

SIEMENS



IE3 obligation in accordance with
EU Directive 640/2009

valid within the EEA from

1 January 2015

It applies to

newly installed
motors

motors
in continuous
operation

in the power range



SIMOTICS Low-Voltage Motors

Type series 1LE1, 1MB1 and 1PC1

Frame sizes 71 to 315

Power range 0.18 to 200 kW




Motors

Catalog
D 81.1

Edition
2014

Answers for industry.

Related catalogs

<p>SIMOTICS FD Flexible Duty Motors</p> <p>D 81.8</p> <p>E86060-K5581-A181-A2-7600</p>	
<p>MOTIX Geared Motors</p> <p>D 87.1</p> <p>E86060-K5287-A111-A4-7600</p>	
<p>Motion Control Drives SINAMICS Inverters for Single-Axis Drives and SIMOTICS Motors</p> <p>D 31</p> <p>E86060-K5531-A101-A1-7600 E86060-E5531-A101-A1-7600 (News)</p>	
<p>SINAMICS G130 Drive Converter Chassis Units SINAMICS G150 Drive Converter Cabinet Units</p> <p>D 11</p> <p>E86060-K5511-A101-A5-7600</p>	
<p>SIMOTICS NEMA Motors Low Voltage AC Motors Selection and Pricing Guide</p> <p>D 81.2</p> <p>Further details available on the Internet at: www.usa.siemens.com/motors</p>	
<p>Industrial Communication SIMATIC NET</p> <p>IK PI</p> <p>E86060-K6710-A101-B8-7600</p>	
<p>Products for Automation and Drives Interactive Catalog, DVD</p> <p>CA 01</p> <p>E86060-D4001-A510-D4-7600</p>	
<p>Industry Mall Information and Ordering Platform in the Internet:</p> <p>www.siemens.com/industrymall</p>	

All information material, such as brochures, catalogs, manuals and operating instructions for standard drive systems are available up-to-date on the Internet at the following address:

www.siemens.com/motoren/printmaterial

The listed documentation can be ordered here or it is available in commonly used file formats (PDF, ZIP) for downloading.

Energy saving/Energy-saving program SinaSave

Further information on the subject of energy saving and the energy-saving program SinaSave is available at the following address:

www.siemens.com/energysaving

Interactive Catalog CA 01 – Selection tool DT Configurator

The selection tool **DT Configurator** is available in conjunction with the electronic catalog CA 01 on DVD.



In addition, the DT Configurator can be used on the Internet without requiring any installation.

The DT Configurator can be found in the Siemens Mall under the following address:

www.siemens.com/dt-configurator

The DT Configurator for motors, mechanical components, converters, connection systems, control and licenses and system configuration can be found in the CA 01 main menu, under drive systems, selection and engineering tools.

- 2D/3D model generator for motors and converters
- Data sheet generator
- Start-up calculation
- Comprehensive product-specific documentation

Hardware and software requirements

- PC with 1.5 GHz CPU or faster
- Operating systems
 - Windows XP
 - Windows NT 4.0 (SP6 and higher)
 - Windows Vista
 - Windows 7
- At least 1 GB RAM (2 GB recommended)
- Screen resolution 1024 x 768, graphics with more than 256 colors, small fonts
- DVD drive for offline version (CA 01)
- Windows-compatible sound card
- Windows-compatible mouse

Installation

The CA01 Catalog can be directly installed on the hard disk or in the network from the DVD as a partial or full version.

Copper surcharges

The metal factors that are applicable for the copper surcharges are specified in the header of Price List D 81.1 P. Further information about "Metal surcharges" can be found in the appendix to this catalog.

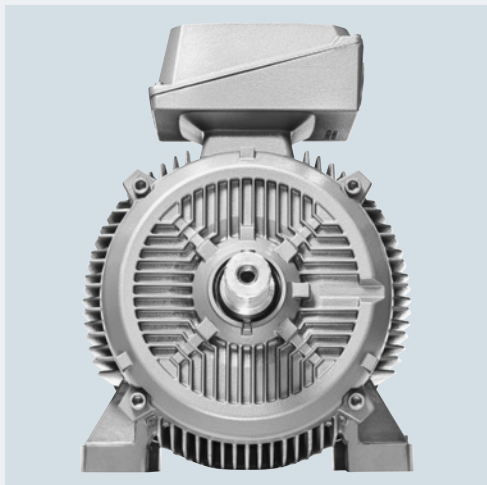
Motors

SIMOTICS

Low-Voltage Motors

Type series 1LE1, 1PC1, 1MB1

Catalog D 81.1 · 2014




The products and systems described in this catalog are manufactured/distributed under application of a certified quality management system in accordance with DIN EN ISO 9001 (Certified Registration No. DE-000357 QM). The certificate is recognized by all IQNet countries.

Supersedes:
Catalog D 81.1 · 2013

Refer to the Industry Mall for current updates of this catalog:
www.siemens.com/industrymall

The products contained in this catalog can also be found in the Interactive Catalog CA 01.
Article No.:
E86060-D4001-A510-D4-7600

Please contact your local Siemens branch

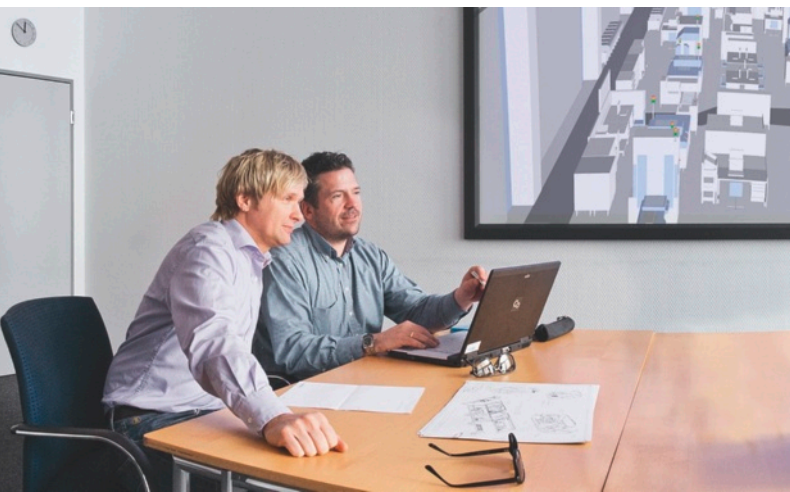
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<p>Introduction General information regarding efficiency in accordance with International Efficiency, Guide to selecting and ordering the motors, General technical specifications</p>	<p>1</p>
<p>SIMOTICS GP/SD 1LE1/1PC1 Standard Motors</p>	<p>2</p>
<p>SIMOTICS GP/SD VSD10 line Standard Motors for Converter-Fed Operation (available soon)</p>	<p>3</p>
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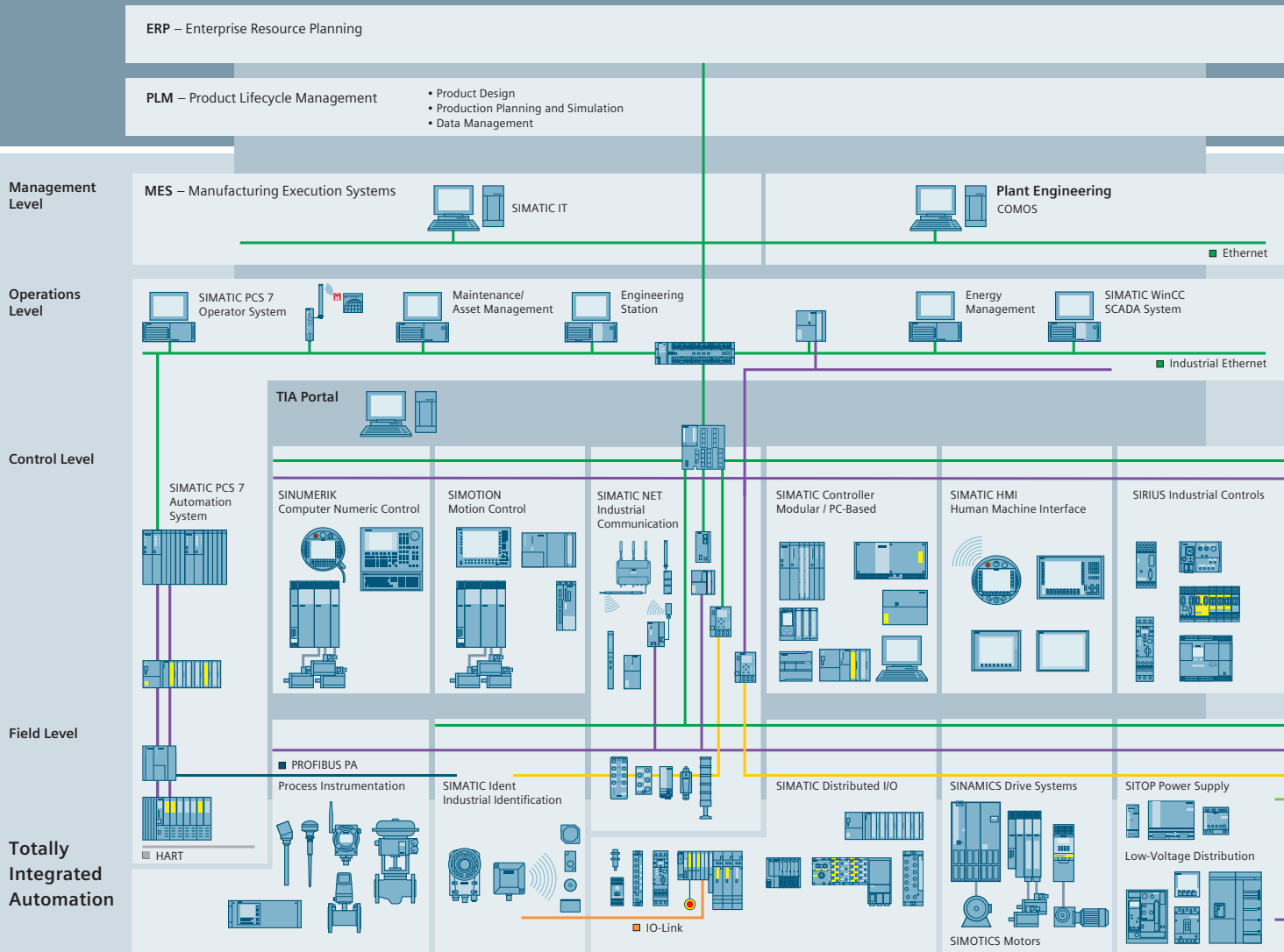
Answers for industry.

Integrated technologies, vertical market expertise and services for greater productivity, energy efficiency, and flexibility.

The Siemens Industry Sector is the world's leading supplier of innovative and environmentally friendly products and solutions for industrial companies. End-to-end automation technology and industrial software, solid market expertise, and technology-based services are the levers we use to increase our customers' productivity, efficiency and flexibility. With a global workforce of more than 100 000 employees, the Industry Sector comprises the Industry Automation, Drive Technologies, and Customer Services divisions, as well as the Metals Technologies Business Unit.

We consistently rely on integrated technologies and, thanks to our bundled portfolio, we can respond more quickly and flexibly to our customers' wishes. With our globally unmatched range of automation technology, industrial control and drive technology as well as industrial software, we equip companies with exactly what they need over their entire value chain – from product design and development to production, sales and service. Our industrial customers benefit from our comprehensive portfolio, which is tailored to their market and their needs.

