarding the message value: The individual information is coded as follows in the message value (r0949/r2124): 0000yyxx hex: yy = component number, xx = error cause		
Remedy:	- carry out a POWER ON (switch-off/switch-on). - replace the component involved.		

F40820	**CX32 DRIVE-CLiQ: Telegram error**		
Message value:	Component number: %1, fault cause: %2		
Message class:	Internal (DRIVE-CLiQ) communication error (12)		
Drive object:	All objects		
Component:	DRIVE-CLiQ Hub Module (Hub)	**Propagation:**	LOCAL
Reaction:	OFF2		
Acknowledge:	IMMEDIATELY		
Cause:	A DRIVE-CLiQ communications error has occurred from the Control Unit to the controller extension involved. Fault cause: 1 (= 01 hex): Checksum error (CRC error). 2 (= 02 hex): Telegram is shorter than specified in the length byte or in the receive list. 3 (= 03 hex): Telegram is longer than specified in the length byte or in the receive list. 4 (= 04 hex): The length of the receive telegram does not match the receive list. 5 (= 05 hex): The type of the receive telegram does not match the receive list. 6 (= 06 hex): The address of the component in the telegram and in the receive list do not match. 7 (= 07 hex): A SYNC telegram is expected - but the received telegram is not a SYNC telegram. 8 (= 08 hex): No SYNC telegram is expected - but the received telegram is one. 9 (= 09 hex): The error bit in the receive telegram is set.		

	16 (= 10 hex):		
	The receive telegram is too early.		
	Note regarding the message value:		
	The individual information is coded as follows in the message value (r0949/r2124):		
	0000yyxx hex: yy = component number, xx = error cause		
Remedy:	- carry out a POWER ON (switch-off/switch-on).		
	- check the electrical cabinet design and cable routing for EMC compliance		
	- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).		

F40825	**CX32 DRIVE-CLiQ: Supply voltage failed**		
Message value:	Component number: %1, fault cause: %2		
Message class:	Supply voltage fault (undervoltage) (3)		
Drive object:	All objects		
Component:	DRIVE-CLiQ Hub Module (Hub)	**Propagation:**	LOCAL
Reaction:	OFF1 (OFF2)		
Acknowledge:	IMMEDIATELY		
Cause:	The DRIVE-CLiQ communication from the DRIVE-CLiQ component involved to the Control Unit signals that the supply voltage has failed.		
	Fault cause:		
	9 (= 09 hex):		
	The power supply voltage for the components has failed.		
	Note regarding the message value:		
	The individual information is coded as follows in the message value (r0949/r2124):		
	0000yyxx hex: yy = component number, xx = error cause		
Remedy:	- carry out a POWER ON (switch-off/switch-on).		
	- check the supply voltage wiring of the DRIVE-CLiQ component (interrupted cable, contacts, ...).		
	- check the dimensioning of the DRIVE-CLiQ component power supply.		

F40835	**CX32 DRIVE-CLiQ: Cyclic data transfer error**		
Message value:	Component number: %1, fault cause: %2		
Message class:	Internal (DRIVE-CLiQ) communication error (12)		
Drive object:	All objects		
Component:	DRIVE-CLiQ Hub Module (Hub)	**Propagation:**	LOCAL
Reaction:	OFF2		
Acknowledge:	IMMEDIATELY		
Cause:	A DRIVE-CLiQ communications error has occurred from the Control Unit to the controller extension involved. The nodes do not send and receive in synchronism.		
	Fault cause:		
	33 (= 21 hex):		
	The cyclic telegram has not been received.		
	34 (= 22 hex):		
	Timeout in the telegram receive list.		
	64 (= 40 hex):		
	Timeout in the telegram send list.		
	Note regarding the message value:		
	The individual information is coded as follows in the message value (r0949/r2124):		
	0000yyxx hex: yy = component number, xx = error cause		
Remedy:	- carry out a POWER ON (switch-off/switch-on).		
	- replace the component involved.		

F40836 CX32 DRIVE-CLiQ: Send error for DRIVE-CLiQ data

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: All objects
Component: DRIVE-CLiQ Hub Module (Hub) **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communications error has occurred from the Control Unit to the controller extension involved. Data were not able to be sent.

Fault cause:

65 (= 41 hex):

Telegram type does not match send list.

Note regarding the message value:

The individual information is coded as follows in the message value (r0949/r2124):

0000yyxx hex: yy = component number, xx = error cause

Remedy: Carry out a POWER ON (switch-off/switch-on).

F40837 CX32 DRIVE-CLiQ: Component fault

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: All objects
Component: DRIVE-CLiQ Hub Module (Hub) **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: Fault detected on the DRIVE-CLiQ component concerned. Faulty hardware cannot be excluded.

Fault cause:

32 (= 20 hex):

Error in the telegram header.

35 (= 23 hex):

Receive error: The telegram buffer memory contains an error.

66 (= 42 hex):

Send error: The telegram buffer memory contains an error.

67 (= 43 hex):

Send error: The telegram buffer memory contains an error.

Note regarding the message value:

The individual information is coded as follows in the message value (r0949/r2124):

0000yyxx hex: yy = component number, xx = error cause

Remedy:
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
- check the electrical cabinet design and cable routing for EMC compliance
- if required, use another DRIVE-CLiQ socket (p9904).
- replace the component involved.

F40845 CX32 DRIVE-CLiQ: Cyclic data transfer error

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: All objects
Component: DRIVE-CLiQ Hub Module (Hub) **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communications error has occurred from the Control Unit to the controller extension involved.

Fault cause:

11 (= 0B hex):

Synchronization error during alternating cyclic data transfer.

	Note regarding the message value: The individual information is coded as follows in the message value (r0949/r2124): 0000yyxx hex: yy = component number, xx = error cause
Remedy:	Carry out a POWER ON (switch-off/switch-on).

F40851 CX32 DRIVE-CLiQ (CU): Sign-of-life missing

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: All objects
Component: DRIVE-CLiQ Hub Module (Hub) **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communications error has occurred from the controller extension involved to the Control Unit.
The DRIVE-CLiQ component did not set the sign-of-life to the Control Unit.
Fault cause:
10 (= 0A hex):
The sign-of-life bit in the receive telegram is not set.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: Upgrade the firmware of the component involved.

F40860 CX32 DRIVE-CLiQ (CU): Telegram error

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: All objects
Component: DRIVE-CLiQ Hub Module (Hub) **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communications error has occurred from the controller extension involved to the Control Unit.
Fault cause:
1 (= 01 hex):
Checksum error (CRC error).
2 (= 02 hex):
Telegram is shorter than specified in the length byte or in the receive list.
3 (= 03 hex):
Telegram is longer than specified in the length byte or in the receive list.
4 (= 04 hex):
The length of the receive telegram does not match the receive list.
5 (= 05 hex):
The type of the receive telegram does not match the receive list.
6 (= 06 hex):
The address of the power unit in the telegram and in the receive list do not match.
9 (= 09 hex):
The error bit in the receive telegram is set.
16 (= 10 hex):
The receive telegram is too early.
17 (= 11 hex):
CRC error and the receive telegram is too early.
18 (= 12 hex):
The telegram is shorter than that specified in the length byte or in the receive list and the receive telegram is too early.
19 (= 13 hex):
The telegram is longer than that specified in the length byte or in the receive list and the receive telegram is too early.

20 (= 14 hex):
The length of the receive telegram does not match the receive list and the receive telegram is too early.
21 (= 15 hex):
The type of the receive telegram does not match the receive list and the receive telegram is too early.
22 (= 16 hex):
The address of the power unit in the telegram and in the receive list does not match and the receive telegram is too early.
25 (= 19 hex):
The error bit in the receive telegram is set and the receive telegram is too early.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy: - carry out a POWER ON (switch-off/switch-on).
- check the electrical cabinet design and cable routing for EMC compliance
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).

F40875 CX32 DRIVE-CLiQ (CU): Supply voltage failed

Message value: Component number: %1, fault cause: %2
Message class: Supply voltage fault (undervoltage) (3)
Drive object: All objects
Component: DRIVE-CLiQ Hub Module (Hub) **Propagation:** LOCAL
Reaction: OFF1 (OFF2)
Acknowledge: IMMEDIATELY
Cause: The DRIVE-CLiQ communication from the DRIVE-CLiQ component involved to the Control Unit signals that the supply voltage has failed.
Fault cause:
9 (= 09 hex):
The power supply voltage for the components has failed.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy: - carry out a POWER ON (switch-off/switch-on).
- check the supply voltage wiring of the DRIVE-CLiQ component (interrupted cable, contacts, ...).
- check the dimensioning of the DRIVE-CLiQ component power supply.

F40885 CX32 DRIVE-CLiQ (CU): Cyclic data transfer error

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: All objects
Component: DRIVE-CLiQ Hub Module (Hub) **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communications error has occurred from the controller extension involved to the Control Unit.
The nodes do not send and receive in synchronism.
Fault cause:
26 (= 1A hex):
Sign-of-life bit in the receive telegram not set and the receive telegram is too early.
33 (= 21 hex):
The cyclic telegram has not been received.
34 (= 22 hex):
Timeout in the telegram receive list.
64 (= 40 hex):
Timeout in the telegram send list.
98 (= 62 hex):
Error at the transition to cyclic operation.

Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy: - check the power supply voltage of the component involved.
- carry out a POWER ON (switch-off/switch-on).
- replace the component involved.

F40886 CX32 DRIVE-CLiQ (CU): Error when sending DRIVE-CLiQ data

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: All objects
Component: DRIVE-CLiQ Hub Module (Hub) **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communications error has occurred from the controller extension involved to the Control Unit.
Data were not able to be sent.
Fault cause:
65 (= 41 hex):
Telegram type does not match send list.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: Carry out a POWER ON (switch-off/switch-on).

