

SIMATIC S7-300 Advanced Controllers



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Overview



S7-300

- The modular mini PLC system for the low and mid-performance ranges
- With comprehensive range of modules for optimum adaptation to the automation task
- Flexible use through simple implementation of distributed structures and versatile networking
- User-friendly handling and uncomplicated design without a fan
- Can be expanded without problems when the tasks increase
- Powerful thanks to a range of integrated functions

S7-300F

- Fail-safe automation system for plants with increased safety requirements for production technology
- Based on S7-300
- Additional ET 200S and ET 200M distributed I/O stations complete with safety-related modules can be connected
- Safety-related communication via PROFIBUS DP with PROFIsafe profile
- Standard modules can be used in addition for non-safety-relevant applications

Availability

As part of our established product portfolio, the SIMATIC S7-300/ET 200M system families will generally be available until 2023. Following the product phase-out declaration, products will be available as spare parts for another ten years.

Technical specifications

General technical data SIMATIC S7-300

Degree of protection	IP20 according to IEC 60 529
Ambient temperature	<ul style="list-style-type: none"> • For horizontal installation 0 to 60 °C • For vertical installation 0 to 40 °C
Relative humidity	10 to 95%, non-condensing, corresponds to relative humidity (RH), stress level 2 acc. to IEC 61131, Part 2
Air pressure	From 1080 to 795 hPa (corresponds to an altitude of -1000 to +2000 m)
Insulation	<ul style="list-style-type: none"> • < 50 V 500 V DC test voltage • < 150 V 2500 V DC test voltage • < 250 V 4000 V DC test voltage
Electromagnetic compatibility	<p>Requirements of the EMC directive; interference immunity according to IEC 61000-6-2</p> <ul style="list-style-type: none"> • Pulse-shaped disturbance variables Test according to: Electrostatic discharge according to IEC 61000-4-2, burst pulses according to IEC 61000-4-4, energy single pulse (surge) according to IEC 61000-4-5, • Sinusoidal disturbance variables Test according to: HF irradiation according to IEC 61000-4-3, HF decoupling according to IEC 61000-4-6 • Emission of radio interference Interference emission according to EN 50081-2 <p>Test according to: Emitted interference of electromagnetic fields according to EN 55016: Limit value class A, (measured at a distance of 10 m) Interference emission via AC mains according to EN 55011: Limit value class A, Group 1</p>
Mechanical strength	<ul style="list-style-type: none"> • Vibrations <p>Frequency range $10 \text{ Hz} \leq f \leq 58 \text{ Hz}$</p> <ul style="list-style-type: none"> • Continuous: 0.0375 mm amplitude • Occasionally 0.75 mm amplitude <p>Frequency range $58 \text{ Hz} \leq f \leq 150 \text{ Hz}$</p> <ul style="list-style-type: none"> • Continuous: 0.5 g constant acceleration • Occasionally 1 g constant acceleration <p>Testing according to IEC 60068-2-6 Tested with: $5 \text{ Hz} \leq f \leq 9 \text{ Hz}$, constant amplitude 3.5 mm; $9 \text{ Hz} \leq f \leq 150 \text{ Hz}$, constant acceleration 1 g; Duration of oscillation: 10 frequency passes per axis in each direction of the 3 mutually perpendicular axes Testing according to IEC 60068-2-27 Tested with: Half-sine wave: strength of shock 15 g peak value, 11 ms duration; Shock direction: 3 shocks each in \pm direction in each of the 3 mutually vertical axes</p>
• Shock	

SIMATIC S7-300 Advanced Controllers

Introduction

S7-300/S7-300F, SIPLUS S7-300

Technical specifications (continued)

General technical data of SIPLUS S7-300	
Ambient temperature range	-40/-25 ... +60/70 °C
Conformal coating	Coating of the printed circuit boards and the electronic components
Technical data	The technical data of the standard product applies except for the environmental conditions.
Ambient conditions	
Extended range of environmental conditions	
<ul style="list-style-type: none"> with reference to ambient temperature, air pressure and altitude 	Tmin ... Tmax at 1080 hPa ... 795 hPa (-1000 m ... +2000 m) // Tmin ... (Tmax - 10K) at 795 hPa ... 658 hPa (+2000 m ... +3500 m) // Tmin ... (Tmax - 20K) at 658 hPa ... 540 hPa (+3500 m ... +5000 m)
<ul style="list-style-type: none"> At cold restart, min. 	0° C
Relative humidity	
<ul style="list-style-type: none"> with condensation, max. 	100 %; RH incl. bedewing/frost (no commissioning in bedewed state)
Resistance	
<ul style="list-style-type: none"> to biologically active substances/ compliance with EN 60721-3-3 	Yes; Class 3B2 mold and fungal spores (except fauna); the supplied plug covers must remain in place on the unused interfaces during operation.
<ul style="list-style-type: none"> to chemically active substances/ compliance with EN 60721-3-3 	Yes; Class 3C4 (RH < 75%) incl. salt spray in accordance with EN 60068-2-52 (severity 3); the supplied plug covers must remain in place on the unused interfaces during operation.
<ul style="list-style-type: none"> to mechanically active substances, compliance with EN 60721-3-3 	Yes; Class 3S4 incl. sand, dust; the supplied plug covers must remain in place on unused interfaces during operation.

Overview CPU 312



- The entry level CPU in Totally Integrated Automation (TIA)
- For smaller applications with moderate processing performance requirements

SIMATIC Micro Memory Card required for operation of the CPU.

Overview CPU 314



- For plants with medium program scope requirements
- High processing power in binary and floating-point arithmetic

SIMATIC Micro Memory Card required for operation of CPU.

Overview CPU 315-2 DP



- The CPU with medium to large program memory and quantity structures for optional use of SIMATIC engineering tools
- High processing power in binary and floating-point arithmetic
- Used as central controller in production lines with central and distributed I/O
- PROFIBUS DP master/slave interface
- For comprehensive I/O expansion
- For configuring distributed I/O structures
- Isochronous mode on PROFIBUS

SIMATIC Micro Memory Card required for operation of CPU.

SIMATIC S7-300 Advanced Controllers

Central processing units

Standard CPUs

Overview 315-2 PN/DP



- The CPU with mid-range program memory and quantity frameworks
- High processing power in binary and floating-point arithmetic
- Used as central controller in production lines with central and distributed I/O
- PROFINET interface with 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as intelligent PROFINET device under a SIMATIC or non-Siemens PROFINET I/O Controller
- Component Based Automation (CBA) on PROFINET
- PROFINET proxy for intelligent devices on PROFIBUS DP in Component Based Automation (CBA)
- Integrated web server with the option of creating user-defined web pages
- Combined MPI/PROFIBUS DP master/slave interface
- Isochronous mode on PROFIBUS and PROFINET

SIMATIC Micro Memory Card required for operation of CPU.

Overview CPU 317-2 DP



- The CPU with a large program memory and quantity framework for demanding applications
- For cross-industry automation tasks in series machine, special machine and plant construction
- Used as central controller in production lines with central and distributed I/O
- High processing power in binary and floating-point arithmetic
- 2 PROFIBUS DP master/slave interfaces
- For comprehensive I/O expansion
- For configuring distributed I/O structures
- Isochronous mode on PROFIBUS
- Optionally supports the use of SIMATIC engineering tools

SIMATIC Micro Memory Card required for operation of CPU.

Overview CPU 317-2 PN/DP



- The CPU with a large program memory and quantity framework for demanding applications
- For cross-industry automation tasks in series machine, special machine and plant construction
- Used as central controller in production lines with central and distributed I/O
- High processing power in binary and floating-point arithmetic
- PROFINET interface with 2-port switch
- PROFINET I/O Controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as intelligent PROFINET device under a SIMATIC or non-Siemens PROFINET I/O Controller
- Distributed intelligence in Component Based Automation (CBA) on PROFINET
- PROFINET proxy for intelligent devices on PROFIBUS DP in Component Based Automation (CBA)
- Integrated web server with the option of creating user-defined web pages
- Combined MPI/PROFIBUS DP master/slave interface
- Isochronous mode on PROFIBUS and PROFINET
- Optionally supports the use of SIMATIC engineering tools

SIMATIC Micro Memory Card required for operation of CPU.

Overview CPU 319-3 PN/DP



- The CPU with high command processing performance, large program memory and quantity framework for demanding applications
- For cross-industry automation tasks in series machine, special machine and plant construction
- Used as central controller in production lines with central and distributed I/O on PROFIBUS and PROFINET
- PROFINET I/O controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as intelligent PROFINET device under a SIMATIC or non-Siemens PROFINET I/O controller
- PROFINET interface with 2-port switch
- Isochronous mode on PROFIBUS or PROFINET
- Integrated web server with the option of creating user-defined web pages
- Distributed intelligence in Component Based Automation (CBA) on PROFINET
- PROFINET proxy for intelligent devices on PROFIBUS DP in Component Based Automation (CBA)
- Optionally supports the use of SIMATIC engineering tools

SIMATIC Micro Memory Card required for operation of the CPU.

SIMATIC S7-300 Advanced Controllers

Central processing units

Standard CPUs

Technical specifications

Article number	6ES7312-1AE14-0AB0 CPU312, 32KB	6ES7314-1AG14-0AB0 CPU314, 128 KB	6ES7315-2AH14-0AB0 CPU315-2DP, 256 KB	6ES7315-2EH14-0AB0 CPU315-2 PN/DP, 384 KB
General information				
Engineering with				
• Programming package	STEP 7 V5.5 + SP1 or higher or STEP 7 V5.2 + SP1 or higher with HSP 218	STEP 7 V5.5 + SP1 or higher or STEP 7 V5.2 + SP1 or higher with HSP 218	STEP 7 V5.5 + SP1 or higher or STEP 7 V5.2 + SP1 or higher with HSP 218	STEP 7 V5.5 or higher
Supply voltage				
Rated value (DC)				
• 24 V DC	Yes	Yes	Yes	Yes
Power loss				
Power loss, typ.	4 W	4 W	4.5 W	4.65 W
Memory				
Work memory				
• integrated	32 kbyte	128 kbyte	256 kbyte	384 kbyte
• expandable	No	No	No	No
• Size of retentive memory for retentive data blocks	32 kbyte	64 kbyte	128 kbyte	128 kbyte
Load memory				
• Plug-in (MMC), max.	8 Mbyte	8 Mbyte	8 Mbyte	8 Mbyte
CPU processing times				
for bit operations, typ.	0.1 µs	0.06 µs	0.05 µs	0.05 µs
for word operations, typ.	0.24 µs	0.12 µs	0.09 µs	0.09 µs
for fixed point arithmetic, typ.	0.32 µs	0.16 µs	0.12 µs	0.12 µs
for floating point arithmetic, typ.	1.1 µs	0.59 µs	0.45 µs	0.45 µs
Counters, timers and their retentivity				
S7 counter				
• Number	256	256	256	256
IEC counter				
• present	Yes	Yes	Yes	Yes
S7 times				
• Number	256	256	256	256
IEC timer				
• present	Yes	Yes	Yes	Yes
Data areas and their retentivity				
Flag				
• Number, max.	256 byte	256 byte	2 048 byte	2 048 byte
Address area				
I/O address area				
• Inputs	1 024 byte	1 024 byte	2 048 byte	2 048 byte
• Outputs	1 024 byte	1 024 byte	2 048 byte	2 048 byte
Process image				
• Inputs, adjustable	1 024 byte	1 024 byte	2 048 byte	2 048 byte
• Outputs, adjustable	1 024 byte	1 024 byte	2 048 byte	2 048 byte
Time of day				
Clock				
• Hardware clock (real-time)		Yes	Yes	Yes
• Software clock	Yes			
Operating hours counter				
• Number	1	1	1	1
1. Interface				
Interface type	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface
Physics	RS 485	RS 485	RS 485	RS 485
Protocols				
• MPI	Yes	Yes	Yes	Yes
• PROFIBUS DP master	No	No	No	Yes
• PROFIBUS DP slave	No	No	No	Yes
• Point-to-point connection	No	No	No	No
PROFIBUS DP master				
• Number of DP slaves, max.				124

Technical specifications (continued)

Article number	6ES7312-1AE14-0AB0 CPU312, 32KB	6ES7314-1AG14-0AB0 CPU314, 128 KB	6ES7315-2AH14-0AB0 CPU315-2DP, 256 KB	6ES7315-2EH14-0AB0 CPU315-2 PN/DP, 384 KB
2. Interface				
Interface type			Integrated RS 485 interface	PROFINET
Physics			RS 485	Ethernet RJ45
Interface types				
• Number of ports				2
Protocols				
• MPI			No	No
• PROFINET IO Controller				Yes; Also simultaneously with IO-Device functionality
• PROFINET IO Device				Yes; Also simultaneously with IO Controller functionality
• PROFINET CBA				Yes
• PROFIBUS DP master			Yes	No
• PROFIBUS DP slave			Yes	No
PROFIBUS DP master				
• Number of DP slaves, max.			124; Per station	
PROFINET IO Controller				
Services				
- Number of connectable IO Devices, max.				128
- Of which IO devices with IRT, max.				64
- Number of IO Devices with IRT and the option "high flexibility"				128
- Number of connectable IO Devices for RT, max..				128
Protocols				
Open IE communication				
• TCP/IP				Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.				8
• ISO-on-TCP (RFC1006)				Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.				8
• UDP				Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.				8
Web server				
• supported				Yes
Isochronous mode				
Isochronous operation (application synchronized up to terminal)			Yes	Yes; Via PROFIBUS DP or PROFINET interface
Communication functions				
PG/OP communication	Yes	Yes	Yes	Yes
Data record routing	No	No	Yes	Yes
Global data communication				
• supported	Yes	Yes	Yes	Yes
S7 basic communication				
• supported	Yes	Yes	Yes	Yes
S7 communication				
• supported	Yes	Yes	Yes	Yes
S5 compatible communication				
• supported	Yes; via CP and loadable FC	Yes; via CP and loadable FC	Yes; via CP and loadable FC	Yes; via CP and loadable FC
Number of connections				
• overall	6	12	16	16

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Central processing units

Standard CPUs

Technical specifications (continued)

Article number	6ES7312-1AE14-0AB0 CPU312, 32KB	6ES7314-1AG14-0AB0 CPU314, 128 KB	6ES7315-2AH14-0AB0 CPU315-2DP, 256 KB	6ES7315-2EH14-0AB0 CPU315-2 PN/DP, 384 KB
Ambient conditions				
Ambient temperature during operation				
• min.	0 °C	0 °C	0 °C	0 °C
• max.	60 °C	60 °C	60 °C	60 °C
Configuration				
Programming				
Programming language				
- LAD	Yes	Yes	Yes	Yes
- FBD	Yes	Yes	Yes	Yes
- STL	Yes	Yes	Yes	Yes
- SCL	Yes	Yes	Yes	Yes
- CFC	Yes	Yes	Yes	Yes
- GRAPH	Yes	Yes	Yes	Yes
- HiGraph®	Yes	Yes	Yes	Yes
Know-how protection				
• User program protection/ password protection	Yes	Yes	Yes	Yes
• Block encryption	Yes; With S7 block Privacy	Yes; With S7 block Privacy	Yes; With S7 block Privacy	Yes; With S7 block Privacy
Dimensions				
Width	40 mm	40 mm	40 mm	40 mm
Height	125 mm	125 mm	125 mm	125 mm
Depth	130 mm	130 mm	130 mm	130 mm
Weights				
Weight, approx.	270 g	280 g	290 g	340 g
<hr/>				
Article number	6ES7317-2AK14-0AB0 CPU317-2 DP, 1 MB	6ES7317-2EK14-0AB0 CPU317-2 PN/DP, 1 MB	6ES7318-3EL01-0AB0 CPU319-3 PN/DP, 2 MB	
General information				
Engineering with				
• Programming package	STEP 7 as of V5.5 + SP1 or STEP 7 V5.2 + SP1 or higher with HSP 202	STEP 7 V5.5 or higher	STEP 7 V5.5 or higher	
Supply voltage				
Rated value (DC)				
• 24 V DC	Yes	Yes	Yes	
Power loss				
Power loss, typ.	4.5 W	4.65 W	14 W	
Memory				
Work memory				
• integrated	1 024 kbyte	1 024 kbyte	2 048 kbyte	
• expandable	No	No	No	
• Size of retentive memory for retentive data blocks	256 kbyte	256 kbyte	700 kbyte	
Load memory				
• Plug-in (MMC), max.	8 Mbyte	8 Mbyte	8 Mbyte	
CPU processing times				
for bit operations, typ.	0.025 µs	0.025 µs	0.004 µs	
for word operations, typ.	0.03 µs	0.03 µs	0.01 µs	
for fixed point arithmetic, typ.	0.04 µs	0.04 µs	0.01 µs	
for floating point arithmetic, typ.	0.16 µs	0.16 µs	0.04 µs	

Technical specifications (continued)

Article number	6ES7317-2AK14-0AB0 CPU317-2 DP, 1 MB	6ES7317-2EK14-0AB0 CPU317-2 PN/DP, 1 MB	6ES7318-3EL01-0AB0 CPU319-3 PN/DP, 2 MB
Counters, timers and their retentivity			
S7 counter			
• Number	512	512	2 048
IEC counter			
• present	Yes	Yes	Yes
S7 times			
• Number	512	512	2 048
IEC timer			
• present	Yes	Yes	Yes
Data areas and their retentivity			
Flag			
• Number, max.	4 096 byte	4 096 byte	8 192 byte
Address area			
I/O address area			
• Inputs	8 192 byte	8 192 byte	8 192 byte
• Outputs	8 192 byte	8 192 byte	8 192 byte
Process image			
• Inputs, adjustable	8 192 byte	8 192 byte	8 192 byte
• Outputs, adjustable	8 192 byte	8 192 byte	8 192 byte
Time of day			
Clock			
• Hardware clock (real-time)	Yes	Yes	Yes
Operating hours counter			
• Number	4	4	4
1. Interface			
Interface type	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface
Physics	RS 485	RS 485	RS 485
Protocols			
• MPI	Yes	Yes	Yes
• PROFIBUS DP master	Yes	Yes	Yes
• PROFIBUS DP slave	Yes; A DP slave at both interfaces simultaneously is not possible	Yes	Yes; A DP slave at both interfaces simultaneously is not possible
• Point-to-point connection	No	No	No
PROFIBUS DP master			
• Number of DP slaves, max.	124	124	124
2. Interface			
Interface type	Integrated RS 485 interface	PROFINET	Integrated RS 485 interface
Physics	RS 485	Ethernet RJ45	RS 485
Interface types			
• Number of ports		2	
Protocols			
• MPI	No	No	No
• PROFINET IO Controller		Yes; Also simultaneously with IO-Device functionality	No
• PROFINET IO Device		Yes; Also simultaneously with IO Controller functionality	No
• PROFINET CBA		Yes	No
• PROFIBUS DP master	Yes	No	Yes
• PROFIBUS DP slave	Yes; A DP slave at both interfaces simultaneously is not possible	No	Yes; A DP slave at both interfaces simultaneously is not possible
PROFIBUS DP master			
• Number of DP slaves, max.	124		124
PROFINET IO Controller			
Services			
- Number of connectable IO Devices, max.		128	
- Of which IO devices with IRT, max.		64	
- Number of IO Devices with IRT and the option "high flexibility"		128	
- Number of connectable IO Devices for RT, max.		128	

SIMATIC S7-300 Advanced Controllers

Central processing units

Standard CPUs

Technical specifications (continued)

Article number	6ES7317-2AK14-0AB0 CPU317-2 DP, 1 MB	6ES7317-2EK14-0AB0 CPU317-2 PN/DP, 1 MB	6ES7318-3EL01-0AB0 CPU319-3 PN/DP, 2 MB
3. Interface			
Interface type			PROFINET
Physics			Ethernet RJ45
Interface types			
• Number of ports			2
Protocols			
• MPI			No
• PROFINET IO Controller			Yes; Also simultaneously with I-Device functionality
• PROFINET IO Device			Yes; Also simultaneously with IO Controller functionality
• PROFINET CBA			Yes
• PROFIBUS DP master			No
• PROFIBUS DP slave			No
PROFINET IO Controller			
Services			
- Number of connectable IO Devices, max.			256
- Of which IO devices with IRT, max.			64
- Number of IO Devices with IRT and the option "high flexibility"			256
- Number of connectable IO Devices for RT, max..			256
Protocols			
Open IE communication			
• TCP/IP		Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.		16	32
• ISO-on-TCP (RFC1006)		Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.		16	32
• UDP		Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.		16	32
Web server			
• supported		Yes	Yes
Isochronous mode			
Isochronous operation (application synchronized up to terminal)		Yes; Via PROFIBUS DP or PROFINET interface	Yes; Via 2nd PROFIBUS DP or PROFINET interface
Communication functions			
PG/OP communication	Yes	Yes	Yes
Data record routing	Yes	Yes	Yes
Global data communication			
• supported	Yes	Yes	Yes
S7 basic communication			
• supported	Yes	Yes	Yes
S7 communication			
• supported	Yes	Yes	Yes
S5 compatible communication			
• supported	Yes; via CP and loadable FC	Yes; via CP and loadable FC	Yes; via CP and loadable FC
Number of connections			
• overall	32	32	32
Ambient conditions			
Ambient temperature during operation			
• min.	0 °C	0 °C	0 °C
• max.	60 °C	60 °C	60 °C

Technical specifications (continued)

Article number	6ES7317-2AK14-0AB0	6ES7317-2EK14-0AB0	6ES7318-3EL01-0AB0
	CPU317-2 DP, 1 MB	CPU317-2 PN/DP, 1 MB	CPU319-3 PN/DP, 2 MB
Configuration			
Programming			
Programming language			
- LAD	Yes	Yes	Yes
- FBD	Yes	Yes	Yes
- STL	Yes	Yes	Yes
- SCL	Yes	Yes	Yes
- CFC	Yes	Yes	Yes
- GRAPH	Yes	Yes	Yes
- HiGraph®	Yes	Yes	Yes
Know-how protection			
• User program protection/ password protection	Yes	Yes	Yes
• Block encryption	Yes; With S7 block Privacy	Yes; With S7 block Privacy	Yes; With S7 block Privacy
Dimensions			
Width	40 mm	40 mm	120 mm
Height	125 mm	125 mm	125 mm
Depth	130 mm	130 mm	130 mm
Weights			
Weight, approx.	360 g	340 g	1 250 g

Ordering data	Article No.	Article No.
CPU 312 Work memory 32 KB, supply voltage 24 V DC, MPI; MMC required	6ES7312-1AE14-0AB0	SIMATIC Micro Memory Card 64 KB 6ES7953-8LF31-0AA0 128 KB 6ES7953-8LG31-0AA0 512 KB 6ES7953-8LJ31-0AA0 2 MB 6ES7953-8LL31-0AA0 4 MB 6ES7953-8LM31-0AA0 8 MB 6ES7953-8LP31-0AA0
CPU 314 Work memory 128 KB, supply voltage 24 V DC, MPI; MMC required	6ES7314-1AG14-0AB0	MPI cable 6ES7901-0BF00-0AA0 for connection of SIMATIC S7 and PG via MPI; 5 m in length
CPU 315-2 DP Work memory 256 KB, supply voltage 24 V DC, MPI, PROFIBUS DP master/slave interface; MMC required	6ES7315-2AH14-0AB0	Slot number plates 6ES7912-0AA00-0AA0
CPU 315-2 PN/DP Work memory 384 KB, 24 V DC power supply, combined MPI/PROFIBUS DP master/slave interface, Ethernet/PROFINET interface with 2-port switch; MMC required	6ES7315-2EH14-0AB0	SIMATIC Manual Collection 6ES7998-8XC01-8YE0 Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC Distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC-based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC
CPU 317-2 DP Work memory 1 MB, supply voltage 24 V DC, MPI, PROFIBUS DP master/slave interface; MMC required	6ES7317-2AK14-0AB0	SIMATIC Manual Collection update service for 1 year 6ES7998-8XC01-8YE2 Current "Manual Collection" DVD and the three subsequent updates
CPU 317-2 PN/DP Work memory 1 MB, 24 V DC power supply, combined MPI/PROFIBUS DP master/slave interface, Ethernet/PROFINET interface with 2-port switch; MMC required	6ES7317-2EK14-0AB0	Power supply connector 6ES7391-1AA00-0AA0 10 units, spare part
CPU 319-3 PN/DP Work memory 2 MB, power supply 24 V DC, combined MPI/PROFIBUS DP master/slave interface, PROFIBUS DP master/ slave interface, Ethernet/PROFINET interface with 2-port switch; MMC required	6ES7318-3EL01-0AB0	USB A2 PC adapter 6GK1571-0BA00-0AA0 For connecting a PG/PC or notebook to PROFIBUS or MPI; USB cable included in scope of supply

SIMATIC S7-300 Advanced Controllers

Central processing units

Standard CPUs

Ordering data	Article No.	Ordering data	Article No.
PROFIBUS bus components		PROFINET bus components	
PROFIBUS DP bus connector RS 485		IE FC TP Standard Cable GP 2x2	6XV1840-2AH10
<ul style="list-style-type: none"> With 90° cable outlet, max. transfer rate 12 Mbps <ul style="list-style-type: none"> - without PG interface - with PG interface with 90° cable outlet for FastConnect connection system, max. transfer rate 12 Mbps <ul style="list-style-type: none"> - without PG interface, 1 unit - without PG interface, 100 units - with PG interface, 1 unit - with PG interface, 100 units with axial cable outlet for SIMATIC OP, for connecting to PPI, MPI, PROFIBUS 	6ES7972-0BA12-0XA0 6ES7972-0BB12-0XA0	4-wire, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compatible; with UL approval; Sold by the meter	
	6ES7972-0BA52-0XA0 6ES7972-0BA52-0XB0 6ES7972-0BB52-0XA0 6ES7972-0BB52-0XB0 6GK1500-0EA02	FO Standard Cable GP (50/125)	6XV1873-2A
PROFIBUS Fast Connect bus cable	6XV1830-0EH10	Standard cable, splittable, UL approval, sold by the meter	
Standard type with special design for quick mounting, 2-wire, shielded, sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m		SCALANCE X204-2 Industrial Ethernet Switch	6GK5204-2BB10-2AA3
RS 485 repeater for PROFIBUS	6ES7972-0AA02-0XA0	Industrial Ethernet switches with integral SNMP access, Web diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; four 10/100 Mbps RJ45 ports and two FO ports	
Transmission rate up to 12 Mbps; 24 V DC; IP20 enclosure		Compact Switch Module CSM 377	6GK7377-1AA00-0AA0
		Unmanaged switch for connecting SIMATIC S7-300, ET 200M and up to three other stations to Industrial Ethernet with 10/100 Mbps; 4 x RJ45 ports; external 24 V DC power supply, LED diagnostics, S7-300 module incl. electronic manual on CD-ROM	
		IE FC RJ45 plugs	
		RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables	
		IE FC RJ45 plug 145	
		145° cable outlet	
		1 unit	6GK1901-1BB30-0AA0
		10 units	6GK1901-1BB30-0AB0
		50 units	6GK1901-1BB30-0AE0
		IE FC RJ45 plug 180	
		180° cable outlet	
		1 unit	6GK1901-1BB10-2AA0
		10 units	6GK1901-1BB10-2AB0
		50 units	6GK1901-1BB10-2AE0
		PROFIBUS/PROFINET bus components	See Catalogs IK PI, CA 01
		For establishing MPI/PROFIBUS/PROFINET communication	

Overview SIPLUS CPU 314



- For plants with medium requirements on the program scope
- High processing performance in binary and floating-point arithmetic

SIPLIC Micro Memory Card required for operation of CPU.

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Overview SIPLUS CPU 315-2 DP



- The CPU with medium to large program memory and quantity structures for optional use of SIMATIC engineering tools
- High processing performance in binary and floating-point arithmetic
- PROFIBUS DP master/slave interface
- For comprehensive I/O expansion
- For configuring distributed I/O structures

SIPLIC Micro Memory Card required for operation of CPU.

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

SIMATIC S7-300 Advanced Controllers

Central processing units

SIPLUS S7-300 standard CPUs

Overview SIPLUS CPU 315-2 PN/DP



- The CPU with medium-sized program memory and quantity frameworks
- High processing performance in binary and floating-point arithmetic
- Used as central controller in production lines with central and distributed I/O
- Component Based Automation (CBA) on PROFINET
- PROFINET proxy for intelligent devices on PROFIBUS DP in Component Based Automation (CBA)
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET interface with 2-port switch
- Combined MPI/PROFIBUS DP master/slave interface
- Isochronous mode on PROFIBUS

SIMATIC Micro Memory Card required for operation of CPU.

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Overview SIPLUS CPU 317-2 PN/DP



- The CPU with a large program memory and quantity framework for demanding applications
- Distributed intelligence in Component Based Automation (CBA) on PROFINET
- PROFINET proxy for intelligent devices on PROFIBUS DP in Component Based Automation (CBA)
- PROFINET I/O Controller for operating distributed I/O on PROFINET
- For cross-industry automation tasks in series machine, special machine and plant construction
- Used as central controller in production lines with central and distributed I/O
- For comprehensive I/O expansion
- For configuring distributed I/O structures
- High processing performance in binary and floating-point arithmetic
- Combined MPI/PROFIBUS DP master/slave interface
- Optionally supports the use of SIMATIC engineering tools

Micro Memory Card required for operation of CPU.

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Technical specifications

Article number	6AG1314-1AG14-2AY0	6AG1314-1AG14-7AB0	6AG1315-2AH14-2AY0	6AG1315-2AH14-7AB0
Based on	6ES7314-1AG14-0AB0 SIPLUS CPU314 EN50155	6ES7314-1AG14-0AB0 SIPLUS S7-300 CPU314	6ES7315-2AH14-0AB0 SIPLUS CPU 315-2DP EN50155	6ES7315-2AH14-0AB0 SIPLUS S7-300 CPU 315-2DP
Ambient conditions				
Ambient temperature during operation				
• min.	-25 °C; = Tmin	-25 °C; = Tmin	-25 °C; = Tmin	-25 °C; = Tmin
• max.	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	5 000 m	5 000 m	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity				
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance				
Use in stationary industrial systems				
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *
Use on land craft, rail vehicles and special-purpose vehicles				
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request		Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *		Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *		Yes; Class 5S3 incl. sand, dust; *	
Use on ships/at sea				
- to biologically active substances according to EN 60721-3-6		Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request		Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6		Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *		Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6		Yes; Class 6S3 incl. sand, dust; *		Yes; Class 6S3 incl. sand, dust; *
Remark				
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

SIMATIC S7-300 Advanced Controllers

Central processing units

SIPLUS S7-300 standard CPUs

Technical specifications (continued)

Article number	6AG1315-2EH14-2AY0	6AG1315-2EH14-7AB0	6AG1317-2EK14-2AY0	6AG1317-2EK14-7AB0
Based on	6ES7315-2EH14-0AB0 SIPLUS S7-300 CPU315-2PN/DP EN50155	6ES7315-2EH14-0AB0 SIPLUS S7-300 CPU315-2PN/DP	6ES7317-2EK14-0AB0 SIPLUS S7-300 CPU317-2PN/DP EN50155	6ES7317-2EK14-0AB0 SIPLUS S7-300 CPU317-2PN/DP
Ambient conditions				
Ambient temperature during operation				
• min.	-25 °C; = Tmin	-25 °C; = Tmin	-25 °C; = Tmin	-25 °C; = Tmin
• max.	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155	70 °C; = Tmax; @ 60°C for UL/ATEX/FM use
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	5 000 m	5 000 m	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity				
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance				
Use in stationary industrial systems				
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *
Use on land craft, rail vehicles and special-purpose vehicles				
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request		Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *		Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *		Yes; Class 5S3 incl. sand, dust; *	
Use on ships/at sea				
- to biologically active substances according to EN 60721-3-6		Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request		Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6		Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *		Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6		Yes; Class 6S3 incl. sand, dust; *		Yes; Class 6S3 incl. sand, dust; *
Remark				
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

Ordering data	Article No.	Article No.	
SIPLUS S7-300 CPU 314 <i>For industrial applications with extended ambient conditions</i> CPU, work memory 128 KB, power supply 24 V DC, MPI; MMC required Extended temperature range and exposure to media <i>For rolling stock railway applications</i> CPU, work memory 128 KB, power supply 24 V DC, MPI; MMC required Conforms to EN 50155	6AG1314-1AG14-7AB0 6AG1314-1AG14-2AY0	SIPLUS S7-300 CPU 317-2 PN/DP <i>For industrial applications with extended ambient conditions</i> CPU, work memory 1 MB, power supply 24 V DC, combined MPI/PROFIBUS DP master/slave interface, Ethernet/PROFINET interface; MMC required Extended temperature range and exposure to media <i>For rolling stock railway applications</i> CPU, work memory 1 MB, power supply 24 V DC, combined MPI/PROFIBUS DP master/slave interface, Ethernet/PROFINET interface; MMC required Conforms to EN 50155	6AG1317-2EK14-7AB0 6AG1317-2EK14-2AY0
SIPLUS S7-300 CPU 315-2 DP <i>For industrial applications with extended ambient conditions</i> CPU, work memory 256 KB, power supply 24 V DC, MPI, PROFIBUS DP master/slave interface; MMC required Extended temperature range and exposure to media <i>For rolling stock railway applications</i> CPU, work memory 256 KB, power supply 24 V DC, MPI, PROFIBUS DP master/slave interface; MMC required Conforms to EN 50155	6AG1315-2AH14-7AB0 6AG1315-2AH14-2AY0	Accessories <i>Mandatory</i> SIMATIC Micro Memory Card 64 KB 128 KB 512 KB 2 MB 4 MB 8 MB	6ES7953-8LF31-0AA0 6ES7953-8LG31-0AA0 6ES7953-8LJ31-0AA0 6ES7953-8LL31-0AA0 6ES7953-8LM31-0AA0 6ES7953-8LP31-0AA0
SIPLUS S7-300 CPU 315-2 PN/DP <i>For industrial applications with extended ambient conditions</i> CPU, work memory 384 KB, power supply 24 V DC, combined MPI/PROFIBUS DP master/slave interface, Ethernet/PROFINET interface with 2-port switch; MMC required Extended temperature range and exposure to media <i>For rolling stock railway applications</i> CPU, work memory 384 KB, power supply 24 V DC, combined MPI/PROFIBUS DP master/slave interface, Ethernet/PROFINET interface with 2-port switch; MMC required Conforms to EN 50155	6AG1315-2EH14-7AB0 6AG1315-2EH14-2AY0	PROFIBUS DP RS 485 bus connector (Extended temperature range and exposure to media) With 90° cable outlet, max. transfer rate 12 Mbps <ul style="list-style-type: none"> • without PG interface • with PG interface With inclined cable outlet, max. transmission rate 12 Mbps <ul style="list-style-type: none"> • without PG interface • with PG interface With insulation displacement terminals, max. transfer rate 12 Mbps <ul style="list-style-type: none"> • with PG interface, grounding via control cabinet cover (Extended temperature range) With axial cable outlet for SIMATIC OP, for connecting to PPI, MPI, PROFIBUS	6AG1972-0BA12-2XA0 6AG1972-0BB12-2XA0 6AG1972-0BA42-7XA0 6AG1972-0BB42-7XA0 6AG1972-0BB70-7XA0 6AG1500-0EA02-2AA0

SIMATIC S7-300 Advanced Controllers

Central processing units

SIPLUS S7-300 standard CPUs

Ordering data

Article No.

IE FC RJ45 plug 180

(Extended temperature range and media exposure)

180° cable outlet

- 1 unit

6AG1901-1BB10-7AA0

SIPLUS SCALANCE X-200 Industrial Ethernet Switches

Industrial Ethernet switches with integral SNMP access, web diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; with integrated redundancy manager (except: SCALANCE X208PRO); incl. operating instructions, Industrial Ethernet network manual and configuration software on CD-ROM

- With electrical and optical ports for glass multimode FOC up to 3 km
- Extended temperature range and exposure to media
- **SIPLUS SCALANCE X204-2** with four 10/100 Mbps RJ45 ports and two fiber-optic ports

6AG1204-2BB10-4AA3

PROFIBUS FastConnect bus cable

6XV1830-0EH10

Standard type with special design for quick mounting, 2-wire, shielded, sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m

RS 485 repeater for PROFIBUS

6AG1972-0AA02-7XA0

(Extended temperature range and exposure to media)

Transmission rate up to 12 Mbps; 24 V DC; IP20 enclosure

Article No.

IE FC TP Standard Cable GP 2x2

6XV1840-2AH10

4-wire, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compatible; with UL approval;

Sold by the meter

FO Standard Cable GP (50/125)

6XV1873-2A

Standard cable, splittable, UL approval, sold by the meter

For commissioning

MPI cable

6ES7901-0BF00-0AA0

For connection of SIMATIC S7 and PG via MPI; 5 m in length

USB A2 PC adapter

6GK1571-0BA00-0AA0

For connecting a PG/PC or notebook to PROFIBUS or MPI; USB cable included in scope of supply

Consumables

Power supply connector

6ES7391-1AA00-0AA0

10 units, spare part

Slot number plates

6ES7912-0AA00-0AA0

Documentation

SIMATIC Manual Collection

6ES7998-8XC01-8YE0

Electronic manuals on DVD, multi-language: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC Distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC-based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC

SIMATIC Manual Collection update service for 1 year

6ES7998-8XC01-8YE2

Current "Manual Collection" DVD and the three subsequent updates

Overview CPU 312C



- The compact CPU with integral digital inputs/outputs
- For small applications with increased processing performance requirements
- With technological functions

SIMATIC Micro Memory Card required for operation of CPU.

Overview CPU 313C-2 PtP



- The compact CPU with integrated digital inputs/outputs as well as second serial interface
- For plants with high processing performance and response time requirements
- With technological functions

SIMATIC Micro Memory Card required for operation of the CPU.

Overview CPU 313C



- The compact CPU with integral digital and analog inputs/outputs
- For plants with high processing performance and response time requirements
- With technological functions

SIMATIC Micro Memory Card required for operation of the CPU.

Overview CPU 313C-2 DP



- The compact CPU with integral digital inputs/outputs and PROFIBUS DP master/slave interface
- For plants with high processing performance and response time requirements
- With technological functions
- For tasks with special functions
- For connecting distributed I/Os

SIMATIC Micro Memory Card required for operation of the CPU.

SIMATIC S7-300 Advanced Controllers

Central processing units

Compact CPUs

Overview CPU 314C-2 PtP



- The compact CPU with integrated digital and analog inputs/outputs as well as second serial interface
- For plants with high processing performance and response time requirements
- With technological functions

SIMATIC Micro Memory Card required for operation of the CPU.

Overview CPU 314C-2 DP



- The compact CPU with integral digital and analog inputs/outputs and PROFIBUS DP master/slave interface
- With technological functions
- For plants with high processing performance and response time requirements
- For connecting distributed I/Os

SIMATIC Micro Memory Card required for operation of the CPU.

Overview CPU 314C-2 PN/DP



- The compact CPU with integral digital and analog inputs/outputs and technological functions
- High processing performance in binary and floating-point arithmetic
- For connecting distributed I/O via PROFIBUS and PROFINET
- Combined MPI/PROFIBUS DP master/slave interface
- PROFINET interface with 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as intelligent PROFINET device under a SIMATIC or non-Siemens PROFINET IO controller
- Component Based Automation (CBA) on PROFINET
- PROFINET proxy for intelligent devices on PROFIBUS DP in Component Based Automation (CBA)
- Integrated web server with the option of creating user-defined web pages
- Isochronous mode on PROFINET

SIMATIC Micro Memory Card required for operation of CPU.

Technical specifications

Article number	6ES7312-5BF04-0AB0 CPU312C, 10DI/6DO, 64 KB	6ES7313-5BG04-0AB0 CPU313C, 24DI/16DO/5AI/2AO, 128 KB	6ES7313-6BG04-0AB0 CPU313C-2 PTP, 16DI/16DO, 128 KB	6ES7313-6CG04-0AB0 CPU313C-2 DP, 16DI/16DO, 128 KB
General information				
Engineering with				
• Programming package	STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203	STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203	STEP 7 as of V5.5 + SP1 or STEP 7 V5.3 + SP2 or higher with HSP 204	STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203
Supply voltage				
Rated value (DC)				
• 24 V DC	Yes	Yes	Yes	Yes
Power loss				
Power loss, typ.	8 W	12 W	9 W	9 W
Memory				
Work memory				
• integrated	64 kbyte	128 kbyte	128 kbyte	128 kbyte
• expandable	No	No	No	No
• Size of retentive memory for retentive data blocks	64 kbyte	64 kbyte	64 kbyte	64 kbyte
Load memory				
• Plug-in (MMC), max.	8 Mbyte	8 Mbyte	8 Mbyte	8 Mbyte
CPU processing times				
for bit operations, typ.	0.1 µs	0.07 µs	0.07 µs	0.07 µs
for word operations, typ.	0.24 µs	0.15 µs	0.15 µs	0.15 µs
for fixed point arithmetic, typ.	0.32 µs	0.2 µs	0.2 µs	0.2 µs
for floating point arithmetic, typ.	1.1 µs	0.72 µs	0.72 µs	0.72 µs
Counters, timers and their retentivity				
S7 counter				
• Number	256	256	256	256
IEC counter				
• present	Yes	Yes	Yes	Yes
S7 times				
• Number	256	256	256	256
IEC timer				
• present	Yes	Yes	Yes	Yes
Data areas and their retentivity				
Flag				
• Number, max.	256 byte	256 byte	256 byte	256 byte
Address area				
I/O address area				
• Inputs	1 024 byte	1 024 byte	1 024 byte	2 048 byte
• Outputs	1 024 byte	1 024 byte	1 024 byte	2 048 byte
Process image				
• Inputs, adjustable	1 024 byte	1 024 byte	1 024 byte	2 048 byte
• Outputs, adjustable	1 024 byte	1 024 byte	1 024 byte	2 048 byte
Time of day				
Clock				
• Hardware clock (real-time)		Yes	Yes	Yes
• Software clock	Yes			
Operating hours counter				
• Number	1	1	1	1
Digital inputs				
integrated channels (DI)	10	24	16	16
Digital outputs				
integrated channels (DO)	6	16	16	16

SIMATIC S7-300 Advanced Controllers

Central processing units

Compact CPUs

Technical specifications (continued)

Article number	6ES7312-5BF04-0AB0 CPU312C, 10DI/6DO, 64 KB	6ES7313-5BG04-0AB0 CPU313C, 24DI/16DO/5AI/2AO, 128 KB	6ES7313-6BG04-0AB0 CPU313C-2 PTP, 16DI/16DO, 128 KB	6ES7313-6CG04-0AB0 CPU313C-2 DP, 16DI/16DO, 128 KB
Analog inputs				
integrated channels (AI)	0	5; 4x current/voltage, 1x resistance	0	0
Input ranges				
• Voltage		Yes; ± 10 V / 100 k Ω ; 0 V to 10 V / 100 k Ω		
• Current		Yes; ± 20 mA / 100 Ω ; 0 mA to 20 mA / 100 Ω ; 4 mA to 20 mA / 100 Ω		
• Resistance thermometer		Yes; Pt 100 / 10 M Ω		
• Resistance		Yes; 0 Ω to 600 Ω / 10 M Ω		
Analog outputs				
integrated channels (AO)	0	2	0	0
Output ranges, voltage				
• 0 to 10 V		Yes		
• -10 V to +10 V		Yes		
Output ranges, current				
• 0 to 20 mA		Yes		
• -20 mA to +20 mA		Yes		
• 4 mA to 20 mA		Yes		
1. Interface				
Interface type	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface
Physics	RS 485	RS 485	RS 485	RS 485
Protocols				
• MPI	Yes	Yes	Yes	Yes
• PROFIBUS DP master	No	No	No	No
• PROFIBUS DP slave	No	No	No	No
• Point-to-point connection	No	No	No	No
2. Interface				
Interface type			Integrated RS 422/ 485 interface	Integrated RS 485 interface
Physics			RS 422 / 485 (X.27)	RS 485
Protocols				
• MPI			No	No
• PROFINET IO Controller			No	No
• PROFINET IO Device			No	No
• PROFINET CBA			No	No
• PROFIBUS DP master			No	Yes
• PROFIBUS DP slave			No	Yes
PROFIBUS DP master				
• Number of DP slaves, max.				124
Communication functions				
PG/OP communication	Yes	Yes	Yes	Yes
Data record routing	No	No	No	Yes
Global data communication				
• supported	Yes	Yes	Yes	Yes
S7 basic communication				
• supported	Yes	Yes	Yes; Server	Yes
S7 communication				
• supported	Yes	Yes	Yes	Yes
S5 compatible communication				
• supported	Yes; via CP and loadable FC	Yes; via CP and loadable FC	Yes; via CP and loadable FC	Yes; via CP and loadable FC
Number of connections				
• overall	6	8	8	8

SIMATIC S7-300 Advanced Controllers

Central processing units

Compact CPUs

Technical specifications (continued)

Article number	6ES7312-5BF04-0AB0 CPU312C, 10DI/6DO, 64 KB	6ES7313-5BG04-0AB0 CPU313C, 24DI/16DO/5AI/2AO, 128 KB	6ES7313-6BG04-0AB0 CPU313C-2 PTP, 16DI/16DO, 128 KB	6ES7313-6CG04-0AB0 CPU313C-2 DP, 16DI/16DO, 128 KB
Integrated Functions				
Number of counters	2; See "Technological Functions" manual	3; See "Technological Functions" manual	3; See "Technological Functions" manual	3; See "Technological Functions" manual
Counting frequency (counter) max.	10 kHz	30 kHz	30 kHz	30 kHz
Frequency measurement	Yes	Yes	Yes	Yes
Number of frequency meters	2; up to 10 kHz (see "Technological Functions" manual)	3; up to 30 kHz (see "Technological Functions" manual)	3; up to 30 kHz (see "Technological Functions" manual)	3; up to 30 kHz (see "Technological Functions" manual)
controlled positioning	No	No	No	No
integrated function blocks (closed-loop control)	No	Yes; PID controller (see "Technological Functions" manual)	Yes; PID controller (see "Technological Functions" manual)	Yes; PID controller (see "Technological Functions" manual)
PID controller	No	Yes	Yes	Yes
Number of pulse outputs	2; Pulse width modulation up to 2.5 kHz (see "Technological Functions" Manual)	3; Pulse width modulation up to 2.5 kHz (see "Technological Functions" Manual)	3; Pulse width modulation up to 2.5 kHz (see "Technological Functions" Manual)	3; Pulse width modulation up to 2.5 kHz (see "Technological Functions" Manual)
Limit frequency (pulse)	2.5 kHz	2.5 kHz	2.5 kHz	2.5 kHz
Ambient conditions				
Ambient temperature during operation				
• min.	0 °C	0 °C	0 °C	0 °C
• max.	60 °C	60 °C	60 °C	60 °C
Configuration				
Programming				
Programming language				
- LAD	Yes	Yes	Yes	Yes
- FBD	Yes	Yes	Yes	Yes
- STL	Yes	Yes	Yes	Yes
- SCL	Yes	Yes	Yes	Yes
- CFC		Yes	Yes	Yes
- GRAPH	Yes	Yes	Yes	Yes
- HiGraph®	Yes	Yes	Yes	Yes
Know-how protection				
• User program protection/ password protection	Yes	Yes	Yes	Yes
• Block encryption	Yes; With S7 block Privacy	Yes; With S7 block Privacy	Yes; With S7 block Privacy	Yes; With S7 block Privacy
Dimensions				
Width	80 mm	120 mm	80 mm	80 mm
Height	125 mm	125 mm	125 mm	125 mm
Depth	130 mm	130 mm	130 mm	130 mm
Weights				
Weight, approx.	410 g	660 g	500 g	500 g

SIMATIC S7-300 Advanced Controllers

Central processing units

Compact CPUs

Technical specifications (continued)

Article number	6ES7314-6BH04-0AB0 CPU314C-2PTP, 24DI/16DO/5AI/2AO, 192 KB	6ES7314-6CH04-0AB0 CPU314C-2DP, 24DI/16DO/5AI/2AO, 192 KB	6ES7314-6EH04-0AB0 CPU314C-2PN/DP, 24DI/16DO/4AI/2AO, 192KB
General information			
Engineering with			
• Programming package	STEP 7 as of V5.5 + SP1 or STEP 7 V5.3 + SP2 or higher with HSP 204	STEP 7 V5.5 + SP1 or higher or STEP 7 V5.3 + SP2 or higher with HSP 203	STEP 7 V5.5 or higher with HSP 191
Supply voltage			
Rated value (DC)			
• 24 V DC	Yes	Yes	Yes
Power loss			
Power loss, typ.	13 W	13 W	14 W
Memory			
Work memory			
• integrated	192 kbyte	192 kbyte	192 kbyte
• expandable	No	No	No
• Size of retentive memory for retentive data blocks	64 kbyte	64 kbyte	64 kbyte
Load memory			
• Plug-in (MMC), max.	8 Mbyte	8 Mbyte	8 Mbyte
CPU processing times			
for bit operations, typ.	0.06 µs	0.06 µs	0.06 µs
for word operations, typ.	0.12 µs	0.12 µs	0.12 µs
for fixed point arithmetic, typ.	0.16 µs	0.16 µs	0.16 µs
for floating point arithmetic, typ.	0.59 µs	0.59 µs	0.59 µs
Counters, timers and their retentivity			
S7 counter			
• Number	256	256	256
IEC counter			
• present	Yes	Yes	Yes
S7 times			
• Number	256	256	256
IEC timer			
• present	Yes	Yes	Yes
Data areas and their retentivity			
Flag			
• Number, max.	256 byte	256 byte	256 byte
Address area			
I/O address area			
• Inputs	1 024 byte	2 048 byte	2 048 byte
• Outputs	1 024 byte	2 048 byte	2 048 byte
Process image			
• Inputs, adjustable	1 024 byte	2 048 byte	2 048 byte
• Outputs, adjustable	1 024 byte	2 048 byte	2 048 byte
Time of day			
Clock			
• Hardware clock (real-time)	Yes	Yes	Yes
Operating hours counter			
• Number	1	1	1
Digital inputs			
integrated channels (DI)	24	24	24
Digital outputs			
integrated channels (DO)	16	16	16

Technical specifications (continued)

Article number	6ES7314-6BH04-0AB0 CPU314C-2PTP, 24DI/16DO/5AI/2AO, 192 KB	6ES7314-6CH04-0AB0 CPU314C-2DP, 24DI/16DO/5AI/2AO, 192 KB	6ES7314-6EH04-0AB0 CPU314C-2PN/DP, 24DI/16DO/4AI/2AO, 192KB
Analog inputs			
integrated channels (AI)	5; 4x current/voltage, 1x resistance	5; 4x current/voltage, 1x resistance	5; 4x current/voltage, 1x resistance
Input ranges			
• Voltage	Yes; $\pm 10\text{ V} / 100\text{ k}\Omega$; 0 V to 10 V / 100 k Ω	Yes; $\pm 10\text{ V} / 100\text{ k}\Omega$; 0 V to 10 V / 100 k Ω	Yes; $\pm 10\text{ V} / 100\text{ k}\Omega$; 0 V to 10 V / 100 k Ω
• Current	Yes; $\pm 20\text{ mA} / 100\ \Omega$; 0 mA to 20 mA / 100 Ω ; 4 mA to 20 mA / 100 Ω	Yes; $\pm 20\text{ mA} / 100\ \Omega$; 0 mA to 20 mA / 100 Ω ; 4 mA to 20 mA / 100 Ω	Yes; $\pm 20\text{ mA} / 100\ \Omega$; 0 mA to 20 mA / 100 Ω ; 4 mA to 20 mA / 100 Ω
• Resistance thermometer	Yes; Pt 100 / 10 M Ω	Yes; Pt 100 / 10 M Ω	Yes; Pt 100 / 10 M Ω
• Resistance	Yes; 0 Ω to 600 Ω / 10 M Ω	Yes; 0 Ω to 600 Ω / 10 M Ω	Yes; 0 Ω to 600 Ω / 10 M Ω
Analog outputs			
integrated channels (AO)	2	2	2
Output ranges, voltage			
• 0 to 10 V	Yes	Yes	Yes
• -10 V to +10 V	Yes	Yes	Yes
Output ranges, current			
• 0 to 20 mA	Yes	Yes	Yes
• -20 mA to +20 mA	Yes	Yes	Yes
• 4 mA to 20 mA	Yes	Yes	Yes
1. Interface			
Interface type	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface
Physics	RS 485	RS 485	RS 485
Protocols			
• MPI	Yes	Yes	Yes
• PROFIBUS DP master	No	No	Yes
• PROFIBUS DP slave	No	No	Yes
• Point-to-point connection	No	No	No
PROFIBUS DP master			
• Number of DP slaves, max.			124
2. Interface			
Interface type	Integrated RS 422/ 485 interface	Integrated RS 485 interface	PROFINET
Physics	RS 422 / 485 (X.27)	RS 485	Ethernet RJ45
Interface types			
• Number of ports			2
Protocols			
• MPI	No	No	No
• PROFINET IO Controller	No	No	Yes; Also simultaneously with IO-Device functionality
• PROFINET IO Device	No	No	Yes; Also simultaneously with IO Controller functionality
• PROFINET CBA	No	No	Yes
• PROFIBUS DP master	No	Yes	No
• PROFIBUS DP slave	No	Yes	No
PROFIBUS DP master			
• Number of DP slaves, max.		124	
PROFINET IO Controller			
Services			
- Number of connectable IO Devices, max.			128
- Of which IO devices with IRT, max.			64
- Number of IO Devices with IRT and the option "high flexibility"			128
- Number of connectable IO Devices for RT, max..			128

SIMATIC S7-300 Advanced Controllers

Central processing units

Compact CPUs

Technical specifications (continued)

Article number	6ES7314-6BH04-0AB0 CPU314C-2PTP, 24DI/16DO/5AI/2AO, 192 KB	6ES7314-6CH04-0AB0 CPU314C-2DP, 24DI/16DO/5AI/2AO, 192 KB	6ES7314-6EH04-0AB0 CPU314C-2PN/DP, 24DI/16DO/4AI/2AO, 192KB
Protocols			
Open IE communication			
• TCP/IP			Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.			8
• ISO-on-TCP (RFC1006)			Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.			8
• UDP			Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.			8
Web server			
• supported			Yes
Isochronous mode			
Isochronous operation (application synchronized up to terminal)			Yes; For PROFINET only
Communication functions			
PG/OP communication	Yes	Yes	Yes
Data record routing	No	Yes	Yes
Global data communication			
• supported	Yes	Yes	Yes
S7 basic communication			
• supported	Yes	Yes	Yes
S7 communication			
• supported	Yes	Yes	Yes
S5 compatible communication			
• supported	Yes; via CP and loadable FC	Yes; via CP and loadable FC	Yes; via CP and loadable FC
Number of connections			
• overall	12	12	12
Integrated Functions			
Number of counters	4; See "Technological Functions" manual	4; See "Technological Functions" manual	4; See "Technological Functions" manual
Counting frequency (counter) max.	60 kHz	60 kHz	60 kHz
Frequency measurement	Yes	Yes	Yes
Number of frequency meters	4; up to 60 kHz (see "Technological Functions" manual)	4; up to 60 kHz (see "Technological Functions" manual)	4; up to 60 kHz (see "Technological Functions" manual)
controlled positioning	Yes	Yes	Yes
integrated function blocks (closed-loop control)	Yes; PID controller (see "Technological Functions" manual)	Yes; PID controller (see "Technological Functions" manual)	Yes; PID controller (see "Technological Functions" manual)
PID controller	Yes	Yes	Yes
Number of pulse outputs	4; Pulse width modulation up to 2.5 kHz (see "Technological Functions" Manual)	4; Pulse width modulation up to 2.5 kHz (see "Technological Functions" Manual)	4; Pulse width modulation up to 2.5 kHz (see "Technological Functions" Manual)
Limit frequency (pulse)	2.5 kHz	2.5 kHz	2.5 kHz
Ambient conditions			
Ambient temperature during operation			
• min.	0 °C	0 °C	0 °C
• max.	60 °C	60 °C	60 °C
Configuration			
Programming			
Programming language			
- LAD	Yes	Yes	Yes
- FBD	Yes	Yes	Yes
- STL	Yes	Yes	Yes
- SCL	Yes	Yes	Yes
- CFC	Yes	Yes	Yes
- GRAPH	Yes	Yes	Yes
- HiGraph®	Yes	Yes	Yes

Technical specifications (continued)

Article number	6ES7314-6BH04-0AB0	6ES7314-6CH04-0AB0	6ES7314-6EH04-0AB0
	CPU314C-2PTP, 24DI/16DO/5AI/2AO, 192 KB	CPU314C-2DP, 24DI/16DO/5AI/2AO, 192 KB	CPU314C-2PN/DP, 24DI/16DO/4AI/2AO, 192KB
Know-how protection			
• User program protection/ password protection	Yes	Yes	Yes
• Block encryption	Yes; With S7 block Privacy	Yes; With S7 block Privacy	Yes; With S7 block Privacy
Dimensions			
Width	120 mm	120 mm	120 mm
Height	125 mm	125 mm	125 mm
Depth	130 mm	130 mm	130 mm
Weights			
Weight, approx.	680 g	680 g	730 g

Ordering data

Ordering data	Article No.	Article No.
CPU 312C Compact CPU, work memory 64 KB, supply voltage 24 V DC, 10 DI/6 DQ integrated, integrated functions, MPI; including slot number labels; MMC required	6ES7312-5BF04-0AB0	SIMATIC Micro Memory Card 64 KB 128 KB 512 KB 2 MB 4 MB 8 MB
CPU 313C Compact CPU, work memory 128 KB, supply voltage 24 V DC, 24 DI/16 DQ, 4 AI/2 AQ integrated, integrated functions, MPI; MMC required	6ES7313-5BG04-0AB0	MPI cable for connection of SIMATIC S7 and PG via MPI; 5 m in length
CPU 313C-2 PtP Compact CPU, work memory 128 KB, supply voltage 24 V DC, 16 DI/16 DQ integrated, integrated functions, MPI, RS 422/485 interface; MMC required	6ES7313-6BG04-0AB0	Point-to-point link cable For connection to CPU 31xC-2 PtP 5 m 10 m 50 m
CPU 313C-2 DP Compact CPU, work memory 128 KB, 24 V DC power supply, 16 DI/16 DQ integrated, integrated functions, MPI, PROFIBUS DP master/slave interface; MMC required	6ES7313-6CG04-0AB0	Front connector (1 unit) For compact CPUs 40-pin, with screw contacts • 1 unit • 100 units 40-pin, with spring-loaded contacts • 1 unit • 100 units
CPU 314C-2 PtP Compact CPU, work memory 192 KB, supply voltage 24 V DC, 24 DI/16 DQ/4 AI/2 AQ integrated, integrated functions, MPI, RS 422/ 485 interface; MMC required	6ES7314-6BH04-0AB0	SIMATIC TOP connect See page 5/251; for information about which components can be used for the respective module, see Industry Mall
CPU 314C-2 DP Compact CPU, work memory 192 KB, supply voltage 24 V DC, 24 DI/16 DQ/4 AI/2 AQ integrated, integrated functions, MPI, PROFIBUS DP master/slave interface; MMC required	6ES7314-6CH04-0AB0	Front door, elevated design For compact CPUs; for connecting 1.3 mm ² /16 AWG wires; wiring diagram and labels in petrol
CPU 314C-2 PN/DP Compact CPU, work memory 192 KB, supply voltage 24 V DC, 24 DI/16 DO/4 AI/2 AO integrated, integrated functions, MPI; PROFIBUS DP master/slave interface; PROFINET IO controller/ I-device interface, MMC required	6ES7314-6EH04-0AB0	Slot number plates
		6ES7953-8LF31-0AA0 6ES7953-8LG31-0AA0 6ES7953-8LJ31-0AA0 6ES7953-8LL31-0AA0 6ES7953-8LM31-0AA0 6ES7953-8LP31-0AA0 6ES7901-0BF00-0AA0 6ES7902-3AB00-0AA0 6ES7902-3AC00-0AA0 6ES7902-3AG00-0AA0 6ES7392-1AM00-0AA0 6ES7392-1AM00-1AB0 6ES7392-1BM01-0AA0 6ES7392-1BM01-1AB0 6ES7328-7AA20-0AA0 6ES7912-0AA00-0AA0

SIMATIC S7-300 Advanced Controllers

Central processing units

Compact CPUs

Ordering data	Article No.	Ordering data	Article No.
SIMATIC Manual Collection Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC Distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC-based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	6ES7998-8XC01-8YE0	PROFINET bus components IE FC TP Standard Cable GP 2x2 4-wire, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compatible; with UL approval; Sold by the meter: Max. delivery unit 1000 m Minimum order quantity 20 m	6XV1840-2AH10
SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates	6ES7998-8XC01-8YE2	FO Standard Cable GP (50/125) Standard cable, splittable, UL approval, sold by the meter Max. delivery unit 1000 m Minimum order quantity 20 m	6XV1873-2A
Power supply connector 10 units, spare part	6ES7391-1AA00-0AA0	SCALANCE X204-2 Industrial Ethernet Switch Industrial Ethernet switches with integral SNMP access, Web diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; four 10/100 Mbps RJ45 ports and two FO ports	6GK5204-2BB10-2AA3
Labeling strips 10 units, spare part	6ES7392-2XX00-0AA0	Compact Switch Module CSM 377 Unmanaged switch for connecting SIMATIC S7-300, ET 200M and up to three other stations to Industrial Ethernet with 10/100 Mbps; 4 x RJ45 ports; external 24 V DC power supply, LED diagnostics, S7-300 module incl. electronic manual on CD-ROM	6GK7377-1AA00-0AA0
Label cover 10 units, spare part	6ES7392-2XY00-0AA0	IE FC RJ45 plugs RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables	
Labeling sheets for machine inscription for modules with 40-pin front connector, DIN A4, for printing with laser printer; 10 units Petrol Light beige Yellow Red	6ES7392-2AX10-0AA0 6ES7392-2BX10-0AA0 6ES7392-2CX10-0AA0 6ES7392-2DX10-0AA0	IE FC RJ45 plug 180 180° cable outlet 1 unit 10 units 50 units	6GK1901-1BB10-2AA0 6GK1901-1BB10-2AB0 6GK1901-1BB10-2AE0
USB A2 PC adapter For connecting a PG/PC or notebook to PROFIBUS or MPI; USB cable included in scope of supply	6GK1571-0BA00-0AA0	PROFIBUS/PROFINET bus components For establishing MPI/PROFIBUS/PROFINET communication	See Catalogs IK PI, CA 01
PROFIBUS DP bus connector RS 485 <ul style="list-style-type: none"> With 90° cable outlet, max. transfer rate 12 Mbps <ul style="list-style-type: none"> without PG interface with PG interface with 90° cable outlet for FastConnect connection system, max. transfer rate 12 Mbps <ul style="list-style-type: none"> without PG interface, 1 unit without PG interface, 100 units with PG interface, 1 unit with PG interface, 100 units with axial cable outlet for SIMATIC OP, for connecting to PPI, MPI, PROFIBUS 	6ES7972-0BA12-0XA0 6ES7972-0BB12-0XA0 6ES7972-0BA52-0XA0 6ES7972-0BA52-0XB0 6ES7972-0BB52-0XA0 6ES7972-0BB52-0XB0 6GK1500-0EA02		
PROFIBUS Fast Connect bus cable Standard type with special design for quick mounting, 2-wire, shielded, sold by the meter, max. delivery unit 1000 m, minimum order quantity 20 m	6XV1830-0EH10		
RS 485 repeater for PROFIBUS Transmission rate up to 12 Mbps; 24 V DC; IP20 enclosure	6ES7972-0AA02-0XA0		

Overview SIPLUS CPU 312C



- The compact CPU with integral digital inputs/outputs
- For small applications with increased processing performance requirements
- With technological functions

Micro Memory Card required for operation of CPU.

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Overview SIPLUS CPU 313C-2 DP



- The compact CPU with integral digital inputs/outputs and PROFIBUS DP master/slave interface
- With technological functions
- For tasks with special functions
- For connecting distributed I/O

Micro Memory Card required for operation of CPU.

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Overview SIPLUS CPU 313C



- The compact CPU with integral digital and analog inputs/outputs
- For plants with high processing performance and response time requirements
- With technological functions

Micro Memory Card required to operate the CPU.

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Overview SIPLUS CPU 314C-2 PtP



- The compact CPU with integrated digital and analog inputs/outputs as well as second serial interface
- For plants with high processing performance and response time requirements
- With technological functions

SIMATIC Micro Memory Card required for operation of CPU.

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

SIMATIC S7-300 Advanced Controllers

Central processing units

SIPLUS S7-300 compact CPUs

Overview SIPLUS CPU 314C-2 DP



- The compact CPU with integral digital and analog inputs/outputs and PROFIBUS DP master/slave interface
- With technological functions
- For tasks with special functions
- For connecting distributed I/O

Micro Memory Card required for operation of CPU.

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Overview SIPLUS CPU 314C-2 PN/DP



- The compact CPU with integral digital and analog inputs/outputs and technological functions
- High processing performance in binary and floating-point arithmetic
- For connecting distributed I/O via PROFIBUS and PROFINET
- Combined MPI/PROFIBUS DP master/slave interface
- PROFINET interface with 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET I-Device for connecting the CPU as intelligent PROFINET device under a SIMATIC or non-Siemens PROFINET I/O controller
- Component Based Automation (CBA) on PROFINET
- PROFINET proxy for intelligent devices on PROFIBUS DP in Component Based Automation (CBA)
- Integrated Web server with the option of creating user-defined web pages
- Isochronous mode on PROFINET

SIMATIC Micro Memory Card required for operation of CPU.

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Technical specifications

Article number	6AG1312-5BF04-2AY0	6AG1312-5BF04-7AB0	6AG1313-5BG04-2AY0	6AG1313-5BG04-7AB0
Based on	6ES7312-5BF04-0AB0 SIPLUS S7-300 CPU312C EN50155	6ES7312-5BF04-0AB0 SIPLUS S7-300 CPU312C	6ES7313-5BG04-0AB0 SIPLUS S7-300 CPU313C EN50155	6ES7313-5BG04-0AB0 SIPLUS S7-300 CPU313C
Ambient conditions				
Ambient temperature during operation				
• min.	-25 °C; = Tmin	-25 °C; = Tmin	-25 °C; = Tmin	-25 °C; = Tmin
• max.	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	5 000 m	5 000 m	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity				
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance				
Use in stationary industrial systems				
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *
Use on land craft, rail vehicles and special-purpose vehicles				
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request		Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *		Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *		Yes; Class 5S3 incl. sand, dust; *	
Use on ships/at sea				
- to biologically active substances according to EN 60721-3-6		Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request		Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6		Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *		Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6		Yes; Class 6S3 incl. sand, dust; *		Yes; Class 6S3 incl. sand, dust; *
Remark				
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

SIMATIC S7-300 Advanced Controllers

Central processing units

SIPLUS S7-300 compact CPUs

Technical specifications (continued)

Article number	6AG1313-6CG04-2AY0	6AG1313-6CG04-7AB0	6AG1314-6BH04-7AB0
Based on	6ES7313-6CG04-0AB0 SIPLUS S7-300 CPU313C-2DP EN50155	6ES7313-6CG04-0AB0 SIPLUS S7-300 CPU313C-2DP	6ES7314-6BH04-0AB0 SIPLUS S7-300 CPU314C-2 PtP
Ambient conditions			
Ambient temperature during operation			
• min.	-25 °C; = Tmin	-25 °C; = Tmin	-25 °C; = Tmin
• max.	70 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use
Altitude during operation relating to sea level			
• Installation altitude above sea level, max.	5 000 m	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity			
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance			
Use in stationary industrial systems			
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
Use on land craft, rail vehicles and special-purpose vehicles			
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request		
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *		
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *		
Use on ships/at sea			
- to biologically active substances according to EN 60721-3-6		Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6		Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6		Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Remark			
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

Technical specifications (continued)

Article number	6AG1314-6CH04-2AY0	6AG1314-6CH04-7AB0	6AG1314-6EH04-7AB0
Based on	6ES7314-6CH04-0AB0 SIPLUS S7-300 CPU314C-2DP EN50155	6ES7314-6CH04-0AB0 SIPLUS S7-300 CPU314C-2DP	6ES7314-6EH04-0AB0 SIPLUS S7-300 CPU314C-2PN/DP
Ambient conditions			
Ambient temperature during operation			
• min.	-25 °C; = Tmin	-25 °C; = Tmin	-25 °C; = Tmin
• max.	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	70 °C; = Tmax; @ 60°C for UL/ATEX/FM use
Altitude during operation relating to sea level			
• Installation altitude above sea level, max.	5 000 m	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity			
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance			
Use in stationary industrial systems			
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
Use on land craft, rail vehicles and special-purpose vehicles			
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request		
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *		
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *		
Use on ships/at sea			
- to biologically active substances according to EN 60721-3-6		Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6		Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6		Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Remark			
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

SIMATIC S7-300 Advanced Controllers

Central processing units

SIPLUS S7-300 compact CPUs

Ordering data

Article No.

Article No.

SIPLUS S7-300 CPU 312C

For industrial applications with extended ambient conditions

Compact CPU, work memory 64 KB, supply voltage 24 V DC, 10 DI/6 DQ integrated, integrated functions, MPI; including slot number labels; MMC required

Extended temperature range and exposure to media

For rolling stock railway applications

Compact CPU, work memory 64 KB, supply voltage 24 V DC, 10 DI/6 DQ integrated, integrated functions, MPI; including slot number labels; MMC required

Conforms to EN 50155

6AG1312-5BF04-7AB0

6AG1312-5BF04-2AY0

SIPLUS S7-300 CPU 313C

For industrial applications with extended ambient conditions

Compact CPU, work memory 128 KB, supply voltage 24 V DC, 24 DI/16 DQ, 4 AI/2 AQ integrated, integrated functions, MPI; MMC required

Extended temperature range and exposure to media

For rolling stock railway applications

Compact CPU, work memory 128 KB, supply voltage 24 V DC, 24 DI/16 DQ, 4 AI/2 AQ integrated, integrated functions, MPI; MMC required

Conforms to EN 50155

6AG1313-5BG04-7AB0

6AG1313-5BG04-2AY0

SIPLUS S7-300 CPU 313C-2 DP

For industrial applications with extended ambient conditions

Compact CPU, work memory 128 KB, supply voltage 24 V DC, 16 DI/16 DQ integrated, integrated functions, MPI, PROFIBUS DP master/slave interface; MMC required

Extended temperature range and exposure to media

For rolling stock railway applications

Compact CPU, work memory 128 KB, supply voltage 24 V DC, 16 DI/16 DQ integrated, integrated functions, MPI, PROFIBUS DP master/slave interface; MMC required

Conforms to EN 50155

6AG1313-6CG04-7AB0

6AG1313-6CG04-2AY0

SIPLUS S7-300 CPU 314C-2 PtP

For industrial applications with extended ambient conditions

Compact CPU, work memory 192 KB, supply voltage 24 V DC, 24 DI/16 DQ, 4 AI/2 AQ integrated, integrated functions, MPI, RS 422/485 interface; MMC required

Extended temperature range and exposure to media

6AG1314-6BH04-7AB0

SIPLUS S7-300 CPU 314C-2 DP

For industrial applications with extended ambient conditions

Compact CPU, work memory 192 KB, supply voltage 24 V DC, 24 DI/16 DQ, 4 AI/2 AQ integrated, integrated functions, MPI, PROFIBUS DP master/slave interface; MMC required

Extended temperature range and exposure to media

6AG1314-6CH04-7AB0

For rolling stock railway applications

Compact CPU, work memory 192 KB, supply voltage 24 V DC, 24 DI/16 DQ, 4 AI/2 AQ integrated, integrated functions, MPI, PROFIBUS DP master/slave interface; MMC required

Conforms to EN 50155

6AG1314-6CH04-2AY0

SIPLUS S7-300 CPU 314C-2 PN/DP

For industrial applications with particularly demanding environmental conditions

Compact CPU, work memory 192 KB, supply voltage 24 V DC, 24 DI/16 DQ, 4 AI/2 AQ integrated, integrated functions, MPI; PROFIBUS DP master/slave interface; PROFINET IO controller/I-Device interface, MMC required

Extended temperature range and exposure to media

6AG1314-6EH04-7AB0

Accessories

Mandatory

SIMATIC Micro Memory Card

64 KB

6ES7953-8LF31-0AA0

128 KB

6ES7953-8LG31-0AA0

512 KB

6ES7953-8LJ31-0AA0

2 MB

6ES7953-8LL31-0AA0

4 MB

6ES7953-8LM31-0AA0

8 MB

6ES7953-8LP31-0AA0

Front connector (1 unit)

For compact CPUs

40-pin, with spring-loaded contacts

- 1 unit
- 100 units

6ES7392-1BM01-0AA0

6ES7392-1BM01-1AB0

Ordering data	Article No.	Ordering data	Article No.
<p><i>For communication within the application</i></p> <p>PROFIBUS DP bus connector RS 485</p> <p>(Extended temperature range and exposure to media)</p> <p>With 90° cable outlet, max. transfer rate 12 Mbps</p> <ul style="list-style-type: none"> without PG interface with PG interface <p>With angled cable outlet, max. transfer rate 12 Mbps</p> <ul style="list-style-type: none"> without PG interface with PG interface <p>(Extended temperature range)</p> <p>With axial cable outlet for SIMATIC OP, for connecting to PPI, MPI, PROFIBUS</p>	<p>6AG1972-0BA12-2XA0</p> <p>6AG1972-0BB12-2XA0</p> <p>6AG1972-0BA42-7XA0</p> <p>6AG1972-0BB42-7XA0</p> <p>6AG1500-0EA02-2AA0</p>	<p>RS 485 repeater for PROFIBUS</p> <p>(Extended temperature range and exposure to media)</p> <p>Transmission rate up to 12 Mbps; 24 V DC; IP20 enclosure</p> <p>Point-to-point link cable</p> <p>For connection to CPU 31xC-2 PtP</p> <p>5 m</p> <p>10 m</p> <p>50 m</p> <p><i>For commissioning</i></p> <p>MPI cable</p> <p>For connection of SIMATIC S7 and PG via MPI; length 5 m</p> <p>USB A2 PC adapter</p>	<p>6AG1972-0AA02-7XA0</p> <p>6ES7902-3AB00-0AA0</p> <p>6ES7902-3AC00-0AA0</p> <p>6ES7902-3AG00-0AA0</p> <p>6ES7901-0BF00-0AA0</p> <p>6GK1571-0BA00-0AA0</p>
<p>IE FC RJ45 plug 180</p> <p>(Extended temperature range and exposure to media)</p> <p>180° cable outlet</p> <ul style="list-style-type: none"> 1 unit 	<p>6AG1901-1BB10-7AA0</p>	<p><i>Consumables</i></p> <p>Front door, elevated design</p> <p>For compact CPUs; for connecting 1.3 mm²/16 AWG wires; wiring diagram and labels in petrol</p> <p>Power supply connector</p> <p>10 units, spare part</p> <p>Slot number plates</p> <p>Labeling strips</p> <p>10 units, spare part</p> <p>Label cover</p> <p>10 units, spare part</p> <p>Labeling sheets for machine inscription</p> <p>For modules with 40-pin front connector, DIN A4, for printing with laser printer; 10 units</p> <p>Petrol</p> <p>Light beige</p> <p>Yellow</p> <p>Red</p>	<p>6ES7328-7AA20-0AA0</p> <p>6ES7391-1AA00-0AA0</p> <p>6ES7912-0AA00-0AA0</p> <p>6ES7392-2XX00-0AA0</p> <p>6ES7392-2XY00-0AA0</p> <p>6ES7392-2AX10-0AA0</p> <p>6ES7392-2BX10-0AA0</p> <p>6ES7392-2CX10-0AA0</p> <p>6ES7392-2DX10-0AA0</p>
<p>SIPLUS SCALANCE X-200 Industrial Ethernet Switches</p> <p>Industrial Ethernet switches with integral SNMP access, online diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; with integrated redundancy manager (exception: SCALANCE X208PRO); incl. operating instructions, Industrial Ethernet network manual and configuration software on CD-ROM</p> <ul style="list-style-type: none"> With electrical and optical ports for glass multimode FOC up to 3 km Extended temperature range and exposure to media SIPLUS SCALANCE X204-2 With four 10/100 Mbps RJ45 ports and two fiber-optic ports 	<p>6AG1204-2BB10-4AA3</p>	<p><i>Documentation</i></p> <p>SIMATIC Manual Collection</p> <p>Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC Distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC-based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC</p> <p>SIMATIC Manual Collection update service for 1 year</p> <p>Current "Manual Collection" DVD and the three subsequent updates</p>	<p>6ES7998-8XC01-8YE0</p> <p>6ES7998-8XC01-8YE2</p>
<p>PROFIBUS FastConnect bus cable</p> <p>Standard type with special design for quick mounting, 2-wire, shielded, sold by the meter; max. delivery unit 1 000 m, minimum order quantity 20 m</p>	<p>6XV1830-0EH10</p>		
<p>IE FC TP Standard Cable GP 2x2</p> <p>4-wire, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compatible; with UL approval</p> <p>Sold by the meter; max. delivery unit 1 000 m minimum order quantity 20 m</p>	<p>6XV1840-2AH10</p>		
<p>FO Standard Cable GP (50/125)</p> <p>Standard cable, splittable, UL approval, sold by the meter; max. delivery unit 1 000 m minimum order quantity 20 m</p>	<p>6XV1873-2A</p>		

SIMATIC S7-300 Advanced Controllers

Central processing units

Fail-safe CPUs

Overview CPU 315F-2 DP



- Based on the SIMATIC CPU 315-2 DP
- For constructing a fail-safe automation system for plants with increased safety requirements
- Complies with safety requirements to SIL 3 acc. to IEC 61508 and PL e acc. to ISO 13849.1
- Distributed fail-safe I/O modules can be connected locally via the integrated PROFIBUS DP interface (PROFIsafe)
- Fail-safe ET 200M I/O modules can also be centrally connected
- Central and distributed use of standard modules for non safety-oriented applications

SIMATIC Micro Memory Card required for operation of CPU.

Overview CPU 317F-2 DP

- Component Based Automation (CBA) on PROFINET
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET interface with 2-port switch
- PROFINET proxy for intelligent devices on PROFIBUS DP in Component Based Automation (CBA)

SIMATIC Micro Memory Card required for operation of CPU.