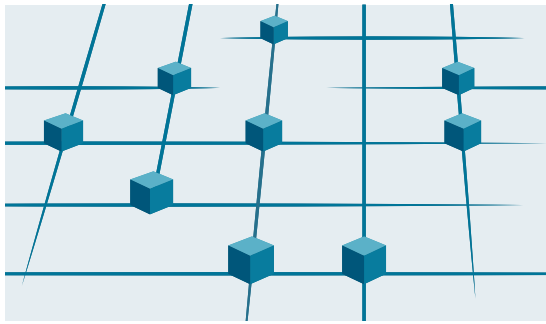
Market launch times can be reduced by up to 50% due to the combination of powerful automation technology and industrial software from Siemens Industry. At the same time, the costs for energy or waste water for a manufacturing company can be reduced significantly. In this way, we increase our customers' competitive strength and make an important contribution to environmental protection with our energy-efficient products and solutions.



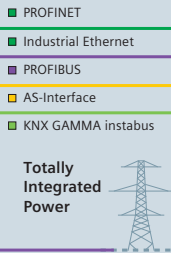
Efficient automation starts with efficient engineering.

Totally Integrated Automation: Efficiency driving productivity.

Efficient engineering is the first step toward better production that is faster, more flexible, and more intelligent. With all components interacting efficiently, Totally Integrated Automation (TIA) delivers enormous time savings right from the engineering phase. The result is lower costs, faster time-to-market, and greater flexibility.



Totally Integrated Automation
Efficient interoperability of all automation components



A unique complete approach for all industries

As one of the world's leading automation suppliers, Siemens provides an integrated, comprehensive portfolio for all requirements in process and manufacturing industries. All components are mutually compatible and system-tested. This ensures that they reliably perform their tasks in industrial use and interact efficiently, and that each automation solution can be implemented with little time and effort based on standard products. The integration of many separate individual engineering tasks into a single engineering environment, for example, provides enormous time and cost savings.

With its comprehensive technology and industry-specific expertise, Siemens is continuously driving progress in manufacturing industries – and Totally Integrated Automation plays a key role.

Totally Integrated Automation creates real value added in all automation tasks, especially for:

- **Integrated engineering**
Consistent, comprehensive engineering throughout the entire product development and production process
- **Industrial data management**
Access to all important data occurring in productive operation – along the entire value chain and across all levels
- **Industrial communication**
Integrated communication based on international cross-vendor standards that are mutually compatible
- **Industrial security**
Systematic minimization of the risk of an internal or external attack on plants and networks
- **Safety Integrated**
Reliable protection of personnel, machinery, and the environment thanks to seamless integration of safety technologies into the standard automation

Making things right with Totally Integrated Automation

Totally Integrated Automation, industrial automation from Siemens, stands for the efficient interoperability of all automation components. The open system architecture covers the entire production process and is based on end-to-end shared characteristics: consistent data management, global standards, and uniform hardware and software interfaces.

Totally Integrated Automation lays the foundation for comprehensive optimization of the production process:

- Time and cost savings due to efficient engineering
- Minimized downtime due to integrated diagnostic functions
- Simplified implementation of automation solutions due to global standards
- Better performance due to interoperability of system-tested components



Totally Integrated Power We bring power to the point – safely and reliably.



Comprehensive answers for power distribution in complex energy systems – from Siemens

Efficient, reliable, safe: These are the demands placed on electrification and especially power distribution. And our answer – for all application areas of the energy system – is Totally Integrated Power (TIP). It's based on our comprehensive range of products, systems, and solutions for low and medium voltage, rounded out by our support throughout the entire lifecycle – from planning with our own software tools to installation, operation, and services.

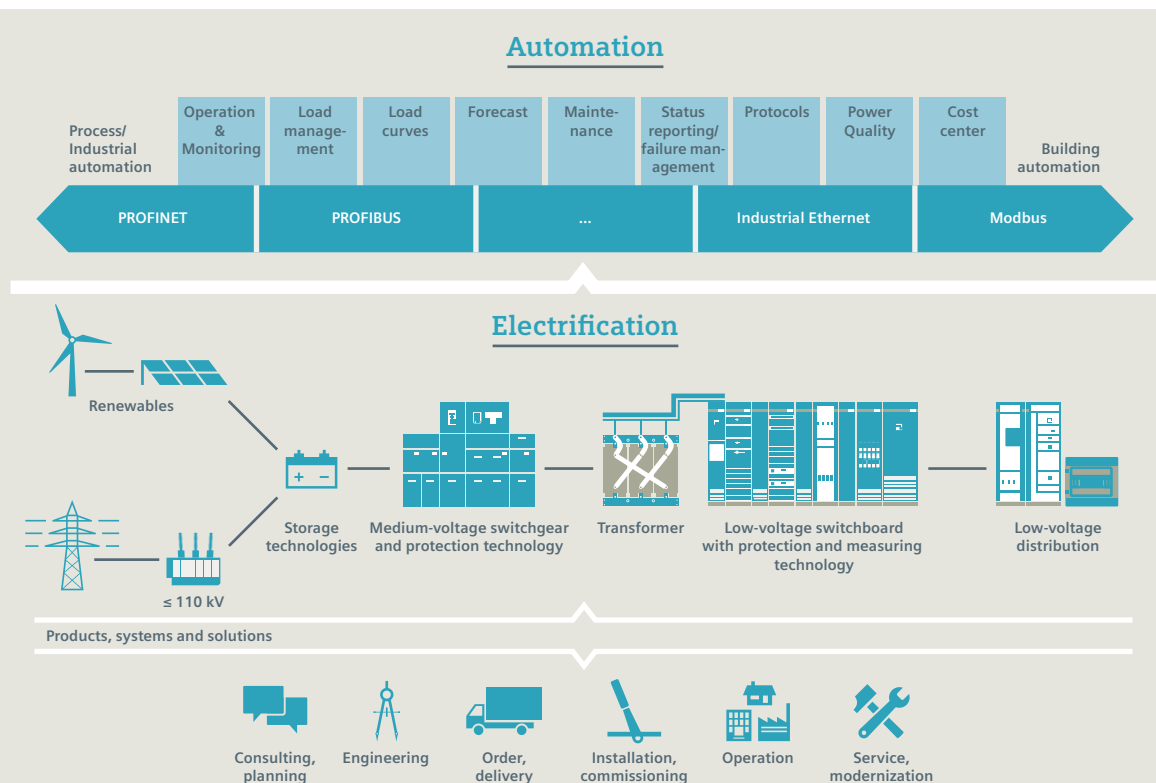
Smart interfaces allow linking to industrial or building automation, making it possible to fully exploit all the optimization potential of an integrated solution. This is how we provide our customers around the world with answers to their challenges. With highly efficient, reliable, and safe power distribution, we lay the foundation for sustainable infrastructure and cities, buildings, and industrial plants. We bring power to the point – wherever and whenever it is needed.

More information: www.siemens.com/tip

Totally Integrated Power offers more:

- **Consistency:**
For simplified plant engineering and commissioning as well as smooth integration into automation solutions for building or production processes
- **One-stop-shop:**
A reliable partner with a complete portfolio for the entire process and lifecycle – from the initial idea to after-sales service
- **Safety:**
A comprehensive range of protection components for personnel safety and line and fire protection, safety by means of type testing
- **Reliability:**
A reliable partner who works with customers to develop long-lasting solutions that meet the highest quality standards
- **Efficiency:**
Bringing power to the point means greater plant availability and maximum energy efficiency in power distribution
- **Flexibility:**
End-to-end consistency and modular design of Totally Integrated Power for any desired expansions and adaptation to future requirements
- **Advanced technology:**
Reliable power distribution especially for applications in which supply is critical, continuous refinement of the technology

Challenges are our speciality



Integrated Drive Systems

Faster on the market and in the black with Integrated Drive Systems

Whether SIMOTICS GP, SD, XP or DP - each is an important element of a Siemens Integrated Drive System, contributing significantly to increased efficiency, productivity, and availability in industrial production processes.

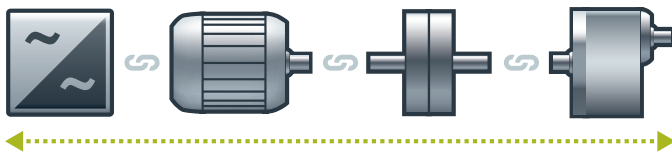
Integrated Drive Systems are Siemens' trendsetting answer to the high degree of complexity that characterizes drive and automation technology today. The world's only true one-stop solution for entire drive systems is characterized in particular by its threefold integration:

Horizontal, vertical, and lifecycle integration ensure that every drive system component fits seamlessly into the whole system, into any automation environment, and even into the entire lifecycle of a plant.

The outcome is an optimal workflow – from engineering all the way to service that entails more productivity, increased efficiency, and better availability. That's how Integrated Drive Systems reduce time to market and time to profit.

Horizontal integration

Integrated drive portfolio: The core elements of a fully integrated drive portfolio are frequency converters, motors, couplings, and gear units. At Siemens, they're all available from a single source. Perfectly integrated, perfectly interacting. For all power and performance classes. As standard solutions or fully customized. No other player in the market can offer a comparable portfolio. Moreover, all Siemens drive components are perfectly matched, so they are optimally interacting.



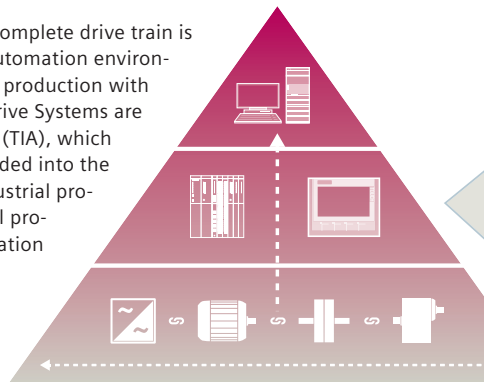
You can boost the availability of your application or plant to up to

99%*

*e.g., conveyor application

Vertical integration

Thanks to **vertical integration**, the complete drive train is seamlessly integrated in the entire automation environment – an important prerequisite for production with maximum value added. Integrated Drive Systems are part of Totally Integrated Automation (TIA), which means that they are perfectly embedded into the system architecture of the entire industrial production process. This enables optimal processes through maximum communication and control.



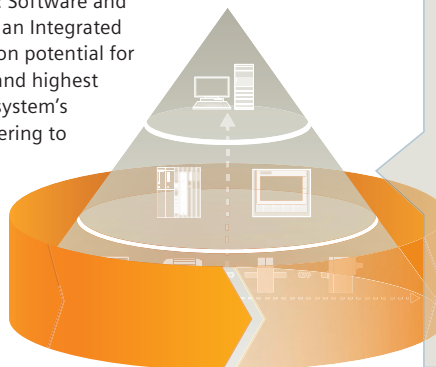
With TIA Portal you can cut your engineering time by up to

30%

Lifecycle integration

Lifecycle integration adds the factor of time: Software and service are available for the entire lifecycle of an Integrated Drive System. That way, important optimization potential for maximum productivity, increased efficiency, and highest availability can be leveraged throughout the system's lifecycle – from planning, design, and engineering to operation, maintenance, and all the way even to modernization.

With Integrated Drive Systems, assets become important success factors. They ensure shorter time to market, maximum productivity and efficiency in operation, and shorter time to profit.