F40887 CX32 DRIVE-CLiQ (CU): Component fault

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: All objects
Component: DRIVE-CLiQ Hub Module (Hub) **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: Fault detected on the DRIVE-CLiQ component concerned. Faulty hardware cannot be excluded.
Fault cause:
32 (= 20 hex):
Error in the telegram header.
35 (= 23 hex):
Receive error: The telegram buffer memory contains an error.
66 (= 42 hex):
Send error: The telegram buffer memory contains an error.
67 (= 43 hex):
Send error: The telegram buffer memory contains an error.
96 (= 60 hex):
Response received too late during runtime measurement.
97 (= 61 hex):
Time taken to exchange characteristic data too long.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: - check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
- check the electrical cabinet design and cable routing for EMC compliance
- if required, use another DRIVE-CLiQ socket (p9904).
- replace the component involved.

F40895 CX32 DRIVE-CLiQ (CU): Cyclic data transfer error

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: All objects
Component: DRIVE-CLiQ Hub Module (Hub) **Propagation:** LOCAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communications error has occurred from the controller extension involved to the Control Unit.
Fault cause:
11 (= 0B hex):
Synchronization error during alternating cyclic data transfer.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: Carry out a POWER ON (switch-off/switch-on).

F49150 Cooling unit: Fault occurred

Message value: -
Message class: Auxiliary unit faulted (20)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The cooling unit signals a general fault.
Remedy: - check the wiring between the cooling unit and the input terminal (Terminal Module).
- check the external control device for the cooling unit.
See also: p0266 (Cooling unit feedback signals signal source)

F49151 Cooling unit: Conductivity has exceeded the fault threshold

Message value: -
Message class: Auxiliary unit faulted (20)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The conductivity of the cooling liquid has exceeded the selected fault threshold (p0269[2]).
See also: p0261 (Cooling unit starting time 2), p0262 (Cooling unit fault conductivity delay time), p0266 (Cooling unit feedback signals signal source)
Remedy: Check the device to de-ionize the cooling liquid.

F49152 Cooling unit: ON command feedback signal missing

Message value: -
Message class: Auxiliary unit faulted (20)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The feedback signal of the ON command of the cooling unit is missing.
- after the ON command, the feedback signal has not been received within the selected starting time (p0260).
- the feedback signal has failed in operation.
- the cooling system was stopped by an external signal.
See also: p0260 (Cooling unit starting time 1), r0267 (Cooling unit status word)
Remedy: - check the wiring between the cooling unit and the input terminal (Terminal Module).
- check the wiring between the output terminal (Terminal Module) and the cooling system.
- check the external control device for the cooling unit.

F49153 Cooling unit: Liquid flow too low

Message value: -
Message class: Auxiliary unit faulted (20)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The drive converter cooling unit signals that the cooling liquid flow is too low.

- after the ON command, the feedback signal has not been received within the selected starting time (p0260).
- in operation, the feedback signal has failed for longer than the permitted failure time (p0263).

See also: p0260 (Cooling unit starting time 1), p0263 (Cooling unit fault liquid flow delay time), r0267 (Cooling unit status word)

Remedy: - check the wiring between the cooling unit and the input terminal (Terminal Module).
- check the external control device for the cooling unit.

F49154 (A) Cooling unit: Liquid leak is present

Message value: -
Message class: Auxiliary unit faulted (20)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The liquid leakage monitoring function has responded.

Caution:

If this fault is reparameterized as an alarm, then using other monitoring functions it must be ensured that when cooling water is lost, the drive is switched off!

See also: r0267 (Cooling unit status word)

Remedy: - check the cooling system for leaks in the cooling circuit.
- check the wiring of the input terminal (Terminal Module) used to monitor leaking fluid.

Reaction upon A: NONE
Acknowl. upon A: NONE

F49155 Cooling unit: Power Stack Adapter, firmware version too old

Message value: -
Message class: Auxiliary unit faulted (20)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: POWER ON
Cause: The firmware version in the Power Stack Adapter (PSA) is too old and does not support the liquid cooling.
Remedy: Upgrade the firmware. Check EEPROM data.

F49156 Cooling unit: Cooling liquid temperature has exceeded the fault threshold

Message value: -
Message class: Auxiliary unit faulted (20)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The cooling liquid intake temperature has exceeded the specified fault threshold.

Note:

The value for the fault threshold depends on the power unit (hardware description data, e.g. 52 ... 55 °C).

Remedy: Check the cooling system and the ambient conditions.

A49170 Cooling unit: Alarm has occurred

Message value: -
Message class: Auxiliary unit faulted (20)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The cooling unit signals a general alarm.
Remedy: - check the wiring between the cooling unit and the input terminal (Terminal Module).
- check the external control device for the cooling unit.

A49171 (N) Cooling unit: Conductivity has exceeded the alarm threshold

Message value: -
Message class: Auxiliary unit faulted (20)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The conductivity of the cooling liquid has exceeded the selected alarm threshold (p0269[1]).
Note:
The threshold cannot be set higher than the fault threshold specified in the equipment description.
Remedy: Check the device to de-ionize the cooling liquid.
Reaction upon N: NONE
Acknowl. upon N: NONE

A49171 (N) Cooling unit: Conductivity has exceeded the alarm threshold

Message value: -
Message class: Auxiliary unit faulted (20)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: Conductivity monitoring is set for the cooling liquid (r0267.7, from p0266[7]).
See also: p0261 (Cooling unit starting time 2), p0262 (Cooling unit fault conductivity delay time), p0266 (Cooling unit feedback signals signal source), r0267 (Cooling unit status word)
Remedy: Check the device to de-ionize the cooling liquid.
Reaction upon N: NONE
Acknowl. upon N: NONE

A49172 Cooling unit: Conductivity actual value is not valid

Message value: -
Message class: Auxiliary unit faulted (20)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: When monitoring the conductivity of the cooling liquid, there is a fault in the wiring or in the sensor.
Remedy: - check the wiring between the cooling unit and the Power Stack Adapter (PSA).
- check the function of the sensor to measure the conductivity.

A49173 Cooling unit: Cooling liquid temperature has exceeded the alarm threshold

Message value: -
Message class: Auxiliary unit faulted (20)
Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The cooling liquid intake temperature has exceeded the specified alarm threshold.
Note:
The value for the alarm threshold depends on the power unit (hardware description data, e.g. 42 ... 50 °C).
Remedy: Check the cooling system and the ambient conditions.

F49200 Excitation group signal fault

Message value: %1
Message class: General drive fault (19)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The excitation sequence control signals a fault.
Fault value (r0949, interpret hexadecimal):
Bit 0:
When switched off or when switching off the excitation, the signal "excitation ready feedback signal" was not received within the monitoring time.
Bit 1:
After an ON command, the signal "excitation ready feedback signal" was not received within the monitoring time.
Bit 2:
After the pulses were enabled, the signal "excitation operational feedback signal" was not received within the monitoring time.
Bit 3:
The "excitation group signal fault" signal is present.
Bit 4:
The switch-on command for the excitation was reset, although pulse enable (r0899.11) is still available, or the excitation current actual value has still not fallen below a minimum value.
Note:
This signal can be generated via p6500[59].
Remedy: - check the excitation.
- check commands, feedback signals and BICO interconnections.
- re bit 4: increase the switch-off delay time (p1647).

A49201 (F) Excitation group signal alarm

Message value: -
Message class: General drive fault (19)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The "excitation group signal alarm" signal is present.
Note:
This signal can be generated via p6500[58].
Remedy: Check the excitation equipment.
Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY

A49204 (N) Excitation switch-off alarm

Message value: -
Message class: Hardware/software error (1)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: When switching off the excitation, after the delay time (p1647) has expired, the excitation current has still not decayed to zero.
Remedy: Extend the switch-off delay time in (p1647).

Note:

The alarm is automatically reset after adapting p1647.

See also: p1647 (Excitation switch-off delay time)

Reaction upon N: NONE
Acknowl. upon N: NONE

A49205 Excitation alarm incorrect/incomplete parameterization of the brushless exciter

Message value: Parameter: %1
Message class: General drive fault (19)
Drive object: VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** GLOBAL
Reaction: NONE
Acknowledge: NONE
Cause: The brushless exciter has not been completely parameterized. The speed-dependent ratio cannot be calculated. As a consequence, it is assumed to be 1.

Additional information: parameter number that is assigned an illegal value.

See also: p0699 (Excitation configuration)

Remedy: Assign the displayed parameter a value <> 0.

See also: p0690, p0691, p0692, p0693, p0694, p0696, p0697, p0698

A49920 (F) Protective breaker main circuit tripped

Message value: -
Message class: General drive fault (19)
Drive object: A_INF, B_INF, CU_I, CU_I_D410, CU_LINK, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** DRIVE
Reaction: NONE
Acknowledge: NONE
Cause: The protective breaker in the main circuit of the power supply has tripped.

Note:

This message is output via the signal source of binector input p6577[1] of the Control Unit.

See also: p6577 (Circuit monitoring functions signal source)

Remedy: Check the main circuit.