Overview CPU 315F-2 DP



- The fail-safe CPU with a large program memory and quantity framework for demanding applications
- For constructing a fail-safe automation system for plants with increased safety requirements
- Complies with safety requirements to SIL 3 acc. to IEC 61508 and PL e acc. to ISO 13849.1
- Fail-safe I/O modules can be connected in a distributed configuration to both integral PROFIBUS DP interfaces (PROFIsafe)
- Fail-safe ET 200M I/O modules can also be connected centrally
- Central and distributed use of standard modules for non safety-oriented applications

SIMATIC Micro Memory Card required for operation of CPU.

Overview CPU 315F-2 PN/DP



- Based on CPU 315-2 PN/DP
- The CPU with medium-sized program memory and quantity structures for setting up a fail-safe automation system in plants with increased safety requirements
- Complies with safety requirements to SIL 3 acc. to IEC 61508 and PL e acc. to ISO 13849.1
- Distributed fail-safe I/O modules can be locally connected via the integrated PROFINET interface (PROFIsafe) and/or via the integrated PROFIBUS DP interface (PROFIsafe)
- Fail-safe ET 200M I/O modules can also be connected centrally
- Central and distributed use of standard modules for non safety-oriented applications

Overview CPU 317F-2 PN/DP



- Based on CPU 317-2 PN/DP
- The fail-safe CPU with a large program memory and quantity framework for demanding applications; for setting up a fail-safe automation system in plants with increased safety requirements.
- Complies with safety requirements to SIL 3 acc. to IEC 61508 and PL e acc. to ISO 13849.1
- Distributed fail-safe I/O modules can be locally connected via the integrated PROFINET interface (PROFIsafe) and/or via the integrated PROFIBUS DP interface (PROFIsafe)
- Fail-safe ET 200M I/O modules can also be connected centrally
- Central and distributed use of standard modules for non safety-oriented applications
- Component Based Automation (CBA) on PROFINET
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET interface with 2-port switch
- PROFINET proxy for intelligent devices on PROFIBUS DP in Component Based Automation (CBA)

SIMATIC Micro Memory Card required for operation of CPU.

Overview CPU 319F-3 PN/DP



- The fail-safe CPU with high-performance command processing, large program memory and large quantity structure for demanding applications
- For constructing a fail-safe automation system for plants with increased safety requirements
- Complies with safety requirements to SIL 3 acc. to IEC 61508 and PL e acc. to 13849.1
- Distributed fail-safe I/O modules can be locally connected via the integrated PROFINET interface (PROFIsafe) and/or via the integrated PROFIBUS DP interface (PROFIsafe);
- Fail-safe ET 200M I/O modules can also be connected centrally
- Standard modules for non-safety-related applications can be operated centrally and locally
- Distributed intelligence in Component Based Automation (CBA) on PROFINET
- Isochronous mode on PROFIBUS
- PROFINET proxy for intelligent devices on PROFIBUS DP in Component Based Automation (CBA)

SIMATIC Micro Memory Card required for operation of CPU.

SIMATIC S7-300 Advanced Controllers

Central processing units

Fail-safe CPUs

Technical specifications

Article number	6ES7315-6FF04-0AB0 CPU315F, 384KB	6ES7315-2FJ14-0AB0 CPU315F-2 PN/DP, 512 KB	6ES7317-6FF04-0AB0 CPU317F-2DP, 1.5 MB	6ES7317-2FK14-0AB0 CPU317F-2 PN/DP, 1.5 MB	6ES7318-3FL01-0AB0 CPU319F-3 PN/DP, 2.5 MB
General information					
Engineering with					
• Programming package	STEP 7 V5.5 + SP1 or higher or STEP 7 V5.2 + SP1 or higher with HSP 218 + Distributed Safety	STEP 7 V5.5 or higher, Distributed Safety V5.4 SP4	STEP 7 V5.5 + SP1 or higher or STEP 7 V5.2 + SP1 or higher with HSP 202 + Distributed Safety	STEP 7 V5.5 or higher, Distributed Safety V5.4 SP4	STEP 7 V5.5 or higher, Distributed Safety V5.4 SP4
Supply voltage					
Rated value (DC)					
• 24 V DC	Yes	Yes	Yes	Yes	Yes
Power loss					
Power loss, typ.	4.5 W	4.65 W	4.5 W	4.65 W	14 W
Memory					
Work memory					
• integrated	384 kbyte	512 kbyte	1 536 kbyte	1 536 kbyte	2 560 kbyte
• expandable	No	No	No	No	No
• Size of retentive memory for retentive data blocks	128 kbyte	128 kbyte	256 kbyte	256 kbyte	700 kbyte
Load memory					
• Plug-in (MMC), max.	8 Mbyte	8 Mbyte	8 Mbyte	8 Mbyte	8 Mbyte
CPU processing times					
for bit operations, typ.	0.05 µs	0.05 µs	0.025 µs	0.025 µs	0.004 µs
for word operations, typ.	0.09 µs	0.09 µs	0.03 µs	0.03 µs	0.01 µs
for fixed point arithmetic, typ.	0.12 µs	0.12 µs	0.04 µs	0.04 µs	0.01 µs
for floating point arithmetic, typ.	0.45 µs	0.45 µs	0.16 µs	0.16 µs	0.04 µs
Counters, timers and their retentivity					
S7 counter					
• Number	256	256	512	512	2 048
IEC counter					
• present	Yes	Yes	Yes	Yes	Yes
S7 times					
• Number	256	256	512	512	2 048
IEC timer					
• present	Yes	Yes	Yes	Yes	Yes
Data areas and their retentivity					
Flag					
• Number, max.	2 048 byte	2 048 byte	4 096 byte	4 096 byte	8 192 byte
Address area					
I/O address area					
• Inputs	2 048 byte	2 048 byte	8 192 byte	8 192 byte	8 192 byte
• Outputs	2 048 byte	2 048 byte	8 192 byte	8 192 byte	8 192 byte
Process image					
• Inputs, adjustable	2 048 byte	2 048 byte	8 192 byte	8 192 byte	8 192 byte
• Outputs, adjustable	2 048 byte	2 048 byte	8 192 byte	8 192 byte	8 192 byte
Time of day					
Clock					
• Hardware clock (real-time)	Yes	Yes	Yes	Yes	Yes
Operating hours counter					
• Number	1	1	4	4	4

Technical specifications (continued)

Article number	6ES7315-6FF04-0AB0 CPU315F, 384KB	6ES7315-2FJ14-0AB0 CPU315F-2 PN/DP, 512 KB	6ES7317-6FF04-0AB0 CPU317F-2DP, 1.5 MB	6ES7317-2FK14-0AB0 CPU317F-2 PN/DP, 1.5 MB	6ES7318-3FL01-0AB0 CPU319F-3 PN/DP, 2.5 MB
1. Interface					
Interface type	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface
Physics	RS 485	RS 485	RS 485	RS 485	RS 485
Protocols					
• MPI	Yes	Yes	Yes	Yes	Yes
• PROFIBUS DP master	No	Yes	Yes	Yes	Yes
• PROFIBUS DP slave	No	Yes	Yes; A DP slave at both interfaces simultaneously is not possible	Yes	Yes; A DP slave at both interfaces simultaneously is not possible
• Point-to-point connection	No	No	No	No	No
PROFIBUS DP master					
• Number of DP slaves, max.		124	124	124	124
2. Interface					
Interface type	Integrated RS 485 interface	PROFINET	Integrated RS 485 interface	PROFINET	Integrated RS 485 interface
Physics	RS 485	Ethernet RJ45	RS 485	Ethernet RJ45	RS 485
Interface types					
• Number of ports		2		2	
Protocols					
• MPI	No	No	No	No	No
• PROFINET IO Controller		Yes; Also simultaneously with IO-Device functionality		Yes; Also simultaneously with IO-Device functionality	No
• PROFINET IO Device		Yes; Also simultaneously with IO Controller functionality		Yes; Also simultaneously with IO Controller functionality	No
• PROFINET CBA		Yes		Yes	No
• PROFIBUS DP master	Yes	No	Yes	No	Yes
• PROFIBUS DP slave	Yes	No	Yes; A DP slave at both interfaces simultaneously is not possible	No	Yes; A DP slave at both interfaces simultaneously is not possible
PROFIBUS DP master					
• Number of DP slaves, max.	124; Per station		124		124
PROFINET IO Controller					
Services					
- Number of connectable IO Devices, max.		128		128	
- Of which IO devices with IRT, max.		64		64	
- Number of IO Devices with IRT and the option "high flexibility"		128		128	
- Number of connectable IO Devices for RT, max..		128		128	

SIMATIC S7-300 Advanced Controllers

Central processing units

Fail-safe CPUs

Technical specifications (continued)

Article number	6ES7315-6FF04-0AB0 CPU315F, 384KB	6ES7315-2FJ14-0AB0 CPU315F-2 PN/DP, 512 KB	6ES7317-6FF04-0AB0 CPU317F-2DP, 1.5 MB	6ES7317-2FK14-0AB0 CPU317F-2 PN/DP, 1.5 MB	6ES7318-3FL01-0AB0 CPU319F-3 PN/DP, 2.5 MB
3. Interface					
Interface type					PROFINET
Physics					Ethernet RJ45
Interface types					
• Number of ports					2
Protocols					
• MPI					No
• PROFINET IO Controller					Yes; Also simultaneously with I-Device functionality
• PROFINET IO Device					Yes; Also simultaneously with IO Controller functionality
• PROFINET CBA					Yes
• PROFIBUS DP master					No
• PROFIBUS DP slave					No
PROFINET IO Controller					
Services					
- Number of connectable IO Devices, max.					256
- Of which IO devices with IRT, max.					64
- Number of IO Devices with IRT and the option "high flexibility"					256
- Number of connectable IO Devices for RT, max..					256
Protocols					
Open IE communication					
• TCP/IP		Yes; via integrated PROFINET interface and loadable FBs		Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.		8		16	32
• ISO-on-TCP (RFC1006)		Yes; via integrated PROFINET interface and loadable FBs		Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.		8		16	32
• UDP		Yes; via integrated PROFINET interface and loadable FBs		Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.		8		16	32
Web server					
• supported		Yes; only read function		Yes	Yes
Isochronous mode					
Isochronous operation (application synchronized up to terminal)	Yes	Yes; Via PROFIBUS DP or PROFINET interface		Yes; Via PROFIBUS DP or PROFINET interface	Yes; Via 2nd PROFIBUS DP or PROFINET interface
Communication functions					
PG/OP communication	Yes	Yes	Yes	Yes	Yes
Data record routing	Yes	Yes	Yes	Yes	Yes
Global data communication					
• supported	Yes	Yes	Yes	Yes	Yes
S7 basic communication					
• supported	Yes	Yes	Yes	Yes	Yes
S7 communication					
• supported	Yes	Yes	Yes	Yes	Yes
S5 compatible communication					
• supported	Yes; via CP and loadable FC	Yes; via CP and loadable FC	Yes; via CP and loadable FC	Yes; via CP and loadable FC	Yes; via CP and loadable FC
Number of connections					
• overall	16	16	32	32	32

SIMATIC S7-300 Advanced Controllers

Central processing units

Fail-safe CPUs

Technical specifications (continued)

Article number	6ES7315-6FF04-0AB0 CPU315F, 384KB	6ES7315-2FJ14-0AB0 CPU315F-2 PN/DP, 512 KB	6ES7317-6FF04-0AB0 CPU317F-2DP, 1.5 MB	6ES7317-2FK14-0AB0 CPU317F-2 PN/DP, 1.5 MB	6ES7318-3FL01-0AB0 CPU319F-3 PN/DP, 2.5 MB
Ambient conditions					
Ambient temperature during operation					
• min.	0 °C	0 °C	0 °C	0 °C	0 °C
• max.	60 °C	60 °C	60 °C	60 °C	60 °C
Configuration					
Programming					
Programming language					
- LAD	Yes	Yes	Yes	Yes	Yes
- FBD	Yes	Yes	Yes	Yes	Yes
- STL	Yes	Yes	Yes	Yes	Yes
- SCL	Yes	Yes	Yes	Yes	Yes
- CFC	Yes	Yes	Yes	Yes	Yes
- GRAPH	Yes	Yes	Yes	Yes	Yes
- HiGraph®	Yes	Yes	Yes	Yes	Yes
Know-how protection					
• User program protection/ password protection	Yes	Yes	Yes	Yes	Yes
• Block encryption	Yes; With S7 block Privacy	Yes; With S7 block Privacy	Yes; With S7 block Privacy	Yes; With S7 block Privacy	Yes; With S7 block Privacy
Dimensions					
Width	40 mm	40 mm	40 mm	40 mm	120 mm
Height	125 mm	125 mm	125 mm	125 mm	125 mm
Depth	130 mm	130 mm	130 mm	130 mm	130 mm
Weights					
Weight, approx.	290 g	340 g	360 g	340 g	1 250 g

SIMATIC S7-300 Advanced Controllers

Central processing units

Fail-safe CPUs

Ordering data	Article No.	Article No.
CPU 315F-2 DP CPU for SIMATIC S7-300F; work memory 384 KB, supply voltage 24 V DC, MPI, PROFIBUS DP master/slave interface, incl. slot number labels; MMC required	6ES7315-6FF04-0AB0	
CPU 315F-2 PN/DP CPU for SIMATIC S7-300F; work memory, 512 KB supply voltage 24 V DC; MPI/PROFIBUS DP master/slave interface; Industrial Ethernet/ PROFINET interface; incl. slot number labels; MMC required	6ES7315-2FJ14-0AB0	
CPU 317F-2 DP Work memory 1.5 MB, supply voltage 24 V DC, MPI, PROFIBUS DP master/slave interface, MMC required	6ES7317-6FF04-0AB0	
CPU 317F-2 PN/DP Work memory 1.5 MB, supply voltage 24 V DC, MPI/PROFIBUS DP master/slave interface, Industrial Ethernet/ PROFINET interface; MMC required	6ES7317-2FK14-0AB0	
CPU 319F-3 PN/DP Work memory 2.5 MB, supply voltage 24 V DC, combined MPI/PROFIBUS DP master/slave interface, PROFIBUS DP master/ slave interface, Ethernet/PROFINET interface; MMC required	6ES7318-3FL01-0AB0	
S7 Distributed Safety V5.4 SP5 Update 2 programming tool Task: Configuration software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, WinAC RTX F, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco Requirement: Windows 7 SP1 (64-bit) Windows 10 Professional/Enterprise (64-bit) Windows Server 2008 R2 SP1 (64-bit) Windows Server 2012 R2 (64-bit), Windows Server 2016 (64-bit) STEP 7 from V5.5 SP1; please also consider the operating systems that have been released for the STEP 7 version used Floating license for 1 user; software and documentation on DVD; license key on USB flash drive Floating license for 1 user; software, documentation and license key for download ¹⁾ ; email address required for delivery	6ES7833-1FC02-0YA5 6ES7833-1FC02-0YH5	
S7 Distributed Safety upgrade From V5.x to V5.4; floating license for 1 user; software and documentation on DVD; license key on USB flash drive	6ES7833-1FC02-0YE5	
		STEP 7 Safety Advanced V15.1 Task: Engineering tool for configuring and programming fail-safe user programs for SIMATIC S7-1200 FC, S7-1500F, S7-1500F Software Controller, S7-300F, S7-400F, WinAC RTX F, ET 200SP F Controller and the fail-safe ET 200SP, ET 200MP, ET 200S, ET 200M, ET 200iSP, ET 200pro and ET 200eco I/O Requirement: STEP 7 Professional V15.1 Floating license for 1 user; software and documentation on DVD; license key on USB flash drive Floating license for 1 user; software, documentation and license key for download ¹⁾ ; email address required for delivery
		SIMATIC Micro Memory Card 64 KB 6ES7953-8LF31-0AA0 128 KB 6ES7953-8LG31-0AA0 512 KB 6ES7953-8LJ31-0AA0 2 MB 6ES7953-8LL31-0AA0 4 MB 6ES7953-8LM31-0AA0 8 MB 6ES7953-8LP31-0AA0
		MPI cable 6ES7901-0BF00-0AA0 for connection of SIMATIC S7 and PG via MPI; 5 m in length
		Slot number plates 6ES7912-0AA00-0AA0
		SIMATIC Manual Collection 6ES7998-8XC01-8YE0 Electronic manuals on DVD, multi-language: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC Distributed I/O, SIMATIC HMI, SIMATIC sensors, SIMATIC NET, SIMATIC PC-based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC
		SIMATIC Manual Collection update service for 1 year 6ES7998-8XC01-8YE2 Current "Manual Collection" DVD and the three subsequent updates
		Power supply connector 6ES7391-1AA00-0AA0 10 units, spare part
		USB A2 PC adapter 6GK1571-0BA00-0AA0 For connecting a PG/PC or notebook to PROFIBUS or MPI; USB cable included in scope of supply

¹⁾ For up-to-date information and download availability, see:
<http://www.siemens.com/tia-online-software-delivery>

Ordering data	Article No.	Article No.
PROFIBUS bus components		
PROFIBUS DP bus connector RS 485		
<ul style="list-style-type: none"> With 90° cable outlet, max. transfer rate 12 Mbps <ul style="list-style-type: none"> - without PG interface - with PG interface with 90° cable outlet for FastConnect connection system, max. transfer rate 12 Mbps <ul style="list-style-type: none"> - without PG interface, 1 unit - without PG interface, 100 units - with PG interface, 1 unit - with PG interface, 100 units with axial cable outlet for SIMATIC OP, for connecting to PPI, MPI, PROFIBUS 	6ES7972-0BA12-0XA0 6ES7972-0BB12-0XA0 6ES7972-0BA52-0XA0 6ES7972-0BA52-0XB0 6ES7972-0BB52-0XA0 6ES7972-0BB52-0XB0 6GK1500-0EA02	
PROFIBUS Fast Connect bus cable	6XV1830-0EH10	
Standard type with special design for quick mounting, 2-wire, shielded, sold by the meter, max. delivery unit 1 000 m, minimum order quantity 20 m		
RS 485 repeater for PROFIBUS	6ES7972-0AA02-0XA0	
Transmission rate up to 12 Mbps; 24 V DC; IP20 enclosure		
PROFINET bus components		
IE FC TP Standard Cable GP 2x2	6XV1840-2AH10	
4-wire, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compatible; with UL approval; Sold by the meter		
FO Standard Cable GP (50/125)	6XV1873-2A	
Standard cable, splittable, UL approval, sold by the meter		
		SCALANCE X204-2 Industrial Ethernet Switch
		Industrial Ethernet switches with integral SNMP access, Web diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; four 10/100 Mbps RJ45 ports and two FO ports
		Compact Switch Module CSM 377
		Unmanaged switch for connecting SIMATIC S7-300, ET 200M and up to three other stations to Industrial Ethernet with 10/100 Mbps; 4 x RJ45 ports; external 24 V DC power supply, LED diagnostics, S7-300 module incl. electronic manual on CD-ROM
		IE FC RJ45 plugs
		RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables
		IE FC RJ45 plug 145
		145° cable outlet
		1 unit
		10 units
		50 units
		IE FC RJ45 plug 180
		180° cable outlet
		1 unit
		10 units
		50 units
		PROFIBUS/PROFINET bus components
		For establishing MPI/PROFIBUS/PROFINET communication
		6GK5204-2BB10-2AA3
		6GK7377-1AA00-0AA0
		6GK1901-1BB30-0AA0
		6GK1901-1BB30-0AB0
		6GK1901-1BB30-0AE0
		6GK1901-1BB10-2AA0
		6GK1901-1BB10-2AB0
		6GK1901-1BB10-2AE0
		See Catalogs IK PI, CA 01

SIMATIC S7-300 Advanced Controllers

Central processing units

SIPLUS S7-300 fail-safe CPUs

Overview SIPLUS CPU 315F-2 DP



- For configuring a fail-safe automation system for plants with increased safety requirements
- Complies with safety requirements up to SIL 3 according to IEC 61508 and up to Cat. 4 according to EN 954-1
- Distributed fail-safe I/O modules can be connected through the integral PROFIBUS DP interface (PROFIsafe)
- Fail-safe ET 200M I/O modules are also centrally connectable
- The standard modules for non-safety applications can be operated both centrally and locally

Micro Memory Card required for operation of CPU.

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Overview SIPLUS CPU 315F-2 PN/DP



- The CPU with a medium sized program memory and quantity structures to build a fail-safe automation system for plants with increased safety requirements
- Complies with safety requirements up to SIL 3 according to IEC 61508, PL e in accordance with ISO 13849 and up to Cat. 4 of EN 954-1
- The fail-safe I/O modules can be locally connected to the integrated PROFINET interface (PROFIsafe) and/or to the integrated PROFIBUS DP interface (PROFIsafe)
- Fail-safe ET 200M I/O modules are also centrally connectable
- The standard modules for non-safety applications can be operated both centrally and locally
- Component Based Automation (CBA) on PROFINET
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET interface with 2-port switch
- PROFINET proxy for intelligent devices on PROFIBUS DP in Component Based Automation (CBA)

Micro Memory Card required for operation of CPU.

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Overview SIPLUS CPU 317F-2 DP



- The fail-safe CPU with a large program memory and quantity framework for demanding applications
- For configuring a fail-safe automation system for plants with increased safety requirements
- Complies with safety requirements up to SIL 3 according to IEC 61508 and up to Cat. 4 according to EN 954-1
- Fail-safe I/O modules can be connected in a distributed configuration to both integral PROFIBUS DP interfaces (PROFIsafe)
- Fail-safe ET 200M I/O modules are also centrally connectable
- The standard modules for non-safety applications can be operated both centrally and locally

Micro Memory Card required for operation of CPU.

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Overview SIPLUS CPU 317F-2 PN/DP



- The failsafe CPU with a large program memory and quantity structures for demanding applications to build a fail-safe automation system for plants with increased safety requirements
- Complies with safety requirements up to SIL 3 according to IEC 61508, PL e in accordance with ISO 13849-1 and up to category 4 of EN 954-1
- The fail-safe I/O modules can be locally connected via the integrated PROFINET interface (PROFIsafe) and/or via the integrated PROFIBUS DP interface (PROFIsafe)
- Fail-safe ET 200M I/O modules are also centrally connectable
- The standard modules for non-safety applications can be operated both centrally and locally
- Component Based Automation (CBA) on PROFINET
- PROFINET IO controller for operating distributed I/O on PROFINET
- PROFINET interface with 2-port switch
- PROFINET proxy for intelligent devices on PROFIBUS DP in Component Based Automation (CBA)

SIMATIC Micro Memory Card required for operation of CPU.

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

SIMATIC S7-300 Advanced Controllers

Central processing units

SIPLUS S7-300 fail-safe CPUs

Technical specifications

Article number	6AG1315-6FF04-2AB0	6AG1315-6FF04-2AY0	6AG1315-2FJ14-2AB0	6AG1315-2FJ14-2AY0
Based on	6ES7315-6FF04-0AB0 SIPLUS S7-300 CPU 315F-2DP	6ES7315-6FF04-0AB0 SIPLUS S7-300 CPU 315F-2DP EN50155	6ES7315-2FJ14-0AB0 SIPLUS S7-300 CPU315F-2PN/DP	6ES7315-2FJ14-0AB0 SIPLUS S7-300 CPU315F-2PN/DP EN50155
Ambient conditions				
Ambient temperature during operation				
• min.	-25 °C	-25 °C; = Tmin	-25 °C; = Tmin	-25 °C; = Tmin
• max.	60 °C	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155	60 °C; = Tmax	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	2 000 m	2 000 m	2 000 m	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity				
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance				
Use in stationary industrial systems				
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *
Use on land craft, rail vehicles and special-purpose vehicles				
- to biologically active substances according to EN 60721-3-5		Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request		Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5		Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *		Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5		Yes; Class 5S3 incl. sand, dust; *		Yes; Class 5S3 incl. sand, dust; *
Use on ships/at sea				
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request		Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *		Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *		Yes; Class 6S3 incl. sand, dust; *	
Remark				
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

Technical specifications (continued)

Article number	6AG1317-6FF04-2AB0	6AG1317-2FK14-2AB0	6AG1317-2FK14-2AY0
Based on	6ES7317-6FF04-0AB0 SIPLUS S7-300 CPU317F-2DP	6ES7317-2FK14-0AB0 SIPLUS S7-300 CPU317F-2PN/DP	6ES7317-2FK14-0AB0 SIPLUS S7-300 CPU317F-2PN/DP EN50155
Ambient conditions			
Ambient temperature during operation			
• min.	-25 °C; = Tmin	-25 °C; = Tmin	-25 °C; = Tmin
• max.	60 °C; = Tmax	60 °C; = Tmax	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155
Altitude during operation relating to sea level			
• Installation altitude above sea level, max.	2 000 m	2 000 m	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity			
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance			
Use in stationary industrial systems			
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
Use on land craft, rail vehicles and special-purpose vehicles			
- to biologically active substances according to EN 60721-3-5			Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5			Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5			Yes; Class 5S3 incl. sand, dust; *
Use on ships/at sea			
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	
Remark			
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

SIMATIC S7-300 Advanced Controllers

Central processing units

SIPLUS S7-300 fail-safe CPUs

Ordering data

Article No.

Article No.

SIPLUS S7-300 CPU 315F-2 DP

For industrial applications with extended ambient conditions

CPU for SIPLUS S7-300F; work memory 384 KB, supply voltage 24 V DC, MPI, PROFIBUS DP master/slave interface; incl. slot number labels; MMC required

Extended temperature range and exposure to media

6AG1315-6FF04-2AB0

For rolling stock railway applications

Conforms to EN 50155

6AG1315-6FF04-2AY0

SIPLUS S7-300 CPU 315F-2 PN/DP

For industrial applications with extended ambient conditions

CPU for SIPLUS S7-300F; work memory 512 KB, supply voltage 24 V DC, MPI/PROFIBUS DP master/slave interface, Industrial Ethernet/PROFINET interface; incl. slot number labels

Extended temperature range and exposure to media

6AG1315-2FJ14-2AB0

For rolling stock railway applications

CPU for SIPLUS S7-300F; work memory 512 KB, supply voltage 24 V DC, MPI/PROFIBUS DP master/slave interface, Industrial Ethernet/PROFINET interface; incl. slot number labels

Conforms to EN 50155

6AG1315-2FJ14-2AY0

SIPLUS S7-300 CPU 317F-2 DP

For industrial applications with extended ambient conditions

CPU for SIPLUS S7-300F, work memory 1.5 MB, supply voltage 24 V DC, MPI, PROFIBUS DP master/slave interface; MMC required

Extended temperature range and exposure to media

6AG1317-6FF04-2AB0

SIPLUS S7-300 CPU 317F-2 PN/DP

For industrial applications with extended ambient conditions

CPU for SIPLUS S7-300F, work memory 1.5 MB, supply voltage 24 V DC, MPI/PROFIBUS DP master/slave interface; Industrial Ethernet/PROFINET interface; MMC required

Extended temperature range and exposure to media

6AG1317-2FK14-2AB0

For rolling stock railway applications

CPU for SIPLUS S7-300F, work memory 1.5 MB, supply voltage 24 V DC, MPI/PROFIBUS DP master/slave interface; Industrial Ethernet/PROFINET interface; MMC required

Conforms to EN 50155

6AG1317-2FK14-2AY0

Accessories

Mandatory

SIMATIC Micro Memory Card

64 KB

6ES7953-8LF31-0AA0

128 KB

6ES7953-8LG31-0AA0

512 KB

6ES7953-8LJ31-0AA0

2 MB

6ES7953-8LL31-0AA0

4 MB

6ES7953-8LM31-0AA0

8 MB

6ES7953-8LP31-0AA0

For communication within the application

PROFIBUS DP bus connector RS 485

(Extended temperature range and exposure to media)

With 90° cable outlet, max. transfer rate 12 Mbps

- Without PG interface
- With PG interface

6AG1972-0BA12-2XA0
6AG1972-0BB12-2XA0

With angled cable outlet, max. transfer rate 12 Mbps

- Without PG interface
- With PG interface

6AG1972-0BA42-7XA0
6AG1972-0BB42-7XA0

(Extended temperature range)

With axial cable outlet for SIMATIC OP, for connecting to PPI, MPI, PROFIBUS

6AG1500-0EA02-2AA0

RS 485 repeater for PROFIBUS

6AG1972-0AA02-7XA0

(Extended temperature range and exposure to media)

Transmission rate up to 12 Mbps; 24 V DC; IP20 enclosure

IE FC RJ45 plug 180

(Extended temperature range and exposure to media)

180° cable outlet

- 1 unit

6AG1901-1BB10-7AA0

Ordering data	Article No.	Article No.
SIPLUS SCALANCE X-200 Industrial Ethernet Switches Industrial Ethernet switches with integral SNMP access, web diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; with integrated redundancy manager (exception: SCALANCE X208PRO); incl. operating instructions, Industrial Ethernet network manual and configuration software on CD-ROM <ul style="list-style-type: none"> • With electrical and optical ports for glass multimode FOC up to 3 km • Extended temperature range and exposure to media • SIPLUS SCALANCE X204-2 with four 10/100 Mbps RJ45 ports and two FO ports 	6AG1204-2BB10-4AA3	
PROFIBUS FastConnect bus cable Standard type with special design for quick mounting, 2-wire, shielded, sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m	6XV1830-0EH10	
IE FC TP Standard Cable GP 2x2 4-wire, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compatible; with UL approval Sold by the meter	6XV1840-2AH10	
FO Standard Cable GP (50/125) <i>For commissioning</i>	6XV1873-2A	
MPI cable For connection of SIMATIC S7 and programming devices via MPI; length 5 m	6ES7901-0BF00-0AA0	
USB A2 PC adapter For connecting a programming device/PC or notebook to PROFIBUS or MPI; USB cable included in scope of supply	6GK1571-0BA00-0AA0	
S7 Distributed Safety V5.4 SP5 Update 2 programming tool Task: Configuration software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, WinAC RTX F, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco Requirement: Windows 7 SP1 (64-bit) Windows 10 Professional/Enterprise (64-bit) Windows Server 2008 R2 SP1 (64-bit) Windows Server 2012 R2 (64-bit), Windows Server 2016 (64-bit) STEP 7 from V5.5 SP1; please also consider the operating systems that have been released for the STEP 7 version used Floating license for 1 user; software and documentation on DVD; license key on USB flash drive Floating license for 1 user, software, documentation and license key for download ¹⁾ ; email address required for delivery	6ES7833-1FC02-0YA5 6ES7833-1FC02-0YH5	S7 Distributed Safety upgrade From V5.x to V5.4; floating license for 1 user; software and documentation on DVD; license key on USB flash drive STEP 7 Safety Advanced V15.1 Task: Engineering tool for configuring and programming fail-safe user programs for SIMATIC S7-1200 FC, S7-1500F, S7-1500F Software Controller, S7-300F, S7-400F, WinAC RTX F, ET 200SP F Controller and the fail-safe ET 200SP, ET 200MP, ET 200S, ET 200M, ET 200iSP, ET 200pro and ET 200eco I/O Requirement: STEP 7 Professional V15.1 Floating license for 1 user, software and documentation on DVD; license key on USB flash drive Floating license for 1 user, software, documentation and license key for download ¹⁾ ; email address required for delivery <i>Consumables</i> Power supply connector 10 units, spare part Slot number plates 6ES7912-0AA00-0AA0 <i>Documentation</i> SIMATIC Manual Collection Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC Distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC-based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates

¹⁾ For up-to-date information and download availability, see:
<http://www.siemens.com/tia-online-software-delivery>

SIMATIC S7-300 Advanced Controllers

Central processing units

Technology CPUs

Overview CPU 315T-3 PN/DP



- SIMATIC CPU with integral technology/motion control functionality
- With full standard CPU 315-2 PN/DP functionality (except for CBA)
- For cross-industry automation tasks in series machine, special machine and plant construction
- Ideal for synchronized motion, such as coupling to a virtual/real master, gear synchronization, cam disk, path interpolation, or print mark compensation
- 3D path interpolation with different kinematics
- Position and pressure-regulated hydraulic axes
- Used as central controller in production lines with central and distributed I/O
- With integrated I/O for high-speed technology functions (e.g. camming, reference point acquisition)
- PROFIBUS DP (DRIVE) interface for isochronous connection of drive components
- PROFINET interface with 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET
- One common S7 user program for control and motion control tasks (no additional programming language necessary for motion control)
- "S7 Technology" option package required (version V4.2 SP3 and higher)

SIMATIC Micro Memory Card (8 MB) required for operation of the CPU.

Overview CPU 317T-3 PN/DP



- SIMATIC CPU with integral technology/motion control functionality
- With full standard CPU 317-2 PN/DP functionality (except for CBA)
- For cross-industry automation tasks in series machine, special machine and plant construction
- Ideal for synchronized motion, such as coupling to a virtual/real master, gear synchronization, cam disk, path interpolation, or print mark compensation
- 3D path interpolation with different kinematics
- Position and pressure-regulated hydraulic axes
- Used as central controller in production lines with central and distributed I/O
- With integrated I/O for high-speed technology functions (e.g. camming, reference point acquisition)
- PROFIBUS DP (DRIVE) interface for isochronous connection of drive components
- PROFINET interface with 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET
- One common S7 user program for control and motion control tasks (no additional programming language necessary for motion control)
- "S7 Technology" option package required (version V4.2 SP3 and higher)

SIMATIC Micro Memory Card (8 MB) required for operation of the CPU.

Overview CPU 317TF-3 PN/DP



- Fail-safe SIMATIC CPU 317TF-3 PN/DP with integral technology/motion control functionality
- Spare-part-compatible successor to the CPU 317TF-2 DP (Article No. 6ES7317-6TF14-0AB0)
- With full functionality of the standard CPU 317-2 PN/DP and CPU 317F-2 PN/DP (except for CBA)
- For cross-industry automation tasks in series machine, special machine and plant construction

- Ideal for synchronized motion, such as coupling to a virtual/real master, gear synchronization, cam disk, path interpolation, or print mark compensation
- 3D path interpolation with different kinematics
- Position and pressure-regulated hydraulic axes
- Used as central controller in production lines with central and distributed I/O
- With integrated I/O for high-speed technology functions (e.g. camming, reference point acquisition)
- PROFIBUS DP (DRIVE) interface for isochronous connection of drive components
- PROFINET interface with 2-port switch
- PROFINET IO controller for operating distributed I/O on PROFINET
- One common S7 user program for control and motion control tasks (no additional programming language necessary for motion control)
- "S7 Technology" option package required
- "S7 Distributed Safety" option package required (version V4.2 SP3 and higher)

SIMATIC Micro Memory Card (8 MB) required for operation of the CPU.

Technical specifications

Article number	6ES7315-7TJ10-0AB0 CPU315T-3 PN/DP, 384KB	6ES7317-7TK10-0AB0 CPU317T-3 PN/DP, 1024KB	6ES7317-7UL10-0AB0 CPU317TF-3 PN/DP, 1,5 MB
General information			
Engineering with			
• Programming package	STEP 7 V5.5 SP2 or higher and S7-Technology option package V4.2 SP3	STEP 7 V5.5 SP2 or higher and S7-Technology option package V4.2 SP3	STEP 7 V5.5 SP2 or higher; S7-Technology option package V4.2 SP3 or higher, Distributed Safety V5.4 SP5 or higher, S7-F Configuration Pack V5.5 SP10 or higher
Supply voltage			
Rated value (DC)			
• 24 V DC	Yes	Yes	Yes
Power loss			
Power loss, typ.	7.5 W	7.5 W	8.5 W
Memory			
Work memory			
• integrated	384 kbyte	1 024 kbyte	1 536 kbyte
• expandable	No	No	No
• Size of retentive memory for retentive data blocks	128 kbyte	256 kbyte	256 kbyte
Load memory			
• Plug-in (MMC), max.	8 Mbyte	8 Mbyte	8 Mbyte
CPU processing times			
for bit operations, typ.	0.05 µs	0.025 µs	0.025 µs
for word operations, typ.	0.09 µs	0.03 µs	0.03 µs
for fixed point arithmetic, typ.	0.12 µs	0.04 µs	0.04 µs
for floating point arithmetic, typ.	0.45 µs	0.16 µs	0.16 µs

SIMATIC S7-300 Advanced Controllers

Central processing units

Technology CPUs

Technical specifications (continued)

Article number	6ES7315-7TJ10-0AB0 CPU315T-3 PN/DP, 384KB	6ES7317-7TK10-0AB0 CPU317T-3 PN/DP, 1024KB	6ES7317-7UL10-0AB0 CPU317TF-3 PN/DP, 1,5 MB
Counters, timers and their retentivity			
S7 counter			
• Number	256	512	512
IEC counter			
• present	Yes	Yes	Yes
S7 times			
• Number	256	512	512
IEC timer			
• present	Yes	Yes	Yes
Data areas and their retentivity			
Flag			
• Number, max.	2 048 byte	4 096 byte	4 096 byte
Address area			
I/O address area			
• Inputs	2 048 byte	8 192 byte	8 192 byte
• Outputs	2 048 byte	8 192 byte	8 192 byte
Process image			
• Inputs, adjustable	2 048 byte	8 192 byte	8 192 byte
• Outputs, adjustable	2 048 byte	8 192 byte	8 192 byte
Time of day			
Clock			
• Hardware clock (real-time)	Yes	Yes	Yes
Operating hours counter			
• Number	1	4	4
Digital outputs			
Integrated high-speed cams			
• Switching accuracy (+/-)	70 µs	70 µs	70 µs
1. Interface			
Interface type	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface
Physics	RS 485	RS 485	RS 485
Protocols			
• MPI	Yes	Yes	Yes
• PROFIBUS DP master	Yes	Yes	Yes
• PROFIBUS DP slave	Yes	Yes	Yes
• Point-to-point connection	No	No	No
PROFIBUS DP master			
• Number of DP slaves, max.	124	124	124
2. Interface			
Interface type	Integrated RS 485 interface	Integrated RS 485 interface	Integrated RS 485 interface
Physics	RS 485	RS 485	RS 485
Protocols			
• MPI	No	No	No
• PROFIBUS DP master	Yes; DP(DRIVE)-Master	Yes; DP(DRIVE)-Master	Yes; DP(DRIVE)-Master
• PROFIBUS DP slave	No	No	No
PROFIBUS DP master			
• Number of DP slaves, max.	64	64	64
3. Interface			
Interface type	PROFINET	PROFINET	PROFINET
Physics	Ethernet RJ45	Ethernet RJ45	Ethernet RJ45
Interface types			
• Number of ports	2	2	2
Protocols			
• MPI	No	No	No
• PROFINET IO Controller	Yes; Also simultaneously with IO-Device functionality	Yes; Also simultaneously with IO-Device functionality	Yes; Also simultaneously with IO-Device functionality
• PROFINET IO Device	Yes; Also simultaneously with IO Controller functionality	Yes; Also simultaneously with IO Controller functionality	Yes; Also simultaneously with IO Controller functionality
• PROFIBUS DP master	No	No	No
• PROFIBUS DP slave	No	No	No

Technical specifications (continued)

Article number	6ES7315-7TJ10-0AB0 CPU315T-3 PN/DP, 384KB	6ES7317-7TK10-0AB0 CPU317T-3 PN/DP, 1024KB	6ES7317-7UL10-0AB0 CPU317TF-3 PN/DP, 1,5 MB
PROFINET IO Controller			
Services			
- Number of connectable IO Devices, max.	128	128	128
- Of which IO devices with IRT, max.	64	64	64
- Number of connectable IO Devices for RT, max..	128	128	128
Protocols			
Open IE communication			
• TCP/IP	Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.	8	16	16
• ISO-on-TCP (RFC1006)	Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.	8	16	16
• UDP	Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs	Yes; via integrated PROFINET interface and loadable FBs
- Number of connections, max.	8	16	16
Web server			
• supported	Yes	Yes	Yes
Isochronous mode			
Isochronous operation (application synchronized up to terminal)	Yes; Via PROFIBUS DP or PROFINET interface	Yes; Via PROFIBUS DP or PROFINET interface	Yes; Via PROFIBUS DP or PROFINET interface
Communication functions			
PG/OP communication	Yes	Yes	Yes
Data record routing	Yes	Yes	Yes
Global data communication			
• supported	Yes	Yes	Yes
S7 basic communication			
• supported	Yes	Yes	Yes
S7 communication			
• supported	Yes	Yes	Yes
S5 compatible communication			
• supported	Yes; via CP and loadable FC	Yes; via CP and loadable FC	Yes; via CP and loadable FC
Number of connections			
• overall	16	32	32
Ambient conditions			
Ambient temperature during operation			
• min.	0 °C	0 °C	0 °C
• max.	60 °C	60 °C	60 °C
Configuration			
Programming			
Programming language			
- LAD	Yes	Yes	Yes
- FBD	Yes	Yes	Yes
- STL	Yes	Yes	Yes
- SCL	Yes	Yes	Yes
- CFC	Yes	Yes	Yes
- GRAPH	Yes	Yes	Yes
- HiGraph®	Yes	Yes	Yes
Know-how protection			
• User program protection/ password protection	Yes	Yes	Yes
• Block encryption	Yes; With S7 block Privacy	Yes; With S7 block Privacy	Yes; With S7 block Privacy
Dimensions			
Width	120 mm	120 mm	120 mm
Height	125 mm	125 mm	125 mm
Depth	130 mm	130 mm	130 mm
Weights			
Weight, approx.	640 g	640 g	640 g

SIMATIC S7-300 Advanced Controllers

Central processing units

Technology CPUs

Ordering data

Article No.

Article No.

CPU 315T-3 PN/DP

Work memory 384 KB, supply voltage 24 V DC, MPI, PROFIBUS DP master/slave interface, PROFIBUS DP(DRIVE) interface, Ethernet/PROFINET interface with 2-port switch; with technology/motion control functions; MMC required

6ES7315-7TJ10-0AB0

CPU 317T-3 PN/DP

Work memory 1024 KB, supply voltage 24 V DC, MPI, PROFIBUS DP master/slave interface, PROFIBUS DP(DRIVE) interface, Ethernet/PROFINET interface with 2-port switch; with technology/motion control functions; MMC required

6ES7317-7TK10-0AB0

CPU 317TF-3 PN/DP

Work memory 1.5 MB, supply voltage 24 V DC, MPI, PROFIBUS DP master/slave interface, PROFIBUS DP(DRIVE) interface, Ethernet/PROFINET interface with 2-port switch; with technology/motion control functions; MMC required

6ES7317-7UL10-0AB0

S7-Technology V4.2

V4.2 SP3 and higher can be used for CPU 317TF-3 PN/DP

Task:

Option package for configuring and programming technology tasks with SIMATIC S7 CPU 31xT and SIMATIC S7 CPU 317TF

Requirement:

STEP 7 V5.6 and higher

Type of delivery:

on DVD;
incl. documentation for CPU 31xT, CPU 317TF (included on DVD)

Floating license

6ES7864-1CC42-0YA5

Floating license for 1 user; license key download without software or documentation¹⁾; email address required for delivery

6ES7864-1CC42-0XH5

S7 Distributed Safety V5.4 SP5 Update 2 programming tool

Task:

Configuration software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, WinAC RTX F, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco, ET 200SP

Requirement:

Windows 7 SP1 (64-bit), Windows 10 Professional/Enterprise (64-bit), Windows Server 2008 R2 SP1 (64-bit), Windows Server 2012 R2 (64-bit), Windows Server 2016 (64-bit); STEP 7 from V5.5 SP1; Please also note the operating systems that have been released for the STEP 7 version used

Floating license for 1 user; software and documentation on DVD; license key on USB flash drive

6ES7833-1FC02-0YA5

Floating license for 1 user; software, documentation and license key for download¹⁾; email address required for delivery

6ES7833-1FC02-0YH5

S7 Distributed Safety upgrade

From V5.x to V5.4; floating license for 1 user; software and documentation on DVD; license key on USB flash drive

6ES7833-1FC02-0YE5

SIMATIC Micro Memory Card

8 MB

6ES7953-8LP31-0AA0

MPI cable

for connection of SIMATIC S7 and PG via MPI; 5 m in length

6ES7901-0BF00-0AA0

Front connectors

40-pin, with screw contacts

- 1 unit
- 100 units

6ES7392-1AM00-0AA0
6ES7392-1AM00-1AB0

40-pin, with spring-loaded contacts

- 1 unit
- 100 units

6ES7392-1BM01-0AA0
6ES7392-1BM01-1AB0

Slot number plates

6ES7912-0AA00-0AA0

SIMATIC Manual Collection

6ES7998-8XC01-8YE0

Electronic manuals on DVD, multi-language: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC Distributed I/O, SIMATIC HMI, SIMATIC sensors, SIMATIC NET, SIMATIC PC-based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC

SIMATIC Manual Collection update service for 1 year

6ES7998-8XC01-8YE2

Current "Manual Collection" DVD and the three subsequent updates

¹⁾ For up-to-date information and download availability, see: <http://www.siemens.com/tia-online-software-delivery>

Ordering data	Article No.	Ordering data	Article No.
Power supply connector 10 units, spare part	6ES7391-1AA00-0AA0	PROFINET bus components	
Labeling strips 10 units, spare part	6ES7392-2XX00-0AA0	IE FC TP Standard Cable GP 2x2	6XV1840-2AH10
Label cover 10 units, spare part	6ES7392-2XY00-0AA0	4-wire, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compatible; with UL approval; sold by the meter	
Labeling sheets for machine inscription for modules with 40-pin front connector, DIN A4, for printing with laser printer; 10 units		FO Standard Cable GP (50/125)	6XV1873-2A
Petrol	6ES7392-2AX10-0AA0	Standard cable, splittable, UL approval, sold by the meter	
Light beige	6ES7392-2BX10-0AA0	SCALANCE X204-2 Industrial Ethernet Switch	6GK5204-2BB10-2AA3
Yellow	6ES7392-2CX10-0AA0	Industrial Ethernet switches with integral SNMP access, Web diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; four 10/100 Mbps RJ45 ports and two FO ports	
Red	6ES7392-2DX10-0AA0	Compact Switch Module CSM 377	6GK7377-1AA00-0AA0
USB A2 PC adapter For connecting a PG/PC or notebook to PROFIBUS or MPI; USB cable included in scope of supply	6GK1571-0BA00-0AA0	Unmanaged switch for connecting SIMATIC S7-300, ET 200M and up to three other stations to Industrial Ethernet with 10/100 Mbps; 4 x RJ45 ports; external 24 V DC power supply, LED diagnostics, S7-300 module incl. electronic manual on CD-ROM	
PROFIBUS bus components		IE FC RJ45 plugs	
PROFIBUS DP bus connector RS 485		RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables	
• With 90° cable outlet, max. transfer rate 12 Mbps - without PG interface - with PG interface	6ES7972-0BA12-0XA0 6ES7972-0BB12-0XA0	IE FC RJ45 plug 180	
• with 90° cable outlet for FastConnect connection system, max. transfer rate 12 Mbps - without PG interface, 1 unit - without PG interface, 100 units - with PG interface, 1 unit - with PG interface, 100 units	6ES7972-0BA52-0XA0 6ES7972-0BA52-0XB0 6ES7972-0BB52-0XA0 6ES7972-0BB52-0XB0	180° cable outlet	
• with axial cable outlet for SIMATIC OP, for connecting to PPI, MPI, PROFIBUS	6GK1500-0EA02	1 unit	6GK1901-1BB10-2AA0
PROFIBUS Fast Connect bus cable	6XV1830-0EH10	10 units	6GK1901-1BB10-2AB0
Standard type with special design for quick mounting, 2-wire, shielded, sold by the meter, max. delivery unit 1 000 m, minimum order quantity 20 m		50 units	6GK1901-1BB10-2AE0
RS 485 repeater for PROFIBUS	6ES7972-0AA02-0XA0	PROFIBUS/PROFINET bus components	See Catalogs IK PI, CA 01
Transmission rate up to 12 Mbps; 24 V DC; IP20 enclosure		For establishing MPI/PROFIBUS/PROFINET communication	

SIMATIC S7-300 Advanced Controllers

I/O modules

Digital modules

SM 321 digital input modules

Overview



- Digital inputs
- For connecting standard switches and two-wire proximity switches (BEROs)

5

Technical specifications

Article number	6ES7321-1BH02-0AA0	6ES7321-1BH50-0AA0	6ES7321-1BL00-0AA0	6ES7321-1BP00-0AA0	6ES7321-1BH10-0AA0
	SM321, 16DI, 24 V DC	SM321, 16DI, 24 V DC, sourcing input	SM321, 32DI, 24 V DC	SM321, 64 DI, DC 24 V DC, 3MS, P/M reading	SM321, 16DI, 24 V DC, 0.05ms Input Delay
Supply voltage					
Load voltage L+					
• Rated value (DC)	24 V	24 V	24 V	24 V	24 V
Input current					
from backplane bus 5 V DC, max.	10 mA	10 mA	15 mA	100 mA	110 mA
Power loss					
Power loss, typ.	3.5 W	3.5 W	6.5 W	7 W	3.8 W
Digital inputs					
Number of digital inputs	16	16	32	64	16
Input characteristic curve in accordance with IEC 61131, type 1	Yes	Yes	Yes	Yes	Yes
Number of simultaneously controllable inputs					
horizontal installation					
- up to 40 °C, max.	16	16	32	64	16
- up to 60 °C, max.	16	16	16	32	16
vertical installation					
- up to 40 °C, max.	16	16	32	32	16
Input voltage					
• Type of input voltage	DC	DC	DC	DC	DC
• Rated value (DC)	24 V	24 V	24 V	24 V	24 V
• for signal "0"	-30 to +5V	-5 to +30V	-30 to +5V	-30 to +5V	-30 to +5V
• for signal "1"	13 to 30V	-13 to -30V	13 to 30V	13 to 30V	13 to 30V
Input current					
• for signal "1", typ.	7 mA	7 mA	7 mA	4.2 mA	7 mA
Input delay (for rated value of input voltage)					
for standard inputs					
- parameterizable	No	No	No	No	No
- at "0" to "1", min.	1.2 ms	1.2 ms	1.2 ms	1.2 ms	25 µs
- at "0" to "1", max.	4.8 ms	4.8 ms	4.8 ms	4.8 ms	75 µs
Cable length					
• shielded, max.	1 000 m	1 000 m	1 000 m	1 000 m	1 000 m
• unshielded, max.	600 m	600 m	600 m	600 m	600 m

Technical specifications (continued)

Article number	6ES7321-1BH02-0AA0 SM321, 16DI, 24 V DC	6ES7321-1BH50-0AA0 SM321, 16DI, 24 V DC, sourcing input	6ES7321-1BL00-0AA0 SM321, 32DI, 24 V DC	6ES7321-1BP00-0AA0 SM321, 64 DI, DC 24 V DC, 3MS, P/M reading	6ES7321-1BH10-0AA0 SM321, 16DI, 24 V DC, 0.05ms Input Delay
Encoder					
Connectable encoders					
• 2-wire sensor	Yes	Yes	Yes	No	Yes
- permissible quiescent current (2-wire sensor), max.	1.5 mA	1.5 mA	1.5 mA		1.5 mA
Isochronous mode					
Isochronous operation (application synchronized up to terminal)	No	No	No	No	Yes
Interrupts/diagnostics/status information					
Diagnostics function	No	No	No	No	No
Alarms					
• Diagnostic alarm	No	No	No	No	No
• Hardware interrupt	No	No	No	No	No
Potential separation					
Potential separation digital inputs					
• between the channels	No	No	No	No	No
• between the channels, in groups of	16	16	16	16	16
• between the channels and backplane bus	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler
Connection method					
required front connector	20-pin	20-pin	40-pin	Cable: 6ES7392-4Bxx0-0AA0 terminal blocks: 6ES7392-1xN00-0AA0	20-pin
Dimensions					
Width	40 mm	40 mm	40 mm	40 mm	40 mm
Height	125 mm	125 mm	125 mm	125 mm	125 mm
Depth	120 mm	120 mm	120 mm	112 mm	120 mm
Weights					
Weight, approx.	200 g	200 g	260 g	230 g	200 g
Article number	6ES7321-7BH01-0AB0 SM321, 16DI, 24V DC	6ES7321-1CH00-0AA0 SM321, 16 DI, AC/DC 24-48V, 1ch/common	6ES7321-1CH20-0AA0 SM321, 16DI, DC48-125V	6ES7321-1FH00-0AA0 SM321, 16 DI, 120/230V AC	
Supply voltage					
Load voltage L+					
• Rated value (DC)	24 V	24 V	48 V		
Load voltage L1					
• Rated value (AC)		24 V		230 V; 120/230 V AC; all load voltages must have the same phase.	
Input current					
from load voltage L+ (without load), max.	90 mA				
from backplane bus 5 V DC, max.	130 mA	100 mA	40 mA	29 mA	
Power loss					
Power loss, typ.	4 W	1.5 W; at 24 V; 2,8 W at 48 V	4.3 W	4.9 W	
Digital inputs					
Number of digital inputs	16	16	16	16	
Input characteristic curve in accordance with IEC 61131, type 1		Yes	Yes	Yes	
Input characteristic curve in accordance with IEC 61131, type 2	Yes				

SIMATIC S7-300 Advanced Controllers

I/O modules

Digital modules

SM 321 digital input modules

Technical specifications (continued)

Article number	6ES7321-7BH01-0AB0	6ES7321-1CH00-0AA0	6ES7321-1CH20-0AA0	6ES7321-1FH00-0AA0
	SM321, 16DI, 24V DC	SM321, 16 DI, AC/DC 24-48V, 1ch/common	SM321, 16DI, DC48-125V	SM321, 16 DI, 120/230V AC
Number of simultaneously controllable inputs				
horizontal installation				
- up to 40 °C, max.	16	16	8	16
- up to 60 °C, max.	16	16	8; 6 to Ue 146 V	16
vertical installation				
- up to 40 °C, max.	16	16	8	16
Input voltage				
• Type of input voltage	DC	AC/DC	DC	AC
• Rated value (DC)	24 V	24 V; DC 24 or 48 V	48 V; 48 V DC to 125 V DC	
• Rated value (AC)		24 V; 24 V AC or 48 V AC (0 ... 63 Hz)		230 V; 120/230 V AC (47 ... 63 Hz)
• for signal "0"	-30 to +5V	-5V AC to +5V AC	-146 V DC to +15 V DC	0 to 40V
• for signal "1"	13 to 30V	14V AC to 60V AC	30 V DC to 146 V DC	79 to 264V
Input current				
• for signal "1", typ.	7 mA	2.7 mA	3.5 mA	6.5 mA; (120V, 60Hz), 16mA (230V, 50Hz)
Input delay (for rated value of input voltage)				
for standard inputs				
- parameterizable	Yes; 0.1 / 0.5 / 3 / 15 / 20 ms	No	No	No
- at "0" to "1", min.		16 ms	0.1 ms	25 ms
- at "0" to "1", max.		16 ms	3.5 ms	25 ms
Cable length				
• shielded, max.	1 000 m	1 000 m	1 000 m	1 000 m
• unshielded, max.	600 m	600 m	600 m	600 m
Encoder				
Connectable encoders				
• 2-wire sensor	Yes	Yes	Yes	Yes
- permissible quiescent current (2-wire sensor), max.	2 mA	1 mA	1 mA	2 mA
Isochronous mode				
Isochronous operation (application synchronized up to terminal)	Yes	No	No	No
Interrupts/diagnostics/ status information				
Diagnostics function	Yes; Parameterizable	No	No	No
Alarms				
• Diagnostic alarm	Yes; Parameterizable	No	No	No
• Hardware interrupt	Yes; Parameterizable	No	No	No
Potential separation				
Potential separation digital inputs				
• between the channels	No	Yes	No	No
• between the channels, in groups of	16	1	8	4
• between the channels and backplane bus	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler
Connection method				
required front connector	20-pin	40-pin	20-pin	20-pin
Dimensions				
Width	40 mm	40 mm	40 mm	40 mm
Height	125 mm	125 mm	125 mm	125 mm
Depth	120 mm	120 mm	120 mm	120 mm
Weights				
Weight, approx.	200 g	260 g	200 g	240 g

Technical specifications (continued)

Article number	6ES7321-1EL00-0AA0 SM321, 32DI, AC120V	6ES7321-1FF01-0AA0 SM321, 8DI, AC120/230V	6ES7321-1FF10-0AA0 SM321, 8 DI, AC 120/230V, 1ch/common
Load voltage L1			
• Rated value (AC)	120 V	230 V; 120/230 V AC	230 V; 120/230 V AC; all load voltages must have the same phase.
Input current			
from backplane bus 5 V DC, max.	16 mA	29 mA	100 mA
Power loss			
Power loss, typ.	4 W	4.9 W	4.9 W
Digital inputs			
Number of digital inputs	32	8	8
Input characteristic curve in accordance with IEC 61131, type 1		Yes	Yes
Input characteristic curve in accordance with IEC 61131, type 2	Yes		
Number of simultaneously controllable inputs			
horizontal installation			
- up to 40 °C, max.	32		
- up to 60 °C, max.	24	8	8
vertical installation			
- up to 40 °C, max.	32	8	8
Input voltage			
• Type of input voltage	AC	AC	AC
• Rated value (AC)	120 V; 47 ... 63 Hz	230 V; 120/230 V AC (47 ... 63 Hz)	120 V; 120/230 V AC (47 ... 63 Hz)
• for signal *0*	0 to 20V	0 to 40V	0 to 40V
• for signal *1*	74 to 132V	79 to 264V	79 to 264V
Input current			
• for signal *1*, typ.	21 mA	6.5 mA; (120 V); 11 mA (230 V)	7.5 mA; (120 V); 17.3 mA (230 V)
Input delay (for rated value of input voltage) for standard inputs			
- parameterizable	No	No	No
- at *0* to *1*, max.	15 ms	25 ms	25 ms
Cable length			
• shielded, max.	1 000 m	1 000 m	1 000 m
• unshielded, max.	600 m	600 m	600 m
Encoder			
Connectable encoders			
• 2-wire sensor	Yes	Yes	Yes
- permissible quiescent current (2-wire sensor), max.	4 mA	2 mA	2 mA
Isochronous mode			
Isochronous operation (application synchronized up to terminal)	No	No	No

SIMATIC S7-300 Advanced Controllers

I/O modules

Digital modules

SM 321 digital input modules

Technical specifications (continued)

Article number	6ES7321-1EL00-0AA0	6ES7321-1FF01-0AA0	6ES7321-1FF10-0AA0
	SM321, 32DI, AC120V	SM321, 8DI, AC120/230V	SM321, 8 DI, AC 120/230V, 1ch/common
Interrupts/diagnostics/ status information			
Diagnostics function	No	No	No
Alarms			
• Diagnostic alarm	No	No	No
• Hardware interrupt	No	No	No
Potential separation			
Potential separation digital inputs			
• between the channels	No	No	Yes
• between the channels, in groups of 8	8	2	1
• between the channels and backplane bus	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler
Connection method			
required front connector	40-pin	20-pin	40-pin
Dimensions			
Width	40 mm	40 mm	40 mm
Height	125 mm	125 mm	125 mm
Depth	120 mm	120 mm	120 mm
Weights			
Weight, approx.	300 g	240 g	240 g

Ordering data

SM 321 digital input modules

Incl. labeling strips, bus connector

16 inputs, 24 V DC

16 inputs, 24 V DC, active low

32 inputs, 24 V DC

64 inputs, 24 V DC, active high/low

Note:

6ES7392-4...0-0AA0 connecting cable and 6ES7392-1.N00-0AA0 terminal blocks necessary.

16 inputs, 24 to 48 V DC

16 inputs, 48 to 125 V DC

16 inputs, 24 V DC, for isochronous mode

32 inputs, 120 V AC

8 inputs, 120/230 V AC

8 inputs, 120/230 V AC, single root

16 inputs, 120/230 V AC

16 inputs, 24 V DC, for isochronous mode, diagnostics-capable

Article No.

6ES7321-1BH02-0AA0

6ES7321-1BH50-0AA0

6ES7321-1BL00-0AA0

6ES7321-1BP00-0AA0

6ES7321-1CH00-0AA0

6ES7321-1CH20-0AA0

6ES7321-1BH10-0AA0

6ES7321-1EL00-0AA0

6ES7321-1FF01-0AA0

6ES7321-1FF10-0AA0

6ES7321-1FH00-0AA0

6ES7321-7BH01-0AB0

Article No.

Front connector

20-pin, with screw contacts

- 1 unit
- 100 units

6ES7392-1AJ00-0AA0
6ES7392-1AJ00-1AB0

20-pin, with spring-loaded contacts

- 1 unit
- 100 units

6ES7392-1BJ00-0AA0
6ES7392-1BJ00-1AB0

40-pin, with screw contacts

- 1 unit
- 100 units

6ES7392-1AM00-0AA0
6ES7392-1AM00-1AB0

40-pin, with spring-loaded contacts

- 1 unit
- 100 units

6ES7392-1BM01-0AA0
6ES7392-1BM01-1AB0

S7-300 connecting cable

For 64-channel modules; 2 units

1 m

6ES7392-4BB00-0AA0

2.5 m

6ES7392-4BC50-0AA0

5 m

6ES7392-4BF00-0AA0

Terminal block

For 64-channel modules; 2 units

With screw contacts

6ES7392-1AN00-0AA0

With spring-loaded contacts

6ES7392-1BN00-0AA0

Ordering data	Article No.	Ordering data	Article No.
Front door, elevated design e.g. for 32-channel modules; for connecting 1.3 mm ² /16 AWG conductors; circuit diagram and nameplates in petrol	6ES7328-0AA00-7AA0	SIMATIC Manual Collection Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC Distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC-based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	6ES7998-8XC01-8YE0
SIMATIC TOP connect	see page 5/251		
Bus connectors 1 unit (spare part)	6ES7390-0AA00-0AA0		
Labeling strips 10 units (spare part) for modules with 20-pin front connector	6ES7392-2XX00-0AA0		
for modules with 40-pin front connector	6ES7392-2XX10-0AA0		
Label cover 10 units (spare part) for modules with 20-pin front connector	6ES7392-2XY00-0AA0		
for modules with 40-pin front connector	6ES7392-2XY10-0AA0		
Labeling sheets for machine inscription For modules with 20-pin front connector, DIN A4, for printing with laser printer; 10 units Petrol Light beige Yellow Red	6ES7392-2AX00-0AA0 6ES7392-2BX00-0AA0 6ES7392-2CX00-0AA0 6ES7392-2DX00-0AA0	SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates	6ES7998-8XC01-8YE2
For modules with 40-pin front connector, DIN A4, for printing with laser printer; 10 units Petrol Light beige Yellow Red	6ES7392-2AX10-0AA0 6ES7392-2BX10-0AA0 6ES7392-2CX10-0AA0 6ES7392-2DX10-0AA0		

SIMATIC S7-300 Advanced Controllers

I/O modules

Digital modules

SM 322 digital output modules

Overview



- Digital outputs
- For connecting solenoid valves, contactors, low-power motors, lamps and motor starters

Technical specifications

Article number	6ES7322-1BH01-0AA0	6ES7322-1BH10-0AA0	6ES7322-1BL00-0AA0	6ES7322-1BP00-0AA0	6ES7322-1BP50-0AA0	6ES7322-8BF00-0AB0
	SM322, 16DQ 24V DC, 0.5A	SM322 High Speed, 16DQ 24V DC, 0.5A	SM322, 32DQ 24V DC, 0.5A	SM322 64DQ, DC24V, 0,3A P-write	SM322 64DQ, DC24V, 0.3A M-write	SM322, 8DQ, 24V DC, 0.5A
General information						
Product type designation	SM 322, DQ 16x24 V DC/0.5 A	SM 322, DQ 16x24 V DC/0.5 A HS	SM 322, DQ 32x24 V DC/0.5 A	SM 322, DQ 64x24 V DC/0.3 A sourcing	SM 322, DQ 64x24 V DC/0.3 A sinking	SM 322, DQ 8x24 V DC/0.5 A
Supply voltage						
Load voltage L+						
• Rated value (DC)	24 V	24 V	24 V	24 V	24 V	24 V
Input current						
from load voltage L+ (without load), max.	80 mA	110 mA	160 mA	75 mA	75 mA	90 mA
from backplane bus 5 V DC, max.	80 mA	70 mA	110 mA	100 mA	100 mA	70 mA
Power loss						
Power loss, typ.	4.9 W	5 W	6.6 W	6 W	6 W	5 W
Digital outputs						
Number of digital outputs	16	16	32	64	64	8
Limitation of inductive shutdown voltage to	L+ (-53 V)	L+ (-53 V)	L+ (-53 V)	L+ (-53 V)	M+ (45 V)	L+ (-45 V)
Switching capacity of the outputs						
• on lamp load, max.	5 W	5 W	5 W	5 W	5 W	5 W
Load resistance range						
• lower limit	48 Ω	48 Ω	48 Ω	80 Ω	80 Ω	48 Ω
• upper limit	4 kΩ	4 kΩ	4 kΩ	10 kΩ	10 kΩ	3 kΩ
Output voltage						
• for signal "1", min.	L+ (-0.8 V)	L+ (-0.8 V)	L+ (-0.8 V)	L+ (-0.5 V)	M+ (0.5 V)	L+ (-0.8 to -1.6 V)
Output current						
• for signal "1" rated value	0.5 A	0.5 A	0.5 A	0.3 A	0.3 A	0.5 A
• for signal "1" permissible range, min.				2.4 mA	2.4 mA	
• for signal "1" permissible range, max.				0.36 A	0.36 A	
• for signal "1" permissible range for 0 to 40 °C, min.	5 mA	5 mA	5 mA			10 mA
• for signal "1" permissible range for 0 to 40 °C, max.	0.6 A	0.6 A	0.6 A			0.6 A
• for signal "1" permissible range for 40 to 60 °C, min.	5 mA	5 mA	5 mA			10 mA
• for signal "1" permissible range for 40 to 60 °C, max.	0.6 A	0.6 A	0.6 A			0.6 A
• for signal "1" minimum load current	5 mA	5 mA	5 mA			10 mA
• for signal "0" residual current, max.	0.5 mA	0.5 mA	0.5 mA	0.1 mA		0.5 mA

Technical specifications (continued)

Article number	6ES7322-1BH01-0AA0 SM322, 16DQ 24V DC, 0.5A	6ES7322-1BH10-0AA0 SM322 High Speed, 16DQ 24V DC, 0.5A	6ES7322-1BL00-0AA0 SM322, 32DQ 24V DC, 0.5A	6ES7322-1BP00-0AA0 SM322 64DQ, DC24V, 0.3A P-write	6ES7322-1BP50-0AA0 SM322 64DQ, DC24V, 0.3A M-write	6ES7322-8BF00-0AB0 SM322, 8DQ, 24V DC, 0.5A
Switching frequency						
• with resistive load, max.	100 Hz	1 000 Hz	100 Hz	100 Hz	100 Hz	100 Hz
• with inductive load, max.	0.5 Hz	0.5 Hz	0.5 Hz	0.5 Hz	0.5 Hz	2 Hz
• on lamp load, max.	10 Hz	10 Hz	10 Hz	10 Hz	10 Hz	10 Hz
Total current of the outputs (per group)						
horizontal installation						
- up to 40 °C, max.	4 A	4 A	4 A	1.6 A	1.6 A	4 A
- up to 60 °C, max.	3 A	3 A	3 A	1.2 A	1.2 A	3 A
vertical installation						
- up to 40 °C, max.	2 A	2 A	2 A	1.6 A	1.6 A	4 A
Total current of the outputs (per module)						
horizontal installation						
- up to 60 °C, max.				4.8 A	4.8 A	
all other mounting positions						
- up to 40 °C, max.				6.4 A	6.4 A	
Cable length						
• shielded, max.	1 000 m	1 000 m	1 000 m	1 000 m	1 000 m	1 000 m
• unshielded, max.	600 m	600 m	600 m	600 m	600 m	600 m
Interrupts/diagnostics/status information						
Diagnostics function	No	No	No	No	No	Yes; Parameterizable
Alarms						
• Diagnostic alarm	No	No	No	No	No	Yes; Parameterizable
Potential separation						
Potential separation digital outputs						
• between the channels	Yes	Yes	Yes	No	No	8
• between the channels, in groups of	8	8	8	16	16	8
• between the channels and backplane bus	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler
Connection method						
required front connector	20-pin	20-pin	40-pin	Cable: 6ES7392-4Bxx0-0AA0 terminal blocks: 6ES7392-1xN00-0AA0	Cable: 6ES7392-4Bxx0-0AA0 terminal blocks: 6ES7392-1xN00-0AA0	20-pin
Dimensions						
Width	40 mm	40 mm	40 mm	40 mm	40 mm	40 mm
Height	125 mm	125 mm	125 mm	125 mm	125 mm	125 mm
Depth	120 mm	120 mm	120 mm	112 mm	112 mm	120 mm
Weights						
Weight, approx.	190 g	200 g	260 g	230 g	230 g	210 g

SIMATIC S7-300 Advanced Controllers

I/O modules

Digital modules

SM 322 digital output modules

Technical specifications (continued)

Article number	6ES7322-5GH00-0AB0	6ES7322-1CF00-0AA0	6ES7322-1BF01-0AA0	6ES7322-1FF01-0AA0	6ES7322-5FF00-0AB0	6ES7322-1FH00-0AA0
	SM322, 16DQ, AC/DC24-48V, 0.5A	SM322, 8DQ, 48-125V DC, 1,5A	SM322, 8DQ, 24V DC, 2A	SM322, 8DQ, 120/230V AC, 1A	SM322, 8DQ, AC120/230V, 2A	SM322, 16DQ, 120/230V AC, 1A
General information						
Product type designation	SM 322, DQ 16x24/48 V UC/ 0.5 A	SM 322, DQ 8x48 ... 125 V DC/ 1.5 A	SM 322, DQ 8x24 V DC/2 A	SM 322, DQ 8x120/230 V AC/ 2 A	SM 322, DQ 8x120/230 V AC/ 2 A ISOL	SM 322, DQ 16x120/230 V AC/ 1 A
Supply voltage						
Load voltage L+						
• Rated value (DC)	24 V; 24 / 48	48 V; 48 V DC to 125 V DC	24 V			
Load voltage L1						
• Rated value (AC)				230 V; 120/230 V AC	230 V; 120/230 V AC	230 V; 120/230 V AC
Input current						
from supply voltage L+, max.	200 mA					
from load voltage L+ (without load), max.		2 mA	60 mA			
from load voltage L1 (without load), max.				2 mA	2 mA	2 mA
from backplane bus 5 V DC, max.	100 mA	100 mA	40 mA	100 mA	100 mA	200 mA
Power loss						
Power loss, typ.	2.8 W	7.2 W	6.8 W	8.6 W	8.6 W	8.6 W
Digital outputs						
Number of digital outputs	16	8	8	8	8	16
Limitation of inductive shutdown voltage to		M (-1 V)	L+ (-48 V)			
Switching capacity of the outputs						
• on lamp load, max.	2.5 W	15 W; 15 W (48 V) or 40 W (125 V)	10 W	50 W	50 W	50 W
Load resistance range						
• lower limit			12 Ω			
• upper limit			4 kΩ			
Output voltage						
• for signal *1*, min.	L+ (-0.25 V)	L+ (-1.2 V)	L+ (-0.8 V)	L1 (-1.5 V)	L1 (-8.5 V)	
Output current						
• for signal *1* rated value	0.5 A	1.5 A	2 A	2 A	2 A	1 A
• for signal *1* permissible range for 0 to 40 °C, min.		10 mA	5 mA	10 mA	10 mA	10 mA
• for signal *1* permissible range for 0 to 40 °C, max.	0.5 A	1.5 A	2.4 A	2 A	2 A	1 A
• for signal *1* permissible range for 40 to 60 °C, min.		10 mA	5 mA	10 mA	10 mA	10 mA
• for signal *1* permissible range for 40 to 60 °C, max.	0.5 A	1.5 A	2.4 A	1 A	1 A	0.5 A
• for signal *1* minimum load current		10 mA	5 mA	10 mA	10 mA	10 mA
• for signal *1* permissible surge current, max.	1.5 A; for 50 ms, 1 A 2 s one-time	3 A; for 10 ms		20 A; max. 1 AC cycle	20 A; with 2 half waves	20 A; with 2 half waves
• for signal *0* residual current, max.	10 μA	0.5 mA	0.5 mA	2 mA	2 mA	2 mA
Switching frequency						
• with resistive load, max.	10 Hz	25 Hz	100 Hz	10 Hz	10 Hz	10 Hz
• with inductive load, max.	0.5 Hz	0.5 Hz	0.5 Hz	0.5 Hz	0.5 Hz	0.5 Hz
• on lamp load, max.	0.5 Hz	10 Hz	10 Hz	1 Hz	1 Hz	1 Hz

Technical specifications (continued)

Article number	6ES7322-5GH00-0A00	6ES7322-1CF00-0AA0	6ES7322-1BF01-0AA0	6ES7322-1FF01-0AA0	6ES7322-5FF00-0A00	6ES7322-1FH00-0AA0
	SM322, 16DQ, AC/DC24-48V, 0.5A	SM322, 8DQ, 48-125V DC, 1,5A	SM322, 8DQ, 24V DC, 2A	SM322, 8DQ, 120/230V AC, 1A	SM322, 8DQ, AC120/230V, 2A	SM322, 16DQ, 120/230V AC, 1A
Total current of the outputs (per group)						
horizontal installation						
- up to 40 °C, max.	0.5 A; 8 A per module	6 A	4 A	4 A	8 A	4 A
- up to 60 °C, max.	0.5 A; 8 A per module	3 A	4 A	2 A	4 A	2 A
vertical installation						
- up to 40 °C, max.	0.5 A; 8 A per module	4 A	4 A	2 A	4 A	2 A
Cable length						
• shielded, max.	1 000 m	1 000 m	1 000 m	1 000 m	1 000 m	1 000 m
• unshielded, max.	600 m	600 m	600 m	600 m	600 m	600 m
Interrupts/diagnostics/status information						
Diagnostics function	Yes; Parameterizable	No	No	Yes; Fuse blown or load voltage missing	Yes; Parameterizable	Yes; Fuse blown or load voltage missing
Alarms						
• Diagnostic alarm	Yes; Parameterizable	No	No	No	Yes; Parameterizable	No
Potential separation						
Potential separation digital outputs						
• between the channels	Yes	Yes	Yes	Yes	Yes	
• between the channels, in groups of	1	4	4	4	1	8
• between the channels and backplane bus	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler
Connection method						
required front connector	40-pin	20-pin	20-pin	20-pin	40-pin	20-pin
Dimensions						
Width	40 mm	40 mm	40 mm	40 mm	40 mm	40 mm
Height	125 mm	125 mm	125 mm	125 mm	125 mm	125 mm
Depth	120 mm	120 mm	120 mm	120 mm	120 mm	120 mm
Weights						
Weight, approx.	260 g	250 g	190 g	275 g	275 g	275 g
Article number	6ES7322-1FL00-0AA0	6ES7322-1HF01-0AA0	6ES7322-1HF10-0AA0	6ES7322-5HF00-0A00	6ES7322-1HH01-0AA0	
	SM322, 32DQ, 120/230V AC, 1A	SM322, 8DQ, 24V DC/2A or 230V AC/2A	SM322, 8DQ, 24V DC/5A OR 230V AC/5A	SM322, 8DQ Relay, 24VDC, 120-230V AC, 5A	SM322, 16DQ Relay	
General information						
Product type designation	SM 322, DQ 32x120/230 V AC/1 A	SM 322, DQ 8x relay 24 V DC/ 230 V AC/2 A	SM 322, DQ 8x relay 24 V DC/ 230 V AC/5 A	SM 322, DQ 8x relay 24 V DC/ 230 V AC/5 A	SM 322, DQ 16xrelay 24 V DC/ 120/230 V AC/8 A	
Supply voltage						
Load voltage L+						
• Rated value (DC)		24 V	120 V	24 V	120 V	
Load voltage L1						
• Rated value (AC)	120 V; 120/230 V AC		230 V	230 V	230 V	
Input current						
from supply voltage L+, max.		160 mA	125 mA	160 mA	250 mA	
from load voltage L1 (without load), max.	10 mA					
from backplane bus 5 V DC, max.	190 mA	40 mA	40 mA	100 mA	100 mA	
Power loss						
Power loss, typ.	25 W	3.2 W	3.2 W	3.5 W	4.5 W	

SIMATIC S7-300 Advanced Controllers

I/O modules

Digital modules

SM 322 digital output modules

Technical specifications (continued)

Article number	6ES7322-1FL00-0AA0	6ES7322-1HF01-0AA0	6ES7322-1HF10-0AA0	6ES7322-5HF00-0AB0	6ES7322-1HH01-0AA0
	SM322, 32DQ, 120/230V AC, 1A	SM322, 8DQ, 24V DC/2A or 230V AC/2A	SM322, 8DQ, 24V DC/5A OR 230V AC/5A	SM322, 8DQ Relay, 24VDC, 120-230V AC, 5A	SM322, 16DQ Relay
Digital outputs					
Number of digital outputs	32	8; Relays	8; Relays	8; Relays	16; Relays
Switching capacity of the outputs					
• on lamp load, max.	50 W	50 W	1 500 W; 230 V AC	1 500 W; 230 V AC	50 W; 230 V AC
Output voltage					
• for signal "1", min.	L1 (-0.8 V)				
Output current					
• for signal "1" rated value	1 A	2 A	5 A	5 A	2 A
• for signal "1" permissible range for 0 to 40 °C, min.	10 mA				
• for signal "1" permissible range for 0 to 40 °C, max.	1 A				
• for signal "1" permissible range for 40 to 60 °C, min.	10 mA				
• for signal "1" permissible range for 40 to 60 °C, max.	1 A				
• for signal "1" minimum load current	10 mA	5 mA	5 mA	10 mA	10 mA
• for signal "1" permissible surge current, max.	10 A; per group (for 2 AC cycles)				
• for signal "0" residual current, max.	2 mA				
Switching frequency					
• with resistive load, max.	10 Hz	2 Hz	2 Hz	2 Hz	1 Hz
• with inductive load, max.	0.5 Hz	0.5 Hz	0.5 Hz	0.5 Hz	0.5 Hz
• on lamp load, max.	1 Hz	2 Hz	2 Hz	2 Hz	1 Hz
• mechanical, max.		10 Hz	10 Hz	10 Hz	10 Hz
Total current of the outputs (per group)					
horizontal installation					
- up to 40 °C, max.	4 A				
- up to 60 °C, max.	3 A		5 A	5 A	8 A
vertical installation					
- up to 40 °C, max.	4 A		5 A	5 A	8 A
Relay outputs					
• Rated supply voltage of relay coil L+ (DC)		24 V; 110 mA	24 V		24 V
• Number of operating cycles, max.		300 000; 230 V AC: 100 000; 120 V AC: 200 000; 24 V DC: 300 000 (at 2 A)	300 000; 300 000 (24 V DC, at 2 A); 200 000 (120 V AC, at 3 A); 100 000 (230 V AC, at 3 A)	100 000; 100 000 (24 V DC, at 5 A); 100 000 (230 V AC, at 5 A)	100 000; 50 000 (24 V DC, at 2 A); 700 000 (120 V AC, at 2 A); 100 000 (230 V AC, at 2 A)
Switching capacity of contacts					
- with inductive load, max.		2 A; 2 A (230 V AC), 2 A (24 V DC)	3 A; 3 A (230 V DC), 2 A (24 V AC)	5 A; 5 A (230 V DC), 5 A (24 V AC)	2 A; 2 A (230 V AC), 2 A (24 V DC)
- with resistive load, max.		2 A	8 A; 8 A (230 V DC), 5 A (24 V AC)	5 A; 5 A (230 V DC), 5 A (24 V AC)	2 A; 2 A (230 V AC), 2 A (24 V DC)
Cable length					
• shielded, max.	1 000 m	1 000 m	1 000 m	1 000 m	1 000 m
• unshielded, max.	600 m	600 m	600 m	600 m	600 m
Interrupts/diagnostics/status information					
Diagnostics function	Yes; Fuse blown or load voltage missing	No	No	Yes; Parameterizable	No
Alarms					
• Diagnostic alarm	No	No	No	Yes; Parameterizable	No

Technical specifications (continued)

Article number	6ES7322-1FL00-0AA0	6ES7322-1HF01-0AA0	6ES7322-1HF10-0AA0	6ES7322-5HF00-0AB0	6ES7322-1HH01-0AA0
	SM322, 32DQ, 120/230V AC, 1A	SM322, 8DQ, 24V DC/2A or 230V AC/2A	SM322, 8DQ, 24V DC/5A OR 230V AC/5A	SM322, 8DQ Relay, 24VDC, 120-230V AC, 5A	SM322, 16DQ Relay
Potential separation					
Potential separation digital outputs					
• between the channels	Yes	Yes	Yes	Yes	Yes
• between the channels, in groups of	8	2	1	1	8
• between the channels and backplane bus	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler
Connection method					
required front connector	20-pin	20-pin	40-pin	40-pin	20-pin
Dimensions					
Width	80 mm	40 mm	40 mm	40 mm	40 mm
Height	125 mm	125 mm	125 mm	125 mm	125 mm
Depth	117 mm	120 mm	120 mm	120 mm	120 mm
Weights					
Weight, approx.	500 g	190 g	320 g	320 g	250 g

Ordering data

SM 322 digital output modules

incl. labeling strips, bus connector

8 outputs, 24 V DC, 2 A

6ES7322-1BF01-0AA0

16 outputs, 24 V DC, 0.5 A

6ES7322-1BH01-0AA0

16 outputs, 24 V DC, 0.5 A, high speed

6ES7322-1BH10-0AA0

32 outputs, 24 V DC, 0.5 A

6ES7322-1BL00-0AA0

64 outputs, 24 V DC, 0.3 A

6ES7322-1BP00-0AA0

Note:
6ES7392-4...0-0AA0 connection cable and 6ES7392-1.N00-0AA0 terminal blocks necessary.