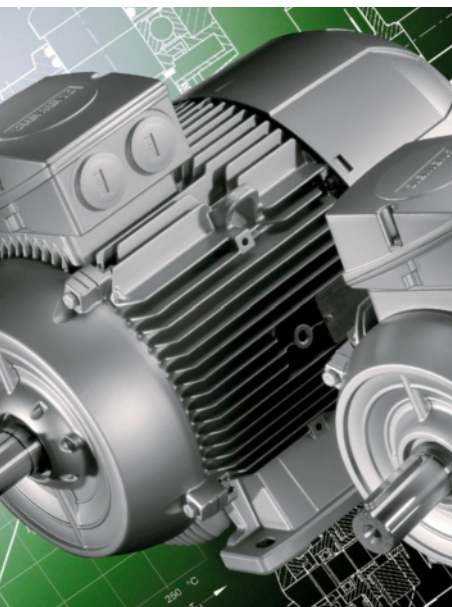


With Integrated Drive Systems you can reduce your maintenance costs by up to

15%

siemens.com/ids

Introduction



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Introduction

General information regarding efficiency in accordance with International Efficiency

Efficiency classes and efficiencies according to IEC 60034-30:2008

1

Overview

Harmonization of the efficiency classes

Different energy efficiency standards exist worldwide for induction motors. To promote international harmonization, the international standard IEC 60034-30:2008 (Rotating electrical machines – Part 30: Efficiency classes of single-speed, three-phase, cage-induction motors (IE code)) was created. This groups low-voltage asynchronous motors into new efficiency classes (valid since October 2008). The efficiencies of IEC 60034-30:2008 are based on losses determined in accordance with the IEC 60034-2-1:2007 standard. This has been valid since November 2007 and replaces the IEC 60034-2:1996 standard as of November 2010. The supplementary losses are now measured and no longer added as a percentage.

IE efficiency classes

The efficiency classes are grouped according to the following nomenclature (IE = International Efficiency):

- IE1 (Standard Efficiency)
- IE2 (High Efficiency)
- IE3 (Premium Efficiency)
- IE4 (Super Premium Efficiency)

IEC 60034-30-1	NEMA-MG1	GB 18613-2012
IE4 1)		Grade 1 (IE4)
IE3	Premium Efficient (60 Hz)	Grade 2 (IE3)
IE2	Energy Efficient (60 Hz)	Grade 3 (IE2)

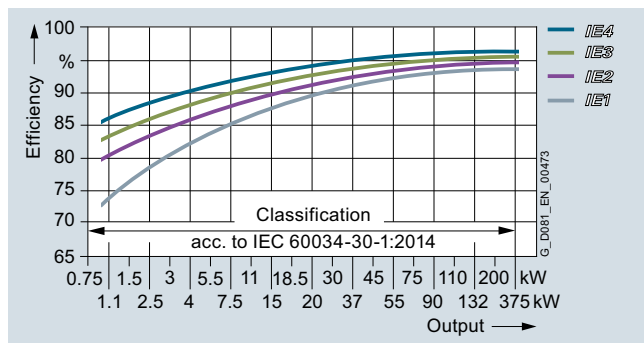
Comparison of IE efficiency classes

Note:

All efficiency classes are stated with reference to 50 Hz data (unless specified otherwise).

Measuring method according to IEC 60034-2-1:2007 for determining the efficiency

In this standard, the nominal 50 Hz limits of Standard (IE1) and High Efficiency (IE2) are based on the CEMEP-EU EFF2 and EFF1 limits respectively. However, they have been adjusted to take the different test procedures into account (CEMEP: Additional load losses PLL flat 0,5 % of input power; in this standard PLL is determined from test).



IE1-IE4 efficiencies, 4-pole, 50 Hz, according to the output

Minimum efficiencies according to IEC 60034-30-1:2014

Rated output $P_{\text{rated, 50 Hz}}$ kW	Efficiency η in % IEC IE class					
	IE1 – Standard Efficiency			IE2 – High Efficiency		
	2-pole	4-pole	6-pole	2-pole	4-pole	6-pole
0.75	72.1	72.1	70.0	77.4	79.6	75.9
1.1	75.0	75.0	72.9	79.6	81.4	78.1
1.5	77.2	77.2	75.2	81.3	82.8	79.8
2.2	79.7	79.7	77.7	83.2	84.3	81.8
3	81.5	81.5	79.7	84.6	85.5	83.3
4	83.1	83.1	81.4	85.8	86.6	84.6
5.5	84.7	84.7	83.1	87.0	87.7	86.0
7.5	86.0	86.0	84.7	88.1	88.7	87.2
11	87.6	87.6	86.4	89.4	89.8	88.7
15	88.7	88.7	87.7	90.3	90.6	89.7
18.5	89.3	89.3	88.6	90.9	91.2	90.4
22	89.9	89.9	89.2	91.3	91.6	90.9
30	90.7	90.7	90.2	92.0	92.3	91.7
37	91.2	91.2	90.8	92.5	92.7	92.2
45	91.7	91.7	91.4	92.9	93.1	92.7
55	92.1	92.1	91.9	93.2	93.5	93.1
75	92.7	92.7	92.6	93.8	94.0	93.7
90	93.0	93.0	92.9	94.1	94.2	94.0
110	93.3	93.3	93.3	94.3	94.5	94.3
132	93.5	93.5	93.5	94.6	94.7	94.6
160	93.8	93.8	93.8	94.8	94.9	94.8
200 ... 375	94.0	94.0	94.0	95.0	95.1	95.0

Rated output $P_{\text{rated, 50 Hz}}$ kW	Efficiency η in % IEC IE class					
	IE3 – Premium Efficiency Standard Efficiency			IE4 – Super Premium Efficiency High Efficiency		
	2-pole	4-pole	6-pole	2-pole	4-pole	6-pole
0.75	80.7	82.5	78.9	85.0	85.7	82.8
1.1	82.7	84.1	81.0	86.5	87.2	84.6
1.5	84.2	85.3	82.5	87.6	88.2	85.9
2.2	85.9	86.7	84.3	88.9	89.5	87.4
3	87.1	87.7	85.6	89.8	90.4	88.5
4	88.1	88.6	86.8	90.6	91.2	89.5
5.5	89.2	89.6	88.0	91.4	92.0	90.5
7.5	90.1	90.4	89.1	92.1	92.7	91.4
11	91.2	91.4	90.3	92.9	93.5	92.3
15	91.9	92.1	91.2	93.5	94.0	93.0
18.5	92.4	92.6	91.7	93.8	94.4	93.5
22	92.7	93.0	92.2	94.1	94.6	93.8
30	93.3	93.6	92.9	94.6	95.1	94.3
37	93.7	93.9	93.3	94.8	95.3	94.7
45	94.0	94.2	93.7	95.1	95.6	94.9
55	94.3	94.6	94.1	95.3	95.8	95.2
75	94.7	95.0	94.6	95.6	96.1	95.5
90	95.0	95.2	94.9	95.8	96.2	95.6
110	95.2	95.4	95.1	95.9	96.3	95.8
132	95.4	95.6	95.4	96.1	96.4	95.9
160	95.6	95.8	95.6	96.2	96.5	95.9
200 ... 375	95.8	96.0	95.8	96.3	96.6	96.0

Background information

Comprehensive laws have been introduced in the European Union with the objective of reducing energy consumption and therefore CO₂ emissions. EU Directive 640/2009 concerns the energy consumption or efficiency of induction motors in the industrial environment. This Directive is now in force in every country of the European economic area.

For further details on internationally applicable standards and legal requirements, visit:

www.siemens.com/international-efficiency

General information regarding efficiency in accordance with International Efficiency

Efficiency classes and efficiencies according to
IEC 60034-30:2008

1

Overview (continued)**Exceptions to the EU Directive:**

- Motors that are designed to be operated totally submerged in a liquid;
- Motors fully integrated into a product (e.g. a gear unit, pump, fan or compressor) whose energy efficiency cannot be measured independently of the product;
- Motors that are specially designed for operation under the following conditions:
 - At altitudes greater than 4000 meters above sea level;
 - At ambient temperatures above 60 °C;
 - At maximum operating temperatures above 400 °C;
 - At ambient temperatures below -30 °C (any motor)
 - With cooling liquid temperatures at the product intake of below 5 °C or above 25 °C;
 - In hazardous areas in the context of Directive 94/9/EU of the European Parliament and Council;
- Brake motors

The following motors are not involved:

- 8-pole motors
- Pole-changing motors
- Synchronous motors
- Motors for intermittent duty S2 to S9
- Single-phase motors
- Motors specially developed for converter-fed operation in accordance with IEC 60034-25

The following changes will come into effect on the dates below:**Since July 27, 2014, the following exceptions have been valid in accordance with EU Regulation 4/2014:**

- At altitudes exceeding 4000 m (above sea level)
- Where ambient temperatures exceed 60 °C
- At ambient temperatures of less than -30 °C, or less than 0 °C with water cooling
- Where coolant temperatures at the inlet to a product are less than 0 °C or exceed 32 °C

January 1, 2015:

Compliance with the legally required minimum efficiency class IE3 for outputs from 7.5 to 375 kW or, as an alternative, IE2 motor plus frequency converter

January 1, 2017:

Compliance with the legally required minimum efficiency class IE3 for outputs from 0.75 to 375 kW or, as an alternative, IE2 motor plus frequency converter

Note:

Different minimum efficiency class requirements apply in China, Korea and Australia. Other countries will be available soon.

Motors for the North American market

The Energy Policy Act (EPAAct) was superseded in December 2010 by the Energy Independence Security Act (EISA).

The following motors must fulfill the NEMA Premium Efficient Level:

- 1 to 200 hp
- 2, 4 and 6-pole
- 230 V, 460 V, motors with feet

In addition, the following motors, for example, must fulfill the NEMA Energy Efficient Level:

- 201 to 500 hp
- 8-pole
- All voltages < 600 V except 230 V and 460 V
- Flange-mounting motors without feet (footless motors) (IM B5 and other flange types)
- NEMA design C (increased starting torque)

For details, see NEMA MG1, Table 12-11 and Table 12-12.

Abbreviations

NEMA: National Electrical Manufacturers Association

IEC: International Electrotechnical Commission

Introduction

Guide to selecting and ordering the motors

Catalog orientation and drive selection

1

Overview

Steps for drive selection

Step 1	Orientation and general technical information	
Technical requirements for the motor	Rated frequency and rated voltage	3 AC 50/60 Hz, 400, 500 or 690 V
	Operating mode	Standard duty (continuous duty S1 according to DIN EN 60034-1)
	Degree of protection or type of explosion protection required	IP..
	Rated speed (No. of poles)	$n = \dots\dots\dots$ rpm
	Rated output	$P = \dots\dots\dots$ kW
	Rated torque	$M = P \cdot 9550/n = \dots\dots\dots$ Nm
	Type of construction	IM..
Step 2	Preselection in accordance with the application	
Determination of the installation conditions and definition of the application, if necessary	Ambient temperature	≤ 40 °C > 40 °C
	Site altitude	≤ 1000 m > 1000 m
	Factors for derating	None Determine the factor for derating (for reduction factor, see "Coolant temperature and site altitude" on Page 1/64)
Cross-reference to other motors	These can be Loher motors for special requirements in the area of explosion protection and applications or motors to the NEMA standard	
Step 3	Preliminary selection of the motor	
Determination of the range of possible motors	Select the frame size and therefore the possible motors on the basis of the following parameters: cooling method, degree of protection, rated output, rated speed and rated torque range. Note: The standard temperature range of the motors is from -20 to +40°C.	