Reaction upon F: Infeed: OFF1 (NONE, OFF1_DELAYED, OFF2)

Servo: OFF1 (NONE, OFF1_DELAYED, OFF2, OFF3)

Vector: OFF1 (NONE, OFF1_DELAYED, OFF2, OFF3)

Hla: OFF1 (NONE, OFF2, OFF3)

Acknowl. upon F: IMMEDIATELY

A49921 (F) Protective breaker redundant main circuit tripped

Message value: -
Message class: General drive fault (19)
Drive object: A_INF, B_INF, CU_I, CU_I_D410, CU_LINK, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** DRIVE
Reaction: NONE
Acknowledge: NONE
Cause: The protective breaker in the main circuit for the redundant feed to the power supply has tripped.
Note:
This message is output via the signal source of binector input p6577[2] of the Control Unit.
See also: p6577 (Circuit monitoring functions signal source)
Remedy: Check the redundant main circuit.
Reaction upon F: Infeed: OFF1 (NONE, OFF1_DELAYED, OFF2)
Servo: OFF1 (NONE, OFF1_DELAYED, OFF2, OFF3)
Vector: OFF1 (NONE, OFF1_DELAYED, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

A49922 (F) Protective breaker 24 V circuit has tripped

Message value: -
Message class: General drive fault (19)
Drive object: A_INF, B_INF, CU_I, CU_I_D410, CU_LINK, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** DRIVE
Reaction: NONE
Acknowledge: NONE
Cause: A protective breaker in the 24 V circuit has tripped.
Note:
This message is output via the signal source of binector input p6577[3] of the Control Unit.
See also: p6577 (Circuit monitoring functions signal source)
Remedy: Check the 24 V circuit
Reaction upon F: Infeed: OFF1 (NONE, OFF1_DELAYED, OFF2)
Servo: OFF1 (NONE, OFF1_DELAYED, OFF2, OFF3)
Vector: OFF1 (NONE, OFF1_DELAYED, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

A49923 (F) Protective breaker terminal strip 24 V circuit has tripped

Message value: -
Message class: General drive fault (19)
Drive object: A_INF, B_INF, CU_I, CU_I_D410, CU_LINK, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** DRIVE
Reaction: NONE
Acknowledge: NONE
Cause: A protective breaker for the terminal strip in the 24 V circuit has tripped.
Note:
This message is output via the signal source of binector input p6577[6] of the Control Unit.
See also: p6577 (Circuit monitoring functions signal source)
Remedy: Check the terminal strip for the 24 V circuit.

Reaction upon F: Infeed: OFF1 (NONE, OFF1_DELAYED, OFF2)
Servo: OFF1 (NONE, OFF1_DELAYED, OFF2, OFF3)
Vector: OFF1 (NONE, OFF1_DELAYED, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

A49924 (F) Protective breaker power unit supply circuit tripped

Message value: -
Message class: General drive fault (19)
Drive object: A_INF, B_INF, CU_I, CU_I_D410, CU_LINK, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** DRIVE
Reaction: NONE
Acknowledge: NONE
Cause: A protective breaker in the circuit of the power unit supply has tripped.
Note:
This message is output via the signal source of binector input p6577[9] of the Control Unit.
See also: p6577 (Circuit monitoring functions signal source)
Remedy: Check the power unit supply circuit.
Reaction upon F: Infeed: OFF1 (NONE, OFF1_DELAYED, OFF2)
Servo: OFF1 (NONE, OFF1_DELAYED, OFF2, OFF3)
Vector: OFF1 (NONE, OFF1_DELAYED, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

A49926 (F) Protective breaker synchronizing voltage tripped

Message value: %1
Message class: General drive fault (19)
Drive object: A_INF, B_INF, CU_I, CU_I_D410, CU_LINK, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** DRIVE
Reaction: NONE
Acknowledge: NONE
Cause: A protective breaker for the synchronizing voltage has tripped.
Note:
This message is output via the signal source of binector input p6577[13] of the Control Unit.
See also: p6577 (Circuit monitoring functions signal source)
Remedy: Check the synchronizing voltage.
Reaction upon F: Infeed: OFF1 (NONE, OFF1_DELAYED, OFF2)
Servo: OFF1 (NONE, OFF1_DELAYED, OFF2, OFF3)
Vector: OFF1 (NONE, OFF1_DELAYED, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

A49927 (F) Protective breaker auxiliary fan circuit has tripped

Message value: -
Message class: General drive fault (19)
Drive object: A_INF, B_INF, CU_I, CU_I_D410, CU_LINK, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** DRIVE
Reaction: NONE
Acknowledge: NONE
Cause: The protective breaker in the fan circuit of the auxiliary fan has tripped.

Note:

This message is output via the signal source of binector input p6577[14] of the Control Unit.

See also: p6577 (Circuit monitoring functions signal source)

Remedy: Check the auxiliary fan.

Reaction upon F: Infeed: OFF1 (NONE, OFF1_DELAYED, OFF2)
Servo: OFF1 (NONE, OFF1_DELAYED, OFF2, OFF3)
Vector: OFF1 (NONE, OFF1_DELAYED, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)

Acknowl. upon F: IMMEDIATELY

A49933 (F) Protective breaker excitation 230 V AC circuit tripped

Message value: -
Message class: General drive fault (19)
Drive object: A_INF, B_INF, CU_I, CU_I_D410, CU_LINK, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** DRIVE
Reaction: NONE
Acknowledge: NONE
Cause: The protective breaker in the 230 V AC circuit of the excitation has tripped.

Note:

This message is output via the signal source of binector input p6577[17] of the Control Unit.

See also: p6577 (Circuit monitoring functions signal source)

Remedy: Check the 230 V AC circuit of the excitation.

Reaction upon F: Infeed: OFF1 (NONE, OFF1_DELAYED, OFF2)
Servo: OFF1 (NONE, OFF1_DELAYED, OFF2, OFF3)
Vector: OFF1 (NONE, OFF1_DELAYED, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)

Acknowl. upon F: IMMEDIATELY

A49934 (F) Protective breaker output cooling unit 230 V AC circuit tripped

Message value: -
Message class: General drive fault (19)
Drive object: A_INF, B_INF, CU_I, CU_I_D410, CU_LINK, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** DRIVE
Reaction: NONE
Acknowledge: NONE
Cause: The protective breaker in the 230 V AC circuit of the outgoing feeder of the cooling unit has tripped.

Note:

This message is output via the signal source of binector input p6577[18] of the Control Unit.

See also: p6577 (Circuit monitoring functions signal source)

Remedy: Check the 230 V AC circuit of the outgoing feeder of the cooling unit.

Reaction upon F: Infeed: OFF1 (NONE, OFF1_DELAYED, OFF2)
Servo: OFF1 (NONE, OFF1_DELAYED, OFF2, OFF3)
Vector: OFF1 (NONE, OFF1_DELAYED, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

A49935 (F) Protective breaker power unit door solenoids 24 V circuit has tripped

Message value: -
Message class: General drive fault (19)
Drive object: A_INF, B_INF, CU_I, CU_I_D410, CU_LINK, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** DRIVE
Reaction: NONE
Acknowledge: NONE
Cause: The protective breaker in the 24 V circuit of the door solenoids in the power unit has tripped.
Note:
This message is output via the signal source of binector input p6577[19] of the Control Unit.
See also: p6577 (Circuit monitoring functions signal source)
Remedy: Check the 24 V circuit of the door solenoids in the power unit.
Reaction upon F: Infeed: OFF1 (NONE, OFF1_DELAYED, OFF2)
Servo: OFF1 (NONE, OFF1_DELAYED, OFF2, OFF3)
Vector: OFF1 (NONE, OFF1_DELAYED, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

A49936 Prot. breaker lighting supply/socket outlets 230V AC cct has tripped

Message value: -
Message class: General drive fault (19)
Drive object: A_INF, B_INF, CU_I, CU_I_D410, CU_LINK, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** DRIVE
Reaction: NONE
Acknowledge: NONE
Cause: The protective breaker in the 230 V AC circuit for the lighting supply/socket outlets has tripped.
Note:
This message is output via the signal source of binector input p6577[20] of the Control Unit.
See also: p6577 (Circuit monitoring functions signal source)
Remedy: Check the 230V AC circuit for the lighting supply/socket outlets.

A49937 (F) UPS not ready

Message value: -
Message class: General drive fault (19)
Drive object: A_INF, B_INF, CU_I, CU_I_D410, CU_LINK, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** DRIVE
Reaction: NONE
Acknowledge: NONE
Cause: The uninterruptible power supply (UPS) is not ready.
Note:
This message is output via the signal source of binector input p6577[25] of the Control Unit.
UPS: Uninterruptible Power Supply
See also: p6577 (Circuit monitoring functions signal source)
Remedy: Check the UPS.

Reaction upon F:	Infeed: OFF1 (NONE, OFF1_DELAYED, OFF2) Servo: OFF1 (NONE, OFF1_DELAYED, OFF2, OFF3) Vector: OFF1 (NONE, OFF1_DELAYED, OFF2, OFF3) Hla: OFF1 (NONE, OFF2, OFF3)
Acknowl. upon F:	IMMEDIATELY

A49938 (F) UPS battery operation

Message value: -

Message class: General drive fault (19)

Drive object: A_INF, B_INF, CU_I, CU_I_D410, CU_LINK, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** DRIVE

Reaction: NONE

Acknowledge: NONE

Cause: The uninterruptible power supply (UPS) is in battery operation.

Note:

This message is output via the signal source of binector input p6577[26] of the Control Unit.

UPS: Uninterruptible Power Supply

See also: p6577 (Circuit monitoring functions signal source)

Remedy: Check the power supply of the control cabinet.

Reaction upon F: Infeed: OFF1 (NONE, OFF1_DELAYED, OFF2)
Servo: OFF1 (NONE, OFF1_DELAYED, OFF2, OFF3)
Vector: OFF1 (NONE, OFF1_DELAYED, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)

Acknowl. upon F: IMMEDIATELY

A49939 (F) UPS battery discharged

Message value: -

Message class: General drive fault (19)

Drive object: A_INF, B_INF, CU_I, CU_I_D410, CU_LINK, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** DRIVE

Reaction: NONE

Acknowledge: NONE

Cause: The uninterruptible power supply (UPS) battery is discharged.