64 outputs, 24 V DC, 0.3 A, sink output

6ES7322-1BP50-0AA0

Note:
6ES7392-4...0-0AA0 connection cable and 6ES7392-1.N00-0AA0 terminal blocks necessary.

8 outputs, 24 V DC, 0.5 A, diagnostics-capable

6ES7322-8BF00-0AB0

16 outputs, 24/48 V DC, 0.5 A

6ES7322-5GH00-0AB0

8 outputs, 48 to 125 V DC, 1.5 A

6ES7322-1CF00-0AA0

8 outputs, 120/230 V AC, 1 A

6ES7322-1FF01-0AA0

8 outputs, 120/230 V AC, 2 A

6ES7322-5FF00-0AB0

16 outputs, 120/230 V AC, 1 A

6ES7322-1FH00-0AA0

32 outputs, 120 V AC, 1 A

6ES7322-1FL00-0AA0

8 outputs, relay contacts, 2 A

6ES7322-1HF01-0AA0

8 outputs, relay contacts, 5 A

6ES7322-1HF10-0AA0

8 outputs, relay contacts, 5 A, with RC filter, overvoltage protection

6ES7322-5HF00-0AB0

16 outputs, relay contacts, 8 A

6ES7322-1HH01-0AA0

Article No.

Front connector

20-pin, with screw contacts

- 1 unit
- 100 units

6ES7392-1AJ00-0AA0
6ES7392-1AJ00-1AB0

20-pin, with spring-loaded contacts

- 1 unit
- 100 units

6ES7392-1BJ00-0AA0
6ES7392-1BJ00-1AB0

40-pin, with screw contacts

- 1 unit
- 100 units

6ES7392-1AM00-0AA0
6ES7392-1AM00-1AB0

40-pin, with spring-loaded contacts

- 1 unit
- 100 units

6ES7392-1BM01-0AA0
6ES7392-1BM01-1AB0

S7-300 connecting cable

For 64-channel modules; 2 units

1 m

6ES7392-4BB00-0AA0

2.5 m

6ES7392-4BC50-0AA0

5 m

6ES7392-4BF00-0AA0

Terminal block

For 64-channel modules; 2 units

With screw contacts

6ES7392-1AN00-0AA0

With spring-loaded contacts

6ES7392-1BN00-0AA0

Front door, elevated design

6ES7328-0AA00-7AA0e.g. for 32-channel modules; for connecting 1.3 mm²/16 AWG conductors

SIMATIC S7-300 Advanced Controllers

I/O modules

Digital modules

SM 322 digital output modules

Ordering data	Article No.		Article No.
SIMATIC TOP connect	see page 5/251	Labeling sheets for machine inscription	
Bus connectors	6ES7390-0AA00-0AA0	for modules with 20-pin front connector, DIN A4, for printing with laser printer; 10 units	
1 unit (spare part)		Petrol	6ES7392-2AX00-0AA0
Set of fuses for SM 322	6ES7973-1HD00-0AA0	Light beige	6ES7392-2BX00-0AA0
10 fuses 8 A quick-response, 2 fuse holders; for 6ES7 322-1FF01-0AA0, 6ES7 322-1FH00-0AA0		Yellow	6ES7392-2CX00-0AA0
10 fuses 6.3 A; for 6ES7 322-1CF00-0AA0	6ES7973-1GC00-0AA0	Red	6ES7392-2DX00-0AA0
Labeling strips		for modules with 40-pin front connector, DIN A4, for printing with laser printer; 10 units	
10 units (spare part)		Petrol	6ES7392-2AX10-0AA0
for modules with 20-pin front connector	6ES7392-2XX00-0AA0	Light beige	6ES7392-2BX10-0AA0
for modules with 40-pin front connector	6ES7392-2XX10-0AA0	Yellow	6ES7392-2CX10-0AA0
Label cover		Red	6ES7392-2DX10-0AA0
10 units (spare part)		SIMATIC Manual Collection	6ES7998-8XC01-8YE0
for modules with 20-pin front connector	6ES7392-2XY00-0AA0	Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC Distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC-based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	
for modules with 40-pin front connector	6ES7392-2XY10-0AA0	SIMATIC Manual Collection update service for 1 year	6ES7998-8XC01-8YE2
		Current "Manual Collection" DVD and the three subsequent updates	

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Overview



- Digital inputs and outputs
- For connection of switches, 2-wire proximity switches (BEROs), solenoid valves, contactors, low-power motors, lamps and motor starters

Technical specifications

Article number	6ES7323-1BH01-0AA0 SM323, 8DI/8DQ, DC24V, 0.5A	6ES7323-1BL00-0AA0 SM323, 16DI/DQ, DC24V, 0.5A	6ES7327-1BH00-0AB0 SM327, 8DI/8DX, DC24V, 0.5A
Supply voltage			
Load voltage L+			
• Rated value (DC)	24 V	24 V	24 V
Input current			
from load voltage L+ (without load), max.	40 mA	80 mA	20 mA
from backplane bus 5 V DC, max.	40 mA	80 mA	60 mA
Power loss			
Power loss, typ.	3.5 W	6.5 W	3 W
Digital inputs			
Number of digital inputs	8	16	8; 8 hard-wired, 8 others individually parameterizable
Input characteristic curve in accordance with IEC 61131, type 1	Yes	Yes	Yes
Number of simultaneously controllable inputs			
horizontal installation			
- up to 60 °C, max.	8	8	16
vertical installation			
- up to 40 °C, max.	8	16	16
Input voltage			
• Type of input voltage	DC	DC	DC
• Rated value (DC)	24 V	24 V	24 V
• for signal "0"	-30 to +5V	-30 to +5V	-30 to +5V
• for signal "1"	13 to 30V	13 to 30V	+15 to +30V
Input current			
• for signal "1", typ.	7 mA	7 mA	6 mA
Input delay (for rated value of input voltage) for standard inputs			
- at "0" to "1", min.	1.2 ms	1.2 ms	1.2 ms
- at "0" to "1", max.	4.8 ms	4.8 ms	4.8 ms
Cable length			
• shielded, max.	1 000 m	1 000 m	1 000 m
• unshielded, max.	600 m	600 m	600 m

SIMATIC S7-300 Advanced Controllers

I/O modules

Digital modules

SM 323/SM 327 digital input/output modules

Technical specifications (continued)

Article number	6ES7323-1BH01-0AA0 SM323, 8DI/8DQ, DC24V, 0.5A	6ES7323-1BL00-0AA0 SM323, 16DI/DQ, DC24V, 0.5A	6ES7327-1BH00-0AB0 SM327, 8DI/8DX, DC24V, 0.5A
Digital outputs			
Number of digital outputs	8	16	8; can also be parameterized individually as DI
Short-circuit protection	Yes	Yes	Yes
• Response threshold, typ.	1 A	1 A	1 A
Limitation of inductive shutdown voltage to	L+ (-53 V)	L+ (-48 V)	L+ (-54 V)
Controlling a digital input	Yes	Yes	Yes
Switching capacity of the outputs			
• on lamp load, max.	5 W	5 W	5 W
Load resistance range			
• lower limit	48 Ω	48 Ω	48 Ω
• upper limit	4 kΩ	4 kΩ	4 kΩ
Output voltage			
• for signal "1", min.	L+ (-0.8 V)	L+ (-0.8 V)	L+ (-1.5 V)
Output current			
• for signal "1" rated value	0.5 A	0.5 A	0.5 A
• for signal "1" permissible range, min.	5 mA	5 mA	5 mA
• for signal "1" permissible range, max.	0.6 A	0.6 A	0.6 A
• for signal "1" minimum load current	5 mA	5 mA	
• for signal "0" residual current, max.	0.5 mA	0.5 mA	0.5 mA
Output delay with resistive load			
• "0" to "1", max.	100 μs	100 μs	350 μs
• "1" to "0", max.	500 μs	500 μs	500 μs
Parallel switching of two outputs			
• for uprating	No	No	No
• for redundant control of a load	Yes; only outputs of the same group	Yes; only outputs of the same group	Yes; only outputs of the same group
Switching frequency			
• with resistive load, max.	100 Hz	100 Hz	100 Hz
• with inductive load, max.	0.5 Hz	0.5 Hz	0.5 Hz
• on lamp load, max.	10 Hz	100 Hz	10 Hz
Total current of the outputs (per group)			
horizontal installation			
- up to 40 °C, max.	4 A	4 A	4 A
- up to 60 °C, max.	4 A	3 A	3 A
vertical installation			
- up to 40 °C, max.	4 A	2 A	2 A
Cable length			
• shielded, max.	1 000 m	1 000 m	1 000 m
• unshielded, max.	600 m	600 m	600 m
Encoder			
Connectable encoders			
• 2-wire sensor	Yes	Yes	Yes
- permissible quiescent current (2-wire sensor), max.	2 mA	1.5 mA	1.5 mA

Technical specifications (continued)

Article number	6ES7323-1BH01-0AA0 SM323, 8DI/8DQ, DC24V, 0.5A	6ES7323-1BL00-0AA0 SM323, 16DI/DQ, DC24V, 0.5A	6ES7327-1BH00-0AB0 SM327, 8DI/8DX, DC24V, 0.5A
Isochronous mode			
Isochronous operation (application synchronized up to terminal)	No	No	No
Interrupts/diagnostics/ status information			
Alarms	No	No	No
Diagnostics function	No	No	No
Diagnostics indication LED			
• Status indicator digital input (green)	Yes	Yes	Yes
• Status indicator digital output (green)	Yes	Yes	Yes
Potential separation			
Potential separation digital inputs			
• between the channels	Yes	Yes	No
• between the channels, in groups of 8	8	16	
• between the channels and backplane bus	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler
Potential separation digital outputs			
• between the channels	Yes	Yes	No
• between the channels, in groups of 8	8	8	
• between the channels and backplane bus	Yes; Optocoupler	Yes; Optocoupler	Yes; Optocoupler
Connection method			
required front connector	20-pin	40-pin	20-pin
Dimensions			
Width	40 mm	40 mm	40 mm
Height	125 mm	125 mm	125 mm
Depth	120 mm	120 mm	120 mm
Weights			
Weight, approx.	220 g	260 g	200 g

SIMATIC S7-300 Advanced Controllers

I/O modules

Digital modules

SM 323/SM 327 digital input/output modules

Ordering data

Article No.

SM 323 digital input/output modules

incl. labeling strips, bus connector

8 inputs, 8 outputs

6ES7323-1BH01-0AA0

16 inputs, 16 outputs

6ES7323-1BL00-0AA0

SM 327 digital input/output modules

incl. labeling strips, bus connector

8 inputs, 8 inputs or outputs
(can be configured)

6ES7327-1BH00-0AB0

Front connector

20-pin, with screw contacts

- 1 unit
- 100 units

6ES7392-1AJ00-0AA0
6ES7392-1AJ00-1AB0

20-pin, with spring-loaded contacts

- 1 unit
- 100 units

6ES7392-1BJ00-0AA0
6ES7392-1BJ00-1AB0

40-pin, with screw contacts

- 1 unit
- 100 units

6ES7392-1AM00-0AA0
6ES7392-1AM00-1AB0

40-pin, with spring-loaded contacts

- 1 unit
- 100 units

6ES7392-1BM01-0AA0
6ES7392-1BM01-1AB0

Front door, elevated design

6ES7328-0AA00-7AA0

e.g. for 32 channel modules;
enables connection of
1.3 mm²/16 AWG wires

SIMATIC TOP connect

see page 5/251

Bus connectors

6ES7390-0AA00-0AA0

1 unit (spare part)

Labeling strips

10 units (spare part)

for modules with 20-pin front
connector

6ES7392-2XX00-0AA0

for modules with 40-pin front
connector

6ES7392-2XX10-0AA0

Label cover

10 units (spare part)

for modules with 20-pin front
connector

6ES7392-2XY00-0AA0

for modules with 40-pin front
connector

6ES7392-2XY10-0AA0

Article No.

Labeling sheets for machine inscription

for modules with 20-pin front
connector, DIN A4, for printing with
laser printer; 10 units

Petrol

6ES7392-2AX00-0AA0

Light beige

6ES7392-2BX00-0AA0

Yellow

6ES7392-2CX00-0AA0

Red

6ES7392-2DX00-0AA0

for modules with 40-pin front
connector, DIN A4, for printing with
laser printer; 10 units

Petrol

6ES7392-2AX10-0AA0

Light beige

6ES7392-2BX10-0AA0

Yellow

6ES7392-2CX10-0AA0

Red

6ES7392-2DX10-0AA0

SIMATIC Manual Collection

6ES7998-8XC01-8YE0

Electronic manuals on DVD,
multilingual:
LOGO!, SIMADYN, SIMATIC bus
components, SIMATIC C7,
SIMATIC Distributed I/O,
SIMATIC HMI, SIMATIC Sensors,
SIMATIC NET, SIMATIC PC-based
Automation, SIMATIC PCS 7,
SIMATIC PG/PC, SIMATIC S7,
SIMATIC Software, SIMATIC TDC

SIMATIC Manual Collection update service for 1 year

6ES7998-8XC01-8YE2

Current "Manual Collection" DVD
and the three subsequent updates

Overview



- Digital inputs
- For connection of switches and 2-wire proximity switches (BEROs)

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Technical specifications

Article number	6AG1321-1BH02-2AA0	6AG1321-1BL00-2AA0	6AG1321-1CH20-2AA0	6AG1321-1FF01-2AA0	6AG1321-1FF10-7AA0
Based on	6ES7321-1BH02-0AA0 SIPLUS SM321 16DI/24VDC	6ES7321-1BL00-0AA0 SIPLUS SM321 32DI/24VDC	6ES7321-1CH20-0AA0 SIPLUS SM 321 16DI/ DC 48-125 V	6ES7321-1FF01-0AA0 SIPLUS S7-300 SM321 8DI/120/230VAC	6ES7321-1FF10-0AA0 SIPLUS S7-300 SM321 8 DI
Ambient conditions					
Ambient temperature during operation					
• min.	-40 °C; = Tmin	-40 °C; = Tmin	-25 °C	-40 °C; = Tmin	-25 °C
• max.	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	70 °C; = Tmax; for use on railway vehicles according to EN50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/ULhaz/ ATEX/FM use applies	70 °C; = Tmax; for use on railway vehicles according to EN50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/ULhaz/ ATEX/FM use applies	70 °C; = Tmax; for use on railway vehicles according to EN50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/ULhaz/ ATEX/FM use applies	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use
Ambient temperature during storage/transportation					
• min.	-40 °C	-40 °C	-40 °C	-40 °C	-40 °C
• max.	70 °C	70 °C	70 °C	70 °C	70 °C
Altitude during operation relating to sea level					
• Installation altitude above sea level, max.	5 000 m	5 000 m	2 000 m	2 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity					
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 digital modules

SIPLUS S7-300 SM 321

Technical specifications (continued)

Article number	6AG1321-1BH02-2AA0	6AG1321-1BL00-2AA0	6AG1321-1CH20-2AA0	6AG1321-1FF01-2AA0	6AG1321-1FF10-7AA0
Based on	6ES7321-1BH02-0AA0 SIPLUS SM321 16DI/24VDC	6ES7321-1BL00-0AA0 SIPLUS SM321 32DI/24VDC	6ES7321-1CH20-0AA0 SIPLUS SM 321 16DI/ DC 48-125 V	6ES7321-1FF01-0AA0 SIPLUS S7-300 SM321 8DI/120/230VAC	6ES7321-1FF10-0AA0 SIPLUS S7-300 SM321 8 DI
Resistance					
Use in stationary industrial systems					
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *
Use on land craft, rail vehicles and special-purpose vehicles					
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *	Yes; Class 5S3 incl. sand, dust; *	Yes; Class 5S3 incl. sand, dust; *	Yes; Class 5S3 incl. sand, dust; *	Yes; Class 5S3 incl. sand, dust; *
Use on ships/at sea					
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Remark					
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

Technical specifications (continued)

Article number	6AG1321-1FH00-7AA0 6ES7321-1FH00-0AA0 SIPLUS S7-300 SM321 16DI	6AG1321-7BH01-2AB0 6ES7321-7BH01-0AB0 SIPLUS SM321 16DI/24VDC	6AG1321-7TH00-4AB0 6ES7321-7TH00-0AB0 SIPLUS PCS 7 SM321 16DI
Ambient conditions			
Ambient temperature during operation			
• min.	-40 °C; = Tmin	-25 °C	0 °C
• max.	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	60 °C
• At cold restart, min.			0 °C
Ambient temperature during storage/transportation			
• min.	-40 °C	-40 °C	-40 °C
• max.	70 °C	70 °C	70 °C
Altitude during operation relating to sea level			
• Installation altitude above sea level, max.	5 000 m	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity			
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance			
Use in stationary industrial systems			
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
Use on land craft, rail vehicles and special-purpose vehicles			
- to biologically active substances according to EN 60721-3-5		Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	
- to chemically active substances according to EN 60721-3-5		Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	
- to mechanically active substances according to EN 60721-3-5		Yes; Class 5S3 incl. sand, dust; *	
Use on ships/at sea			
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Remark			
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 digital modules

SIPLUS S7-300 SM 321**Ordering data****Article No.****SIPLUS S7-300 SM 321
digital input modules***For industrial applications with
extended ambient conditions*Extended temperature range and
exposure to media

16 inputs, 24 V DC

6AG1321-1BH02-2AA0

32 inputs, 24 V DC

6AG1321-1BL00-2AA0

16 inputs, 48 to 120 V DC

6AG1321-1CH20-2AA0

8 inputs, 120/230 V AC

6AG1321-1FF01-2AA0

8 inputs, 120/230 V AC, single root

6AG1321-1FF10-7AA0

16 inputs, 120/230 V AC

6AG1321-1FH00-7AA016 inputs, 24 V DC,
diagnostics-capable**6AG1321-7BH01-2AB0**Exposure to media16 inputs, NAMUR,
redundant design possible**6AG1321-7TH00-4AB0***For rolling stock railway
applications*Conforms to EN 50155

16 inputs, 24 V DC

6AG1321-1BH02-2AA0

32 inputs, 24 V DC

6AG1321-1BL00-2AA0

16 inputs, 48 to 120 V DC

6AG1321-1CH20-2AA0

8 inputs, 120/230 V AC

6AG1321-1FF01-2AA016 inputs, 24 V DC,
diagnostics-capable**6AG1321-7BH01-2AB0****Accessories***Mandatory***Front connector**

20-pin, with spring-loaded contacts

- 1 unit
- 100 units

6ES7392-1BJ00-0AA0**6ES7392-1BJ00-1AB0**

40-pin, with spring-loaded contacts

- 1 unit
- 100 units

6ES7392-1BM01-0AA0**6ES7392-1BM01-1AB0****Article No.***Consumables***Front door, elevated design****6ES7328-0AA00-7AA0**E.g. for 32-channel modules;
for connecting 1.3 mm²/16 AWG
conductors; circuit diagram and
nameplates in petrol**Bus connectors****6ES7390-0AA00-0AA0**

1 unit (spare part)

Labeling strips

10 units; spare part

For modules with 20-pin front
connector**6ES7392-2XX00-0AA0**For modules with 40-pin front
connector**6ES7392-2XX10-0AA0****Label cover**

10 units; spare part

For modules with 20-pin front
connector**6ES7392-2XY00-0AA0**For modules with 40-pin front
connector**6ES7392-2XY10-0AA0***Documentation***SIMATIC Manual Collection****6ES7998-8XC01-8YE0**Electronic manuals on DVD,
multi-language:
LOGO!, SIMADYN, SIMATIC bus
components, SIMATIC C7,
SIMATIC Distributed I/O,
SIMATIC HMI, SIMATIC Sensors,
SIMATIC NET, SIMATIC PC-based
Automation, SIMATIC PCS 7,
SIMATIC PG/PC, SIMATIC S7,
SIMATIC Software, SIMATIC TDC**SIMATIC Manual Collection
update service for 1 year****6ES7998-8XC01-8YE2**Current "Manual Collection" DVD
and the three subsequent updates

Overview



- Digital outputs
- For connecting solenoid valves, contactors, small-power motors, lamps and motor starters

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Technical specifications

Article number	6AG1322-1BF01-2XB0	6AG1322-8BF00-2AB0	6AG1322-1BH01-2AA0	6AG1322-1BL00-2AA0
Based on	6ES7322-1BF01-0XB0 SIPLUS S7-300 SM322 8DQ/24VDC 2A	6ES7322-8BF00-0AB0 SIPLUS SM322 8DQ/24VDC	6ES7322-1BH01-0AA0 SIPLUS S7-300 SM322 16DQ/24VDC 0.5A	6ES7322-1BL00-0AA0 SIPLUS S7-300 SM322 32DQ/24VDC 0.5A
Ambient conditions				
Ambient temperature during operation				
• min.	-25 °C	-25 °C; = Tmin	-25 °C	-25 °C; = Tmin
• max.	70 °C; = Tmax; 60 °C @ UL/cUL use	70 °C; = Tmax; 60 °C @ UL/cUL use	70 °C; = Tmax; for use on railway vehicles according to EN50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/ULhaz/ATEX/FM use applies	70 °C; = Tmax; for use on railway vehicles according to EN50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/ULhaz/ATEX/FM use applies
Ambient temperature during storage/transportation				
• min.	-40 °C		-40 °C	-40 °C
• max.	70 °C		70 °C	70 °C
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	5 000 m	5 000 m	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity				
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 digital modules

SIPLUS S7-300 SM 322

Technical specifications (continued)

Article number	6AG1322-1BF01-2XB0	6AG1322-8BF00-2AB0	6AG1322-1BH01-2AA0	6AG1322-1BL00-2AA0
Based on	6ES7322-1BF01-0XB0 SIPLUS S7-300 SM322 8DQ/24VDC 2A	6ES7322-8BF00-0AB0 SIPLUS SM322 8DQ/24VDC	6ES7322-1BH01-0AA0 SIPLUS S7-300 SM322 16DQ/24VDC 0.5A	6ES7322-1BL00-0AA0 SIPLUS S7-300 SM322 32DQ/24VDC 0.5A
Resistance				
Use in stationary industrial systems				
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *
Use on land craft, rail vehicles and special-purpose vehicles				
- to biologically active substances according to EN 60721-3-5		Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5		Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5		Yes; Class 5S3 incl. sand, dust; *	Yes; Class 5S3 incl. sand, dust; *	Yes; Class 5S3 incl. sand, dust; *
Use on ships/at sea				
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Remark				
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Article number	6AG1322-1CF00-7AA0	6AG1322-1HF10-2AA0	6AG1322-5HF00-4AB0	6AG1322-1FF01-7AA0
Based on	6ES7322-1CF00-0AA0 SIPLUS SM322 8DQ/48-125VDC	6ES7322-1HF10-0AA0 SIPLUS SM322 8DQ - Relay	6ES7322-5HF00-0AB0 SIPLUS_SM322_8RO	6ES7322-1FF01-0AA0 SIPLUS S7-300 SM322 8DQ/120/230VAC
Ambient conditions				
Ambient temperature during operation				
• min.	-25 °C	-25 °C	0 °C; = Tmin	-40 °C
• max.	70 °C; = Tmax; for use on railway vehicles according to EN50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/ULhaz/ATEX/FM use applies	60 °C	60 °C; = Tmax	70 °C; = Tmax; for use on railway vehicles according to EN 50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/UL hazardous use applies
Ambient temperature during storage/transportation				
• min.	-40 °C	-40 °C	-40 °C	-40 °C
• max.	70 °C	70 °C	70 °C	70 °C
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	2 000 m	2 000 m	2 000 m	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity				
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)

Technical specifications (continued)

Article number	6AG1322-1CF00-7AA0	6AG1322-1HF10-2AA0	6AG1322-5HF00-4AB0	6AG1322-1FF01-7AA0
Based on	6ES7322-1CF00-0AA0 SIPLUS SM322 8DQ/48-125VDC	6ES7322-1HF10-0AA0 SIPLUS SM322 8DQ - Relay	6ES7322-5HF00-0AB0 SIPLUS_SM322_8RO	6ES7322-1FF01-0AA0 SIPLUS S7-300 SM322 8DQ/120/230VAC
Resistance				
Use in stationary industrial systems				
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *
Use on land craft, rail vehicles and special-purpose vehicles				
- to biologically active substances according to EN 60721-3-5		Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request		
- to chemically active substances according to EN 60721-3-5		Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *		
- to mechanically active substances according to EN 60721-3-5		Yes; Class 5S3 incl. sand, dust; *		
Use on ships/at sea				
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Remark				
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Article number	6AG1322-5FF00-4AB0	6AG1322-1FH00-7AA0	6AG1322-1HH01-2AA0	
Based on	6ES7322-5FF00-0AB0 SIPLUS S7-300 SM322 8DQ	6ES7322-1FH00-0AA0 SIPLUS S7-300 SM322 16DQ	6ES7322-1HH01-0AA0 SIPLUS SM322	
Ambient conditions				
Ambient temperature during operation				
• min.	0 °C; = Tmin	-40 °C; = Tmin	-40 °C	
• max.	60 °C; = Tmax	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	
Ambient temperature during storage/transportation				
• min.	-40 °C	-40 °C	-40 °C	
• max.	70 °C	70 °C	70 °C	
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	5 000 m	5 000 m	2 000 m	
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 digital modules

SIPLUS S7-300 SM 322**Technical specifications** (continued)

Article number	6AG1322-5FF00-4AB0	6AG1322-1FH00-7AA0	6AG1322-1HH01-2AA0
Based on	6ES7322-5FF00-0AB0 SIPLUS S7-300 SM322 8DQ	6ES7322-1FH00-0AA0 SIPLUS S7-300 SM322 16DQ	6ES7322-1HH01-0AA0 SIPLUS SM322
Relative humidity			
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance			
Use in stationary industrial systems			
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
Use on land craft, rail vehicles and special-purpose vehicles			
- to biologically active substances according to EN 60721-3-5			Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5			Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5			Yes; Class 5S3 incl. sand, dust; *
Use on ships/at sea			
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Remark			
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

Ordering data	Article No.	Article No.
SIPLUS S7-300 SM 322 digital output modules		
<i>For industrial applications with extended ambient conditions</i>		
<u>Extended temperature range and exposure to media</u>		
8 outputs, 24 V DC, 2 A	6AG1322-1BF01-2XB0	
16 outputs, 24 V DC, 0.5 A	6AG1322-1BH01-2AA0	
32 outputs, 24 V DC, 0.5 A	6AG1322-1BL00-2AA0	
8 outputs, 48 to 125 V DC, 1.5 A	6AG1322-1CF00-7AA0	
8 outputs, 120/230 V AC, 1 A	6AG1322-1FF01-7AA0	
16 outputs, 120/230 V AC, 1 A	6AG1322-1FH00-7AA0	
8 outputs, relay contacts, 5 A	6AG1322-1HF10-2AA0	
16 outputs, relay contacts, 8 A	6AG1322-1HH01-2AA0	
8 outputs, 24 V DC, 0.5 A, diagnostics-capable	6AG1322-8BF00-2AB0	
<u>Exposure to media</u>		
8 outputs, 120/230 V AC, 2 A	6AG1322-5FF00-4AB0	
8 outputs, relay contacts, 5 A, with RC filter, overvoltage protection	6AG1322-5HF00-4AB0	
<i>For rolling stock railway applications</i>		
<u>Conforms to EN 50155</u>		
16 outputs, 24 V DC, 0.5 A, high speed	6AG1322-1BH01-2AA0	
32 outputs, 24 V DC, 0.5 A	6AG1322-1BL00-2AA0	
8 outputs, relay contacts, 5 A	6AG1322-1HF10-2AA0	
16 outputs, relay contacts, 8 A	6AG1322-1HH01-2AA0	
8 outputs, 24 V DC, 0.5 A, diagnostics-capable	6AG1322-8BF00-2AB0	
Accessories		
<i>Mandatory</i>		
Front connector		
20-pin, with spring-loaded contacts		
• 1 unit	6ES7392-1BJ00-0AA0	
• 100 units	6ES7392-1BJ00-1AB0	
40-pin, with spring-loaded contacts		
• 1 unit	6ES7392-1BM01-0AA0	
• 100 units	6ES7392-1BM01-1AB0	
		<i>Consumables</i>
		Front door, elevated design
		6ES7328-0AA00-7AA0
		E.g. for 32-channel modules; for connecting 1.3 mm ² /16 AWG conductors; circuit diagram and nameplates in petrol
		Bus connectors
		6ES7390-0AA00-0AA0
		1 unit (spare part)
		Labeling strips
		10 units; spare part
		For modules with 20-pin front connector
		6ES7392-2XX00-0AA0
		For modules with 40-pin front connector
		6ES7392-2XX10-0AA0
		Label cover
		10 units; spare part
		For modules with 20-pin front connector
		6ES7392-2XY00-0AA0
		For modules with 40-pin front connector
		6ES7392-2XY10-0AA0
		<i>Documentation</i>
		SIMATIC Manual Collection
		6ES7998-8XC01-8YE0
		Electronic manuals on DVD, multi-language: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC Distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC-based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC
		SIMATIC Manual Collection update service for 1 year
		6ES7998-8XC01-8YE2
		Current "Manual Collection" DVD and the three subsequent updates

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 digital modules

SIPLUS S7-300 SM 323**Overview**

- Digital inputs and outputs
- For connection of switches, 2-wire proximity switches (BEROs), solenoid valves, contactors, low-power motors, lamps and motor starters

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Technical specifications

Article number	6AG1323-1BH01-2AA0
Based on	6ES7323-1BH01-0AA0 SIPLUS SM323 8DI/8DO
Ambient conditions	
Ambient temperature during operation	
• min.	-40 °C; = Tmin
• max.	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *
Use on land craft, rail vehicles and special-purpose vehicles	
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *
Use on ships/at sea	
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
Remark	
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!

Ordering data	Article No.		Article No.
SIPLUS S7-300 SM 323 digital input/output module <i>For industrial applications with extended ambient conditions</i> <u>Extended temperature range and exposure to media</u> 8 inputs, 8 outputs <i>For rolling stock railway applications</i> <u>Conforms to EN 50155</u> 8 inputs, 8 outputs	6AG1323-1BH01-2AA0 6AG1323-1BH01-2AA0	Labeling strips 10 units; spare part For modules with 20-pin front connector For modules with 40-pin front connector	6ES7392-2XX00-0AA0 6ES7392-2XX10-0AA0
Accessories <i>Mandatory</i> Front connector 20-pin, with spring-loaded contacts <ul style="list-style-type: none"> • 1 unit • 100 units 40-pin, with spring-loaded contacts <ul style="list-style-type: none"> • 1 unit • 100 units <i>Consumables</i> Front door, elevated design E.g. for 32-channel modules; for connecting 1.3 mm ² /16 AWG conductors; circuit diagram and nameplates in petrol	6ES7392-1BJ00-0AA0 6ES7392-1BJ00-1AB0 6ES7392-1BM01-0AA0 6ES7392-1BM01-1AB0 6ES7328-0AA00-7AA0	Label cover 10 units; spare part For modules with 20-pin front connector For modules with 40-pin front connector	6ES7392-2XY00-0AA0 6ES7392-2XY10-0AA0
Bus connectors 1 unit (spare part)	6ES7390-0AA00-0AA0	<i>Documentation</i> SIMATIC Manual Collection Electronic manuals on DVD, multi-language: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC Distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC-based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	6ES7998-8XC01-8YE0
		SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates	6ES7998-8XC01-8YE2

SIMATIC S7-300 Advanced Controllers

I/O modules

Analog modules

SM 331 analog input modules

Overview



- Analog inputs
- For connection of voltage and current sensors, thermocouples, resistors and resistance thermometers

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Technical specifications

Article number	6ES7331-7KF02-0AB0 SM331, 8AI, 9/12/14Bit	6ES7331-7HF01-0AB0 SM331, 8AI, 14BIT, 0,052MS/channel	6ES7331-1KF02-0AB0 SM331, 8AI, 13bit	6ES7331-7KB02-0AB0 SM331, 2AI, 9/12/14Bit
Supply voltage				
Load voltage L+				
• Rated value (DC)	24 V	24 V		24 V
Input current				
from load voltage L+ (without load), max.	30 mA	50 mA		30 mA
from backplane bus 5 V DC, max.	50 mA	100 mA	90 mA	50 mA
Power loss				
Power loss, typ.	1 W	1.5 W	0.4 W	1 W
Analog inputs				
Number of analog inputs	8	8	8	2
• For resistance measurement	4		8	1
permissible input voltage for voltage input (destruction limit), max.	20 V; continuous; 75 V for max. 1 s (mark to space ratio 1:20)	20 V; 20 V DC permanent, 75 V DC for max. 1 s (duty factor 1:20)	30 V; 12 V continuous, 30 V for max. 1 s	20 V; continuous; 75 V for max. 1 s (mark to space ratio 1:20)
permissible input current for current input (destruction limit), max.	40 mA	40 mA	40 mA	40 mA
Input ranges (rated values), voltages				
• 0 to +10 V	No	No	Yes	No
• 1 V to 5 V	Yes	Yes	Yes	Yes
• 1 V to 10 V	No		No	No
• -1 V to +1 V	Yes	Yes	Yes	Yes
• -10 V to +10 V	Yes	Yes	Yes	Yes
• -2.5 V to +2.5 V	Yes		No	Yes
• -250 mV to +250 mV	Yes		No	Yes
• -5 V to +5 V	Yes	Yes	Yes	Yes
• -50 mV to +50 mV	No		Yes	No
• -500 mV to +500 mV	Yes	Yes	Yes	Yes
• -80 mV to +80 mV	Yes	Yes	No	Yes
Input ranges (rated values), currents				
• 0 to 20 mA	Yes	Yes	Yes	Yes
• -10 mA to +10 mA	Yes		No	Yes
• -20 mA to +20 mA	Yes	Yes	Yes	Yes
• -3.2 mA to +3.2 mA	Yes		No	Yes
• 4 mA to 20 mA	Yes	Yes	Yes	Yes

Technical specifications (continued)

Article number	6ES7331-7KF02-0AB0 SM331, 8AI, 9/12/14Bit	6ES7331-7HF01-0AB0 SM331, 8AI, 14BIT, 0,052MS/channel	6ES7331-1KF02-0AB0 SM331, 8AI, 13bit	6ES7331-7KB02-0AB0 SM331, 2AI, 9/12/14Bit
Input ranges (rated values), thermocouples				
• Type B	No		No	No
• Type C	No		No	
• Type E	Yes		No	Yes
• Type J	Yes		No	Yes
• Type K	Yes		No	Yes
• Type L	Yes		No	No
• Type N	Yes		No	Yes
• Type R	No		No	No
• Type S	No		No	No
• Type T	No		No	No
• Type U	No		No	No
• Type TXK/TXK(L) to GOST	No		No	No
Input ranges (rated values), resistance thermometer				
• Cu 10	No		No	No
• Ni 100	Yes; Standard		Yes; Standard/climate	Yes
• Ni 1000	No		Yes	No
• LG-Ni 1000	No		Yes; Standard/climate	No
• Ni 120	No		No	No
• Ni 200	No		No	No
• Ni 500	No		No	No
• Pt 100	Yes; Standard		Yes; Standard/climate	Yes
• Pt 1000	No		No	No
• Pt 200	No		No	No
• Pt 500	No		No	No
Input ranges (rated values), resistors				
• 0 to 150 ohms	Yes		No	Yes
• 0 to 300 ohms	Yes		No	Yes
• 0 to 600 ohms	Yes		Yes	Yes
• 0 to 6000 ohms	No		Yes	No
Thermocouple (TC)				
Temperature compensation				
- parameterizable	Yes		No	Yes
- internal temperature compensation	Yes		No	Yes
- external temperature compensation with compensations socket	Yes		No	Yes
- for definable comparison point temperature	Yes			Yes
Characteristic linearization				
• parameterizable	Yes		Yes	Yes
- for thermocouples	Type E, J, K, L, N		No	Type E, J, K, L, N
- for resistance thermometer	Pt100 (standard, climatic range), Ni100 (standard, climatic range)		yes; Pt100 standard/air con.; Ni100 standard/air con.; Ni1000 standard/air con.; LG-Ni1000 standard/air con.	Pt100 (standard, climatic range), Ni100 (standard, climatic range)
Cable length				
• shielded, max.	200 m; 50 m at 80 mV and thermocouples	200 m	200 m; max. 50 m at 50 mV	200 m; 50 m at 80 mV and thermocouples

SIMATIC S7-300 Advanced Controllers

I/O modules

Analog modules

SM 331 analog input modules

Technical specifications (continued)

Article number	6ES7331-7KF02-0AB0 SM331, 8AI, 9/12/14Bit	6ES7331-7HF01-0AB0 SM331, 8AI, 14BIT, 0,052MS/channel	6ES7331-1KF02-0AB0 SM331, 8AI, 13bit	6ES7331-7KB02-0AB0 SM331, 2AI, 9/12/14Bit
Analog value generation for the inputs				
Measurement principle	integrating	Actual value encryption	integrating	integrating
Integration and conversion time/resolution per channel				
<ul style="list-style-type: none"> Resolution with overrange (bit including sign), max. Integration time, parameterizable Basic conversion time (ms) Interference voltage suppression for interference frequency f_1 in Hz 	15 bit; Unipolar: 9/12/12/14 bit; bipolar: 9 bit + sign/ 12 bit + sign/12 bit + sign/ 14 bit + sign Yes; 2,5 / 16,67 / 20 / 100 ms 3 / 17 / 22 / 102 ms 400 / 60 / 50 / 10 Hz	14 bit; Unipolar: 14 bit; bipolar: 13 bit + sign Yes 52 μ s per channel none / 400 / 60 / 50 Hz	13 bit Yes; 60 / 50 ms 66 / 55 ms 50 / 60 Hz	15 bit; Unipolar: 9/12/12/14 bit; bipolar: 9 bit + sign/ 12 bit + sign/12 bit + sign/ 14 bit + sign Yes; 2,5 / 16,67 / 20 / 100 ms 3 / 17 / 22 / 102 ms 400 / 60 / 50 / 10 Hz
Encoder				
Connection of signal encoders				
<ul style="list-style-type: none"> for current measurement as 2-wire transducer for current measurement as 4-wire transducer for resistance measurement with two-wire connection for resistance measurement with three-wire connection for resistance measurement with four-wire connection 	Yes Yes Yes Yes Yes	Yes Yes Yes Yes Yes	Yes; with external supply Yes Yes Yes Yes	Yes Yes Yes Yes Yes
Errors/accuracies				
Operational error limit in overall temperature range				
<ul style="list-style-type: none"> Voltage, relative to input range, (+/-) Current, relative to input range, (+/-) Resistance, relative to input range, (+/-) Resistance thermometer, relative to input range, (+/-) 	1 %; $\pm 1\%$ (80 mV); $\pm 0.6\%$ (250 mV to 1 000 mV); $\pm 0.8\%$ (2.5 V to 10 V) 0.7 %; From 3.2 to 20 mA 0.7 %; 150, 300, 600 Ohm (+/-) 0.7 %; $\pm 0.7\%$ (Pt100/ Ni100); $\pm 0.8\%$ (Pt100 climate)	0.4 % 0.3 % 0.7 %; 150, 300, 600 Ohm kohms 0.7 %; $\pm 0.7\%$ (Pt100/ Ni100); $\pm 0.8\%$ (Pt100 climate)	0.6 %; $\pm 0.6\%$ (± 5 V, 10 V, 1 to 5 V, 0 to 10 V); $\pm 0.5\%$ (± 50 mV, 500 mV, 1 V) 0.5 %; ± 20 mA, 0 to 20 mA, 4 to 20 mA 0.5 %; 0 to 6 kohms, 0 to 600 kohms 1 Kelvin (Pt100, Ni100, climatic; Ni1000, LG-Ni1000, standard; Ni1000, LG-Ni1000, climatic); 1.2 Kelvin (Pt100, Ni100, standard)	1 %; $\pm 1\%$ (80 mV); $\pm 0.6\%$ (250 mV to 1 000 mV); $\pm 0.8\%$ (2.5 V to 10 V) 0.7 %; From 3.2 to 20 mA 0.7 %; 150, 300, 600 Ohm kohms 0.7 %; $\pm 0.7\%$ (Pt100/ Ni100); $\pm 0.8\%$ (Pt100 climate)
Basic error limit (operational limit at 25 °C)				
<ul style="list-style-type: none"> Voltage, relative to input range, (+/-) Current, relative to input range, (+/-) Resistance, relative to input range, (+/-) Resistance thermometer, relative to input range, (+/-) 	0.6 %; $\pm 0.4\%$ (250 mV to 1 000 mV); $\pm 0.6\%$ (2.5 mV to 10 mV); $\pm 0.7\%$ (80 mV) 0.5 %; 3.2 to 20 mA 0.5 %; 150, 300, 600 Ohm (+/-) 0.6 %; $\pm 0.5\%$ (Pt100/ Ni100), $\pm 0.6\%$ (Pt100 climate)	0.25 % 0.2 % 0.5 %; 150, 300, 600 Ohm kohms 0.6 %; $\pm 0.5\%$ (Pt100/ Ni100), $\pm 0.6\%$ (Pt100 climate)	0.4 %; 0.4% (± 5 V, 10 V, 1 to 5 V, 0 to 10 V); 0.3% (± 50 mV, 500 mV, 1 V) 0.3 %; ± 20 mA, 0 to 20 mA, 4 to 20 mA 0.3 %; 0 to 6 kohms, 0 to 600 kohms 1 Kelvin (Pt100, Ni100, standard); 0.8 Kelvin (Pt100, Ni100, climatic; Ni1000, LG-Ni1000, standard; Ni1000, LG-Ni1000, climatic)	0.6 %; $\pm 0.6\%$ (80 mV, 2.5 V to 10 V); $\pm 0.4\%$ (250 mV to 1 000 mV) 0.5 %; 3.2 to 20 mA 0.5 %; 150, 300, 600 Ohm kohms 0.6 %; $\pm 0.5\%$ (Pt100/ Ni100), $\pm 0.6\%$ (Pt100 climate)
Interrupts/diagnostics/status information				
Diagnostics function	Yes; Parameterizable	Yes	No	Yes; Parameterizable
Alarms				
<ul style="list-style-type: none"> Diagnostic alarm Limit value alarm 	Yes; Parameterizable, channels 0 and 2 Yes; Parameterizable	Yes; Parameterizable Yes; Parameterizable, channels 0 and 2	No No	Yes Yes; Parameterizable, channel 0
Diagnostic messages				
<ul style="list-style-type: none"> Diagnostic information readable 	Yes	Yes	No	Yes

Technical specifications (continued)

Article number	6ES7331-7KF02-0AB0 SM331, 8AI, 9/12/14Bit	6ES7331-7HF01-0AB0 SM331, 8AI, 14BIT, 0,052MS/channel	6ES7331-1KF02-0AB0 SM331, 8AI, 13bit	6ES7331-7KB02-0AB0 SM331, 2AI, 9/12/14Bit	
Potential separation					
Potential separation analog inputs • between the channels and backplane bus	Yes	Yes	Yes	Yes	
Connection method					
required front connector	20-pin	20-pin	40-pin	20-pin	
Dimensions					
Width	40 mm	40 mm	40 mm	40 mm	
Height	125 mm	125 mm	125 mm	125 mm	
Depth	117 mm	117 mm	117 mm	120 mm	
Weights					
Weight, approx.	250 g	230 g	250 g	250 g	
Article number	6ES7331-7PF01-0AB0 SM331, 8AI, resistor, PT100/200/1000, .	6ES7331-7PF11-0AB0 SM331, 8AI, 16BIT, Thermocouples	6ES7331-7PE10-0AB0 SM331, 6AI, 16bit, Thermocouples	6ES7331-7NF00-0AB0 SM331,8AI, +/-5/10V,1-5V, +/-20mA,0/4-20mA	6ES7331-7NF10-0AB0 SM331,8AI, +/-5/10V,1-5V, +/-20mA,0/4-20mA
Supply voltage					
Load voltage L+ • Rated value (DC)	24 V	24 V	24 V		24 V
Input current					
from load voltage L+ (without load), max.	240 mA	240 mA	150 mA		200 mA
from backplane bus 5 V DC, max.	100 mA	100 mA	100 mA	130 mA	100 mA
Power loss					
Power loss, typ.	4.6 W	3 W	2.2 W	0.6 W	3 W
Analog inputs					
Number of analog inputs	8	8	6	8	8
• For resistance measurement	8				
permissible input voltage for voltage input (destruction limit), max.	75 V; 35 V continuous, 75 V for max. 1 s (mark to space ratio 1:20)	75 V; 20 V DC permanent, 75 V DC for max. 1 s (duty factor 1:20)	35 V; 35 V continuous, 75 V for max. 1 s (mark to space ratio 1:20)	50 V; Permanent	75 V; 35 V continuous, 75 V for max. 1 s (mark to space ratio 1:20)
permissible input current for current input (destruction limit), max.				32 mA	40 mA
Input ranges (rated values), voltages					
• 0 to +10 V	No	No	No	No	No
• 1 V to 5 V	No	No	No	Yes	Yes
• 1 V to 10 V	No	No	No	No	No
• -1 V to +1 V	No	No	Yes	No	No
• -10 V to +10 V	No	No	No	Yes	Yes
• -2.5 V to +2.5 V	No	No	No	No	No
• -250 mV to +250 mV	No	No	Yes	No	No
• -5 V to +5 V	No	No	No	Yes	Yes
• -50 mV to +50 mV	No	No	Yes	No	No
• -500 mV to +500 mV	No	No	Yes	No	No
• -80 mV to +80 mV	No	No	Yes	No	No
Input ranges (rated values), currents					
• 0 to 20 mA	No	No	No	Yes	Yes
• -10 mA to +10 mA	No	No	No	No	No
• -20 mA to +20 mA	No	No	No	Yes	Yes
• -3.2 mA to +3.2 mA	No	No	No	No	No
• 4 mA to 20 mA	No	No	No	Yes	Yes

SIMATIC S7-300 Advanced Controllers

I/O modules

Analog modules

SM 331 analog input modules

Technical specifications (continued)

Article number	6ES7331-7PF01-0AB0 SM331, 8AI, resistor, PT100/200/1000, .	6ES7331-7PF11-0AB0 SM331, 8AI, 16BIT, Thermocouples	6ES7331-7PE10-0AB0 SM331, 6AI, 16bit, Thermocouples	6ES7331-7NF00-0AB0 SM331,8AI, +/-5/10V,1-5V, +/-20mA,0/4-20mA	6ES7331-7NF10-0AB0 SM331,8AI, +/-5/10V,1-5V, +/-20mA,0/4-20mA
Input ranges (rated values), thermocouples					
• Type B	No	Yes	Yes	No	No
• Type C	No	Yes	Yes	No	No
• Type E	No	Yes	Yes	No	No
• Type J	No	Yes	Yes	No	No
• Type K	No	Yes	Yes	No	No
• Type L	No	Yes	Yes	No	No
• Type N	No	Yes	Yes	No	No
• Type R	No	Yes	Yes	No	No
• Type S	No	Yes	Yes	No	No
• Type T	No	Yes	Yes	No	No
• Type U	No	Yes	Yes	No	No
• Type TXK/TXK(L) to GOST	No	Yes	Yes	No	No
Input ranges (rated values), resistance thermometer					
• Cu 10	Yes	No	No	No	No
• Ni 100	Yes	No	No	No	No
• Ni 1000	Yes	No	No	No	No
• LG-Ni 1000	Yes	No	No	No	No
• Ni 120	Yes	No	No	No	No
• Ni 200	Yes	No	No	No	No
• Ni 500	Yes	No	No	No	No
• Pt 100	Yes	No	No	No	No
• Pt 1000	Yes	No	No	No	No
• Pt 200	Yes	No	No	No	No
• Pt 500	Yes	No	No	No	No
Input ranges (rated values), resistors					
• 0 to 150 ohms	Yes	No	No	No	No
• 0 to 300 ohms	Yes	No	No	No	No
• 0 to 600 ohms	Yes	No	No	No	No
• 0 to 6000 ohms		No	No	No	No
Thermocouple (TC)					
Temperature compensation					
- parameterizable		Yes	Yes		
- internal temperature compensation		Yes	Yes		
- external temperature compensation with Pt100		Yes	Yes		
- external temperature compensation with compensations socket		Yes	Yes		
- for definable comparison point temperature		Yes	Yes		
Characteristic linearization					
• parameterizable	Yes	Yes	Yes		
- for thermocouples		Type B, E, J, K, L, N, R, S, T, U, C	Type B, E, J, K, L, N, R, S, T, U, C, TXK, XK(L)		
- for resistance thermometer	Pt100, Pt200, Pt500, Pt1000, Ni100, Ni120, Ni200, Ni500, Ni1000, Cu10; (standard/climate)		No		
Cable length					
• shielded, max.	200 m	100 m	200 m	200 m	200 m

Technical specifications (continued)

Article number	6ES7331-7PF01-0AB0	6ES7331-7PF11-0AB0	6ES7331-7PE10-0AB0	6ES7331-7NF00-0AB0	6ES7331-7NF10-0AB0
	SM331, 8AI, resistor, PT100/200/1000, .	SM331, 8AI, 16BIT, Thermocouples	SM331, 6AI, 16bit, Thermocouples	SM331,8AI, +/-5/10V,1-5V, +/-20mA,0/4-20mA	SM331,8AI, +/-5/10V,1-5V, +/-20mA,0/4-20mA
Analog value generation for the inputs					
Measurement principle	integrating	integrating	integrating	integrating	integrating
Integration and conversion time/ resolution per channel					
• Resolution with overrange (bit including sign), max.	16 bit; Two's complement	16 bit; Two's complement	16 bit; Two's complement	16 bit; Unipolar: 15/15/15/15 bit; bipolar: 15 bit + sign/ 15 bit + sign/ 15 bit + sign/ 15 bit + sign	16 bit; Unipolar: 15/15/15/15 bit; bipolar: 15 bit + sign/ 15 bit + sign/ 15 bit + sign
• Integration time, parameterizable	Yes	Yes	Yes	Yes; 10/ 16.67/ 20/ 100 ms	Yes; 23 / 72 / 83 / 95 ms
• Basic conversion time (ms)	up to 4 channels: 10 ms per module, over 5 channels: 190 ms per module, 8 channels: 80 ms	Up to 4 channels: 10 ms per module, 5 channels upwards: 190 ms per module	30 / 50 / 60 / 300 ms		10 ms (4-channel mode); 95/83/72/23 ms (8-channel mode)
• Integration time (ms)			10/ 16.67/ 20/ 100 ms		
• Interference voltage suppression for interference frequency f1 in Hz	400 / 60 / 50 Hz	400 / 60 / 50 Hz	10 / 50 / 60 / 400 Hz	400 / 60 / 50 / 10 Hz	400 / 60 / 50 Hz, combinations of 400, 60, 50 Hz
Encoder					
Connection of signal encoders					
• for current measurement as 2-wire transducer				Yes; with external transmitter; possible with separate supply for transmitter	Yes; with external transmitter, current supply; possible with separate supply for transmitter
• for current measurement as 4-wire transducer				Yes	Yes
• for resistance measurement with two-wire connection	Yes; without resistance correction				
• for resistance measurement with three-wire connection	Yes				
• for resistance measurement with four-wire connection	Yes				
Errors/accuracies					
Operational error limit in overall temperature range					
• Voltage, relative to input range, (+/-)		±1 K	Operating error at 0 ... 60 °C: ±0.12% @ ±25 mV, ±0.08% @ ±50 mV, ±0.6% @ ±80 mV, ±0.05% @ ±250 mV, ±0.05% @ 500 mV, ±0.05% @ ±1 V	0.1 %; At $U_{cm} = 0$ V or ±0.7 % at $U_{cm} = 50$ V	0.1 %
• Current, relative to input range, (+/-)				0.3 %; At $U_{cm} = 0$ V or ±0.9 % at $U_{cm} = 50$ V	0.1 %
• Resistance, relative to input range, (+/-)	0.1 %				
• Resistance thermometer, relative to input range, (+/-)	±1 K				
Basic error limit (operational limit at 25 °C)					
• Voltage, relative to input range, (+/-)			See manual for details	0.05 %	0.05 %
• Current, relative to input range, (+/-)				0.05 %	0.05 %
• Resistance, relative to input range, (+/-)	0.05 %				
• Resistance thermometer, relative to input range, (+/-)	±0.5 K				

SIMATIC S7-300 Advanced Controllers

I/O modules

Analog modules

SM 331 analog input modules**Technical specifications** (continued)

Article number	6ES7331-7PF01-0AB0 SM331, 8AI, resistor, PT100/200/1000, .	6ES7331-7PF11-0AB0 SM331, 8AI, 16BIT, Thermocouples	6ES7331-7PE10-0AB0 SM331, 6AI, 16bit, Thermocouples	6ES7331-7NF00-0AB0 SM331,8AI, +/-5/10V,1-5V, +/-20mA,0/4-20mA	6ES7331-7NF10-0AB0 SM331,8AI, +/-5/10V,1-5V, +/-20mA,0/4-20mA
Interrupts/diagnostics/status information					
Diagnostics function	Yes; Parameterizable	Yes; Parameterizable	Yes; Parameterizable	Yes; Parameterizable	Yes; Parameterizable
Alarms					
• Diagnostic alarm	Yes; Parameterizable per group	Yes; Parameterizable per group	Yes; channel by channel	Yes; Parameterizable	Yes; Parameterizable
• Limit value alarm	Yes; Parameterizable	Yes; Parameterizable	Yes; Parameterizable	Yes; Parameterizable, channels 0 and 2	Yes; Parameterizable all channels (end of cycle interrupt is also supported across modules)
• Hardware interrupt	Yes; Parameterizable, channels 0 to 7	Yes; Parameterizable, channels 0 to 7	Yes; Parameterizable		Yes; Parameterizable, channels 0 to 7 (on exceeding limit value), at end of cycle
Diagnostic messages					
• Diagnostic information readable	Yes	Yes	Yes	Yes	Yes
Potential separation					
Potential separation analog inputs					
• between the channels and backplane bus	Yes	Yes	Yes	Yes	Yes
Connection method					
required front connector	40-pin	40-pin	40-pin	40-pin	40-pin
Dimensions					
Width	40 mm	40 mm	40 mm	40 mm	40 mm
Height	125 mm	125 mm	125 mm	125 mm	125 mm
Depth	120 mm	120 mm	120 mm	117 mm	117 mm
Weights					
Weight, approx.	272 g	272 g	272 g	272 g	272 g

Ordering data	Article No.	Ordering data	Article No.
SM 331 analog input modules		Shield connection clamps	
Including labeling strips, bus connector, measuring range modules		2 units	
8 inputs, 13-bit resolution	6ES7331-1KF02-0AB0	For 2 cables with 2 mm to 6 mm diameter	6ES7390-5AB00-0AA0
8 inputs, resolution 9/12/14 bits	6ES7331-7KF02-0AB0	For 1 cable with 3 mm to 8 mm diameter	6ES7390-5BA00-0AA0
2 inputs, resolution 9/12/14 bits	6ES7331-7KB02-0AB0	For 1 cable with 4 mm to 13 mm diameter	6ES7390-5CA00-0AA0
8 inputs, enhanced resolution 16 bits	6ES7331-7NF00-0AB0	Label cover	6ES7392-2XY00-0AA0
8 inputs, enhanced resolution 16 bits, 4-channel mode	6ES7331-7NF10-0AB0	10 units (spare part), for modules with 20-pin front connector	
8 inputs, resolution 14 bits, for isochronous mode	6ES7331-7HF01-0AB0	Labeling strips	6ES7392-2XX00-0AA0
6 inputs, for thermal elements, resolution 16 bits	6ES7331-7PE10-0AB0	10 units (spare part), for modules with 20-pin front connector	
8 inputs, for thermal resistors	6ES7331-7PF01-0AB0	Labeling sheets for machine labeling	
8 inputs, for thermoelements	6ES7331-7PF11-0AB0	For modules with 20-pin front connector, DIN A4, for printing with laser printer; 10 units	
Measuring range module for analog inputs	6ES7974-0AA00-0AA0	Petrol	6ES7392-2AX00-0AA0
1 module for 2 analog inputs; 2 units (spare part)		Light beige	6ES7392-2BX00-0AA0
Front connector		Yellow	6ES7392-2CX00-0AA0
20-pin, with screw contacts		Red	6ES7392-2DX00-0AA0
• 1 unit	6ES7392-1AJ00-0AA0	For modules with 40-pin front connector, DIN A4, for printing with laser printer; 10 units	
• 100 units	6ES7392-1AJ00-1AB0	Petrol	6ES7392-2AX10-0AA0
20-pin, with spring-loaded contacts		Light beige	6ES7392-2BX10-0AA0
• 1 unit	6ES7392-1BJ00-0AA0	Yellow	6ES7392-2CX10-0AA0
• 100 units	6ES7392-1BJ00-1AB0	Red	6ES7392-2DX10-0AA0
40-pin, with screw contacts		SIMATIC Manual Collection	6ES7998-8XC01-8YE0
• 1 unit	6ES7392-1AM00-0AA0	Electronic manuals on DVD, multilingual:	
• 100 units	6ES7392-1AM00-1AB0	LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC Distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC-based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	
40-pin, with spring-loaded contacts		SIMATIC Manual Collection update service for 1 year	6ES7998-8XC01-8YE2
• 1 unit	6ES7392-1BM01-0AA0	Current "Manual Collection" DVD and the three subsequent updates	
• 100 units	6ES7392-1BM01-1AB0		
Front door, elevated design	6ES7328-0AA00-7AA0		
e.g. for 32-channel modules; for connecting 1.3 mm ² /16 AWG wires			
SIMATIC TOP connect	see page 5/251		
Bus connectors	6ES7390-0AA00-0AA0		
1 unit (spare part)			
Shield connection element	6ES7390-5AA00-0AA0		
80 mm wide, with 2 rows for 4 shield connection clamps each			

SIMATIC S7-300 Advanced Controllers

I/O modules

Analog modules

SM 332 analog output modules

Overview



- Analog outputs
- For the connection of analog actuators

Technical specifications

Article number	6ES7332-5HB01-0AB0 SM332, 2AQ, U/I, 11/12Bit	6ES7332-5HD01-0AB0 SM332, 4AQ, U/I, 11/12Bit	6ES7332-5HF00-0AB0 SM332, 8AQ, U/I, 11/12Bit	6ES7332-7ND02-0AB0 SM332, 4AQ, 0-10V, 0-5V,+/-10V,+/-20mA
Supply voltage				
Load voltage L+				
• Rated value (DC)	24 V	24 V	24 V	24 V
Input current				
from load voltage L+ (without load), max.	135 mA	240 mA	340 mA	290 mA
from backplane bus 5 V DC, max.	60 mA	60 mA	100 mA	120 mA
Power loss				
Power loss, typ.	3 W	3 W	6 W	3 W
Analog outputs				
Number of analog outputs	2	4	8	4; Isochronous mode
Voltage output, short-circuit protection	Yes	Yes	Yes	Yes
Voltage output, short-circuit current, max.	25 mA	25 mA	25 mA	40 mA
Current output, no-load voltage, max.	18 V	18 V	18 V	18 V
Output ranges, voltage				
• 0 to 10 V	Yes	Yes	Yes	Yes
• 1 V to 5 V	Yes	Yes	Yes	Yes
• -10 V to +10 V	Yes	Yes	Yes	Yes
Output ranges, current				
• 0 to 20 mA	Yes	Yes	Yes	Yes
• -20 mA to +20 mA	Yes	Yes	Yes	Yes
• 4 mA to 20 mA	Yes	Yes	Yes	Yes
Load impedance (in rated range of output)				
• with voltage outputs, min.	1 k Ω	1 k Ω	1 k Ω	1 k Ω
• with voltage outputs, capacitive load, max.	1 μ F	1 μ F	1 μ F	1 μ F
• with current outputs, max.	500 Ω	500 Ω	500 Ω	500 Ω
• with current outputs, inductive load, max.	10 mH	10 mH	10 mH	1 mH
Cable length				
• shielded, max.	200 m	200 m	200 m	200 m

Technical specifications (continued)

Article number	6ES7332-5HB01-0AB0 SM332, 2AQ, U/I, 11/12Bit	6ES7332-5HD01-0AB0 SM332, 4AQ, U/I, 11/12Bit	6ES7332-5HF00-0AB0 SM332, 8AQ, U/I, 11/12Bit	6ES7332-7ND02-0AB0 SM332, 4AQ, 0-10V, 0-5V,+/-10V,+/-20mA
Analog value generation for the outputs				
Integration and conversion time/ resolution per channel				
• Resolution with overrange (bit including sign), max.	12 bit; ± 10 V, ± 20 mA, 4 mA to 20 mA, 1 V to 5 V: 11 bit + sign; 0 V to 10 V, 0 mA to 20 mA: 12 bit	12 bit; ± 10 V, ± 20 mA, 4 mA to 20 mA, 1 V to 5 V: 11 bit + sign; 0 V to 10 V, 0 mA to 20 mA: 12 bit	12 bit; ± 10 V, ± 20 mA, 4 mA to 20 mA, 1 V to 5 V: 11 bit + sign; 0 V to 10 V, 0 mA to 20 mA: 12 bit	16 bit
• Conversion time (per channel)	0.8 ms	0.8 ms	0.8 ms	200 μ s; in isochronous mode 640 μ s
Settling time				
• for resistive load	0.2 ms	0.2 ms	0.2 ms	0.2 ms
• for capacitive load	3.3 ms	3.3 ms	3.3 ms	3.3 ms
• for inductive load	0.5 ms; 0.5 ms (1 mH); 3.3 ms (10 mH)	0.5 ms; 0.5 ms (1 mH); 3.3 ms (10 mH)	0.5 ms; 0.5 ms (1 mH); 3.3 ms (10 mH)	0.5 ms
Errors/accuracies				
Operational error limit in overall temperature range				
• Voltage, relative to output range, (+/-)	0.5 %	0.5 %	0.5 %	0.12 %
• Current, relative to output range, (+/-)	0.6 %	0.6 %	0.6 %	0.18 %
Basic error limit (operational limit at 25 °C)				
• Voltage, relative to output range, (+/-)	0.4 %	0.4 %	0.4 %	0.02 %
• Current, relative to output range, (+/-)	0.5 %	0.5 %	0.5 %	0.02 %
Interrupts/diagnostics/ status information				
Diagnostics function	Yes; Parameterizable	Yes; Parameterizable	Yes; Parameterizable	Yes; Parameterizable
Substitute values connectable	Yes; Parameterizable	Yes; Parameterizable	Yes; Parameterizable	Yes; Parameterizable
Alarms				
• Diagnostic alarm	Yes; Parameterizable	Yes; Parameterizable	Yes; Parameterizable	Yes; Parameterizable
Diagnostic messages				
• Diagnostic information readable	Yes	Yes	Yes	Yes
Potential separation				
Potential separation analog outputs				
• between the channels and backplane bus	Yes	Yes	Yes	Yes
Connection method				
required front connector	20-pin	20-pin	40-pin	20-pin
Dimensions				
Width	40 mm	40 mm	40 mm	40 mm
Height	125 mm	125 mm	125 mm	125 mm
Depth	117 mm	117 mm	117 mm	117 mm
Weights				
Weight, approx.	220 g	220 g	272 g	220 g

SIMATIC S7-300 Advanced Controllers

I/O modules

Analog modules

SM 332 analog output modules**Ordering data****Article No.****SM 332 analog output modules**

Incl. labeling strips, bus connector

4 outputs, 11/12 bit

6ES7332-5HD01-0AB0

4 outputs, 16 bit

6ES7332-7ND02-0AB0

2 outputs, 11/12 bit

6ES7332-5HB01-0AB0

8 outputs, 11/12 bit

6ES7332-5HF00-0AB0**Front connector**

20-pin, with screw contacts

- 1 unit
- 100 units

6ES7392-1AJ00-0AA0
6ES7392-1AJ00-1AB0

20-pin, with spring-loaded contacts

- 1 unit
- 100 units

6ES7392-1BJ00-0AA0
6ES7392-1BJ00-1AB0

40-pin, with screw contacts

- 1 unit
- 100 units

6ES7392-1AM00-0AA0
6ES7392-1AM00-1AB0

40-pin, with spring-loaded contacts

- 1 unit
- 100 units

6ES7392-1BM01-0AA0
6ES7392-1BM01-1AB0**Front door, elevated design****6ES7328-0AA00-7AA0**e.g. for 32-channel modules; for connecting 1.3 mm²/16 AWG wires**SIMATIC TOP connect**

See page 5/251

Bus connectors

1 unit (spare part)

6ES7390-0AA00-0AA0**Shield connection element****6ES7390-5AA00-0AA0**

80 mm wide, with 2 rows for 4 shield connection clamps each

Shield connection clamps

2 units

For 2 cables with 2 mm to 6 mm diameter

6ES7390-5AB00-0AA0

For 1 cable with 3 mm to 8 mm diameter

6ES7390-5BA00-0AA0

For 1 cable with 4 mm to 13 mm diameter

6ES7390-5CA00-0AA0**Article No.****Label cover****6ES7392-2XY00-0AA0**

10 units (spare part), for modules with 20-pin front connector

Labeling strips**6ES7392-2XX00-0AA0**

10 units (spare part), for modules with 20-pin front connector

Labeling sheets for machine labeling

For modules with 20-pin front connector, DIN A4, for printing with laser printer; 10 units

Petrol

6ES7392-2AX00-0AA0

Light beige

6ES7392-2BX00-0AA0

Yellow

6ES7392-2CX00-0AA0

Red

6ES7392-2DX00-0AA0

For modules with 40-pin front connector, DIN A4, for printing with laser printer; 10 units

Petrol

6ES7392-2AX10-0AA0

Light beige

6ES7392-2BX10-0AA0

Yellow

6ES7392-2CX10-0AA0

Red

6ES7392-2DX10-0AA0**SIMATIC Manual Collection****6ES7998-8XC01-8YE0**

Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC Distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC-based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC

SIMATIC Manual Collection update service for 1 year**6ES7998-8XC01-8YE2**

Current "Manual Collection" DVD and the three subsequent updates

Overview



- Analog inputs and outputs
- For the connection of analog sensors and actuators

Technical specifications

Article number	6ES7334-0CE01-0AA0	6ES7334-0KE00-0AB0
	SM334, 4AI, 2AQ, non isolated	SM334, 4AI/2AQ, 0-10V f.PT100
Supply voltage		
Load voltage L+		
• Rated value (DC)	24 V	24 V
Input current		
from supply and load voltage L+ (without load), max.	110 mA	80 mA
from backplane bus 5 V DC, max.	55 mA	60 mA
Power loss		
Power loss, typ.	3 W	2 W
Analog inputs		
Number of analog inputs	4	4
• For voltage measurement	4	2
• For resistance measurement		4
permissible input voltage for voltage input (destruction limit), max.	20 V	20 V; continuous; 75 V for max. 1 s (mark to space ratio 1:20)
permissible input current for current input (destruction limit), max.	40 mA	
Cycle time (all channels) max.	5 ms	85 ms
Input ranges (rated values), voltages		
• 0 to +10 V	Yes	Yes
Input ranges (rated values), currents		
• 0 to 20 mA	Yes	
Input ranges (rated values), resistance thermometer		
• Pt 100		Yes; only climatic range
Input ranges (rated values), resistors		
• 0 to 10000 ohms		Yes
Characteristic linearization		
• parameterizable		Yes
- for resistance thermometer		Pt100 (climate)
Cable length		
• shielded, max.	200 m	100 m

SIMATIC S7-300 Advanced Controllers

I/O modules

Analog modules

SM 334 analog input/output modules

Technical specifications (continued)

Article number	6ES7334-0CE01-0AA0	6ES7334-0KE00-0AB0
	SM334, 4AI, 2AQ, non isolated	SM334, 4AI/2AQ, 0-10V f.PT100
Analog outputs		
Number of analog outputs	2	2
Voltage output, short-circuit protection	Yes	Yes
Voltage output, short-circuit current, max.	11 mA	30 mA
Current output, no-load voltage, max.	15 V	
Output ranges, voltage		
• 0 to 10 V	Yes	Yes
Output ranges, current		
• 0 to 20 mA	Yes	
Load impedance (in rated range of output)		
• with voltage outputs, min.	5 kΩ	2.5 kΩ
• with voltage outputs, capacitive load, max.	1 μF	1 μF
• with current outputs, max.	300 Ω	
• with current outputs, inductive load, max.	1 mH	
Cable length		
• shielded, max.	200 m	100 m
Analog value generation for the inputs		
Integration and conversion time/ resolution per channel		
• Resolution with overrange (bit including sign), max.	8 bit	12 bit
• Integration time (ms)		16,67 / 20 ms
Analog value generation for the outputs		
Integration and conversion time/ resolution per channel		
• Resolution with overrange (bit including sign), max.	8 bit	12 bit
Settling time		
• for resistive load	0.3 ms	0.8 ms
• for capacitive load	3 ms	0.8 ms
• for inductive load	0.3 ms	
Encoder		
Connection of signal encoders		
• for current measurement as 2-wire transducer	No	
• for current measurement as 4-wire transducer	Yes	
• for resistance measurement with two-wire connection		Yes
• for resistance measurement with three-wire connection		Yes
• for resistance measurement with four-wire connection		Yes

Technical specifications (continued)

Article number	6ES7334-0CE01-0AA0	6ES7334-0KE00-0AB0
	SM334, 4AI, 2AQ, non isolated	SM334, 4AI/2AQ, 0-10V f.PT100
Errors/accuracies		
Operational error limit in overall temperature range		
• Voltage, relative to input range, (+/-)	0.9 %	0.7 %; 0 to 10V
• Current, relative to input range, (+/-)	0.8 %	
• Resistance, relative to input range, (+/-)		3.5 %; 10 kOhm
• Resistance thermometer, relative to input range, (+/-)		1 %
• Voltage, relative to output range, (+/-)	0.6 %	1 %
• Current, relative to output range, (+/-)	1 %	
Basic error limit (operational limit at 25 °C)		
• Voltage, relative to input range, (+/-)	0.7 %	0.5 %; 0 to 10V
• Current, relative to input range, (+/-)	0.6 %	
• Resistance, relative to input range, (+/-)		2.8 %; 10 kOhm
• Resistance thermometer, relative to input range, (+/-)		0.8 %
• Voltage, relative to output range, (+/-)	0.5 %	0.85 %
• Current, relative to output range, (+/-)	0.5 %	
Interrupts/diagnostics/status information		
Alarms	No	No
Diagnostics function	No	No
Potential separation		
Potential separation analog inputs		
• between the channels and backplane bus	No	Yes
Potential separation analog outputs		
• between the channels and backplane bus	No	Yes
Connection method		
required front connector	20-pin	20-pin
Dimensions		
Width	40 mm	40 mm
Height	125 mm	125 mm
Depth	117 mm	117 mm
Weights		
Weight, approx.	285 g	200 g

SIMATIC S7-300 Advanced Controllers

I/O modules

Analog modules

SM 334 analog input/output modules**Ordering data****Article No.****SM 334 analog input/output modules**

Incl. labeling strips, bus connector

4 inputs, 2 outputs

6ES7334-0CE01-0AA0

4 inputs, 2 outputs, resistance measurement, Pt 100

6ES7334-0KE00-0AB0**Front connector**

20-pin, with screw contacts

- 1 unit
- 100 units

6ES7392-1AJ00-0AA0**6ES7392-1AJ00-1AB0**

20-pin, with spring-loaded terminals

- 1 unit
- 100 units

6ES7392-1BJ00-0AA0**6ES7392-1BJ00-1AB0****Front door, elevated design****6ES7328-0AA00-7AA0**e.g. for 32-channel modules; for connecting 1.3 mm²/16 AWG wires**SIMATIC TOP connect**

See page 5/251

Bus connectors**6ES7390-0AA00-0AA0**

1 unit (spare part)

Shield connection element**6ES7390-5AA00-0AA0**

80 mm wide, with 2 rows for 4 shield connection clamps each

Shield connection clamps

2 units

For 2 cables with 2 mm to 6 mm diameter

6ES7390-5AB00-0AA0

For 1 cable with 3 mm to 8 mm diameter

6ES7390-5BA00-0AA0

For 1 cable with 4 mm to 13 mm diameter

6ES7390-5CA00-0AA0**Article No.****Label cover****6ES7392-2XY00-0AA0**

10 units (spare part), for modules with 20-pin front connector

Labeling strips**6ES7392-2XX00-0AA0**

10 units (spare part), for modules with 20-pin front connector

Labeling sheets for machine labeling

For modules with 20-pin front connector, DIN A4, for printing with laser printer; 10 units

Petrol

6ES7392-2AX00-0AA0

Light beige

6ES7392-2BX00-0AA0

Yellow

6ES7392-2CX00-0AA0

Red

6ES7392-2DX00-0AA0**SIMATIC Manual Collection****6ES7998-8XC01-8YE0**

Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC Distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC-based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC

SIMATIC Manual Collection update service for 1 year**6ES7998-8XC01-8YE2**

Current "Manual Collection" DVD and the three subsequent updates

Overview



- Analog inputs
- For connecting voltage sensors and current sensors, thermocouples, resistors and resistance thermometers

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Technical specifications

Article number	6AG1331-1KF02-7AB0	6AG1331-7KB02-2AB0	6AG1331-7KF02-2AB0
Based on	6ES7331-1KF02-0AB0 SIPLUS SM331 8AI	6ES7331-7KB02-0AB0 SIPLUS SM331 2AI	6ES7331-7KF02-0AB0 SIPLUS SM331 8AI
Ambient conditions			
Ambient temperature during operation			
• min.	-25 °C	-25 °C; = Tmin	-25 °C; = Tmin
• max.	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	70 °C; = Tmax; for use on railway vehicles according to EN50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/ULhaz/ATEX/FM use applies
Altitude during operation relating to sea level			
• Installation altitude above sea level, max.	5 000 m	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity			
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance			
Use in stationary industrial systems			
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 analog modules

SIPLUS S7-300 SM 331

Technical specifications (continued)

Article number	6AG1331-1KF02-7AB0	6AG1331-7KB02-2AB0	6AG1331-7KF02-2AB0
Based on	6ES7331-1KF02-0AB0 SIPLUS SM331 8AI	6ES7331-7KB02-0AB0 SIPLUS SM331 2AI	6ES7331-7KF02-0AB0 SIPLUS SM331 8AI
Use on land craft, rail vehicles and special-purpose vehicles			Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to biologically active substances according to EN 60721-3-5			Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to chemically active substances according to EN 60721-3-5			Yes; Class 5S3 incl. sand, dust; *
- to mechanically active substances according to EN 60721-3-5			
Use on ships/at sea			
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Remark			
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

Article number	6AG1331-7NF00-2AB0	6AG1331-7NF10-2AB0	6AG1331-7PF01-4AB0	6AG1331-7PF11-4AB0
Based on	6ES7331-7NF00-0AB0 SIPLUS S7-300 SM331 8AI - 4Qpol	6ES7331-7NF10-0AB0 SIPLUS SM331 8AI - 4Qpol	6ES7331-7PF01-0AB0 SIPLUS SM331 8AI	6ES7331-7PF11-0AB0 SIPLUS S7-300 SM331 8AI 4Qpol
Ambient conditions				
Ambient temperature during operation				
• min.	-25 °C; = Tmin	-25 °C; = Tmin	0 °C; = Tmin	0 °C; = Tmin
• max.	70 °C; = Tmax; for use on railway vehicles according to EN 50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/UL hazardous use applies	60 °C; = Tmax	60 °C; = Tmax	60 °C; = Tmax
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	5 000 m	5 000 m	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity				
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance				
Use in stationary industrial systems				
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *	Yes; Class 3S4 incl. sand, dust; *

Technical specifications (continued)

Article number	6AG1331-7NF00-2AB0	6AG1331-7NF10-2AB0	6AG1331-7PF01-4AB0	6AG1331-7PF11-4AB0
Based on	6ES7331-7NF00-0AB0 SIPLUS S7-300 SM331 8AI - 40pol	6ES7331-7NF10-0AB0 SIPLUS SM331 8AI - 40pol	6ES7331-7PF01-0AB0 SIPLUS SM331 8AI	6ES7331-7PF11-0AB0 SIPLUS S7-300 SM331 8AI 40pol
Use on land craft, rail vehicles and special-purpose vehicles				
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request			
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *			
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *			
Use on ships/at sea				
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Remark				
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 analog modules

SIPLUS S7-300 SM 331**Ordering data****Article No.****SIPLUS S7-300 SM 331 analog input modules***For industrial applications with extended ambient conditions*Extended temperature range and exposure to media

8 inputs, 13-bit resolution

6AG1331-1KF02-7AB0

2 inputs, 9/12/14-bit resolution

6AG1331-7KB02-2AB0

8 inputs, 9/12/14-bit resolution

6AG1331-7KF02-2AB0

8 inputs, enhanced 16-bit resolution

6AG1331-7NF00-2AB0

8 inputs, enhanced 16-bit resolution, 4-channel mode

6AG1331-7NF10-2AB0Exposure to media

8 inputs, for thermal resistors

6AG1331-7PF01-4AB0

8 inputs, for thermocouples

6AG1331-7PF11-4AB0*For rolling stock railway applications*Conforms to EN 50155

8 inputs, 9/12/14-bit resolution

6AG1331-7KF02-2AB0

8 inputs, enhanced 16-bit resolution

6AG1331-7NF00-2AB0**Accessories***Mandatory***Front connector**

20-pin, with spring-loaded contacts

- 1 unit
- 100 units

6ES7392-1BJ00-0AA0**6ES7392-1BJ00-1AB0**

40-pin, with spring-loaded contacts

- 1 unit
- 100 units

6ES7392-1BM01-0AA0**6ES7392-1BM01-1AB0***Consumables***Front door, elevated design****6ES7328-0AA00-7AA0**E.g. for 32-channel modules; for connecting 1.3 mm²/16 AWG conductors; circuit diagram and nameplates in petrol**Bus connectors****6ES7390-0AA00-0AA0**

1 unit (spare part)

Article No.**Labeling strips**

10 units; spare part

For modules with 20-pin front connector

6ES7392-2XX00-0AA0

For modules with 40-pin front connector

6ES7392-2XX10-0AA0**Label cover**

10 units; spare part

For modules with 20-pin front connector

6ES7392-2XY00-0AA0

For modules with 40-pin front connector

6ES7392-2XY10-0AA0*Documentation***SIMATIC Manual Collection****6ES7998-8XC01-8YE0**

Electronic manuals on DVD, multi-language: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC Distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC-based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC

SIMATIC Manual Collection update service for 1 year**6ES7998-8XC01-8YE2**

Current "Manual Collection" DVD and the three subsequent updates

Overview



- Analog outputs
- For connection of analog actuators

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Technical specifications

Article number	6AG1332-5HD01-7AB0	6AG1332-7ND02-4AB0	6AG1332-5HB01-2AB0	6AG1332-5HF00-2AB0
Based on	6ES7332-5HD01-0AB0 SIPLUS S7-300 SM332 4AQ U/I	6ES7332-7ND02-0AB0 SIPLUS S7-300 SM332 4AQ	6ES7332-5HB01-0AB0 SIPLUS S7-300 SM332 2AQ	6ES7332-5HF00-0AB0 SIPLUS S7-300 SM 332 8AQ - 40pol
Ambient conditions				
Ambient temperature during operation				
• min.	-25 °C; = Tmin	0 °C; = Tmin	-25 °C; = Tmin	-25 °C
• max.	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	60 °C; = Tmax	70 °C; = Tmax; for use on railway vehicles according to EN50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/ULhaz/ATEX/FM use applies	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	5 000 m	5 000 m	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity				
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance				
Use in stationary industrial systems				
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 analog modules

SIPLUS S7-300 SM 332**Technical specifications** (continued)

Article number	6AG1332-5HD01-7AB0	6AG1332-7ND02-4AB0	6AG1332-5HB01-2AB0	6AG1332-5HF00-2AB0
Based on	6ES7332-5HD01-0AB0 SIPLUS S7-300 SM332 4AQ U/I	6ES7332-7ND02-0AB0 SIPLUS S7-300 SM332 4AQ	6ES7332-5HB01-0AB0 SIPLUS S7-300 SM332 2AQ	6ES7332-5HF00-0AB0 SIPLUS S7-300 SM 332 8AQ - 40pol
Use on land craft, rail vehicles and special-purpose vehicles				
- to biologically active substances according to EN 60721-3-5			Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	
- to chemically active substances according to EN 60721-3-5			Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	
- to mechanically active substances according to EN 60721-3-5			Yes; Class 5S3 incl. sand, dust; *	
Use on ships/at sea				
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Remark				
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

Ordering data	Article No.	Ordering data	Article No.
SIPLUS S7-300 SM 332 analog output modules <i>For industrial applications with extended ambient conditions</i> <u>Extended temperature range and exposure to media</u> 2 outputs, 11/12-bit 4 outputs, 11/12-bit 8 outputs, 11/12-bit <u>Exposure to media</u> 4 outputs, 16-bit; only exposure to media <i>For rolling stock railway applications</i> <u>Conforms to EN 50155</u> 2 outputs, 11/12-bit	6AG1332-5HB01-2AB0 6AG1332-5HD01-7AB0 6AG1332-5HF00-2AB0 6AG1332-7ND02-4AB0 6AG1332-5HB01-2AB0	Bus connectors 1 unit (spare part)	6ES7390-0AA00-0AA0
Accessories <i>Mandatory</i> Front connector 20-pin, with spring-loaded contacts <ul style="list-style-type: none"> • 1 unit • 100 units 40-pin, with spring-loaded contacts <ul style="list-style-type: none"> • 1 unit • 100 units <i>Consumables</i> Front door, elevated design E.g. for 32-channel modules; for connecting 1.3 mm ² /16 AWG conductors; circuit diagram and nameplates in petrol	6ES7392-1BJ00-0AA0 6ES7392-1BJ00-1AB0 6ES7392-1BM01-0AA0 6ES7392-1BM01-1AB0 6ES7328-0AA00-7AA0	Labeling strips 10 units; spare part For modules with 20-pin front connector For modules with 40-pin front connector Label cover 10 units; spare part For modules with 20-pin front connector For modules with 40-pin front connector <i>Documentation</i> SIMATIC Manual Collection Electronic manuals on DVD, multi-language: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC Distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC-based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	6ES7392-2XX00-0AA0 6ES7392-2XX10-0AA0 6ES7392-2XY00-0AA0 6ES7392-2XY10-0AA0 6ES7998-8XC01-8YE0

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 analog modules

SIPLUS S7-300 SM 334**Overview**

- Analog inputs and outputs
- For connection of analog sensors and actuators

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Technical specifications

Article number	6AG1334-0KE00-7AB0
Based on	6ES7334-0KE00-0AB0 SIPLUS S7-300 SM334 4AE 2AQ
Ambient conditions	
Ambient temperature during operation	
• min.	-25 °C; = Tmin
• max.	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *
Use on ships/at sea	
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
Remark	
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!