Layout of the selection and ordering tables and description of the columns of the table headers

Output, frame size, temperature class		Operating values at rated output															Article No., add. data								
Table header – Meaning																									
P_{rated} 50 Hz	Tem- pera- ture class	P_{rated} 60 Hz	P_{rated} 60 Hz	Frame size	n_{rated} 50 Hz	T_{rated} 50 Hz	IE class	CC No. CC032A	η_{rated} 50 Hz, 4/4	η_{rated} 50 Hz, 3/4	η_{rated} 50 Hz, 2/4	$\text{COS}\phi$ 50 Hz, 4/4	I_{rated} 50 Hz, 400 V	I_{rated} 50 Hz, 690 V	$T_{\text{LR}}/$ I_{rated}	$I_{\text{LR}}/$ I_{rated}	$T_{\text{B}}/$ I_{rated}	L_{pA} 50 Hz	L_{WA} 50 Hz	t_{E} 50 Hz, T1/T2	t_{E} 50 Hz, T3	Ar- ticle No.	m IM B3	J	Torque class
kW		kW	hp	FS	rpm	Nm			%	%	%		A	A				dB (A)	dB (A)	s	s		kg	kgm ²	CL
Rated output at 50 Hz	Temperature class	Rated output at 60 Hz	Rated output at 60 Hz	Frame size	Rated speed at 50 Hz	Rated torque at 50 Hz	Efficiency Class according to IEC 60034-30 standard	CC No. CC032A	Efficiency at 50 Hz, 4/4-load	Efficiency at 50 Hz, 3/4-load	Efficiency at 50 Hz, 2/4-load	Power factor at 50 Hz, 4/4-load	Rated current at 400 V, 50 Hz	Rated current at 690 V, 50 Hz	Locked-rotor torque on direct switch-on as a multiple of the rated torque	Locked-rotor current on direct switch-on as a multiple of the rated current	Breakdown torque on direct switch-on as a multiple of the rated torque	Measuring-surface sound pressure level at 50 Hz	Sound power level at 50 Hz	t_{E} time for temperature class T1/T2, 50 Hz	t_{E} time for temperature class T3, 50 Hz	Article number	Weight for IM B3 type of construction, approx.	Moment of inertia	Torque class

Legend:

Primary key
Standard values for all motors
Specially for NEMA Energy Efficient MG1 motors, Table 12-11 or NEMA Premium Efficient MG1 motors, Table 12-12
Specially for explosion-proof motors for Zone 1 in type of protection Ex e
Specially for versions for converter-fed operation

Note on pole-changing motors:

The operating values are specified here for the rated output for the two or three different pole numbers.

Step 4	Detailed selection of the motors in the selection and ordering data tables
Determination of the basic Article No. of the motor	Determine the motor Article No. according to the following parameters: rated output, rated speed, rated torque and rated current from the "Selection and ordering data" for the motors that have already been identified as possibilities.
Step 5	Selection of the special versions or options
Completing the motor Article No.	Determine special versions and the associated order codes (e.g. special voltages and types of construction, motor protection and degrees of protection, windings and insulation, colors and paint finish, mountings and mounting technology, etc.).
Step 6	Additional information for motor selection
Checking the required measurements	The dimensions are specified in each catalog section under the heading of "Dimensions"
Selection of the frequency converter, if required	Article No. of the converter as well as its selection, see Catalogs D 11, D 11.1, D 18.1, D 21.3, D 31 and DA 51.2.

Introduction

Guide to selecting and ordering the motors

Catalog orientation and drive selection

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Overview (continued)

Steps for drive selection in the catalog

		Catalog section
Step 1	Introduction	1
Step 2	SIMOTICS GP/SD 1LE1/1PC1 Standard Motors	2
	Orientation	
Step 3	Motors with High Efficiency IE2 Motors with Premium Efficiency IE3 Motors with Standard Efficiency IE1 NEMA Energy Efficient MG1 motors, Table 12-11 NEMA Premium Efficient MG1 motors, Table 12-12 Pole-changing motors	
Step 4	Supplements to article numbers and special versions	
Step 5	Dimensions	
Step 2	SIMOTICS XP 1MB1 Explosion-Proof Motors	4
	Orientation	
Step 3	Motors for Zone 21/22 or 2 in type of protection Ex t or Ex n <ul style="list-style-type: none"> • Motors with Standard Efficiency IE1 <ul style="list-style-type: none"> - Aluminum series 1MB10 • Motors with High Efficiency IE2 <ul style="list-style-type: none"> - Aluminum series 1MB10 - Cast-iron series 1MB15/6 • Motors with Premium Efficiency IE3 <ul style="list-style-type: none"> - Aluminum series 1MB10 - Cast-iron series 1MB15/6 	
Step 4	Supplements to article numbers and special versions	
Step 5	Dimensions	
Step 2	SIMOTICS DP Application-Specific Motors – Smoke-extraction Motors	5
	Orientation	
Step 3	Motors with High Efficiency IE2 <ul style="list-style-type: none"> • Aluminum series 1PC1300 • Cast-iron series 1PC1301 	
Step 4	Supplements to article numbers and special versions	
Step 5	Dimensions	

Introduction

Guide to selecting and ordering the motors

Catalog orientation and drive selection

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Overview (continued)

Aluminum series spectrum – Standard degree of protection IP55; optionally IP56 or IP65

Catalog section	Motor version	Motor type (alum.)	Motor type – Frame size – Rated output at 50 Hz (values in kW) or 60 Hz (values in hp)										
			71	80	90	100	112	132	160	180	200	225	
2 SIMOTICS GP 1LE10/1PC10 Standard Motors													
High Efficiency IE2	1LE1001	1LE1001										0.37 ... 22 kW	
	1PC1001											0.37 ... 9 kW	
IE3 Premium Efficiency	1LE1003	1LE1003										0.37 ... 18.5 kW	
IE1 Standard Efficiency	1LE1002											0.75 ... 18.5 kW	
	1PC1002											0.3 ... 7.4 kW	
NEMA Energy Efficient	1LE1021	1LE1021 Eagle Line										0.37 ... 18.5 kW 0.5 ... 25 hp	
NEMA Premium Efficient	1LE1023	1LE1023 Eagle Line										0.37 ... 18.5 kW 0.5 ... 25 hp	
Pole-changing	1LE1011											0.55 ... 16 kW	
	1LE1012											0.6 ... 12 kW	
3 SIMOTICS GP/SD VSD10 line Standard Motors for Converter-Fed Operation (available soon)													
4 SIMOTICS XP 1MB10 Explosion-Proof Motors – Ex tb (Zone 21), Ex tc (Zone 22), Ex n (Zone 2)													
IE1 Standard Efficiency	1MB10.2	1MB1012/1MB1022/1MB1032										0.37 ... 18.5 kW	
High Efficiency IE2	1MB10.1	1MB1011/1MB1021/1MB1031										0.37 ... 18.5 kW	
IE3 Premium Efficiency	1MB10.3	1MB1013/1MB1023/1MB1033										0.37 ... 18.5 kW	
5 SIMOTICS DP 1PC1 Application-Specific Motors													
Smoke-extraction motors High Efficiency IE2	1PC1300	1PC1300										0.37 ... 18.5 kW	

Cast-iron series spectrum – Standard degree of protection IP55; optionally IP56 or IP65

Catalog section	Motor version	Motor type (cast-iron)	Motor type – Frame size – Rated output at 50 Hz (values in kW) or 60 Hz (values in hp)												
			71	80	90	100	112	132	160	180	200	225	250	280	315
2 SIMOTICS SD 1LE15/1LE16 Standard Motors															
High Efficiency IE2	1LE1501	1LE1501 Basic Line												0.18 ... 200 kW	
	1LE1601													0.75 ... 200 kW	
IE3 Premium Efficiency	1LE1503	1LE1503 Basic Line												0.18 ... 200 kW	
	1LE1603													1.5 ... 200 kW	
NEMA Energy Efficient	1LE1521	1LE1521 Eagle Line Basic												0.18 ... 200 kW 0.25 ... 250 hp	
	1LE1621													0.18 ... 200 kW 0.25 ... 250 hp	
NEMA Premium Efficient	1LE1523	1LE1523 Eagle Line Basic												0.18 ... 200 kW 0.25 ... 250 hp	
	1LE1623													0.18 ... 200 kW 0.25 ... 250 hp	
3 SIMOTICS GP/SD VSD10 line Standard Motors for Converter-Fed Operation (available soon)															
4 SIMOTICS XP 1MB15/1MB16 Explosion-Proof Motors – Ex tb (Zone 21), Ex tc (Zone 22), Ex n (Zone 2)															
High Efficiency IE2	1MB15.1	1MB15.1 Basic Line												0.75 ... 200 kW	
	1MB16.1													0.75 ... 200 kW	
IE3 Premium Efficiency	1MB15.3	1MB15.3 Basic Line												1.5 ... 200 kW	
	1MB16.3													1.5 ... 200 kW	
5 SIMOTICS DP 1PC1 Application-Specific Motors															
Smoke-extraction motors High Efficiency IE2	1PC1301											1PC1301	15 ... 200 kW		

Overview

The following table contains a listing of all available special versions according to category and availability in the individual catalog sections. The order codes are listed here according to the function. An alphanumeric listing of all special versions can be found in the Appendix in the Index of order codes.

Special versions	Addition alidentification code -Z with order code and plain text if required	Catalog section – Page					
		2 Standard motors		4 Ex motors		5 Smoke-extraction motors	
		Alumi- num series	Cast-iron series	Alumi- num series	Cast-iron series	Alumi- num series	Cast-iron series
Design for Zones according to ATEX							
Design (IP55) for Zone 2 in Ex nA II C and 22 in Ex tc IIIB, for non-conductive dust	B30			4/31	4/34		
Design for Zone 2 in Ex nA IIB T3 Gc	B31			4/31	4/34		
VIK design marked with Ex nA II on rating plate	C02			4/31	4/34		
Motor protection (bearing protection)							
Measuring nipple for SPM shock pulse measurement for bearing inspection	Q01					5/19 5/21	
Prepared for mounting a SIPLUS CMS 1000 vibration sensor	Q05		2/58			5/19 5/21	
2 x 3 temperature detectors for alarm and tripping	Q32		2/58				
Installation of 1 Pt100 resistance thermometer in stator winding, two-wire circuit	Q62		2/58				
Installation of 3 Pt100 resistance thermometers in stator winding, three-wire circuit	Q63		2/58				
Installation of 6 Pt100 resistance thermometers in stator winding, three-wire circuit	Q64		2/58				
Installation of 2 Pt100 screw-in resistance thermometers in basic circuit for rolling-contact bearings	Q72		2/58		4/34		
Installation of 2 Pt100 screw-in resistance thermometers in 3-wire circuit for rolling-contact bearings	Q78		2/58		4/34		
Installation of 2 Pt100 double screw-in resistance thermometers in 3-wire circuit for rolling-contact bearings	Q79		2/58		4/34		
Motor connection and terminal box							
External grounding	H04	2/53	2/58			5/19	
Terminal box on NDE	H08	2/53	2/58			5/19 5/21	
Second external grounding	H70		2/60				
Rotation of the terminal box through 90°, entry from DE	R10	2/53	2/58	4/31	4/34		
Rotation of the terminal box through 90°, entry from NDE	R11	2/53	2/58	4/31	4/34		
Rotation of the terminal box through 180°	R12	2/53	2/58	4/31	4/34	5/19 5/21	
Terminal box in position 0°; connection from right	R13					5/19 5/21	
One EMC cable gland	R14		2/58				
One metal cable gland	R15	2/53	2/58				
EMC cable gland, maximum configuration	R16		2/58				
Stud terminal for cable connection, accessories pack (3 items)	R17		2/58		4/34		
Cable gland, maximum configuration	R18		2/58	4/31	4/34		
Saddle terminal for connection without cable lug, accessories pack	R19		2/58		4/34		
3 cables protruding, 0.5 m long	R20	2/53	2/58				
3 cables protruding, 1.5 m long	R21	2/53	2/58				
6 cables protruding, 0.5 m long	R22	2/53	2/58				
6 cables protruding, 1.5 m long	R23	2/53	2/58				
6 cables protruding, 3 m long	R24	2/53	2/58				
Reduction piece for M cable gland in accordance with British Standard, both cable entries mounted	R30	2/53	2/58				
Larger terminal box	R50	2/53	2/58	4/31	4/34		
Terminal box without cable entry opening	R51		2/58				
Drilled removable entry plate	R52		2/58				
Undrilled removable entry plate	R53		2/59				
Cast-iron auxiliary terminal box (small)	R62		2/59		4/34		
Motor connector Han-Drive 10e for 230 VΔ/400 VY	R70	2/53					
Motor connector EMC Han-Drive 10e for 230 VΔ/400 VY	R71	2/53					
Small motor connector CQ12 with EMC	R72	2/53					
Small motor connector CQ12 without EMC	R73	2/53					
Silicon-free version	R74		2/59				
Non-standard threaded through hole (NPT or G thread)	Y61		2/59				
Windings and insulation							
Temperature class 155 (F), utilized acc. to 155 (F), with service factor (SF)	N01	2/53	2/59				
Temperature class 155 (F), utilized acc. to 155 (F), with increased output	N02	2/53	2/59				
Temperature class 155 (F), utilized acc. to 155 (F), with increased coolant temperature	N03	2/53	2/59				