Note:

This message is output via the signal source of binector input p6577[27] of the Control Unit.

UPS: Uninterruptible Power Supply

See also: p6577 (Circuit monitoring functions signal source)

Remedy: Check the UPS battery.

Reaction upon F: Infeed: OFF1 (NONE, OFF1_DELAYED, OFF2)
Servo: OFF1 (NONE, OFF1_DELAYED, OFF2, OFF3)
Vector: OFF1 (NONE, OFF1_DELAYED, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)

Acknowl. upon F: IMMEDIATELY

A49940 (F) Protective breaker tripped PU supply 400 V circuit

Message value: -
Message class: External measured value / signal state outside the permissible range (16)
Drive object: A_INF, B_INF, CU_I, CU_I_D410, CU_LINK, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** DRIVE
Reaction: NONE
Acknowledge: NONE
Cause: The protective breaker for the 400 V AC supply of the power unit has tripped.
Note:
This message is output via the signal source of binector input p6577[28] of the Control Unit.
See also: p6577 (Circuit monitoring functions signal source)
Remedy: Check the 400 V AC supply voltage for the power unit.
Reaction upon F: Infeed: OFF1 (NONE, OFF1_DELAYED, OFF2)
Servo: OFF1 (NONE, OFF1_DELAYED, OFF2, OFF3)
Vector: OFF1 (NONE, OFF1_DELAYED, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

A49941 (F) Protective breaker anti-condensation heating tripped

Message value: -
Message class: External measured value / signal state outside the permissible range (16)
Drive object: A_INF, B_INF, CU_I, CU_I_D410, CU_LINK, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** DRIVE
Reaction: NONE
Acknowledge: NONE
Cause: The protective breaker for the anti-condensation heating was tripped.
Note:
This message is output via the signal source of binector input p6577[29] of the Control Unit.
See also: p6577 (Circuit monitoring functions signal source)
Remedy: Check the anti-condensation heating circuit.
Reaction upon F: Infeed: OFF1 (NONE, OFF1_DELAYED, OFF2)
Servo: OFF1 (NONE, OFF1_DELAYED, OFF2, OFF3)
Vector: OFF1 (NONE, OFF1_DELAYED, OFF2, OFF3)
Hla: OFF1 (NONE, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

A49942 (F) Protective breaker SITOP supply circuit tripped

Message value: -
Message class: External measured value / signal state outside the permissible range (16)
Drive object: A_INF, B_INF, CU_I, CU_I_D410, CU_LINK, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: Control Unit (CU) **Propagation:** DRIVE
Reaction: NONE
Acknowledge: NONE
Cause: The protective breaker for the SITOP 24 V circuit has tripped.
Note:
This message is output via the signal source of binector input p6577[21] of the Control Unit.
See also: p6577 (Circuit monitoring functions signal source)
Remedy: Check the SITOP power supply.

Reaction upon F:	Infeed: OFF1 (NONE, OFF1_DELAYED, OFF2) Servo: OFF1 (NONE, OFF1_DELAYED, OFF2, OFF3) Vector: OFF1 (NONE, OFF1_DELAYED, OFF2, OFF3) Hla: OFF1 (NONE, OFF2, OFF3)
Acknowl. upon F:	IMMEDIATELY

A49998 Recorder trigger event occurred

Message value: %1

Message class: Hardware/software error (1)

Drive object: A_INF, B_INF, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** GLOBAL

Reaction: NONE

Acknowledge: NONE

Cause: A recorder trigger event has occurred. The data are then written to the memory card, specifying the event number.

Alarm value (r2124, interpret decimal):

Event number.

Remedy: Not necessary.

This message disappears automatically.

A50002 (F) COMM BOARD: Alarm 2

Message value: %1

Message class: Communication error to the higher-level control system (9)

Drive object: A_INF, B_INF, CU_LINK, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: CBE20 SINAMICS Link:

A specific telegram word (send) is being used twice.

Alarm value (r2124, interpret decimal):

Telegram word used twice

See also: p8871 (SINAMICS Link PZD send word)

Remedy: CBE20 SINAMICS Link:

Correct the parameter assignment.

See also: p8871 (SINAMICS Link PZD send word)

Reaction upon F: Infeed: NONE (OFF1, OFF2)

Servo: NONE (OFF1, OFF2, OFF3)

Vector: NONE (OFF1, OFF2, OFF3)

Hla: NONE (OFF1, OFF2, OFF3)

Acknowl. upon F: IMMEDIATELY

A50003 (F) COMM BOARD: Alarm 3

Message value: Info 1: %1, Info 2: %2
Message class: Communication error to the higher-level control system (9)
Drive object: A_INF, B_INF, CU_LINK, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: CBE20 SINAMICS Link:
A specific telegram word (receive) is being used twice.
Alarm value (r2124, interpret hexadecimal):
yyyyxxxx hex: yyyy = info. 1, xxxx = info. 2
Info. 1 (decimal) = Address of sender
Info. 2 (decimal) = Receive telegram word
See also: p8870 (SINAMICS Link PZD receive word), p8872 (SINAMICS Link PZD receive address)
Remedy: CBE20 SINAMICS Link:
Correct the parameter assignment.
Reaction upon F: Infeed: NONE (OFF1, OFF2)
Servo: NONE (OFF1, OFF2, OFF3)
Vector: NONE (OFF1, OFF2, OFF3)
Hla: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

A50004 (F) COMM BOARD: Alarm 4

Message value: Info 1: %1, Info 2: %2
Message class: Communication error to the higher-level control system (9)
Drive object: A_INF, B_INF, CU_LINK, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: CBE20 SINAMICS Link:
- telegram word (receive) and address of sender inconsistent. Both values have to be either equal to zero or not equal to zero.
- address of the sender > maximum project address.
Alarm value (r2124, interpret hexadecimal):
yyyyxxxx hex: yyyy = info. 1, xxxx = info. 2
Info. 1 (decimal) = Drive object number from p8870, p8872
Info. 2 (decimal) = Index from p8870, p8872
See also: p8811, p8870, p8872
Remedy: In the case of CBE20 SINAMICS Link:
Correct the parameter assignment.
Reaction upon F: Infeed: NONE (OFF1, OFF2)
Servo: NONE (OFF1, OFF2, OFF3)
Vector: NONE (OFF1, OFF2, OFF3)
Hla: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

A50005 (F) COMM BOARD: Alarm 5

Message value: %1
Message class: Communication error to the higher-level control system (9)
Drive object: A_INF, B_INF, CU_LINK, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: CBE20 SINAMICS Link:
Sender not found on SINAMICS Link.
Alarm value (r2124, interpret decimal):
0: synchronization to the bus clock cycle unsuccessful.
1 ... 64: address of the sender that was not found.
See also: p8872 (SINAMICS Link PZD receive address)
Remedy: CBE20 SINAMICS Link:
Check the connection to the sender.
Set parameters p8811, p8812[1] to identical values for all participants/nodes.
Check parameter p8836 for all participants.
See also: p8811 (SINAMICS Link project selection), p8812 (SINAMICS Link clock cycle settings), p8836 (SINAMICS link node address)
Reaction upon F: Infeed: NONE (OFF1, OFF2)
Servo: NONE (OFF1, OFF2, OFF3)
Vector: NONE (OFF1, OFF2, OFF3)
Hla: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

A50006 (F) COMM BOARD: Alarm 6

Message value: Info 1: %1, Info 2: %2
Message class: Communication error to the higher-level control system (9)
Drive object: A_INF, B_INF, CU_LINK, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC
Component: None **Propagation:** LOCAL
Reaction: NONE
Acknowledge: NONE
Cause: CBE20 SINAMICS Link:
The parameter assignment indicates that the sender and the receiver are one and the same. This is not permitted.
Alarm value (r2124, interpret hexadecimal):
yyyyxxxx hex: yyyy = info. 1, xxxx = info. 2
Info. 1 (decimal) = Drive object number from p8872
Info. 2 (decimal) = Index from p8872
See also: p8836 (SINAMICS link node address), p8872 (SINAMICS Link PZD receive address)
Remedy: In the case of CBE20 SINAMICS Link:
Correct the parameter assignment. All p8872[index] must be set to a value not equal to p8836.
Reaction upon F: Infeed: NONE (OFF1, OFF2)
Servo: NONE (OFF1, OFF2, OFF3)
Vector: NONE (OFF1, OFF2, OFF3)
Hla: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

A50007 (F) COMM BOARD: Alarm 7

Message value: Info 1: %1, Info 2: %2

Message class: Communication error to the higher-level control system (9)

Drive object: A_INF, B_INF, CU_LINK, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: CBE20 SINAMICS Link:

A send telegram word is greater than possible in the project.

Alarm value (r2124, interpret hexadecimal):

yyyyxxxx hex: yyyy = info. 1, xxxx = info. 2

Info. 1 (decimal) = drive object number from p8871

Info. 2 (decimal) = index from p8871

See also: p8811 (SINAMICS Link project selection), p8871 (SINAMICS Link PZD send word)

Remedy: In the case of CBE20 SINAMICS Link:

Correct the parameter assignment.