Ordering data	Article No.	Ordering data	Article No.
SIPLUS S7-300 SM 334 analog input/output modules <i>For industrial applications with extended ambient conditions</i> <u>Extended temperature range and exposure to media</u> 4 inputs, 2 outputs; resistance measurement, Pt 100	6AG1334-0KE00-7AB0	Bus connectors 1 unit (spare part)	6ES7390-0AA00-0AA0
Accessories <i>Mandatory</i> Front connector 20-pin, with spring-loaded contacts <ul style="list-style-type: none"> • 1 unit • 100 units 40-pin, with spring-loaded contacts <ul style="list-style-type: none"> • 1 unit • 100 units 	6ES7392-1BJ00-0AA0 6ES7392-1BJ00-1AB0 6ES7392-1BM01-0AA0 6ES7392-1BM01-1AB0	Labeling strips 10 units; spare part For modules with 20-pin front connector For modules with 40-pin front connector	6ES7392-2XX00-0AA0 6ES7392-2XX10-0AA0
<i>Consumables</i> Front door, elevated design E.g. for 32-channel modules; for connecting 1.3 mm ² /16 AWG conductors; circuit diagram and nameplates in petrol	6ES7328-0AA00-7AA0	Label cover 10 units; spare part For modules with 20-pin front connector For modules with 40-pin front connector	6ES7392-2XY00-0AA0 6ES7392-2XY10-0AA0
		<i>Documentation</i> SIMATIC Manual Collection Electronic manuals on DVD, multi-language: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC Distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC-based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	6ES7998-8XC01-8YE0
		SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates	6ES7998-8XC01-8YE2

SIMATIC S7-300 Advanced Controllers

I/O modules

F-digital/analog modules

SM 326 F-digital input modules - Safety Integrated

Overview



- Digital inputs for the fail-safe SIMATIC S7 systems
- For connecting:
 - Switches and 2-wire proximity switches
 - Sensors according to NAMUR and mechanical contacts, also for signals from hazardous areas
- With integral safety functions for fail-safe operation
- Can be used in fail-safe operation
 - Centrally: with S7-31xF-2 DP
 - Distributed in ET 200M: with SIMATIC IM 151-7 F-CPU, S7-31xF-2 DP, S7-416F-2 and S7-400F/FH
- In standard operation can be used in the same way as S7-300 modules

Technical specifications

Article number	6ES7326-1RF01-0AB0	6ES7326-1BK02-0AB0
	SM326, 8DI, DC24V, failsafe	SM326, F-DI 24 X DC24V, failsafe
General information		
Product type designation	SM326, F-DI 8x 24 V DC	SM326, F-DI 24x 24 V DC
Supply voltage		
Rated value (DC)		24 V
Reverse polarity protection	Yes	Yes
Input current		
from load voltage L+ (without load), max.	160 mA	450 mA
from backplane bus 5 V DC, max.	90 mA	100 mA
Encoder supply		
Number of outputs	8	4; Isolated
Type of output voltage	8.2 V DC	
Output current		
• Rated value		400 mA
Power loss		
Power loss, typ.	4.5 W	10 W
Digital inputs		
Number of digital inputs	8	24
Number of simultaneously controllable inputs		
all mounting positions		
- up to 40 °C, max.	8	24
- up to 60 °C, max.	8	24; (at 24 V) or 18 (at 28.8 V)
Input voltage		
• Type of input voltage	DC	DC
• Rated value (DC)		24 V
• for signal "0"		-30 to +5V
• for signal "1"		+11 to +30V
Input current		
• for signal "0", max. (permissible quiescent current)	0.35 to 1.2 mA	2 mA
• for signal "1", typ.	2.1 to 7 mA	10 mA

Technical specifications (continued)

Article number	6ES7326-1RF01-0AB0	6ES7326-1BK02-0AB0
	SM326, 8DI, DC24V, failsafe	SM326, F-DI 24 X DC24V, failsafe
Input delay (for rated value of input voltage)		
for standard inputs		
- at "0" to "1", max.		3.4 ms
- at "1" to "0", max.		3.4 ms
for NAMUR inputs		
- at "0" to "1", max.	1.2 to 3 ms	
- at "1" to "0", max.	1.2 to 3 ms	
Cable length		
• shielded, max.	200 m	200 m
• unshielded, max.	100 m	100 m
Encoder		
Connectable encoders		
• 2-wire sensor		Yes; if short-circuit test is deactivated
- permissible quiescent current (2-wire sensor), max.		2 mA
Interrupts/diagnostics/status information		
Alarms		
• Diagnostic alarm	Yes; Parameterizable	Yes
Diagnostic messages		
• Diagnostic information readable		Yes
Ex(i) characteristics		
Module for Ex(i) protection	Yes	
Maximum values of input circuits (per channel)		
• Co (permissible external capacity), max.	3 µF	
• Io (short-circuit current), max.	13.9 mA	
• Lo (permissible external inductivity), max.	80 mH	
• Po (power of load), max.	33.1 mW	
• Uo (output no-load voltage), max.	10 V	
• Um (fault voltage), max.	60 V DC/30 V AC	
• Ta (permissible ambient temperature), max.	60 °C	60 °C
Potential separation		
Potential separation digital inputs		
• between the channels	Yes	Yes
• between the channels, in groups of		12
• between the channels and backplane bus	Yes	Yes
• between the channels and the power supply of the electronics	Yes	
Standards, approvals, certificates		
Highest safety class achievable in safety mode		
• acc. to DIN VDE 0801		AK 6
• acc. to EN 954	Cat. 4	Cat. 4
• SIL acc. to IEC 61508	SIL 2 (single-channel), SIL 3 (two-channel)	SIL 3
Use in hazardous areas		
• Test number KEMA	99 ATEX 2671 X	
Connection method		
required front connector	1x 40-pin	40-pin
Dimensions		
Width	80 mm	80 mm
Height	125 mm	125 mm
Depth	120 mm	120 mm
Weights		
Weight, approx.	482 g	442 g

SIMATIC S7-300 Advanced Controllers

I/O modules

F-digital/analog modules

SM 326 F-digital input modules - Safety Integrated

Ordering data	Article No.	Ordering data	Article No.
SM 326 F-digital input module		DIN rail for active bus modules	
24 inputs, 24 V DC	6ES7326-1BK02-0AB0	For max. 5 active bus modules for hot swapping function	
8 inputs, 24 V DC, NAMUR	6ES7326-1RF01-0AB0	<ul style="list-style-type: none"> • 483 mm (19") long • 530 mm long • 620 mm long • 2 000 mm long 	6ES7195-1GA00-0XA0 6ES7195-1GF30-0XA0 6ES7195-1GG30-0XA0 6ES7195-1GC00-0XA0
S7 Distributed Safety V5.4 SP5 Update 2 programming tool		Active bus module	6ES7195-7HC00-0XA0
<p>Task:</p> Configuration software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, WinAC RTX F, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco, ET 200SP		BM 1 x 80 for 1 module with 80 mm width	
<p>Requirement:</p> Windows 7 SP1 (64-bit), Windows 10 Professional/Enterprise (64-bit), Windows Server 2008 R2 SP1 (64-bit), Windows Server 2012 R2 (64-bit), Windows Server 2016 (64-bit); STEP 7 from V5.5 SP1; Please also note the operating systems that have been released for the STEP 7 version used		SITOP power supply module	6ES7307-1EA01-0AA0
Floating license for 1 user; software and documentation on DVD; license key on USB flash drive	6ES7833-1FC02-0YA5	For ET 200M; 120/230 V AC, 24 V DC, 5 A; Type PS 307-1E	
Floating license for 1 user; software, documentation and license key for download ¹⁾ ; email address required for delivery	6ES7833-1FC02-0YH5	Front connectors	
S7 Distributed Safety upgrade		40-pin, with screw contacts	
From V5.x to V5.4; floating license for 1 user; software and documentation on DVD; license key on USB flash drive	6ES7833-1FC02-0YE5	<ul style="list-style-type: none"> • 1 unit • 100 units 	6ES7392-1AM00-0AA0 6ES7392-1AM00-1AB0
STEP 7 Safety Advanced V15.1		40-pin, with spring-loaded contacts	
<p>Task:</p> Engineering tool for configuring and programming fail-safe user programs for SIMATIC S7-1200 FC, S7-1500F, S7-1500F Software Controller, S7-300F, S7-400F, WinAC RTX F, ET 200SP F Controller and the fail-safe ET 200SP, ET 200MP, ET 200S, ET 200M, ET 200iSP, ET 200pro and ET 200eco I/O		<ul style="list-style-type: none"> • 1 unit • 100 units 	6ES7392-1BM01-0AA0 6ES7392-1BM01-1AB0
<p>Requirement:</p> STEP 7 Professional V15.1		Front door, higher version, for F-modules	6ES7328-7AA10-0AA0
Floating license for 1 user; software and documentation on DVD; license key on USB flash drive	6ES7833-1FA15-0YA5	For F-modules; for connecting 1.3 mm ² /16 AWG wires; wiring diagram and labels in yellow	
Floating license for 1 user; software, documentation and license key for download ¹⁾ ; email address required for delivery	6ES7833-1FA15-0YH5	Labeling strips	6ES7392-2XX20-0AA0
		For F-modules (spare part); 10 units	
		Label cover	6ES7392-2XY20-0AA0
		For F-modules (spare part); 10 units	
		LK 393 cable guide	6ES7393-4AA10-0AA0
		For F-modules; L+ and M connections; 5 units	
		SIMATIC Manual Collection	6ES7998-8XC01-8YE0
		Electronic manuals on DVD, multi-language: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC Distributed I/O, SIMATIC HMI, SIMATIC sensors, SIMATIC NET, SIMATIC PC-based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	
		SIMATIC Manual Collection update service for 1 year	6ES7998-8XC01-8YE2
		Current "Manual Collection" DVD and the three subsequent updates	

¹⁾ For up-to-date information and download availability, see: <http://www.siemens.com/tia-online-software-delivery>

Overview



- Digital outputs for the fail-safe SIMATIC S7 systems
- Two versions (1 x current sourcing, 1 x current sinking)
- For connecting solenoid valves, DC contactors and indicator lights
- With integral safety functions for fail-safe operation
- Can be used in fail-safe operation
 - Centrally: with S7-31xF DP, S7-31xF PN/DP
 - Distributed in ET 200M: with SIMATIC IM 151-7 F-CPU, S7-31xF-2 DP, S7-41xF-2 and S7-400F/FH

Technical specifications

Article number	6ES7326-2BF10-0AB0	6ES7326-2BF41-0AB0
	SM326, F-DQ10XDC24V/2A PP, failsafe	SM 326, F-DQ 8 X DC 24V/2A PM
General information		
Product type designation	SM 326, F-DQ 10x24 V DC/2 A PP	SM 326, F-DQ 8x24 V DC/2 A PM
Supply voltage		
Rated value (DC)	24 V; 1L+	24 V; 1L+
Reverse polarity protection	Yes	Yes
Load voltage L+		
• Rated value (DC)	24 V; 2L+, 3L+	24 V; 2L+, 3L+
• Reverse polarity protection	No	No
Input current		
from supply voltage 1L+, max.	100 mA	75 mA
from load voltage 2L+ (without load), max.	100 mA	100 mA
from load voltage 3L+ (without load), max.	100 mA	100 mA
from backplane bus 5 V DC, max.	100 mA	100 mA
Power loss		
Power loss, typ.	6 W	12 W
Digital outputs		
Number of digital outputs	10	8
Short-circuit protection	Yes	Yes
Limitation of inductive shutdown voltage to		L+ (-33 V)
Switching capacity of the outputs		
• on lamp load, max.	5 W	5 W
Output voltage		
• for signal "1", min.	L+ (-1.0 V)	L+ (-1.0 V)
Output current		
• for signal "1" rated value	2 A	2 A
• for signal "1" permissible range for 0 to 40 °C, min.	7 mA	7 mA
• for signal "1" permissible range for 0 to 40 °C, max.	2.4 A	2 A; 2 A for horizontal installation, 1 A for vertical installation
• for signal "1" permissible range for 40 to 60 °C, min.	7 mA	7 mA
• for signal "1" permissible range for 40 to 60 °C, max.	2.4 A	1 A; for horizontal installation
• for signal "0" residual current, max.	0.5 mA	0.5 mA

SIMATIC S7-300 Advanced Controllers

I/O modules

F-digital/analog modules

SM 326 F-digital output modules - Safety Integrated**Technical specifications** (continued)

Article number	6ES7326-2BF10-0AB0 SM326, F-DQ10XDC24V/2A PP, failsafe	6ES7326-2BF41-0AB0 SM 326, F-DQ 8 X DC 24V/2A PM
Switching frequency		
• with resistive load, max.	25 Hz	30 Hz
• with inductive load, max.	25 Hz	2 Hz
• on lamp load, max.	10 Hz	10 Hz
Total current of the outputs (per group)		
horizontal installation		
- up to 40 °C, max.	10 A	7.5 A
- up to 60 °C, max.	6 A	5 A
vertical installation		
- up to 40 °C, max.	5 A	5 A
Cable length		
• shielded, max.	1 000 m	200 m; 200 m for SIL 3, AK 6, Cat 4
• unshielded, max.	600 m	200 m
Interrupts/diagnostics/status information		
Alarms		
• Diagnostic alarm	Yes	Yes; Parameterizable
Diagnostic messages		
• Diagnostic information readable	Yes	Yes
Potential separation		
Potential separation digital outputs		
• between the channels	Yes	Yes
• between the channels, in groups of 5	5	4
• between the channels and backplane bus	Yes	Yes
• between the channels and the power supply of the electronics	Yes	Yes
Standards, approvals, certificates		
Highest safety class achievable in safety mode		
• acc. to DIN VDE 0801	AK 5 and 6	
• acc. to EN 954	Cat. 4	Cat. 4
• SIL acc. to IEC 61508	SIL 3	SIL 3
Connection method		
required front connector	40-pin	40-pin
Dimensions		
Width	40 mm	80 mm
Height	125 mm	125 mm
Depth	120 mm	120 mm
Weights		
Weight, approx.	330 g	465 g

Ordering data	Article No.	Ordering data	Article No.
SM 326 F-digital output module		DIN rail for active bus modules	
10 outputs, 24 V DC, 2 A PP; width 40 mm	6ES7326-2BF10-0AB0	For max. 5 active bus modules, for function "Insertion and removal"	
8 outputs, 24 V DC, 2 A PM; width 80 mm	6ES7326-2BF41-0AB0	• 483 mm (19") long	6ES7195-1GA00-0XA0
S7 Distributed Safety V5.4 SP5 Update 2 programming tool		• 530 mm long	6ES7195-1GF30-0XA0
Task: Configuration software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, WinAC RTX F, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco, ET 200SP		• 620 mm long	6ES7195-1GG30-0XA0
Requirement: Windows 7 SP1 (64-bit), Windows 10 Professional/Enterprise (64-bit), Windows Server 2008 R2 SP1 (64-bit), Windows Server 2012 R2 (64-bit), Windows Server 2016 (64-bit); STEP 7 from V5.5 SP1; Please also note the operating systems that have been released for the STEP 7 version used		• 2 000 mm long	6ES7195-1GC00-0XA0
Floating license for 1 user; software and documentation on DVD; license key on USB flash drive	6ES7833-1FC02-0YA5	Active bus modules	
Floating license for 1 user; software, documentation and license key for download ¹⁾ ; email address required for delivery	6ES7833-1FC02-0YH5	BM 2 x 40 for accepting 2 I/O modules each 40 mm wide	6ES7195-7HB00-0XA0
S7 Distributed Safety upgrade		BM 1 x 80 for accepting 1 I/O module 80 mm wide	6ES7195-7HC00-0XA0
From V5.x to V5.4; floating license for 1 user; software and documentation on DVD; license key on USB flash drive	6ES7833-1FC02-0YE5	SITOP power supply module	6ES7307-1EA01-0AA0
STEP 7 Safety Advanced V15.1		For ET 200M; 120/230 V AC, 24 V DC, 5 A; Type PS 307-1E	
Task: Engineering tool for configuring and programming fail-safe user programs for SIMATIC S7-1200 FC, S7-1500F, S7-1500F Software Controller, S7-300F, S7-400F, WinAC RTX F, ET 200SP F Controller and the fail-safe ET 200SP, ET 200MP, ET 200S, ET 200M, ET 200iSP, ET 200pro and ET 200eco I/O		Front connectors	
Requirement: STEP 7 Professional V15.1		40-pin, with screw contacts	
Floating license for 1 user; software and documentation on DVD; license key on USB flash drive	6ES7833-1FA15-0YA5	• 1 unit	6ES7392-1AM00-0AA0
Floating license for 1 user; software, documentation and license key for download ¹⁾ ; email address required for delivery	6ES7833-1FA15-0YH5	• 100 units	6ES7392-1AM00-1AB0
		40-pin, with spring-loaded contacts	
		• 1 unit	6ES7392-1BM01-0AA0
		• 100 units	6ES7392-1BM01-1AB0
		Front door, higher version, for F-modules	6ES7328-7AA10-0AA0
		For F-modules; for connecting 1.3 mm ² /16 AWG wires; wiring diagram and labels in yellow	
		Labeling strips	6ES7392-2XX20-0AA0
		For F-modules (spare part), 10 units	
		Label cover	6ES7392-2XY20-0AA0
		For F-modules (spare part), 10 units	
		LK 393 cable guide	6ES7393-4AA10-0AA0
		For F-modules; L+ and M connections, 5 units	
		SIMATIC Manual Collection	6ES7998-8XC01-8YE0
		Electronic manuals on DVD, multi-language: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC Distributed I/O, SIMATIC HMI, SIMATIC sensors, SIMATIC NET, SIMATIC PC-based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	
		SIMATIC Manual Collection update service for 1 year	6ES7998-8XC01-8YE2
		Current "Manual Collection" DVD and the three subsequent updates	

¹⁾ For up-to-date information and download availability, see:
<http://www.siemens.com/tia-online-software-delivery>

SIMATIC S7-300 Advanced Controllers

I/O modules

F-digital/analog modules

SM 336 F-analog input modules - Safety Integrated

Overview



- Analog inputs for the fail-safe SIMATIC S7 systems
- Applicable in the ET 200M distributed I/O device with IM 153-2 HF as well as centrally with SIMATIC S7-31xF-2 DP
- Properties of the SM 336; F-AI 6 x 0/4 - 20 mA HART:
 - 6 analog inputs with galvanic isolation between channels and backplane bus
 - Input ranges: 0 to 20 mA, 4 to 20 mA
 - Short-circuit proof power supply from 2 or 4-wire transducer via the module
 - External encoder supply possible
 - Applicable in safety mode
 - HART communication
 - Firmware update using HW Config
 - Identification data

Technical specifications

Article number	6ES7336-4GE00-0AB0 SM 336, f.AI 6 X 0/4 ... 20mA HART
Supply voltage	
Rated value (DC)	24 V
Reverse polarity protection	Yes
Input current	
From power supply L+, typ.	150 mA
from backplane bus 5 V DC, max.	90 mA
Power loss	
Power loss, typ.	4.5 W
Analog inputs	
Number of analog inputs	6
permissible input current for current input (destruction limit), max.	40 mA
Input ranges (rated values), currents	
• 0 to 20 mA	Yes
• 4 mA to 20 mA	Yes
Cable length	
• shielded, max.	1 000 m
Analog value generation for the inputs	
Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	16 bit; 15 bit + sign
• Integration time (ms)	20 ms @ 50 Hz, 16.7 ms @ 60 Hz
• Interference voltage suppression for interference frequency f1 in Hz	f=n x (f1 ±0.5 %)
Encoder	
Connection of signal encoders	
• for current measurement as 2-wire transducer	Yes
• for current measurement as 4-wire transducer	Yes

Article number	6ES7336-4GE00-0AB0 SM 336, f.AI 6 X 0/4 ... 20mA HART
Errors/accuracies	
Operational error limit in overall temperature range	
• Current, relative to input range, (+/-)	0.2 %; 40 µA
Basic error limit (operational limit at 25 °C)	
• Current, relative to input range, (+/-)	0.1 %
Interrupts/diagnostics/status information	
Alarms	
• Diagnostic alarm	Yes
Diagnostic messages	
• Diagnostic information readable	Yes
Potential separation	
Potential separation analog inputs	
• between the channels	Yes
• between the channels and backplane bus	Yes
• between the channels and the power supply of the electronics	Yes
Standards, approvals, certificates	
Highest safety class achievable in safety mode	
• acc. to EN 954	4
• SIL acc. to IEC 61508	SIL 3
Connection method	
required front connector	20-pin
Dimensions	
Width	40 mm
Height	125 mm
Depth	120 mm
Weights	
Weight, approx.	350 g

Ordering data	Article No.	Ordering data	Article No.
SM 336 F-analog input module 6 inputs, 15 bit, 0/4 - 20 mA HART	6ES7336-4GE00-0AB0	DIN rail for active bus modules For max. 5 active bus modules for hot swapping function	
S7 Distributed Safety V5.4 SP5 Update 2 programming tool Task: Configuration software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, WinAC RTX F, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco, ET 200SP Requirement: Windows 7 SP1 (64-bit), Windows 10 Professional/Enterprise (64-bit), Windows Server 2008 R2 SP1 (64-bit), Windows Server 2012 R2 (64-bit), Windows Server 2016 (64-bit); STEP 7 from V5.5 SP1; Please also note the operating systems that have been released for the STEP 7 version used Floating license for 1 user; software and documentation on DVD; license key on USB flash drive Floating license for 1 user; software, documentation and license key for download ¹⁾ ; email address required for delivery		• 483 mm long • 530 mm long • 620 mm long • 2 000 mm long	6ES7195-1GA00-0XA0 6ES7195-1GF30-0XA0 6ES7195-1GG30-0XA0 6ES7195-1GC00-0XA0
	6ES7833-1FC02-0YA5	Active bus module BM 2x40 Bus module for accepting 2 I/O modules each 40 mm wide	6ES7195-7HB00-0XA0
	6ES7833-1FC02-0YH5	SITOP power supply module For ET 200M; 120/230 V AC, 24 V DC, 5 A; Type PS 307-1E	6ES7307-1EA01-0AA0
S7 Distributed Safety upgrade From V5.x to V5.4; floating license for 1 user; software and documentation on DVD; license key on USB flash drive	6ES7833-1FC02-0YE5	Front connectors 20-pin, with screw contacts • 1 unit • 100 units 20-pin, with spring-loaded contacts • 1 unit • 100 units	6ES7392-1AJ00-0AA0 6ES7392-1AJ00-1AB0 6ES7392-1BJ00-0AA0 6ES7392-1BJ00-1AB0
STEP 7 Safety Advanced V15.1 Task: Engineering tool for configuring and programming fail-safe user programs for SIMATIC S7-1200 FC, S7-1500F, S7-1500F Software Controller, S7-300F, S7-400F, WinAC RTX F, ET 200SP F Controller and the fail-safe ET 200SP, ET 200MP, ET 200S, ET 200M, ET 200iSP, ET 200pro and ET 200eco I/O Requirement: STEP 7 Professional V15.1 Floating license for 1 user; software and documentation on DVD; license key on USB flash drive Floating license for 1 user; software, documentation and license key for download ¹⁾ ; email address required for delivery		Front door, higher version, for F-modules For F-modules; for connecting 1.3 mm ² /16 AWG wires; wiring diagram and labels in yellow	6ES7328-7AA10-0AA0
	6ES7833-1FA15-0YA5	Labeling strips For F-modules (spare part), 10 units	6ES7392-2XX20-0AA0
	6ES7833-1FA15-0YH5	Label cover For F-modules (spare part), 10 units	6ES7392-2XY20-0AA0
		LK 393 cable guide For F-modules; L+ and M connections, 5 units	6ES7393-4AA10-0AA0
		SIMATIC Manual Collection Electronic manuals on DVD, multi-language: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC Distributed I/O, SIMATIC HMI, SIMATIC sensors, SIMATIC NET, SIMATIC PC-based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	6ES7998-8XC01-8YE0
		SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates	6ES7998-8XC01-8YE2

¹⁾ For up-to-date information and download availability, see: <http://www.siemens.com/tia-online-software-delivery>

SIMATIC S7-300 Advanced Controllers

I/O modules

F-digital/analog modules

Safety protector

Overview



- Supports mixed operation of fail-safe signal modules in safety mode and S7-300 standard modules in an ET 200M distributed I/O device for achieving Cat. 4 or SIL 3.
- The safety protector is not required if the safety class or safety category to be achieved is less than SIL 3 or Cat. 4, respectively.

When Cat. 4/SIL 3 is required, the safety protector must be implemented in the following situations:

Application	Safety protector must be used
Central use after CPU 31xF-2 DP or CPU 31xF-2 PN/DP <ul style="list-style-type: none"> • Only fail-safe modules in the tier • Standard and fail-safe modules in the tier 	Yes, behind the CPU Yes, after the last standard module and before the first fail-safe module
Central use after CPU 31xF-2 DP or CPU 31xF-2 PN/DP in an expansion rack <ul style="list-style-type: none"> • Only fail-safe modules in the tier • Standard and fail-safe modules in the tier 	Yes, after the IM 36x Yes, after the last standard module and before the first fail-safe module
Distributed behind the IM 153-2 with copper connection <ul style="list-style-type: none"> • Only fail-safe modules in the station • Standard and fail-safe modules in the station 	Yes, after the IM 153-2 Yes, after the last standard module and before the first fail-safe module
Distributed behind the IM 153-2 with fiber-optic connection <ul style="list-style-type: none"> • Only fail-safe modules in the station • Standard and fail-safe modules in the station 	No Yes, after the last standard module and before the first fail-safe module

Technical specifications

Article number	6ES7195-7KF00-0XA0 Safety Protector betw. F- and Std-Mod.
Weights	
Weight, approx.	10 g

Ordering data

Article No.

Safety protector For simultaneous operation of fail-safe and standard modules in ET 200M	6ES7195-7KF00-0XA0
Bus safety protector For holding the safety protector in ET 200M	6ES7195-7HG00-0XA0

Overview



- Digital inputs for the fail-safe SIPLUS S7 systems
- For connecting:
 - Switches and 2-wire proximity switches
 - Sensors according to NAMUR and mechanical contacts, also for signals from hazardous areas
- With integral safety functions for fail-safe operation
- Can be used in fail-safe operation
 - Centrally: with S7-31xF-2 DP
 - Distributed in ET 200M: With SIMATIC IM 151-7 F-CPU, S7-31xF-2 DP, S7-416F-2 and S7-400F/FH
- In standard operation can be used in the same way as S7-300 modules

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Technical specifications

Article number	6AG1326-1BK02-2AB0	6AG1326-1BK02-2AY0	6AG1326-1RF01-4AB0
Based on	6ES7326-1BK02-0AB0 SIPLUS S7-300 SM326F DI24	6ES7326-1BK02-0AB0 SIPLUS S7-300 SM326F DI24	6ES7326-1RF01-0AB0 SIPLUS S7-300 SM326F DI8 NAMUR
Ambient conditions			
Ambient temperature during operation			
• min.	-25 °C; = Tmin	-25 °C; = Tmin	0 °C; = Tmin
• max.	60 °C; = Tmax; *+70 °C where forced convection with a minimum air velocity of 0.7 m/s through the modules and rated voltage of 24 V ±5 % are ensured. If in the course of maintenance or automatic diagnosis it is determined that the admissible specified parameters have been exceeded, the modules should be subjected to a proof test (function check) by the manufacturer.	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155	60 °C; = Tmax
Altitude during operation relating to sea level			
• Installation altitude above sea level, max.	2 000 m	2 000 m	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity			
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance			
Use in stationary industrial systems			
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 F-digital/analog modules

SIPLUS S7-300 SM 326 - Safety Integrated**Technical specifications** (continued)

Article number	6AG1326-1BK02-2AB0	6AG1326-1BK02-2AY0	6AG1326-1RF01-4AB0
Based on	6ES7326-1BK02-0AB0 SIPLUS S7-300 SM326F DI24	6ES7326-1BK02-0AB0 SIPLUS S7-300 SM326F DI24	6ES7326-1RF01-0AB0 SIPLUS S7-300 SM326F DI8 NAMUR
Use on land craft, rail vehicles and special-purpose vehicles			
- to biologically active substances according to EN 60721-3-5		Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	
- to chemically active substances according to EN 60721-3-5		Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	
- to mechanically active substances according to EN 60721-3-5		Yes; Class 5S3 incl. sand, dust; *	
Use on ships/at sea			
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request		Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *		Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *		Yes; Class 6S3 incl. sand, dust; *
Remark			
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

Ordering data**SIPLUS S7-300 SM 326 F-digital input***For industrial applications with extended ambient conditions*Extended temperature range and exposure to media

24 inputs, 24 V DC, failsafe, with diagnostics interrupt

6AG1326-1BK02-2AB0

8 inputs, 24 V DC, NAMUR, failsafe

6AG1326-1RF01-4AB0*For rolling stock railway applications*Conforms to EN 50155

24 inputs, 24 V DC, failsafe, with diagnostics interrupt

6AG1326-1BK02-2AY0**Accessories***Mandatory***Front connector**

40-pin, with spring-loaded contacts

- 1 unit
- 100 units

6ES7392-1BM01-0AA0
6ES7392-1BM01-1AB0*Accessories for hot swapping function***Active bus module**

BM 1 x 80 for 1 module, 80 mm wide

6AG1195-7HC00-2XA0**Article No.***Consumables***DIN rail for active bus modules**

For max. 5 active bus modules for hot swapping function

- Length 483 mm (19")
- Length 530 mm
- Length 620 mm
- Length 2000 mm

6ES7195-1GA00-0XA0
6ES7195-1GF30-0XA0
6ES7195-1GG30-0XA0
6ES7195-1GC00-0XA0**Front door, elevated design, for F-modules**For F-modules; for connecting 1.3 mm²/16 AWG wires; wiring diagram and labels in yellow**6ES7328-7AA10-0AA0****Labeling strips**

For F-modules (spare part); 10 units

6ES7392-2XX20-0AA0**Label cover**

For F-modules (spare part); 10 units

6ES7392-2XY20-0AA0**LK 393 cable guide**

For F-modules; L+ and M connections; 5 units

6ES7393-4AA10-0AA0

Ordering data	Article No.	Article No.
<p><i>Programming tools and documentation</i></p> <p>S7 Distributed Safety V5.4 SP5 Update 2 programming tool</p> <p>Task: Configuration software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, WinAC RTX F, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco, ET 200SP</p> <p>Requirement: Windows 7 SP1 (64-bit), Windows 10 Professional/Enterprise (64-bit), Windows Server 2008 R2 SP1 (64-bit), Windows Server 2012 R2 (64-bit), Windows Server 2016 (64-bit); STEP 7 as of V5.5 SP1; Please also consider the operating systems that have been released for the used STEP 7 version</p> <p>Floating license for 1 user; software and documentation on DVD; license key on USB flash drive</p> <p>Floating license for 1 user; software, documentation and license key for download¹⁾; email address required for delivery</p> <p>S7 Distributed Safety upgrade</p> <p>From V5.x to V5.4; floating license for 1 user; software and documentation on DVD; license key on USB flash drive</p>	<p>6ES7833-1FC02-0YA5</p> <p>6ES7833-1FC02-0YH5</p> <p>6ES7833-1FC02-0YE5</p>	<p>STEP 7 Safety Advanced V15.1</p> <p>Task: Engineering tool for configuring and programming fail-safe user programs for SIMATIC S7-1200 FC, S7-1500F, S7-1500F Software Controller, S7-300F, S7-400F, WinAC RTX F, ET 200SP F Controller and the fail-safe ET 200SP, ET 200MP, ET 200S, ET 200M, ET 200iSP, ET 200pro and ET 200eco I/O</p> <p>Requirement: STEP 7 Professional V15.1</p> <p>Floating license for 1 user, software and documentation on DVD; license key on USB flash drive</p> <p>Floating license for 1 user, software, documentation and license key for download¹⁾; email address required for delivery</p> <p>SIMATIC Manual Collection</p> <p>Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC Distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC-based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC</p> <p>SIMATIC Manual Collection update service for 1 year</p> <p>Current "Manual Collection" DVD and the three subsequent updates</p>
		<p>6ES7833-1FA15-0YA5</p> <p>6ES7833-1FA15-0YH5</p> <p>6ES7998-8XC01-8YE0</p> <p>6ES7998-8XC01-8YE2</p>

¹⁾ For up-to-date information and download availability, see:
<http://www.siemens.com/tia-online-software-delivery>

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 F-digital/analog modules

SIPLUS S7-300 SM 326 - Safety Integrated**Overview**

- Digital outputs for the fail-safe SIMATIC S7 systems
- For connection of solenoid valves, DC contactors and indicator lights
- With integral safety functions for fail-safe operation
- Can be used in fail-safe mode
 - Centrally: With S7-31xF-2 DP
 - Distributed in ET 200M: With SIMATIC IM 151-7 F-CPU, S7-31xF-2 DP, S7-416F-2 and S7-400F/FH

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Technical specifications

Article number	6AG1326-2BF10-2AB0	6AG1326-2BF10-2AY0	6AG1326-2BF41-2AB0	6AG1326-2BF41-2AY0
Based on	6ES7326-2BF10-0AB0 SIPLUS S7-300 SM326F 10 DQ	6ES7326-2BF10-0AB0 SIPLUS S7-300 SM326 10F-DQ	6ES7326-2BF41-0AB0 SIPLUS S7-300 SM326F DQ8	6ES7326-2BF41-0AB0 SIPLUS S7-300 SM326 F DQ8 EN50155
Ambient conditions				
Ambient temperature during operation				
• min.	-25 °C	-25 °C; = Tmin	-25 °C	-25 °C; = Tmin
• max.	60 °C; = Tmax; *+70 °C when forced convection at a minimum air speed of 0.3 m/s through the modules is ensured. If in the course of maintenance or automatic diagnosis it is determined that the admissible specified parameters have been exceeded, the modules should be subjected to a proof test (function check) by the manufacturer.	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155	60 °C	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155
Altitude during operation relating to sea level				
• Installation altitude above sea level, max.	2 000 m	2 000 m	2 000 m	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity				
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance				
Use in stationary industrial systems				
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 F-digital/analog modules

SIPLUS S7-300 SM 326 - Safety Integrated

Technical specifications (continued)

Article number	6AG1326-2BF10-2AB0	6AG1326-2BF10-2AY0	6AG1326-2BF41-2AB0	6AG1326-2BF41-2AY0
Based on	6ES7326-2BF10-0AB0 SIPLUS S7-300 SM326F 10 DQ	6ES7326-2BF10-0AB0 SIPLUS S7-300 SM326 10F-DQ	6ES7326-2BF41-0AB0 SIPLUS S7-300 SM326F DQ8	6ES7326-2BF41-0AB0 SIPLUS S7-300 SM326 F DQ8 EN50155
Use on land craft, rail vehicles and special-purpose vehicles				
- to biologically active substances according to EN 60721-3-5		Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request		Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5		Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *		Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5		Yes; Class 5S3 incl. sand, dust; *		Yes; Class 5S3 incl. sand, dust; *
Use on ships/at sea				
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request		Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *		Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *		Yes; Class 6S3 incl. sand, dust; *	
Remark				
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

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Ordering data

SIPLUS S7-300 SM 326 F-digital output

For industrial applications with extended ambient conditions

Extended temperature range and exposure to media

10 outputs, 24 V DC, 2 A, failsafe
8 outputs, 24 V DC, 2 A, failsafe, current sinking output

For rolling stock railway applications

Conforms to EN 50155

10 outputs, 24 V DC, 2 A, failsafe
8 outputs, 24 V DC, 2 A, failsafe, current sinking output

Accessories

Mandatory

Front connector

40-pin, with spring-loaded contacts

- 1 unit
- 100 units

Article No.

6AG1326-2BF10-2AB0

6AG1326-2BF41-2AB0

6AG1326-2BF10-2AY0

6AG1326-2BF41-2AY0

6ES7392-1BM01-0AA0

6ES7392-1BM01-1AB0

Article No.

Accessories for hot swapping function

Active bus module

BM 2 x 40 for accepting 2 I/O modules, each 40 mm wide

6AG1195-7HB00-7XA0

BM 1 x 80 for 1 module, 80 mm wide

6AG1195-7HC00-2XA0

Consumables

DIN rail for active bus modules

For max. 5 active bus modules for hot swapping function

- Length 483 mm (19")
- Length 530 mm
- Length 620 mm
- Length 2000 mm

6ES7195-1GA00-0XA0

6ES7195-1GF30-0XA0

6ES7195-1GG30-0XA0

6ES7195-1GC00-0XA0

Front door, elevated design, for F-modules

6ES7328-7AA10-0AA0

For F-modules; for connecting 1.3 mm²/16 AWG wires; wiring diagram and labels in yellow

Labeling strips

6ES7392-2XX20-0AA0

For F-modules (spare part); 10 units

Label cover

6ES7392-2XY20-0AA0

For F-modules (spare part); 10 units

LK 393 cable guide

6ES7393-4AA10-0AA0

For F-modules;
L+ and M connections; 5 units

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 F-digital/analog modules

SIPLUS S7-300 SM 326 - Safety Integrated**Ordering data****Article No.****Article No.***Programming tools and documentation***S7 Distributed Safety V5.4 SP5 Update 2 programming tool**

Task:

Configuration software for configuring fail-safe user programs for SIMATIC S7-300F, S7-400F, WinAC RTX F, ET 200S, ET 200M, ET 200iSP, ET 200pro, ET 200eco, ET 200SP

Requirement:

Windows 7 SP1 (64-bit), Windows 10 Professional/Enterprise (64-bit), Windows Server 2008 R2 SP1 (64-bit), Windows Server 2012 R2 (64-bit), Windows Server 2016 (64-bit); STEP 7 as of V5.5 SP1; Please also consider the operating systems that have been released for the used STEP 7 version

Floating license for 1 user; software and documentation on DVD; license key on USB flash drive

6ES7833-1FC02-0YA5

Floating license for 1 user; software, documentation and license key for download¹⁾; email address required for delivery

6ES7833-1FC02-0YH5**S7 Distributed Safety upgrade**

From V5.x to V5.4; floating license for 1 user; software and documentation on DVD; license key on USB flash drive

6ES7833-1FC02-0YE5**STEP 7 Safety Advanced V15.1**

Task:

Engineering tool for configuring and programming fail-safe user programs for SIMATIC S7-1200 FC, S7-1500F, S7-1500F Software Controller, S7-300F, S7-400F, WinAC RTX F, ET 200SP F Controller and the fail-safe ET 200SP, ET 200MP, ET 200S, ET 200M, ET 200iSP, ET 200pro and ET 200eco I/O

Requirement:

STEP 7 Professional V15.1

Floating license for 1 user, software and documentation on DVD; license key on USB flash drive

6ES7833-1FA15-0YA5

Floating license for 1 user, software, documentation and license key for download¹⁾; email address required for delivery

6ES7833-1FA15-0YH5**SIMATIC Manual Collection****6ES7998-8XC01-8YE0**

Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC Distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC-based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC

SIMATIC Manual Collection update service for 1 year**6ES7998-8XC01-8YE2**

Current "Manual Collection" DVD and the three subsequent updates

¹⁾ For up-to-date information and download availability, see: <http://www.siemens.com/tia-online-software-delivery>

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 F-digital/analog modules

SIPLUS S7-300 SM 336 - Safety Integrated

Overview



- Analog inputs for fail-safe SIPLUS S7 systems
- Applicable in the ET 200M distributed I/O device with IM 153-2 HF as well as centrally with SIPLUS S7-31xF-2 DP
- Properties of the SM 336; F-AI 6 x 0/4 ... 20 mA HART:
 - 6 analog inputs with galvanic isolation between channels and backplane bus
 - Input ranges: 0 mA to 20 mA, 4 mA to 20 mA
 - Short-circuit proof power supply of 2 or 4-wire transmitter via the module
 - External encoder supply possible
 - Applicable in safety mode
 - HART communication
 - Firmware update using HW Config
 - Identification data
 - Temperature range -25 ... +70 °C; (+70 °C when ensuring a forced convection with a minimal air velocity of 0.3 m/s through the module. If a violation of the permissible, specified parameters is detected during maintenance or by automatic diagnostics, the modules must be proof-tested by the manufacturer. Without this measure the temperature range is -25...60°C)

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Technical specifications

Article number	6AG1336-4GE00-2AB0
Based on	6ES7336-4GE00-0AB0 SIPLUS S7-300 SM336 F 6AI 15BIT
Ambient conditions	
Ambient temperature during operation	
• min.	-25 °C; = Tmin; Startup @ -25 °C
• max.	60 °C; = T max; *+70 °C when forced convection at a minimum air speed of 0.3 m/s through the modules is ensured. If in the course of maintenance or automatic diagnosis it is determined that the admissible specified parameters have been exceeded, the modules should be subjected to a proof test (function check) by the manufacturer.
• At cold restart, min.	-25 °C
Ambient temperature during storage/transportation	
• min.	-40 °C
• max.	70 °C
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *
Use on ships/at sea	
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
Remark	
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 F-digital/analog modules

SIPLUS S7-300 SM 336 - Safety Integrated

Ordering data

Article No.

**SIPLUS S7-300 SM 336
F-analog input module***For industrial applications with
extended ambient conditions*Extended temperature range and
exposure to media6 inputs, 15 bits, 0/4 ... 20 mA
HART**6AG1336-4GE00-2AB0****Accessories***Mandatory***Front connector**

20-pin, with spring-loaded contacts

- 1 unit
- 100 units

6ES7392-1BJ00-0AA0**6ES7392-1BJ00-1AB0***Accessories for hot swapping
function***Active bus module**BM 2 x 40 for accepting
2 I/O modules, each 40 mm wide**6AG1195-7HB00-7XA0***Consumables***DIN rail for active bus modules**For max. 5 active bus modules for
hot swapping function

- Length 483 mm (19")
- Length 530 mm
- Length 620 mm
- Length 2000 mm

6ES7195-1GA00-0XA0**6ES7195-1GF30-0XA0****6ES7195-1GG30-0XA0****6ES7195-1GC00-0XA0****Front door, elevated design,
for F-modules****6ES7328-7AA10-0AA0**For F-modules; for connecting
1.3 mm²/16 AWG wires; wiring
diagram and labels in yellow**Labeling strips****6ES7392-2XX20-0AA0**

For F-modules (spare part); 10 units

Label cover**6ES7392-2XY20-0AA0**

For F-modules (spare part); 10 units

LK 393 cable guide**6ES7393-4AA10-0AA0**For F-modules;
L+ and M connections; 5 units*Programming tools and
documentation***S7 Distributed Safety V5.4 SP5
Update 2 programming tool**

Task:

Configuration software for
configuring fail-safe user programs
for SIMATIC S7-300F, S7-400F,
WinAC RTX F, ET 200S, ET 200M,
ET 200iSP, ET 200pro, ET 200eco,
ET 200SP

Requirement:

Windows 7 SP1 (64-bit),
Windows 10 Professional/Enterprise
(64-bit),
Windows Server 2008 R2 SP1
(64-bit),
Windows Server 2012 R2 (64-bit),
Windows Server 2016 (64-bit);
STEP 7 as of V5.5 SP1;
Please also consider the operating
systems that have been released
for the used STEP 7 versionFloating license for 1 user;
software and documentation on
DVD; license key on USB flash drive**6ES7833-1FC02-0YA5**Floating license for 1 user;
software, documentation and
license key for download¹⁾;
email address required for delivery**6ES7833-1FC02-0YH5****S7 Distributed Safety upgrade**From V5.x to V5.4;
floating license for 1 user;
software and documentation on
DVD; license key on USB flash drive**6ES7833-1FC02-0YE5****STEP 7 Safety Advanced V15.1**

Task:

Engineering tool for configuring and
programming fail-safe user
programs for SIMATIC S7-1200 FC,
S7-1500F, S7-1500F Software
Controller, S7-300F, S7-400F,
WinAC RTX F, ET 200SP F Controller
and the fail-safe ET 200SP,
ET 200MP, ET 200S, ET 200M,
ET 200iSP, ET 200pro and
ET 200eco I/O

Requirement:

STEP 7 Professional V15.1

Floating license for 1 user,
software and documentation on
DVD; license key on USB flash drive**6ES7833-1FA15-0YA5**Floating license for 1 user,
software, documentation and
license key for download¹⁾;
email address required for delivery**6ES7833-1FA15-0YH5****SIMATIC Manual Collection****6ES7998-8XC01-8YE0**Electronic manuals on DVD,
multilingual:
LOGO!, SIMADYN, SIMATIC bus
components, SIMATIC C7,
SIMATIC Distributed I/O,
SIMATIC HMI, SIMATIC Sensors,
SIMATIC NET, SIMATIC PC-based
Automation, SIMATIC PCS 7,
SIMATIC PG/PC, SIMATIC S7,
SIMATIC Software, SIMATIC TDC**SIMATIC Manual Collection
update service for 1 year****6ES7998-8XC01-8YE2**Current "Manual Collection" DVD
and the three subsequent updates

¹⁾ For up-to-date information and download availability, see:
<http://www.siemens.com/tia-online-software-delivery>

Overview



- Allows combined operation of fail-safe signal modules in safety mode and S7-300 standard modules in an ET 200M.
- The safety protector is not required if the safety class SIL 3 or safety category < Cat. 4 is to be achieved.

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Technical specifications

Article number	6AG1195-7KF00-2XA0
Based on	6ES7195-7KF00-0XA0 SIPLUS S7-300 safety protector
Ambient conditions	
Ambient temperature during operation	
• min.	-25 °C; = Tmin
• max.	60 °C; = Tmax
Ambient temperature during storage/transportation	
• min.	-40 °C
• max.	70 °C
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *
Use on ships/at sea	
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
Remark	
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!

Ordering data

Article No.

SIPLUS F safety protector

For the simultaneous operation of fail-safe and standard modules in the same ET 200M

For industrial applications with extended ambient conditions

Extended temperature range and exposure to media

6AG1195-7KF00-2XA0

Accessories

SIPLUS ET 200M bus safety protector F

For the simultaneous operation of fail-safe and standard modules in ET 200 M for the hot swapping function

Extended temperature range and exposure to media

6AG1195-7HG00-2XA0

SIMATIC S7-300 Advanced Controllers

I/O modules

Ex digital modules

Ex digital input modules

Overview



- Digital inputs for signals from the Ex field
- For the connection of intrinsically safe digital equipment from the Ex field
- 4 DI NAMUR
- 4 digital inputs in 4 channel modules (single-channel isolation)
- Connectable encoder in accordance with EN 60947-5-6 and NAMUR, optionally with wired or unwired mechanical contacts
- Diagnostics and diagnostics alarm programmable

5

Technical specifications

Article number	6ES7321-7RD00-0AB0 SM321, 4DI, DC24V, HAZARDOUS AREAS
Supply voltage	
Load voltage L+	
• Rated value (DC)	24 V
Input current	
from load voltage L+ (without load), max.	50 mA
from backplane bus 5 V DC, max.	80 mA
Encoder supply	
Type of output voltage	via the inputs
Power loss	
Power loss, typ.	1.1 W
Digital inputs	
Number of NAMUR inputs	4
Input voltage	
• Rated value (DC)	8.2 V; from internal power circuit supply
Input current	
• on wire-break, max.	0.1 mA
• on short-circuit, max.	8.5 mA
for NAMUR encoders	
- for signal "0"	0.35 to 1.2 mA
- for signal "1"	2.1 to 7 mA
Input delay (for rated value of input voltage)	
• Input frequency (with a time delay of 0.1 ms), max.	2 kHz
for NAMUR inputs	
- parameterizable	Yes; 0.1 / 0.5 / 3 / 15 / 20 ms (plus 0.25 ms preparation time)
Cable length	
• unshielded, max.	200 m
Encoder	
Connectable encoders	
• NAMUR encoder	Yes; Two-wire connection

Article number	6ES7321-7RD00-0AB0 SM321, 4DI, DC24V, HAZARDOUS AREAS
Interrupts/diagnostics/status information	
Diagnostic messages	
• Diagnostic information readable	Yes
Ex(i) characteristics	
Maximum values of input circuits (per channel)	
• Co (permissible external capacity), max.	3 µF
• Io (short-circuit current), max.	14.1 mA
• Lo (permissible external inductivity), max.	100 mH
• Po (power of load), max.	33.7 mW
• Uo (output no-load voltage), max.	10 V
Potential separation	
Potential separation digital inputs	
• Potential separation digital inputs	Yes
• between the channels, in groups of	1
Standards, approvals, certificates	
Use in hazardous areas	
• Type of protection acc. to EN 50020 (CENELEC)	[EEx ib] IIC
• Type of protection acc. to FM	Class II, Division 2, Group A, B, C, D T4
• Test number PTB	Ex-96.D.2094X
Ambient conditions	
Ambient temperature during operation	
• max.	60 °C
Connection method	
required front connector	20-pin
Weights	
Weight, approx.	230 g

Ordering data	Article No.		Article No.
Ex digital input module 4 inputs, isolated, NAMUR	6ES7321-7RD00-0AB0	Labeling sheets for machine inscription for modules with 20-pin front connector, DIN A4, for printing with laser printer; 10 units	
Front connector 20-pin, with screw contacts • 1 unit • 100 units	6ES7392-1AJ00-0AA0 6ES7392-1AJ00-1AB0	Petrol	6ES7392-2AX00-0AA0
Front door, elevated design e.g. for 32 channel modules; enables connection of 1.3 mm ² /16 AWG wires	6ES7328-0AA00-7AA0	Light beige	6ES7392-2BX00-0AA0
LK 393 cable guide Mandatory for operation in Ex-hazard areas	6ES7393-4AA00-0AA0	Yellow	6ES7392-2CX00-0AA0
Labeling strips 10 units (spare part), for modules with 20-pin front connector	6ES7392-2XX00-0AA0	Red	6ES7392-2DX00-0AA0
Label cover 10 units (spare part), for modules with 20-pin front connector	6ES7392-2XY00-0AA0	SIMATIC Manual Collection Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC Distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC-based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	6ES7998-8XC01-8YE0
		SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates	6ES7998-8XC01-8YE2

SIMATIC S7-300 Advanced Controllers

I/O modules

Ex digital modules

Ex digital output modules

Overview



- Digital outputs for signals from the Ex field
- For the connection of intrinsically safe digital equipment from the Ex field
- 4 DQ 24 V DC/10mA or 4 DQ 15 V DC/20 mA
- 4 digital outputs in 4 channel modules (single-channel isolation)
- Diagnostics and diagnostics alarm programmable
- Substitute value behavior programmable

Technical specifications

Article number	6ES7322-5SD00-0AB0	6ES7322-5RD00-0AB0
	SM322, 4DQ, 24V DC, 10MA, HAZARDOUS AREAS	SM322, 4DQ, 15V DC, 20MA, HAZARDOUS AREAS
Supply voltage		
Load voltage L+		
• Rated value (DC)	24 V	24 V
Input current		
from load voltage L+ (without load), max.	160 mA	160 mA
from backplane bus 5 V DC, max.	85 mA	85 mA
Power loss		
Power loss, typ.	3 W	3 W
Digital outputs		
Number of digital outputs	4	4
Short-circuit protection	Yes; Electronic	Yes; Electronic
• Response threshold, typ.	Output current with short-circuit protection, min. 10 mA + 10 %	Output current with short-circuit protection, min. 20.5 mA + 10 %
Load resistance range		
• upper limit	390 Ω; Two-wire connection	200 Ω; Two-wire connection
Output voltage		
• Rated value (DC)	24 V	15 V
Output current		
• for signal "1" permissible range for 0 to 60 °C, max.	10 mA; ±10 %	20 mA; ±10 %
Switching frequency		
• with resistive load, max.	100 Hz	100 Hz
Cable length		
• unshielded, max.	200 m	200 m
Interrupts/diagnostics/status information		
Diagnostic messages		
• Diagnostic information readable	Yes	Yes
• Short-circuit	Yes	Yes
Ex(i) characteristics		
Maximum values of output circuits (per channel)		
• Co (permissible external capacity), max.	90 nF	500 nF
• Io (short-circuit current), max.	70 mA	85 mA
• Lo (permissible external inductivity), max.	6.7 mH	5 mH
• Po (power of load), max.	440 mW	335 mW
• Uo (output no-load voltage), max.	25.2 V	15.75 V

Technical specifications (continued)

Article number	6ES7322-5SD00-0AB0	6ES7322-5RD00-0AB0
	SM322, 4DQ, 24V DC, 10MA, HAZARDOUS AREAS	SM322, 4DQ, 15V DC, 20MA, HAZARDOUS AREAS
Potential separation		
Potential separation digital outputs		
• Potential separation digital outputs	Yes	Yes
• between the channels, in groups of	1	1
Standards, approvals, certificates		
Use in hazardous areas		
• Type of protection acc. to EN 50020 (CENELEC)	[EEx ib] IIC	[EEx ib] IIC
• Type of protection acc. to FM	Class I, Division 2, Group A, B, C, D T4	AIS CL.1, DIV 1, GP A, B, C, D; CL.I, DIV 2, GP A, B, C, D T4
• Test number PTB	Ex-96.D.2093X	Ex-96.D.2102X
Ambient conditions		
Ambient temperature during operation		
• max.	60 °C	60 °C
Connection method		
required front connector	20-pin	20-pin
Weights		
Weight, approx.	230 g	230 g

Ordering data

	Article No.		Article No.
Ex digital output modules		Labeling sheets for machine inscription	
4 outputs, isolated, 24 V DC, 10 mA	6ES7322-5SD00-0AB0	for modules with 40-pin front connector, DIN A4, for printing with laser printer; 10 units	
4 outputs, isolated, 15 V DC, 20 mA	6ES7322-5RD00-0AB0		
Front connector		Petrol	6ES7392-2AX00-0AA0
20-pin, with screw contacts		Light beige	6ES7392-2BX00-0AA0
• 1 unit	6ES7392-1AJ00-0AA0	Yellow	6ES7392-2CX00-0AA0
• 100 units	6ES7392-1AJ00-1AB0	Red	6ES7392-2DX00-0AA0
Front door, elevated design		SIMATIC Manual Collection	6ES7998-8XC01-8YE0
e.g. for 32 channel modules; enables connection of 1.3 mm ² /16 AWG wires	6ES7328-0AA00-7AA0	Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC Distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC-based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	
LK 393 cable guide	6ES7393-4AA00-0AA0	SIMATIC Manual Collection update service for 1 year	6ES7998-8XC01-8YE2
Mandatory for operation in Ex-hazard areas		Current "Manual Collection" DVD and the three subsequent updates	
Labeling strips	6ES7392-2XX00-0AA0		
10 units (spare part), for modules with 20-pin front connector			
Label cover	6ES7392-2XY00-0AA0		
10 units (spare part), for modules with 20-pin front connector			

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 Ex digital modules

SIPLUS S7-300 Ex digital input modules**Overview**

- Digital inputs for signals from the Ex field
- For the connection of intrinsically safe digital equipment from the Ex field
- 4 DI NAMUR
- 4 digital inputs in 4 channel modules (single-channel isolation)
- Connectable encoder in accordance with EN 60947-5-6 and NAMUR, optionally with wired or unwired mechanical contacts
- Programmable diagnostics and diagnostic interrupt

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Technical specifications

Article number	6AG1321-7RD00-4AB0
Based on	6ES7321-7RD00-0AB0 SIPLUS S7-300 SM 321 4DI NAMUR
Ambient conditions	
Ambient temperature during operation	
• min.	0 °C; = Tmin
• max.	60 °C; = Tmax
Ambient temperature during storage/transportation	
• min.	-40 °C
• max.	70 °C
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)

Article number	6AG1321-7RD00-4AB0
Based on	6ES7321-7RD00-0AB0 SIPLUS S7-300 SM 321 4DI NAMUR
Resistance	
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
Use on ships/at sea	
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
Remark	
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!

Ordering data	Article No.	Ordering data	Article No.
SIPLUS S7-300 Ex digital input module		Labeling sheets for machine inscription	
<u>Exposure to media</u> 4 inputs, isolated, NAMUR	6AG1321-7RD00-4AB0	For modules with 20-pin front connector, DIN A4, for printing with laser printer; 10 units	
Accessories		Petrol	6ES7392-2AX00-0AA0
<i>Mandatory</i>		Light beige	6ES7392-2BX00-0AA0
Front connector		Yellow	6ES7392-2CX00-0AA0
20-pin, with spring-loaded contacts		Red	6ES7392-2DX00-0AA0
• 1 unit	6ES7392-1BJ00-0AA0	<i>Documentation</i>	
• 100 units	6ES7392-1BJ00-1AB0	SIMATIC Manual Collection	6ES7998-8XC01-8YE0
<i>Consumables</i>		Electronic manuals on DVD, multi-language: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC Distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC-based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	
DIN rail for active bus modules		SIMATIC Manual Collection update service for 1 year	6ES7998-8XC01-8YE2
For max. 5 active bus modules for hot swapping function		Current "Manual Collection" DVD and the three subsequent updates	
• Length 483 mm (19")	6ES7195-1GA00-0XA0		
• Length 530 mm	6ES7195-1GF30-0XA0		
• Length 620 mm	6ES7195-1GG30-0XA0		
• Length 2000 mm	6ES7195-1GC00-0XA0		
Front door, elevated design	6ES7328-0AA00-7AA0		
E.g. for 32-channel modules; for connecting 1.3 mm ² /16 AWG conductors; circuit diagram and nameplates in petrol			
LK 393 cable guide	6ES7393-4AA00-0AA0		
Mandatory for operation in hazardous areas			
Labeling strips	6ES7392-2XX00-0AA0		
10 units (spare part), for modules with 20-pin front connector			
Label cover	6ES7392-2XY00-0AA0		
10 units (spare part), for modules with 20-pin front connector			

SIMATIC S7-300 Advanced Controllers

I/O modules

Ex analog modules

Ex analog input modules

Overview



- Analog inputs for signals from the Ex field
- For the connection of intrinsically safe analog equipment from the Ex field
- 8 or 4 analog inputs in 4 channel groups (single-channel isolation)
- Measurement type and range can be selected for each channel
- Diagnostics and diagnostics alarm programmable
- Programmable threshold alarm
- HART-compatible inputs (only 6ES7331-7RD00-0AB0)

Technical specifications

Article number	6ES7331-7RD00-0AB0 SM331, 4AE, 0/4-20mA, EX-ZONE	6ES7331-7SF00-0AB0 SM331, 8AE THERMO/4AE PT100, EX-ZONE
Supply voltage		
Load voltage L+		
• Rated value (DC)	24 V	24 V
Input current		
from load voltage L+ (without load), max.	250 mA	
from backplane bus 5 V DC, max.	60 mA	120 mA
Output voltage		
Power supply to the transmitters		
• Rated value (DC)	13 V; at 22 mA	
• No-load voltage (DC)	25.2 V	
Power loss		
Power loss, typ.	3 W	0.6 W
Analog inputs		
Number of analog inputs	4	8; 8x thermocouples; 4x RTD thermoresistors
permissible input current for current input (destruction limit), max.	40 mA	
Input ranges (rated values), currents		
• 0 to 20 mA	Yes	
• 4 mA to 20 mA	Yes	
Input ranges (rated values), thermocouples		
• Type B		Yes
• Type E		Yes
• Type J		Yes
• Type K		Yes
• Type L		Yes
• Type N		Yes
• Type R		Yes
• Type S		Yes
• Type T		Yes
• Type U		Yes
Input ranges (rated values), resistance thermometer		
• Ni 100		Yes
• Pt 100		Yes
• Pt 200		Yes
Cable length		
• shielded, max.	200 m	200 m; TC: 50 m

Technical specifications (continued)

Article number	6ES7331-7RD00-0AB0	6ES7331-7SF00-0AB0
	SM331, 4AE, 0/4-20mA, EX-ZONE	SM331, 8AE THERMO/4AE PT100, EX-ZONE
Analog value generation for the inputs		
Measurement principle	Sigma Delta	Sigma Delta
Integration and conversion time/resolution per channel		
<ul style="list-style-type: none"> Resolution with overrange (bit including sign), max. Integration time, parameterizable Interference voltage suppression for interference frequency f_1 in Hz 	16 bit; 10 bit to 15 bit + sign Yes; 2.5 to 100 ms 10 to 400 Hz	16 bit; 10 bit to 15 bit + sign Yes; 2.5 to 100 ms 10 to 400 Hz
Encoder		
Connection of signal encoders		
<ul style="list-style-type: none"> for current measurement as 2-wire transducer for current measurement as 4-wire transducer 	Yes Yes	Yes Yes
Errors/accuracies		
Temperature error (relative to input range), (+/-)		0.001 %/K; Temperature error: 0.001 to 0.002 %/K
Operational error limit in overall temperature range		
<ul style="list-style-type: none"> Current, relative to input range, (+/-) Resistance thermometer, relative to input range, (+/-) 	0.45 % 0.04 %; 0.09 to 0.04%	
Basic error limit (operational limit at 25 °C)		
<ul style="list-style-type: none"> Current, relative to input range, (+/-) Resistance thermometer, relative to input range, (+/-) 	0.1 % 0.008 %; 0.018 ... 0.008%	
Interference voltage suppression for $f = n \times (f_1 \pm 1 \%)$, $f_1 =$ interference frequency		
<ul style="list-style-type: none"> Series mode interference (peak value of interference < rated value of input range), min. Common mode interference, min. 	60 dB 130 dB	60 dB 130 dB
Interrupts/diagnostics/status information		
Diagnostic messages		
<ul style="list-style-type: none"> Diagnostic information readable Overrange Wire-break in signal transmitter cable Short-circuit of the signal encoder cable 	Yes Yes Yes Yes	Yes Yes Yes Yes
Ex(i) characteristics		
Maximum values of input circuits (per channel)		
<ul style="list-style-type: none"> C_o (permissible external capacity), max. I_o (short-circuit current), max. L_o (permissible external inductivity), max. P_o (power of load), max. R_i, max. U_o (output no-load voltage), max. 	90 nF 68.5 mA 7.5 mH 431 mW 50 Ω 25.2 V	43 μ F 28.8 mA 40 mH 41.4 mW 5.9 V
Potential separation		
Potential separation analog inputs		
<ul style="list-style-type: none"> Potential separation analog inputs 	Yes	Yes

SIMATIC S7-300 Advanced Controllers

I/O modules

Ex analog modules

Ex analog input modules

Technical specifications (continued)

Article number	6ES7331-7RD00-0AB0	6ES7331-7SF00-0AB0
	SM331, 4AE, 0/4-20mA, EX-ZONE	SM331, 8AE THERMO/4AE PT100, EX-ZONE
Permissible potential difference		
between the inputs (UCM)	60 V DC/30 V AC when used in the hazardous area; 400 V DC/250 V AC when used in NON-hazardous area	60 V DC/30 V AC when used in the hazardous area; 400 V DC/250 V AC when used in NON-hazardous area
Between the inputs and MANA (UCM)	60 V DC/30 V AC when used in the hazardous area; 400 V DC/250 V AC when used in NON-hazardous area	60 V DC/30 V AC when used in the hazardous area; 400 V DC/250 V AC when used in NON-hazardous area
Standards, approvals, certificates		
Use in hazardous areas		
• Type of protection acc. to EN 50020 (CENELEC)	[EEx ib] IIC	[EEx ib] IIC
• Type of protection acc. to FM	Class I, Division 2, Group A, B, C, D T4	Class I, Division 2, Group A, B, C, D T4
• Test number PTB	Ex-96.D.2092X	Ex-96.D.2108X
Ambient conditions		
Ambient temperature during operation		
• max.	60 °C	60 °C
Connection method		
required front connector	20-pin	20-pin
Weights		
Weight, approx.	290 g	210 g

Ordering data

Ex analog input modules

4 inputs, isolated, 0/4 to 20 mA, 15 bit

6ES7331-7RD00-0AB0

8/4 inputs, isolated, for thermocouples and Pt100, Pt200, Ni100

6ES7331-7SF00-0AB0

Front connector

20-pin, with screw contacts

- 1 unit
- 100 units

6ES7392-1AJ00-0AA0
6ES7392-1AJ00-1AB0

Front door, elevated design

e.g. for 32 channel modules; enables connection of 1.3 mm²/16 AWG wires

6ES7328-0AA00-7AA0

LK 393 cable guide

Mandatory for operation in Ex-hazard areas

6ES7393-4AA00-0AA0

Labeling strips

10 units (spare part), for modules with 20-pin front connector

6ES7392-2XX00-0AA0

Label cover

10 units (spare part), for modules with 20-pin front connector

6ES7392-2XY00-0AA0

Labeling sheets for machine inscription

for modules with 20-pin front connector, DIN A4, for printing with laser printer; 10 units

Petrol

6ES7392-2AX00-0AA0

Light beige

6ES7392-2BX00-0AA0

Yellow

6ES7392-2CX00-0AA0

Red

6ES7392-2DX00-0AA0

SIMATIC Manual Collection

6ES7998-8XC01-8YE0

Electronic manuals on DVD, multilingual:
LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC Distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC-based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC

SIMATIC Manual Collection update service for 1 year

6ES7998-8XC01-8YE2

Current "Manual Collection" DVD and the three subsequent updates

Overview



- Analog outputs for signals from the Ex field
- For the connection of intrinsically safe analog equipment from the Ex field
- 4 analog outputs in 4 channel modules (single-channel isolation)
- Diagnostics and diagnostics alarm programmable

Technical specifications

Article number	6ES7332-5RD00-0AB0 SIMATIC S7, SM 332 ANALOG OUTPUT
Supply voltage	
Load voltage L+	
• Rated value (DC)	24 V
Input current	
from load voltage L+ (without load), max.	200 mA
from backplane bus 5 V DC, max.	80 mA
Power loss	
Power loss, typ.	4 W
Analog outputs	
Number of analog outputs	4
Voltage output, short-circuit protection	Yes
Voltage output, short-circuit current, max.	70 mA
Current output, no-load voltage, max.	14 V
Output ranges, current	
• 0 to 20 mA	Yes
• 4 mA to 20 mA	Yes
Connection of actuators	
• for current output two-wire connection	Yes
Load impedance (in rated range of output)	
• with current outputs, max.	500 Ω
Cable length	
• shielded, max.	200 m
Analog value generation for the outputs	
Integration and conversion time/ resolution per channel	
• Resolution with overrange (bit including sign), max.	15 bit
• Basic conversion time (ms)	2.5 ms
Errors/accuracies	
Operational error limit in overall temperature range	
• Current, relative to output range, (+/-)	0.55 %
Basic error limit (operational limit at 25 °C)	
• Current, relative to output range, (+/-)	0.2 %

Article number	6ES7332-5RD00-0AB0 SIMATIC S7, SM 332 ANALOG OUTPUT
Interrupts/diagnostics/ status information	
Diagnostics function	Yes
Diagnostic messages	
• Diagnostic information readable	Yes
• Overrange	Yes
• Wire-break in actuator cable	Yes
Ex(i) characteristics	
Maximum values of output circuits (per channel)	
• Co (permissible external capacity), max.	850 nF
• Io (short-circuit current), max.	70 mA
• Lo (permissible external inductivity), max.	6.6 mH
• Po (power of load), max.	440 mW
• Uo (output no-load voltage), max.	14 V
Potential separation	
Potential separation analog outputs	
• Potential separation analog outputs	Yes
Permissible potential difference	
between the outputs (UCM)	60 V DC/30 V AC when used in the hazardous area; 400 V DC/250 V AC when used in NON-hazardous area
Between the outputs and MANA (UCM)	60 V DC/30 V AC when used in the hazardous area; 400 V DC/250 V AC when used in NON-hazardous area
Standards, approvals, certificates	
Use in hazardous areas	
• Type of protection acc. to EN 50020 (CENELEC)	[Ex ib] IIC
• Type of protection acc. to FM	Class I, Division 2, Group A, B, C, D T4
• Test number PTB	Ex-96.D.2026X
Ambient conditions	
Ambient temperature during operation	
• max.	60 °C
Connection method	
required front connector	20-pin
Weights	
Weight, approx.	280 g

SIMATIC S7-300 Advanced Controllers

I/O modules

Ex analog modules

Ex analog output modules**Ordering data****Article No.****Ex analog output module**

4 outputs, isolated, 0/4 to 20 mA

6ES7332-5RD00-0AB0**Front connector**

20-pin, with screw contacts

- 1 unit
- 100 units

6ES7392-1AJ00-0AA0
6ES7392-1AJ00-1AB0**Front door, elevated design**e.g. for 32 channel modules;
enables connection of
1.3 mm²/16 AWG wires**6ES7328-0AA00-7AA0****LK 393 cable guide**Mandatory for operation in
hazardous areas**6ES7393-4AA00-0AA0****Labeling strips**10 units (spare part), for modules
with 20-pin front connector**6ES7392-2XX00-0AA0****Label cover**10 units (spare part), for modules
with 20-pin front connector**6ES7392-2XY00-0AA0****Labeling sheets for machine
inscription**For modules with 20-pin front
connector, DIN A4, for printing with
laser printer; 10 units

Petrol

6ES7392-2AX00-0AA0

Light beige

6ES7392-2BX00-0AA0

Yellow

6ES7392-2CX00-0AA0

Red

6ES7392-2DX00-0AA0**Article No.****SIMATIC Manual Collection****6ES7998-8XC01-8YE0**Electronic manuals on DVD,
multilingual:
LOGO!, SIMADYN, SIMATIC bus
components, SIMATIC C7,
SIMATIC Distributed I/O,
SIMATIC HMI, SIMATIC Sensors,
SIMATIC NET, SIMATIC PC-based
Automation, SIMATIC PCS 7,
SIMATIC PG/PC, SIMATIC S7,
SIMATIC Software, SIMATIC TDC**SIMATIC Manual Collection
update service for 1 year****6ES7998-8XC01-8YE2**Current "Manual Collection" DVD
and the three subsequent updates

Overview



- Analog inputs for signals from the Ex field
- For the connection of intrinsically safe analog equipment from the Ex field
- 4 analog inputs in 4 channel groups (single-channel isolation)
- Measurement type and range can be selected for each channel
- Programmable diagnostics and diagnostic interrupt
- Programmable threshold alarm
- HART-compatible inputs (6AG1331-7RD00-2AB0 only)

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Technical specifications

Article number	6AG1331-7RD00-2AB0	6AG1331-7SF00-4AB0
Based on	6ES7331-7RD00-0AB0 SIPLUS S7-300 SM331 4AI	6ES7331-7SF00-0AB0 SIPLUS S7-300 SM331 20pol
Ambient conditions		
Ambient temperature during operation		
• min.	-25 °C; = Tmin	0 °C; = Tmin
• max.	60 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use, 70 °C only 4 wire	60 °C; = Tmax
Ambient temperature during storage/transportation		
• min.	-40 °C	-40 °C
• max.	70 °C	70 °C
Altitude during operation relating to sea level		
• Installation altitude above sea level, max.	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity		
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance		
Use in stationary industrial systems		
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
Use on ships/at sea		
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Remark		
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 Ex analog modules

SIPLUS S7-300 Ex analog input modules**Ordering data****Article No.****SIPLUS S7-300 Ex analog input modules**Extended temperature range and exposure to media

4 inputs, isolated, 0/4 to 20 mA, 15 bit

Exposure to media

8/4 inputs, isolated, for thermocouples and Pt100, Pt200, Ni100; medial exposure only

6AG1331-7RD00-2AB0**6AG1331-7SF00-4AB0****Accessories***Mandatory***Front connector**

20-pin, with spring-loaded contacts

- 1 unit
- 100 units

6ES7392-1BJ00-0AA0**6ES7392-1BJ00-1AB0***Consumables***DIN rail for active bus modules**

For max. 5 active bus modules for hot swapping function

- Length 483 mm (19")
- Length 530 mm
- Length 620 mm
- Length 2000 mm

6ES7195-1GA00-0XA0**6ES7195-1GF30-0XA0****6ES7195-1GG30-0XA0****6ES7195-1GC00-0XA0****Front door, elevated design**E.g. for 32-channel modules; for connecting 1.3 mm²/16 AWG conductors; circuit diagram and nameplates in petrol**6ES7328-0AA00-7AA0****Article No.****LK 393 cable guide**

Mandatory for operation in hazardous areas

6ES7393-4AA00-0AA0**Labeling strips**

10 units (spare part), for modules with 20-pin front connector

6ES7392-2XX00-0AA0**Label cover**

10 units (spare part), for modules with 20-pin front connector

6ES7392-2XY00-0AA0**Labeling sheets for machine inscription**

For modules with 20-pin front connector, DIN A4, for printing with laser printer; 10 units

Petrol

6ES7392-2AX00-0AA0

Light beige

6ES7392-2BX00-0AA0

Yellow

6ES7392-2CX00-0AA0

Red

6ES7392-2DX00-0AA0*Documentation***SIMATIC Manual Collection****6ES7998-8XC01-8YE0**

Electronic manuals on DVD, multi-language: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC Distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC-based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC

SIMATIC Manual Collection update service for 1 year**6ES7998-8XC01-8YE2**

Current "Manual Collection" DVD and the three subsequent updates

Overview



- One-channel intelligent counter module for simple counting tasks
- For direct connection of incremental encoders
- Comparison function with 2 specifiable comparison values
- Integrated digital outputs to output the response upon reaching the comparison value.
- Operating modes:
 - Continuous counting
 - One-shot counting
 - Periodic counting
- Special functions:
 - Set counter
 - Latch counter
- Start/stop counter with gate function

Note:

Incremental encoders and pre-assembled connecting cables for counting and positioning functions are offered under SIMODRIVE Sensor or Motion Connect 500.