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Overview (continued)

Special versions	Additional identification code -Z with order code and plain text if required	Catalog section – Page					
		2 Standard motors		4 Ex motors		5 Smoke-extraction motors	
		Aluminum series	Cast-iron series	Aluminum series	Cast-iron series	Aluminum series	Cast-iron series
Windings and insulation (continued)							
Temperature class 155 (F), utilized acc. to 130 (B), coolant temperature 45 °C, derating approx. 4 %	N05	2/53	2/59	4/31	4/34		
Temperature class 155 (F), utilized acc. to 130 (B), coolant temperature 50 °C, derating approx. 8 %	N06	2/53	2/59	4/31	4/34		
Temperature class 155 (F), utilized acc. to 130 (B), coolant temperature 55 °C, derating approx. 13 %	N07	2/53	2/59	4/31	4/34		
Temperature class 155 (F), utilized acc. to 130 (B), coolant temperature 60 °C, derating approx. 18 %	N08	2/53	2/59	4/31	4/34		
Temperature class H	N10 <i>New!</i>	2/53	2/59				
Temperature class 180 (H) at rated output and max. CT 60 °C	N11	2/53	2/59				
Increased air humidity/temperature with 30 to 60 g water per m ³ of air	N20	2/53	2/59	4/31	4/34	5/19	5/21
Increased air humidity/temperature with 60 to 100 g water per m ³ of air	N21	2/53	2/59	4/31	4/34		
Temperature class 155 (F), utilized acc. to 130 (B), with higher coolant temperature and/or site altitude	Y50 • and specified output, CT .. °C or SA m above sea level	2/54	2/59	4/31	4/34		
Temperature class 155 (F), utilized according to 155 (F), other requirements	Y52 • and identification code	2/54	2/59				
Temperature class 180 (H), utilized according to 155 (F)	Y75 • and specified output, CT .. °C or SA M above sea level		2/59				
Colors and paint finish							
Unpainted (only cast-iron parts primed)	S00	2/54	2/59	4/31	4/35	5/19	5/21
Unpainted, only primed	S01	2/54	2/59	4/31	4/35	5/19	5/22
Special finish sea air resistant	S03	2/54	2/59	4/31	4/35	5/19	5/23
Special paint for use offshore	S04		2/59		4/35		
Internal coating	S05		2/59				5/21
Special finish in RAL 7030 stone gray	S10		2/59		4/35		5/21
Special finish in special RAL colors: For RAL colors, see "Special finish in special RAL colors" (see Catalog Section 1 "Introduction")	Y51 • and special finish RAL....	2/54	2/59	4/31	4/35	5/19	5/21
Standard finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005 (see Catalog Section 1 "Introduction")	Y53 • and standard finish RAL....		2/60		4/35		5/21
Special finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005 (see Catalog Section 1 "Introduction")	Y54 • and special finish RAL....	2/54	2/60	4/31	4/35	5/19	5/21
Modular technology - Basic versions							
Mounting of holding brake (standard assignment)	F01	2/54	2/60				
Mounting of brake for higher switching frequency (operating brake)	F02	2/54					
Backstop, counter-clockwise motion blocked, clockwise direction of rotation	F40		2/60				
Backstop, clockwise motion blocked, counter-clockwise direction	F41		2/60				
Mounting of separately driven fan	F70	2/54	2/60				
Mounting of 1XP8012-10 (HTL) rotary pulse encoder	G01	2/54	2/60				
Mounting of 1XP8012-20 (TTL) rotary pulse encoder	G02	2/54	2/60				
Modular technology – Additional versions							
Brake supply voltage 24 V DC	F10	2/54	2/60				
Brake supply voltage 230 V AC, 50/60 Hz	F11	2/54	2/60				
Brake supply voltage 400 V AC, 50/60 Hz	F12	2/54	2/60				
Mechanical manual brake release with lever (no locking)	F50	2/54	2/60				
Special technology							
Mounting of LL 861 900 220 rotary pulse encoder	G04	2/54	2/60				
Mounting of HOG 9 D 1024 I rotary pulse encoder	G05	2/54	2/60				
Mounting of HOG 10 D 1024 I rotary pulse encoder	G06	2/54	2/60				
Mounting of POG10D rotary pulse encoder (only in combination with separately driven fan or brake)	G07		2/60				
Mounting of POG9 rotary pulse encoder (only in combination with separately driven fan or brake)	G08		2/60				
Mounting of rotary pulse encoder HOG 10 DN 1024 I, terminal box moisture protection	G15 <i>New!</i>		2/60				
Mounting of rotary pulse encoder HOG 10 DN 1024 I, terminal box dust protection	G16 <i>New!</i>		2/60				

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Guide to selecting and ordering the motors

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Overview (continued)

Special versions	Additional identification code -Z with order code and plain text if required	Catalog section – Page					
		2 Standard motors		4 Ex motors		5 Smoke-extraction motors	
		Aluminum series	Cast-iron series	Aluminum series	Cast-iron series	Aluminum series	Cast-iron series
Special mounting technology (continued)							
Mounting of a special type of rotary pulse encoder	Y70 • and identification code		2/60				
Mounting of rotary pulse encoder HOG 10 DN 1024 I + FSL, (speed ... rpm), terminal box moisture protection	Y74 • and required speed rpm <i>New!</i>		2/60				
Mounting of rotary pulse encoder HOG 10 DN 1024 I + FSL, (speed ... rpm), terminal box dust protection	Y76 • and required speed rpm <i>New!</i>		2/61				
Mounting of rotary pulse encoder HOG 10 DN 1024 I + ESL 93, (speed ... rpm), terminal box dust protection	Y79 • and required speed (max 3) rpm <i>New!</i>		2/61				
Mechanical design and degrees of protection							
Low-noise version for 2-pole motors with clockwise direction of rotation	F77	2/54	2/61	4/32	4/35		
Low-noise version for 2-pole motors with counter-clockwise direction of rotation	F78	2/54	2/61	4/32	4/35		
Prepared for mountings, center hole only	G40	2/54	2/61				
Prepared for mountings with D12 shaft	G41	2/55	2/61				
Prepared for mountings with D16 shaft	G42	2/55	2/61				
Protective cover for encoder (supplied loose – only for mountings with order codes G40, G41 and G42)	G43	2/55	2/61				
Protective cover	H00	2/55	2/61	4/32	4/35	5/19	
Screwed-on (instead of cast) feet	H01	2/55	2/61			5/19	5/21
Vibration-proof version	H02	2/55	2/61	4/32	4/35		
Condensation drainage holes	H03	2/55	2/61	4/32			
Rust-resistant screws (externally)	H07	2/55	2/61	4/32	4/35	5/19	5/21
Housing with screw mounting	H10	2/55					
IP65 degree of protection	H20	2/55	2/61	4/32	4/35	5/19	5/21
IP54 degree of protection	H21		2/61				
IP56 degree of protection	H22	2/55	2/61	4/32	4/35	5/19	5/21
Drive-end seal for flange-mounting motors, oil-tight to 0.1 bar	H23	2/55	2/61	4/32	4/35	5/19	5/21
Grounding brush for converter-fed operation	L52		2/61				
Next larger standard flange	P01	2/55	2/61	4/32	4/35	5/19	
Next smaller standard flange	P02	2/55	2/61				
Coolant temperature and site altitude							
Coolant temperature –50 to +40 °C	D02		2/61				
Coolant temperature –40 to +40 °C	D03	2/55	2/61	4/32	4/35		
Coolant temperature –30 to +40 °C	D04	2/55	2/61			5/19	5/21
Designs in accordance with standards and specifications							
VIK version	C02	2/55	2/61				
Motor without CE marking for export outside EEA (see EU Directive 640/2009)	D22	2/55	2/61				
Electrical according to NEMA MG1-12	D30	2/55	2/61				
Design according to UL with "Recognition Mark"	D31	2/55	2/61				
China Energy Efficiency Label	D34	2/55	2/61				
IECEx certification	D37	<i>New!</i>		4/32	4/35		
Canadian regulations (CSA)	D40	2/55	2/61				
Train-compatible version	L82	2/55					
Bearings and lubrication							
Regreasing device with M10X1 grease nipple according to DIN 71412-A	L19	<i>New!</i>	2/61				
Located bearing DE	L20	2/55	2/61	4/32	4/35		
Located bearing NDE	L21	2/55	2/61	4/32	4/35		
Bearing design for increased cantilever forces	L22	2/55	2/61	4/32	4/35	5/19	5/21
Regreasing device	L23	2/55	2/62	4/32	4/35	5/19	5/21
Hot bearing grease	L24		2/62				
Special bearing for DE and NDE, bearing size 63	L25	2/55	2/62		4/35		
Reinforced bearings at both DE and NDE, DE bearing for increased cantilever forces	L28		2/62				
Increased max. speed	L37	<i>New!</i>	2/62				
Bearing insulation DE	L50		2/62				
Bearing insulation NDE	L51		2/62				
Measuring nipple for SPM shock pulse measurement for bearing inspection	Q01	2/55	2/62	4/32	4/35		
Balance and vibration quantity							
Vibration quantity level B	L00	2/55	2/62	4/32	4/36	5/19	5/22
Balancing without feather key, feather key is supplied	L01	2/55	2/62	4/32	4/36	5/19	5/22
Full-key balancing	L02	2/55	2/62	4/32	4/36	5/19	5/22

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Overview (continued)