Reaction upon F: Infeed: NONE (OFF1, OFF2)

Servo: NONE (OFF1, OFF2, OFF3)

Vector: NONE (OFF1, OFF2, OFF3)

Hla: NONE (OFF1, OFF2, OFF3)

Acknowl. upon F: IMMEDIATELY

A50008 (F) COMM BOARD: Alarm 8

Message value: Info 1: %1, Info 2: %2

Message class: Communication error to the higher-level control system (9)

Drive object: A_INF, B_INF, CU_LINK, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: CBE20 SINAMICS Link:

A receive telegram word is greater than possible in the project.

Alarm value (r2124, interpret hexadecimal):

yyyyxxxx hex: yyyy = info. 1, xxxx = info. 2

Info. 1 (decimal) = drive object number from p8870

Info. 2 (decimal) = index from p8870

See also: p8811 (SINAMICS Link project selection), p8870 (SINAMICS Link PZD receive word)

Remedy: In the case of CBE20 SINAMICS Link:

Correct the parameter assignment.

Reaction upon F: Infeed: NONE (OFF1, OFF2)

Servo: NONE (OFF1, OFF2, OFF3)

Vector: NONE (OFF1, OFF2, OFF3)

Hla: NONE (OFF1, OFF2, OFF3)

Acknowl. upon F: IMMEDIATELY

A50011 (F) EtherNetIP/COMM BOARD: configuration error

Message value: %1

Message class: Communication error to the higher-level control system (9)

Drive object: A_INF, B_INF, CU_LINK, CU_S120_DP, CU_S120_PN, CU_S150_DP, CU_S150_PN, ENC, HLA, HUB, R_INF, S_INF, SERVO, SERVO_AC, SERVO_I_AC, TB30, TM120, TM15, TM150, TM15DI_DO, TM17, TM31, TM41, TM54F_MA, TM54F_SL, VECTOR, VECTOR_AC, VECTOR_I_AC

Component: None **Propagation:** LOCAL

Reaction: NONE

Acknowledge: NONE

Cause: CBE20 EtherNet/IP:

An EtherNet/IP controller attempts to establish a connection using an incorrect configuring telegram.

The telegram length set in the controller does not match the parameterization in the drive device.

Remedy: Check the set telegram length.

Note:

PZD interface 1:

For p0922 not equal to 999, then the length of the selected telegram applies.

For p0922 = 999, the maximum interconnected PZD (r2067) applies.

PZD interface 2:

The maximum interconnected PZD (r8867) applies.

See also: p0922, r2067, r8867

Reaction upon F: Infeed: NONE (OFF1, OFF2)

Servo: NONE (OFF1, OFF2, OFF3)

Vector: NONE (OFF1, OFF2, OFF3)

Hla: NONE (OFF1, OFF2, OFF3)

Acknowl. upon F: IMMEDIATELY

Appendix

A

Content

A.1 ASCII table (characters that can be displayed)

The following table includes the decimal and hexadecimal notation of ASCII characters that can be displayed (printable).

Table A-1 ASCII table (characters that can be displayed)

Character	Decimal	Hexadecimal	Meaning
	32	20	Space
!	33	21	Exclamation mark
"	34	22	Quotation mark
#	35	23	Number sign
$	36	24	Dollar
%	37	25	Percent
&	38	26	Ampersand
’	39	27	Apostrophe, closing single quotation mark
(	40	28	Opening parenthesis
)	41	29	Closing parenthesis
*	42	2A	Asterisk
+	43	2B	Plus
,	44	2C	Comma
-	45	2D	Hyphen, minus
.	46	2E	Period, decimal point
/	47	2F	Slash, slant
0	48	30	Digit 0
1	49	31	Digit 1
2	50	32	Digit 2
3	51	33	Digit 3
4	52	34	Digit 4
5	53	35	Digit 5
6	54	36	Digit 6
7	55	37	Digit 7
8	56	38	Digit 8
9	57	39	Digit 9
:	58	3A	Colon
;	59	3B	Semicolon
<	60	3C	Less than
=	61	3D	Equals
>	62	3E	Greater than
?	63	3F	Question mark
@	64	40	Commercial At

Table A-1 ASCII table (characters that can be displayed), continued

Character	Decimal	Hexadecimal	Meaning
A	65	41	Capital letter A
B	66	42	Capital letter B
C	67	43	Capital letter C
D	68	44	Capital letter D
E	69	45	Capital letter E
F	70	46	Capital letter F
G	71	47	Capital letter G
H	72	48	Capital letter H
I	73	49	Capital letter I
J	74	4A	Capital letter J
K	75	4B	Capital letter K
L	76	4C	Capital letter L
M	77	4D	Capital letter M
N	78	4E	Capital letter N
O	79	4F	Capital letter O
P	80	50	Capital letter P
Q	81	51	Capital letter Q
R	82	52	Capital letter R
S	83	53	Capital letter S
T	84	54	Capital letter T
U	85	55	Capital letter U
V	86	56	Capital letter V
W	87	57	Capital letter W
X	88	58	Capital letter X
Y	89	59	Capital letter Y
Z	90	5A	Capital letter Z
[	91	5B	Opening bracket
\	92	5C	Backslash
]	93	5D	Closing bracket
^	94	5E	Circumflex
_	95	5F	Underline
‘	96	60	Opening single quotation mark
a	97	61	Small letter a
b	98	62	Small letter b
c	99	63	Small letter c
d	100	64	Small letter d

Table A-1 ASCII table (characters that can be displayed), continued

Character	Decimal	Hexadecimal	Meaning
e	101	65	Small letter e
f	102	66	Small letter f
g	103	67	Small letter g
h	104	68	Small letter h
i	105	69	Small letter i
j	106	6A	Small letter j
k	107	6B	Small letter k
l	108	6C	Small letter l
m	109	6D	Small letter m
n	110	6E	Small letter n
o	111	6F	Small letter o
p	112	70	Small letter p
q	113	71	Small letter q
r	114	72	Small letter r
s	115	73	Small letter s
t	116	74	Small letter t
u	117	75	Small letter u
v	118	76	Small letter v
w	119	77	Small letter w
x	120	78	Small letter x
y	121	79	Small letter y
z	122	7A	Small letter z
{	123	7B	Opening brace
|	124	7C	Vertical line
}	125	7D	Closing brace
~	126	7E	Tilde

A.2 List of abbreviations

Note

The following list of abbreviations includes all abbreviations and their meanings used in the entire SINAMICS family of drives.

Abbreviation	Derivation of abbreviation	Significance
A		
A…	Alarm	Warning
AC	Alternating Current	Alternating current
ADC	Analog Digital Converter	Analog digital converter
AI	Analog Input	Analog input
AIM	Active Interface Module	Active Interface Module
ALM	Active Line Module	Active Line Module
AO	Analog Output	Analog output
AOP	Advanced Operator Panel	Advanced Operator Panel
APC	Advanced Positioning Control	Advanced Positioning Control
AR	Automatic Restart	Automatic restart
ASC	Armature Short Circuit	Armature short-circuit
ASCII	American Standard Code for Information Interchange	American coding standard for the exchange of information
AS-i	AS-Interface (Actuator Sensor Interface)	AS-Interface (open bus system in automation technology)
ASM	Asynchronmotor	Induction motor
AVS	Active Vibration Suppression	Active load vibration damping
B		
BB	Betriebsbedingung	Operation condition
BERO	-	Contactless proximity switch
BI	Binector Input	Binector input
BIA	Berufsgenossenschaftliches Institut für Arbeitssicherheit	BG-Institute for Occupational Safety and Health
BICO	Binector Connector Technology	Binector connector technology
BLM	Basic Line Module	Basic Line Module
BO	Binector Output	Binector output
BOP	Basic Operator Panel	Basic Operator Panel
C		
C	Capacitance	Capacitance
C…	-	Safety message
CAN	Controller Area Network	Serial bus system
CBC	Communication Board CAN	Communication Board CAN
CBE	Communication Board Ethernet	PROFINET communication module (Ethernet)
CD	Compact Disc	Compact disc
CDS	Command Data Set	Command data set
CF Card	CompactFlash Card	CompactFlash card

Abbreviation	Derivation of abbreviation	Significance
CI	Connector Input	Connector input
CLC	Clearance Control	Clearance control
CNC	Computerized Numerical Control	Computer-supported numerical control
CO	Connector Output	Connector output
CO/BO	Connector Output/Binector Output	Connector output/Binector output
COB ID	CAN Object Identification	CAN object identification
CoL	Certificate of License	Certificate of License
COM	Common contact of a changeover relay	Center contact of a changeover contact
COMM	Commissioning	Startup
CP	Communication Processor	Communication processor
CPU	Central Processing Unit	Central processing unit
CRC	Cyclic Redundancy Check	Cyclic redundancy check
CSM	Control Supply Module	Control Supply Module
CU	Control Unit	Control Unit
CUA	Control Unit Adapter	Control Unit Adapter
CUD	Control Unit DC	Control Unit DC
D		
DAC	Digital Analog Converter	Digital analog converter
DC	Direct Current	DC current
DCB	Drive Control Block	Drive Control Block
DCBRK	DC Brake	DC braking
DCC	Drive Control Chart	Drive Control Chart
DCN	Direct Current Negative	Direct current negative
DCP	Direct Current Positive	Direct current positive
DDC	Dynamic Drive Control	Dynamic Drive Control
DDS	Drive Data Set	Drive data set
DI	Digital Input	Digital input
DI/DO	Digital Input/Digital Output	Digital input/output, bidirectional
DMC	DRIVE-CLiQ Hub Module Cabinet	DRIVE-CLiQ Hub Module Cabinet
DME	DRIVE-CLiQ Hub Module External	DRIVE-CLiQ Hub Module External
DMM	Double Motor Module	Double Motor Module
DO	Digital Output	Digital output
DO	Drive Object	Drive object
DP	Decentralized Peripherals	Distributed I/O
DPRAM	Dual Ported Random Access Memory	Dual-Port Random Access Memory
DQ	DRIVE-CLiQ	DRIVE-CLiQ
DRAM	Dynamic Random Access Memory	Dynamic Random Access Memory
DRIVE-CLiQ	Drive Component Link with IQ	Drive Component Link with IQ
DSC	Dynamic Servo Control	Dynamic Servo Control
DSM	Doppelsubmodul	Double submodule
DTC	Digital Time Clock	Timer