<http://www.siemens.com/simatic-technology>

Technical specifications

Article number	6ES7350-1AH03-0AE0 FM350-1, counter mod. up to 500KHZ
Supply voltage	
Auxiliary voltage 1L+, load voltage 2L+	
• Rated value (DC)	24 V
non-periodic skip	
- Duration	500 ms
- Recovery time	50 s
- Value	35 V
Input current	
from load voltage 1L+ (without load), max.	40 mA
from backplane bus 5 V DC, max.	160 mA
5 V encoder supply	
• 5 V	Yes; 5.2 V \pm 2 %
• Output current, max.	300 mA
24 V encoder supply	
• 24 V	Yes; 1L+ (-3 V)
• Output current, max.	400 mA
Power loss	
Power loss, typ.	4.5 W
Digital inputs	
Number of digital inputs	3
Functions	1 for gate start, 1 for gate stop, 1 for setting the counter
Input voltage	
• for signal "0"	-28.8 ... +5V
• for signal "1"	+11 to +28.8V
Input current	
• for signal "1", typ.	9 mA
Digital outputs	
Number of digital outputs	2
Short-circuit protection	Yes; Clocked electronically
Limitation of inductive shutdown voltage to	2L+ (-39 V)
Output voltage	
• for signal "0", max.	3 V
• for signal "1", min.	2L+ (-1,5 V)

Article number	6ES7350-1AH03-0AE0 FM350-1, counter mod. up to 500KHZ
Output current	
• for signal "1" rated value	0.5 A
• for signal "1" permissible range for 0 to 60 °C, min.	5 mA
• for signal "1" permissible range for 0 to 60 °C, max.	0.6 A
Output delay with resistive load	
• "0" to "1", max.	300 μ s
Encoder	
Connectable encoders	
• Incremental encoder (symmetrical)	Yes; With 2 pulse trains offset by 90°
• Incremental encoder (asymmetrical)	Yes
• 24 V initiator	Yes
• 24 V directional element	Yes; 1 pulse train, 1 direction level
Counter	
Number of counter inputs	1
Counting range, description	32 bit or \pm 31 bit
Minimum pulse width, adjustable	Yes; 2.5 or 25 μ s
Counter input 5 V	
• Type	RS 422
• Terminating resistor	220 Ω
• Differential input voltage	1,3 V
• Counting frequency, max.	500 kHz
Counter input 24 V	
• Input voltage for signal "0"	-28.8 ... +5V
• Input voltage for signal "1"	+11 to +28.8V
• Input current for signal "1", typ.	9 mA
• Counting frequency, max.	200 kHz
• Minimum pulse width	2.5 μ s

SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

FM 350-1 counter module

Technical specifications (continued)

Article number	6ES7350-1AH03-0AE0 FM350-1, counter mod. up to 500KHZ
Potential separation	
Potential separation digital inputs	
• between the channels and backplane bus	Yes; Optocoupler
Potential separation digital outputs	
• between the channels and backplane bus	Yes; Optocoupler
Potential separation counter	
• between the channels and backplane bus	Yes; Optocoupler

Article number	6ES7350-1AH03-0AE0 FM350-1, counter mod. up to 500KHZ
Connection method	
required front connector	1x 20-pin
Dimensions	
Width	40 mm
Height	125 mm
Depth	120 mm
Weights	
Weight, approx.	250 g

5

Ordering data

Ordering data	Article No.
FM 350-1 counter module With 1 channel, max. 500 kHz; for incremental encoder	6ES7350-1AH03-0AE0
Coding plug - Range card for analog inputs Spare part	6ES7974-0AA00-0AA0
Front connector 20-pin, with screw contacts	
• 1 unit	6ES7392-1AJ00-0AA0
• 100 units	6ES7392-1AJ00-1AB0
20-pin, with spring-loaded contacts	
• 1 unit	6ES7392-1BJ00-0AA0
• 100 units	6ES7392-1BJ00-1AB0
Bus connectors 1 unit (spare part)	6ES7390-0AA00-0AA0
Labeling strips 10 units (spare part)	6ES7392-2XX00-0AA0
Labeling sheets for machine inscription	See under "Accessories", page 5/266
Slot number label Spare part	6ES7912-0AA00-0AA0
Shield connection element 80 mm wide, with 2 rows for 4 terminals each	6ES7390-5AA00-0AA0
Shield connection clamps 2 units	
For 2 cables with 2 mm to 6 mm diameter	6ES7390-5AB00-0AA0
For 1 cable with 3 mm to 8 mm diameter	6ES7390-5BA00-0AA0
For 1 cable with 4 mm to 13 mm diameter	6ES7390-5CA00-0AA0
Connectable incremental encoders 6FX2 001-2...	Refer to the Industry Mall under SIMODRIVE Sensor or Motion Connect 500 (see also http://www.siemens.com/simatic-technology)

Article No.

Signal cable	Article No.
Pre-assembled for HTL and TTL encoder, without sub D connector, UL/DESINA	6FX5002-2CA12- ■ ■ ■ 0
Length code:	
0 m	1
100 m	2
200 m	3
0 m	A
10 m	B
20 m	C
30 m	D
40 m	E
50 m	F
60 m	G
70 m	H
80 m	J
90 m	K
0 m	A
1 m	B
2 m	C
3 m	D
4 m	E
5 m	F
6 m	G
7 m	H
8 m	J
9 m	K

Overview



- 8-channel intelligent counter module for universal counting and measuring
- To directly connect 24 V incremental encoders, direction sensors, initiators or NAMUR encoders
- Check function with preselectable set points (number depends on mode)
- Integrated digital outputs to output the response when the setpoint is reached
- Operating modes:
 - Continuous/single/periodic counting
 - Frequency/speed measurement
 - Cycle duration measurement
 - Dosing

Note:

Incremental encoder and pre-assembled connecting cables for counter and positioning function are offered under SIMODRIVE Sensor and Motion Connect 500.

<http://www.siemens.com/simatic-technology>

Technical specifications

Article number	6ES7350-2AH01-0AE0 FM350-2, Counter Mod., 8 Channels, 20KHz
Supply voltage	
Auxiliary voltage 1L+, load voltage 2L+	
• Rated value (DC)	24 V
Input current	
from load voltage L+ (without load), max.	150 mA
from backplane bus 5 V DC, max.	100 mA
Encoder supply	
Type of output voltage	NAMUR-encoder supply: 8.2 V \pm 2 %
Short-circuit protection	Yes
Output current	
• Rated value	200 mA
Power loss	
Power loss, typ.	10 W
Digital inputs	
Number of digital inputs	8
Number of NAMUR inputs	8
Functions	1 each for gate start/ gate stop
Input voltage	
• for signal "0"	-3 to +5V
• for signal "1"	11 to 30.2 V
Input current	
• for signal "0", max. (permissible quiescent current)	2 mA
• for signal "1", typ.	9 mA
Input delay (for rated value of input voltage)	
for standard inputs	
- at "0" to "1", max.	50 μ s
Cable length	
• shielded, max.	100 m

Article number	6ES7350-2AH01-0AE0 FM350-2, Counter Mod., 8 Channels, 20KHz
Digital outputs	
Number of digital outputs	8
Short-circuit protection	Yes
Limitation of inductive shutdown voltage to	L+ (-40 V)
Output voltage	
• for signal "1", min.	L+ (-0.8 V)
Output current	
• for signal "1" rated value	0.5 A
• for signal "0" residual current, max.	0.5 mA
Output delay with resistive load	
• "0" to "1", max.	300 μ s
Switching frequency	
• with resistive load, max.	500 Hz
• with inductive load, max.	0.5 Hz
Total current of the outputs (per group)	
horizontal installation	
- up to 40 °C, max.	4 A
- up to 60 °C, max.	2 A
all other mounting positions	
- up to 40 °C, max.	2 A
Cable length	
• shielded, max.	600 m
• unshielded, max.	100 m
Encoder	
Connectable encoders	
• Incremental encoder (asymmetrical)	Yes
• 24 V initiator	Yes
• 24 V directional element	Yes
• NAMUR encoder	Yes
• 2-wire sensor	Yes

SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

FM 350-2 counter module

Technical specifications (continued)

Article number	6ES7350-2AH01-0AEO FM350-2, Counter Mod., 8 Channels, 20KHz
NAMUR encoder	
• Input signal	to DIN 19 234
• Input current for signal "0", max.	1.2 mA
• Input current for signal "1", min.	2.1 mA
• Input delay, max.	50 µs
• Input frequency, max.	20 kHz
• Cable length, shielded, max.	100 m
Interrupts/diagnostics/ status information	
Diagnostics function	Yes; Diagnostic information readable
Alarms	
• Diagnostic alarm	Yes; Parameterizable
• Hardware interrupt	Yes; Parameterizable
Counter input 24 V	
• Number	8; 32 bit or ±31 bit
• Input voltage for signal "0"	-3 to +5V
• Input voltage for signal "1"	11 to 30.2 V
• Input current for signal "0", max. (permissible quiescent current)	2 mA
• Input current for signal "1", typ.	9 mA
• Input delay, max.	50 µs
• Counting frequency, max.	20 kHz; Incremental encoder: 10 kHz
• Cable length, max.	100 m

Article number	6ES7350-2AH01-0AEO FM350-2, Counter Mod., 8 Channels, 20KHz
Potential separation	
Potential separation digital inputs	
• between the channels and backplane bus	Yes; and shielding
Potential separation digital outputs	
• between the channels and backplane bus	Yes; and shielding
Potential separation counter	
• between the channels and backplane bus	Yes; and shielding
Connection method	
required front connector	1x 40-pin
Dimensions	
Width	80 mm
Height	125 mm
Depth	120 mm
Weights	
Weight, approx.	460 g

Ordering data

Ordering data	Article No.
FM 350-2 counter module With 8 channels, max. 20 kHz; for 24 V incremental encoders and NAMUR encoders; incl. configuration package and electronic documentation on CD	6ES7350-2AH01-0AEO
Front connector	
40-pin, with screw contacts	
• 1 unit	6ES7392-1AM00-0AA0
• 100 units	6ES7392-1AM00-1AB0
40-pin, with spring-loaded contacts	
• 1 unit	6ES7392-1BM01-0AA0
• 100 units	6ES7392-1BM01-1AB0
Bus connectors	6ES7390-0AA00-0AA0
1 unit (spare part)	
Labeling strips	6ES7392-2XX10-0AA0
10 units (spare part)	
Labeling sheets for machine inscription	See under "Accessories", page 5/266

Article No.

Article No.	Article No.
Slot number label	6ES7912-0AA00-0AA0
Spare part	
Shield connection element	6ES7390-5AA00-0AA0
80 mm wide, with 2 rows for 4 terminals each	
Terminal elements	
2 units	
For 2 cables with 2 mm to 6 mm diameter	6ES7390-5AB00-0AA0
For 1 cable with 3 mm to 8 mm diameter	6ES7390-5BA00-0AA0
For 1 cable with 4 mm to 13 mm diameter	6ES7390-5CA00-0AA0
Signal cable	
Pre-assembled for HTL and TTL encoder, without sub D connector, UL/DESINA	6FX5002-2CA12- ■ ■ ■ 0
Length code:	See FM 350-1, page 5/142

Overview



- Two-channel positioning module for rapid-traverse/creep-speed drives
- 4 digital outputs per channel for motor control
- Incremental or synchro-serial position decoding

Note:

Displacement measuring systems and precut/pre-assembled cables for counting and positioning functions are available under SIMODRIVE Sensor or Motion Connect 500.

<http://www.siemens.com/simatic-technology>

Technical specifications

Article number	6ES7351-1AH02-0AE0 FM351 positioning Mod. rapid/creep Feed
Supply voltage	
Rated value (DC)	
• 24 V DC	Yes
Load voltage L+	
• Rated value (DC)	24 V
Input current	
Current consumption, max.	350 mA
from backplane bus 5 V DC, max.	150 mA
Encoder supply	
5 V encoder supply	
• 5 V	Yes
• Output current, max.	350 mA
• Cable length, max.	32 m
24 V encoder supply	
• 24 V	Yes
• Output current, max.	400 mA; Per channel
• Cable length, max.	100 m
Power loss	
Power loss, typ.	7.9 W

Article number	6ES7351-1AH02-0AE0 FM351 positioning Mod. rapid/creep Feed
Digital inputs	
Number of digital inputs	8
Functions	Reference cams, reversing cams, flying actual value setting, start/stop positioning
Input voltage	
• Rated value (DC)	24 V
• for signal "0"	-3 to +5V
• for signal "1"	+11 to +30V
Input current	
• for signal "0", max. (permissible quiescent current)	2 mA
• for signal "1", typ.	6 mA
Digital outputs	
Number of digital outputs	8
Functions	Rapid traverse, creep, run right, run left
Short-circuit protection	Yes
Output voltage	
• Rated value (DC)	24 V
• for signal "1", min.	UP - 0.8 V
Output current	
• for signal "1" permissible range for 0 to 60 °C, min.	5 mA; with UPmax
• for signal "1" permissible range for 0 to 60 °C, max.	600 mA; with UPmax
• for signal "0" residual current, max.	0.5 mA

SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

FM 351 positioning module

Technical specifications (continued)

Article number	6ES7351-1AH02-0AE0 FM351 positioning Mod. rapid/creep Feed
Encoder	
Connectable encoders	
• Incremental encoder (symmetrical)	Yes
• Incremental encoder (asymmetrical)	Yes
• Absolute encoder (SSI)	Yes
• 2-wire sensor	Yes
- permissible quiescent current (2-wire sensor), max.	2 mA; on signal "0", max. 2 mA; on signal "1", max. 6 mA
Encoder signals, incremental encoder (symmetrical)	
• Trace mark signals	A, notA, B, notB
• Zero mark signal	N, notN
• Input voltage	5 V difference signal (phys. RS 422)
• Input frequency, max.	0.5 MHz
Encoder signals, incremental encoder (asymmetrical)	
• Trace mark signals	A, B
• Zero mark signal	N
• Input voltage	24 V
• Input frequency, max.	50 kHz; 50 kHz for 25 m cable length; 25 kHz for 100 m cable length
Encoder signals, absolute encoder (SSI)	
• Input signal	5 V difference signal (phys. RS 422)
• Data signal	DATA, notDATA
• Clock signal	CL, notCL
• Telegram length, parameterizable	13 or 25 bit
• Clock frequency, max.	1.5 MHz
• Gray code	Yes
• Cable length, shielded, max.	200 m; At max. 188 kHz

Article number	6ES7351-1AH02-0AE0 FM351 positioning Mod. rapid/creep Feed
Potential separation	
Potential separation digital inputs	
• Potential separation digital inputs	Yes
Potential separation digital outputs	
• Potential separation digital outputs	Yes
Connection method	
required front connector	1x 20-pin
Dimensions	
Width	80 mm
Height	125 mm
Depth	120 mm
Weights	
Weight, approx.	550 g

Ordering data	Article No.	Article No.
FM 351 positioning module For rapid traverse and creep speed drives	6ES7351-1AH02-0AE0	
Front connectors 20-pin, with screw contacts • 1 unit • 100 units	6ES7392-1AJ00-0AA0 6ES7392-1AJ00-1AB0	
20-pin, with spring-loaded contacts • 1 unit • 100 units	6ES7392-1BJ00-0AA0 6ES7392-1BJ00-1AB0	
Bus connectors 1 unit (spare part)	6ES7390-0AA00-0AA0	
Labeling strips 10 units (spare part)	6ES7392-2XX00-0AA0	
Slot number label Spare part	6ES7912-0AA00-0AA0	
Labeling sheets for machine inscription Spare part	See under "Accessories", page 5/266	
Shield connection element 80 mm wide, with 2 rows for 4 terminals each	6ES7390-5AA00-0AA0	
Terminal elements 2 units For 2 cables with 2 mm to 6 mm diameter	6ES7390-5AB00-0AA0	
For 1 cable with 3 mm to 8 mm diameter	6ES7390-5BA00-0AA0	
For 1 cable with 4 mm to 13 mm diameter	6ES7390-5CA00-0AA0	
		Signal cables
		Preassembled for SSI absolute encoder, UL/DESINA
		6ES7390-5AB00-0AA0
		Preassembled for TTL encoder 6FX2001-1, UL/DESINA
		6ES7390-5BA00-0AA0
		Preassembled for TTL encoder 24 V, UL/DESINA
		6ES7390-5CA00-0AA0
		Not crimped
		0
		Module end crimped, connector case supplied
		1
		Motor end crimped, connector case supplied
		4
		0 m
		100 m
		200 m
		0 m
		10 m
		20 m
		30 m
		40 m
		50 m
		60 m
		70 m
		80 m
		90 m
		0 m
		1 m
		2 m
		3 m
		4 m
		5 m
		6 m
		7 m
		8 m
		9 m
		0.0 m
		0.1 m
		0.2 m
		0.3 m
		0.4 m
		0.5 m
		0.6 m
		0.7 m
		0.8 m

SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

FM 352 cam controllers

Overview



- Extremely high-speed electronic cam controller
- Low-cost alternative to mechanical cam controllers
- 32 cam tracks, 13 onboard digital outputs for direct output of actions
- Incremental or synchro-serial position decoding

Note:

Displacement measuring systems and precut/pre-assembled cables for counting and positioning functions are available under SIMODRIVE Sensor or Motion Connect 500.

<http://www.siemens.com/simatic-technology>

Technical specifications

Article number	6ES7352-1AH02-0AE0 FM352 Electron. Cam-operated Control
Supply voltage	
Rated value (DC)	
• 24 V DC	Yes
Input current	
from load voltage L+ (without load), max.	200 mA
from backplane bus 5 V DC, max.	100 mA
Encoder supply	
5 V encoder supply	
• 5 V	Yes
• Output current, max.	300 mA
• Cable length, max.	32 m
24 V encoder supply	
• 24 V	Yes
• Output current, max.	300 mA
• Cable length, max.	100 m
Power loss	
Power loss, typ.	8.1 W
Digital inputs	
Number of digital inputs	4
Functions	Reference point switch, set floating actual value/length measurement, brake release, enable track output no. 3
Input voltage	
• Rated value (DC)	24 V
• for signal "0"	-30 to +5V
• for signal "1"	+11 to +30V
Input current	
• for signal "0", max. (permissible quiescent current)	2 mA
• for signal "1", typ.	9 mA
Digital outputs	
Number of digital outputs	13
Functions	Cam track
Short-circuit protection	Yes
Output voltage	
• Rated value (DC)	24 V
• for signal "1", min.	UP - 0.8 V

Article number	6ES7352-1AH02-0AE0 FM352 Electron. Cam-operated Control
Output current	
• for signal "1" permissible range for 0 to 60 °C, min.	5 mA; with UPmax
• for signal "1" permissible range for 0 to 60 °C, max.	600 mA; with UPmax
• for signal "0" residual current, max.	0.5 mA
Encoder	
Connectable encoders	
• Incremental encoder (symmetrical)	Yes
• Incremental encoder (asymmetrical)	Yes
• Absolute encoder (SSI)	Yes
• 2-wire sensor	Yes
- permissible quiescent current (2-wire sensor), max.	2 mA
Encoder signals, incremental encoder (symmetrical)	
• Trace mark signals	A, notA, B, notB
• Zero mark signal	N, notN
• Input voltage	5 V difference signal (phys. RS 422)
• Input frequency, max.	1 MHz
Encoder signals, incremental encoder (asymmetrical)	
• Trace mark signals	A, B
• Zero mark signal	N
• Input voltage	24 V
• Input frequency, max.	50 kHz; 50 kHz for 25 m cable length; 25 kHz for 100 m cable length
Encoder signals, absolute encoder (SSI)	
• Data signal	DATA, notDATA
• Clock signal	CL, notCL
• Telegram length, parameterizable	13 or 25 bit
• Clock frequency, max.	1 MHz
• Gray code	Yes
• Cable length, shielded, max.	320 m; at max. 125 kHz

Technical specifications (continued)

Article number	6ES7352-1AH02-0AE0 FM352 Electron. Cam-operated Control
Potential separation	
Potential separation digital inputs	
• Potential separation digital inputs	No
Potential separation digital outputs	
• Potential separation digital outputs	No
Connection method	
required front connector	1x 20-pin

Article number	6ES7352-1AH02-0AE0 FM352 Electron. Cam-operated Control
Dimensions	
Width	80 mm
Height	125 mm
Depth	120 mm
Weights	
Weight, approx.	550 g

Ordering data

Ordering data	Article No.
FM352 electronic cam controller	6ES7352-1AH02-0AE0
Front connectors	
20-pin, with screw contacts	
• 1 unit	6ES7392-1AJ00-0AA0
• 100 units	6ES7392-1AJ00-1AB0
20-pin, with spring-loaded contacts	
• 1 unit	6ES7392-1BJ00-0AA0
• 100 units	6ES7392-1BJ00-1AB0
Bus connectors	6ES7390-0AA00-0AA0
1 unit (spare part)	
Labeling strips	6ES7392-2XX00-0AA0
10 units (spare part)	
Labeling sheets for machine inscription	See under "Accessories", page 5/266
Slot number label	6ES7912-0AA00-0AA0
Spare part	
Shield connection element	6ES7390-5AA00-0AA0
80 mm wide, with 2 rows for 4 terminals each	
Shield connection clamps	
2 units	
For 2 cables with 2 mm to 6 mm diameter	6ES7390-5AB00-0AA0
For 1 cable with 3 mm to 8 mm diameter	6ES7390-5BA00-0AA0
For 1 cable with 4 mm to 13 mm diameter	6ES7390-5CA00-0AA0

Signal cable	Article No.
Pre-assembled for SSI absolute encoder, UL/DESINA	6FX50 2-2CC11-
Pre-assembled for TTL encoder 6FX2001-1, UL/DESINA	6FX50 2-2CD01-
Pre-assembled for TTL encoder 24 V, UL/DESINA	6FX50 2-2CD24-
Not crimped	0
Module end crimped, connector case supplied	1
Motor end crimped, connector case supplied	4
0 m	1
100 m	2
200 m	3
0 m	A
10 m	B
20 m	C
30 m	D
40 m	E
50 m	F
60 m	G
70 m	H
80 m	J
90 m	K
0 m	A
1 m	B
2 m	C
3 m	D
4 m	E
5 m	F
6 m	G
7 m	H
8 m	J
9 m	K
0.0 m	0
0.1 m	1
0.2 m	2
0.3 m	3
0.4 m	4
0.5 m	5
0.6 m	6
0.7 m	7
0.8 m	8

SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

FM 352-5 high-speed Boolean processor

Overview



- The FM 352-5 high-speed Boolean processor provides extremely fast binary control and also some of the fastest switching processes ever possible (cycle time: 1 μ s).
- Programming is possible with LAD or FBD.
- The available set of statements comprises bit statements (partial statement set of STEP 7), timers, counters, frequency dividers, frequency generators, shift registers.
- 12 integral DI / 8 integral DQ.
- 2 versions: Current sinking or current sourcing digital outputs.
- 1 channel for connection of a 24-V incremental encoder, a 5-V incremental encoder (RS 422) or an SSI absolute encoder.

Micro Memory Card required for use of the FM 352-5

Note:

Displacement measuring systems and precut/pre-assembled cables for counting and positioning functions are available under SIMODRIVE Sensor or Motion Connect 500.

<http://www.siemens.com/simatic-technology>

Technical specifications

Article number	6ES7352-5AH01-0AE0	6ES7352-5AH11-0AE0
	FM 352-5, Boolean Processor 12DI/8DQ	FM 352-5 PNP, Boolean Processor 12DI/8DQ
Supply voltage		
Rated value (DC)		
• 24 V DC	Yes	Yes
Load voltage L+		
• Rated value (DC)	24 V	24 V
• Reverse polarity protection	Yes	Yes
Input current		
from load voltage 1L+, max.	150 mA; typ. 60 mA	150 mA; typ. 60 mA
from load voltage 2L+ (without load), max.	200 mA; typ. 60 mA, DI/DO supply	200 mA; typ. 60 mA, DI/DO supply
from load voltage 3L+ (with encoder), max.	600 mA; typ. 80 mA plus encoder supply	600 mA; typ. 80 mA plus encoder supply
from load voltage 3L+ (without load), max.	200 mA; typ. 80 mA	200 mA; typ. 80 mA
from backplane bus 5 V DC, typ.	135 mA	135 mA
Encoder supply		
5 V encoder supply		
• 5 V	Yes	Yes
• Short-circuit protection	Yes; Electronic overload protection; no protection on applying a normal or counter voltage.	Yes; Electronic overload protection; no protection on applying a normal or counter voltage.
• Output current, max.	250 mA	250 mA
24 V encoder supply		
• 24 V	Yes	Yes
• Short-circuit protection	Yes; Overvoltage and overheating protection if overloaded; diagnostics if output reaches temperature limit; no protection on applying a normal or counter voltage	Yes; Overvoltage and overheating protection if overloaded; diagnostics if output reaches temperature limit; no protection on applying a normal or counter voltage
• Output current, max.	400 mA	400 mA
Power loss		
Power loss, typ.	6.5 W	6.5 W
Memory		
Type of memory	RAM	RAM
Memory size	128 kbyte; required for operation, MMC	128 kbyte; required for operation, MMC

Technical specifications (continued)

Article number	6ES7352-5AH01-0AEO FM 352-5, Boolean Processor 12DI/8DQ	6ES7352-5AH11-0AEO FM 352-5 PNP, Boolean Processor 12DI/8DQ
Digital inputs		
Number of digital inputs	8; Standard and up to 12 with 24 V DC encoder inputs as digital inputs	8; Standard and up to 12 with 24 V DC encoder inputs as digital inputs
Input voltage		
• Rated value (DC)	24 V	24 V
• for signal "0"	-30 to +5V	-30 to +5V
• for signal "1"	+11 to +30V	+11 to +30V
Input current		
• for signal "0", max. (permissible quiescent current)	1.5 mA	1.5 mA
• for signal "1", typ.	3.8 mA	3.8 mA
Input delay (for rated value of input voltage)		
• Input frequency (with a time delay of 0.1 ms), max.	200 kHz	200 kHz
• programmable digital filter delay	None, 5 µs, 10 µs, 15 µs, 20 µs, 50 µs, 1.6 ms	None, 5 µs, 10 µs, 15 µs, 20 µs, 50 µs, 1.6 ms
• Minimum pulse width for program reactions	1 µs, 5 µs, 10 µs, 15 µs, 20 µs, 50 µs, 1.6 ms	1 µs, 5 µs, 10 µs, 15 µs, 20 µs, 50 µs, 1.6 ms
for standard inputs		
- at "0" to "1", max.	3 µs; typ. 1.5 µs	3 µs; typ. 1.5 µs
Cable length		
• shielded, max.	600 m	600 m
• unshielded, max.	100 m; Shielded cable recommended if filtering delay is set to less than 1.6 ms	100 m; Shielded cable recommended if filtering delay is set to less than 1.6 ms
Digital outputs		
Number of digital outputs	8	8
Current-sinking	Yes	No
Current-sourcing	No	Yes
Short-circuit protection	Yes; Overvoltage protection, thermal protection	Yes; Overvoltage protection, thermal protection
• Response threshold, typ.	1.7 to 3.5 A	1.7 to 3.5 A
Limitation of inductive shutdown voltage to	2M -45 V typ., (-40 V to -55 V); comment: no protection against inductive kickback >55 mJ	2M -45 V typ., (-40 V to -55 V); comment: no protection against inductive kickback >55 mJ
Controlling a digital input	No	Yes
Switching capacity of the outputs		
• on lamp load, max.	5 W	5 W
Output voltage		
• Rated value (DC)	24 V	24 V
• for signal "0", max.	28.8 V	28.8 V
• for signal "1", max.	0.5 V	0.5 V
Output current		
• for signal "1" rated value	0.5 A; At 60 °C	0.5 A; At 60 °C
• for signal "1" permissible range for 0 to 60 °C, min.	5 mA	5 mA
• for signal "1" permissible range for 0 to 60 °C, max.	600 mA	600 mA
• for signal "0" residual current, max.	1 mA	1 mA
Output delay with resistive load		
• "0" to "1", max.	1 µs; 0.6 µs 50 mA / 1.0 µs 0.5 A	1 µs; 0.6 µs 50 mA / 1.0 µs 0.5 A
• "1" to "0", max.	1.5 µs; 1.7 µs 50 mA / 1.5 µs 0.5 A	1.5 µs; 1.7 µs 50 mA / 1.5 µs 0.5 A
Parallel switching of two outputs		
• for uprating	Yes; 2	Yes; 2
Switching frequency		
• with resistive load, max.	100 kHz; 20 kHz at 0.5 A; 100 kHz at 0.25 A	100 kHz; 20 kHz at 0.5 A; 100 kHz at 0.25 A
• with inductive load, max.	2 Hz; 2 Hz at 0.5 A with external commutator diodes; 0.5 Hz at 0.5 A without external commutator diodes	2 Hz; 2 Hz at 0.5 A with external commutator diodes; 0.5 Hz at 0.5 A without external commutator diodes
• on lamp load, max.	10 Hz	10 Hz
Cable length		
• shielded, max.	600 m	600 m
• unshielded, max.	100 m	100 m

SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

FM 352-5 high-speed Boolean processor

Technical specifications (continued)

Article number	6ES7352-5AH01-0AE0	6ES7352-5AH11-0AE0
	FM 352-5, Boolean Processor 12DI/8DQ	FM 352-5 PNP, Boolean Processor 12DI/8DQ
Encoder		
Connectable encoders		
• Incremental encoder (symmetrical)	Yes	Yes
• Incremental encoder (asymmetrical)	Yes	Yes
• Absolute encoder (SSI)	Yes	Yes
• 2-wire sensor	Yes	Yes
- permissible quiescent current (2-wire sensor), max.	1.5 mA	1.5 mA
Encoder signals, incremental encoder (symmetrical)		
• Trace mark signals	A, notA, B, notB	A, notA, B, notB
• Zero mark signal	N, notN	N, notN
• Input voltage	5 V difference signal (phys. RS 422)	5 V difference signal (phys. RS 422)
• Input frequency, max.	500 kHz	500 kHz
• Cable length, shielded, max.	100 m; 100 m with 24 V supply and 500 kHz; 32 m with 5 V supply and 500 kHz	100 m; 100 m with 24 V supply and 500 kHz; 32 m with 5 V supply and 500 kHz
Encoder signals, incremental encoder (asymmetrical)		
• Trace mark signals	A, B	A, B
• Zero mark signal	N	N
• Input voltage	24 V	24 V
• Input frequency, max.	200 kHz	200 kHz
• Cable length, shielded, max.	50 m; Cable length, HTL incremental encoder, Siemens, type 6FX2001-4: 50 kHz, 25 m shielded, max., 25 kHz, 50 m shielded, max.	50 m; Cable length, HTL incremental encoder, Siemens, type 6FX2001-4: 50 kHz, 25 m shielded, max., 25 kHz, 50 m shielded, max.
Encoder signals, absolute encoder (SSI)		
• Data signal	DATA, notDATA	DATA, notDATA
• Clock signal	CK, notCK	CK, notCK
• Telegram length, parameterizable	13 or 25 bit	13 or 25 bit
• Clock frequency, max.	1 MHz; 125 kHz, 250 kHz, 500 kHz or 1 MHz	1 MHz; 125 kHz, 250 kHz, 500 kHz or 1 MHz
• Cable length, shielded, max.	320 m; At 125 kHz	320 m; At 125 kHz
• Monoflop time	settable: 16/32/48/64 µs	settable: 16/32/48/64 µs
• Listening mode	Yes; one or two stations	Yes; one or two stations
• Multiturn	Yes; 25 bit message frame	Yes; 25 bit message frame
Encoder signal evaluation		
• Counting direction, forward	Yes	Yes
• Counting direction, backward	Yes	Yes
Response times		
Input- to output response time	5 V input to 24 V output, 0 filter: 1 to 4 µs (typ.); 24 V input to 24 V output, 0 filter: 2 to 6 µs (typ.)	5 V input to 24 V output, 0 filter: 1 to 4 µs (typ.); 24 V input to 24 V output, 0 filter: 2 to 6 µs (typ.)
Interfaces		
Point-to-point connection		
• Updating times	PLC interface: 1.7 ms	PLC interface: 1.7 ms
Interrupts/diagnostics/status information		
Alarms		
• Diagnostic alarm	Yes; 1L, 2L, 3L missing; MMC error; output overload (8); encoder supply overload; differential wire break; parameterization error; SSI message frame overflow	Yes; 1L, 2L, 3L missing; MMC error; output overload (8); encoder supply overload; differential wire break; parameterization error; SSI message frame overflow
• Hardware interrupt	Yes; 8 available; for generation by user program	Yes; 8 available; for generation by user program
Diagnostic messages		
• Wire-break in signal transmitter cable	Yes	Yes
• Overflow/underflow	Yes	Yes
• missing load voltage	Yes	Yes

Technical specifications (continued)

Article number	6ES7352-5AH01-0AEO FM 352-5, Boolean Processor 12DI/8DQ	6ES7352-5AH11-0AEO FM 352-5 PNP, Boolean Processor 12DI/8DQ
Counter		
Counting range, description	Counting range (16-bit counters): -32 768 to 32 767 (user-specific within this range); counting range (32-bit counters): -2 147 483 648 to 2 147 483 647 (user-specific within this range)	Counting range (16-bit counters): -32 768 to 32 767 (user-specific within this range); counting range (32-bit counters): -2 147 483 648 to 2 147 483 647 (user-specific within this range)
Counting range, lower limit	-2 147 483 648	-2 147 483 648
Counting range, upper limit	2 147 483 647	2 147 483 647
Counting mode		
• Counting mode, individual	Yes	Yes
• Counting mode, continuous	Yes	Yes
• Counting mode, periodic	Yes	Yes
Potential separation		
between 1L and 2L and 3L	Yes	Yes
Potential separation digital inputs		
• Potential separation digital inputs	Yes; Yes CPU, I/O and sensor units are isolated	Yes; Yes CPU, I/O and sensor units are isolated
Configuration		
Programming		
• Program cycle time (scan)	1 µs	1 µs
Connection method		
required front connector	1x 40-pin	1x 40-pin
Dimensions		
Width	80 mm	80 mm
Height	125 mm	125 mm
Depth	120 mm	120 mm
Weights		
Weight, approx.	434 g; Module weight: approx. 434 g (with 1L connection and without I/O connection or MMC); shipping weight: approx. 500 g (with bus and 1L connection and without I/O connection or MMC)	434 g; Module weight: approx. 434 g (with 1L connection and without I/O connection or MMC); shipping weight: approx. 500 g (with bus and 1L connection and without I/O connection or MMC)

SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

FM 352-5 high-speed Boolean processor

Ordering data

Article No.

FM 352-5 high-speed Boolean processor

with current sinking digital outputs
with current sourcing digital outputs

6ES7352-5AH01-0AE0
6ES7352-5AH11-0AE0

Micro Memory Card

128 KB
512 KB
2 MB

6ES7953-8LG31-0AA0
6ES7953-8LJ31-0AA0
6ES7953-8LL31-0AA0

Front connector

40-pin, with screw contacts
• 1 unit
• 100 units
40-pin, with spring-loaded contacts
• 1 unit
• 100 units

6ES7392-1AM00-0AA0
6ES7392-1AM00-1AB0
6ES7392-1BM01-0AA0
6ES7392-1BM01-1AB0

Article No.

Signal cables

To HTL and TTL encoders, preassembled, without Sub-D connector

6FX5002-2CA12- 0

To SSI absolute encoders 6FX2001-5, preassembled, without Sub-D connector

6FX5002-2CC12- 0

Length code:

0 m
100 m
200 m

1
2
3

0 m
10 m
20 m
30 m
40 m
50 m
60 m
70 m
80 m
90 m

A
B
C
D
E
F
G
H
J
K

0 m
1 m
2 m
3 m
4 m
5 m
6 m
7 m
8 m
9 m

A
B
C
D
E
F
G
H
J
K

0.0 m
0.1 m
0.2 m
0.3 m
0.4 m
0.5 m
0.6 m
0.7 m
0.8 m

0
1
2
3
4
5
6
7
8

5

Overview



- 4-channel closed-loop controller module for universal control tasks
- Can be used for temperature, pressure, flow and level controls
- Convenient online self-optimization for temperature controls
- Predefined controller structures
- 2 control algorithms
- 2 versions:
 - FM 355 C as continuous controller;
 - FM 355 S as step or pulse controller
- With 4 analog outputs (FM 355 C) or 8 digital outputs (FM 355 S) for direct control of the most common actuators
- Continuation of control mode also possible with CPU stop or failure

Technical specifications

Article number	6ES7355-0VH10-0AE0 Control unit FM355C, 4 chan.	6ES7355-1VH10-0AE0 Control unit FM355S, 4 chan.
Supply voltage		
Load voltage L+		
• Rated value (DC)	24 V	24 V
Input current		
from load voltage L+ (without load), max.	310 mA; Typ. 260 mA	270 mA; typ. 220 mA
from backplane bus 5 V DC, max.	75 mA; typ. 50 mA	75 mA; typ. 50 mA
Power loss		
Power loss, typ.	6.5 W	5.5 W
Power loss, max.	7.8 W	6.9 W
Digital inputs		
Number of digital inputs	8	8
Input characteristic curve in accordance with IEC 61131, type 2	Yes	Yes
Input voltage		
• Rated value (DC)	24 V	24 V
• for signal "0"	-3 to +5V	-3 to +5V
• for signal "1"	13 to 30V	13 to 30V
Input current		
• for signal "1", typ.	7 mA	7 mA
Cable length		
• shielded, max.	1 000 m	1 000 m
• unshielded, max.	600 m	600 m
Digital outputs		
Number of digital outputs		8
Short-circuit protection		Yes; Electronic
Limitation of inductive shutdown voltage to		L+ (-1.5 V)
Controlling a digital input		Yes
Switching capacity of the outputs		
• on lamp load, max.		5 W
Load resistance range		
• lower limit		240 Ω
• upper limit		4 kΩ

SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

FM 355 controller module

Technical specifications (continued)

Article number	6ES7355-0VH10-0AEO	6ES7355-1VH10-0AEO
	Control unit FM355C, 4 chan.	Control unit FM355S, 4 chan.
Output voltage		
• for signal *1*, min.		L+ (-2.5 V)
Output current		
• for signal *1* rated value		100 mA
• for signal *1* permissible range for 0 to 60 °C, min.		5 mA
• for signal *1* permissible range for 0 to 60 °C, max.		150 mA
• for signal *0* residual current, max.		0.5 mA
Parallel switching of two outputs		
• for logic links		Yes
Switching frequency		
• with resistive load, max.		100 Hz
• with inductive load, max.		0.5 Hz
• on lamp load, max.		100 Hz
Total current of the outputs (per group)		
all mounting positions		
- up to 60 °C, max.		400 mA
Cable length		
• shielded, max.		1 000 m
• unshielded, max.		600 m
Analog inputs		
Number of analog inputs	4	4
permissible input voltage for voltage input (destruction limit), max.	30 V	30 V
permissible input current for current input (destruction limit), max.	40 mA	40 mA
Input ranges (rated values), voltages		
• 0 to +10 V	Yes	Yes
• -1.75 V to +11.75 V	Yes	Yes
• -80 mV to +80 mV	Yes	Yes
Input ranges (rated values), currents		
• 0 to 20 mA	Yes	Yes
• 0 to 23.5 mA	Yes	Yes
• -3.5 mA to +23.5 mA	Yes	Yes
• 4 mA to 20 mA	Yes	Yes
Input ranges (rated values), thermocouples		
• Type B	Yes	Yes
• Type J	Yes	Yes
• Type K	Yes	Yes
• Type R	Yes	Yes
• Type S	Yes	Yes
Input ranges (rated values), resistance thermometer		
• Pt 100	Yes	Yes
Thermocouple (TC)		
Temperature compensation		
- internal temperature compensation	Yes	Yes
- external temperature compensation with Pt100	Yes	Yes
Characteristic linearization		
• parameterizable	Yes	Yes
- for thermocouples	Type B, J, K, R, S	Type B, J, K, R, S
- for resistance thermometer	Pt100 (standard)	Pt100 (standard)
Cable length		
• shielded, max.	200 m; 50 m at 80 mV and thermocouples	200 m; 50 m at 80 mV and thermocouples

Technical specifications (continued)

Article number	6ES7355-0VH10-0AEO	6ES7355-1VH10-0AEO
	Control unit FM355C, 4 chan.	Control unit FM355S, 4 chan.
Analog outputs		
Number of analog outputs	4	
Voltage output, short-circuit protection	Yes	
Voltage output, short-circuit current, max.	25 mA	
Current output, no-load voltage, max.	18 V	
Output ranges, voltage		
• 0 to 10 V	Yes	
• -10 V to +10 V	Yes	
Output ranges, current		
• 0 to 20 mA	Yes	
• 4 mA to 20 mA	Yes	
Connection of actuators		
• for voltage output two-wire connection	Yes	
• for current output two-wire connection	Yes	
Load impedance (in rated range of output)		
• with voltage outputs, min.	1 k Ω	
• with voltage outputs, capacitive load, max.	1 μ F	
• with current outputs, max.	500 Ω	
• with current outputs, inductive load, max.	1 mH	
Cable length		
• shielded, max.	200 m; 50 m at 80 mV and thermocouples	
Analog value generation for the inputs		
Measurement principle	integrating	integrating
Integration and conversion time/resolution per channel		
• Resolution with overrange (bit including sign), max.	14 bit; 12 bit or 14 bit, parameterizable	14 bit; 12 bit or 14 bit, parameterizable
• Conversion time (per channel)	16.67 ms; for 12 bit: 16 2/3 ms for 60 Hz, 20 ms for 50 Hz; for 14 bit: 100 ms for 50 Hz and 60 Hz	16.67 ms; for 12 bit: 16 2/3 ms for 60 Hz, 20 ms for 50 Hz; for 14 bit: 100 ms for 50 Hz and 60 Hz
Analog value generation for the outputs		
Settling time		
• for resistive load	0.1 ms	
• for capacitive load	3.3 ms	
• for inductive load	0.5 ms	
Encoder		
Connection of signal encoders		
• for voltage measurement	Yes	Yes
• for current measurement as 4-wire transducer	Yes	Yes
Connectable encoders		
• 2-wire sensor	Yes	Yes
- permissible quiescent current (2-wire sensor), max.	1.5 mA	1.5 mA

SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

FM 355 controller module

Technical specifications (continued)

Article number	6ES7355-0VH10-0AEO	6ES7355-1VH10-0AEO
	Control unit FM355C, 4 chan.	Control unit FM355S, 4 chan.
Errors/accuracies		
Linearity error (relative to input range), (+/-)	0.05 %	0.05 %
Temperature error (relative to input range), (+/-)	0.005 %/K	0.005 %/K
Linearity error (relative to output range), (+/-)	0.05 %	
Temperature error (relative to output range), (+/-)	0.02 %/K	
Operational error limit in overall temperature range		
• Voltage, relative to input range, (+/-)	0.6 %; ±0.6 to ±1%	0.6 %; ±0.6 to ±1%
• Current, relative to input range, (+/-)	0.6 %; ±0.6 to ±1%	0.6 %; ±0.6 to ±1%
• Resistance thermometer, relative to input range, (+/-)	0.6 %; ±0.6 to ±1%	0.6 %; ±0.6 to ±1%
• Voltage, relative to output range, (+/-)	0.5 %	
• Current, relative to output range, (+/-)	0.6 %	
Basic error limit (operational limit at 25 °C)		
• Voltage, relative to input range, (+/-)	0.4 %; 80 mV: ±0.6 %; 250 to 1 000 mV: ±0.4 %; 2.5 to 10 V: ±0.6 %; 3.2 to 20 mA: ±0.5 %	0.4 %; 80 mV: ±0.6 %; 250 to 1 000 mV: ±0.4 %; 2.5 to 10 V: ±0.6 %; 3.2 to 20 mA: ±0.5 %
• Current, relative to input range, (+/-)	0.4 %; ±0.4 to ±0.6 %	0.4 %; ±0.4 to ±0.6 %
• Resistance thermometer, relative to input range, (+/-)	0.4 %; ±0.4 to ±0.6 %	0.4 %; ±0.4 to ±0.6 %
• Voltage, relative to output range, (+/-)	0.3 %	
• Current, relative to output range, (+/-)	0.5 %	
Interference voltage suppression for $f = n \times (f_1 \pm 1 \%)$, $f_1 =$ interference frequency		
• Series mode interference (peak value of interference < rated value of input range), min.	40 dB	40 dB
• Common mode interference (USS < 2.5 V), min.	70 dB	70 dB
Interrupts/diagnostics/status information		
Substitute values connectable	Yes; Parameterizable	Yes; Parameterizable
Integrated Functions		
Control technology		
• Number of closed-loop controllers	4	4
Potential separation		
Potential separation controller		
• between the channels	No	No
• between the channels and backplane bus	Yes; Optocoupler	Yes; Optocoupler
Connection method		
required front connector	2x 20-pin	2x 20-pin
Dimensions		
Width	80 mm	80 mm
Height	125 mm	125 mm
Depth	120 mm	120 mm
Weights		
Weight, approx.	470 g	470 g

Ordering data	Article No.		Article No.
FM 355 C controller module With 4 analog outputs for 4 continuous controllers	6ES7355-0VH10-0AE0	Labeling sheets for machine inscription	See under "Accessories", page 5/266
FM 355 S controller module With 8 digital outputs for 4 step or pulse controllers	6ES7355-1VH10-0AE0	Slot number label	6ES7912-0AA00-0AA0
Front connector 20-pin, with screw contacts • 1 unit • 100 units	6ES7392-1AJ00-0AA0 6ES7392-1AJ00-1AB0	Spare part	
20-pin, with spring-loaded contacts • 1 unit • 100 units	6ES7392-1BJ00-0AA0 6ES7392-1BJ00-1AB0	Shield connection element	6ES7390-5AA00-0AA0
Bus connectors	6ES7390-0AA00-0AA0	80 mm wide, with 2 rows for 4 terminals each	
1 unit (spare part)		Shield connection clamps	
Labeling strips	6ES7392-2XX00-0AA0	2 units	
10 units (spare part)		For 2 cables with 2 mm to 6 mm diameter	6ES7390-5AB00-0AA0
		For 1 cable with 3 mm to 8 mm diameter	6ES7390-5BA00-0AA0
		For 1 cable with 4 mm to 13 mm diameter	6ES7390-5CA00-0AA0

SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

FM 355-2 temperature controller module

Overview



- 4-channel closed-loop controller module specifically for temperature controls
- Including integrated and easy-to-use online self-optimization
- Heating and cooling controllers as well as combined controllers with heating and active cooling function feasible
- Ready-to-use controller structures
- 2 versions:
 - FM 355-2 C as a continuous controller;
 - FM 355-2 S as step or pulse controllers
- With 4 analog outputs (FM 355-2 C) or 8 digital outputs (FM 355-2 S) to directly control the most common final control elements
- Continuation of control mode also possible with CPU stop or failure

Technical specifications

Article number	6ES7355-2CH00-0AE0	6ES7355-2SH00-0AE0
	Temp. control unit FM355-2C, 4 chan.	Temp. control unit FM355-2S, 4 chan.
Supply voltage		
Load voltage L+		
• Rated value (DC)	24 V	24 V
Input current		
from load voltage L+ (without load), max.	310 mA; Typ. 260 mA	270 mA; typ. 220 mA
from backplane bus 5 V DC, max.	75 mA; typ. 50 mA	75 mA; typ. 50 mA
Power loss		
Power loss, typ.	6.5 W	5.5 W
Power loss, max.	7.8 W	6.9 W
Digital inputs		
Number of digital inputs	8	8
Input characteristic curve in accordance with IEC 61131, type 2	Yes	Yes
Input voltage		
• Rated value (DC)	24 V	24 V
• for signal "0"	-3 to +5V	-3 to +5V
• for signal "1"	13 to 30V	13 to 30V
Input current		
• for signal "1", typ.	7 mA	7 mA
Cable length		
• shielded, max.	1 000 m	1 000 m
• unshielded, max.	600 m	600 m
Digital outputs		
Number of digital outputs		8
Short-circuit protection		Yes; Electronic
Limitation of inductive shutdown voltage to		L+ (-1.5 V)
Controlling a digital input		Yes
Switching capacity of the outputs		
• on lamp load, max.		5 W
Load resistance range		
• lower limit		240 Ω
• upper limit		4 kΩ
Output voltage		
• for signal "1", min.		L+ (-2.5 V)

Technical specifications (continued)

Article number	6ES7355-2CH00-0AE0	6ES7355-2SH00-0AE0
	Temp. control unit FM355-2C, 4 chan.	Temp. control unit FM355-2S, 4 chan.
Output current		
• for signal "1" rated value		0.1 A
• for signal "1" permissible range for 0 to 60 °C, min.		5 mA
• for signal "1" permissible range for 0 to 60 °C, max.		150 mA
• for signal "0" residual current, max.		0.5 mA
Parallel switching of two outputs		
• for logic links		Yes
Switching frequency		
• with resistive load, max.		100 Hz
• with inductive load, max.		0.5 Hz
• on lamp load, max.		100 Hz
Total current of the outputs (per group)		
all mounting positions		
- up to 60 °C, max.		400 mA
Cable length		
• shielded, max.		1 000 m
• unshielded, max.		600 m
Analog inputs		
Number of analog inputs	4	4
permissible input voltage for voltage input (destruction limit), max.	20 V	20 V
permissible input current for current input (destruction limit), max.	40 mA	40 mA
Input ranges (rated values), voltages		
• 0 to +10 V	Yes	Yes
• -1.75 V to +11.75 V	Yes	Yes
Input ranges (rated values), currents		
• 0 to 20 mA	Yes	Yes
• 0 to 23.5 mA	Yes	Yes
• -3.5 mA to +23.5 mA	Yes	Yes
• 4 mA to 20 mA	Yes	Yes
Input ranges (rated values), thermocouples		
• Type B	Yes	Yes
• Type E	Yes	Yes
• Type J	Yes	Yes
• Type K	Yes	Yes
• Type R	Yes	Yes
• Type S	Yes	Yes
Input ranges (rated values), resistance thermometer		
• Pt 100	Yes	Yes
Thermocouple (TC)		
Temperature compensation		
- internal temperature compensation	Yes	Yes
- external temperature compensation with Pt100	Yes	Yes
Characteristic linearization		
• parameterizable	Yes	Yes
- for thermocouples	Type B, E, J, K, R, S	Type B, E, J, K, R, S
- for resistance thermometer	Pt100 (standard)	Pt100 (standard)
Cable length		
• shielded, max.	200 m; 50 m at 80 mV and thermocouples	200 m; 50 m at 80 mV and thermocouples

SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

FM 355-2 temperature controller module**Technical specifications (continued)**

Article number	6ES7355-2CH00-0AEO Temp. control unit FM355-2C, 4 chan.	6ES7355-2SH00-0AEO Temp. control unit FM355-2S, 4 chan.
Analog outputs		
Number of analog outputs	4	
Voltage output, short-circuit protection	Yes	
Voltage output, short-circuit current, max.	25 mA	
Current output, no-load voltage, max.	18 V	
Output ranges, voltage		
• 0 to 10 V	Yes	
• -10 V to +10 V	Yes	
Output ranges, current		
• 0 to 20 mA	Yes	
• 4 mA to 20 mA	Yes	
Connection of actuators		
• for voltage output two-wire connection	Yes	
• for current output two-wire connection	Yes	
Load impedance (in rated range of output)		
• with voltage outputs, min.	1 k Ω	
• with voltage outputs, capacitive load, max.	1 μ F	
• with current outputs, max.	500 Ω	
• with current outputs, inductive load, max.	1 mH	
Cable length		
• shielded, max.	200 m; 50 m at 80 mV and thermocouples	
Analog value generation for the inputs		
Measurement principle	integrating	integrating
Integration and conversion time/resolution per channel		
• Resolution with overrange (bit including sign), max.	14 bit	14 bit
• Conversion time (per channel)	100 ms; At 50/60 Hz	100 ms; At 50/60 Hz
Analog value generation for the outputs		
Settling time		
• for resistive load	0.1 ms	
• for capacitive load	3.3 ms	
• for inductive load	0.5 ms	
Encoder		
Connection of signal encoders		
• for voltage measurement	Yes	Yes
• for current measurement as 4-wire transducer	Yes	Yes
Connectable encoders		
• 2-wire sensor	Yes	Yes
- permissible quiescent current (2-wire sensor), max.	1.5 mA	1.5 mA

Technical specifications (continued)

Article number	6ES7355-2CH00-0AE0 Temp. control unit FM355-2C, 4 chan.	6ES7355-2SH00-0AE0 Temp. control unit FM355-2S, 4 chan.
Errors/accuracies		
Linearity error (relative to input range), (+/-)	0.05 %	0.05 %
Temperature error (relative to input range), (+/-)	0.005 %/K	0.005 %/K
Linearity error (relative to output range), (+/-)	0.05 %	
Temperature error (relative to output range), (+/-)	0.02 %/K	
Operational error limit in overall temperature range		
• Voltage, relative to input range, (+/-)	0.6 %; ±0.6 to ±0.7 %	0.06 %; ±0.06 to ±0.7%
• Current, relative to input range, (+/-)	0.6 %; ±0.6 to ±0.7 %	0.06 %; ±0.06 to ±0.7%
• Resistance thermometer, relative to input range, (+/-)	0.6 %; ±0.6 to ±0.7 %	0.06 %; ±0.06 to ±0.7%
• Voltage, relative to output range, (+/-)	0.5 %	
• Current, relative to output range, (+/-)	0.6 %	
Basic error limit (operational limit at 25 °C)		
• Voltage, relative to input range, (+/-)	0.04 %; ±0.04 to ±0.5 %	0.04 %; ±0.04 to ±0.5 %
• Current, relative to input range, (+/-)	0.04 %; ±0.04 to ±0.5 %	0.04 %; ±0.04 to ±0.5 %
• Resistance thermometer, relative to input range, (+/-)	0.04 %; ±0.04 to ±0.5 %	0.04 %; ±0.04 to ±0.5 %
• Voltage, relative to output range, (+/-)	0.4 %	
• Current, relative to output range, (+/-)	0.5 %	
Interference voltage suppression for $f = n \times (f_1 \pm 1 \%)$, $f_1 =$ interference frequency		
• Series mode interference (peak value of interference < rated value of input range), min.	40 dB	40 dB
• Common mode interference (USS < 2.5 V), min.	70 dB	70 dB
Interrupts/diagnostics/status information		
Substitute values connectable	Yes; Parameterizable	Yes; Parameterizable
Integrated Functions		
Control technology		
• Number of closed-loop controllers	4	4
Potential separation		
Potential separation controller		
• between the channels	No	No
• between the channels and backplane bus	Yes; Optocoupler	Yes; Optocoupler
Connection method		
required front connector	2x 20-pin	2x 20-pin
Dimensions		
Width	80 mm	80 mm
Height	125 mm	125 mm
Depth	120 mm	120 mm
Weights		
Weight, approx.	470 g	470 g

SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

FM 355-2 temperature controller module**Ordering data****Article No.****FM 355-2 C temperature controller module****6ES7355-2CH00-0AE0**

With 4 analog outputs for 4 continuous-action controllers

FM 355-2 S temperature controller module**6ES7355-2SH00-0AE0**

With 8 digital outputs for 4 step or pulse controllers

Front connector

20-pin, with screw contacts

- 1 unit
- 100 units

6ES7392-1AJ00-0AA0
6ES7392-1AJ00-1AB0

20-pin, with spring-loaded contacts

- 1 unit
- 100 units

6ES7392-1BJ00-0AA0
6ES7392-1BJ00-1AB0**Bus connectors****6ES7390-0AA00-0AA0**

1 unit (spare part)

Article No.**Labeling strips****6ES7392-2XX00-0AA0**

10 units (spare part)

Labeling sheets for machine inscription

See under "Accessories", page 5/266

Slot number label**6ES7912-0AA00-0AA0**

Spare part

Shield connection element**6ES7390-5AA00-0AA0**

80 mm wide, with 2 rows for 4 terminals each

Shield connection clamps

2 units

For 2 cables with 2 mm to 6 mm diameter

6ES7390-5AB00-0AA0

For 1 cable with 3 mm to 8 mm diameter

6ES7390-5BA00-0AA0

For 1 cable with 4 mm to 13 mm diameter

6ES7390-5CA00-0AA0

5

Overview



- Interface between max. 3 absolute-value sensors (SSI) and the CPU
- For provision of the displacement encoder values for further processing in STEP 7 programs
- Enables direct response of controller to encoder values in moving systems

Note:

Displacement measuring systems and pre-cut/pre-assembled cables for counting and positioning functions are available under SIMODRIVE Sensor or Motion Connect 500.

<http://www.siemens.com/simatic-technology>

Technical specifications

Article number	6ES7338-4BC01-0AB0 SM 338, f. 3 SSI encoders
Supply voltage	
Load voltage L+	
• Rated value (DC)	24 V
Input current	
from load voltage L+ (without load), max.	100 mA
from backplane bus 5 V DC, max.	160 mA
24 V encoder supply	
• 24 V	Yes; L+ (-0.8 V)
• Output current, max.	900 mA
Power loss	
Power loss, typ.	3 W
Digital inputs	
Input voltage	
• for signal *0*	-3 to +5V
• for signal *1*	11 to 30.2 V
Input current	
• for signal *0*, max. (permissible quiescent current)	2 mA
• for signal *1*, typ.	9 mA
Input delay (for rated value of input voltage) for standard inputs	
- at *0* to *1*, min.	300 µs
Cable length	
• shielded, max.	600 m

Article number	6ES7338-4BC01-0AB0 SM 338, f. 3 SSI encoders
Encoder	
Number of connectable encoders, max.	3
Connectable encoders	
• Absolute encoder (SSI)	Yes
• 2-wire sensor	Yes
Encoder signals, absolute encoder (SSI)	
• Cable length, shielded, max.	320 m; 320 m at 125 kHz; 160 m at 250 kHz; 60 m at 500 kHz; 20 m at 1 MHz
Interrupts/diagnostics/status information	
Alarms	
• Diagnostic alarm	Yes
Potential separation	
Potential separation exists	No
Connection method	
required front connector	20-pin
Dimensions	
Width	40 mm
Height	125 mm
Depth	120 mm
Weights	
Weight, approx.	235 g

SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

SM 338 POS input module

Ordering data

Article No.

SM 338 POS input module

6ES7338-4BC01-0AB0

For position sensing with 3 SSI encoders

Front connector

20-pin, with screw contacts

- 1 unit
- 100 units

6ES7392-1AJ00-0AA0

6ES7392-1AJ00-1AB0

20-pin, with spring-loaded contacts

- 1 unit
- 100 units

6ES7392-1BJ00-0AA0

6ES7392-1BJ00-1AB0

Front door, elevated design

6ES7328-0AA00-7AA0

e.g. for 32-channel modules;
for connecting 1.3 mm²/16 AWG
conductors

SIMATIC Manual Collection

6ES7998-8XC01-8YE0

Electronic manuals on DVD,
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SIMATIC Manual Collection

6ES7998-8XC01-8YE2

update service for 1 year
Current "Manual Collection" DVD
and the three subsequent updates

Article No.

Signal cable

Pre-assembled for SSI absolute
encoder 6FX2001-5, without Sub-D
connector, UL/DESINA

6FX5002-2CC12-

0 m

100 m

200 m

0 m

10 m

20 m

30 m

40 m

50 m

60 m

70 m

80 m

90 m

0 m

1 m

2 m

3 m

4 m

5 m

6 m

7 m

8 m

9 m

0.0 m

0.1 m

0.2 m

0.3 m

0.4 m

0.5 m

0.6 m

0.7 m

0.8 m

6FX5002-2CC12-

1

2

3

A

B

C

D

E

F

G

H

J

K

A

B

C

D

E

F

G

H

J

K

0

1

2

3

4

5

6

7

8

Overview



- For connecting up to 4 drives with analog setpoint interface or pulse-direction interface to a controller
- Operation with isochronous PROFIBUS DP
- Connectable drives:
 - Electrical drives
 - Hydraulic drives
 - Stepper drives
- Can be used with:
 - SIMATIC CPU 41x-2 DP, CPU 31x-2 DP, CPU 31xT-2 DP, WinAC RTX 2008
 - SIMOTION C2xx, SIMOTION P320-4, SIMOTION D4x5-2
- Can also be used with external encoders

5

Technical specifications

Article number	6ES7174-0AA10-0AA0 IM 174 for connecting analog drives
Supply voltage	
Rated value (DC)	
• 24 V DC	Yes
Input current	
Current consumption, max.	500 mA
from backplane bus 5 V DC, max.	100 mA
Encoder supply	
5 V encoder supply	
• 5 V	Yes
• Output current, max.	1.2 A
• Cable length, max.	25 m
24 V encoder supply	
• 24 V	Yes
• Output current, max.	1.4 A
• Cable length, max.	100 m
Absolute encoder (SSI) encoder supply	
• Absolute encoder (SSI)	Yes
• Short-circuit protection	Yes
Power loss	
Power loss, typ.	12 W
Digital inputs	
Number of digital inputs	10
Input voltage	
• for signal "0"	-3 to +5V
• for signal "1"	+11 to +30V
Input current	
• for signal "0", max. (permissible quiescent current)	2 mA
• for signal "1", typ.	8 mA
Input delay (for rated value of input voltage) for standard inputs	
- at "0" to "1", min.	15 µs
Cable length	
• shielded, max.	100 m

Article number	6ES7174-0AA10-0AA0 IM 174 for connecting analog drives
Digital outputs	
Number of digital outputs	8
Short-circuit protection	Yes
Switching capacity of the outputs	
• with resistive load, max.	1 A
• on lamp load, max.	30 W
Output voltage	
• Rated value (DC)	24 V; L+
• for signal "1", min.	L+ (-3 V)
• for signal "1", max.	3 V
Output current	
• for signal "1" permissible range for 0 to 55 °C, min.	5 mA
• for signal "1" permissible range for 0 to 55 °C, max.	300 mA
• for signal "0" residual current, max.	0.4 mA
Output delay with resistive load	
• "0" to "1", max.	500 µs
Switching frequency	
• with resistive load, max.	500 Hz
• with inductive load, max.	0.5 Hz
Relay outputs	
• Number of relay outputs	4
• Number of operating cycles, max.	50 000
Switching capacity of contacts	
- with resistive load, max.	1 A
Cable length	
• shielded, max.	600 m
Analog outputs	
Number of analog outputs	4
Output ranges, voltage	
• -10 V to +10 V	Yes
Analog value generation for the outputs	
Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	15 bit

SIMATIC S7-300 Advanced Controllers

I/O modules

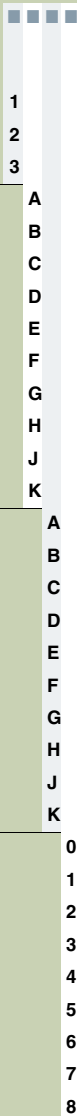
Function modules

IM 174 PROFIBUS module

Technical specifications (continued)

Article number	6ES7174-0AA10-0AA0 IM 174 for connecting analog drives
Encoder	
Number of connectable encoders, max.	4
Connectable encoders	
• Incremental encoder (symmetrical)	Yes
• Absolute encoder (SSI)	Yes
• 2-wire sensor	Yes
- permissible quiescent current (2-wire sensor), max.	2 mA
Encoder signals, incremental encoder (symmetrical)	
• Trace mark signals	A, notA, B, notB
• Zero mark signal	N, notN
• Input voltage	5 V difference signal (phys. RS 422)
• Input frequency, max.	1 MHz
• Cable length, shielded, max.	35 m; 35 m at max. 500 kHz; 10 m at max. 1 MHz
Encoder signals, absolute encoder (SSI)	
• Input signal	5 V difference signal (phys. RS 422)
• Data signal	DATA, notDATA
• Clock signal	CL, notCL
• Telegram length, parameterizable	13, 21, 24 bit
• Clock frequency, max.	1.5 MHz; 187.5 KHz 1.5 MHz (parameterizable)
• Binary code	Yes
• Gray code	Yes
• Cable length, shielded, max.	250 m; 250 m at 187.5 kHz, 10 m at 1.5 MHz
Isochronous mode	
Isochronous operation (application synchronized up to terminal)	Yes
shortest clock pulse	1.5 ms
Interrupts/diagnostics/status information	
Alarms	
• Diagnostic alarm	Yes

Article number	6ES7174-0AA10-0AA0 IM 174 for connecting analog drives
Drive interface	
Number of drive interfaces	4
Analog drive	
Setpoint signal	
- Short-circuit proof	Yes; max. 45 mA, min. 3.3 kOhm load impedance
- Rated voltage range	-10.5 V to +10.5 V
- Output current	-3 to +3 mA
Output controller enable	
- Number of relay contacts	4
- Switching voltage, max.	30 V
- Switching current, max.	1 A
- Switching capacity, max.	30 V·A
- Number of switching cycles, min.	50 000; at 30 V DC, 1 A
- Cable length, shielded, max.	35 m
Stepper drive	
• Differential output voltage, min.	2 V; R = 100 Ohm
• Differential output voltage for signal "0", max.	1 V; For I = -20 mA
• Differential output voltage for signal "1", min.	3.7 V; 3.7 V at I = -20 mA; 4.5 V at I = -100 µA,
• Load resistance, min.	55 Ω
• Output current, max.	60 mA
• Pulse frequency	750 kHz
• Cable length, shielded, max.	50 m; in hybrid operation with analog axes 35 m, in asymmetrical transmission 10 m
Potential separation	
Potential separation digital inputs	
• Potential separation digital inputs	Yes; to encoders, analog outputs, DP interface; no to other DI/DOs
Potential separation digital outputs	
• Potential separation digital outputs	Yes; to encoders, analog outputs, DP interface; no to other DI/DOs
Connection method	
required front connector	40-pin
Dimensions	
Width	160 mm
Height	125 mm
Depth	118 mm
Weights	
Weight, approx.	1 kg

Ordering data	Article No.		Article No.
<p>IM 174 PROFIBUS module</p> <p>PROFIBUS module for connecting analog drives and stepper drives to a controller</p>	<p>6ES7174-0AA10-0AA0</p>	<p>Setpoint cable</p> <p>for the connection between IM 174 and SIMODRIVE 611-A</p> <p>0 m</p> <p>100 m</p> <p>200 m</p> <hr/> <p>0 m</p> <p>10 m</p> <p>20 m</p> <p>30 m</p> <p>40 m</p> <p>50 m</p> <p>60 m</p> <p>70 m</p> <p>80 m</p> <p>90 m</p> <hr/> <p>0 m</p> <p>1 m</p> <p>2 m</p> <p>3 m</p> <p>4 m</p> <p>5 m</p> <p>6 m</p> <p>7 m</p> <p>8 m</p> <p>9 m</p> <hr/> <p>0.0 m</p> <p>0.1 m</p> <p>0.2 m</p> <p>0.3 m</p> <p>0.4 m</p> <p>0.5 m</p> <p>0.6 m</p> <p>0.7 m</p> <p>0.8 m</p>	<p>6FX2002-3AD01-</p>  <p>1</p> <p>2</p> <p>3</p> <hr/> <p>A</p> <p>B</p> <p>C</p> <p>D</p> <p>E</p> <p>F</p> <p>G</p> <p>H</p> <p>J</p> <p>K</p> <hr/> <p>A</p> <p>B</p> <p>C</p> <p>D</p> <p>E</p> <p>F</p> <p>G</p> <p>H</p> <p>J</p> <p>K</p> <hr/> <p>0</p> <p>1</p> <p>2</p> <p>3</p> <p>4</p> <p>5</p> <p>6</p> <p>7</p> <p>8</p>

SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

SIWAREX U

Overview



SIWAREX U is a versatile weighing module for all simple weighing and force measuring tasks. The compact module can be integrated into SIMATIC automation systems without any problems. Complete data access is possible via the SIMATIC.

5

Technical specifications

SIWAREX U

Integration in automation systems

• S7-300	Direct integration
• S7-1500	Through ET 200M
• S7-400 (H)	Through ET 200M
• PCS 7 (H)	Through ET 200M
• Automation systems from other vendors	Through ET 200M
• Stand-alone (without SIMATIC CPU)	Possible with IM 153-1

Communication interfaces

- SIMATIC S7 (P bus)
- RS 232
- TTY

Connection of remote displays (through TTY serial interface)

Gross, channel 1, 2 or default value 1, 2

Scale adjustment

Through SIMATIC (P bus) or PC using SIWATOOL U (RS 232)

Measuring properties

Error limit to DIN 1319-1 of full-scale value at 20 °C ± 10 K (68 °F ± 10 K)

0.05%

Internal resolution ADC
Data format of weight values

65535
2 byte (fixed-point)

Number of measurements/second

50

Digital filter

0.05 ... 5 Hz (in 7 steps), mean value filter

Weighing functions

Weight values

Gross

Limit values

2 (min./max.)

Zero-setting function

Per command

Load cells

Strain gauges in 4-wire or 6-wire system

SIWAREX U

Load cell powering

Supply voltage U_s (rated value)	6 V DC ¹⁾
Max. supply current	≤ 150 mA per channel
Permissible load resistance	
• R_{Lmin}	> 40 Ω per channel
• R_{Lmax}	< 4 010 Ω

With Ex(i) interface

• R_{Lmin}	> 87 Ω per channel
• R_{Lmax}	< 4 010 Ω

Permissible load cell characteristic

Up to 4 mV/V

Max. distance of load cells

500 m²⁾
150/500 m for gas group IIC
500 m²⁾ for gas group IIB
(see SIWAREX IS Manual)

Intrinsically-safe load cell powering

Optional (Ex interface) with SIWAREX IS

Auxiliary power supply

Rated voltage	24 V DC
Max. power consumption	150 mA (single-channel) / 240 mA (dual-channel)
Current consumption on backplane bus	≤ 100 mA

Certification

ATEX 95, FM, cUL_{US} Haz. Loc.

IP degree of protection to EN 60529; IEC 60529

IP20

Climatic requirements

T_{min} (IND) to T_{max} (IND) (operating temperature)

- Horizontal installation 0 ... +60 °C (32 ... 140 °F)
- Vertical installation 0 ... +40 °C (32 ... 104 °F)

EMC requirements according to

according to NAMUR NE21, Part 1; EN 61326

Dimensions

40 x 125 x 130 mm
(1.58 x 4.92 x 5.12 in)

¹⁾ Load cell supply changed to 6 V DC as compared to 7MH4601-1AA01 and ... 1BA01.

²⁾ Possible up to 1000 m under certain conditions when using the recommended cable (accessories).

Ordering data	Article No.	Ordering data	Article No.
SIWAREX U For SIMATIC S7 and ET 200M, incl. bus connector, weight 0.3 kg (0.661 lb)		Accessories (optional)	
Single-channel version ¹⁾ for connecting one scale	7MH4950-1AA01	Labeling strips (10 units, spare part)	6ES7392-2XX00-0AA0
Two-channel version ²⁾ for connecting two scales	7MH4950-2AA01	Remote displays (option) The digital remote displays can be connected directly to SIWAREX U through a TTY interface. The following remote displays can be used: S102, S302 Siebert Industrieelektronik GmbH Postfach 1180 D-66565 Eppelborn, Germany Tel.: +49 6806/980-0 Fax: +49 6806/980-999 Internet: http://www.siebert.de Detailed information is available from the manufacturer.	
SIWATOOL V4 & V7 Service and commissioning software for SIWAREX weighing modules	7MH4900-1AK01	SIWAREX JB junction box, aluminum housing	7MH5001-0AA20
SIWAREX U configuration package for PCS7, version 8.0 Suitable for 7MH4950-xAA01 <ul style="list-style-type: none"> • Function block for CFC • Faceplate • Manual 	7MH4950-3AK62	For connecting up to 4 load cells in parallel, and for connecting multiple junction boxes.	
SIWAREX PCS7 AddOn Library for PCS7 V8.x and V9.0 <ul style="list-style-type: none"> • Supports PROFINET APL faceplates and function blocks for: <ul style="list-style-type: none"> • SIWAREX U • SIWAREX FTA • SIWAREX FTC_B (conveyor scales) • SIWAREX WP321 Classic faceplate and function block for: <ul style="list-style-type: none"> • SIWAREX FTC_L (loss in weight) 	7MH4900-1AK61	SIWAREX JB junction box, stainless steel housing	7MH5001-0AA00
SIWATOOL connection cable From SIWAREX U/CS with serial PC interface, for 9-pin PC interfaces (RS 232), length 3 m (9.84 ft)	7MH4607-8CA	SIWAREX JB junction box, stainless steel housing (ATEX) For parallel connection of up to 4 load cells (for zone allocation, see manual or type-examination certificate).	7MH4710-1EA01
Installation material (mandatory)		Ex interface SIWAREX IS For intrinsically safe connection of load cells. With ATEX approval (not UL/FM). Suitable for SIWAREX electronic weighing system. Compatibility of load cells must be checked separately. <ul style="list-style-type: none"> • With short-circuit current < 199 mA DC • With short-circuit current < 137 mA DC 	7MH4710-5BA 7MH4710-5CA
20-pin front connector with screw contacts Required for each SIWAREX module	6ES7392-1AJ00-0AA0		
Shield connection element Sufficient for two SIWAREX U modules	6ES7390-5AA00-0AA0		
Shield connection clamp Contents: 2 units (suitable for cable with diameter 4 ... 13 mm) (0.16 ... 0.51 in) Note: one shield connection clamp each is required for: <ul style="list-style-type: none"> • Scale connection • RS 485 interface • RS 232 interface 	6ES7390-5CA00-0AA0		
S7 DIN rail <ul style="list-style-type: none"> • 160 mm (6.30 in) • 480 mm (18.90 in) • 530 mm (20.87 in) • 830 mm (32.68 in) • 2000 mm (78.74 in) 	6ES7390-1AB60-0AA0 6ES7390-1AE80-0AA0 6ES7390-1AF30-0AA0 6ES7390-1AJ30-0AA0 6ES7390-1BC00-0AA0		

SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

SIWAREX U**Ordering data****Article No.****Cable (optional)****Cable Li2Y 1 x 2 x 0.75 ST +
2 x (2 x 0.34 ST) – CY**

For connecting SIWAREX electronic weighing systems to junction box (JB), extension box (EB) and Ex interface or between two EBs. For permanent installation. Occasional bending is possible.

External diameter:
approx. 10.8 mm (0.43 in)

Permissible ambient temperature
-40 ... +80 °C (-40 ... +176 °F).

Sold by the meter.

- Sheath color: orange
- For hazardous atmospheres. Sheath color: blue.

7MH4702-8AG
7MH4702-8AF

Article No.**Commissioning****Commissioning charge for one static scale with SIWAREX module**

(Travel and setup charge must be ordered separately)

Scope:

- Recording of data
- Checking of mechanical installation of the scale
- Checking of electrical wiring and function
- Static adjustment of the scale

Requirements:

- Mechanical design functional
- Modules electrically wired and tested
- Calibration weights available
- Free access to scale

9LA1110-8SN50-0AA0

Flat charge for travel and setup in Germany

9LA1110-8RA10-0AA0

- 1) Compatible with 7MH4601-1AA01; supply of load cells changed to 6 V DC.
- 2) Compatible with 7MH4601-1BA01; supply of load cells changed to 6 V DC.