Special versions	Additional identification code -Z with order code and plain text if required	Catalog section – Page					
		2 Standard motors		4 Ex motors		5 Smoke-extraction motors	
		Aluminum series	Cast-iron series	Aluminum series	Cast-iron series	Aluminum series	Cast-iron series
Shaft and rotor							
Shaft extension with standard dimensions, without feather keyway	L04	2/56	2/62	4/32	4/36	5/20	5/22
Second standard shaft extension	L05	2/56	2/62	4/32	4/36	5/20	5/22
Standard shaft made of stainless steel	L06	2/56	2/62	4/32	4/36		
Concentricity of shaft extension in accordance with DIN 42955 Tolerance R	L07	2/56	2/62	4/32	4/36	5/20	5/22
Concentricity of shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors	L08	2/56	2/62	4/32	4/36	5/20	5/22
Non-standard shaft extension, DE	Y58 • and identification code	2/56	2/62	4/32	4/36	5/20	5/22
Non-standard shaft extension, NDE	Y59 • and identification code	2/56	2/62	4/32	4/36	5/20	5/22
Special shaft steel	Y60 • and identification code		2/62				
Heating and ventilation							
Sheet metal fan cover	F74	2/56	2/62				
Fan cover for textile industry	F75	2/56					
Metal external fan	F76	2/56	2/62	4/32	4/36		
Without external fan and without fan cover	F90	2/56	2/62			5/20	5/22
Anti-condensation heating for 230 V	Q02	2/55	2/62	4/32	4/36		
Anti-condensation heating for 115 V	Q03	2/55	2/62	4/32	4/36		
Separately driven fan with non-standard voltage and/or frequency	Y81 • and identification code		2/62				
Rating plate and extra rating plates							
Extra rating plate for voltage tolerance	B07	2/56	2/62			5/20	5/22
Second rating plate, loose	M10	2/56	2/62	4/33	4/36	5/20	
Rating plate, stainless steel	M11	2/56	2/62	4/33	4/36		
Extra rating plate or rating plate with deviating rating plate data	Y80 • and identification code	2/56	2/62	4/33	4/36	5/20	5/22
Extra rating plate with identification codes	Y82 • and identification code	2/56	2/63	4/33	4/36	5/20	5/22
Additional information on rating plate and on package label (max. 20 characters)	Y84 • and identification code	2/56	2/63	4/33	4/36	5/20	5/22
Adhesive label, supplied loose	Y85 • and identification code	2/56	2/63				
Extension of the liability for defects							
Extension of the liability for defects by 12 months to a total of 24 months (2 years) from delivery	Q80		2/63				
Extension of the liability for defects by 24 months to a total of 36 months (3 years) from delivery	Q82		2/63				
Packaging, safety notes, documentation and test certificates							
Printed German/English Operating Instructions (compact) enclosed in each wire-lattice pallet	B01	2/56					
Acceptance test certificate 3.1 in accordance with EN 10204	B02	2/56	2/63	4/33	4/36	5/20	5/22
Printed German/English operating instructions enclosed	B04	2/56	2/63	4/33	4/36	5/20	5/22
Document - Electrical data sheet	B60	2/56	2/63				
Document - Order dimensional drawing	B61	2/57	2/63				
Standard test (routine test) with acceptance	B65		2/63			5/20	5/22
Type test with heat run for horizontal motors, without acceptance	B82 <i>New!</i>		2/63				
Type test with heat run for horizontal motors, with acceptance	B83	2/57	2/63	4/33	4/36	5/20	5/22
Wire-lattice pallet packaging	B99	2/57		4/33	4/36		
Connected in star for dispatch	M01	2/57	2/63	4/33	4/36		
Connected in delta for dispatch	M02	2/57	2/63	4/33	4/36		
Printed Operating Instructions (Compact) for explosion-proof motors enclosed in other official EU languages	Y98 • and identification code			4/33	4/36		

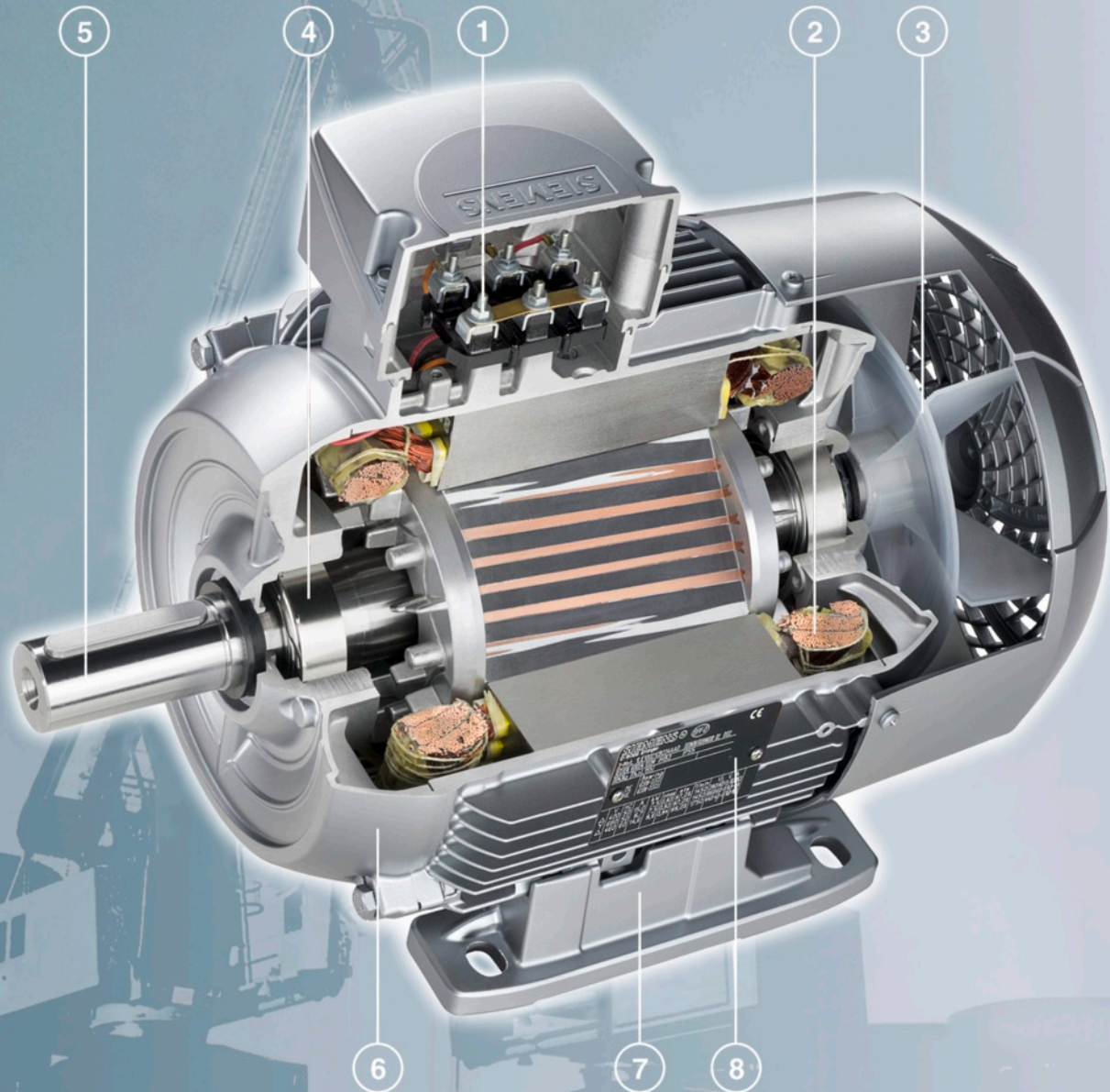
Introduction

General technical specifications

Cut-away diagram of a
low-voltage motor

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Overview



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| <p>① Motor protection Page 1/18
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Balance and vibration quantity Page 1/40</p> <p>⑥ Colors and paint finish Page 1/12</p> <p>⑦ Types of construction Page 1/28</p> <p>⑧ Rating plate and extra rating plates Page 1/22</p> |
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Introduction

General technical specifications

Colors and paint finish

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Overview

To protect the drives against corrosion and external influences, high-quality coatings based on 2-K epoxy resin are offered in various different colors.

Version	Suitability of paint finish for climate group in accordance with DIN IEC 60721, Part 2-1	
Standard finish C2	Moderate (extended) for indoor and outdoor installation under a roof not directly exposed to weather conditions	Briefly: up to 120 °C Contin.: up to 100 °C
Special finish C3 Order code S02	Worldwide (global) for outdoor installation in direct sunlight and/or exposed to weather conditions. Suitable for use in the tropics for < 60 % relative humidity at 40 °C	Briefly: up to 140 °C Contin.: up to 120 °C Also: for aggressive atmospheres up to 1 % acid and alkali concentration or permanent dampness in sheltered rooms

"Sea-air resistant" special finish system – Order code S03

Application	Resistance
<ul style="list-style-type: none"> Recommended for indoor installations or outdoor installations exposed to direct weather conditions Industrial climate with moderate SO₂ exposure, inshore maritime climate, but not offshore maritime climate, e.g. for crane drives and also in the paper industry Complies with the test requirements of DIN EN ISO 12944-2 Corrosion Category C4 	<ul style="list-style-type: none"> Chemical exposure up to 5 % acid and caustic solution concentration Suitable for use in the tropics up to 75% relative humidity at 50 °C Thermal stability from –40 to 140 °C

"Offshore" special finish system - Order code S04

Application	Resistance
<ul style="list-style-type: none"> Recommended for outdoor installations exposed to direct weather conditions Industrial climate with moderate SO₂ exposure and offshore maritime climate, e.g. for crane drives Complies with the test requirements of DIN EN ISO 12944-2 Corrosion Category C5 	<ul style="list-style-type: none"> Chemical exposure over 5 % acid and caustic solution concentration Suitable for use in the tropics up to 75% relative humidity at 60 °C Thermal stability from –40 to 140 °C

All motors are painted with RAL 7030 (stone gray) if the color is not specified.

Different colors with standard and special finish must be ordered with order codes **Y53** or **Y54** or **Y51** with the RAL number specified in plain text (for a selection of the available RAL numbers/ RAL colors, see tables for order codes **Y51**, **Y53** and **Y54** on the next page).

Exposure to direct sunlight may cause a change in color. If color stability is essential, a finish system based on polyurethane is recommended. Please contact your local Siemens office for advice.

All paint finishes can be painted over with commercially available paints. Special paint with increased layer thickness available on request.

If required, the motors can be supplied only coated in primer, order code **S01**, or unpainted (unfinished cast-iron surfaces in primer) using order code **S00**.