Abbreviation	Derivation of abbreviation	Significance
E		
EASC	External Armature Short-Circuit	External armature short-circuit
EDS	Encoder Data Set	Encoder data set
EEPROM	Electrically Erasable Programmable Read-Only Memory	Electrically Erasable Programmable Read-Only-Memory
EGB	Elektrostatisch gefährdete Baugruppen	Electrostatically sensitive devices
ELCB	Earth Leakage Circuit Breaker	Residual current operated circuit breaker
ELP	Earth Leakage Protection	Ground-fault monitoring
EMC	Electromagnetic Compatibility	Electromagnetic compatibility
EMF	Electromotive Force	Electromotive force
EMK	Elektromotorische Kraft	Electromotive force
EMV	Elektromagnetische Verträglichkeit	Electromagnetic compatibility
EN	Europäische Norm	European standard
EnDat	Encoder-Data-Interface	Encoder interface
EP	Enable Pulses	Pulse enable
EPOS	Einfachpositionierer	Basic positioner
ES	Engineering System	Engineering system
ESB	Ersatzschaltbild	Equivalent circuit diagram
ESD	Electrostatic Sensitive Devices	Elektrostatisch gefährdete Baugruppen
ESM	Essential Service Mode	Essential service mode
ESR	Extended Stop and Retract	Extended stop and retract
F		
F…	Fault	Fault
FAQ	Frequently Asked Questions	Frequently asked questions
FBLOCKS	Free Blocks	Free function blocks
FCC	Function Control Chart	Function Control Chart
FCC	Flux Current Control	Flux current control
FD	Function Diagram	Function diagram
F-DI	Failsafe Digital Input	Fail-safe digital input
F-DO	Failsafe Digital Output	Fail-safe digital output
FEPROM	Flash-EPROM	Non-volatile write and read memory
FG	Function Generator	Function generator
FI	-	Fault current
FOC	Fiber-Optic Cable	Fiber-optic cable
FP	Funktionsplan	Function diagram
FPGA	Field Programmable Gate Array	Field Programmable Gate Array
FW	Firmware	Firmware
G		
GB	Gigabyte	Gigabyte
GC	Global Control	Global control telegram (broadcast telegram)
GND	Ground	Reference potential for all signal and operating voltages, usually defined as 0 V (also referred to as M)

Abbreviation	Derivation of abbreviation	Significance
GSD	Gerätestammdatei	Generic Station Description: Describes the features of a PROFIBUS slave
GSV	Gate Supply Voltage	Gate supply voltage
GUID	Globally Unique Identifier	Globally Unique Identifier
H		
HF	High frequency	High frequency
HFD	Hochfrequenzdrossel	Radio frequency reactor
HLA	Hydraulic Linear Actuator	Hydraulic linear actuator
HLG	Hochlaufgeber	Ramp-function generator
HM	Hydraulic Module	Hydraulic Module
HMI	Human Machine Interface	Human Machine Interface
HTL	High-Threshold Logic	Logic with high interference threshold
HW	Hardware	Hardware
I		
i. V.	In Vorbereitung	Under development: This property is currently not available
I/O	Input/Output	Input/output
I2C	Inter-Integrated Circuit	Internal serial data bus
IASC	Internal Armature Short-Circuit	Internal armature short-circuit
IBN	Inbetriebnahme	Startup
ID	Identifier	Identification
IE	Industrial Ethernet	Industrial Ethernet
IEC	International Electrotechnical Commission	International Electrotechnical Commission
IF	Interface	Interface
IGBT	Insulated Gate Bipolar Transistor	Insulated gate bipolar transistor
IGCT	Integrated Gate-Controlled Thyristor	Semiconductor power switch with integrated control electrode
IL	Impulslöschung	Pulse suppression
IP	Internet Protocol	Internet protocol
IPO	Interpolator	Interpolator
IT	Isolé Terre	Non-grounded three-phase line supply
IVP	Internal Voltage Protection	Internal voltage protection
J		
JOG	Jogging	Jogging
K		
KDV	Kreuzweiser Datenvergleich	Data cross-check
KHP	Know-how protection	Know-how protection
KIP	Kinetische Pufferung	Kinetic buffering
Kp	-	Proportional gain
KTY84	-	Temperature sensor
L		
L	-	Symbol for inductance
LED	Light Emitting Diode	Light emitting diode

Abbreviation	Derivation of abbreviation	Significance
LIN	Linearmotor	Linear motor
LR	Lageregler	Position controller
LSB	Least Significant Bit	Least significant bit
LSC	Line-Side Converter	Line-side converter
LSS	Line-Side Switch	Line-side switch
LU	Length Unit	Length unit
LWL	Lichtwellenleiter	Fiber-optic cable
M		
M	-	Symbol for torque
M	Masse	Reference potential for all signal and operating voltages, usually defined as 0 V (also referred to as GND)
MB	Megabyte	Megabyte
MCC	Motion Control Chart	Motion Control Chart
MDI	Manual Data Input	Manual data input
MDS	Motor Data Set	Motor data set
MLFB	Maschinenlesbare Fabrikatebezeichnung	Machine-readable product code
MM	Motor Module	Motor Module
MMC	Man-Machine Communication	Man-machine communication
MMC	Micro Memory Card	Micro memory card
MSB	Most Significant Bit	Most significant bit
MSC	Motor Side Converter	Motor-side converter
MSCY_C1	Master Slave Cycle Class 1	Cyclic communication between master (class 1) and slave
MSR	Motorstromrichter	Motor-side converter
MT	Messtaster	Probe
N		
N. C.	Not Connected	Not connected
N…	No Report	No report or internal message
NAMUR	Normenarbeitsgemeinschaft für Mess- und Regeltechnik in der chemischen Industrie	Standardization association for measurement and control in chemical industries
NC	Normally Closed (contact)	NC contact
NC	Numerical Control	Numerical control
NEMA	National Electrical Manufacturers Association	Standardization association in USA (United States of America)
NM	Nullmarke	Zero mark
NO	Normally Open (contact)	NO contact
NSR	Netzstromrichter	Line-side converter
NTP	Network Time Protocol	Standard for synchronization of the time of day
NVRAM	Non-Volatile Random Access Memory	Non-volatile read/write memory

Abbreviation	Derivation of abbreviation	Significance
O		
OA	Open Architecture	Software component which provides additional functions for the SINAMICS drive system
OAIF	Open Architecture Interface	Version of the SINAMICS firmware as of which the OA-application can be used
OASP	Open Architecture Support Package	Expands the STARTER commissioning tool by the corresponding OA-application
OC	Operating Condition	Operation condition
OCC	One Cable Connection	One-cable technology
OEM	Original Equipment Manufacturer	Original equipment manufacturer
OLP	Optical Link Plug	Bus connector for fiber-optic cable
OMI	Option Module Interface	Option Module Interface
P		
p…	-	Adjustable parameters
P1	Processor 1	Processor 1
P2	Processor 2	Processor 2
PB	PROFIBUS	PROFIBUS
PcCtrl	PC Control	Master control
PD	PROFIdrive	PROFIdrive
PDC	Precision Drive Control	Precision Drive Control
PDS	Power unit Data Set	Power unit data set
PDS	Power Drive System	Drive system
PE	Protective Earth	Protective ground
PELV	Protective Extra Low Voltage	Safety extra-low voltage
PFH	Probability of dangerous failure per hour	Probability of dangerous failure per hour
PG	Programmiergerät	Programming device
PI	Proportional Integral	Proportional integral
PID	Proportional Integral Differential	Proportional integral differential
PLC	Programmable Logic Controller	Programmable logic controller
PLL	Phase-Locked Loop	Phase-locked loop
PM	Power Module	Power Module
PMI	Power Module Interface	Power Module Interface
PMSM	Permanent-magnet synchronous motor	Permanent-magnet synchronous motor
PN	PROFINET	PROFINET
PNO	PROFIBUS Nutzerorganisation	PROFIBUS user organization
PPI	Point to Point Interface	Point-to-point interface
PRBS	Pseudo Random Binary Signal	White noise
PROFIBUS	Process Field Bus	Serial data bus
PS	Power Supply	Power supply
PSA	Power Stack Adapter	Power Stack Adapter
PT1000	-	Temperature sensor
PTC	Positive Temperature Coefficient	Positive temperature coefficient
PTP	Point To Point	Point-to-point