Overview



SIWAREX FTA (Flexible Technology, Automatic Weighing Instrument) is a versatile and flexible weighing module for industrial use. It can be used in both non-automatic and automatic weighing operation, for example the production of mixtures, and for filling, loading, monitoring and bag filling.

It has the corresponding scale approvals and is also suitable for legal-for-trade weighing systems.

The SIWAREX FTA function module is integrated in SIMATIC S7/PCS7, and uses the features of this modern automation system, such as integrated communication, diagnostics and configuration tools.

Technical specifications

SIWAREX FTA	
Use in automation systems	
S7-300	Directly or via ET 200M
S7-1500	Through ET 200M
S7-400 (H)	Through ET 200M
PCS 7 (H)	Through ET 200M
Communication interfaces	
S7	Through backplane bus
RS 232	For SIWATOOL or printer connection
RS 485	For remote display or digital load cell
Module parameterization	
	Using SIMATIC S7
	Using SIWATOOL FTA software (RS 232)
Measuring properties	
EU type approval as non-automatic weighing instrument, trade class III	3 x 6 000 d ≥ 0.5 μV/e
Internal resolution	16 million parts
Internal/external updating rate	400/100 Hz
Several parameterizable digital filters	
	Critically damped, Bessel, Butterworth (0.05 ... 20 Hz), mean-value filter
Weighing functions	
Non-automatic weighing machine	OIML R76
Automatic weighing machine	OIML R51, R61, R107
Load cells	
	Strain gages in 4-wire or 6-wire system
3 characteristic value ranges	1, 2 or 4 mV/V
Load cell powering	
Supply voltage U_S (rated value)	10.3 V DC
Max. supply current	184 mA
Permissible load cell resistance	
• R_{Lmin}	> 56 Ω
	> 87 Ω with Ex interface
• R_{Lmax}	≤ 4 010 Ω

SIWAREX FTA	
Max. distance of load cells	
When using the recommended cable:	
Standard	1 000 m (3 280 ft)
In hazardous area ¹⁾	
• For gases of group IIC	300 m (984 ft)
• For gases of group IIB	1000 m (3 280 ft)
Connection to load cells in Ex zone 1	
	Optionally via SIWAREX IS Ex interface
Ex approvals zone 2 and safety	
	ATEX 95, FM, cUL _{US} Haz. Loc.
Auxiliary power supply	
Rated voltage	24 V DC
Max. power consumption	500 mA
Current consumption on backplane bus	Typ. 55 mA
Inputs/outputs	
Digital inputs	7 DI electrically isolated
Digital outputs	8 DO electrically isolated
Counter input	Up to 10 kHz
Analog output	
• Current range	0/4 ... 20 mA
• Updating rate	100 Hz
Approvals	
	EU type approval (CE, OIML R76)
	EU prototype test to MID (OIML R51, R61, R107)
Degree of protection according to EN 60529; IEC 60529	
	IP20
Climatic requirements	
T_{min} (IND) ... T_{max} (IND) (operating temperature)	
• Horizontal installation	-10 ... 60 °C (14 ... 140 °F)
• Vertical installation	-10 ... 40 °C (14 ... 104 °F)
EMC requirements	
	EN 61326, EN 45501, NAMUR NE21, Part 1
Dimensions	
	80 x 125 x 130 mm (3.15 x 4.92 x 5.12 in)
Weight	
	600 g (0.44 lb)

¹⁾ For further details, see Ex interface, type SIWAREX IS

SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

SIWAREX FTA

Ordering data

Article No.

SIWAREX FTA

Legal-for-trade weighing electronics for automatic scales for S7-300 and ET 200M.
EU type approval 3 x 6000 d
Applications: proportioning, filling, bagging, loading.
Note: Observe approval conditions for applications requiring official calibration. We recommend using our calibration set and contacting our SIWAREX hotline.

7MH4900-2AA01

SIWAREX FTA Manual

Available in a range of languages
Free download on the Internet at:
<http://www.siemens.com/weighing-technology>

SIWAREX FTA "Getting started"

Sample software shows beginners how to program the scales in STEP 7.

Free download on the Internet at:
<http://www.siemens.com/weighing-technology>

SIWATOOL V4 & V7

Service and commissioning software for SIWAREX weighing modules

7MH4900-1AK01

Configuration package SIWAREX FTA for SIMATIC PCS 7, Version 8.0 on CD-ROM

- HSP hardware support package for integrating SIWAREX FTA/FTC in STEP 7
- Function block for CFC
- Faceplate
- Manual

7MH4900-2AK63

SIWAREX PCS7 AddOn Library for PCS7 V8.x and V9.0

- Supports PROFINET

APL faceplates and function blocks for:

- SIWAREX U
- SIWAREX FTA
- SIWAREX FTC_B (belt scales)
- SIWAREX WP321

Classic faceplate and function block for:

- SIWAREX FTC_L (loss in weight)

7MH4900-1AK61

Calibration set for SIWAREX FTA

For verification of up to 5 scales comprising:

- 3 x inscription foil for label
- 1 x protection film
- Guidelines for verification, verification certificates and approvals, adaptable label, SIWAREX FTA Manual on CD-ROM

7MH4900-2AY10

SIWATOOL connection cable

From SIWAREX FTA with serial PC interface, for 9-pin PC interfaces (RS 232)

- 2 m long (6.56 ft)
- 5 m long (16.40 ft)

7MH4702-8CA
7MH4702-8CB

Article No.

Front connector, 40-pin

Required for each SIWAREX module

- With screw contacts
- With spring-loaded terminals

6ES7392-1AM00-0AA0
6ES7392-1BM01-0AA0**Shield connection element**

Sufficient for one SIWAREX FTA module

6ES7390-5AA00-0AA0

Shield connection clamp

Contents: 2 units (suitable for cable with diameter 4 ... 13 mm) (0.16 ... 0.51 in)

Note:
one shield connection clamp each is required for:

- Scale connection
- RS 485 interface
- RS 232 interface

6ES7390-5CA00-0AA0

S7 DIN rail

- 160 mm (6.30 in)
- 480 mm (18.90 in)
- 530 mm (20.87 in)
- 830 mm (32.68 in)
- 2 000 mm (78.74 in)

6ES7390-1AB60-0AA0
6ES7390-1AE80-0AA0
6ES7390-1AF30-0AA0
6ES7390-1AJ30-0AA0
6ES7390-1BC00-0AA0**MMC memory**

For data recording up to 32 MB, only for legal-for-trade applications R76, R51 and R107

7MH4900-2AY21

Remote displays (option)

The Siebert S102 and S302 remote digital displays can be directly connected to the SIWAREX FTA via an RS 485 interface.

Siebert Industrieelektronik GmbH
Postfach 1180
D-66565 Eppelborn, Germany
Tel.: +49 6806/980-0
Fax: +49 6806/980-999
Internet: <http://www.siebert.de>

Detailed information is available from the manufacturer.

SIWAREX JB junction box, aluminum housing

For connecting up to 4 load cells in parallel, and for connecting several junction boxes

7MH5001-0AA20

SIWAREX JB junction box, stainless steel housing

For connecting up to 4 load cells in parallel.

7MH5001-0AA00

SIWAREX JB junction box, stainless steel housing (ATEX)

For parallel connection of up to 4 load cells (for zone allocation, see manual or type-examination certificate).

7MH4710-1EA01

Ex interface SIWAREX IS

For intrinsically safe connection of load cells. With ATEX approval (not UL/FM). Suitable for SIWAREX electronic weighing system. Compatibility of load cells must be checked separately.

- With short-circuit current < 199 mA DC
- With short-circuit current < 137 mA DC

7MH4710-5BA

7MH4710-5CA

Ordering data	Article No.	Commissioning	Article No.
<p>Cable (optional)</p> <p>Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) – CY</p> <p>For connecting SIWAREX electronic weighing systems to junction box (JB), extension box (EB) and Ex interface or between two EBs. For permanent installation. Occasional bending is possible.</p> <p>External diameter: approx. 10.8 mm (0.43 in)</p> <p>Permissible ambient temperature -40 ... +80 °C (-40 ... +176 °F).</p> <p>Sold by the meter.</p> <ul style="list-style-type: none"> • Sheath color: orange • For hazardous atmospheres. Sheath color: blue. 	<p>7MH4702-8AG 7MH4702-8AF</p>	<p>Commissioning charge for one static scale with SIWAREX module</p> <p>(Travel and setup charge must be ordered separately)</p> <p>Scope:</p> <ul style="list-style-type: none"> • Recording of data • Checking of mechanical installation of the scale • Checking of electrical wiring and function • Static adjustment of the scale <p>Requirements:</p> <ul style="list-style-type: none"> • Mechanical design functional • Modules electrically wired and tested • Calibration weights available • Free access to scale <p>Flat charge for travel and setup in Germany</p>	<p>9LA1110-8SN50-0AA0</p> <hr/> <p>9LA1110-8RA10-0AA0</p>

SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

SIWAREX FTC

Overview



The SIWAREX FTC (Flexible Technology for Continuous Weighing) is a versatile and flexible weighing module for belt scales, loss-in-weight feeders and solid flow meters. It can also be used to record weights and measure force. The SIWAREX FTC function module is integrated in SIMATIC S7/PCS7, and uses the features of this modern automation system, such as integral communication, diagnostics and configuration tools.

5

Technical specifications

SIWAREX FTC	
Use in automation systems	
S7-300	Directly or via ET 200M
S7-1500	Through ET 200M
S7-400 (H)	Through ET 200M
PCS 7 (H)	Through ET 200M
Communication interfaces	
S7	Through backplane bus
RS 232	For SIWATOOL or printer connection
RS 485	For remote display or digital load cell
Module parameterization	
	Using SIMATIC S7
	Using SIWATOOL FTC software (RS 232)
Measuring properties	
Accuracy to EN 45501	$3 \times 6\,000 \text{ d} \geq 0.5 \mu\text{V/e}$
Internal resolution	+/- 8 million parts
Internal/external updating rate	400/100 Hz
Several parameterizable digital filters	
	Critically dampened, Bessel, Butterworth (0.05 ... 20 Hz), mean-value filter
Weighing functions	
	<ul style="list-style-type: none"> Non-automatic weighing machine, force measurement Belt scale Loss-in-weight feeder Solid flow meter
Load cells	
	Strain gages in 4-wire or 6-wire system
3 characteristic value ranges	1, 2 or 4 mV/V
Load cell powering	
Supply voltage U_S (rated value)	10.3 V DC
Max. supply current	184 mA
Permissible load cell resistance	
• $R_{L\min}$	$> 56 \Omega$
	$> 87 \Omega$ with Ex interface
• $R_{L\max}$	$\leq 4\,010 \Omega$

SIWAREX FTC	
Max. distance of load cells	
When using the recommended cable:	
Standard	1 000 m (3 280 ft)
In hazardous area ¹⁾	
• For gases of group IIC	300 m (984 ft)
• For gases of group IIB	1 000 m (3 280 ft)
Connection to load cells in Ex zone 1	
	Optionally via SIWAREX IS Ex interface
Ex approvals zone 2 and safety	
	ATEX 95, FM, cUL _{US} Haz. Loc.
Auxiliary power supply	
Rated voltage	24 V DC
Max. power consumption	500 mA
Current consumption on backplane bus	Typ. 55 mA
Inputs/outputs	
Digital inputs	7, electrically isolated
Digital outputs	8, electrically isolated
Counter input	Up to 10 kHz
Analog output	
• Current range	0/4 ... 20 mA
• Updating rate	100 Hz
Degree of protection according to EN 60529; IEC 60529	
	IP20
Climatic requirements	
T_{\min} (IND) ... T_{\max} (IND) (operating temperature)	
• Horizontal installation	-10 ... 60 °C (14 ... 140 °F)
• Vertical installation	-10 ... 40 °C (14 ... 104 °F)
EMC requirements	
	EN 61326, EN 45501, NAMUR NE21, Part 1
Dimensions	
	80 x 125 x 130 mm (3.15 x 4.92 x 5.12 in)
Weight	
	600 g (0.44 lb)

¹⁾ For further details, see Ex interface, type SIWAREX IS

Ordering data	Article No.		Article No.
SIWAREX FTC Weighing electronics for S7-300 and ET 200M. Applications: Belt scales, force measurement, loss-in-weight feeders and solid flow meters	7MH4900-3AA01		
SIWAREX FTC_B manual for belt scales Available in a range of languages Free download on the Internet at: http://www.siemens.com/weighing-technology		40-pin front connector with screw contacts Required for each SIWAREX module <ul style="list-style-type: none"> • With screw contacts • With spring-loaded terminals 	6ES7392-1AM00-0AA0 6ES7392-1BM01-0AA0
SIWAREX FTC_L manual for solid flow meters and loss-in-weight feeders Available in a range of languages Free download on the Internet at: http://www.siemens.com/weighing-technology		Shield connection element Sufficient for one SIWAREX FTC module	6ES7390-5AA00-0AA0
SIWAREX FTC "Getting started" for belt scales Sample software shows beginners how to program the scales in STEP 7 for belt scale mode Free download on the Internet at: http://www.siemens.com/weighing-technology		Shield connection clamp Contents: 2 units (suitable for cable with diameter 4 ... 13 mm) Note: one shield connection clamp each is required for: <ul style="list-style-type: none"> • Scale connection • RS 485 interface • RS 232 interface 	6ES7390-5CA00-0AA0
SIWAREX FTC "Getting started" for solid flow meters Sample software shows beginners how to program the scales in STEP 7 for solid flow meter mode Free download on the Internet at: http://www.siemens.com/weighing-technology		S7 DIN rail <ul style="list-style-type: none"> • 160 mm (6.30 in) • 480 mm (18.90 in) • 530 mm (20.87 in) • 830 mm (32.68 in) • 2 000 mm (78.74 in) 	6ES7390-1AB60-0AA0 6ES7390-1AE80-0AA0 6ES7390-1AF30-0AA0 6ES7390-1AJ30-0AA0 6ES7390-1BC00-0AA0
SIWAREX FTC "Getting started" for loss-in-weight feeders Sample software shows beginners how to program scales in STEP 7 for loss-in-weight feeder mode Free download on the Internet at: http://www.siemens.com/weighing-technology		MMC memory For data recording up to 16 MB	7MH4900-2AY20
SIWAREX FTC "Getting started" for loss-in-weight feeders Sample software shows beginners how to program scales in STEP 7 for loss-in-weight feeder mode Free download on the Internet at: http://www.siemens.com/weighing-technology		Remote display (optional) The Siebert S102 and S302 remote digital displays can be directly connected to the SIWAREX FTC via an RS 485 interface. (not suitable for belt scale mode) Siebert Industrieelektronik GmbH Postfach 1180 D-66565 Eppelborn, Germany Tel.: +49 6806/980-0 Fax: +49 6806/980-999 Internet: http://www.siebert.de Detailed information is available from the manufacturer.	
SIWATOOL V4 & V7 Service and commissioning software for SIWAREX weighing modules	7MH4900-1AK01		
SIWAREX PCS7 AddOn Library for PCS7 V8.x and V9.0 <ul style="list-style-type: none"> • Supports PROFINET APL faceplates and function blocks for: <ul style="list-style-type: none"> • SIWAREX U • SIWAREX FTA • SIWAREX FTC_B (belt scales) • SIWAREX WP321 Classic faceplate and function block for: <ul style="list-style-type: none"> • SIWAREX FTC_L (loss in weight) 	7MH4900-1AK61		
SIWATOOL connection cable from SIWAREX FTC with serial PC interface, for 9-pin PC interfaces (RS 232) <ul style="list-style-type: none"> • 2 m long (6.56 ft) • 5 m long (16.40 ft) 	7MH4702-8CA 7MH4702-8CB		
		SIWAREX JB junction box, aluminum housing For connecting up to 4 load cells in parallel, and for connecting multiple junction boxes.	7MH5001-0AA20
		SIWAREX JB junction box, stainless steel housing For connecting up to 4 load cells in parallel.	7MH5001-0AA00
		SIWAREX JB junction box, stainless steel housing (ATEX) For parallel connection of up to 4 load cells (for zone allocation, see manual or type-examination certificate).	7MH4710-1EA01
		Ex interface SIWAREX IS For intrinsically safe connection of load cells. With ATEX approval (not UL/FM). Suitable for SIWAREX electronic weighing system. Compatibility of load cells must be checked separately. <ul style="list-style-type: none"> • With short-circuit current < 199 mA DC • With short-circuit current < 137 mA DC 	7MH4710-5BA 7MH4710-5CA

SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

SIWAREX FTC**Ordering data****Article No.****Cable (optional)****Cable Li2Y 1 x 2 x 0.75 ST +
2 x (2 x 0.34 ST) – CY**

For connecting SIWAREX electronic weighing systems to junction box (JB), extension box (EB) and Ex interface or between two EBs. For permanent installation. Occasional bending is possible.

External diameter:
approx. 10.8 mm (0.43 in)

Permissible ambient temperature
-40 ... +80 °C (-40 ... +176 °F).

Sold by the meter.

- Sheath color: orange
- For hazardous atmospheres. Sheath color: blue.

7MH4702-8AG
7MH4702-8AF

Article No.**Commissioning****Commissioning charge for one
belt scale with SIWAREX module**

(Travel and setup charge must be ordered separately)

Scope:

- Recording of data
- Checking of mechanical installation of the scale
- Checking of electrical wiring and function
- Dynamic adjustment of the scale

Requirements:

- Mechanical design functional
- Modules electrically wired and tested
- Calibration weights available
- Free access to scale

9LA1110-8SM50-0AA0

**Flat charge for travel and setup in
Germany**

9LA1110-8RA10-0AA0

Overview



SIFLOW FC070 is based on the latest developments within the digital processing technology – engineered for high performance, fast flow step response, immunity against process generated noise, easy to install, commission and maintain.

SIFLOW FC070 is available in two versions:

- SIFLOW FC070 Standard
- SIFLOW FC070 Ex CT

The SIFLOW FC070 transmitter delivers true multi-parameter measurements i.e. mass flow, volume flow, density, temperature and fraction.

SIFLOW FC070 is designed for integration in a variety of automation systems, i.e.:

- Central mounted in S7-300, C7
- Decentralized in ET 200M for use with S7-300 and S7-400 as PROFIBUS DP/PROFINET masters
- Decentralized in ET 200M for use with any automation system using standardized PROFIBUS DP/PROFINET masters
- Stand-alone via a Modbus RTU master, i.e. SIMATIC PDM

The SIFLOW FC070 transmitter can be connected to all sensors of types MASS 2100, FCS200 and FC300.

Technical specifications

Measurement of	Mass flow, volume flow, density, sensor temperature, fraction A flow, fraction B flow, fraction A in %
Measurement functions	
• Totalizer 1	Totalization of mass flow, volume flow, fraction A, fraction B
• Totalizer 2	Totalization of mass flow, volume flow, fraction A, fraction B
• Single and 2-stage batch function	Batching function with the use of one or two outputs for dosing in high and low speed
• 4 programmable limits	4 programmable high/low limits for mass flow, volume flow, density, sensor temperature, fraction A flow, fraction B flow, fraction A in %. Limits will generate an alarm if reached.
Digital input	
Functions	Start batch, stop batch, start/stop batch, hold/continue batch, reset totalizer 1, reset totalizer 2, reset totalizer 1 and 2, zero adjust, force frequency output, freeze frequency output
High signal	<ul style="list-style-type: none"> • Nominal voltage: 24 V DC • Lower limit: 15 V DC • Upper limit: 30 V DC • Current: 2 ... 15 mA
Low signal	<ul style="list-style-type: none"> • Nominal voltage: 0 V DC • Lower limit: -3 V DC • Upper limit: 5 V DC • Current: -15 ... +15 mA
Input	Approx. 10 kΩ
Switching	Max. 100 Hz

Digital output 1 and 2	
Functions	<ul style="list-style-type: none"> • Output 1: Pulse, frequency, redundancy pulse, redundancy frequency, 2-stage batch, batch • Output 2: Redundancy pulse, redundancy frequency, 2-stage batch
Voltage supply	3 ... 30 V DC (passive output)
Switching current	Max. 30 mA at 30 V DC
Voltage drop	≤ 3 V DC at max. current
Leakage current	≤ 0.4 mA at max. voltage 30 V DC
Load resistance	1 ... 10 kΩ
Switching frequency	0 ... 12 kHz 50 % duty cycle
Functions	Pulse, frequency, redundancy pulse, redundancy frequency, 2-stage batch, batch
Communication	
Modbus RS 232C	<ul style="list-style-type: none"> • Max. baud rate: 115 200 baud • Max. line length: 15 m at 115 200 baud • Signal level: according to EIA-RS 232C
Modbus RS 485	<ul style="list-style-type: none"> • Max. baud rate: 115 200 baud • Max. line length: 1200 m at 115 200 baud • Signal level: according to EIA-RS 485 • Bus termination: Integrated. Can be enabled by inserting wire jumpers.
Galvanic isolation	All inputs, outputs and communication interfaces are galvanically isolated. Isolation voltage: 500 V.

SIMATIC S7-300 Advanced Controllers

I/O modules

Function modules

SIFLOW FC070**Technical specifications** (continued)

Power	
Supply	24 V DC nominal
Tolerance	20.4 V DC ... 28.8 V DC
Consumption	Max. 7.2 W
Fuse	T1 A/125 V, not replaceable by operator
Environment	
Ambient temperature	<ul style="list-style-type: none"> Storage -40 °C ... +70 °C (-40 °F ... +158 °F)
Operation conditions	Horizontally mounted rail. For SIFLOW FC070 Std.: 0 ... 60 °C (32 ... 140 °F) For SIFLOW FC070 Ex CT: -40 ... +60 °C (-40 ... +140 °F) Vertically mounted rail For SIFLOW FC070 Std.: 0 ... 45 °C (32 ... 113 °F) For SIFLOW FC070 Ex CT: -40 ... +45 °C (-40 ... +113 °F)
Altitude	<ul style="list-style-type: none"> Operation: -1000 ... 2000 m (pressure 795 ... 1080 hPa)
Enclosure	
Material	Noryl, color: anthracite
Rating	IP20/NEMA 2 according to IEC 60529
Mechanical load	According to SIMATIC standards (S7-300 devices)
Ex approvals	
SIFLOW FC070 Standard	ATEX: II 3G Ex nA II T4
SIFLOW FC070 Ex CT	ATEX, IECEx, EAC Ex, FM, CSA, INMETRO: <ul style="list-style-type: none"> Zone 2: Ex nA [ia] IIC T4 FM: <ul style="list-style-type: none"> Class I, Div. 2: Grp. A, B, C, D (interface to Class I+II+III, Div. 1)

Custody transfer approvals	
SIFLOW FC070 Ex CT	Compressed gaseous fuel measuring systems for vehicles NTEP for USA and Canada, approval no: 97-111A3
EMC performance	
Emission	EN 55011/CISPR-11
Immunity	EN/IEC 61326-1
Certification	
CE mark	Low voltage directive RoHS
NAMUR	
	Within the limits according to "General recommendations" with error criteria A in accordance with NE 21
Programming tools	
SIMATIC S7	Configuration through backplane P-BUS, PLC program and WinCC flexible
SIMATIC PCS7	Configuration through backplane P-BUS and PLC/WinCC faceplates, certified driver
SIMATIC PDM	Through Modbus port RS 232C and RS 485, certified driver

Ordering data	Article No.	Article No.	
SIFLOW FC070 flow transmitter Remember to order 40 pin front connector.	7ME4120-2DH20-0EA0		
40 pin front connector with screw contacts	6ES7392-1AM00-0AA0		
40 pin front connector with spring contacts	6ES7392-1BM01-0AA0		
SIFLOW FC070 Ex flow transmitter Remember to order 20 pin front connector.	7ME4120-2DH21-0EA0		
20 pin front connector with screw contacts	6ES7392-1AJ00-0AA0		
20 pin front connector with spring contacts	6ES7392-1BJ00-0AA0		
Operating instructions for SITRANS F C SIFLOW FC070			
SIFLOW FC070 System Manual • English • German	A5E00924779 A5E00924776		
SIFLOW FC070 with S7 • English • German	A5E02254228 A5E02665536		
SIFLOW FC070 with PCS 7 • English All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	A5E03694109		
		Accessories	
		Cable with multiplug for connecting MASS 2100, FCS200 and FC300 sensors, 5 x 2 x 0.34 mm ² twisted and screened in pairs. Temperature range -20 °C ... +110 °C (-4 °F ... +230 °F) • 5 m (16.4 ft) • 10 m (32.8 ft) • 25 m (82 ft) • 50 m (164 ft) • 75 m (246 ft) • 150 m (492 ft)	FDK:083H3015 FDK:083H3016 FDK:083H3017 FDK:083H3018 FDK:083H3054 FDK:083H3055
		Cable without multiplug for connecting MC2 sensors, 5 x 2 x 0.34 mm ² twisted and screened in pairs. Temperature range -20 °C ... +110 °C (-4 °F ... +230 °F) • 10 m (32.8 ft) • 25 m (82 ft) • 75 m (246 ft) • 150 m (492 ft)	FDK:083H3001 FDK:083H3002 FDK:083H3003 FDK:083H3004
		SIMATIC S7-300 rail The mechanical mounting rack of the SIMATIC S7-300 • 160 mm (6.3") • 482 mm (18.9") • 530 mm (20.8") • 830 mm (32.7") • 2000 mm (78.7")	6ES7390-1AB60-0AA0 6ES7390-1AE80-0AA0 6ES7390-1AF30-0AA0 6ES7390-1AJ30-0AA0 6ES7390-1BC00-0AA0
		SIMATIC S7-300, stabilized power supply PS307 Input: 120/230 V AC Output: 24 V DC/2 A	6ES7307-1BA01-0AA0

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 function modules

SIPLUS S7-300 FM 350-1

Overview



- Single-channel, intelligent counter module for simple counting tasks
- For direct connection of incremental encoders
- Comparison function with 2 definable comparison values
- Integrated digital outputs for output of the response on reaching the comparison value
- Operating modes:
 - Continuous counting
 - Single counting
 - Periodic counting
- Special functions:
 - Set counter
 - Latch counter
- Start/stop counter by gate function

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Technical specifications

Article number	6AG1350-1AH03-2AE0	6AG1350-1AH03-2AY0
Based on	6ES7350-1AH03-0AE0 SIPLUS S7-300 FM350-1	6ES7350-1AH03-0AE0 SIPLUS S7-300 FM350-1 EN50155
Ambient conditions		
Ambient temperature during operation		
• min.	-25 °C; = Tmin	-25 °C; = Tmin
• max.	60 °C; = Tmax	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155
Altitude during operation relating to sea level		
• Installation altitude above sea level, max.	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity		
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance		
Use in stationary industrial systems		
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
Use on land craft, rail vehicles and special-purpose vehicles		
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *	Yes; Class 5S3 incl. sand, dust; *

Technical specifications (continued)

Article number	6AG1350-1AH03-2AE0	6AG1350-1AH03-2AY0
Based on	6ES7350-1AH03-0AE0 SIPLUS S7-300 FM350-1	6ES7350-1AH03-0AE0 SIPLUS S7-300 FM350-1 EN50155
Use on ships/at sea		
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	
Remark		
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

Ordering data

Ordering data	Article No.	Ordering data	Article No.
SIPLUS S7-300 FM 350-1 counter module		Label cover	6ES7392-2XY00-0AA0
With 1 channel, max. 500 kHz; for incremental encoder		10 units (spare part), for modules with 20-pin front connector	
<i>For industrial applications with extended ambient conditions</i>		Labeling strips	6ES7392-2XX00-0AA0
<u>Extended temperature range and exposure to media</u>	6AG1350-1AH03-2AE0	10 units (spare part), for modules with 20-pin front connector	
<i>For rolling stock railway applications</i>		Slot number plates	6ES7912-0AA00-0AA0
Conforms to EN 50155	6AG1350-1AH03-2AY0	<i>Documentation</i>	
Accessories		SIMATIC Manual Collection	6ES7998-8XC01-8YE0
<i>Mandatory</i>		Electronic manuals on DVD, multi-language: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC Distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC-based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	
Front connector		SIMATIC Manual Collection update service for 1 year	6ES7998-8XC01-8YE2
20-pin, with spring-loaded contacts		Current "Manual Collection" DVD and the three subsequent updates	
• 1 unit	6ES7392-1BJ00-0AA0		
• 100 units	6ES7392-1BJ00-1AB0		
<i>Consumables</i>			
Bus connectors	6ES7390-0AA00-0AA0		
1 unit (spare part)			
Shield connection element	6ES7390-5AA00-0AA0		
80 mm wide, with 2 rows for 4 shield connection clamps each			
Shield connection clamps			
2 units			
For 1 cable, diameter 3 mm to 8 mm	6ES7390-5BA00-0AA0		
For 1 cable, diameter 4 mm to 13 mm	6ES7390-5CA00-0AA0		

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 function modules

SIPLUS S7-300 FM 350-2**Overview**

- 8-channel intelligent counter module for universal counting and measuring tasks
- For the direct connection of 24 V incremental encoders, directional encoders, initiators or NAMUR encoders
- Comparison function with predefined comparison values (number depending on operating mode)
- Integrated digital outputs for output of the response on reaching the comparison value
- Operating modes:
 - Continuous / single / periodic counting
 - Frequency and speed control
 - Period measurement
 - Dosing

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Technical specifications

Article number	6AG1350-2AH01-4AE0
Based on	6ES7350-2AH01-0AE0 SIPLUS S7-300 FM350-2
Ambient conditions	
Ambient temperature during operation	
• min.	0 °C; = Tmin
• max.	60 °C; = Tmax
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance	
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
Use on ships/at sea	
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
Remark	
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!

Ordering data	Article No.	Ordering data	Article No.
SIPLUS S7-300 FM 350-2 counter module With 8 channels, max. 20 kHz; for 24 V incremental encoders and NAMUR encoders; includes configuration package and electronic documentation on CD Exposure to media	6AG1350-2AH01-4AE0	Label cover 10 units (spare part), for modules with 40-pin front connector	6ES7392-2XY10-0AA0
Accessories <i>Mandatory</i>		Labeling strips 10 units (spare part), for modules with 40-pin front connector	6ES7392-2XX10-0AA0
Front connector 40-pin, with spring-loaded contacts <ul style="list-style-type: none"> • 1 unit • 100 units 	6ES7392-1BM01-0AA0 6ES7392-1BM01-1AB0	Slot number plates 6ES7912-0AA00-0AA0	
<i>Consumables</i>		<i>Documentation</i>	
Bus connectors 1 unit (spare part)	6ES7390-0AA00-0AA0	SIMATIC Manual Collection Electronic manuals on DVD, multi-language: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC Distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC-based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC	6ES7998-8XC01-8YE0
Shield connection clamps 2 units For 2 cables, diameter 2 mm to 6 mm For 1 cable, diameter 3 mm to 8 mm For 1 cable, diameter 4 mm to 13 mm	6ES7390-5AB00-0AA0 6ES7390-5BA00-0AA0 6ES7390-5CA00-0AA0	SIMATIC Manual Collection update service for 1 year Current "Manual Collection" DVD and the three subsequent updates	6ES7998-8XC01-8YE2

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 function modules

SIPLUS SIWAREX U**Overview****SIPLUS SIWAREX U electronic weighing system**

Article No.	6AG1 950-2AA01-4AA0
Article No. based on	7MH4 950-2AA01
Range of ambient temperature	0 ... +60 °C
Conformal coating	Coating of the printed circuit boards and the electronic components
Technical data	The technical data of the standard product applies except for the ambient conditions.
Ambient conditions	
Relative humidity	100%, condensation/frost permissible. No commissioning in bedewed state.

For technical documentation on SIPLUS, see:

<http://www.siemens.com/siplus-extreme>**SIPLUS SIWAREX U electronic weighing system**

SIPLUS SIWAREX U is a flexible weighing module for all simple weighing and force measuring tasks. The compact module can be integrated into SIPLUS automation systems without any problems.

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Ordering data**Article No.****SIPLUS SIWAREX U**

Electronic weighing system for SIPLUS S7 and ET 200M, incl. bus connector

Exposure to media

6AG1950-2AA01-4AA0**Accessories***Mandatory***Front connector**

20-pin, with spring-loaded contacts

- 1 unit
- 100 units

6ES7392-1BJ00-0AA0**6ES7392-1BJ00-1AB0***Consumables***Bus connectors**

1 unit (spare part)

6ES7390-0AA00-0AA0**Shield connection clamps**

2 units

For 2 cables, diameter 2 mm to 6 mm

6ES7390-5AB00-0AA0

For 1 cable, diameter 3 mm to 8 mm

6ES7390-5BA00-0AA0

For 1 cable, diameter 4 mm to 13 mm

6ES7390-5CA00-0AA0**Article No.****Labeling strips**

10 units; spare part

6ES7392-2XX00-0AA0**Label cover**

10 units; spare part

6ES7392-2XY00-0AA0**Slot number plates****6ES7912-0AA00-0AA0****SIWAREX JB junction box, aluminum housing**

For connecting up to 4 load cells in parallel, and for connecting multiple junction boxes

7MH4710-1BA**Ex interface, type SIWAREX IS**

With ATEX approval, but without UL and FM approvals, for intrinsically safe connection of load cells

Incl. Equipment Manual

Suitable for SIWAREX U, CS, MS, FTA, FTC and CF weighing modules

Approved for use in the EU

- With short-circuit current < 199 mA DC
- With short-circuit current < 137 mA DC

7MH4710-5BA**7MH4710-5CA**

Ordering data	Article No.	Article No.	
<p><i>Cables (optional)</i></p> <p>Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) – CY, orange sheath</p> <p>For connecting SIWAREX U, CS, MS, FTA, FTC and CF to the junction box (JB), extension box (EB) or Ex interface (Ex-I) or between two JB's; for fixed laying, occasional bending permitted, 10.8 mm (0.43 inch) outer diameter, for ambient temperature -40 ... +80 °C (-40 ... +176 °F)</p>	7MH4702-8AG	<p>SIWAREX U configuration package for PCS7, version 8.0</p> <p>Suitable for 7MH4950-xAA01</p> <ul style="list-style-type: none"> • Function block for the CFC • Faceplate • SIWATOOL U commissioning software • Manual 	7MH4950-3AK62
<p>Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) – CY, blue sheath</p> <p>For connecting the junction box (JB) or extension box (EB) in a potentially explosive atmosphere to the Ex interface (Ex I), for fixed laying, occasional bending permitted, blue PVC insulating sheath, approx. 10.8 mm (0.43 inch) outer diameter, for ambient temperature -40 ... +80 °C (-40 ... +176 °F)</p>	7MH4702-8AF	<p>SIWAREX U APL configuration package for PCS7, version 8.0, Update 1</p> <p>Suitable for 7MH4950-xAA01</p> <ul style="list-style-type: none"> • Function block for the CFC • APL-style faceplate • SIWATOOL U commissioning software • Manual 	7MH4950-3AK65
<p><i>Configuration software</i></p> <p>SIWAREX U configuration package for PCS7 S7, version 7.0 and V7.1</p> <p>Suitable for 7MH4950-1AA01 and 7MH4950-2AA01</p> <p>On CD-ROM</p> <ul style="list-style-type: none"> • Function block for the CFC • Faceplate • SIWATOOL U commissioning software • Manual 	7MH4950-3AK61	<p><i>Documentation</i></p> <p>SIMATIC Manual Collection</p> <p>Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC Distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC-based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC</p>	6ES7998-8XC01-8YE0
		<p>SIMATIC Manual Collection update service for 1 year</p> <p>Current "Manual Collection" DVD and the three subsequent updates</p>	6ES7998-8XC01-8YE2

SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

CP 340

Overview



- The economical complete solution for serial communication via point-to-point links.
- 3 versions with different transmission interfaces:
 - RS 232C (V.24)
 - 20 mA (TTY)
 - RS 422/RS 485 (X.27)
- Implemented protocols:
 - ASCII
 - 3964 (R) (not for RS 485)
 - Printer driver
- Simple parameterization via a parameterization tool integrated into STEP 7

Technical specifications

Article number	6ES7340-1AH02-0AE0 CP340 w. RS232C interface(V.24)	6ES7340-1BH02-0AE0 CP340 w. 20MA interface(TTY)	6ES7340-1CH02-0AE0 CP340 w. RS422/485 interface
General information			
Product type designation	CP 340	CP 340	CP 340
Supply voltage			
Rated value (DC)			
• 24 V DC	No; Power supply via backplane bus 5V	No; Power supply via backplane bus 5V	No; Power supply via backplane bus 5V
Input current			
from backplane bus 5 V DC, max.	165 mA	190 mA	165 mA
Power loss			
Power loss, typ.	0.6 W	0.85 W	0.6 W
Power loss, max.	0.85 W	0.95 W	0.85 W
Interfaces			
Number of interfaces	1; Isolated	1; Isolated	1; Isolated
Interface physics, 20 mA (TTY)		Yes	
Interface physics, RS 232C (V.24)	Yes		
Interface (physical) RS 422/485 (X.27)			Yes
Transmission rate, min.	2.4 kbit/s	2.4 kbit/s	2.4 kbit/s
Transmission rate, max.	19.2 kbit/s	19.2 kbit/s	19.2 kbit/s
Point-to-point connection			
• Cable length, max.	15 m	1 000 m; 100 m active, 1 000 m passive	1 200 m
• supported printers	HP-Deskjet, HP-Laserjet, IBM-Proprietary, user-defined	HP-Deskjet, HP-Laserjet, IBM-Proprietary, user-defined	HP-Deskjet, HP-Laserjet, IBM-Proprietary, user-defined
• Connector type	9-pin sub D connector	9-pin sub D socket	15-pin sub D socket
Integrated protocol driver			
- 3964 (R)	Yes	Yes	Yes
- ASCII	Yes	Yes	Yes
- RK512	No	No	No
- customer-specific drivers reloadable	No	No	No
Telegram length, max.			
- 3964 (R)	1 024 byte	1 024 byte	1 024 byte
- ASCII	1 024 byte	1 024 byte	1 024 byte
Transmission rate, 20 mA (TTY)			
- with 3964 (R) protocol, max.		19.2 kbit/s	
- with ASCII protocol, max.		9.6 kbit/s	
- with printer driver, max.		9.6 kbit/s	

Technical specifications (continued)

Article number	6ES7340-1AH02-0AE0	6ES7340-1BH02-0AE0	6ES7340-1CH02-0AE0
	CP340 w. RS232C interface(V.24)	CP340 w. 20MA interface(TTY)	CP340 w. RS422/485 interface
Transmission rate, RS 422/485			
- with 3964 (R) protocol, max.			19.2 kbit/s
- with ASCII protocol, max.			9.6 kbit/s
- with printer driver, max.			9.6 kbit/s
Transmission speed, RS 232			
- with 3964 (R) protocol, max.	19.2 kbit/s		
- with ASCII protocol, max.	9.6 kbit/s		
- with printer driver, max.	9.6 kbit/s		
Ambient conditions			
Ambient temperature during operation			
• min.	0 °C	0 °C	0 °C
• max.	60 °C	60 °C	60 °C
Ambient temperature during storage/transportation			
• min.	-40 °C	-40 °C	-40 °C
• max.	70 °C	70 °C	70 °C
Software			
Block			
• FB length in RAM, max.	2 700 byte; Data communication, sending and receiving	2 700 byte; Data communication, sending and receiving	2 700 byte; Data communication, sending and receiving
Connection method			
Design of electrical connection for supply voltage	Over backplane bus	Over backplane bus	Over backplane bus
Dimensions			
Width	40 mm	40 mm	40 mm
Height	125 mm	125 mm	125 mm
Depth	120 mm	120 mm	120 mm
Weights			
Weight, approx.	300 g	300 g	300 g

Ordering data

Article No.

Article No.

CP 340 communications processor	6ES7340-1AH02-0AE0	CP 340 communications processor	6ES7340-1CH02-0AE0
With one RS 232 C (V.24) interface		With one RS 422/485 (X.27) interface	
RS 232 connecting cable		RS 422/485 connecting cable	
For linking to SIMATIC S7		For linking to SIMATIC S7	
5 m	6ES7902-1AB00-0AA0	5 m	6ES7902-3AB00-0AA0
10 m	6ES7902-1AC00-0AA0	10 m	6ES7902-3AC00-0AA0
15 m	6ES7902-1AD00-0AA0	50 m	6ES7902-3AG00-0AA0
CP 340 communications processor	6ES7340-1BH02-0AE0		
With one 20 mA (TTY) interface			
20 mA (TTY) connecting cable			
For linking to SIMATIC S7			
5 m	6ES7902-2AB00-0AA0		
10 m	6ES7902-2AC00-0AA0		
50 m	6ES7902-2AG00-0AA0		

SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

CP 341

Overview



- For quick, high-performance serial data exchange via point-to-point coupling
- 3 versions with different transmission physics:
 - RS 232C (V.24),
 - 20 mA (TTY),
 - RS 422/RS 485 (X.27)
- Implemented protocols: ASCII, 3964 (R), RK 512
- The following protocols can also be loaded: Modbus RTU
- Easy configuration using a parameterizing tool integrated in STEP 7

Technical specifications

Article number	6ES7341-1AH02-0AE0 CP 341 RS232C (V.24)	6ES7341-1BH02-0AE0 CP341 20mA-Interface (TTY)	6ES7341-1CH02-0AE0 CP341 RS422/485-Interface
General information			
Product type designation	CP 341	CP 341	CP 341
Supply voltage			
Rated value (DC)			
• 24 V DC	Yes	Yes	Yes
Input current			
from supply voltage L+, max.	100 mA	100 mA	100 mA
from backplane bus 5 V DC, max.	70 mA	70 mA	70 mA
Power loss			
Power loss, typ.	1.6 W	1.6 W	1.6 W
Power loss, max.	2.4 W	2.4 W	2.4 W
Interfaces			
Number of interfaces	1; Isolated	1; Isolated	1; Isolated
Interface physics, 20 mA (TTY)		Yes	
Interface physics, RS 232C (V.24)	Yes		
Interface (physical) RS 422/485 (X.27)			Yes
Transmission rate, min.	0.3 kbit/s	0.3 kbit/s	0.3 kbit/s
Transmission rate, max.	115.2 kbit/s	19.2 kbit/s	115.2 kbit/s
Point-to-point connection			
• Cable length, max.	15 m	1 000 m	1 200 m
• supported printers	Serial printers	Serial printers	Serial printers
• Connector type	9-pin sub D connector	9-pin sub D socket	15-pin sub D socket
Integrated protocol driver			
- 3964 (R)	Yes	Yes	Yes; not with RS 485
- ASCII	Yes	Yes	Yes
- RK512	Yes	Yes	Yes; not with RS 485
Telegram length, max.			
- 3964 (R)	4 096 byte	4 096 byte	4 096 byte
- ASCII	4 096 byte	4 096 byte	4 096 byte
- RK 512	4 096 byte	4 096 byte	4 096 byte
Transmission rate, 20 mA (TTY)			
- with 3964 (R) protocol, max.		19.2 kbit/s	
- with ASCII protocol, max.		19.2 kbit/s	
- with printer driver, max.		19.2 kbit/s	
- with RK 512 protocol, max.		19.2 kbit/s	

Technical specifications (continued)

Article number	6ES7341-1AH02-0AE0 CP 341 RS232C (V.24)	6ES7341-1BH02-0AE0 CP341 20mA-Interface (TTY)	6ES7341-1CH02-0AE0 CP341 RS422/485-Interface
Transmission rate, RS 422/485			
- with 3964 (R) protocol, max.			115.2 kbit/s
- with ASCII protocol, max.			115.2 kbit/s
- with printer driver, max.			115.2 kbit/s
- with RK 512 protocol, max.			115.2 kbit/s
Transmission speed, RS 232			
- with 3964 (R) protocol, max.	115.2 kbit/s		
- with ASCII protocol, max.	115.2 kbit/s		
- with printer driver, max.	115.2 kbit/s		
- with RK 512 protocol, max.	115.2 kbit/s		
Ambient conditions			
Ambient temperature during operation			
• min.	0 °C	0 °C	0 °C
• max.	60 °C	60 °C	60 °C
Ambient temperature during storage/transportation			
• min.	-40 °C	-40 °C	-40 °C
• max.	70 °C	70 °C	70 °C
Software			
Block			
• FB length in RAM, max.	6 100 byte; Data communication, sending and receiving	6 100 byte; Data communication, sending and receiving	6 100 byte; Data communication, sending and receiving
Connection method			
Design of electrical connection for supply voltage	3 screw-type terminals: L+, M, GND	3 screw-type terminals: L+, M, GND	3 screw-type terminals: L+, M, GND
Dimensions			
Width	40 mm	40 mm	40 mm
Height	125 mm	125 mm	125 mm
Depth	120 mm	120 mm	120 mm
Weights			
Weight, approx.	300 g	300 g	300 g

Ordering data

Ordering data	Article No.	Ordering data	Article No.
CP 341 communications processor	6ES7341-1AH02-0AE0	CP 341 communications processor	6ES7341-1CH02-0AE0
With one RS 232 C (V.24) interface		With one RS 422/485 (X.27) interface	
RS 232 connecting cable		RS 422/485 connecting cable	
For linking to SIMATIC S7		For linking to SIMATIC S7	
5 m	6ES7902-1AB00-0AA0	5 m	6ES7902-3AB00-0AA0
10 m	6ES7902-1AC00-0AA0	10 m	6ES7902-3AC00-0AA0
15 m	6ES7902-1AD00-0AA0	50 m	6ES7902-3AG00-0AA0
CP 341 communications processor	6ES7341-1BH02-0AE0	Loadable drivers for CP 341	
With one 20 mA (TTY) interface		Modbus master (RTU format)	
20 mA (TTY) connecting cable		• Single license	6ES7870-1AA01-0YA0
For linking to SIMATIC S7		• Single license, without software or documentation	6ES7870-1AA01-0YA1
5 m	6ES7902-2AB00-0AA0	Modbus slave (RTU format)	
10 m	6ES7902-2AC00-0AA0	• Single license	6ES7870-1AB01-0YA0
50 m	6ES7902-2AG00-0AA0	• Single license, without software or documentation	6ES7870-1AB01-0YA1

SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

Loadable drivers for CP 441-2 and CP 341

Overview

- Drivers for Modbus protocol with RTU message format; communication as master or slave
- Downloadable onto CP 341 and CP 441-2 (6ES7 441-2AA05-0AE0)

Technical specifications

Parameterization software

Type of license

Target system

Loadable drivers for CP 441-2 and CP 341

Simple license, copy license

SIMATIC CP 341, SIMATIC CP 441-2

Technical specifications

Adjustable parameters

Modbus Master

- Modbus protocol with RTU format
- Master/slave coupling: SIMATIC S7 is master
- Function codes implemented: 01, 02, 03, 04, 05, 06, 07, 08, 11, 12, 15, 16
- No V.24 control and signal lines
- CRC polynomial: $x^{16} + x^{15} + x^2 + 1$
- Interfaces: TTY (20 mA); V.24 (RS 232 C); X.27 (RS 422/485) 2-wire or 4-wire
- Receive mailbox specified on BRCV
- Character delay time 3.5 characters or multiple thereof
- Broadcast message possible
- Transmission rate 300 bit/s up to 76800 bit/s (TTY up to 19200 bit/s)
- Character frame
- With/without RS 485 operation for 2-wire connections
- With/without modem operation (ignore smudge characters)
- Response monitoring time 100 ms to 25.5 s in steps of 100 ms
- Factor for the character delay time 1-10
- Default setting of receive line when using the X.27 interface module

Adjustable parameters

Modbus slave

- Modbus protocol with RTU format
- Master/slave coupling: SIMATIC S7 is slave
- Function codes implemented: 01, 02, 03, 04, 05, 06, 08, 15, 16
- No V.24 control and signal line
- CRC polynomial: $x^{16} + x^{15} + x^2 + 1$
- Interfaces: TTY (20 mA), V.24 (RS 232C), X.27 (RS 422/485) 2-wire or 4-wire
- Communications FB 180, instance DB 180 (use of a multi-instance)
- Conversion of the Modbus data address to S7 data areas. Data areas which can be processed: DB, bit memories, outputs, inputs, timers, counters
- Character delay time 3.5 characters or multiple thereof
- Transmission rate 300 bit/s up to 76800 bit/s (TTY up to 19200 bit/s)
- Character frame
- Slave address of CP (1 to 255)
- With/without RS 485 operation for 2-wire connection
- With/without modem operation (ignore smudge characters)
- Factor for the character delay time 1-10
- Number of work DB (for FB processing)
- Enabling of memory areas for writing by the master
- Default setting of receive line when using the X.27 interface module
- Conversion of Modbus addresses to S7 data areas

Ordering data	Article No.		Article No.
<p>Modbus Master V3.1</p> <p>Task: Communication via Modbus protocol with RTU format, SIMATIC S7 as master</p> <p>Requirement: CP 341 or CP 441-2; STEP 7 V4.02 and higher</p> <p>Delivery package: Driver program/documentation, English, German, French</p> <p>Single license</p> <p>Single license, without software and documentation</p>	<p>6ES7870-1AA01-0YA0</p> <p>6ES7870-1AA01-0YA1</p>	<p>SIMATIC Manual Collection</p> <p>Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC Distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC-based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC</p>	<p>6ES7998-8XC01-8YE0</p>
<p>Modbus Slave V3.1</p> <p>Task: Communication via Modbus protocol with RTU format, SIMATIC S7 as slave</p> <p>Requirement: CP 341 or CP 441-2; STEP 7 V4.02 and higher</p> <p>Delivery package: Driver program/documentation, English, German, French</p> <p>Single license</p> <p>Single license, without software and documentation</p>	<p>6ES7870-1AB01-0YA0</p> <p>6ES7870-1AB01-0YA1</p>	<p>SIMATIC Manual Collection update service for 1 year</p> <p>Current "Manual Collection" DVD and the three subsequent updates</p>	<p>6ES7998-8XC01-8YE2</p>

SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

CP 343-2P/CP 343-2

Overview



The CP 343-2P communications processor is the AS-Interface master for the SIMATIC S7-300 and the ET 200M distributed I/O station, with user-friendly parameterizing options.

The CP 343-2 is the basic version of the module.

The CP 343-2P / CP 343-2 has the following characteristics:

- As many as 62 AS-Interface slaves can be connected
- Integrated analog value transmission
- Supports all AS-Interface master functions according to the AS-Interface Specification V3.0
- Status displays of operating states and indication of the readiness for operation of connected slaves by means of LEDs in the front panel
- Fault indications (including AS-Interface voltage fault, configuration fault) by means of LEDs in the front panel.
- Compact enclosure in the design of the SIMATIC S7-300
- Suitable for AS-Interface with 30-V voltage and AS-i Power24V (from product version 2/firmware version 3.1)
- Additionally for CP 343-2P: Supports the configuration of the AS-Interface-network with STEP 7 V5.2 and higher

Design

The CP 343-2P / CP 343-2 is connected like an I/O module to the S7-300. It has:

- Two terminal connections for connecting the AS-Interface cable directly.
- LEDs in the front panel for indicating the operating state and functional readiness of all connected and active slaves
- Pushbuttons for switching over the master operating state and for adopting the existing ACTUAL configuration of the AS-i slave as the TARGET configuration

Function

The CP 343-2P / CP 343-2 supports all specified functions of the extended AS-Interface Specification V3.0.

The CP 343-2P / CP 343-2 each occupy 16 bytes in the I/O address area of the SIMATIC S7-300. The digital I/O data of the standard slaves and A slaves is saved in this area. The digital I/O data of the B slaves and the analog I/O data can be accessed with the S7 system functions for read/write data records.

If required, master calls can be performed with the command interface, e.g. read/write parameters, read/write configuration.

For more information, see <https://support.industry.siemens.com/cs/ww/en/view/51678777>.

Notes on security

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

For more information on Industrial Security, see <http://www.siemens.com/industrialsecurity>.

Configuration

All connected AS-Interface slaves are configured at the press of a button. No further configuration of the CP is required.

Additionally for CP 343-2P

The CP 343-2P also supports configuring of the AS-Interface network with STEP 7 V5.2 and higher. Specifying the AS-i configuration in HW-Config facilitates the setting of slave parameters and documentation of the plant. Uploading the ACTUAL configuration of an already configured AS-Interface network is also supported. The saved configuration cannot be overwritten at the press of a button and is therefore tamper-proof.

Benefits

- Shorter start-up times through simple configuration at the press of a button
- Design of flexible machine-related structures using the ET 200M distributed I/O system
- Enables diagnostics of the AS-Interface network
- Well suited also for complex applications thanks to connection options for 62 slaves and integral analog value processing
- Reduction of standstill and servicing times in the event of a fault thanks to the LED indicators:
 - Status of the AS-Interface network
 - Slaves connected and their readiness for operation
 - Monitoring of the AS-Interface voltage
- Lower costs for stock keeping and spare parts inventory because the CP can be used for the SIMATIC S7-300 and also for the ET 200M
- Additionally for CP 343-2P: Improved plant documentation and support for service assignments thanks to a description of the AS-Interface configuration in the STEP 7 project
- Simple operation with AS-Interface power supply unit (see <https://mall.industry.siemens.com/mall/en/WW/Catalog/Products/8200165?tree=CatalogTree>) possible without restrictions
- Alternatively: No need for the AS-i power supply unit with AS-i Power24V. The AS-Interface cable is powered through an existing 24 V DC PELV power supply unit. An S22.5 AS-i data decoupling module (e.g. 3RK1901-1DE12-1AA0) is required for the decoupling, see <https://mall.industry.siemens.com/mall/en/WW/Catalog/Products/10057533?tree=CatalogTree>.

Application

The CP 343-2P / CP 343-2 is the AS-Interface master connection for the SIMATIC S7-300 and the ET 200M.

Through connection to AS-Interface it is possible to access max. 248 DI / 248 DQ per CP, using 62 A/B slaves with 4 DI / 4 DQ each.

With the integrated analog value processing, it is easy to transmit analog signals. Up to 62 analog slaves with an A/B address (each with up to two channels) or up to 31 analog slaves with a standard address (each with up to four channels) are possible per CP.

The CP 343-2P is the further development of the CP 343-2 and contains its entire functionality. An existing STEP 7 user program for a CP 343-2 can thus be used without restrictions with a CP 343-2P. It is only in STEP 7 HW-Config that the two modules are configured differently, with the CP 343-2P offering additional options. This is why the CP 343-2P is recommended.

Ordering data**Article No.****CP 343-2P communications processor****6GK7343-2AH11-0XA0**

- Device version with expanded configuration options for connection of SIMATIC S7-300 and ET 200M to AS-Interface
- Configuration of the AS-i network using the SET key or STEP 7 (V5.2 and higher)
- Without front connector
- Corresponds to AS-Interface Specification V3.0
- Dimensions (W x H x D / mm): 40 x 125 x 120

CP 343-2 communications processor**6GK7343-2AH01-0XA0**

- Basic version for connection of SIMATIC S7-300 and ET 200M to AS-Interface
- Configuration of the AS-i network using the SET key
- Without front connector
- Corresponds to AS-Interface Specification V3.0
- Dimensions (W x H x D / mm): 40 x 125 x 120

Accessories**Front connector, 20-pin**

- With screw-type terminals
- With spring-loaded terminals

6ES7392-1AJ00-0AA0
6ES7392-1BJ00-0AA0**AS-Interface addressing unit V3.0****3RK1904-2AB02**

- For AS-Interface modules and sensors and actuators with integrated AS-Interface according to AS-i Specification V3.0
- For setting the AS-i address of standard slaves, and slaves with extended addressing mode (A/B slaves)
- With input/output test function and many other commissioning functions
- Battery operation with four type AA batteries (IEC LR6, NEDA 15)
- Degree of protection IP40
- Dimensions (W x H x D / mm): 84 x 195 x 35
- Scope of supply:
 - Addressing unit with four batteries
 - Addressing cable, with M12 plug to addressing plug (hollow plug), length 1.5 m

More information**More information**

Manuals, see <https://support.industry.siemens.com/cs/ww/en/ps/15754/man>

For diagnostics during ongoing operation, diagnostics blocks with clearly arranged visualization on the SIMATIC HMI panel are available or can be downloaded free of charge via a web browser, see <https://support.industry.siemens.com/cs/ww/en/view/61892138>.

AS-Interface function block library for SIMATIC PCS 7 for easy connection of AS-Interface to PCS 7, see <https://mall.industry.siemens.com/mall/en/ww/Catalog/Products/10046725?tree=CatalogTree>.

SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

CP 342-5**Overview**

- PROFIBUS DP master or slave with electrical interface for connecting the SIMATIC S7-300 to PROFIBUS at up to 12 Mbps (including 45.45 Kbps)
- Communication services:
 - PROFIBUS DP
 - PG/OP communication (OP multiplexing)
 - S7 communication (client, server)
 - Open communication (SEND/RECEIVE)
- Easy configuration and programming over PROFIBUS
- Cross-network programming device communication through S7 routing
- Modules can be replaced without the need for a PG

5

Technical specifications

Article number	6GK7342-5DA03-0XE0
Product type designation	CP 342-5
Transmission rate	
Transfer rate	
• at the 1st interface acc. to PROFIBUS	9.6 kbit/s ... 12 Mbit/s
Interfaces	
Number of interfaces acc. to Industrial Ethernet	0
Number of electrical connections	
• at the 1st interface acc. to PROFIBUS	1
• for power supply	1
Type of electrical connection	
• at the 1st interface acc. to PROFIBUS	9-pin Sub-D socket (RS485)
• for power supply	4-pole terminal block
Supply voltage, current consumption, power loss	
Type of voltage of the supply voltage	DC
Supply voltage 1 from backplane bus	5 V
Supply voltage external	24 V
Supply voltage external at DC Rated value	24 V
Relative positive tolerance at DC at 24 V	20 %
Relative negative tolerance at DC at 24 V	15 %
Consumed current	
• from backplane bus at DC at 5 V typical	0.15 A
• from external supply voltage at DC at 24 V typical	0.25 A
Power loss [W]	6.75 W

Article number	6GK7342-5DA03-0XE0
Product type designation	CP 342-5
Permitted ambient conditions	
Ambient temperature	
• during operation	0 ... 60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
Relative humidity at 25 °C without condensation during operation maximum	95 %
Protection class IP	IP20
Design, dimensions and weight	
Module format	Compact module S7-300 single width
Width	40 mm
Height	125 mm
Depth	120 mm
Net weight	0.3 kg
Product properties, functions, components general	
Number of units	
• per CPU maximum	4
Performance data open communication	
Number of possible connections for open communication by means of SEND/RECEIVE blocks maximum	16
Amount of data	
• as user data per connection for open communication by means of SEND/RECEIVE blocks maximum	240 byte

Technical specifications (continued)

Article number	6GK7342-5DA03-0XE0
Product type designation	CP 342-5
Performance data PROFIBUS DP	
Service as DP master	
• DPV0	Yes
Number of DP slaves on DP master usable	124
Amount of data	
• of the address area of the inputs as DP master total	2 160 byte
• of the address area of the outputs as DP master total	2 160 byte
• of the address area of the inputs per DP slave	244 byte
• of the address area of the outputs per DP slave	244 byte
• of the address area of the diagnostic data per DP slave	240 byte
Service as DP slave	
• DPV0	Yes
Amount of data	
• of the address area of the inputs as DP slave total	240 byte
• of the address area of the outputs as DP slave total	240 byte

Article number	6GK7342-5DA03-0XE0
Product type designation	CP 342-5
Performance data S7 communication	
Number of possible connections for S7 communication	
• maximum	16
Performance data multi-protocol mode	
Number of active connections with multi-protocol mode	
• without DP maximum	32
• with DP maximum	28
Performance data telecontrol	
Protocol is supported	
• TCP/IP	No
Product functions management, configuration	
Configuration software	
• required	STEP 7 V5.1 SP2 or higher / STEP 7 Professional V12 (TIA Portal) or higher

Ordering data

Ordering data	Article No.	Ordering data	Article No.
CP 342-5 communications processor	6GK7342-5DA03-0XE0	PROFIBUS FC Standard Cable	6XV1830-0EH10
Communications processor for electrical connection of SIMATIC S7-300 to PROFIBUS at up to 12 Mbps, with electronic manual on CD-ROM		2-wire bus cable, shielded, special design for fast mounting, delivery unit: max. 1000 m, minimum order quantity 20 m, sold by the meter	
Accessories		PROFIBUS bus terminal 12M	6GK1500-0AA10
PROFIBUS FastConnect RS 485 connection plug		Bus terminal for connection of PROFIBUS nodes at up to 12 Mbps with connecting cable	
With 90° cable outlet; insulation displacement technology, max. transmission rate 12 Mbps		SIMATIC S7-300 DM 370	6ES7370-0AA01-0AA0
• Without PG interface	6ES7972-0BA52-0XA0	Dummy module; used for module replacement	
• With PG interface	6ES7972-0BB52-0XA0		
PROFIBUS bus connector IP20			
With connection to PPI, MPI, PROFIBUS			
• Without PG interface	6ES7972-0BA12-0XA0		
• With PG interface	6ES7972-0BB12-0XA0		

SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

CP 342-5 FO

Overview



- PROFIBUS DP master or slave with optical interface for connecting the SIMATIC S7-300 to PROFIBUS at up to 12 Mbps (including 45.45 Kbps)
- Direct connection to the optical PROFIBUS network via the integrated fiber-optic interface for plastic and PCF fiber-optic cables
- Communication services:
 - PROFIBUS DP
 - PG/OP communication (OP multiplexing)
 - S7 communication (client, server)
 - Open communication (SEND/RECEIVE)
- Easy configuration and programming over PROFIBUS
- Cross-network programming device communication through S7 routing
- Modules can be replaced without the need for a PG

DP-M	DP-S	FMS	PG/OP	S7/S5	
●	●		●	●	

Technical specifications

Article number	6GK7342-5DF00-0XE0
Product type designation	CP 342-5 FO
Transmission rate	
Transfer rate	
• at the 1st interface acc. to PROFIBUS	9.6 kbit/s ... 12 Mbit/s
Interfaces	
Number of interfaces acc. to Industrial Ethernet	0
Number of electrical connections	
• for power supply	1
Number of optical interfaces at the 1st interface acc. to PROFIBUS	2
Design of the optical interface at the 1st interface acc. to PROFIBUS	Duplex socket
Type of electrical connection	
• for power supply	4-pole terminal block
Supply voltage, current consumption, power loss	
Type of voltage of the supply voltage	DC
Supply voltage 1 from backplane bus	5 V
Supply voltage	24 V
Supply voltage external	24 V
Supply voltage external at DC Rated value	24 V
Relative positive tolerance at DC at 24 V	20 %
Relative negative tolerance at DC at 24 V	15 %
Consumed current	
• from backplane bus at DC at 5 V typical	0.15 A
• from external supply voltage at DC at 24 V typical	0.25 A
Power loss [W]	6 W

Article number	6GK7342-5DF00-0XE0
Product type designation	CP 342-5 FO
Permitted ambient conditions	
Ambient temperature	
• during operation	0 ... 60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
Relative humidity at 25 °C without condensation during operation maximum	95 %
Protection class IP	IP20
Design, dimensions and weight	
Module format	Compact module
Width	40 mm
Height	125 mm
Depth	120 mm
Net weight	0.3 kg
Mounting type	
• S7-300 rail mounting	Yes
Product properties, functions, components general	
Number of units	
• per CPU maximum	4
Wire length	
• for PCF FOC maximum	300 m
• for POF FOC maximum	50 m
Performance data open communication	
Number of possible connections for open communication by means of SEND/RECEIVE blocks maximum	16
Amount of data	
• as user data per connection for open communication by means of SEND/RECEIVE blocks maximum	240 byte

Technical specifications (continued)

Article number	6GK7342-5DF00-0XE0
Product type designation	CP 342-5 FO
Performance data PROFIBUS DP	
Service as DP master	
• DPV0	Yes
Number of DP slaves on DP master usable	124
Amount of data	
• of the address area of the inputs as DP master total	2 160 byte
• of the address area of the outputs as DP master total	2 160 byte
• of the address area of the inputs per DP slave	244 byte
• of the address area of the outputs per DP slave	244 byte
• of the address area of the diagnostic data per DP slave	240 byte
Service as DP slave	
• DPV0	Yes
Amount of data	
• of the address area of the inputs as DP slave total	240 byte
• of the address area of the outputs as DP slave total	240 byte

Article number	6GK7342-5DF00-0XE0
Product type designation	CP 342-5 FO
Performance data S7 communication	
Number of possible connections for S7 communication	
• maximum	16
Performance data multi-protocol mode	
Number of active connections with multi-protocol mode	
• without DP maximum	32
• with DP maximum	28
Performance data telecontrol	
Protocol is supported	
• TCP/IP	No
Product functions management, configuration	
Configuration software	
• required	STEP 7 V5.1 SP2 or higher / STEP 7 Professional V12 (TIA Portal) or higher

Ordering data

CP 342-5 FO communications processor

Communication processor for optical connection of SIMATIC S7-300 to PROFIBUS to 12 Mbps with electronic manual on CD-ROM

Article No.

6GK7342-5DF00-0XE0

Article No.

Accessories

PROFIBUS Plastic Fiber Optic, Simplex Connector/Polishing Set

100 simplex connectors and 5 polishing sets for assembling PROFIBUS plastic fiber optic cables for the optical PROFIBUS DP

6GK1901-0FB00-0AAA0

PROFIBUS Plastic Fiber Optic, stripping tool set

Tools for removing the outer sheath or core sheath of plastic fiber optic cables

6GK1905-6PA10

SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

CP 343-5

Overview



Connection of SIMATIC S7-300 to PROFIBUS at up to 12 Mbps (including 45.45 Kbps)

- Communication services:
 - PG/OP communication
 - S7 communication
 - Open communication (SEND/RECEIVE)
 - PROFIBUS FMS
- Easy configuration and programming over PROFIBUS
- Can be easily integrated into the S7-300 system
- Cross-network programming device communication through S7 routing
- Modules can be replaced without the need for a PG

DP-M	DP-S	FMS	PG/OP	S7/S5	
		●	●	●	

Technical specifications

Article number	6GK7343-5FA01-0XE0
Product type designation	CP 343-5
Transmission rate	
Transfer rate	
• at the 1st interface acc. to PROFIBUS	9.6 kbit/s ... 12 Mbit/s
Interfaces	
Number of interfaces acc. to Industrial Ethernet	0
Number of electrical connections	
• at the 1st interface acc. to PROFIBUS	1
• for power supply	1
Type of electrical connection	
• at the 1st interface acc. to PROFIBUS	9-pin Sub-D socket (RS485)
• for power supply	4-pole terminal block
Supply voltage, current consumption, power loss	
Type of voltage of the supply voltage	DC
Supply voltage 1 from backplane bus	5 V
Supply voltage	24 V
Supply voltage external	24 V
Supply voltage external at DC Rated value	24 V
Relative positive tolerance at DC at 24 V	20 %
Relative negative tolerance at DC at 24 V	15 %
Consumed current	
• from backplane bus at DC at 5 V typical	0.15 A
• from external supply voltage at DC at 24 V typical	0.25 A
Power loss [W]	5 W

Article number	6GK7343-5FA01-0XE0
Product type designation	CP 343-5
Permitted ambient conditions	
Ambient temperature	
• during operation	0 ... 60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
Relative humidity at 25 °C without condensation during operation maximum	95 %
Protection class IP	IP20
Design, dimensions and weight	
Module format	Compact module S7-300 single width
Width	40 mm
Height	125 mm
Depth	120 mm
Net weight	0.3 kg
Mounting type	
• S7-300 rail mounting	Yes
Product properties, functions, components general	
Number of units	
• per CPU maximum	4
Performance data open communication	
Number of possible connections for open communication by means of SEND/RECEIVE blocks maximum	16
Amount of data	
• as user data per connection for open communication by means of SEND/RECEIVE blocks maximum	240 byte

Technical specifications (continued)

Article number	6GK7343-5FA01-0XE0
Product type designation	CP 343-5
Performance data FMS functions	
Number of possible connections for FMS connection maximum	16
Amount of data of the variables	
• for READ job maximum	237 byte
• for WRITE and REPORT job maximum	233 byte
Number of variables	
• Configurable from server to FMS partner	256
• Loadable from server to FMS partner	256

Article number	6GK7343-5FA01-0XE0
Product type designation	CP 343-5
Performance data S7 communication	
Number of possible connections for S7 communication	
• maximum	16
Performance data multi-protocol mode	
Number of active connections with multi-protocol mode	48
Performance data telecontrol	
Protocol is supported	
• TCP/IP	No
Product functions management, configuration	
Configuration software	
• required	STEP 7 V5.1 SP3 or higher and NCM S7 for PROFIBUS

Ordering data**Article No.****Article No.**

CP 343-5 communications processor	6GK7343-5FA01-0XE0
Communications processor for connection of S7-300 to PROFIBUS, FMS, open communication, PG/OP and S7 communication; with electronic manual on CD-ROM	
Accessories	
STEP 7 Version 5.6	
Target system: SIMATIC S7-300/-400, SIMATIC C7, SIMATIC WinAC	
Requirements: Windows Server 2008 R2 SP1 Windows Server 2012 R2 Windows Server 2016 Windows 7 SP1 Windows 10 Professional Windows 10 Enterprise	
Type of delivery: English, German, French, Spanish, Italian Including license key on USB flash drive, with electronic documentation	
• Floating license on DVD	6ES7810-4CC11-0YA5
• Rental license for 50 hours	6ES7810-4CC11-0YA6
• Software Update Service on DVD (requires current software version)	6ES7810-4BC01-0YX2
• Floating license upgrade 3.x/4.x/5.x to V5.6; on DVD	6ES7810-4CC11-0YE5
• STEP 7 V5.6 trial license; on DVD, operational for 14 days	6ES7810-4CC11-0YA7

PROFIBUS FastConnect RS485 bus connection plug	
With 90° cable outlet; insulation displacement technology, max. transfer rate 12 Mbps (1 unit)	
• Without PG interface	6ES7972-0BA52-0XA0
• With PG interface	6ES7972-0BB52-0XA0
PROFIBUS bus connector IP20	
With connection to PPI, MPI, PROFIBUS	
• Without PG interface	6ES7972-0BA12-0XA0
• With PG interface	6ES7972-0BB12-0XA0
PROFIBUS bus terminal 12M	6GK1500-0AA10
Bus terminal for connection of PROFIBUS nodes at up to 12 Mbps with connecting cable	
SIMATIC S7-300 DM 370	6ES7370-0AA01-0AA0
Dummy module; used for module replacement	

SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

CP 343-1 Lean

Overview



Communications processor for connecting a SIMATIC S7-300 to Industrial Ethernet networks, also as PROFINET IO Device.

The CP supports:

- PG/OP communication
- S7 communication
- Open communication (SEND/RECEIVE)
- PROFINET communication

ISO	TCP/UDP	PN	MRP	IT	IP-R	PG/OP	S7/S5
	●	●	●			●	●

Technical specifications

Article number	6GK7343-1CX10-0XE0
Product type designation	CP 343-1 Lean
Transmission rate	
Transfer rate	
• at the 1st interface	10 ... 100 Mbit/s
Interfaces	
Number of interfaces acc. to Industrial Ethernet	2
Number of electrical connections	
• at the 1st interface acc. to Industrial Ethernet	2
• for power supply	1
Type of electrical connection	
• at the 1st interface acc. to Industrial Ethernet	RJ45 port
• of Industrial Ethernet interface	RJ45 port
• for power supply	2-pole plugable terminal block
Supply voltage, current consumption, power loss	
Type of voltage of the supply voltage	DC
Supply voltage 1 from backplane bus	5 V
Supply voltage	24 V
Supply voltage external	24 V
Supply voltage external at DC Rated value	24 V
Relative positive tolerance at DC at 24 V	20 %
Relative negative tolerance at DC at 24 V	15 %
Consumed current	
• from backplane bus at DC at 5 V typical	0.2 A
• from external supply voltage at DC at 24 V typical	0.16 A
• from external supply voltage at DC at 24 V maximum	0.2 A
Power loss [W]	5.8 W

Article number	6GK7343-1CX10-0XE0
Product type designation	CP 343-1 Lean
Permitted ambient conditions	
Ambient temperature	
• for vertical installation during operation	0 ... 40 °C
• for horizontally arranged busbars during operation	0 ... 60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
Relative humidity at 25 °C without condensation during operation maximum	95 %
Protection class IP	IP20
Design, dimensions and weight	
Module format	Compact module S7-300 single width
Width	40 mm
Height	125 mm
Depth	120 mm
Net weight	0.22 kg
Mounting type	
• S7-300 rail mounting	Yes

Technical specifications (continued)

Article number	6GK7343-1CX10-0XE0
Product type designation	CP 343-1 Lean
Performance data open communication	
Number of possible connections for open communication by means of SEND/RECEIVE blocks maximum	8
Amount of data	
• as user data per ISO on TCP connection for open communication by means of SEND/RECEIVE blocks maximum	8 Kibyte
• as user data per TCP connection for open communication by means of SEND/RECEIVE blocks maximum	8 Kibyte
• as user data per UDP connection for open IE communication by means of SEND/RECEIVE blocks maximum	2 Kibyte
Number of Multicast stations	8
Performance data S7 communication	
Number of possible connections for S7 communication	
• maximum	4
Service	
• of SIMATIC communication as server	Yes
Performance data multi-protocol mode	
Number of active connections with multi-protocol mode	12
Performance data PROFINET communication as PN IO-Controller	
Product function PROFINET IO controller	No
Performance data PROFINET communication as PN IO-Device	
Product function PROFINET IO device	Yes
Amount of data	
• as user data for input variables as PROFINET IO device maximum	512 byte
• as user data for input variables as PROFINET IO device maximum	512 byte
• as user data for input variables for each sub-module as PROFINET IO device	240 byte
• as user data for input variables for each sub-module as PROFINET IO device	240 byte
• as user data for the consistency area for each sub-module	240 byte
Number of submodules per PROFINET IO-Device	32
Performance data telecontrol	
Protocol is supported	
• TCP/IP	Yes

Article number	6GK7343-1CX10-0XE0
Product type designation	CP 343-1 Lean
Product functions management, configuration	
Product function MIB support	Yes
Protocol is supported	
• SNMP v1	Yes
• DCP	Yes
• LLDP	Yes
Configuration software	
• required	STEP 7 V5.4 or higher / STEP 7 Professional V11 (TIA Portal) or higher
Identification & maintenance function	
• I&MO - device-specific information	Yes
• I&M1 – higher-level designation/ location designation	Yes
Product functions Diagnosis	
Product function Web-based diagnostics	Yes
Product functions switch	
Product feature Switch	Yes
Product function	
• switch-managed	No
• with IRT PROFINET IO switch	No
• Configuration with STEP 7	Yes
Product functions Redundancy	
Product function	
• Ring redundancy	Yes
• Redundancy manager	No
Protocol is supported Media Redundancy Protocol (MRP)	Yes
Product functions Security	
Product function	
• password protection for Web applications	No
• ACL - IP-based	Yes
• ACL - IP-based for PLC/routing	No
• switch-off of non-required services	Yes
• Blocking of communication via physical ports	Yes
• log file for unauthorized access	No
Product functions Time	
Product function SICLOCK support	Yes
Product function pass on time synchronization	Yes
Protocol is supported	
• NTP	Yes

SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

CP 343-1 Lean**Ordering data****Article No.****Article No.****CP 343-1 Lean communications processor****6GK7343-1CX10-0XE0**

For connecting SIMATIC S7-300 to Industrial Ethernet through TCP/IP and UDP, Multicast, S7 communication, open communication (SEND/RECEIVE), FETCH/WRITE, PROFINET IO Device, MRP, integrated 2-port switch ERTEC, comprehensive diagnostics facilities, module replacement without PG, SNMP, initial commissioning over LAN; with electronic manual on CD-ROM

Accessories**IE FC RJ45 plug 145**

RJ45 plug connector 2 x 2 for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 145° cable outlet

- 1 pack = 1 unit
- 1 pack = 10 units
- 1 pack = 50 units

6GK1901-1BB30-0AA0
6GK1901-1BB30-0AB0
6GK1901-1BB30-0AE0

IE FC TP Standard Cable GP 2 x 2 (Type A)**6XV1840-2AH10**

4-wire, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compatible; with UL approval; sold by the meter; max. length 1000 m, minimum order quantity 20 m

IE FC Stripping Tool**6GK1901-1GA00**

Preadjusted stripping tool for fast stripping of the Industrial Ethernet FC cables

Compact Switch Module CSM 377**6GK7377-1AA00-0AA0**

Unmanaged switch for connection of a SIMATIC S7-300 CPU, ET 200M, and up to three further nodes to Industrial Ethernet operating at 10/100 Mbps; 4 x RJ45 ports; external 24 V DC power supply, LED diagnostics, S7-300 module including electronic manual on CD-ROM

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Overview



Communications processor for connecting a SIMATIC S7-300/SINUMERIK 840D powerline to Industrial Ethernet networks, also as PROFINET IO controller or IO Device.