Overview (continued)

Paint finish in other standard RAL colors – Standard finish order code Y53, special finish order code Y54 (RAL number is required in plain text)

RAL No.	Color name	RAL No.	Color name
1002	Sand yellow	6011	Mignonette green
1013	Pearl white	6019	Pastel green
1015	Light ivory	6021	Pale green
1019	Gray beige	7000	Squirrel gray
2003	Pastel orange	7001	Silver gray
2004	Pure orange	7004	Signal gray
3000	Flame red	7011	Iron gray
3007	Black red	7016	Anthracite gray
5007	Brilliant blue	7022	Umber gray
5009	Azure blue	7031	Blue gray
5010	Gentian blue	7032	Pebble gray
5012	Light blue	7033	Cement gray
5015	Sky blue	7035	Light gray
5017	Traffic blue	9001	Cream
5018	Teal blue	9002	Gray white
5019	Capri blue	9005	Jet black

Special finish in special RAL colors – Order code Y51 (RAL number is required in plain text)

RAL No.	Color name	RAL No.	Color name	RAL No.	Color name	RAL No.	Color name
1003	Signal yellow	3020	Traffic red	6009	Fir green	7039	Quartz gray
1004	Golden yellow	4005	Blue lilac	6010	Grass green	7040	Window gray
1006	Maize yellow	5000	Violet blue	6016	Turquoise green	7042	Traffic gray A
1007	Daffodil yellow	5001	Green blue	6017	May green	7044	Silk gray
1012	Lemon yellow	5002	Ultramarine	6018	Yellow green	7045	Tele gray 1
1014	Dark ivory	5003	Sapphire blue	6024	Traffic green	7046	Tele gray 2
1018	Zinc yellow	5005	Signal blue	6026	Opal green	7047	Tele gray 4
1021	Rape yellow	5011	Steel blue	6027	Light green	8012	Red brown
1023	Traffic yellow	5013	Cobalt blue	6029	Mint green	8025	Pale brown
1028	Melon yellow	5014	Pigeon blue	6032	Signal green	8028	Terra brown
1032	Broom yellow	5020	Ocean blue	6034	Pastel turquoise	9003	Signal white
1033	Dahlia yellow	5021	Water blue	7005	Mouse gray	9004	Signal black
2008	Bright red orange	5022	Night blue	7009	Green gray	9006	White aluminium
2009	Traffic orange	5023	Distant blue	7012	Basalt gray	9007	Gray aluminium
2010	Signal orange	5024	Pastel blue	7015	Slate gray	9010	Pure white
3002	Carmine red	6000	Patina green	7023	Concrete gray	9011	Graphite black
3004	Purple red	6001	Emerald green	7036	Platinum gray	9016	Traffic white
3011	Brown red	6002	Leaf green	7037	Dusty gray	9017	Traffic black
3015	Light pink	6005	Moss green	7038	Agate gray	9018	Papyrus white

Coating structure and colors not specified in the catalog are available on request.

Introduction

General technical specifications

Packaging, safety notes, documentation,
test certificates and extension of liability for defects

1

Overview

Connected in star for dispatch – Order code **M01**

The terminal board of the motor is connected in star for dispatch.

Connected in delta for dispatch – Order code **M02**

The terminal board of the motor is connected in delta for dispatch.

Packing weights

For motors Frame size	Type 1LE1 ... - 1PC1 ... - 1MB1 ... -	For land transport				Types of construction IM B5, IM V1			
		Type of construction IM B3		Types of construction IM B5, IM V1		Types of construction IM B5, IM V1		Types of construction IM B5, IM V1	
		in box Tare	on wooden base board ISPM with hooded box Tare	on pallet Tare	in crate Tare	in box Tare	on wooden base board ISPM with hooded box Tare	on pallet Tare	in crate Tare
		kg	kg	kg	kg	kg	kg	kg	kg
80 M	0D.2	0.65	–	–	–	0.65	–	–	–
90 S	0E.0	0.65	–	–	–	0.65	–	–	–
100 L	1A.4	–	5.0	–	–	–	5.0	–	–
	1A.5	–	5.0	–	–	–	5.0	–	–
	1A.6	–	5.0	–	–	–	5.0	–	–
112 M	1B.2	–	5.0	–	–	–	5.0	–	–
	1B.6	–	5.0	–	–	–	5.0	–	–
132 S	1C.0	4.7	–	–	–	5.2	–	–	–
	1C.1	4.7	–	–	–	5.2	–	–	–
132 M	1C.2	4.7	–	–	–	5.2	–	–	–
	1C.3	4.7	–	–	–	5.2	–	–	–
	1C.6	8.7	–	–	–	9.2	–	–	–
160 M	1D.2	4.8	–	–	–	5.7	–	–	–
	1D.3	4.8	–	–	–	5.7	–	–	–
160 L	1D.4	4.8	–	–	–	5.7	–	–	–
	1D.6	8.8	–	–	–	9.7	–	–	–
180		–	–	8.0	–	–	–	10.0	–
200		–	–	11.0	–	–	–	13.0	–
225		–	–	14.0	–	–	–	17.0	–
250		–	–	22.0	–	–	–	25.0	–
280		–	–	24.0	–	–	–	27.0	–
315		–	–	28.0	–	–	–	32.0	–

Data apply for individual packaging. Wire-lattice pallets can be used, order code **B99**.

Safety notes

Printed German and English Operating Instructions (Compact) enclosed in each wire-lattice pallet – Order code **B01**

Documentation

Printed German and English Operating Instructions enclosed with the motor are available as an option – Order code **B04**

Test certificates

Acceptance test certificate 3.1 according to EN 10204 – Order code **B02**

An acceptance test certificate 3.1 in accordance with EN 10204 can be supplied for most motors.

Type test with heat run for horizontal motors, with acceptance – Order code **B83**

During the type test, a temperature-rise test is performed; no-load, short-circuit and load characteristics are recorded; the iron losses and friction losses are determined and the efficiency is calculated from the summed losses. This option is only applicable to motors with a horizontal type of construction. Acceptance testing is performed by an external representative (e.g. customer, classification society).

Extension of the liability for defects for SIMOTICS 1LE15 and 1MB15 low-voltage motors

For SIMOTICS 1LE15 and 1MB15 low-voltage motors, it is possible to obtain an extension of the liability for defects beyond the standard liability period.

The standard warranty period is quoted in the standard conditions of supply and delivery and is 12 months.

For the case of a new product order

With the following optional order suffixes listed in the table, extension of the liability for defects beyond the standard liability period is possible in conjunction with a new order for a product.

The markup on the product price is graded according to the duration of the extension.

Extension of the liability for defects for 1LE15 and 1MB15 motors

Add. identification code –Z with order code	Description
Q80	Extension of liability for defects, by 12 months to a total of 24 months (2 years) from delivery
Q82	Extension of liability for defects, by 24 months to a total of 36 months (3 years) from delivery

Overview

Applicable standards and specifications

The 1LE1 motors comply with the IEC60034 series of international product standards for rotating electrical machines and, in particular, those parts that are listed in the table below.

Title	IEC/EN	DIN EN
General specifications for rotating electrical machines	IEC 60034-1, IEC 60085	DIN EN 60034-1
Specification of the losses and efficiency of rotating electrical machines	IEC 60034-2-1	DIN EN 60034-2-1
General-purpose three-phase induction motors having standard dimensions and outputs	IEC 60072 Mounting dimensions and output series only (no assignment of frame size to output)	DIN EN 50347 Mounting dimensions acc. to IEC60072 and output assignment for Europe
Starting performance of rotating electrical machines	IEC 60034-12	DIN EN 60034-12
Terminal designations and direction of rotation for electrical machines	IEC 60034-8	DIN EN 60034-8
Designation for types of construction, mounting and terminal box position (IM code)	IEC 60034-7	DIN EN 60034-7
Terminal box cable entries	–	DIN 42925
Built-in thermal protection	IEC 60034-11	DIN EN 60034-11
Noise limits of rotating electrical machines	IEC 60034-9	DIN EN 60034-9
IEC standard voltages	IEC 60038	DIN IEC 60038
Methods of cooling of rotating electrical machines (IC code)	IEC 60034-6	DIN EN 60034-6
Vibration severity of rotating electrical machines	IEC 60034-14	DIN EN 60034-14
Vibration limits	–	DIN ISO 10816
Degrees of protection for rotating electrical machines (IP code)	IEC 60034-5	DIN EN 60034-5
International efficiency classes for rotating electrical machines (IE code)	IEC 60034-30	DIN EN 60034-30
In addition, the following applies to Ex motors:		
General provisions	IEC/EN 60079-0	DIN EN 60079-0
Type of protection "n" (non sparking)	IEC/EN 60079-15	DIN EN 60079-15
Areas containing flammable dust	IEC/EN 60079-31	DIN EN 60079-31

The following applies to explosion-proof motors:

Since the requirements of explosion-proof motors comply with the European standards EN 60079-0, EN 60079-15, EN 60079-31 and Directive 94/9/EC (ATEX 95), the certificates issued by authorized testing agencies (PTB, FTZU, etc.) are accepted by all member states of the EU. The remaining members of CENELEC, Switzerland in particular, also accept the certificates.

Tolerances for electrical data

According to DIN EN 60034, the following tolerances are permitted: Motors which comply with DIN EN 60034-1 must have a voltage tolerance of $\pm 5\%$ / frequency tolerance of $\pm 2\%$ (Design A). If utilized, the admissible limit temperature of the temperature class may be exceeded by 10 K.

Efficiency η at

$$P_{\text{rated}} \leq 150 \text{ kW: } -0.15 \cdot (1 - \eta)$$

$$P_{\text{rated}} > 150 \text{ kW: } -0.1 \cdot (1 - \eta)$$

With η being a decimal number.

$$\text{Power factor} \quad - \quad \frac{1 - \cos \varphi}{6}$$

- Minimum absolute value: 0.02
- Maximum absolute value: 0.07

Slip $\pm 20\%$ (for motors $< 1 \text{ kW}$ $\pm 30\%$ is admissible)

Locked-rotor current $+20\%$

Locked-rotor torque -15% to $+25\%$

Breakdown torque -10%

Moment of inertia $\pm 10\%$

Certifications

Product certifications are differentiated in terms of safety-related certificates and efficiency certificates.

Since 2011, it has been obligatory for low-voltage motors with outputs in the range of 0.75 to 375 kW (2, 4 and 6-pole) to be classified in accordance with the IEC 60034-30 efficiency standard and to be marked with the corresponding IE code (International Efficiency IE1, IE2 or IE3). The efficiency is determined using the summed losses method in accordance with IEC 60034-2-1.

Introduction

General technical specifications

Designs in accordance with standards and specifications

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Overview (continued)

Energy-saving motors for the European Economic Area in accordance with EU Directive 640/2009

Since June 2011, all low-voltage motors that fall within the scope of the EU directive must fulfill the specifications of international efficiency class IE2.

- Line voltage \leq 1000 V
- Line frequency 50 or 50/60 Hz
- Output range 0.75 to 375 kW
- Pole number 2, 4 and 6-pole
- Uninterrupted duty S1

In January 2015, the efficiency requirements for motors within the 7.5 to 375 kW range will be increased. IE2 motors are only admissible if they are speed-controlled via converters.

This will also apply from January 2017 for 0.75 to < 7.5 kW motors.

Energy-saving motors for the North-American economic area in accordance with EISA

In December 2010, the existing EPAct (Energy Policy Act) was superseded by EISA (Energy Independence Security Act). Accordingly, all motors with feet must now fulfill the increased requirements of NEMA MG1 Table 12-12 (NEMA Premium Efficient) and motors that were not previously subject to EPAct must demonstrate an efficiency in accordance with NEMA MG1 Table 12-11 (NEMA Energy Efficient). Efficiency is determined in accordance with IEEE 112B or the previous CSA 390-98 standard.

- Line voltage \leq 600 V
- Line frequency 60 Hz
- Output range 1 HP to 500 HP (> 200 HP, NEE)
- Number of poles: 2, 4, 6, 8-pole (8-pole: NEE) and geared motors
- Uninterrupted duty S1

Explosion-proof motors are also included.