Abbreviation	Derivation of abbreviation	Significance
PWM	Pulse Width Modulation	Pulse width modulation
PZD	Prozessdaten	Process data
Q		
R		
r…	-	Display parameters (read only)
RAM	Random Access Memory	Memory for reading and writing
RCCB	Residual Current Circuit Breaker	Residual current operated circuit breaker
RCD	Residual Current Device	Residual current operated circuit breaker
RCM	Residual Current Monitor	Residual current monitor
REL	Reluctance motor textile	Reluctance motor textile
RESM	Reluctance synchronous motor	Synchronous reluctance motor
RFG	Ramp-Function Generator	Ramp-function generator
RJ45	Registered Jack 45	Term for an 8-pin socket system for data transmission with shielded or non-shielded multi-wire copper cables
RKA	Rückkühlanlage	Cooling unit
RLM	Renewable Line Module	Renewable Line Module
RO	Read Only	Read only
ROM	Read-Only Memory	Read-only memory
RPDO	Receive Process Data Object	Receive Process Data Object
RS232	Recommended Standard 232	Interface standard for a cable-connected serial data transmission between a transmitter and receiver (also known as EIA232)
RS485	Recommended Standard 485	Interface standard for a cable-connected differential, parallel, and/or serial bus system (data transmission between a number of transmitters and receivers, also known as EIA485)
RTC	Real Time Clock	Real-time clock
RZA	Raumzeigerapproximation	Space-vector approximation
S		
S1	-	Continuous duty
S3	-	Intermittent duty
SAM	Safe Acceleration Monitor	Safe acceleration monitoring
SBC	Safe Brake Control	Safe brake control
SBH	Sicherer Betriebshalt	Safe operating stop
SBR	Safe Brake Ramp	Safe brake ramp monitoring
SBT	Safe Brake Test	Safe brake test
SCA	Safe Cam	Safe cam
SCC	Safety Control Channel	Safety Control Channel
SCSE	Single Channel Safety Encoder	Single-channel safety encoder
SD Card	SecureDigital Card	Secure digital memory card
SDC	Standard Drive Control	Standard Drive Control
SDI	Safe Direction	Safe motion direction
SE	Sicherer Software-Endschalter	Safe software limit switch

Abbreviation	Derivation of abbreviation	Significance
SESM	Separately-excited synchronous motor	Separately excited synchronous motor
SG	Sicher reduzierte Geschwindigkeit	Safely-limited speed
SGA	Sicherheitsgerichteter Ausgang	Safety-related output
SGE	Sicherheitsgerichteter Eingang	Safety-related input
SH	Sicherer Halt	Safe stop
SI	Safety Integrated	Safety Integrated
SIC	Safety Info Channel	Safety Info Channel
SIL	Safety Integrity Level	Safety integrity level
SITOP	-	Siemens power supply system
SLA	Safely-Limited Acceleration	Safety limited acceleration
SLM	Smart Line Module	Smart Line Module
SLP	Safely-Limited Position	Safely-limited position
SLS	Safely-Limited Speed	Safely-limited speed
SLVC	Sensorless Vector Control	Sensorless vector control
SM	Sensor Module	Sensor Module
SMC	Sensor Module Cabinet	Sensor Module Cabinet
SME	Sensor Module External	Sensor Module External
SMI	SINAMICS Sensor Module Integrated	SINAMICS Sensor Module Integrated
SMM	Single Motor Module	Single Motor Module
SN	Sicherer Software-Nocken	Safe software cam
SOS	Safe Operating Stop	Safe operating stop
SP	Service Pack	Service pack
SP	Safe Position	Safe position
SPC	Setpoint Channel	Setpoint channel
SPI	Serial Peripheral Interface	Serial peripheral interface
SPS	Speicherprogrammierbare Steuerung	Programmable logic controller
SS1	Safe Stop 1	Safe Stop 1 (time-monitored, ramp-monitored)
SS1E	Safe Stop 1 External	Safe Stop 1 with external stop
SS2	Safe Stop 2	Safe Stop 2
SS2E	Safe Stop 2 External	Safe Stop 2 with external stop
SSI	Synchronous Serial Interface	Synchronous serial interface
SSL	Secure Sockets Layer	Encryption protocol for secure data transfer (new TLS)
SSM	Safe Speed Monitor	Safe feedback from speed monitor
SSP	SINAMICS Support Package	SINAMICS support package
STO	Safe Torque Off	Safe torque off
STW	Steuerwort	Control word
T		
TB	Terminal Board	Terminal Board
TEC	Technology Extension	Software component which is installed as an additional technology package and which expands the functionality of SINAMICS (previously OA-application)

Abbreviation	Derivation of abbreviation	Significance
TIA	Totally Integrated Automation	Totally Integrated Automation
TLS	Transport Layer Security	Encryption protocol for secure data transfer (previously SSL)
TM	Terminal Module	Terminal Module
TN	Terre Neutre	Grounded three-phase line supply
Tn	-	Integral time
TPDO	Transmit Process Data Object	Transmit Process Data Object
TSN	Time-Sensitive Networking	Time-Sensitive Networking
TT	Terre Terre	Grounded three-phase line supply
TTL	Transistor-Transistor Logic	Transistor-transistor logic
Tv	-	Rate time
U		
UL	Underwriters Laboratories Inc.	Underwriters Laboratories Inc.
UPS	Uninterruptible Power Supply	Uninterruptible power supply
USV	Unterbrechungsfreie Stromversorgung	Uninterruptible power supply
UTC	Universal Time Coordinated	Universal time coordinated
V		
VC	Vector Control	Vector control
Vdc	-	DC-link voltage
VdcN	-	Partial DC-link voltage negative
VdcP	-	Partial DC-link voltage positive
VDE	Verband Deutscher Elektrotechniker	Association of German Electrical Engineers
VDI	Verein Deutscher Ingenieure	Association of German Engineers
VPM	Voltage Protection Module	Voltage Protection Module
Vpp	Volt peak to peak	Volt peak to peak
VSM	Voltage Sensing Module	Voltage Sensing Module
W		
WEA	Wiedereinschaltautomatik	Automatic restart
WZM	Werkzeugmaschine	Machine tool
X		
XML	Extensible Markup Language	Extensible markup language (standard language for Web publishing and document management)
Y		
Z		
ZK	Zwischenkreis	DC link
ZM	Zero Mark	Zero mark
ZSW	Zustandswort	Status word

A.3 References

Documentation for SINAMICS

Catalogs

/D 11/ **SINAMICS G130 Drive Converter Chassis Units**
SINAMICS G150 Drive Converter Cabinet Units

Article number: E86060-K5511-A101-A6 Edition: 2015

/D 21.3/ **SINAMICS S120 Chassis Format Units**
SINAMICS S120 Cabinet Modules
SINAMICS S150 Converter Cabinet Units

Article number: E86060-K5521-A131-A6 Edition: 2017

/D 21.4/ **SINAMICS S120 and SIMOTICS**

Article number: E86060-K5521-A141-A1 Edition: 2017

/D 31.1/ **SINAMICS Inverters for Single-Axis Drives – Built-In Units**

Article number: E86060-E5531-A121-A1 Edition: 2018

/D 31.2/ **SINAMICS Inverters for Single-Axis Drives – Distributed Inverters**

Article number: E86060-E5531-A121-A1 Edition: 2018

/D 32/ **SINAMICS S210 and SIMOTICS S-1FK2**
Servo Drive System

Article number: pdf Edition: 2017

/D 35/ **SINAMICS G120P and SINAMICS G120P Cabinet**
Pump, Fan, Compressor Converters

Article number: E86060-K5535-A101-A1 Edition: 2017

Related catalogs

/ST 70/ **SIMATIC Products for Totally Integrated Automation**

Article number: E86060-K4670-A101-B6 Edition: 2017

/ST 70 N/ **SIMATIC Products for Totally Integrated Automation**

Article number: E86060-K4670-A151-A8 Edition: 2016

/NC 62/ **SINUMERIK 840D, Equipment for Machine Tools**

Article number: E86060-K4462-A101-A2 Edition: 2016

/NC 81.1/ **SINUMERIK 808, Equipment for Machine Tools**

Article number: E86060-K4481-A111-A3 Edition: 2017

/NC 82/ **SINUMERIK 828, Equipment for Machine Tools**
Article number: E86060-K4482-A101-A5 Edition: 2017

Interactive catalogs

/CA 01/ **Products for Automation and Drives**
DVD
Article number: E86060-D4001-A500-D8 Edition: 10/2017

/Mall/ **Industry Mall,**
Catalog and Ordering System for Automation and Drives
http://www.siemens.com/industrymall

User documentation

/BA1/ **SINAMICS G150**
Operating instructions
Article number: On request Edition: 11/2017

/BA2/ **SINAMICS G130**
Operating instructions
Article number: On request Edition: 11/2017

/BA3/ **SINAMICS S150**
Operating instructions
Article number: On request Edition: 11/2017

/BA21/ **SINAMICS/SIMOTICS SINAMICS S210 servo drive system**
Operating Instructions for SINAMICS S210 converters and SIMOTICS S-1FK2 servomotor
Article number: A5E41702836A AB Edition: 07/2018

/GH1/ **SINAMICS S120**
Control Units and Additional System Components Manual
Article number: 6SL3097-4AH00-0□P7 Edition: 11/2017

/GH2/ **SINAMICS S120**
Booksize Power Units Manual
Article number: 6SL3097-4AC00-0□P9 Edition: 11/2017

/GH3/ **SINAMICS S120**
Chassis Power Units Air-Cooled Manual
Article number: 6SL3097-4AE00-0□P5 Edition: 11/2017

/GH4/ **SINAMICS S120**
Booksize C/D Type Manual
Article number: 6SL3097-4AC20-0□P2 Edition: 09/2017