The CP supports:

- PG/OP communication
- S7 communication
- Open communication (SEND/RECEIVE)
- PROFINET communication

ISO	TCP/UDP	PN	MRP	IT	IP-R	PG/OP	S7/S5
●	●	●	●			●	●

Technical specifications

Article number	6GK7343-1EX30-0XE0
Product type designation	CP 343-1
Transmission rate	
Transfer rate	
• at the 1st interface	10 ... 100 Mbit/s
Interfaces	
Number of interfaces acc. to Industrial Ethernet	2
Number of electrical connections	
• at the 1st interface acc. to Industrial Ethernet	2
• for power supply	1
Type of electrical connection	
• at the 1st interface acc. to Industrial Ethernet	RJ45 port
• of Industrial Ethernet interface	RJ45 port
• for power supply	2-pole plugable terminal block
Supply voltage, current consumption, power loss	
Type of voltage of the supply voltage	DC
Supply voltage 1 from backplane bus	5 V
Supply voltage	24 V
Supply voltage external	24 V
Supply voltage external at DC Rated value	24 V
Relative positive tolerance at DC at 24 V	20 %
Relative negative tolerance at DC at 24 V	15 %
Consumed current	
• from backplane bus at DC at 5 V typical	0.2 A
• from external supply voltage at DC at 24 V typical	0.16 A
• from external supply voltage at DC at 24 V maximum	0.2 A
Power loss [W]	5.8 W

Article number	6GK7343-1EX30-0XE0
Product type designation	CP 343-1
Permitted ambient conditions	
Ambient temperature	
• for vertical installation during operation	0 ... 40 °C
• for horizontally arranged busbars during operation	0 ... 60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
Relative humidity at 25 °C without condensation during operation maximum	95 %
Protection class IP	IP20
Design, dimensions and weight	
Module format	Compact module S7-300 single width
Width	40 mm
Height	125 mm
Depth	120 mm
Net weight	0.22 kg
Mounting type	
• S7-300 rail mounting	Yes
Performance data open communication	
Number of possible connections for open communication by means of SEND/RECEIVE blocks maximum	16
Amount of data	
• as user data per ISO connection for open communication by means of SEND/RECEIVE blocks maximum	8 Kibyte
• as user data per ISO on TCP connection for open communication by means of SEND/RECEIVE blocks maximum	8 Kibyte
• as user data per TCP connection for open communication by means of SEND/RECEIVE blocks maximum	8 Kibyte
• as user data per UDP connection for open IE communication by means of SEND/RECEIVE blocks maximum	2 Kibyte
Number of Multicast stations	16

SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

CP 343-1

Technical specifications (continued)

Article number	6GK7343-1EX30-0XE0
Product type designation	CP 343-1
Performance data S7 communication	
Number of possible connections for S7 communication	
• maximum	16
Performance data multi-protocol mode	
Number of active connections with multi-protocol mode	32
Performance data PROFINET communication as PN IO-Controller	
Number of PN IO devices on PROFINET IO controller usable total	32
Number of external PN IO lines with PROFINET per rack	1
Amount of data	
• as user data for input variables as PROFINET IO controller maximum	1 Kibyte
• as user data for input variables as PROFINET IO controller maximum	1 Kibyte
• as user data for input variables per PN IO device as PROFINET IO controller maximum	1 433 byte
• as user data for output variables per PN IO device as PROFINET IO controller maximum	1 433 byte
• as user data for input variables per PN IO device for each sub-module as PROFINET IO controller maximum	240 byte
• as user data for output variables per PN IO device for each sub-module as PROFINET IO controller maximum	240 byte
Performance data PROFINET communication as PN IO-Device	
Product function PROFINET IO device	Yes
Amount of data	
• as user data for input variables as PROFINET IO device maximum	512 byte
• as user data for input variables as PROFINET IO device maximum	512 byte
• as user data for input variables for each sub-module as PROFINET IO device	240 byte
• as user data for input variables for each sub-module as PROFINET IO device	240 byte
• as user data for the consistency area for each sub-module	240 byte
Number of submodules per PROFINET IO-Device	32
Performance data telecontrol	
Protocol is supported	
• TCP/IP	Yes

Article number	6GK7343-1EX30-0XE0
Product type designation	CP 343-1
Product functions management, configuration	
Product function MIB support	Yes
Protocol is supported	
• SNMP v1	Yes
• DCP	Yes
• LLDP	Yes
Configuration software	
• required	STEP 7 V5.4 SP2 or higher / STEP 7 Professional V11 (TIA Portal) or higher
Identification & maintenance function	
• I&MO - device-specific information	Yes
• I&M1 – higher-level designation/ location designation	Yes
Product functions Diagnosis	
Product function Web-based diagnostics	Yes
Product functions switch	
Product feature Switch	Yes
Product function	
• switch-managed	No
• with IRT PROFINET IO switch	Yes
• Configuration with STEP 7	Yes
Product functions Redundancy	
Product function	
• Ring redundancy	Yes
• Redundancy manager	No
Protocol is supported Media Redundancy Protocol (MRP)	Yes
Product functions Security	
Product function	
• password protection for Web applications	No
• ACL - IP-based	Yes
• ACL - IP-based for PLC/routing	No
• switch-off of non-required services	Yes
• Blocking of communication via physical ports	Yes
• log file for unauthorized access	No
Product functions Time	
Product function SICLOCK support	Yes
Product function pass on time synchronization	Yes
Protocol is supported	
• NTP	Yes

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Ordering data	Article No.	Ordering data	Article No.
<p>CP 343-1 communications processor</p> <p>For connection of SIMATIC S7-300 to Industrial Ethernet over ISO and TCP/IP; PROFINET IO controller or PROFINET IO Device, MRP, integrated 2-port switch ERTEC; S7 communication, open communication (SEND/RECEIVE), FETCH/WRITE, with and without RFC 1006, multicast, DHCP, CPU clock synchronization via SIMATIC procedure and NTP, diagnostics, SNMP, access protection through IP access list, initialization over LAN 10/100 Mbps; with electronic manual on DVD</p>	6GK7343-1EX30-0XE0	<p>IE FC TP Standard Cable GP 2 x 2 (Type A)</p> <p>4-wire, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m</p>	6XV1840-2AH10
<p>Accessories</p> <p>IE FC RJ45 plug 180 2 x 2</p> <p>RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 180° cable outlet; for network components and CPs/CPUs with Industrial Ethernet interface</p> <ul style="list-style-type: none"> • 1 pack = 1 unit • 1 pack = 10 units • 1 pack = 50 units 	<p>6GK1901-1BB10-2AA0</p> <p>6GK1901-1BB10-2AB0</p> <p>6GK1901-1BB10-2AE0</p>	<p>IE FC Stripping Tool</p> <p>Pre-adjusted stripping tool for fast stripping of Industrial Ethernet FC cables</p>	6GK1901-1GA00
<p>IE FC RJ45 plug 145</p> <p>RJ45 plug connector 2 x 2 for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 145° cable outlet</p> <ul style="list-style-type: none"> • 1 pack = 1 unit • 1 pack = 10 units • 1 pack = 50 units 	<p>6GK1901-1BB30-0AA0</p> <p>6GK1901-1BB30-0AB0</p> <p>6GK1901-1BB30-0AE0</p>	<p>Compact Switch Module CSM 377</p> <p>Unmanaged switch for connection of a SIMATIC S7-300 CPU, ET 200M, and up to three additional nodes to Industrial Ethernet operating at 10/100 Mbps; 4 x RJ45 ports; external 24 V DC power supply, LED diagnostics, S7-300 module including electronic manual on CD-ROM</p>	6GK7377-1AA00-0AA0

SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

CP 343-1 Advanced

Overview



Communications processor for connecting the SIMATIC S7-300/SINUMERIK 840D powerline to Industrial Ethernet networks, also as PROFINET IO controller and IO device.

The CP supports:

- PG/OP communication
- S7 communication
- Open communication (SEND/RECEIVE)
- PROFINET communication
- IT communication
- Security functionality, firewall and VPN

In addition, the CP 343-1 Advanced provides email functions and allows users to create their own Web pages - ideal support for maintenance and quality assurance. The Internet functions such as FTP even allow connection to the most diverse PC-based systems. This CP is therefore the bridge between the field level and the management level for the S7-300. The CP 343-1 Advanced connects seamlessly to the security structures of the office and IT world.

ISO	TCP/UDP	PN	MRP	IT	IP-R	PG/OP	S7/S5
●	●	●	●	●	●	●	●

Technical specifications

Article number	6GK7343-1GX31-0XE0
Product type designation	CP 343-1 Advanced
Transmission rate	
Transfer rate	
• at the 1st interface	10 ... 1 000 Mbit/s
• at the 2nd interface	10 ... 100 Mbit/s
Interfaces	
Number of interfaces acc. to Industrial Ethernet	3
Number of electrical connections	
• at the 1st interface acc. to Industrial Ethernet	1
• at the 2nd interface acc. to Industrial Ethernet	2
• for power supply	1
Type of electrical connection	
• at the 1st interface acc. to Industrial Ethernet	RJ45 port
• at the 2nd interface acc. to Industrial Ethernet	RJ45 port
• for power supply	2-pole plugable terminal block
design of the removable storage C-PLUG	Yes
Supply voltage, current consumption, power loss	
Type of voltage of the supply voltage	DC
Supply voltage 1 from backplane bus	5 V
Supply voltage external	24 V
Supply voltage external at DC Rated value	24 V
Relative positive tolerance at DC at 24 V	20 %
Relative negative tolerance at DC at 24 V	15 %
Consumed current	
• from backplane bus at DC at 5 V typical	0.14 A
• from external supply voltage at DC at 24 V typical	0.48 A
• from external supply voltage at DC at 24 V maximum	0.62 A
Power loss [W]	14.7 W

Article number	6GK7343-1GX31-0XE0
Product type designation	CP 343-1 Advanced
Permitted ambient conditions	
Ambient temperature	
• for vertical installation during operation	0 ... 40 °C
• for horizontally arranged busbars during operation	0 ... 60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
Relative humidity at 25 °C without condensation during operation maximum	95 %
Protection class IP	IP20
Design, dimensions and weight	
Module format	Compact module
Width	80 mm
Height	125 mm
Depth	120 mm
Net weight	0.8 kg
Mounting type	
• S7-300 rail mounting	Yes
Performance data open communication	
Number of possible connections for open communication by means of SEND/RECEIVE blocks maximum	16
Amount of data	
• as user data per ISO connection for open communication by means of SEND/RECEIVE blocks maximum	8 Kibyte
• as user data per ISO on TCP connection for open communication by means of SEND/RECEIVE blocks maximum	8 Kibyte
• as user data per TCP connection for open communication by means of SEND/RECEIVE blocks maximum	8 Kibyte
• as user data per UDP connection for open IE communication by means of SEND/RECEIVE blocks maximum	2 Kibyte
Number of Multicast stations	16

Technical specifications (continued)

Article number	6GK7343-1GX31-0XE0
Product type designation	CP 343-1 Advanced
Performance data S7 communication	
Number of possible connections for S7 communication	
• maximum	16
Performance data multi-protocol mode	
Number of active connections with multi-protocol mode	48
Performance data IT functions	
Number of possible connections	
• as client by means of FTP maximum	10
• as server by means of FTP maximum	2
Number of possible connections	
• as server by means of HTTP maximum	4
• as e-mail client maximum	1
Amount of data as user data for email maximum	8 Kibyte
Storage capacity of the user memory	
• as flash memory file system	28 Mibyte
• as RAM	30 Mibyte
Number of possible write cycles of the flash memory cells	100 000
Performance data PROFINET communication as PN IO-Controller	
Product function PROFINET IO controller	Yes
Number of PN IO devices on PROFINET IO controller usable total	128
Number of PN IO IRT devices on PROFINET IO controller usable	128
Number of external PN IO lines with PROFINET per rack	1
Amount of data	
• as user data for input variables as PROFINET IO controller maximum	4 Kibyte
• as user data for input variables as PROFINET IO controller maximum	4 Kibyte
• as user data for input variables per PN IO device as PROFINET IO controller maximum	1 433 byte
• as user data for output variables per PN IO device as PROFINET IO controller maximum	1 433 byte
• as user data for input variables per PN IO device for each sub-module as PROFINET IO controller maximum	240 byte
• as user data for output variables per PN IO device for each sub-module as PROFINET IO controller maximum	240 byte

Article number	6GK7343-1GX31-0XE0
Product type designation	CP 343-1 Advanced
Performance data PROFINET communication as PN IO-Device	
Product function PROFINET IO device	Yes
Amount of data	
• as user data for input variables as PROFINET IO device maximum	1 024 byte
• as user data for input variables as PROFINET IO device maximum	1 024 byte
• as user data for input variables for each sub-module as PROFINET IO device	240 byte
• as user data for input variables for each sub-module as PROFINET IO device	240 byte
• as user data for the consistency area for each sub-module	240 byte
Number of submodules per PROFINET IO-Device	32
Performance data PROFINET CBA	
Number of remote connection partners with PROFINET CBA	64
Number of connections with PROFINET CBA total	1 000
Amount of data	
• as user data for digital inputs with PROFINET CBA maximum	8 Kibyte
• as user data for digital outputs with PROFINET CBA maximum	8 Kibyte
• as user data for arrays and data types in the case of acyclic transmission with PROFINET CBA maximum	8 Kibyte
• as user data for arrays and data types with PROFINET CBA with cyclical transfer maximum	250 byte
• as user data for arrays and data types with PROFINET CBA in the case of local interconnection maximum	2 400 byte
Performance data PROFINET CBA remote connection with acyclic transmission	
Refresh time of the remote interconnections in the case of acyclic transmission with PROFINET CBA	100 ms
Number of remote connections to input variables in the case of acyclic transmission with PROFINET CBA maximum	128
Number of remote connections to output variables in the case of acyclic transmission with PROFINET CBA maximum	128
Amount of data	
• as user data for remote interconnections with input variables in the case of acyclic transmission with PROFINET CBA	8 Kibyte
• as user data for remote interconnections with output variables in the case of acyclic transmission with PROFINET CBA	8 Kibyte

SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

CP 343-1 Advanced

Technical specifications (continued)

Article number	6GK7343-1GX31-0XE0
Product type designation	CP 343-1 Advanced
Performance data PROFINET CBA remote connection with cyclic transmission	
Refresh time of the remote interconnections with PROFINET CBA with cyclical transfer	8 ms
Number of remote connections to input variables with PROFINET CBA with cyclical transfer maximum	200
Number of remote connections to output variables with PROFINET CBA with cyclical transfer maximum	200
Amount of data	
• as user data for remote interconnections with input variables with PROFINET CBA with cyclical transfer maximum	2 000 byte
• as user data for remote interconnections with output variables with PROFINET CBA with cyclical transfer maximum	2 000 byte
Performance data PROFINET CBA HMI variables via PROFINET acyclic	
Number of connectable HMI stations for HMI variables in the case of acyclic transmission with PROFINET CBA	3
Refresh time of the HMI variables in the case of acyclic transmission with PROFINET CBA	500 ms
Number of HMI variables in the case of acyclic transmission with PROFINET CBA maximum	200
Amount of data as user data for HMI variables in the case of acyclic transmission with PROFINET CBA maximum	8 Kibyte
Performance data PROFINET CBA device-internal connections	
Number of internal connections with PROFINET CBA maximum	256
Amount of data of the internal connections with PROFINET CBA maximum	2 400 byte
Performance data PROFINET CBA connections to constants	
Number of connections with constants with PROFINET CBA maximum	200
Amount of data as user data for interconnections with constants with PROFINET CBA maximum	4 096 byte
Performance data PROFINET CBA PROFIBUS proxy functionality	
Product function with PROFINET CBA PROFIBUS proxy functionality	No
Performance data telecontrol	
Protocol is supported	
• TCP/IP	Yes

Article number	6GK7343-1GX31-0XE0
Product type designation	CP 343-1 Advanced
Product functions management, configuration	
Product function MIB support	Yes
Protocol is supported	
• SNMP v1	Yes
• SNMP v3	Yes
• DCP	Yes
• LLDP	Yes
Configuration software	
• required	STEP7 V5.5 SP2 HF1 or higher / STEP 7 Professional V12 (TIA Portal) or higher
• for PROFINET CBA required	SIMATIC iMap V3.0 SP4 and higher
Identification & maintenance function	
• I&M0 - device-specific information	Yes
• I&M1 - higher-level designation/ location designation	Yes
Product functions Diagnosis	
Product function Web-based diagnostics	Yes
Product functions switch	
Product feature Switch	Yes
Product function	
• switch-managed	No
• with IRT PROFINET IO switch	Yes
• Configuration with STEP 7	Yes
Product functions Redundancy	
Product function	
• Ring redundancy	Yes
• Redundancy manager	Yes
Protocol is supported Media Redundancy Protocol (MRP)	Yes
Product functions Security	
Firewall version	stateful inspection
Product function with VPN connection	IPSec
Type of encryption algorithms with VPN connection	AES-256, AES-192, AES-128, 3DES-168, DES-56
Type of authentication procedure with VPN connection	Preshared key (PSK), X.509v3 certificates
Type of hashing algorithms with VPN connection	MD5, SHA-1
Number of possible connections with VPN connection	32
Product function	
• password protection for Web applications	Yes
• ACL - IP-based	Yes
• ACL - IP-based for PLC/routing	Yes
• switch-off of non-required services	Yes
• Blocking of communication via physical ports	Yes
• log file for unauthorized access	No
Product functions Time	
Product function SICLOCK support	Yes
Product function pass on time synchronization	Yes
Protocol is supported	
• NTP	Yes

Ordering data	Article No.	Article No.	
<p>CP 343-1 Advanced communications processor</p> <p>For connecting the SIMATIC S7-300 CPU to Industrial Ethernet; 1 x 10/100/1000 Mbps; 2 x 10/100 Mbps (IE SWITCH); RJ 45 ports; TCP; UDP; ISO; PROFINET IO-Controller and Device, S7 communication (client + server); open communication (SEND/RECEIVE); S7 routing; IP configuration via DHCP/block; extended web diagnostics; time synchronization; IP Access Control List; IP routing; FTP; email; PROFINET CBA; C-PLUG</p> <ul style="list-style-type: none"> • With Security (Firewall + VPN) and PROFinergy (Controller + Device) 	6GK7343-1GX31-0XE0	<p>IE FC TP Standard Cable GP 2 x 2 (Type A)</p> <p>4-wire, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m</p> <p>IE FC TP Standard Cable GP 4 x 2</p> <p>8-wire, shielded TP installation cable for connecting to IE FC RJ45 Modular Outlet for universal applications; with UL approval; sold by the meter; max. quantity 1000 m, minimum order quantity 20 m</p> <ul style="list-style-type: none"> • AWG22, for connecting to IE FC RJ45 Modular Outlet • AWG24, for connecting to IE FC RJ45 plug 4 x 2 	6XV1840-2AH10
<p>Accessories</p> <p>IE FC RJ45 plug 180 2 x 2</p> <p>RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 180° cable outlet; for network components and CPs/CPU with Industrial Ethernet interface</p> <ul style="list-style-type: none"> • 1 pack = 1 unit • 1 pack = 10 units • 1 pack = 50 units 	6GK1901-1BB10-2AA0 6GK1901-1BB10-2AB0 6GK1901-1BB10-2AE0	<p>IE FC Stripping Tool</p> <p>Pre-adjusted stripping tool for fast stripping of Industrial Ethernet FC cables</p> <p>Compact Switch Module CSM 377</p> <p>Unmanaged switch for connection of a SIMATIC S7-300 CPU, ET 200M, and up to three further nodes to Industrial Ethernet operating at 10/100 Mbps; 4 x RJ45 ports; external 24 V DC power supply, LED diagnostics, S7-300 module including electronic manual on CD-ROM</p>	6XV1870-2E 6XV1878-2A 6GK1901-1GA00 6GK7377-1AA00-0AA0
<p>IE FC RJ45 plug 145</p> <p>RJ45 plug connector 2 x 2 for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 145° cable outlet</p> <ul style="list-style-type: none"> • 1 pack = 1 unit • 1 pack = 10 units • 1 pack = 50 units 	6GK1901-1BB30-0AA0 6GK1901-1BB30-0AB0 6GK1901-1BB30-0AE0		
<p>IE FC RJ45 plug 4 x 2</p> <p>RJ45 plug connector for Industrial Ethernet (10/100/1000 Mbps) with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; 180° cable outlet; for network components and CPs/CPU with Industrial Ethernet interface</p> <ul style="list-style-type: none"> • 1 pack = 1 unit • 1 pack = 10 units • 1 pack = 50 units 	6GK1901-1BB11-2AA0 6GK1901-1BB11-2AB0 6GK1901-1BB11-2AE0		

SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

CP 343-1 ERPC

Overview



The CP 343-1 ERPC (Enterprise Connect) communications processor for connecting a SIMATIC S7-300 to Industrial Ethernet networks.

The CP supports:

- PG/OP communication
- S7 communication
- Open communication (SEND/RECEIVE)
- ERPC communication

Connection of the SIMATIC S7-300 to various database systems for vertical integration is supported by means of a firmware expansion to be ordered separately.

ERPC	TCP/UDP	PN	MRP	IT	IP-R	PG/OP	S7/S5
●	●					●	●

Technical specifications

Article number	6GK7343-1FX00-0XE0
Product type designation	CP 343-1 ERPC
Transmission rate	
Transfer rate	
• at the 1st interface	10 ... 1 000 Mbit/s
Interfaces	
Number of interfaces acc. to Industrial Ethernet	1
Number of electrical connections	
• at the 1st interface acc. to Industrial Ethernet	1
• for power supply	1
Type of electrical connection	
• at the 1st interface acc. to Industrial Ethernet	RJ45 port
• for power supply	2-pole pluggable terminal block
design of the removable storage C-PLUG	Yes
Supply voltage, current consumption, power loss	
Type of voltage of the supply voltage	DC
Supply voltage 1 from backplane bus	5 V
Supply voltage external	24 V
Supply voltage external at DC Rated value	24 V
Relative positive tolerance at DC at 24 V	20 %
Relative negative tolerance at DC at 24 V	15 %
Consumed current	
• from backplane bus at DC at 5 V typical	0.3 A
• from external supply voltage at DC at 24 V typical	0.16 A
• from external supply voltage at DC at 24 V maximum	0.6 A
Power loss [W]	14.7 W

Article number	6GK7343-1FX00-0XE0
Product type designation	CP 343-1 ERPC
Permitted ambient conditions	
Ambient temperature	
• for vertical installation during operation	0 ... 40 °C
• for horizontally arranged busbars during operation	0 ... 60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
Relative humidity at 25 °C without condensation during operation maximum	95 %
Protection class IP	IP20
Design, dimensions and weight	
Module format	Compact module S7-300 double width
Width	80 mm
Height	125 mm
Depth	120 mm
Net weight	0.8 kg
Mounting type	
• S7-300 rail mounting	Yes
Performance data open communication	
Number of possible connections for open communication by means of SEND/RECEIVE blocks maximum	8
Amount of data	
• as user data per ISO on TCP connection for open communication by means of SEND/RECEIVE blocks maximum	8 Kibyte
• as user data per TCP connection for open communication by means of SEND/RECEIVE blocks maximum	8 Kibyte
• as user data per UDP connection for open IE communication by means of SEND/RECEIVE blocks maximum	2 Kibyte
Number of Multicast stations	8

Technical specifications (continued)

Article number	6GK7343-1FX00-0XE0
Product type designation	CP 343-1 ERPC
Performance data S7 communication	
Number of possible connections for S7 communication	8
<ul style="list-style-type: none"> • maximum • Note 	also 2 PG/OP connections and 1 diagnostics connection
Performance data multi-protocol mode	
Number of active connections with multi-protocol mode	32
Performance data IT functions	
Number of possible connections	4
<ul style="list-style-type: none"> • as server by means of HTTP maximum 	
Number of possible write cycles of the flash memory cells	100 000
Performance data ERPC functions	
Number of possible connections for communication with ERP or MES stations maximum	8
Number of possible logical triggers per CP maximum	8
Number of configurable ERPC symbols for database access	
<ul style="list-style-type: none"> • per CPU maximum • per logical trigger maximum 	2 000 255
Amount of data as user data and header information per logical trigger	8 Kibyte
Performance data telecontrol	
Protocol is supported	
<ul style="list-style-type: none"> • TCP/IP 	Yes
Product functions management, configuration	
Product function MIB support	Yes
Protocol is supported	
<ul style="list-style-type: none"> • SNMP v1 • DCP • LLDP 	Yes Yes Yes
Configuration software	
<ul style="list-style-type: none"> • required 	STEP 7 V5.4 SP5 + HSP or higher
Identification & maintenance function	
<ul style="list-style-type: none"> • I&MO - device-specific information • I&M1 – higher-level designation/location designation 	Yes Yes

Article number	6GK7343-1FX00-0XE0
Product type designation	CP 343-1 ERPC
Product functions Diagnosis	
Product function Web-based diagnostics	Yes
Product functions switch	
Product feature Switch	No
Product functions Redundancy	
Product function	
<ul style="list-style-type: none"> • Ring redundancy 	No
Product functions Security	
Product function	
<ul style="list-style-type: none"> • password protection for Web applications • ACL - IP-based • ACL - IP-based for PLC/routing • switch-off of non-required services • Blocking of communication via physical ports • log file for unauthorized access 	No Yes No Yes Yes No
Product functions Time	
Product function SICLOCK support	Yes
Product function pass on time synchronization	Yes
Protocol is supported	
<ul style="list-style-type: none"> • NTP 	Yes

SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

CP 343-1 ERPC**Ordering data****Article No.****CP 343-1 ERPC
(Enterprise Connect)
communications processor**

For the connection of SIMATIC S7-300 to Industrial Ethernet and for the support of the database connection of the SIMATIC S7-300 to various databases; TCP/UDP, S7 communication, open communication (SEND/RECEIVE), with and without RFC 1006, multicast, web server, setting of CPU's clock using SIMATIC procedures and NTP, access protection via IP access list, SNMP, DHCP, initialization over LAN 10/100/1000 Mbps; with electronic manual on DVD, C-PLUG included in scope of supply

6GK7343-1FX00-0XE0**deviceWISE Embedded Edition
for SIMATIC S7**

Firmware expansion for database connection of the SIMATIC S7-300 complete with CP 343-1 ERPC to various ERP or MES systems

See Catalog IK PI 2015,
Partner solutions/deviceWISE
Embedded Edition for SIMATIC S7

Article No.**Accessories****IE FC RJ45 plug 4 x 2**

RJ45 plug connector for Industrial Ethernet (10/100/1000 Mbps) with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; 180° cable outlet; for network components and CPs/CPU's with Industrial Ethernet interface

- 1 pack = 1 unit
- 1 pack = 10 units
- 1 pack = 50 units

6GK1901-1BB11-2AA0
6GK1901-1BB11-2AB0
6GK1901-1BB11-2AE0

IE FC TP Standard Cable GP 4 x 2

8-wire, shielded TP installation cable for connecting to IE FC RJ45 Modular Outlet for universal applications; with UL approval; sold by the meter;

- max. delivery unit 1000 m, minimum order quantity 20 m
- AWG22, for connecting to IE FC RJ45 Modular Outlet
 - AWG24, for connecting to IE FC RJ45 plug 4 x 2

6XV1870-2E**6XV1878-2A****IE FC Stripping Tool**

Pre-adjusted stripping tool for fast stripping of Industrial Ethernet FC cables

6GK1901-1GA00

Overview



- Unmanaged switch for connecting a SIMATIC S7-300 with integral PROFINET interface or an Industrial Ethernet CP or SIMATIC ET 200M to an Industrial Ethernet in an electrical line, tree or star structure
- As many as three additional nodes can be connected
- As an unmanaged switch, the CSM 377 is used for integrating small machines into existing automation networks or for the stand-alone operation of the machines
- Simple, space-saving attachment to SIMATIC S7-300 DIN rail due to design as single-width module in SIMATIC S7-300 format
- Low-cost solution for implementing small, local Ethernet networks
- Rugged, industry-standard node connections with PROFINET-compliant RJ45 plug connectors that latch onto the enclosure to offer additional strain and bending relief

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Technical specifications

Article number	6GK7377-1AA00-0AA0	
Product type designation	SCALANCE CSM 377	
Transmission rate		
Transfer rate	10 Mbit/s, 100 Mbit/s	
Interfaces for communication integrated		
Number of electrical connections	4	
• for network components or terminal equipment		
Number of 100 Mbit/s SC ports		
• for multimode		0
Number of 1000 Mbit/s LC ports	0	
• for multimode		
• for single mode (LD)	0	
Interfaces others		
Number of electrical connections	1	
• for power supply		
Type of electrical connection	2-pole terminal block	
• for power supply		
Supply voltage, current consumption, power loss		
Type of voltage of the supply voltage	DC	
Supply voltage	24 V	
• external		
• external minimum		19.2 V
• external maximum		28.8 V
Product component fusing at power supply input	Yes	
Fuse protection type at input for supply voltage	0.5 A / 60 V	
Consumed current maximum	0.07 A	
Power loss [W]	1.6 W	
• at DC at 24 V		
Permitted ambient conditions		
Ambient temperature	0 ... 60 °C	
• during operation		
• during storage		-40 ... +70 °C
• during transport		-40 ... +70 °C
Relative humidity	95 %	
• at 25 °C without condensation during operation maximum		
Protection class IP	IP20	

Article number	6GK7377-1AA00-0AA0
Product type designation	SCALANCE CSM 377
Design, dimensions and weight	
Design	SIMATIC S7-300 device design
Width	40 mm
Height	125 mm
Depth	118 mm
Net weight	0.2 kg
Mounting type	No
• 35 mm DIN rail mounting	
• wall mounting	
• S7-300 rail mounting	
• S7-1500 rail mounting	No
Product functions management, configuration	
Product function	No
• multiport mirroring	
Product function switch-managed	No
Product functions Redundancy	
Product function	Yes
• Parallel Redundancy Protocol (PRP)/ operation in the PRP-network	
• Parallel Redundancy Protocol (PRP)/ Redundant Network Access (RNA)	No
Standards, specifications, approvals	
Standard	FM3611: Class 1, Divison 2, Group A, B, C, D / T..., CL.1, Zone 2, GP. IIC, T.. Ta
• for FM	
• for hazardous zone	EN 60079-15, II 3 G Ex nA II T..., KEMA 06 ATEX 0021 X
• for safety from CSA and UL	UL 508, CSA C22.2 No. 142
• for hazardous zone from CSA and UL	UL 1604 and UL 2279-15 (Hazardous Location)
• for emitted interference	EN 61000-6-4:2001
• for interference immunity	EN 61000-6-2:2001
Standards, specifications, approvals CE	
Certificate of suitability CE marking	Yes

SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

CSM 377 unmanaged

Technical specifications (continued)

Article number	6GK7377-1AA00-0AA0
Product type designation	SCALANCE CSM 377
Standards, specifications, approvals miscellaneous	
Certificate of suitability	EN 61000-6-2:2001, EN 61000-6-4:2001
• C-Tick	Yes
• KC approval	No
Standards, specifications, approvals ship classification	
Marine classification association	
• American Bureau of Shipping Europe Ltd. (ABS)	Yes
• Bureau Veritas (BV)	Yes
• Det Norske Veritas (DNV)	Yes
• Germanische Lloyd (GL)	No
• Lloyds Register of Shipping (LRS)	Yes
• Nippon Kaiji Kyokai (NK)	Yes
• Polski Rejestr Statkow (PRS)	No
• Royal Institution of Naval Architects (RINA)	No
Standards, specifications, approvals product conformity	
MTBF	144 y

Ordering data

Article No.

Compact Switch Module CSM 377

Unmanaged switch for connecting a SIMATIC S7-300, ET200 M and up to three further nodes to Industrial Ethernet with 10/100 Mbps; 4 x RJ45 ports; external 24 V DC power supply; diagnostics on LEDs, S7-300 module including electronic manual on CD-ROM

6GK7377-1AA00-0AA0

Accessories

IE FC TP Standard Cable GP 2 x 2 (Type A)

4-wire, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compliant; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m

6XV1840-2AH10

IE FC RJ45 plug 180 2 x 2

RJ45 plug connector for Industrial Ethernet with a rugged metal housing and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; 180° cable outlet; for network components and CPs/CPUs with Industrial Ethernet interface

- 1 pack = 1 unit
- 1 pack = 10 units
- 1 pack = 50 units

6GK1901-1BB10-2AA0
6GK1901-1BB10-2AB0
6GK1901-1BB10-2AE0

IE FC Stripping Tool

Pre-adjusted stripping tool for fast stripping of Industrial Ethernet FC cables

6GK1901-1GA00

Overview



- SINAUT communications module TIM for SIMATIC S7-300 for use in a wide area network (WAN)
- IP communication via secure VPN (virtual private network) using the Internet
- Wireless communication via GPRS router, GPRS modem, or radio devices
- Wired communication via Ethernet, DSL, dialup modems or dedicated line modem
- Complete migration of existing wireless, dedicated line and dial-up technology to IP-based network
- Message frame memory for seamless recording of data
- Simple configuration and operation without specialist IT knowledge

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Technical specifications

Article number	6NH7800-3BA00
Product type designation	TIM 3V-IE
Transmission rate	
Transfer rate	
• for Industrial Ethernet	10 ... 100 Mbit/s
• acc. to RS 232	50 ... 38 400 bit/s
Interfaces	
Number of interfaces acc. to Industrial Ethernet	1
Number of electrical connections	
• for external data transmission acc. to RS 232	1
• for power supply	1
Type of electrical connection	
• of Industrial Ethernet interface	RJ45 port
• at interface 1 for external data transmission	9 pin Sub-D-connector (RS232)
• for power supply	2-pole plugable terminal block
design of the removable storage C-PLUG	No
Supply voltage, current consumption, power loss	
Type of voltage of the supply voltage	DC
Supply voltage	24 V
Supply voltage	20.4 ... 28.8 V
Supply voltage external at DC Rated value	24 V
Supply voltage external at DC rated value	20.4 ... 28.8 V
Relative symmetrical tolerance at DC	
• at 5 V	5 %
Relative positive tolerance at DC at 24 V	5 %
Relative negative tolerance at DC at 24 V	5 %
Consumed current	
• from backplane bus at DC at 24 V maximum	0.2 A
• from external supply voltage at DC at 24 V maximum	0.2 A
Power loss [W]	5.8 W
Product extension optional Backup battery	No

Article number	6NH7800-3BA00
Product type designation	TIM 3V-IE
Permitted ambient conditions	
Ambient temperature	
• during operation	0 ... 60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
Relative humidity at 25 °C without condensation during operation maximum	95 %
Protection class IP	IP20
Design, dimensions and weight	
Module format	Compact module S7-300 single width
Width	40 mm
Height	125 mm
Depth	120 mm
Net weight	0.25 kg
Product properties, functions, components general	
Number of units	
• per CPU maximum	1
• Note	Number of TIM per S7-300
Wire length	
• with RS 232 interface maximum	6 m
Performance data S7 communication	
Number of possible connections for S7 communication	
• maximum	8
• with PG connections maximum	2
• with OP connections maximum	8
Service	
• SINAUT ST7 via S7 communication	Yes
• PG/OP communication	Yes
Performance data multi-protocol mode	
Number of active connections with multi-protocol mode	12

SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

TIM 3V-IE (for S7-300)**Technical specifications (continued)**

Article number	6NH7800-3BA00
Product type designation	TIM 3V-IE
Performance data telecontrol	
Suitability for use	
• Node station	No
• substation	Yes
• TIM control center	No
• Note	RS232 and Industrial Ethernet can not be operated in parallel
Protocol is supported	
• DNP3	No
• SINAUT ST1 protocol	Yes
• SINAUT ST7 protocol	Yes
Product function data buffering if connection is aborted	Yes; 16,000 data messages
Storage capacity	
• of S7 CPU RAM for TD7onCPU mode data blocks on CPU required	20 Kibyte
• of S7 CPU RAM for TD7onTIM mode data blocks on TIM required	0 Kibyte
• Note	TD7onCPU: at least 20 KB, actual requirement determined by data volume and functional scope TD7onTIM: 0 bytes in most favorable case
Product feature Buffered message frame memory	No
Transmission format	
• for SINAUT ST1 protocol with polling 11 bit	Yes
• for SINAUT ST1 protocol with spontaneous 10-bit or 11-bit	Yes
• for SINAUT ST7 protocol with multi-master polling 10-bit	Yes
• for SINAUT ST7 protocol with polling or spontaneous 10-bit or 11-bit	Yes
Operating mode for scanning of data transmission	
• with dedicated line/radio link with SINAUT ST1 protocol	Polling, polling with time slot procedure
• with dedicated line/radio link with SINAUT ST7 protocol	Polling, polling with time slot procedure, multi-master polling with time slot procedure
• with dial-up network with SINAUT ST1 protocol	spontaneous
• with dial-up network with SINAUT ST7 protocol	spontaneous
Hamming distance	
• for SINAUT ST1 protocol	4
• for SINAUT ST7 protocol	4

Article number	6NH7800-3BA00
Product type designation	TIM 3V-IE
Product functions management, configuration	
Configuration software	
• required	SINAUT ST7 ES
• for CPU configuring required SINAUT TD7 block library for CPU	Yes
• for PG configuring required SINAUT ST7 configuration software for PG	Yes
Storage location of TIM configuration data	on the TIM
Product functions Security	
Suitability for operation Virtual Private Network	Yes
Operating mode Virtual Private Network note	VPN operation as MSC client with MSC protocol and password protection only possible in conjunction with GPRS modem with MSC capability
Type of authentication with Virtual Private Network PSK	Yes
Product function	
• password protection for VPN	Yes
• MSC client via GPRS modem with MSC capability	Yes
Protocol	
• is supported MSC protocol	No
Key length for MSC with Virtual Private Network	128 bit
Number of possible connections	
• as MSC client with VPN connection	1
• as MSC server with VPN connection	0

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Ordering data	Article No.	Ordering data	Article No.
TIM 3V-IE communications module With an RS 232 interface for SINAUT communication via a conventional WAN or an IP-based network (WAN or LAN)	6NH7800-3BA00	IE FC Stripping Tool Pre-adjusted stripping tool for fast stripping of Industrial Ethernet FC cables	6GK1901-1GA00
SINAUT Engineering Software V5.5 + SP3 On DVD, comprising <ul style="list-style-type: none"> • SINAUT Engineering Software V5.5 for the PG • SINAUT TD7 block library • Electronic manual in German and English 	6NH7997-0CA55-0AA0	Connecting cable For connecting a TIM (RS 232) with a SINAUT ST7 MD2, MD3 or MD4 (RS 232) modem Cable length 1.5 m	6NH7701-4AL
Accessories		Connecting cable For connecting a TIM (RS 232) with the GSM modem MD720-3; also suitable for third-party modems or radio unit with standard RS 232 interface; cable length 2.5 m	6NH7701-5AN
IE FC TP Standard Cable GP 2 x 2 (Type A) 4-wire, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compatible; with UL approval Sold by the meter; Max. delivery unit 1 000 m, minimum order quantity 20 m	6XV1840-2AH10	Connecting cable With one end open for connecting a TIM (RS 232) to a third-party modem or radio unit (RS 232) Cable length 2.5 m	6NH7701-4BN
IE FC RJ45 plug 180 RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 180° cable outlet; for network components and CPs/CPUs with Industrial Ethernet interface <ul style="list-style-type: none"> • 1 pack = 1 unit • 1 pack = 10 units • 1 pack = 50 units 	6GK1901-1BB10-2AA0 6GK1901-1BB10-2AB0 6GK1901-1BB10-2AE0	Connecting cable For connecting two TIM modules via their RS 232 interface without modems ("null modem"); cable length 6 m	6NH7701-0AR

SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

TIM 3V-IE Advanced (for S7-300)

Overview



- SINAUT communications module TIM for SIMATIC S7-300 for use in wide area network (WAN) as station, node station, and control center
- IP communication via secure VPN (virtual private network) using the Internet
- Wireless communication via GPRS router, GPRS modem or radio devices
- Wired communication via Ethernet, DSL, dialup modems or dedicated line modem
- Complete migration of existing wireless, dedicated line and dial-up technology to IP-based network
- Message frame memory for complete recording of data and support of redundant communication paths
- Simple configuration and operation without specialist IT knowledge

Technical specifications

Article number	6NH7800-3CA00
Product type designation	TIM 3V-IE Advanced
Transmission rate	
Transfer rate	
• for Industrial Ethernet	10 ... 100 Mbit/s
• acc. to RS 232	50 ... 38 400 bit/s
Interfaces	
Number of interfaces acc. to Industrial Ethernet	1
Number of electrical connections	
• for external data transmission acc. to RS 232	1
• for power supply	1
Type of electrical connection	
• of Industrial Ethernet interface	RJ45 port
• at interface 1 for external data transmission	9 pin Sub-D-connector (RS232)
• for power supply	2-pole plugable terminal block
design of the removable storage C-PLUG	No
Supply voltage, current consumption, power loss	
Type of voltage of the supply voltage	DC
Supply voltage	24 V
Supply voltage	20.4 ... 28.8 V
Supply voltage external at DC Rated value	24 V
Supply voltage external at DC rated value	20.4 ... 28.8 V
Relative symmetrical tolerance at DC	
• at 5 V	5 %
Relative positive tolerance at DC at 24 V	5 %
Relative negative tolerance at DC at 24 V	5 %
Consumed current	
• from backplane bus at DC at 24 V maximum	0.2 A
• from external supply voltage at DC at 24 V maximum	0.2 A
Power loss [W]	5.8 W
Product extension optional Backup battery	No

Article number	6NH7800-3CA00
Product type designation	TIM 3V-IE Advanced
Permitted ambient conditions	
Ambient temperature	
• during operation	0 ... 60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
Relative humidity at 25 °C without condensation during operation maximum	95 %
Protection class IP	IP20
Design, dimensions and weight	
Module format	Compact module S7-300 single width
Width	40 mm
Height	125 mm
Depth	120 mm
Net weight	0.25 kg
Product properties, functions, components general	
Number of units	
• Note	Number of TIMs per S7-300: multiple, number depends on the connection resources of the S7-300 CPU
Wire length	
• with RS 232 interface maximum	6 m
Performance data S7 communication	
Number of possible connections for S7 communication	
• maximum	24
• with PG connections maximum	4
• with OP connections maximum	20
Service	
• SINAUT ST7 via S7 communication	Yes
• PG/OP communication	Yes
Performance data multi-protocol mode	
Number of active connections with multi-protocol mode	24

Technical specifications (continued)

Article number	6NH7800-3CA00	Article number	6NH7800-3CA00
Product type designation	TIM 3V-IE Advanced	Product type designation	TIM 3V-IE Advanced
Performance data telecontrol		Product functions management, configuration	
Suitability for use		Configuration software	
• Node station	Yes	• required	SINAUT ST7 ES
• substation	Yes	• for CPU configuring required SINAUT TD7 block library for CPU	Yes
• TIM control center	Yes	• for PG configuring required SINAUT ST7 configuration software for PG	Yes
• Note	RS232 and Industrial Ethernet can be operated in parallel	Storage location of TIM configuration data	on the TIM
Protocol is supported		Product functions Security	
• DNP3	No	Suitability for operation Virtual Private Network	Yes
• SINAUT ST1 protocol	Yes	Type of authentication with Virtual Private Network PSK	Yes
• SINAUT ST7 protocol	Yes	Product function	
Product function data buffering if connection is aborted	Yes; 32,000 data messages	• password protection for VPN	Yes
Storage capacity		• MSC client via GPRS modem with MSC capability	Yes
• of S7 CPU RAM for TD7onCPU mode data blocks on CPU required	20 Kibyte	Protocol	
• of S7 CPU RAM for TD7onTIM mode data blocks on TIM required	0 Kibyte	• is supported MSC protocol	Yes
• Note	TD7onCPU: at least 20 KB, actual requirement determined by data volume and functional scope TD7onTIM: 0 bytes in most favorable case	• with Virtual Private Network MSC is supported	TCP/IP
Product feature Buffered message frame memory	No	Key length for MSC with Virtual Private Network	128 bit
Transmission format		Number of possible connections	
• for SINAUT ST1 protocol with polling 11 bit	Yes	• as MSC client with VPN connection	1
• for SINAUT ST1 protocol with spontaneous 10-bit or 11-bit	Yes	• as MSC server with VPN connection	0
• for SINAUT ST7 protocol with multi-master polling 10-bit	Yes		
• for SINAUT ST7 protocol with polling or spontaneous 10-bit or 11-bit	Yes		
Operating mode for scanning of data transmission			
• with dedicated line/radio link with SINAUT ST1 protocol	Polling, polling with time slot procedure		
• with dedicated line/radio link with SINAUT ST7 protocol	Polling, polling with time slot procedure, multi-master polling with time slot procedure		
• with dial-up network with SINAUT ST1 protocol	spontaneous		
• with dial-up network with SINAUT ST7 protocol	spontaneous		
Hamming distance			
• for SINAUT ST1 protocol	4		
• for SINAUT ST7 protocol	4		

SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

TIM 3V-IE Advanced (for S7-300)

Ordering data

Article No.

TIM 3V-IE Advanced communications module

With an RS 232 interface and an RJ45 interface for SINAUT communication via a conventional WAN and an IP-based network (WAN or LAN)

6NH7800-3CA00

Accessories

SINAUT Engineering Software V5.5 + SP3

- On DVD, comprising
- SINAUT ST7 Engineering Software V5.5 + SP3 for the PG
 - SINAUT TD7 block library
 - Electronic manual in German and English

6NH7997-0CA55-0AA0

SINAUT ST7 Engineering Software Update from Version V5.0x to V5.5

SINAUT Engineering Software V5.5 upgrade; for owners of SINAUT Engineering Software Version V5.0 or higher

6NH7997-0CA55-0GA0

IE FC TP Standard Cable GP 2 x 2 (Type A)

4-wire, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compatible; with UL approval
Sold by the meter;
Max. delivery unit 1 000 m, minimum order quantity 20 m

6XV1840-2AH10

IE FC RJ45 plug 180

RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 180° cable outlet; for network components and CPs/ CPUs with Industrial Ethernet interface

- 1 pack = 1 unit
- 1 pack = 10 units
- 1 pack = 50 units

6GK1901-1BB10-2AA0
6GK1901-1BB10-2AB0
6GK1901-1BB10-2AE0

Article No.

IE FC Stripping Tool

Pre-adjusted stripping tool for fast stripping of Industrial Ethernet FC cables

6GK1901-1GA00

Connecting cable

For connecting a TIM (RS 232) with a SINAUT ST7 MD2, MD3 or MD4 (RS 232) modem
Cable length 1.5 m

6NH7701-4AL

Connecting cable

For connecting a TIM (RS 232) with the GSM modem MD720-3; also suitable for third-party modems or radio units with standard RS 232 interface
Cable length 2.5 m

6NH7701-5AN

Connecting cable

With one end open for connecting a TIM (RS 232) to a third-party modem or radio unit (RS 232)
Cable length 2.5 m

6NH7701-4BN

Connecting cable

For connecting two TIM modules via their RS 232 interface without modems ("null modem")
Cable length 6 m

6NH7701-0AR

Overview



- SINAUT communications module TIM with four interfaces for SIMATIC S7-300 or as self-contained unit for the S7-400 for use in the wide area network (WAN)
- For universal use in a SINAUT station, node station and control center
- Internet communication via integrated MSC-VPN tunnel with direct connection to DSL router or operation via IPsec VPN with additional SIMATIC NET components
- Wireless communication via GPRS router, GPRS modem, or radio devices
- Wired communication via Ethernet, DSL, dialup modems or dedicated line modem
- Complete migration of existing wireless, dedicated line and dial-up technology to IP-based network
- Message frame memory for complete recording of data and support of redundant communication paths
- Simple configuration and operation without specialist IT knowledge

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Technical specifications

Article number	6NH7800-4BA00
Product type designation	TIM 4R-IE
Transmission rate	
Transfer rate	
• for Industrial Ethernet	10 ... 100 Mbit/s
• acc. to RS 232	50 ... 38 400 bit/s
Interfaces	
Number of interfaces acc. to Industrial Ethernet	2
Number of electrical connections	
• for external data transmission acc. to RS 232	2
• for power supply	1
Type of electrical connection	
• of Industrial Ethernet interface	RJ45 port
• at interface 1 for external data transmission	9 pin Sub-D-connector, RS232 switchable to RS485
• at interface 2 for external data transmission	9-pole D-sub connector, RS232 can be switched to RS485
• for power supply	2-pole pluggable terminal block
design of the removable storage C-PLUG	Yes
Supply voltage, current consumption, power loss	
Type of voltage of the supply voltage	DC
Supply voltage	24 V
Supply voltage	20.4 ... 28.8 V
Supply voltage external at DC Rated value	24 V
Supply voltage external at DC rated value	20.4 ... 28.8 V
Consumed current	
• from backplane bus at DC at 24 V maximum	0.2 A
• from external supply voltage at DC at 24 V maximum	0.17 A
Power loss [W]	4.6 W
Product extension optional Backup battery	Yes
Type of battery	Lithium AA / 3.6 V / 2.3 Ah
Backup current	
• typical	100 µA
• maximum	160 µA

Article number	6NH7800-4BA00
Product type designation	TIM 4R-IE
Permitted ambient conditions	
Ambient temperature	
• during operation	0 ... 60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
Relative humidity at 25 °C without condensation during operation maximum	95 %
Protection class IP	IP20
Design, dimensions and weight	
Module format	Compact module S7-300 double width
Width	80 mm
Height	125 mm
Depth	120 mm
Net weight	0.4 kg
Product properties, functions, components general	
Number of units	
• Note	Number of TIM 4R-IE per S7-300/S7-400: multiple, number depends on the connection resources of the CPU
Wire length	
• with RS 232 interface maximum	6 m
• with RS 485 interface maximum	30 m
Performance data	
S7 communication	
Number of possible connections for S7 communication	
• maximum	64
• with PG connections maximum	2
• with OP connections maximum	62
Service	
• SINAUT ST7 via S7 communication	Yes
• PG/OP communication	Yes

SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

TIM 4R-IE (for S7-300/-400/PC)

Technical specifications (continued)

Article number	6NH7800-4BA00
Product type designation	TIM 4R-IE
Performance data multi-protocol mode	
Number of active connections with multi-protocol mode	128
Performance data telecontrol	
Suitability for use	
• Node station	Yes
• substation	Yes
• TIM control center	Yes
Protocol is supported	
• DNP3	No
• SINAUT ST1 protocol	Yes
• SINAUT ST7 protocol	Yes
Product function data buffering if connection is aborted	Yes; 56,000 data messages
Storage capacity	
• of S7 CPU RAM for TD7onCPU mode data blocks on CPU required	20 Kibyte
• of S7 CPU RAM for TD7onTIM mode data blocks on TIM required	0 Kibyte
• Note	TD7onCPU: at least 20 KB, actual requirement determined by data volume and functional scope TD7onTIM: 0 bytes in most favorable case
Product feature Buffered message frame memory	Yes
Transmission format	
• for SINAUT ST1 protocol with polling 11 bit	Yes
• for SINAUT ST1 protocol with spontaneous 10-bit or 11-bit	Yes
• for SINAUT ST7 protocol with multi-master polling 10-bit	Yes
• for SINAUT ST7 protocol with polling or spontaneous 10-bit or 11-bit	Yes
Operating mode for scanning of data transmission	
• with dedicated line/radio link with SINAUT ST1 protocol	Polling, polling with time slot procedure
• with dedicated line/radio link with SINAUT ST7 protocol	Polling, polling with time slot procedure, multi-master polling with time slot procedure
• with dial-up network with SINAUT ST1 protocol	spontaneous
• with dial-up network with SINAUT ST7 protocol	spontaneous
Hamming distance	
• for SINAUT ST1 protocol	4
• for SINAUT ST7 protocol	4

Article number	6NH7800-4BA00
Product type designation	TIM 4R-IE
Product functions management, configuration	
Configuration software	
• required	SINAUT ST7 ES
• for CPU configuring required SINAUT TD7 block library for CPU	Yes
• for PG configuring required SINAUT ST7 configuration software for PG	Yes
Storage location of TIM configuration data	on internal TIM flash memory, or on TIM in optional C-PLUG, or on MMC of the S7-300 CPU if TIM installed in S7-300 controller
Product functions Security	
Suitability for operation Virtual Private Network	Yes
Type of authentication with Virtual Private Network PSK	Yes
Product function	
• password protection for VPN	Yes
• MSC client via GPRS modem with MSC capability	Yes
Protocol	
• is supported MSC protocol	Yes
• with Virtual Private Network MSC is supported	TCP/IP
Key length for MSC with Virtual Private Network	128 bit
Number of possible connections	
• as MSC client with VPN connection	1
• as MSC server with VPN connection	128
Product functions Time	
Product component Hardware real-time clock	Yes
Product feature Hardware real-time clock w. battery backup	Yes
Accuracy of the hardware real-time clock per day maximum	4 s
time synchronization	
• from NTP-server	Yes

Ordering data	Article No.	Ordering data	Article No.
TIM 4R-IE communications module With two combined RS 232/RS 485 interfaces for SINAUT communication via conventional WANs and two RJ45 interfaces for SINAUT communication via IP-based networks (WAN or LAN)	6NH7800-4BA00	IE FC Stripping Tool Pre-adjusted stripping tool for fast stripping of Industrial Ethernet FC cables	6GK1901-1GA00
Accessories SINAUT Engineering Software V5.5 + SP3 On DVD, comprising <ul style="list-style-type: none"> • SINAUT ST7 Engineering Software V5.5 + SP3 for the PG • SINAUT TD7 block library • Electronic manual in German and English 	6NH7997-0CA55-0AA0	Connecting cable For connecting a TIM (RS 232) with a SINAUT ST7 MD2, MD3 or MD4 (RS 232) modem; cable length 1.5 m	6NH7701-4AL
SINAUT ST7 Engineering Software Update from Version V5.0x to V5.5 SINAUT Engineering Software V5.5 upgrade; for owners of SINAUT Engineering Software Version V5.0 or higher	6NH7997-0CA55-0GA0	Connecting cable For connecting a TIM (RS 232) with the GSM modem MD720-3; also suitable for third-party modems or radio units with standard RS 232 interface Cable length 2.5 m	6NH7701-5AN
Backup battery 3.6 V/2.3 Ah for TIM 4R-IE	6ES7971-0BA00	Connecting cable With one end open for connecting a TIM (RS 232) to a third-party modem or radio unit (RS 232); cable length 2.5 m	6NH7701-4BN
IE FC TP Standard Cable GP 2 x 2 (Type A) 4-wire, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compatible; with UL approval Sold by the meter; Max. delivery unit 1 000 m, minimum order quantity 20 m	6XV1840-2AH10	Connecting cable For connecting two TIM modules via their RS 232 interface without modems ("null modem") Cable length 6 m	6NH7701-0AR
IE FC RJ45 plug 180 RJ45 plug connector for Industrial Ethernet with a rugged metal enclosure and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 180° cable outlet; for network components and CPs/CPU's with Industrial Ethernet interface <ul style="list-style-type: none"> • 1 pack = 1 unit • 1 pack = 10 units • 1 pack = 50 units 	6GK1901-1BB10-2AA0 6GK1901-1BB10-2AB0 6GK1901-1BB10-2AE0	SITOP compact 24 V/0.6 A 1-phase power supply with wide-range input 85 ... 264 V AC/110 ... 300 V DC, stabilized output voltage 24 V, rated output current value 0.6 A, slim design	6EP1331-5BA00

SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

TIM 3V-IE DNP3 (for S7-300)

Overview



In a station for the S7-CPU, the new communication module TIM 3V-IE DNP3 V3.0 (TeleControl Interface Module) handles the data exchange with the assigned master system SIMATIC PCS 7 TeleControl V8.0 using the open DNP3 protocol. In addition, the V3.0 module now also supports master and node functionality.

- With the S7-300 housing, the module can be fully integrated into the S7-300 system
- The module has an RS232 interface for the connection of an external modem for data transmission via a conventional WAN or the connection of a Modbus RTU slave to an S7-300 system
- The RJ45 port is used for data transmission via IP-based networks

Technical specifications

Article number	6NH7803-3BA00-0AA0
Product type designation	TIM 3V-IE DNP3
Transmission rate	
Transfer rate	
• for Industrial Ethernet	10 ... 100 Mbit/s
• acc. to RS 232	9 600 ... 38 400 bit/s
Interfaces	
Number of interfaces acc. to Industrial Ethernet	1
Number of electrical connections	
• for external data transmission acc. to RS 232	1
• for power supply	1
Type of electrical connection	
• of Industrial Ethernet interface	RJ45 port
• at interface 1 for external data transmission	9 pin Sub-D-connector (RS232)
• for power supply	2-pole plugable terminal block
design of the removable storage C-PLUG	No
Supply voltage, current consumption, power loss	
Type of voltage of the supply voltage	DC
Supply voltage	24 V
Supply voltage	20.4 ... 28.8 V
Supply voltage external at DC Rated value	24 V
Supply voltage external at DC rated value	20.4 ... 28.8 V
Consumed current	
• from backplane bus at DC at 24 V maximum	0.2 A
• from external supply voltage at DC at 24 V maximum	0.2 A
Power loss [W]	5.8 W
Product extension optional Backup battery	No

Article number	6NH7803-3BA00-0AA0
Product type designation	TIM 3V-IE DNP3
Permitted ambient conditions	
Ambient temperature	
• during operation	0 ... 60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
Relative humidity at 25 °C without condensation during operation maximum	95 %
Protection class IP	IP20
Design, dimensions and weight	
Module format	Compact module S7-300 single width
Width	40 mm
Height	125 mm
Depth	120 mm
Net weight	0.25 kg
Product properties, functions, components general	
Number of units	
• Note	Number of TIMs per S7-300: 1
Wire length	
• with RS 232 interface maximum	6 m
Performance data S7 communication	
Number of possible connections for S7 communication	
• maximum	3
• with PG connections maximum	2
• with OP connections maximum	1
• Note	only via LAN
Service	
• PG/OP communication	Yes

Technical specifications (continued)

Article number	6NH7803-3BA00-0AA0
Product type designation	TIM 3V-IE DNP3
Performance data telecontrol	
Suitability for use	
• Node station	Yes
• substation	Yes
• TIM control center	Yes
Protocol is supported	
• DNP3	Yes
• SINAUT ST1 protocol	No
• SINAUT ST7 protocol	No
• Modbus RTU	Yes
Product function data buffering if connection is aborted	Yes; 64,000 data points with one master
Number of DNP3 masters	
• for Ethernet maximum	8
• with RS 232 interface maximum	1
Number of Modbus RTU slaves maximum	1

Article number	6NH7803-3BA00-0AA0
Product type designation	TIM 3V-IE DNP3
Product functions management, configuration	
Configuration software	
• required	SINAUT ST7 ES
Storage location of TIM configuration data	on the CPU or TIM

Ordering data

Article No.	Article No.
TIM 3V-IE DNP3 communications module With an RS 232 interface for SINAUT communication via a conventional WAN and an IP-based network (WAN or LAN)	6NH7803-3BA00-0AA0
SINAUT Engineering Software V5.5 + SP3 On DVD, comprising • SINAUT ST7 Engineering Software V5.5 for the PG • SINAUT TD7 block library • Electronic manual in German and English	6NH7997-0CA55-0AA0
SINAUT ST7 Engineering Software Update from Version V5.0x to V5.5 SINAUT Engineering Software V5.5 upgrade; for owners of SINAUT Engineering Software Version V5.0 or higher	6NH7997-0CA55-0GA0
Accessories	
IE FC TP Standard Cable GP 2 x 2 (Type A) 4-wire, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compatible; with UL approval Sold by the meter; Max. delivery unit 1 000 m, minimum order quantity 20 m	6XV1840-2AH10

IE FC RJ45 plug 180 RJ45 plug connector for Industrial Ethernet with a rugged metal housing and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 180° cable outlet; for network components and CPs/CPUs with Industrial Ethernet interface • 1 pack = 1 unit • 1 pack = 10 units • 1 pack = 50 units	6GK1901-1BB10-2AA0 6GK1901-1BB10-2AB0 6GK1901-1BB10-2AE0
IE FC Stripping Tool Pre-adjusted stripping tool for fast stripping of Industrial Ethernet FC cables	6GK1901-1GA00
Connecting cable For connecting a TIM (RS 232) with a SINAUT ST7 MD2, MD3 or MD4 (RS 232) modem Cable length 1.5 m	6NH7701-4AL
Connecting cable For connecting a TIM (RS 232) with the GSM modem MD720-3; also suitable for third-party modems or radio units with standard RS 232 interface Cable length 2.5 m	6NH7701-5AN
Connecting cable With one end open for connecting a TIM (RS 232) to a third-party modem or radio unit (RS 232) Cable length 2.5 m	6NH7701-4BN
Connecting cable For connecting two TIM modules via their RS 232 interface without modems ("null modem") Cable length 6 m	6NH7701-0AR

SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

TIM 4R-IE DNP3 (for S7-300/-400)

Overview



In a station for the S7-CPU, the communication module TIM 4R-IE DNP3 (TeleControl Interface Modul) handles the data exchange with the assigned SIMATIC PCS7 TeleControl V8.0 master system using the open DNP3 protocol. In addition, the V3.0 module now also supports master and node functionality.

- With the double-width S7-300 housing, the module can be fully integrated into the S7-300 system
- Can be connected as a stand-alone module to a SIMATIC S7-400 and SIMATIC S7-400 H System
- Two RS 232/RS 485 interfaces support connection of an external modem for data transmission via a conventional WAN or of a Modbus RTU slave to an S7-300 system
- The module has two RJ45 interfaces for data transmission via IP-based networks
- By using physically separate connection paths, the module permits media redundancy without loss of data during the switchover

Technical specifications

Article number	6NH7803-4BA00-0AA0
Product type designation	TIM 4R-IE DNP3
Transmission rate	
Transfer rate	
• for Industrial Ethernet	10 ... 100 Mbit/s
• acc. to RS 232	9 600 ... 115 200 bit/s
Interfaces	
Number of interfaces acc. to Industrial Ethernet	2
Number of electrical connections	
• for external data transmission acc. to RS 232	2
• for power supply	1
Type of electrical connection	
• of Industrial Ethernet interface	RJ45 port
• at interface 1 for external data transmission	9 pin Sub-D-connector, RS232 switchable to RS485
• at interface 2 for external data transmission	9-pole D-sub connector, RS232 can be switched to RS485
• for power supply	2-pole pluggable terminal block
design of the removable storage C-PLUG	Yes
Supply voltage, current consumption, power loss	
Type of voltage of the supply voltage	DC
Supply voltage	24 V
Supply voltage	20.4 ... 28.8 V
Supply voltage external at DC Rated value	24 V
Supply voltage external at DC rated value	20.4 ... 28.8 V
Consumed current	
• from backplane bus at DC at 24 V maximum	0.2 A
• from external supply voltage at DC at 24 V maximum	0.17 A
Power loss [W]	4.6 W
Product extension optional Backup battery	Yes
Type of battery	Lithium AA / 3.6 V / 2.3 Ah
Backup current	
• typical	100 µA
• maximum	160 µA

Article number	6NH7803-4BA00-0AA0
Product type designation	TIM 4R-IE DNP3
Permitted ambient conditions	
Ambient temperature	
• during operation	0 ... 60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
Relative humidity at 25 °C without condensation during operation maximum	95 %
Protection class IP	IP20
Design, dimensions and weight	
Module format	Compact module S7-300 double width
Width	80 mm
Height	125 mm
Depth	120 mm
Net weight	0.4 kg
Product properties, functions, components general	
Number of units	
• Note	Number of TIMs per S7-300 / S7-400: 1
Wire length	
• with RS 232 interface maximum	6 m
• with RS 485 interface maximum	30 m
Performance data S7 communication	
Number of possible connections for S7 communication	
• maximum	5
• with PG connections maximum	2
• with OP connections maximum	1
• Note	only via LAN
Service	
• PG/OP communication	Yes

Technical specifications (continued)

Article number	6NH7803-4BA00-0AA0
Product type designation	TIM 4R-IE DNP3
Performance data telecontrol	
Suitability for use	
• Node station	Yes
• substation	Yes
• TIM control center	Yes
Protocol is supported	
• DNP3	Yes
• SINAUT ST1 protocol	No
• SINAUT ST7 protocol	No
• Modbus RTU	Yes
Product function data buffering if connection is aborted	Yes; 200,000 data points with one master
Number of DNP3 masters	
• for Ethernet maximum	8
• with RS 232 interface maximum	1
Number of Modbus RTU slaves maximum	1

Article number	6NH7803-4BA00-0AA0
Product type designation	TIM 4R-IE DNP3
Product functions management, configuration	
Configuration software	
• required	SINAUT ST7 ES
Storage location of TIM configuration data	on the CPU or TIM
Product functions Time	
Product component Hardware real-time clock	Yes
Product feature Hardware real-time clock w. battery backup	Yes
Accuracy of the hardware real-time clock per day maximum	4 s
time synchronization	
• from NTP-server	Yes

Ordering data

Ordering data	Article No.
TIM 4R-IE DNP3 communications module With two combined RS 232/RS 485 interfaces for SINAUT communication via conventional WANs and two RJ45 interfaces for SINAUT communication via IP-based networks (WAN or LAN)	6NH7803-4BA00-0AA0
Accessories	
SINAUT Engineering Software V5.5 + SP3 On DVD, comprising • SINAUT ST7 Engineering Software V5.5 + SP3 for the PG • SINAUT TD7 block library • Electronic manual in German and English	6NH7997-0CA55-0AA0
SINAUT ST7 Engineering Software Update from Version V5.0x to V5.5 SINAUT Engineering Software V5.5 upgrade; for owners of SINAUT Engineering Software Version V5.0 or higher	6NH7997-0CA55-0GA0
Backup battery 3.6 V/2.3 Ah for TIM 4R-IE DNP3	6ES7971-0BA00
IE FC TP Standard Cable GP 2 x 2 (Type A) 4-wire, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compatible; with UL approval; sold by the meter; Max. delivery unit 1 000 m, minimum order quantity 20 m	6XV1840-2AH10
IE FC RJ45 plug 180 RJ45 plug connector for Industrial Ethernet with a rugged metal housing and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 180° cable outlet; for network components and CPs/CPU with Industrial Ethernet interface • 1 pack = 1 unit • 1 pack = 10 units • 1 pack = 50 units	6GK1901-1BB10-2AA0 6GK1901-1BB10-2AB0 6GK1901-1BB10-2AE0

Ordering data	Article No.
IE FC Stripping Tool Pre-adjusted stripping tool for fast stripping of Industrial Ethernet FC cables	6GK1901-1GA00
Connecting cable For connecting a TIM (RS 232) with a SINAUT ST7 MD2, MD3 or MD4 (RS 232) modem Cable length 1.5 m	6NH7701-4AL
Connecting cable For connecting a TIM (RS 232) with the GSM modem MD720-3; also suitable for third-party modems or radio units with standard RS 232 interface Cable length 2.5 m	6NH7701-5AN
Connecting cable With one end open for connecting a TIM (RS 232) to a third-party modem or radio unit (RS 232) Cable length 2.5 m	6NH7701-4BN
Connecting cable For connecting two TIM modules via their RS 232 interface without modems ("null modem") Cable length 6 m	6NH7701-0AR
SITOP compact 24 V/0.6 A 1-phase power supply with wide-range input 85 to 264 V AC/ 110 to 300 V DC, stabilized output voltage 24 V, rated output current value 0.6 A, slim design	6EP1331-5BA00

SIMATIC S7-300 Advanced Controllers

I/O modules

Communication

ASM 475

Overview



The ASM 475 is a powerful communication module for connecting the SIMATIC RF200, RF300, SIMATIC MV400 and SIMATIC MV500 identifications systems to the S7-300 und ET 200M.

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Technical specifications

Article number	6GT2002-0GA10
Product type designation	ASM 475 communication module
Suitability for operation	SIMATIC S7-300, ET200M together with RF200/300/600, MV400, MOBY D/E/I/U
Transmission rate	
Transfer rate at the point-to-point connection serial maximum	115.2 kbit/s
Interfaces	
Design of the interface for point-to-point connection	RS422
Number of readers connectable	2
Type of electrical connection	
• of the backplane bus	S7-300 backplane bus
• of the PROFIBUS interface	(according to the head module)
• of Industrial Ethernet interface	(according to the head module)
• for supply voltage	Screw-type or spring-loaded terminals
Design of the interface to the reader for communication	Screw-type or spring-loaded terminals
Mechanical data	
Material	Noryl
Color	anthracite
Supply voltage, current consumption, power loss	
Supply voltage	
• at DC Rated value	24 V
• at DC	20 ... 30 V
Consumed current at DC at 24 V	
• without connected devices typical	0.1 A
• with connected devices maximum	1 A

Article number	6GT2002-0GA10
Product type designation	ASM 475 communication module
Permitted ambient conditions	
Ambient temperature	
• during operation	0 ... 60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
Protection class IP	IP20
Shock resistance	According to IEC 61131-2
Shock acceleration	150 m/s ²
Vibrational acceleration	10 m/s ²
Design, dimensions and weight	
Width	40 mm
Height	125 mm
Depth	120 mm
Net weight	0.2 kg
Mounting type	S7-300 rack
Wire length for RS 422 interface maximum	1 000 m
Product properties, functions, components general	
Display version	4 LEDs per reader connection, 2 LEDs for device status
Product function transponder file handler can be addressed	Yes
Protocol is supported	
• S7 communication	Yes
Type of parameterization	Object manager, GSD
Type of programming	FB 45, FB 55, FC 56 (FC 45/55 with limited functionality)
Type of computer-mediated communication	acyclic communication
Standards, specifications, approvals	
Certificate of suitability	CE, FCC, UL/CSA
Accessories	
accessories	Front connector with screw-type or spring-loaded terminals

Ordering data	Article No.		Article No.
ASM 475 communication module For SIMATIC S7-300 and ET 200M, parameterizable	6GT2002-0GA10	Extension cable SIMATIC RF200 / RF300 / RF600 / MV400, PUR material, suitable for cable carriers, straight connector	
Accessories		2 m	6GT2891-4FH20
Front connector (1 x per ASM 475) • with screw terminals • with spring-loaded terminals	6ES7392-1AJ00-0AA0 6ES7392-1BJ00-0AA0	5 m	6GT2891-4FH50
Shield connecting element (80 mm wide for 2 x ASM 475)	6ES7390-5AA00-0AA0	10 m	6GT2891-4FN10
Shield connection clamp (1 x per reader cable)	6ES7390-5BA00-0AA0	20 m	6GT2891-4FN20
		50 m	6GT2891-4FN50
		SIMATIC RF200 / RF300 / RF600 / MV400 connecting cable Pre-assembled, between the ASM 475 and RF200 / RF300 / RF600 / MV400, IP65, straight connector, PUR material, suitable for cable carriers, in the following lengths ¹⁾ :	
		2 m	6GT2891-4EH20
		5 m	6GT2891-4EH50
		DVD "RFID Systems Software & Documentation"	6GT2080-2AA20

¹⁾ The connecting cables can be extended using RF300 connecting cables of type 6GT2891-4Fxxx. These connecting cables are available in the lengths 2 m, 5 m, 10 m, 20 m and 50 m.