/GH5/	**SINAMICS S120** Cabinet Modules Manual		
	Article number:	On request	Edition: 07/2016
/GH6/	**SINAMICS S120** AC Drive Manual		
	Article number:	6SL3097-5AL00-0□P1	Edition: 07/2018
/GH7/	**SINAMICS S120** Chassis Power Units Liquid-Cooled Manual		
	Article number:	6SL3097-4AM00-0□P8	Edition: 11/2017
/GH12/	**SINAMICS S120M** Distributed Drive Technology Manual		
	Article number:	6SL3097-4AW00-0□P3	Edition: 12/2014
/GH14/	**SINAMICS S120** Chassis Power Units Water-Cooled for Common Cooling Circuits Manual		
	Article number:	6SL3097-4AM10-0□P0	Edition: 08/2017
/GS1/	**SINAMICS S120** Getting Started with STARTER		
	Article number:	6SL3097-4AG00-0□P5	Edition: 11/2017
/GS10/	**SINAMICS S120** Getting Started with Startdrive		
	Article number:	6SL3097-4AG30-0□P0	Edition: 11/2017
/IH1/	**SINAMICS S120** Commissioning Manual with STARTER		
	Article number:	6SL3097-4AF00-0□P6	Edition: 11/2017
/IH2/	**SINAMICS S120** CANopen Commissioning Manual		
	Article number:	6SL3097-4AA00-0□P3	Edition: 11/2017
/IH3/	**SINAMICS S120** Commissioning Manual with Startdrive		
	Article number:	6SL3097-4AA10-0□P1	Edition: 11/2017
/FH1/	**SINAMICS S120** Drive Functions Function Manual		
	Article number:	6SL3097-5AB00-0□P0	Edition: 07/2018
/FHS/	**SINAMICS S120** Safety Integrated Function Manual		
	Article number:	6SL3097-5AR00-0□P0	Edition: 07/2018

/FH4/ **SINAMICS/SIMOTION**
DCC Standard Blocks Function Manual
Article number: 6SL3097-4AQ00-0□P4 Edition: 07/2016

/PB1/ **SINAMICS/SIMOTION**
Programming and Operating Manual for DCC Editor Description
Article number: 6SL3097-4AN00-0□P3 Edition: 07/2016

/LH1/ **SINAMICS S120/S150**
List Manual
Article number: 6SL3097-5AP00-0□P0 Edition: 07/2018

/LH2/ **SINAMICS G130/G150**
List Manual
Article number: A5E03263479A Edition: 07/2018

/MA1/ **SINAMICS/SINUMERIK**
Machine Configuration Guidelines
Article number: 6FC5397-6CP10-0□A2 Edition: 01/2013

/SH1/ **SINAMICS S120 and SIMODRIVE 611**
Control Cabinet Integration Guidelines
Article number: 6SL3097-0AT00-0□P0 Edition: 09/2007

/SH2/ **SINAMICS S120 High Frequency Drive**
System Manual
Article number: 6SL3097-4AH10-0□P3 Edition: 04/2015

/SH3/ **SINAMICS S120 Hydraulic Drive**
System Manual
Article number: 6SL3097-4BA00-0□P2 Edition: 07/2016

/PFK7S/ **SIMOTICS S-1FK7 Synchronous Motors for SINAMICS S110/S120**
Configuration Manual
Article number: 6SN1197-0AD16-0□P4 Edition: 10/2011

/PFT7S/ **SIMOTICS S-1FT7 Synchronous Motors for SINAMICS S120**
Configuration Manual
Article number: 6SN1197-0AD13-0□P5 Edition: 09/2015

/PKTS/ **SIMOTICS T-1FW3 Complete Torque Motors**
Configuration Manual
Article number: 6SN1197-0AD70-0□P8 Edition: 11/2015

/PJ1FN3/ **SIMOTICS L-1FN3 Linear Motors**
Configuration Manual
Article number: 6SN1197-0AB86-0□P1 Edition: 03/2015

/1FN3_BE/ **SIMOTICS L-1FN3 Linear Motors**
Operating instructions
Article number: 6SN1197-0AF01-0□P1 Edition: 12/2016

/PJTMS/ **SIMOTICS T-1FW6 Built-In Torque Motors**
Configuration Manual
Article number: 6SN1197-0AE00-0□P8 Edition: 08/2016

/1FW6_BE/ **SIMOTICS T-1FW6 Built-In Torque Motors**
Operating instructions
Article number: 6SN1197-0AF00-0□P3 Edition: 07/2017

/PJTMS2/ **Non-Ventilated SIMOTICS T-1FW6 Built-In Torque Motors**
Configuration Manual
Article number: 6SN1197-0AE01-0□P2 Edition: 02/2015

/1FW6_BE2/ **Non-Ventilated SIMOTICS T-1FW6 Built-In Torque Motors**
Operating instructions
Article number: 6SN1197-0AF02-0□P2 Edition: 07/2017

/PH8S/ **SIMOTICS M-1PH8 Synchronous/Induction Motors**
Configuration Manual
Article number: 6SN1197-0AD74-0□P2 Edition: 12/2016

/PMH2/ **SINAMICS SIMAG H2 Hollow-Shaft Measuring System**
Configuration Manual
Article number: 6SN1197-0AB31-0□P8 Edition: 01/2011

/PH1/ **EMC Installation Guidelines**
Configuration Manual
Article number: 6FC5297-0AD30-0□P3 Edition: 01/2012

Documentation for PROFIBUS/PROFINET/PROFIenergy

/P1/ **PROFIBUS-DP/DPV1 IEC 61158**
Basics, Tips and Tricks for Users
Hüthig; Manfred Popp, 2nd Edition
ISBN 3-7785-2781-9

/P2/ **PROFIBUS-DP, Getting Started**
PROFIBUS Nutzerorganisation e. V.; Manfred Popp
Haid-und-Neu-Strasse 7, D-76131 Karlsruhe, Germany
http://www.profibus.com – http://www.profinet.com
Article number 4.071 (German)
4.072 (English)

/P3/ **Manual for PROFIBUS Networks, SIEMENS**
Article number: 6GK1970-5CA20-0AA0

/P4/ **PROFIBUS and PROFINET, PROFIdrive Profile Drive Technology**
PROFIBUS Nutzerorganisation e. V.
Haid-und-Neu-Straße 7, D-76131 Karlsruhe, Germany
http://www.profibus.com – http://www.profinet.com
Article number: 3.172 Version 4.2 October 2015

/P5/ **The PROFINET IO Book**
Basics and Tips for Successful Use
Published by VDE Verlag Berlin; Manfred Popp
ISBN: 978-3-8007-3274-6 2nd Edition, 2010

/P6/ **Automation with PROFINET**
Industrial Communication Based on Industrial Ethernet
Publicis Publishing; Raimond Pigan, Mark Metter
ISBN: 978-3-8957-8293-0 2nd Edition, 2008

/P7/ **PROFIenergy, Common Application Profile**
Technical Specification for PROFINET
PROFIBUS Nutzerorganisation e. V.
Haid-und-Neu-Straße 7, D-76131 Karlsruhe, Germany
http://www.profibus.com – http://www.profinet.com
Article number: 3.802 Version 1.2 April 2016

/IK PI/ **Industrial Communication for Automation and Drives**
Catalog
Article number: E86060-K6710-A101-B7 Edition: 2012

Documentation for Safety Equipment

Note

For more information on technical documentation in and around the topic of "Safety Integrated", please follow the link below:

http://www.siemens.com/safety

The following list contains some of the safety-related documentation available.

/MRL/ **Directive 2006/42/EU of the European Parliament and Council**
Machinery Directive
Bundesanzeiger-Verlags GmbH Edition: 2006

/SISH/	**Safety Integrated** System Manual		
	Article number:	6ZB5000-0AA01-0BA1	5th Edition
	System Manual Appendix to 5th Edition		
	Article number:	6ZB5000-0AB01-0BA0	
/SICD/	**Safety Integrated** CD-ROM		
	Article number:	E20001-F500-P210	Edition: 04/2008

Index

Numbers

C

D

E

F

G

H

I

J

K

L

M

N

O

T

U

V

General documentation/catalogs			
SINAMICS	G110	D 11	- Converter built-in units 0.12 kW up to 3 kW
	G120	D 31	- SINAMICS Converters for Single-Axis Drives and SIMOTICS Motors
	G130, G150	D 11	- Converter built-in units - Converter cabinet units
	S120, S150	D 21	- SINAMICS S120 built-in units in the chassis format and Cabinet Modules - SINAMICS S150 Converter Cabinet Units
	S120	D 21.4	- SINAMICS S120 and SIMOTICS
Manufacturer/service documentation			
SINAMICS	G110		- Getting Started - Operating instructions - List Manuals
	G120		- Getting Started - Operating instructions - Hardware Installation Manuals - Function Manual Safety Integrated - List Manuals
	G130		- Operating instructions - List Manual
	G150		- Operating instructions - List Manual
	GM150, SM120/SM150, GL150, SL150		- Operating instructions - List Manuals
	S110		- Manual - Getting Started - Function Manual - List Manual
	S120		- Getting Started with STARTER - Commissioning Manual with STARTER - Getting Started with Startdrive - Commissioning Manual with Startdrive - Commissioning Manual CANopen - Function Manual Drive Functions - Function Manual Safety Integrated - Function Manual DCC - List Manual - Manual Control Unit and supplementary system components - Manual Power Unit Booksize - Manual Power Unit Booksize C/D Type - Manual Power Unit Chassis air-cooled - Manual Power Unit Chassis liquid-cooled - Combi Manual - Manual Cabinet Modules - Manual AC Drive - SINAMICS S120M Manual Distributed Drive Technology - SINAMICS HLA System Manual Hydraulic Drive
	S150		- Operating instructions - List Manual
Motors			- Configuration Manuals, Motors
General			- Configuration Manual, EMC Guidelines

More information

Siemens:
www.siemens.com

Industry Online Support (service and support):
www.siemens.com/online-support

Industry Mall
www.siemens.com/industrymall

Siemens AG
Digital Factory
Motion Control
Postfach 3180
91050 ERLANGEN
GERMANY

Scan the QR code for product information