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 communication

SIPLUS S7-300 CP 340**Overview**

- The low-cost, complete solution for serial communication over a point-to-point connection
- RS 232C (V.24) and RS 422/485 (X.27)
- Implemented protocols:
 - ASCII
 - 3964 (R) (not for RS 485)
 - Printer driver
- Simple parameterization using tool integrated in STEP 7

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Technical specifications

Article number	6AG1340-1AH02-2AE0	6AG1340-1AH02-2AY0	6AG1340-1CH02-2AE0
Based on	6ES7340-1AH02-0AE0 SIPLUS S7-300 CP340 RS232	6ES7340-1AH02-0AE0 SIPLUS S7-300 CP340 RS232 EN50155	6ES7340-1CH02-0AE0 SIPLUS S7-300 CP340 RS422/485
Ambient conditions			
Ambient temperature during operation			
• min.	-25 °C; = Tmin	-25 °C; = Tmin	-25 °C; = Tmin
• max.	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	60 °C; = Tmax; the rated temperature range of -25 ... +55 °C (T1) applies for the use on railway vehicles according to EN50155	60 °C; = Tmax
Ambient temperature during storage/transportation			
• min.	-40 °C	-40 °C	-40 °C
• max.	70 °C	70 °C	70 °C
Altitude during operation relating to sea level			
• Installation altitude above sea level, max.	5 000 m	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity			
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance			
Use in stationary industrial systems			
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *

Technical specifications (continued)

Article number	6AG1340-1AH02-2AE0	6AG1340-1AH02-2AY0	6AG1340-1CH02-2AE0
Based on	6ES7340-1AH02-0AE0 SIPLUS S7-300 CP340 RS232	6ES7340-1AH02-0AE0 SIPLUS S7-300 CP340 RS232 EN50155	6ES7340-1CH02-0AE0 SIPLUS S7-300 CP340 RS422/485
Use on land craft, rail vehicles and special-purpose vehicles		Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); * Yes; Class 5S3 incl. sand, dust; *	
- to biologically active substances according to EN 60721-3-5			
- to chemically active substances according to EN 60721-3-5			
- to mechanically active substances according to EN 60721-3-5			
Use on ships/at sea			
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request		Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *		Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *		Yes; Class 6S3 incl. sand, dust; *
Remark			
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

Ordering data**Article No.****SIPLUS S7-300 CP 340 communications processor**

For industrial applications with extended ambient conditions

Extended temperature range and exposure to media

with 1 RS 232C interface (V.24)

6AG1340-1AH02-2AE0

with 1 RS 422/485 (X.27) interface

6AG1340-1CH02-2AE0

For rolling stock railway applications

Conforms to EN 50155

with 1 RS 232C interface (V.24)

6AG1340-1AH02-2AY0

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 communication

SIPLUS S7-300 CP 341**Overview**

- For fast, high-performance serial data exchange via point-to-point coupling
- Two versions with different physical transmission characteristics:
 - RS 232C (V.24),
 - RS 422/RS 485 (X.27)
- Implemented protocols: ASCII, 3964 (R), RK 512, customized protocols (can be reloaded)
- Simple parameter assignment using tool integrated in STEP 7

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Technical specifications

Article number	6AG1341-1AH02-7AE0	6AG1341-1CH02-7AE0
Based on	6ES7341-1AH02-0AE0	6ES7341-1CH02-0AE0
	SIPLUS S7-300 CP341 RS232C	SIPLUS S7-300 CP341 RS422/485
Ambient conditions		
Ambient temperature during operation		
• min.	-25 °C; = Tmin	-25 °C; = Tmin
• max.	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use
Ambient temperature during storage/transportation		
• min.	-40 °C	-40 °C
• max.	70 °C	70 °C
Altitude during operation relating to sea level		
• Installation altitude above sea level, max.	5 000 m	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity		
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance		
Use in stationary industrial systems		
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
Use on ships/at sea		
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Remark		
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

Ordering data	Article No.		Article No.
<p>SIPLUS S7-300 CP 341 communications processor</p> <p><i>For industrial applications with extended ambient conditions</i></p> <p><u>Extended temperature range and exposure to media</u></p> <p>with RS 232C interface (V.24)</p> <p>with RS 422/485 (X.27) interface</p>	<p>6AG1341-1AH02-7AE0</p> <p>6AG1341-1CH02-7AE0</p>	<p>Modbus Slave V3.1</p> <p>Task: Communication via Modbus protocol with RTU format, SIMATIC S7 as slave</p> <p>Requirement: CP 341 or CP 441-2; STEP 7 V4.02 and higher</p> <p>Delivery package: Driver program/documentation, English, German, French</p>	
<p>Accessories</p>			
<p>Modbus Master V3.1</p> <p>Task: Communication via Modbus protocol with RTU format, SIMATIC S7 as master</p> <p>Requirement: CP 341 or CP 441-2; STEP 7 V4.02 and higher</p> <p>Delivery package: Driver program/documentation, English, German, French</p> <p>Single license</p> <p>Single license, without software and documentation</p>	<p>6ES7870-1AA01-0YA0</p> <p>6ES7870-1AA01-0YA1</p>	<p>Single license</p> <p>Single license, without software and documentation</p>	<p>6ES7870-1AB01-0YA0</p> <p>6ES7870-1AB01-0YA1</p>

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 communication

SIPLUS S7-300 CP 343-1 Lean**Overview**

ISO	TCP/UDP	PN	MRP	IT	IP-R	PG/OP	S7/S5
	●	●	●			●	●

- Connection for the SIMATIC S7-300 to Industrial Ethernet (not for SINUMERIK)
 - 2 x RJ45 interface for 10/100 Mbps full/half duplex connection (with autosensing for automatic switchover and autocrossover function)
 - Integral 2-port real-time switch ERTEC
 - Multi-protocol operation with TCP and UDP transport protocol and PROFINET IO
 - Keep Alive function
- Communications services:
 - Open communication (TCP/IP and UDP)
 - PG/OP communication
 - S7 communication (server)
 - PROFINET IO device
- Multicast for UDP
- Remote programming and initial commissioning is possible over Industrial Ethernet
- IT communication
 - Web function
- Integration into network management through SNMP
- Configuration with STEP 7
- Cross-network PG/OP communication by means of S7 routing
- Diagnostics possibilities in STEP 7 and via web browser

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

SIPLUS S7-300 CP 343-1 Lean

Article No.	6AG1343-1CX10-2XE0	6AG1343-1CX10-4XE0
BasedOn article no.	6GK7343-1CX10-0XE0	6GK7343-1CX10-0XE0
Ambient temperature range	-25 ... +60 °C	0 ... +60 °C
Conformal coating	Coating of the printed circuit boards and the electronic components	
Technical data	The technical data of the standard product applies except for the ambient conditions.	
Ambient conditions		
Relative humidity	100%, condensation/frost permissible. No commissioning if condensation present.	
Biologically active substances, compliance with EN 60721-3-3	Class 3B2 mold and fungal spores (excluding fauna). The supplied plug covers must remain in place over the unused interfaces during operation!	
Chemically active substances, compliance with EN 60721-3-3	Class 3C4 incl. salt spray in accordance with EN60068-2-52 (degree of severity 3). The supplied plug covers must remain in place over the unused interfaces during operation!	
Mechanically active substances, compliance with EN 60721-3-3	Class 3S4 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation!	
Air pressure (depending on the highest positive temperature range specified)	1 080 ... 795 hPa (-1 000 ... +2 000 m) see ambient temperature range 795 ... 658 hPa (+2 000 ... +3 500 m) derating 10 K 658 ... 540 hPa (+3 500 ... +5 000 m) derating 20 K	

For technical documentation on SIPLUS, see:

<http://www.siemens.com/siplus-extreme>

Ordering data	Article No.	Ordering data	Article No.
<p>SIPLUS CP 343-1 Lean communications processor</p> <p>For connecting SIMATIC S7-300 to Industrial Ethernet through TCP/IP and UDP, Multicast, S7 communication, open communication (SEND/RECEIVE), FETCH/WRITE, PROFINET IO device, integral 2-port switch ERTEC, comprehensive diagnostics facilities, module replacement without PG, SNMP, initial commissioning over LAN; with electronic manual on CD-ROM</p> <p><i>For industrial applications with extended ambient conditions</i></p> <p>Extended temperature range and exposure to environmental substances</p>	6AG1343-1CX10-2XE0	<p>IE FC TP Standard Cable GP 2 x 2 (Type A)</p> <p>4-wire, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compliant; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m</p>	6XV1840-2AH10
<p>Accessories</p> <p><i>Consumables</i></p> <p>IE FC RJ45 plug 180</p> <p>(Extended temperature range and exposure to environmental substances)</p> <p>180° cable outlet</p> <ul style="list-style-type: none"> • 1 unit 	6AG1901-1BB10-7AA0	<p>IE FC stripping tool</p> <p>Preadjusted stripping tool for fast stripping of Industrial Ethernet FC cables</p> <p><i>Programming tools</i></p> <p>STEP 7 Version 5.6</p> <p>STEP 7 Professional V15</p> <p>SOFTNET S7 for Industrial Ethernet</p> <p>Software for S7 and open communication, incl. OPC server, PG/OP communication, and NCM PC/STEP 7 Professional V12, runtime software, software and electronic manual on CD-ROM, license key on USB flash drive, Class A</p>	<p>6GK1901-1GA00</p> <p>See Chapter 11</p> <p>See Chapter 11</p> <p>See Catalog IK PI</p>

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 communication

SIPLUS S7-300 CP 343-1**Overview**

ISO	TCP/UDP	PN	MRP	IT	IP-R	PG/OP	S7/S5
●	●	●	●			●	●

- The connection of SIMATIC S7-300/SINUMERIK 840D powerline to Industrial Ethernet
 - 2 x RJ45 interface for 10/100 Mbps full/half-duplex connection with autosening/autonegotiation and autocrossover function
 - Integrated 2-port real-time switch ERTEC
 - Multi-protocol operation with ISO, TCP, UDP transport protocol and PROFINET IO
 - Adjustable keep-alive function
- Communications services:
 - Open communication (ISO, TCP/IP, and UDP)
 - PROFINET IO controller or PROFINET IO device
 - PG/OP communication: Cross-network by means of S7 routing
 - S7 communication (client, server, multiplexing)
- Media redundancy (MRP); within an Ethernet network with ring topology, the CP supports the media redundancy procedure MRP (V2.2 or higher).
- Multicast for UDP
- IP address assignment via DHCP, simple PC tool or via the user program (e.g. HMI)
- Access protection via configurable access list
- Remote programming and commissioning via Industrial Ethernet
- Configuration with STEP 7
- Automatic setting of CPU clock setting over Ethernet with NTP or SIMATIC procedure
- Web diagnostics
- Integration in network management systems via SNMP (MIB2 diagnostics information)
- Diagnostics possibilities in STEP 7 and via web browser

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

SIPLUS CP 343-1	
Article No.	6AG1343-1EX30-7XE0
BasedOn Article No.	6GK7343-1EX30-0XE0
Ambient temperature range	-25 ... +70 °C; 60 °C @ UL/cUL, ATEX and FM use
Conformal coating	Coating of the printed circuit boards and the electronic components
Technical data	The technical data of the standard product applies except for the ambient conditions.
Ambient conditions	
Relative humidity	100%, condensation/frost permissible. No commissioning if condensation present.
Biologically active substances, compliance with EN 60721-3-3	Class 3B2 mold and fungal spores (excluding fauna). The supplied plug covers must remain in place over the unused interfaces during operation!
Chemically active substances, compliance with EN 60721-3-3	Class 3C4 incl. salt spray in accordance with EN60068-2-52 (degree of severity 3). The supplied plug covers must remain in place over the unused interfaces during operation!
Mechanically active substances, compliance with EN 60721-3-3	Class 3S4 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation!
Air pressure (depending on the highest positive temperature range specified)	1 080 ... 795 hPa (-1 000 ... +2 000 m) see ambient temperature range 795 ... 658 hPa (+2 000 ... +3 500 m) derating 10 K 658 ... 540 hPa (+3 500 ... +5 000 m) derating 20 K

For further technical documentation on SIPLUS, see:

<http://www.siemens.com/siplus-extreme>

Ordering data	Article No.	Ordering data	Article No.
<p>SIPLUS S7-300 CP 343-1 communications processor</p> <p>For connection of SIMATIC S7-300 to Industrial Ethernet over ISO and TCP/IP; PROFINET IO controller or PROFINET IO device, MRP, integrated 2-port switch ERTEC; S7 communication, open communication (SEND/RECEIVE), FETCH/WRITE, with and without RFC 1006, multicast, DHCP, CPU clock synchronization via SIMATIC procedure and NTP, diagnostics, SNMP, access protection through IP access list, initialization over LAN 10/100 Mbps; with electronic manual on DVD</p> <p><i>For industrial applications with extended ambient conditions</i></p> <p>Extended temperature range and exposure to environmental substances</p>	6AG1343-1EX30-7XE0	<p><i>Communication within the application</i></p> <p>SIPLUS SCALANCE X-200 Industrial Ethernet Switches</p> <p>Industrial Ethernet switches with integral SNMP access, online diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; with integrated redundancy manager (exception: SCALANCE X208PRO); incl. operating instructions, Industrial Ethernet network manual and configuration software on CD-ROM</p> <ul style="list-style-type: none"> • With electrical and optical ports for glass multimode FOC up to 3 km • Extended temperature range and exposure to media • SIPLUS SCALANCE X204-2 with four 10/100 Mbps RJ45 ports and two FO ports 	6AG1204-2BB10-4AA3
<p>Accessories</p> <p><i>Consumables</i></p> <p>IE FC RJ45 plug 180</p> <p>(Extended temperature range and exposure to environmental substances)</p> <p>180° cable outlet</p> <ul style="list-style-type: none"> • 1 unit 	6AG1901-1BB10-7AA0	<p><i>Programming tools</i></p> <p>STEP 7 Version 5.6</p> <p>See Chapter 11</p> <p>STEP 7 Professional V15.1</p> <p>See Chapter 11</p> <p>SOFTNET S7 for Industrial Ethernet</p> <p>See Catalog IK PI</p>	
<p>C-PLUG</p> <p>Swap medium for simple replacement of devices in the event of a fault; for storing configuration or engineering and application data; can be used for SIMATIC NET products with C-PLUG slot, -40 ... +70 °C, medial exposure</p>	6AG1900-0AB00-7AA0	<p>Software for S7 and open communication, incl. OPC server, PG/OP communication, and NCM PC/STEP 7 Professional V12, runtime software, software and electronic manual on CD-ROM, license key on USB flash drive, Class A</p>	
<p>IE FC TP Standard Cable GP 2 x 2 (Type A)</p> <p>4-wire, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compliant; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m</p>	6XV1840-2AH10		
<p>IE FC stripping tool</p> <p>Preadjusted stripping tool for fast stripping of Industrial Ethernet FC cables</p>	6GK1901-1GA00		

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 communication

SIPLUS S7-300 CP 343-1 Advanced

Overview



ISO	TCP/UDP	PN	MRP	IT	IP-R	PG/OP	S7/S5
●	●	●	●	●	●	●	●

- The connection of SIMATIC S7-300/SINUMERIK 840D powerline to Industrial Ethernet
 - Multi-protocol operation with TCP and UDP transport protocol
 - Adjustable keep-alive function
- Two separate interfaces (integrated network separation):
 - Gigabit interface with one RJ45 port with 10/100/1 000 Mbps, full/half-duplex with auto-sensing capability
 - PROFINET interface with two RJ45 ports with 10/100 Mbps full/half-duplex with auto-sensing and auto-crossover functionality via integrated 2-port switch
- Communications services via both interfaces:
 - Open communication (TCP/IP and UDP): Multicast with UDP, including routing between both interfaces
 - PG/OP communication:
 - Cross-network by means of S7 routing
 - S7 communication (client, server, multiplexing) including routing between both interfaces
 - IT communication:
 - HTTP communication supports access to process data via own web pages;
 - e-mail client function, sending of e-mails directly from user program;
 - FTP communication supports program-controlled FTP client communication;
 - access to data blocks through FTP server
- Communications services via PROFINET interfaces:
 - PROFINET IO controller and IO device with real-time properties (RT and IRT)¹⁾
 - PROFINET CBA
 - IP address assignment via DHCP, simple PC tool or via program block (e.g. for HMI)
 - Configuration with STEP 7

- Media redundancy (MRP); within an Ethernet network with ring topology, the CP supports the media redundancy procedure MRP (V2.2 or higher).
- Access protection by means of configurable IP access list
- Module replacement without programming device; all information is stored on the C-PLUG (also file system for IT functions)
- Extensive diagnostic functions for all modules in the rack
- IT communication
 - Web function
 - E-mail function
 - FTP
- Integration into network management systems through the support of SNMP V1 MIB-II

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

SIPLUS S7-300 CP 343-1 Advanced

Article No.	6AG1343-1GX31-4XE0
BasedOn Article No.	6GK7343-1GX31-0XE0
Ambient temperature range	0 ... +60 °C
Conformal coating	Coating of the printed circuit boards and the electronic components
Technical data	The technical data of the standard product applies, except for the ambient conditions.
Ambient conditions	
Relative humidity	100%, condensation/frost permissible. No commissioning if condensation present.
Biologically active substances, compliance with EN 60721-3-3	Class 3B2 mold and fungal spores (excluding fauna). The supplied plug covers must remain in place over the unused interfaces during operation!
Chemically active substances, compliance with EN 60721-3-3	Class 3C4 incl. salt spray in accordance with EN60068-2-52 (degree of severity 3). The supplied plug covers must remain in place over the unused interfaces during operation!
Mechanically active substances, compliance with EN 60721-3-3	Class 3S4 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation!
Air pressure (depending on the highest positive temperature range specified)	1080 ... 795 hPa (-1 000 ... +2 000 m) see ambient temperature range 795 ... 658 hPa (+2 000 ... +3 500 m) derating 10 K 658 ... 540 hPa (+3 500 ... +5 000 m) derating 20 K

For technical documentation on SIPLUS, see:

<http://www.siemens.com/siplus-extreme>

¹⁾ Possible combinations in parallel operation:
 - IO controller with IRT and IO device with RT
 - IO controller with RT and IO device with IRT

Ordering data	Article No.	Article No.
<p>SIPLUS S7-300 CP 343-1 Advanced communications processor</p> <p>for connecting the SIMATIC S7-300 to Industrial Ethernet, PROFINET IO controller and IO device with RT and IRT, MRP, PROFINET CBA, TCP/IP and UDP, S7 communication, open communication (SEND/RECEIVE), FETCH/WRITE with or without RFC 1006, diagnostics extensions, multicast, Web server, HTML diagnostics, FTP server, FTP client, e-mail client, CPU clock set via SIMATIC procedure and NTP, access control via IP access list, SNMP, DHCP, initialization over LAN 10/100 Mbps; with electronic manual on DVD; C-PLUG included</p> <p><i>For industrial applications with extended ambient conditions</i></p> <p>Exposure to media</p>	6AG1343-1GX31-4XE0	<p>IE FC TP Standard Cable GP 4 x 2</p> <p>8-wire, shielded TP installation cable for universal applications; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m</p> <ul style="list-style-type: none"> • AWG22, for connecting to IE FC RJ45 Modular Outlet • AWG24, for connecting to IE FC RJ45 plug 4 x 2, IE FC M12 plug PRO 4 x 2 <p>6XV1870-2E</p> <p>6XV1878-2A</p> <p>IE FC stripping tool</p> <p>Preadjusted stripping tool for fast stripping of Industrial Ethernet FC cables</p> <p><i>Communication within the application</i></p> <p>SIPLUS SCALANCE X-200 Industrial Ethernet Switches</p> <p>Industrial Ethernet switches with integral SNMP access, online diagnostics, copper cable diagnostics and PROFINET diagnostics for configuring line, star and ring topologies; with integrated redundancy manager (exception: SCALANCE X208PRO); incl. operating instructions, Industrial Ethernet network manual and configuration software on CD-ROM</p> <ul style="list-style-type: none"> • With electrical and optical ports for glass multimode FOC up to 3 km • Extended temperature range and exposure to media • SIPLUS SCALANCE X204-2 with four 10/100 Mbps RJ45 ports and two FO ports <p>6AG1204-2BB10-4AA3</p> <p><i>Programming tools</i></p> <p>STEP 7 Version 5.6</p> <p>See Chapter 11</p> <p>STEP 7 Professional V15.1</p> <p>See Chapter 11</p> <p>SOFTNET S7 for Industrial Ethernet</p> <p>See Catalog IK PI</p> <p>Software for S7 and open communication, incl. OPC server, PG/OP communication, and NCM PC/STEP 7 Professional V12, runtime software, software and electronic manual on CD-ROM, license key on USB flash drive, Class A</p> <p>SIMATIC iMap</p> <p>See Chapter 11</p>
<p>Accessories</p> <p><i>Consumables</i></p> <p>IE FC RJ45 plug 180</p> <p>(Extended temperature range and exposure to environmental substances)</p> <p>180° cable outlet</p> <ul style="list-style-type: none"> • 1 unit <p>C-PLUG</p> <p>Swap medium for simple replacement of devices in the event of a fault; for storing configuration or engineering and application data; can be used for SIMATIC NET products with C-PLUG slot, -40 ... +70 °C, medial exposure</p>	6AG1901-1BB10-7AA0	
<p>IE FC TP Standard Cable GP 2 x 2 (Type A)</p> <p>4-wire, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compliant; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m</p>	6XV1840-2AH10	

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 communication

SIPLUS TIM 3V-IE for WAN and Ethernet**Overview**

- SINAUT communication module SIPLUS TIM for SIMATIC S7-300 for use in a wide area network (WAN)
- IP communication via secure VPN (virtual private network) using the Internet
- Wireless communication via GPRS router, GPRS modem, or radio devices
- Wired communication via Ethernet, DSL, dialup modems or dedicated line modem
- Complete migration of existing wireless, dedicated line and dial-up technology to IP-based network
- Message frame memory for seamless recording of data
- Simple configuration and operation without specialist IT knowledge

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were adopted from the respective standard products. SIPLUS extreme specific information was added.

SIPLUS TIM 3V-IE

Article No.	6AG1800-3BA00-7AA0
Article No. based on	6NH7800-3BA00
Ambient temperature range	-25 ... +70 °C; 60 °C @ UL/cUL, ATEX and FM use
Conformal coating	Coating of the printed circuit boards and the electronic components
Technical specifications	The technical data of the standard product applies except for the ambient conditions.
Ambient conditions	
Relative humidity	100%, condensation/frost permissible. No commissioning if condensation present.
Biologically active substances, compliance with EN 60721-3-3	Class 3B2 mold and fungal spores (excluding fauna). The supplied plug covers must remain in place over the unused interfaces during operation!
Chemically active substances, compliance with EN 60721-3-3	Class 3C4 incl. salt spray in accordance with EN60068-2-52 (degree of severity 3). The supplied plug covers must remain in place over the unused interfaces during operation!
Mechanically active substances, compliance with EN 60721-3-3	Class 3S4 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation!
Air pressure (depending on the highest positive temperature range specified)	1080 ... 795 hPa (-1000 ... +2000 m) 795 ... 658 hPa (+2000 ... +3500 m) derating 10 K 658 ... 540 hPa (+3500 ... +5000 m) derating 20 K

Technical documentation on SIPLUS can be found here:
<http://www.siemens.com/siplus-extreme>

Ordering data**SIPLUS ST7 TIM 3V-IE communication module**

With an RS 232 interface for SINAUT communication via a conventional WAN or an IP-based network (WAN or LAN)

Accessories*Consumables***IE FC TP Standard Cable GP 2 x 2 (Type A)**

4-wire, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compliant; with UL approval; sold by the meter; max. length 1000 m, minimum order quantity 20 m

Article No.**6AG1800-3BA00-7AA0****6XV1840-2AH10****Article No.****IE FC RJ45 plug 180**

RJ45 plug connector for Industrial Ethernet with a rugged metal housing and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 180° cable outlet; for network components and CPs/CPUs with Industrial Ethernet interface

- 1 pack = 1 unit, -40 ... +70 °C, exposure to media

IE FC Stripping Tool

Preadjusted stripping tool for fast stripping of the Industrial Ethernet FC cables

6AG1901-1BB10-7AA0**6GK1901-1GA00**

Overview



- SINAUT communication module SIPLUS TIM with four interfaces for SIMATIC S7-300 or as a self-contained device for S7-400 for use in a wide area network (WAN)
- For universal use in a SINAUT station, node station and control center
- Internet communication via integrated MSC-VPN tunnel with direct connection to DSL router or operation via IPsec VPN with additional SIMATIC NET components
- Wireless communication via GPRS router, GPRS modem, or radio devices
- Wired communication via Ethernet, DSL, dialup modems or dedicated line modem
- Complete migration of existing wireless, dedicated line and dial-up technology to IP-based network
- Message frame memory for seamless recording of data and support of redundant communication paths
- Simple configuration and operation without specialist IT knowledge

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

SIPLUS TIM 4R-IE

Article No.	6AG1800-4BA00-7AA0
Article No. based on	6NH7800-4BA00
Ambient temperature range	-25 ... +70 °C; 60 °C @ UL/cUL, ATEX and FM use
Conformal coating	Coating of the printed circuit boards and the electronic components
Technical specifications	The technical data of the standard product applies except for the ambient conditions.
Ambient conditions	
Relative humidity	100%, condensation/frost permissible. No commissioning if condensation present.
Biologically active substances, compliance with EN 60721-3-3	Class 3B2 mold and fungal spores (excluding fauna). The supplied plug covers must remain in place over the unused interfaces during operation!
Chemically active substances, compliance with EN 60721-3-3	Class 3C4 incl. salt spray in accordance with EN60068-2-52 (degree of severity 3). The supplied plug covers must remain in place over the unused interfaces during operation!
Mechanically active substances, compliance with EN 60721-3-3	Class 3S4 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation!
Air pressure (depending on the highest positive temperature range specified)	1080 ... 795 hPa (-1000 ... +2000 m) 795 ... 658 hPa (+2000 ... +3500 m) derating 10 K 658 ... 540 hPa (+3500 ... +5000 m) derating 20 K

For technical documentation on SIPLUS, see:
<http://www.siemens.com/siplus-extreme>

Ordering data**SIPLUS ST7 TIM 4R-IE communication module**

With two combined RS 232/RS 485 interfaces for SINAUT communication via conventional WANs and two RJ45 interfaces for SINAUT communication via IP-based networks (WAN or LAN)

Accessories*Consumables***IE FC TP Standard Cable GP 2 x 2 (Type A)**

4-wire, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compliant; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m

Article No.**6AG1800-4BA00-7AA0****6XV1840-2AH10****Article No.****IE FC RJ45 plug 180**

RJ45 plug connector for Industrial Ethernet with a rugged metal housing and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables;
with 180° cable outlet;
for network components and CPs/CPU with Industrial Ethernet interface

- 1 pack = 1 unit;
-40 ... +70 °C, exposure to media

IE FC Stripping Tool

Preadjusted stripping tool for fast stripping of the Industrial Ethernet FC cables

6AG1901-1BB10-7AA0**6GK1901-1GA00**

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 communication

SIPLUS TIM 3V-IE DNP3**Overview**

In a station for the S7-CPU, the new SIPLUS communication module TIM 3V-IE DNP3 V3.0 (TeleControl Interface Module) handles the data exchange with the assigned master system SIMATIC PCS 7 TeleControl V8.0 using the open DNP3 protocol. In addition, the V3.0 module now also supports master and node functionality.

- With the S7-300 housing, the module can be fully integrated into the S7-300 system
- The module has an RS232 interface for the connection of an external modem for data transmission via a conventional WAN or the connection of a Modbus RTU slave to an S7-300 system
- The RJ45 port is used for data transmission via IP-based networks

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were adopted from the respective standard products. SIPLUS extreme specific information was added.

SIPLUS TIM 3V-IE	
Article No.	6AG1803-3BA00-7AA0
Article No. based on	6NH7803-3BA00
Ambient temperature range	-25 ... +70 °C
Conformal coating	Coating of the printed circuit boards and the electronic components
Technical specifications	The technical specifications of the standard product apply except for the ambient conditions.
Ambient conditions	
Relative humidity	100%, condensation/frost permissible. No commissioning if condensation present.
Biologically active substances, compliance with EN 60721-3-3	Class 3B2 mold and fungal spores (excluding fauna). The supplied plug covers must remain in place over the unused interfaces during operation.
Chemically active substances, compliance with EN 60721-3-3	Class 3C4 incl. salt spray in accordance with EN60068-2-52 (degree of severity 3). The supplied plug covers must remain in place over the unused interfaces during operation.
Mechanically active substances, compliance with EN 60721-3-3	Class 3S4 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation.
Air pressure (depending on the highest positive temperature range specified)	1 080 ... 795 hPa (-1 000 ... +2 000 m) see ambient temperature range 795 ... 658 hPa (+2 000 ... +3 500 m) derating 10 K 658 ... 540 hPa (+3 500 ... +5 000 m) derating 20 K

Technical documentation on SIPLUS can be found here:
<http://www.siemens.com/siplus-extreme>

Ordering data**SIPLUS TIM 3V-IE DNP3 communication module**

With an RS232 interface for SINAUT communication via a conventional WAN and an IP-based network (WAN or LAN)

Accessories*Consumables***IE FC TP Standard Cable GP 2 x 2 (Type A)**

4-wire, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m

Article No.**6AG1803-3BA00-7AA0****6XV1840-2AH10****Article No.****IE FC RJ45 plug 180**

RJ45 plug-in connector for Industrial Ethernet with a rugged metal housing and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 180° cable outlet; for network components and CPs/CPU's with Industrial Ethernet interface

- 1 pack = 1 unit
-40 ... +70 °C, medial exposure

IE FC Stripping Tool

Preadjusted stripping tool for fast stripping of the Industrial Ethernet FC cables

6AG1901-1BB10-7AA0**6GK1901-1GA00**

Overview



In a station for the S7-CPU, the SIPLUS communication module TIM 4R-IE DNP3 (TeleControl Interface Module) handles the data exchange with the assigned SIMATIC PCS7 TeleControl V8.0 master system using the open DNP3 protocol. In addition, the V3.0 module now also supports master and node functionality.

- With the double-width S7-300 housing, the module can be fully integrated into the S7-300 system
- Can be connected as a stand-alone module to a SIMATIC S7-400 and SIMATIC S7-400 H System
- Two RS232/RS485 interfaces support connection of an external modem for data transmission via a conventional WAN or of a Modbus RTU slave to an S7-300 system
- The module has two RJ45 interfaces for data transmission via IP-based networks
- By using physically separate connection paths, the module permits media redundancy without loss of data during the switchover

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were adopted from the respective standard products. SIPLUS extreme specific information was added.

SIPLUS TIM 4R-IE DNP3

Article No.	6AG1803-4BA00-7AA0
Article No. based on	6NH7803-4BA00-0AA0
Ambient temperature range	-25 ... +70 °C
Conformal coating	Coating of the printed circuit boards and the electronic components
Technical specifications	The technical specifications of the standard product apply except for the ambient conditions.
Ambient conditions	
Relative humidity	100%, condensation/frost permissible. No commissioning if condensation present.
Biologically active substances, compliance with EN 60721-3-3	Class 3B2 mold and fungal spores (excluding fauna). The supplied plug covers must remain in place over the unused interfaces during operation.
Chemically active substances, compliance with EN 60721-3-3	Class 3C4 incl. salt spray in accordance with EN60068-2-52 (degree of severity 3). The supplied plug covers must remain in place over the unused interfaces during operation.
Mechanically active substances, compliance with EN 60721-3-3	Class 3S4 incl. sand, dust. The supplied plug covers must remain in place over the unused interfaces during operation.
Air pressure (depending on the highest positive temperature range specified)	1 080 ... 795 hPa (-1 000 ... +2 000 m) 795 ... 658 hPa (+2 000 ... +3 500 m) derating 10 K 658 ... 540 hPa (+3 500 ... +5 000 m) derating 20 K

Technical documentation on SIPLUS can be found here:
<http://www.siemens.com/siplus-extreme>

Ordering data

SIPLUS TIM 4R-IE DNP3 communication module

With two combined RS 232/RS 485 interfaces for SINAUT communication via conventional WANs and two RJ45 interfaces for SINAUT communication via IP-based networks (WAN or LAN)

Accessories

Consumables

IE FC TP Standard Cable GP 2 x 2 (Type A)

4-wire, shielded TP installation cable for connecting to IE FC RJ45 outlet/IE FC RJ45 plug; PROFINET-compatible; with UL approval; sold by the meter; max. delivery unit 1000 m, minimum order quantity 20 m

Article No.

6AG1803-4BA00-7AA0

6XV1840-2AH10

Article No.

IE FC RJ45 plug 180

RJ45 plug-in connector for Industrial Ethernet with a rugged metal housing and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables; with 180° cable outlet; for network components and CPs/CPU with Industrial Ethernet interface

- 1 pack = 1 unit
-40 ... +70 °C, medial exposure

IE FC Stripping Tool

Preadjusted stripping tool for fast stripping of the Industrial Ethernet FC cables

6AG1901-1BB10-7AA0

6GK1901-1GA00

SIMATIC S7-300 Advanced Controllers

I/O modules

Special modules

SM 374 simulator**Overview**

- Simulator module for program testing during commissioning and ongoing operation
- For the simulation of sensor signals using switches
- For display of signal conditions on the outputs using LED
- Simulation of
 - 16 inputs or
 - 16 outputs or
 - 8 inputs and 8 outputs
- Function can be directly adjusted on the module using a screwdriver

Technical specifications

Article number	6ES7374-2XH01-0AA0 SM 374 Simulation unit 16I/16O
General information	
Product type designation	SM 374
Input current	
from backplane bus 5 V DC, max.	80 mA
Power loss	
Power loss, typ.	0.35 W
Digital inputs	
Number of digital inputs	16; Switch
Digital outputs	
Number of digital outputs	16; LEDs

Article number	6ES7374-2XH01-0AA0 SM 374 Simulation unit 16I/16O
Potential separation	
Potential separation digital inputs	
• between the channels and backplane bus	No
Potential separation digital outputs	
• between the channels and backplane bus	No
Dimensions	
Width	40 mm
Height	125 mm
Depth	120 mm
Weights	
Weight, approx.	190 g

Ordering data

	Article No.
SM 374 simulator module incl. bus connectors, labeling strips	6ES7374-2XH01-0AA0
Bus connectors 1 unit, spare part	6ES7390-0AA00-0AA0
Labeling strips 10 units (spare part)	6ES7392-2XX00-0AA0
Label cover 10 units (spare part)	6ES7392-2XY00-0AA0

Article No.

	Article No.
Labeling sheets for machine inscription for modules with 20-pin front connector, DIN A4, for printing with laser printer; 10 units	
Petrol	6ES7392-2AX00-0AA0
Light beige	6ES7392-2BX00-0AA0
Yellow	6ES7392-2CX00-0AA0
Red	6ES7392-2DX00-0AA0

Overview



- Dummy module for reserving slots for non-parameterized signal modules
- Structure and address allocation is retained when replaced with a signal module

Technical specifications

Article number	6ES7370-0AA01-0AA0 DM 370 DUMMY module
General information	
Product type designation	DM 370
Input current	
from backplane bus 5 V DC, max.	5 mA
Power loss	
Power loss, max.	0.03 W

Article number	6ES7370-0AA01-0AA0 DM 370 DUMMY module
Digital inputs	
Number of digital inputs	0
Digital outputs	
Number of digital outputs	0
Dimensions	
Width	40 mm
Height	125 mm
Depth	120 mm
Weights	
Weight, approx.	180 g

Ordering data

	Article No.
DM 370 dummy module incl. bus connectors, labeling strips	6ES7370-0AA01-0AA0
Bus connectors 1 unit, spare part	6ES7390-0AA00-0AA0
Labeling strips 10 units (spare part)	6ES7392-2XX00-0AA0
Label cover 10 units (spare part)	6ES7392-2XY00-0AA0

	Article No.
Labeling sheets for machine inscription for modules with 20-pin front connector, DIN A4, for printing with laser printer; 10 units	
Petrol	6ES7392-2AX00-0AA0
Light beige	6ES7392-2BX00-0AA0
Yellow	6ES7392-2CX00-0AA0
Red	6ES7392-2DX00-0AA0

SIMATIC S7-300 Advanced Controllers

I/O modules

SIPLUS S7-300 special modules

SIPLUS S7-300 DM 370**Overview**

- Dummy module for reserving slots for unconfigured signal modules
- Retention of design and address assignment when replacing with a signal module

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

5

Technical specifications

Article number	6AG1370-0AA01-7AA0
Based on	6ES7370-0AA01-0AA0 SIPLUS S7-300 Dummy-BG
Ambient conditions	
Ambient temperature during operation	
• min.	-40 °C; = Tmin
• max.	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)

Article number	6AG1370-0AA01-7AA0
Based on	6ES7370-0AA01-0AA0 SIPLUS S7-300 Dummy-BG
Resistance	
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *
Use on ships/at sea	
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
Remark	
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!

Ordering data	Article No.		Article No.
SIMATIC S7-300 DM 370 dummy module for use when replacing modules Extended temperature range and exposure to media	6AG1370-0AA01-7AA0	Label cover 10 units (spare part) For modules with 20-pin front connector	6ES7392-2XY00-0AA0
Accessories		Labeling sheets for machine printing For modules with 20-pin front connector, DIN A4, for printing with laser printer; 10 units	
<i>Consumables</i>		Petrol	6ES7392-2AX00-0AA0
Bus connectors 1 unit (spare part)	6ES7390-0AA00-0AA0	Light beige	6ES7392-2BX00-0AA0
Labeling strips 10 units (spare part) For modules with 20-pin front connector	6ES7392-2XX00-0AA0	Yellow	6ES7392-2CX00-0AA0
		Red	6ES7392-2DX00-0AA0

SIMATIC S7-300 Advanced Controllers

I/O modules

Connection system

Front connectors

Overview



- For the simple and user-friendly connection of sensors and actuators to the S7-300 I/O modules
- For maintaining the wiring when replacing modules ("permanent wiring")
- With mechanical coding to avoid errors when replacing modules

Ordering data

Article No.

Front connectors

20-pin, with screw contacts

- 1 unit
- 100 units

6ES7392-1AJ00-0AA0
6ES7392-1AJ00-1AB0

20-pin, with spring-loaded contacts

- 1 unit
- 100 units

6ES7392-1BJ00-0AA0
6ES7392-1BJ00-1AB0

40-pin, with screw contacts

- 1 unit
- 100 units

6ES7392-1AM00-0AA0
6ES7392-1AM00-1AB0

40-pin, with spring-loaded contacts

- 1 unit
- 100 units

6ES7392-1BM01-0AA0
6ES7392-1BM01-1AB0

Front door, elevated design

6ES7328-0AA00-7AA0

e.g. for 32 channel modules;
enables connection of
1.3 mm²/16 AWG wires

Front door, higher version, for F-modules

6ES7328-7AA10-0AA0

For F-modules; for connecting
1.3 mm²/16 AWG wires; wiring
diagram and labels in yellow

Overview

Wiring of SIMATIC S7 I/O modules with the sensors/actuators is a significant factor with respect to time/cost overhead, configuring, control cabinet installation, procurement and ease of service.

With SIMATIC TOP connect system cabling, it is simple and quick to establish a reliable connection for your SIMATIC S7-300 or ET 200M.

With the TIA Selection Tool, a mouse click is all that is required to configure the connection from the SIMATIC S7 module to the I/O. The program automatically checks for plausibility and generates a parts list for the selected connection components that can then be ordered in the Industry Mall.

More information can be found on the Internet at

<http://www.siemens.com/tia-selection-tool>

Design

Two cabling variants are available for a wide range of control cabinet concepts:

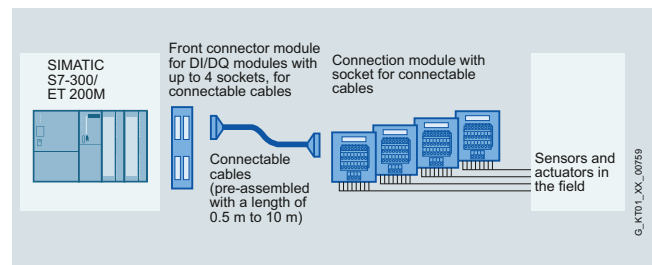
Fully modular connection

Each component is individually inserted.

The system consists of:

- Front connector module
- Connecting cable
- Terminal modules in the following versions: Basic module, signal module and function module

Connection errors are thus practically excluded and installation overhead is minimized. Systematic connection of the SIMATIC system. The assembly overhead for the connecting cables is drastically reduced thanks to the use of pre-assembled or easily assembled cables sold by the meter.



SIMATIC TOP connect for S7-300/ ET200M, fully modular connection

Flexible connection

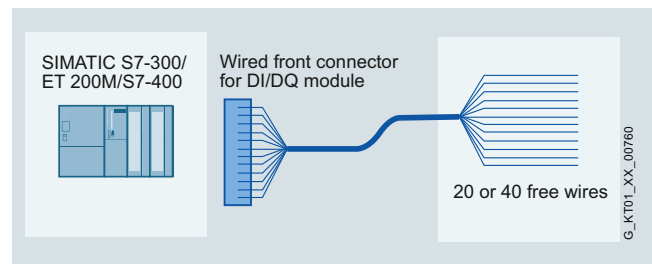
Consisting of:

- Front connector with screw-type or crimp connection
- Front connector with fixed single cores
- Single cores also available with UL/CSA-certified cores

The blue wires are numbered sequentially and can be routed direct to each element in the control cabinet. The numbering of the single cores corresponds to the coding of the front connector contacts.

In comparison to conventional single wiring, there is a cost saving of 50% for assembly, since the single cores that have already been checked on the connector are fixed.

Thus no complex pre-assembly of up to two times 46 single cores per module is necessary.



SIMATIC TOP connect for S7-300/ET200M, flexible connection

SIMATIC S7-300 Advanced Controllers

I/O modules

Connection system

System cabling for SIMATIC S7-300 and ET 200M > Fully modular connection

Overview



The fully modular connection for connecting to the digital I/O modules of the SIMATIC S7-300 or ET 200M consists of modified front connectors, called front connector modules, preassembled connecting cables of various lengths, and terminal modules. Suitable components can be selected for the application in question and joined by means of simple plug-in connections. The terminal modules are used instead of conventional terminal blocks and act as the interface to the sensors and actuators.

Benefits

- Front connector module, connecting cable and terminal module are easy to plug in
- Fast, low-cost wiring
- For digital and analog signals, supply voltage can be connected to the front plug-in module or terminal module
- Reduction in wiring errors, clear control cabinet wiring
- Distribution of digital signals by byte or quadruple byte
- Each component can be replaced individually
- Cable lengths can be configured without cutting losses, or pre-assembled cables can be used

Design

Front connector module

Modified front connectors, called front connector modules, are available for connecting to the module. These are plugged into the module to be wired instead of the front connector. Many different front connector module versions, for digital I/O modules, 24 V 2-ampère modules or analog I/O modules. The connecting cables are plugged into these front connector modules.

Connecting cable

The connecting cable is available in two different versions.

As a pre-assembled 16-pin or 50-pin round cable (shielded or unshielded) up to a length of 10 m, or as a 16-pin round-sheath ribbon cable (with or without shield), which can be easily assembled by the user; or as 2 x 16-pin round-sheath ribbon cable (without shield).

When assembled, there are one or two insulation displacement connectors (female ribbon connectors) at both ends of the cable.

The round-sheath ribbon cable is assembled by the user with the aid of pliers (can be ordered separately). The cable transmits 8 or 2 x 8 channels over a distance of up to 30 m.

The connecting cable connects the front connector module with the terminal module.

Terminal module

The system has both digital and analog terminal modules for connecting the I/O signals. These are snapped onto the DIN rail. The terminal modules with basic or signal functionality are available in 1-byte or 4-byte versions.

Terminal modules are available for two different connection methods: with push-in or screw-type terminals. The potential can be fed in at the terminal module or at the front connector module.

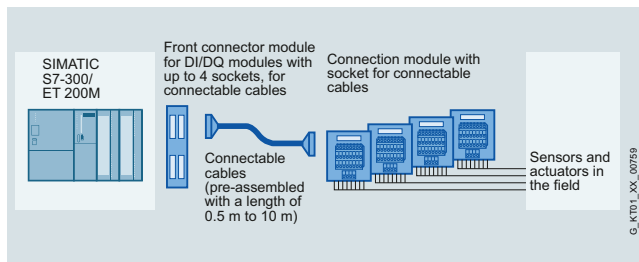
If other voltage or power levels are required in the field, the terminal module for TPRo or TPOo output signals is used. For the TPRo terminal module, relays are used for the implementation. For the TPOo terminal module, optocouplers are used for the implementation. This converts the 24 V DC output signal simply and reliably to another voltage or power level. If 230 V AC or 110 V AC input signals have to be transmitted to the controller in the field, a terminal module with relay TPRi is available that simply converts the 230/110 V AC signal to 24 V DC. This means that there is always the same voltage level on the module side.

Use with optocouplers for the TPRo relay modules

If higher switching frequencies of the relay terminal module are required for the output signals, the relay can simply be replaced with an optocoupler (note technical specifications) in order to increase the switching frequency.

Shield plate

The shield plate is latched onto the terminal module for 3-wire-wire initiators or optionally onto the terminal module for analog signals and then snapped onto the DIN rail with the terminal module. With the shield connection clamps, optimal shield connection is achieved between the shielded round-sheath ribbon cable or the shielded field cables and the grounded DIN rail.



SIMATIC TOP connect for S7-300/ ET200 M, fully modular connection

G_K101_XX_00759

Technical specifications front connector module**Technical data of front connector module**

Rated operating voltage	24 VDC
Max. permissible operating voltage	60 V DC
Max. permissible continuous current • per connector pin	1 A
Max. permissible summation current	4 A/byte
Permissible ambient temperature	0 to + 60°C
Test voltage	0.5 kV, 50 Hz, 60 sec.
Air gaps and creepage distances	IEC 664 (1980), IEC 664 A (1981), in accordance with DIN VDE 0110 (01.89), overvoltage class II, pollution degree 2

Wiring rules for front connector modules

	Front connector module SIMATIC TOP connect, connection for potential infeed	
	Spring connection Screw connection	
	Modules up to 4 connections	
Connectable cable cross-sections	<ul style="list-style-type: none"> • solid cables No • flexible cables with/without wire end ferrule 0.25 to 1.5 mm² 	
Number of wires per connection	1 or a combination of 2 conductors up to 1.5 mm ² (total) in a common wire end ferrule	
Max. diameter of the cable insulation	3.1 mm	
Stripping length of the cables	<ul style="list-style-type: none"> • without insulating collar 6 mm • with insulating collar - 	
Wire-end ferrules in acc. with DIN 46228	<ul style="list-style-type: none"> • without insulating collar Form A; 5 to 7 mm long • with insulating collar 0.25 to 1.0 mm² - • with insulating collar 1.5 mm² - 	
Blade width of the screwdriver	3.5 mm (cylindrical shape)	
Tightening torque for connecting the cables	-	0.4 to 0.7 Nm

**Front connector module
SIMATIC TOP connect, connection
for potential infeed**

Spring connection Screw connection

Modules up to 8 connections

Connectable cable cross-sections	<ul style="list-style-type: none"> • solid cables No • flexible cables with/without wire end ferrule 0.25 to 0.75 mm² 	
Number of cables per connection	1 or a combination of 2 wires up to 0.75 mm ² (total) in a common wire end ferrule	
Max. diameter of the cable insulation	2.0 mm	
Stripping length of the cables	<ul style="list-style-type: none"> • without insulating collar 6 mm • with insulating collar - 	
Wire-end ferrules in acc. with DIN 46228	<ul style="list-style-type: none"> • without insulating collar Form A; 5 to 7 mm long • with insulating collar 0.25 to 1.0 mm² - • with insulating collar 1.5 mm² - 	
Blade width of the screwdriver	3.5 mm (cylindrical shape)	
Tightening torque for connecting the cables	-	0.4 to 0.7 Nm

Technical specifications connecting cable**Technical specifications of connecting cable
from SIMATIC S7 to connection module**

Operating voltage	60 V DC
Continuous current per signal conductor	1 A
Max. total current	4 A/byte
Operating temperature	0 to +60 °C
Outer diameter of pre-assembled round cable in mm unshielded/shielded (16-pole)	Approx. 6.5/7.0

SIMATIC S7-300 Advanced Controllers

I/O modules

Connection system

System cabling for SIMATIC S7-300 and ET 200M > Fully modular connection

Ordering data

Article No.

Article No.

Front connector modules

Front connector module
(compact CPU 312C)

Power supply via

- Screw terminals

6ES7921-3AK20-0AA0

Front connector module
(compact CPU 313C/
314C-2PtP/314C-2DP), slot X1

Power supply via

- Screw terminals

6ES7921-3AM20-0AA0

Front connector module
(digital 2 x 8 I/O)

Power supply via

- Spring-loaded terminals
- Screw terminals

6ES7921-3AA00-0AA0

6ES7921-3AB00-0AA0

Front connector module
(digital 4 x 8 I/O)

Power supply via

- Spring-loaded terminals
- Screw terminals

6ES7921-3AA20-0AA0

6ES7921-3AB20-0AA0

Front connector module
(1 x 8 outputs) for 2-ampere
digital outputs

Power supply via

- Spring-loaded terminals
- Screw terminals

6ES7921-3AC00-0AA0

6ES7921-3AD00-0AA0

Front connector module 20-pin
(analog)

Power supply via

- Spring-loaded terminals
- Screw terminals

6ES7921-3AF00-0AA0

6ES7921-3AG00-0AA0

Front connector module 40-pin
(analog)

Power supply via

- Spring-loaded terminals
- Screw terminals

6ES7921-3AF20-0AA0

6ES7921-3AG20-0AA0

Connecting cables

Connecting cables for
SIMATIC S7-300

Pre-assembled round cable

16-pin, 0.14 mm²

Unshielded

- 0.5 m
- 1.0 m
- 1.5 m
- 2.0 m
- 2.5 m
- 3.0 m
- 4.0 m
- 5.0 m
- 6.5 m
- 8.0 m
- 10.0 m

6ES7923-0BA50-0CB0

6ES7923-0BB00-0CB0

6ES7923-0BB50-0CB0

6ES7923-0BC00-0CB0

6ES7923-0BC50-0CB0

6ES7923-0BD00-0CB0

6ES7923-0BE00-0CB0

6ES7923-0BF00-0CB0

6ES7923-0BG50-0CB0

6ES7923-0BJ00-0CB0

6ES7923-0CB00-0CB0

Shielded

- 1.0 m
- 2.0 m
- 2.5 m
- 3.0 m
- 4.0 m
- 5.0 m
- 6.5 m
- 8.0 m
- 10.0 m

6ES7923-0BB00-0DB0

6ES7923-0BC00-0DB0

6ES7923-0BC50-0DB0

6ES7923-0BD00-0DB0

6ES7923-0BE00-0DB0

6ES7923-0BF00-0DB0

6ES7923-0BG50-0DB0

6ES7923-0BJ00-0DB0

6ES7923-0CB00-0DB0

Version 4 x 16 to 1 x 50-pin,
0.14 mm²

Unshielded

- 0.5 m
- 1.0 m
- 1.5 m
- 2.0 m
- 2.5 m
- 3.0 m
- 4.0 m
- 5.0 m
- 6.5 m
- 8.0 m
- 10.0 m

6ES7923-5BA50-0EB0

6ES7923-5BB00-0EB0

6ES7923-5BB50-0EB0

6ES7923-5BC00-0EB0

6ES7923-5BC50-0EB0

6ES7923-5BD00-0EB0

6ES7923-5BE00-0EB0

6ES7923-5BF00-0EB0

6ES7923-5BG50-0EB0

6ES7923-5BJ00-0EB0

6ES7923-5CB00-0EB0

Ordering data

Terminal modules

Terminal module TP1

For 1-wire connection, for 16-pin connecting cables

- Push-in terminals without LEDs
- Screw-type terminals without LEDs
- Push-in terminals with LEDs
- Screw-type terminals with LEDs

6ES7924-0AA20-0AC0

6ES7924-0AA20-0AA0

6ES7924-0AA20-0BC0

6ES7924-0AA20-0BA0

For 1-wire connection, for 50-pin connecting cables

- Push-in terminals without LEDs
- Screw-type terminals without LEDs
- Push-in terminals with LEDs
- Screw-type terminals with LEDs

6ES7924-2AA20-0AC0

6ES7924-2AA20-0AA0

6ES7924-2AA20-0BC0

6ES7924-2AA20-0BA0

Terminal module TP3

For 3-wire connection, for 16-pin connecting cables

- Push-in terminals without LEDs
- Screw-type terminals without LEDs
- Push-in terminals with LEDs
- Screw-type terminals with LEDs
- Push-in terminals with LEDs and one isolating terminal per channel
- Screw-type terminals with LEDs and one isolating terminal per channel
- Push-in terminals with LEDs and one fuse per channel
- Screw-type terminals with LEDs and one fuse per channel

6ES7924-0CA20-0AC0

6ES7924-0CA20-0AA0

6ES7924-0CA20-0BC0

6ES7924-0CA20-0BA0

6ES7924-0CH20-0BC0

6ES7924-0CH20-0BA0

6ES7924-0CL20-0BC0

6ES7924-0CL20-0BA0

For 3-wire connection, for 50-pin connecting cables

- Push-in terminals without LEDs
- Screw-type terminals without LEDs
- Push-in terminals with LEDs
- Screw-type terminals with LEDs

6ES7924-2CA20-0AC0

6ES7924-2CA20-0AA0

6ES7924-2CA20-0BC0

6ES7924-2CA20-0BA0

Terminal module TPPro

Relay module for 8 outputs, relay as normally open contact

- Push-in terminals with LEDs
- Screw-type terminals with LEDs

6ES7924-0BD20-0BC0

6ES7924-0BD20-0BA0

Terminal module TPri

Relay module for 8 outputs (110 V AC), relay as normally open contact

- Push-in terminals with LEDs
- Screw-type terminals with LEDs

6ES7924-0BG20-0BC0

6ES7924-0BG20-0BA0

Terminal module TPri

Relay module for 8 outputs (230 V AC), relay as normally open contact

- Push-in terminals with LEDs
- Screw-type terminals with LEDs

6ES7924-0BE20-0BC0

6ES7924-0BE20-0BA0

Terminal module TPOo

Optocoupler module for 8 outputs (max. 24 V DC/4 A)

- Push-in terminals with LEDs
- Screw-type terminals with LEDs

6ES7924-0BF20-0BC0

6ES7924-0BF20-0BA0

Terminal module for digital output modules 2 A

Terminal module TP2

- Push-in terminals without LEDs
- Screw-type terminals without LEDs

6ES7924-0BB20-0AC0

6ES7924-0BB20-0AA0

Terminal module for analog modules

Terminal module TPA

- Push-in terminals without LEDs
- Screw-type terminals without LEDs

6ES7924-0CC21-0AC0

6ES7924-0CC21-0AA0

Accessories

ID labels for terminal modules in S7-1500 design

ID labels, insertable
P. unit = 340 units

3RT1900-1SB20

Shield plate for analog terminal module

P. unit = 4 units (for connection of 15-pin connecting cable)

6ES7928-1AA20-4AA0

Shield connection clamp

For shield plate at SIMATIC end,
P. unit = 10 units

6ES7590-5BA00-0AA0

For shield plate at field end,
2 x 2 ... 6 mm

6ES7390-5AB00-0AA0

For shield plate at field end,
3 ... 8 mm

6ES7390-5BA00-0AA0

For shield plate at field end,
4 ... 13 mm

6ES7390-5CA00-0AA0

SIMATIC S7-300 Advanced Controllers

I/O modules

Connection system > System cabling for SIMATIC S7-300 and ET 200M

Flexible connection > Front connector with single wires

Overview

Flexible connection enables fast, direct connection of the SIMATIC S7-300/ET 200 M input/output modules to the individual elements in the control cabinet.

Attached single cores reduce the wiring outlay.

Wire cross-sections of 0.5 mm² allow higher currents, too.

Technical specifications**Front connector with single cores for 16 channels**

Rated operating voltage	24 V DC
Permissible continuous current with simultaneous load of all wires, max.	1.5 A
Permissible ambient temperature	0 to 60 °C
Core type	H05V-K or with UL 1007/1569; CSA TR64
Number of single cores	20
Core cross-section	0.5 mm ² ; Cu
Bundle diameter in mm	approx. 15
Core color	Blue, RAL 5010
Designation of cores	Numbered from 1 to 20 (front connector contact = core number)
Assembly	Screw-type or crimp contacts

Front connector with single cores for 32 channels

Rated operating voltage	24 V DC
Permissible continuous current with simultaneous load of all wires, max.	1.5 A
Permissible ambient temperature	0 to 60 °C
Core type	H05V-K or with UL 1007/1569; CSA TR64
Number of single cores	40
Core cross-section	0.5 mm ² ; Cu
Bundle diameter in mm	approx. 17
Core color	Blue, RAL 5010
Designation of cores	Numbered from 1 to 40 (front connector contact = core number)
Assembly	Screw-type or crimp contacts

Ordering data**Article No.****Front connector with single cores for 16-channel digital modules SIMATIC S7-300, 20 x 0.5 mm²****Core type H05V-K**Screw-type version

Packaging unit: 1 unit

Length:

- 2.5 m
- 3.2 m
- 5 m
- Custom lengths

6ES7922-3BC50-0AB0
6ES7922-3BD20-0AB0
6ES7922-3BF00-0AB0
 On request

Packaging unit: 5 units

Length:

- 2.5 m
- 3.2 m
- 5.0 m

6ES7922-3BC50-5AB0
6ES7922-3BD20-5AB0
6ES7922-3BF00-5AB0

Crimp version

Packaging unit: 1 unit

Length:

- 2.5 m
- 3.2 m
- 5.0 m
- Custom lengths

6ES7922-3BC50-0AF0
6ES7922-3BD20-0AF0
6ES7922-3BF00-0AF0
 On request

Core type UL/CSA-certifiedScrew-type version

Packaging unit: 1 unit

Length:

- 3.2 m
- 5.0 m

6ES7922-3BD20-0UB0
6ES7922-3BF00-0UB0

Front connector with single cores for 32-channel digital modules SIMATIC S7-300, 40 x 0.5 mm²**Core type H05V-K**Screw-type version

Packaging unit: 1 unit

Length:

- 2.5 m
- 3.2 m
- 5.0 m
- Custom lengths

6ES7922-3BC50-0AC0
6ES7922-3BD20-0AC0
6ES7922-3BF00-0AC0
 On request

Packaging unit: 5 units

Length:

- 2.5 m
- 3.2 m
- 5.0 m

6ES7922-3BC50-5AC0
6ES7922-3BD20-5AC0
6ES7922-3BF00-5AC0

Crimp version

Packaging unit: 1 unit

Length:

- 2.5 m
- 3.2 m
- 5.0 m
- Custom lengths

6ES7922-3BC50-0AG0
6ES7922-3BD20-0AG0
6ES7922-3BF00-0AG0
 On request

Core type UL/CSA-certifiedScrew version

Packaging unit: 1 unit

Length:

- 3.2 m
- 5.0 m

6ES7922-3BD20-0UC0
6ES7922-3BF00-0UC0

Design***The front connector is available in two designs***The 20-pin front connector contains:

- 20 connections for crimp contacts for connecting the wiring
- Strain relief for the cables
- Unlatching key; for unlatching the front connector when replacing the module
- Holder for coding element attachment; there are two coding elements with attachments on the modules. The attachments latch in when inserting into the front connector for the first time.

The 40-pin front connector contains:

- 40 connections for crimp contacts for connecting the wiring
- Strain relief for the cables
- Locking screw; for fixing and detaching the front connector when the module is replaced
- Holder for coding element attachment; there is a coding element with an attachment on the modules. The attachment latches in when inserting into the front connector for the first time.

IntegrationUse of the 20-pin front connector with

- 16-channel signal modules
- Function modules
- CPU 312 IFM

Use of the 40-pin front connector with

- 32-channel signal modules
- Compact CPUs

Ordering data**Article No.****Front connector 20-pin, crimp version without crimp contacts**

Packing unit 100 units

6ES7921-3AH00-1AA0**Front connector 40-pin, crimp version without crimp contacts**

Packing unit 100 units

6ES7921-3AH20-1AA0**Accessories****Crimp contacts for front connectors**

Packing unit 250 units

6XX3070**Crimping tool**

For crimping the crimp contacts

6XX3071**Unlocking tool for crimp contacts****6ES5497-4UC11**

SIMATIC S7-300 Advanced Controllers

Power supplies

1-phase, 24 V DC (for S7-300 and ET200M)

Overview



The design and functionality of the SIMATIC PS 307 single-phase load power supply (system and load current supply) with automatic range switchover of the input voltage is an optimal match to the SIMATIC S7-300 PLC. By means of the connecting comb that is supplied with the system and load current supply, the supply to the CPU is quickly established. It is also possible to provide a 24 V supply to other S7-300 system components, input/output circuits of the input/output modules and, if necessary, the sensors and actuators. Comprehensive certifications, such as UL, ATEX or GL facilitate universal use (does not apply to outdoor use).

Technical specifications

Article number	6ES7307-1BA01-0AA0	6ES7305-1BA80-0AA0	6ES7307-1EA01-0AA0	6ES7307-1EA80-0AA0	6ES7307-1KA02-0AA0
Product	PS 307	PS 305 Outdoor	PS 307	PS 307 Outdoor	PS 307
Power supply, type	24 V/2 A	24 V/2 A	24 V/5 A	24 V/5 A	24 V/10 A
Input					
Input	1-phase AC	DC voltage	1-phase AC	1-phase AC	1-phase AC
• Note	Automatic range selection		Automatic range selection	Set by means of selector switch on the device	Automatic range selection
Supply voltage					
• 1 at AC Rated value	120 V		120 V	120 V	120 V
• 2 at AC Rated value	230 V		230 V	230 V	230 V
• at DC		24 ... 110 V			
Input voltage					
• 1 at AC	85 ... 132 V		85 ... 132 V	93 ... 132 V	85 ... 132 V
• 2 at AC	170 ... 264 V		170 ... 264 V	187 ... 264 V	170 ... 264 V
• at DC		16.8 ... 138 V			
Wide-range input	No	Yes	No	No	No
Overvoltage resistance	$2.3 \times V_{in\ rated}$, 1.3 ms	154 V; 0.1 s	$2.3 \times V_{in\ rated}$, 1.3 ms	$2.3 \times V_{in\ rated}$, 1.3 ms	$2.3 \times V_{in\ rated}$, 1.3 ms
Mains buffering at $I_{out\ rated}$, min.	20 ms; at $V_{in} = 93/187\text{ V}$	10 ms; at $V_{in\ rated}$	20 ms; at $V_{in} = 93/187\text{ V}$	20 ms; at $V_{in} = 93/187\text{ V}$	20 ms; at $V_{in} = 93/187\text{ V}$
Rated line frequency 1	50 Hz		50 Hz	50 Hz	50 Hz
Rated line frequency 2	60 Hz		60 Hz	60 Hz	60 Hz
Rated line range	47 ... 63 Hz		47 ... 63 Hz	47 ... 63 Hz	47 ... 63 Hz
Input current					
• at rated input voltage 120 V	0.9 A		2.3 A	2.1 A	4.2 A
• at rated input voltage 230 V	0.5 A		1.2 A	1.2 A	1.9 A
• at rated input voltage 24 V		2.4 A			
• at rated input voltage 110 V		0.6 A			
Switch-on current limiting (+25 °C), max.	22 A	20 A	20 A	45 A	55 A
Duration of inrush current limiting at 25 °C					
• maximum	3 ms	10 ms	3 ms	3 ms	3 ms
I^2t , max.	1 A ² ·s	5 A ² ·s	1.2 A ² ·s	1.8 A ² ·s	3.3 A ² ·s
Built-in incoming fuse	T 1.6 A/250 V (not accessible)	T 6.3 A/250 V (not accessible)	T 3,15 A/250 V (not accessible)	T 3,15 A/250 V (not accessible)	T 6.3 A/250 V (not accessible)
Protection in the mains power input (IEC 898)	Recommended miniature circuit breaker: 3 A characteristic C	Recommended miniature circuit breaker: from 10 A characteristic C, suitable for DC	Recommended miniature circuit breaker: from 6 A characteristic C	Recommended miniature circuit breaker: from 10 A characteristic C or from 6 A characteristic D	Recommended miniature circuit breaker: from 10 A characteristic C

Technical specifications (continued)

Article number	6ES7307-1BA01-0AA0	6ES7305-1BA80-0AA0	6ES7307-1EA01-0AA0	6ES7307-1EA80-0AA0	6ES7307-1KA02-0AA0
Product	PS 307	PS 305 Outdoor	PS 307	PS 307 Outdoor	PS 307
Power supply, type	24 V/2 A	24 V/2 A	24 V/5 A	24 V/5 A	24 V/10 A
Output					
Output	Controlled, isolated DC voltage	Controlled, isolated DC voltage	Controlled, isolated DC voltage	Controlled, isolated DC voltage	Controlled, isolated DC voltage
Rated voltage V_{out} DC	24 V	24 V	24 V	24 V	24 V
Total tolerance, static \pm	3 %	3 %	3 %	3 %	3 %
Static mains compensation, approx.	0.1 %	0.2 %	0.1 %	0.2 %	0.1 %
Static load balancing, approx.	0.2 %	0.4 %	0.5 %	0.4 %	0.5 %
Residual ripple peak-peak, max.	50 mV	150 mV	50 mV	150 mV	50 mV
Residual ripple peak-peak, typ.	5 mV	30 mV	10 mV	40 mV	15 mV
Spikes peak-peak, max. (bandwidth: 20 MHz)	150 mV	240 mV	150 mV	240 mV	150 mV
Spikes peak-peak, typ. (bandwidth: 20 MHz)	20 mV	150 mV	20 mV	90 mV	60 mV
Product function Output voltage adjustable	No	No	No	No	No
Output voltage setting	-	-	-	-	-
Status display	Green LED for 24 V OK	Green LED for 24 V OK	Green LED for 24 V OK	Green LED for 24 V OK	Green LED for 24 V OK
On/off behavior	No overshoot of V_{out} (soft start)	No overshoot of V_{out} (soft start)	No overshoot of V_{out} (soft start)	No overshoot of V_{out} (soft start)	No overshoot of V_{out} (soft start)
Startup delay, max.	2 s	3 s	2 s	3 s	2 s
Voltage rise, typ.	10 ms	5 ms	10 ms	100 ms	10 ms
Rated current value $I_{out\ rated}$	2 A	2 A	5 A	5 A	10 A
Current range	0 ... 2 A	0 ... 3 A	0 ... 5 A	0 ... 5 A	0 ... 10 A
• Note		3 A up to +60°C at $V_{in} > 24$ V			
Supplied active power typical	48 W	48 W	120 W	120 W	240 W
Short-term overload current					
• on short-circuiting during the start-up typical	9 A	9 A	20 A	20 A	38 A
• at short-circuit during operation typical	9 A	9 A	20 A	20 A	38 A
Duration of overloading capability for excess current					
• on short-circuiting during the start-up	90 ms	270 ms	100 ms	180 ms	80 ms
• at short-circuit during operation	90 ms	270 ms	100 ms	80 ms	80 ms
Parallel switching for enhanced performance	Yes	Yes	Yes	No	Yes
Numbers of parallel switchable units for enhanced performance	2	2			
Efficiency					
Efficiency at $V_{out\ rated}$, $I_{out\ rated}$, approx.	84 %	75 %	87 %	84 %	90 %
Power loss at $V_{out\ rated}$, $I_{out\ rated}$, approx.	9 W	16 W	18 W	23 W	27 W
Closed-loop control					
Dynamic mains compensation ($V_{in\ rated} \pm 15$ %), max.	0.1 %	0.3 %	0.1 %	0.3 %	0.1 %
Dynamic load smoothing (I_{out} : 50/100/50 %), $U_{out} \pm$ typ.	0.8 %	2.5 %	1 %	3 %	2 %
Load step setting time 50 to 100%, typ.	0.5 ms	2.5 ms	0.3 ms	0.2 ms	
Load step setting time 100 to 50%, typ.	0.5 ms	2.5 ms	0.3 ms	0.2 ms	
Setting time maximum	1 ms	5 ms		5 ms	0.1 ms

SIMATIC S7-300 Advanced Controllers

Power supplies

1-phase, 24 V DC (for S7-300 and ET200M)

Technical specifications (continued)

Article number	6ES7307-1BA01-0AA0	6ES7305-1BA80-0AA0	6ES7307-1EA01-0AA0	6ES7307-1EA80-0AA0	6ES7307-1KA02-0AA0
Product	PS 307	PS 305 Outdoor	PS 307	PS 307 Outdoor	PS 307
Power supply, type	24 V/2 A	24 V/2 A	24 V/5 A	24 V/5 A	24 V/10 A
Protection and monitoring					
Output overvoltage protection	Additional control loop, shutdown at < 28.8 V, automatic restart	Additional control loop, shutdown at approx. 30 V, automatic restart	Additional control loop, shutdown at < 28.8 V, automatic restart	Additional control loop, shutdown at approx. 30 V, automatic restart	Additional control loop, shutdown at < 28.8 V, automatic restart
Current limitation	2.2 ... 2.6 A	3.3 ... 3.9 A	5.5 ... 6.5 A	5.5 ... 6.5 A	11 ... 12 A
Property of the output Short-circuit proof	Yes	Yes	Yes	Yes	Yes
Short-circuit protection	Electronic shutdown, automatic restart	Electronic shutdown, automatic restart	Electronic shutdown, automatic restart	Electronic shutdown, automatic restart	Electronic shutdown, automatic restart
Enduring short circuit current RMS value					
• maximum	2 A	2 A	7 A	5 A	12 A
Overload/short-circuit indicator	-	-			-
Safety					
Primary/secondary isolation	Yes	Yes	Yes	Yes	Yes
Galvanic isolation	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178	Safety extra low output voltage V_{out} according to EN 60950-1 and EN 50178, creepage distances and clearances > 5 mm	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178	Safety extra low output voltage V_{out} according to EN 60950-1 and EN 50178, creepage distances and clearances > 5 mm	Safety extra-low output voltage U_{out} acc. to EN 60950-1 and EN 50178
Protection class	Class I	Class I	Class I	Class I	Class I
Leakage current					
• maximum	3.5 mA		3.5 mA	3.5 mA	3.5 mA
• typical	0.5 mA		0.5 mA	0.3 mA	0.6 mA
CE mark	Yes	Yes	Yes	Yes	Yes
UL/cUL (CSA) approval	cULus-Listed (UL 508, CSA C22.2 No. 142), File E143289	UL-Listed (UL 508), File E143289, CSA (CSA C22.2 No. 142)	cULus-Listed (UL 508, CSA C22.2 No. 142), File E143289	UL-Listed (UL 508), File E143289, CSA (CSA C22.2 No. 142)	cULus-Listed (UL 508, CSA C22.2 No. 142), File E143289
Explosion protection	ATEX (EX) II 3G Ex nA II T4; cULus (ANSI/ISA 12.12.01, CSA C22.2 No.213) Class I, Div. 2, Group ABCD, T4, File E330455	-	ATEX (EX) II 3G Ex nA II T4; cULus (ANSI/ISA 12.12.01, CSA C22.2 No.213) Class I, Div. 2, Group ABCD, T4, File E330455	-	ATEX (EX) II 3G Ex nA II T4; cULus (ANSI/ISA 12.12.01, CSA C22.2 No.213) Class I, Div. 2, Group ABCD, T4, File E330455
FM approval	Class I, Div. 2, Group ABCD, T4	-	Class I, Div. 2, Group ABCD, T4	-	Class I, Div. 2, Group ABCD, T4
CB approval	No	No	No	No	No
Marine approval	In S7-300 system	-	In S7-300 system	-	In S7-300 system
Degree of protection (EN 60529)	IP20	IP20	IP20	IP20	IP20
EMC					
Emitted interference	EN 55022 Class B	EN 55011 Class A	EN 55022 Class B	EN 55011 Class A	EN 55022 Class B
Supply harmonics limitation	not applicable	not applicable	EN 61000-3-2	-	EN 61000-3-2
Noise immunity	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2
Operating data					
Ambient temperature					
• during operation	0 ... 60 °C	-25 ... +70 °C	0 ... 60 °C	-25 ... +70 °C	0 ... 60 °C
- Note	with natural convection	with natural convection	with natural convection	with natural convection	with natural convection
• during transport	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
Humidity class according to EN 60721	Climate class 3K3, no condensation	Climate class 3K5, transient condensation permitted	Climate class 3K3, no condensation	Climate class 3K5, transient condensation permitted	Climate class 3K3, no condensation

SIMATIC S7-300 Advanced Controllers

Power supplies

1-phase, 24 V DC (for S7-300 and ET200M)

Technical specifications (continued)

Article number	6ES7307-1BA01-0AA0	6ES7305-1BA80-0AA0	6ES7307-1EA01-0AA0	6ES7307-1EA80-0AA0	6ES7307-1KA02-0AA0
Product	PS 307	PS 305 Outdoor	PS 307	PS 307 Outdoor	PS 307
Power supply, type	24 V/2 A	24 V/2 A	24 V/5 A	24 V/5 A	24 V/10 A
Mechanics					
Connection technology	screw-type terminals	screw-type terminals	screw-type terminals	screw-type terminals	screw-type terminals
Connections					
• Supply input	L, N, PE: 1 screw terminal each for 0.5 ... 2.5 mm ² single-core/finely stranded	L+, M1, PE: 1 screw terminal each for 0.5 ... 2.5 mm ² single-core/finely stranded	L, N, PE: 1 screw terminal each for 0.5 ... 2.5 mm ² single-core/finely stranded	L, N, PE: 1 screw terminal each for 0.5 ... 2.5 mm ² single-core/finely stranded	L, N, PE: 1 screw terminal each for 0.5 ... 2.5 mm ² single-core/finely stranded
• Output	L+, M: 2 screw terminals each for 0.5 ... 2.5 mm ²	L+, M: 3 screw terminals each for 0.5 ... 2.5 mm ²	L+, M: 3 screw terminals each for 0.5 ... 2.5 mm ²	L+, M: 3 screw terminals each for 0.5 ... 2.5 mm ²	L+, M: 4 screw terminals each for 0.5 ... 2.5 mm ²
• Auxiliary	-	-	-	-	-
Width of the enclosure	40 mm	80 mm	60 mm	80 mm	80 mm
Height of the enclosure	125 mm	125 mm	125 mm	125 mm	125 mm
Depth of the enclosure	120 mm	120 mm	120 mm	120 mm	120 mm
Required spacing					
• top	40 mm	50 mm	40 mm	50 mm	40 mm
• bottom	40 mm	50 mm	40 mm	50 mm	40 mm
• left	0 mm	0 mm	0 mm	0 mm	0 mm
• right	0 mm	0 mm	0 mm	0 mm	0 mm
Weight, approx.	0.4 kg	0.57 kg	0.6 kg	0.57 kg	0.8 kg
Product feature of the enclosure housing for side-by-side mounting	Yes	Yes	Yes	Yes	Yes
Installation	Can be mounted onto S7 rail	Can be mounted onto S7 rail	Can be mounted onto S7 rail	Can be mounted onto S7 rail	Can be mounted onto S7 rail
Mechanical accessories	Mounting adapter for standard mounting rail (6EP1971-1BA00)	Mounting adapter for standard mounting rail (6ES7390-6BA00-0AA0)	Mounting adapter for standard mounting rail (6EP1971-1BA00)	Mounting adapter for standard mounting rail (6ES7390-6BA00-0AA0)	Mounting adapter for standard mounting rail (6EP1971-1BA00)
MTBF at 40 °C	2 320 078 h	964 506 h	2 480 589 h	2 231 610 h	1 504 280 h
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

Ordering data

Ordering data	Article No.	Ordering data	Article No.
Load current supply PS 307, 2A incl. connecting comb Input: 120/230 V AC Output: 24 V DC/2 A	6ES7307-1BA01-0AA0	SIMATIC S7-300 Outdoor, 5A Stabilized power supply PS307 Input: 120/230 V AC Output: 24 V DC/5 A	6ES7307-1EA80-0AA0
SIMATIC S7-300 Outdoor, 2A Stabilized power supply PS305 Input: 24 ... 110 V DC Output: 24 V DC/2 A	6ES7305-1BA80-0AA0	PS 307 load power supply, 10 A Input: 120/230 V AC Output: 24 V DC/10 A	6ES7307-1KA02-0AA0
PS 307 load power supply, 5 A incl. connecting comb Input: 120/230 V AC Output: 24 V DC/5 A	6ES7307-1EA01-0AA0		

SIMATIC S7-300 Advanced Controllers

SIPLUS power supplies

1-phase, 24 V DC (for S7-300 and ET200M)

Overview



The design and functionality of the SIMATIC PS 305 and 307 1-phase load power supplies (system and load current supply) with automatic range switchover of the input voltage are an optimal match for the SIMATIC S7-300 PLC. By means of the connecting comb that is supplied with the system and load current supply, the supply to the CPU is quickly established. It is also possible to provide a 24 V supply to other S7-300 system components, input/output circuits of the input/output modules and, if necessary, the sensors and actuators. Comprehensive certifications, such as UL, ATEX or GL facilitate universal use (does not apply to outdoor use).

Note:

SIPLUS extreme products are based on Siemens standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

Technical specifications

Article number	6AG1305-1BA80-2AA0	6AG1307-1EA01-7AA0	6AG1307-1KA02-7AA0
Based on	6ES7305-1BA80-0AA0 SIPLUS PS S7-300 PS305 (EN50155)	6ES7307-1EA01-0AA0 SIPLUS PS307 AC 120/230V / DC 24 V/5 A	6ES7307-1KA02-0AA0 SIPLUS_PS307_10A
Ambient conditions			
Ambient temperature during operation			
• min.	-25 °C; = Tmin	-25 °C; = Tmin	-25 °C; = Tmin
• max.	70 °C; = Tmax; for use on railway vehicles according to EN 50155, the rated temperature range -25 ... +55 °C (T1) or 60 °C @ UL/UL hazardous use applies	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use	70 °C; = Tmax; 60 °C @ UL/cUL, ATEX and FM use
Altitude during operation relating to sea level			
• Installation altitude above sea level, max.	2 000 m	2 000 m	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax - 20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m); above 2 000 m max. 75 V DC	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax - 20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m); above 2 000 m max. 75 V DC	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax - 20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m); above 2 000 m max. 75 V DC
Relative humidity			
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance			
Use in stationary industrial systems			
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *

Technical specifications (continued)

Article number	6AG1305-1BA80-2AA0	6AG1307-1EA01-7AA0	6AG1307-1KA02-7AA0
Based on	6ES7305-1BA80-0AA0 SIPLUS PS S7-300 PS305 (EN50155)	6ES7307-1EA01-0AA0 SIPLUS PS307 AC 120/230V / DC 24 V/5 A	6ES7307-1KA02-0AA0 SIPLUS_PS307_10A
Use on land craft, rail vehicles and special-purpose vehicles			
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request		
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *		
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *		
Use on ships/at sea			
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Remark			
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!

Ordering data

Ordering data	Article No.	Ordering data	Article No.
SIPLUS power supplies <i>For industrial applications with extended ambient conditions</i>		Accessories	
SIPLUS S7-300 PS 305 (Extended temperature range and exposure to media) Input: 24 ... 110 V DC Output: 24 V DC/2 A	6AG1305-1BA80-2AA0	SIMATIC S7-300 mounting adapter For snapping the PS 307 onto a 35 mm DIN rail (EN 60715)	6EP1971-1BA00
SIPLUS S7-300 PS 307 5 A (Extended temperature range and exposure to media) Incl. connection bracket 120/230 V AC; 24 V DC Output current 5 A (dimensions 60 x 125 x 120)	6AG1307-1EA01-7AA0	Spare part SIMATIC S7-300 mounting adapter; for snapping the PS 307 onto 35 mm standard rails	6ES7390-6BA00-0AA0
SIPLUS S7-300 PS 307 10 A (Extended temperature range and exposure to media) Incl. connection bracket 120/230 V AC; 24 V DC Output current 10 A (dimensions 80 x 125 x 120)	6AG1307-1KA02-7AA0		
<i>For rolling stock railway applications</i>			
SIPLUS S7-300 PS 305 (Extended temperature range and exposure to media) Conforms to EN 50155 Input: 24 ... 110 V DC Output: 24 V DC/2 A	6AG1305-1BA80-2AA0		

SIMATIC S7-300 Advanced Controllers

Interface modules

IM 360/361/365 interface modules

Overview



- For connection of the SIMATIC S7-300 rack in multi-tier configurations
- IM 365: For configuring central controllers and max. 1 expansion unit.
Limited use of modules in the expansion unit (e.g. no CPs and FMs)
- IM 360/IM 361: For configuring central controllers and max. 3 expansion units.
Unlimited selection of modules in the expansion unit

Technical specifications

Article number	6ES7360-3AA01-0AA0	6ES7361-3CA01-0AA0	6ES7365-0BA01-0AA0
	IM360 interface module in CC, with K-BUS	IM361 interface module in EU, with K-Bus	IM365 interface module, w/o K-BUS
Supply voltage			
Rated value (DC)		Yes	
• 24 V DC			
Input current			
from supply voltage L+, max.		500 mA	
from backplane bus 5 V DC, max.	350 mA		100 mA
Power loss			
Power loss, typ.	2 W	5 W	0.5 W
Hardware configuration			
Number of interfaces per CPU, max.	1	3	1; 1 pair
Dimensions			
Width	40 mm	80 mm	40 mm
Height	125 mm	125 mm	125 mm
Depth	120 mm	120 mm	120 mm
Weights			
Weight, approx.	225 g	505 g	580 g

Ordering data

	Article No.	Article No.
IM 360 interface module	6ES7360-3AA01-0AA0	SIMATIC Manual Collection 6ES7998-8XC01-8YE0 Electronic manuals on DVD, multilingual: LOGO!, SIMADYN, SIMATIC bus components, SIMATIC C7, SIMATIC Distributed I/O, SIMATIC HMI, SIMATIC Sensors, SIMATIC NET, SIMATIC PC-based Automation, SIMATIC PCS 7, SIMATIC PG/PC, SIMATIC S7, SIMATIC Software, SIMATIC TDC
For expanding the S7-300 with max. 3 EUs; can be plugged into the CC		
IM 361 interface module	6ES7361-3CA01-0AA0	
For expanding the S7-300 with max. 3 EUs; can be plugged into the EU		
Connecting cable		
Between IM 360 and IM 361 or IM 361 and IM 361		SIMATIC Manual Collection update service for 1 year 6ES7998-8XC01-8YE2 Current "Manual Collection" DVD and the three subsequent updates
1 m	6ES7368-3BB01-0AA0	
2.5 m	6ES7368-3BC51-0AA0	
5 m	6ES7368-3BF01-0AA0	
10 m	6ES7368-3CB01-0AA0	
IM 365 interface module	6ES7365-0BA01-0AA0	
For expanding the S7-300 with max. 1 EU; 2 modules with permanent connecting cable (1 m)		

Overview



- SIPLUS IM 365: For configuration of 1 central controller and max. 1 expansion unit

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme specific information was added.

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Technical specifications

Article number	6AG1365-0BA01-2AA0
Based on	6ES7365-0BA01-0AA0 SIPLUS S7-300 IM365
Ambient conditions	
Ambient temperature during operation	
• min.	-25 °C; = Tmin
• max.	60 °C; = Tmax
Altitude during operation relating to sea level	
• Installation altitude above sea level, max.	5 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity	
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)

Article number	6AG1365-0BA01-2AA0
Based on	6ES7365-0BA01-0AA0 SIPLUS S7-300 IM365
Resistance	
Use in stationary industrial systems	
- to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
- to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust; *
Use on land craft, rail vehicles and special-purpose vehicles	
- to biologically active substances according to EN 60721-3-5	Yes; Class 5B2 mold, fungus and dry rot spores (with the exception of fauna); Class 5B3 on request
- to chemically active substances according to EN 60721-3-5	Yes; Class 5C3 (RH < 75 %) incl. salt spray acc. to EN 50155 (ST2); *
- to mechanically active substances according to EN 60721-3-5	Yes; Class 5S3 incl. sand, dust; *
Use on ships/at sea	
- to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
- to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
- to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *
Remark	
- Note regarding classification of environmental conditions acc. to EN 60721	* The supplied plug covers must remain in place over the unused interfaces during operation!

Ordering data

Article No.

SIPLUS S7-300 IM 365 interface module

For expansion of S7-300 with max. 1 EU; 2 modules with permanent connecting cable (1 m)

Extended temperature range and exposure to media

6AG1365-0BA01-2AA0

SIMATIC S7-300 Advanced Controllers

Accessories

DIN rail, labeling sheets

Overview DIN rail



- The mechanical rack for SIMATIC S7-300
- For accommodating the modules
- Can be attached to walls

Ordering data

Article No.

DIN rail	Article No.
160 mm	6ES7390-1AB60-0AA0
482 mm	6ES7390-1AE80-0AA0
530 mm	6ES7390-1AF30-0AA0
830 mm	6ES7390-1AJ30-0AA0
2000 mm	6ES7390-1BC00-0AA0

Overview Labeling sheets

Labeling sheets

- Film sheets for the application-specific labeling of SIMATIC S7-300 I/O modules using standard laser printers
- Plain color films, tear-resistant, dirt-repellent
- Simple handling:
 - perforated label sheets in DIN A4 format for easy separation of the labeling strips.
 - the separated strips can be attached directly onto the I/O modules.
- Different colors to distinguish between different module types or preferred applications:
The labeling sheets are available in the following colors: petrol, light beige, red, and yellow. Yellow is reserved for fail-safe systems.

Label cover

- Petrol-colored film
- For sealing and fixing of custom labeling strips on normal paper
- Accessories, 10 units

Technical specifications

Labeling sheets for S7-300

Dimensions	DIN A4
Labeling strips per sheet, pre-perforated	10
Weight, approx.	0.1 kg

Ordering data

Article No.

Label sheets

for modules with 20-pin front connector, DIN A4, for printing with laser printer; 10 units

Petrol **6ES7392-2AX00-0AA0**

Light beige **6ES7392-2BX00-0AA0**

Yellow **6ES7392-2CX00-0AA0**

Red **6ES7392-2DX00-0AA0**

for modules with 40-pin front connector, DIN A4, for printing with laser printer; 10 units

Petrol **6ES7392-2AX10-0AA0**

Light beige **6ES7392-2BX10-0AA0**

Yellow **6ES7392-2CX10-0AA0**

Red **6ES7392-2DX10-0AA0**