Exclusions from the EISA efficiency requirements

- Brake motors
- Converter-fed motors
- Motors with design letter C and higher
- Motors with design letter A for outputs \leq 250 HP
- Motors whose IEC frame size does not correspond to the NEMA frame size

Note:

Option **D30**: el. acc. to NEMA

Option **D31**: UL version

These options can be ordered for motors that are not subject to the EISA specifications (e.g. for use outside North America).

Options D30 and D31 do not authorize operation within North America.



The logo NEMA Premium is a registered trademark. It is only permitted to be used by companies that voluntarily submit to the control of the NEMA organization.

Approval for the USA: UL safety and DoE listing

For the USA, motor series **1LE1 .21 (NEE)** and **1LE1 .23 (NPE)** are listed at the Department of Energy (DoE) and marked with the certification number **CC032A**.

Additional specifications to NEMA MG1: Nominal efficiency acc. to NEMA MG1 Table 12-11 or Table 12-12, design letter, code letter, CONT, CC No. CC 032A (Siemens) and service factor SF 1.15.

Motor series 1LE1 .21 and 1LE1 .23 remain certified up to a rated voltage of 600 V from Underwriters Laboratories Inc. and are marked accordingly ("Recognition Mark" = R/C).



UL approval does not apply to Zone 2, 21, 22 motors or marine motors.

Note:

As of December 19, 2015, only those motors with a minimum efficiency rating in accordance with MG1 Table 12-12 (NEMA Premium) will be permitted to be offered for sale. From this date, operation of all 1LE1.21 motors with a minimum efficiency of NEE will no longer be permitted in the USA.

Approval for Canada: CSA safety and CSA Energy Efficiency Verification

In April 2012, the EISA requirements were implemented in Canada; in this case all outputs are subject to certification without the restrictions applicable to the NEMA frame sizes. Motor series 1LE1.21 and 1LE1.23 are certified for Canada through the Canadian Standard Association (CSA), listed by the Office of Energy Efficiency (OEE9) and marked with both the CSA safety logo and the CSA efficiency label. These motors comply with the efficiency requirements of the new CSA standard C390-10. The efficiency is determined in the same manner as with IEC60034-2-1.



Externally or internally mounted components which are used are listed by CSA or are used by manufacturers in accordance with regulations. It may have to be decided whether the motor is suitable for the application. Approval does not apply to Zone 2, 21, 22 for 1MB1 motors or marine motors.

Not possible in combination with order code **N11** "Temperature class 180 (H) for rated output and maximum coolant temperature 60 °C".

Approval for Mexico:

The EISA specifications apply to Mexico, but with the exception that only NEMA Premium is permitted for motors subject to mandatory marking (Table 12-12).

Energy-saving motors for South Korea: KEMCO legislation

In 2012, the KEMCO requirements were changed as follows:

- Line voltage \leq 600 V
- Line frequency 60 Hz
- Output range 0.75 kW to 200 kW
- Number of poles: 2-, 4-, 6-pole
- Uninterrupted duty S1

1LE1.41 motors with order code **D33** are certified for these requirements. The rating plate is marked with the Korean standard KSC IEC 60034-2-1 and the KEMCO energy label.



Overview (continued)

Energy-saving motors for China: China Energy Label

In 2012, the directive for the China Energy Label was redefined. Applicability was extended to explosion-proof motors.

- Line voltage ≤ 1000 V
- Line frequency 50 Hz
- Output range 0.75 kW to 375 kW
- Number of poles: 2-, 4-, 6-pole
- Uninterrupted duty S1

The minimum requirements for the efficiency classes previously defined in the Chinese standard GB18613-2006 were classified in the new standard GB18613-2012 (Minimum Allowable Values of Energy Efficiency and Energy Efficiency Grades for Small and Medium Three-Phase Asynchronous Motors) in accordance with International Efficiency IE2-4.



IEC IE class	GB18613-2006	GB18613-2012
IE4		Grade 1
IE3	Grade 1 old	Grade 2
IE2	Grade 2 old	Grade 3
IE1	Grade 3 old	

The series 1LE1001 plus order code **D34** was previously certified in frame sizes 100 to 160 for China Energy Label 2012 and expansion of the certificate is planned.

CCC safety certification is also required for motors with lower outputs.

CCC - China Compulsory Certification – Order code **D01**

Motors with low outputs, "Small power motors", which are exported to China must be certified up to a rated output of:

- 2-pole: ≤ 2.2 kW
- 4-pole: ≤ 1.1 kW
- 6-pole: ≤ 0.75 kW
- 8-pole: ≤ 0.55 kW

Certification of the 1LE1 series will be undertaken in parallel with expansion of the CEL certificate.

Notes:

Chinese customs checks the need for certification of imported products by means of the commodity code.

The following do not need to be certified:

- Explosion-proof motors (NEPSI certificate required)
- Multi-voltage motors
- Multi-speed motors with outputs higher than those listed above
- Repair parts

Introduction

General technical specifications

Motor protection

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Overview

The order variants for motor protection are coded with letters in the 15th position of the Article No. and, if necessary, using order codes.

In the standard version, the motor is designed without motor protection.

15th position of Article No. letter **A**

A distinction is made between current-dependent and motor-temperature-dependent protection devices.

The following applies to all motors:

The motors can withstand 1.5 times the rated current at rated voltage and frequency for two minutes (DIN EN 60034).

Current-dependent protection devices

Fuses are only used to protect mains cables in the event of a short-circuit. They are not suitable for overload protection of the motor.

The motors are usually protected by thermally delayed overload protection devices (circuit breakers for motor protection or overload relays).

This protection is current-dependent and is particularly effective in the case of a locked rotor.

For standard duty with short start-up times and starting currents not too excessive and for low numbers of switching operations, motor protection switches provide adequate protection.

Motor protection switches are not suitable for heavy starting duty or large numbers of switching operations. Differences in the thermal time constants for the protection equipment and the motor result in unnecessary early tripping when the protection switch is set to rated current.

Motor-temperature-dependent protective devices and motor temperature detection with converter-fed operation

Depending on the specific requirements, various different components can be built into the motor winding for switching off the motor before it overheats and for monitoring the winding temperature and motor temperature.

Temperature detectors – Bimetal switches

Bimetal switches operate on the principle of mechanical deformation as a result of long-term heating. Bimetal strips bent as a result of such heating have a spring action that results in sudden reversal of the curvature (concave to convex or vice-versa).

When a limit temperature is reached, these temperature detectors (NC contacts) can deactivate an auxiliary circuit. The circuit can only be reclosed following a considerable fall in temperature. Bimetal switches are suitable protection devices in the case of slowly rising motor temperatures. When the motor current rises quickly (e.g. with a locked rotor), these switches are not suitable due to their large thermal time constants.

Temperature detectors for tripping

15th position of Article No. letter **Z** and order code **Q3A**

The temperature detectors have the following current-carrying capacity and switching capacity:

230 V, AC 2.5 A
24 V, DC: 1.6 A

PTC thermistors – Thermistor motor protection

PTC thermistors provide the most comprehensive protection against thermal overloading of the motor. A rise in the winding temperature over the permissible value can be accurately detected thanks to the low heat capacity of these PTC (Positive Temperature Coefficient) thermistors and their excellent heat contact with the winding. When the limit temperature is reached (rated tripping temperature), the PTC thermistors undergo a sudden change in resistance. This is evaluated by a tripping unit and can be used to open auxiliary circuits. PTC thermistors cannot themselves be subjected to high currents and voltages. This would result in destruction of the semiconductor. The switching hysteresis of the PTC thermistor and tripping unit is low, which supports fast restarting of the drive. Motor protection of this type is recommended for heavy duty starting, switching duty, extreme changes in load, high ambient temperatures or fluctuating supply systems.

Motor protection with PTC thermistor for tripping. In the terminal box, 2 auxiliary terminals are required.

15th position of Article No. letter **B**

Two temperature sensor circuits are used if a warning is required before the motor is shut down (tripped). The warning is normally set to 10 K below the tripping temperature.

Motor protection with PTC thermistor for alarm and tripping.

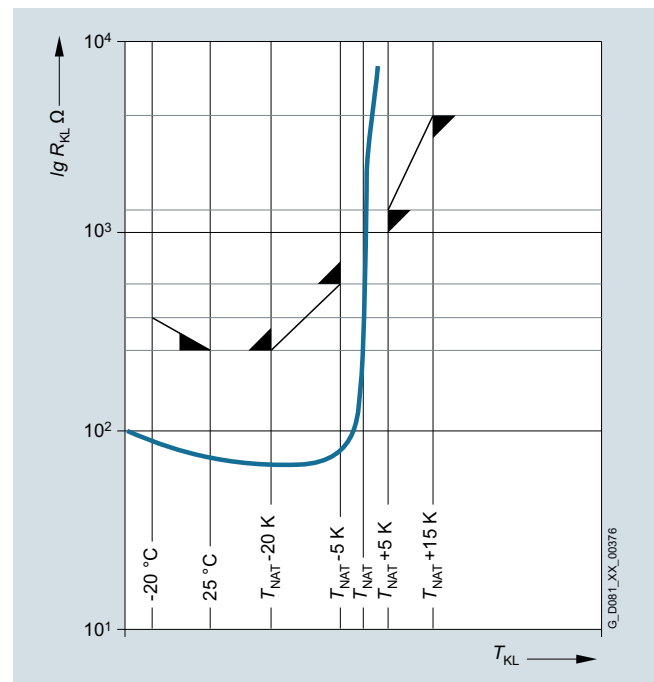
In the terminal box, 4 auxiliary terminals are required.

15th position of Article No. letter **C**

In order to achieve full thermal protection it is necessary to combine a thermally delayed overcurrent release and a PTC thermistor. For full motor protection implemented only with PTC thermistors, please inquire.

PTC sensor characteristic

The PTC thermistor is a temperature-dependent component. At the smallest changes in temperature in the region of the rated shutdown temperature, the resistance of the PTC increases steeply.



PTC sensor characteristic

G_D081_XX_00376

Overview (continued)

NTC thermistor

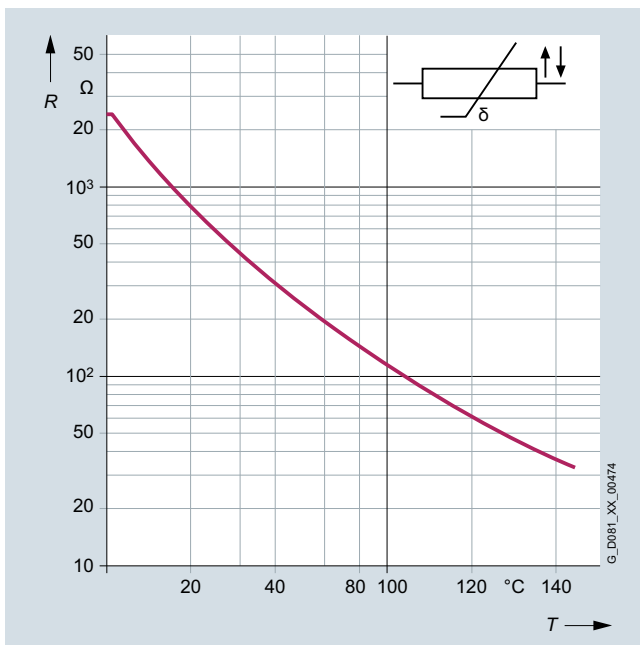
NTC thermistors have a negative temperature coefficient and conduct current at higher temperatures better than at lower temperatures.

NTC thermistors are typically used for temperature compensation of electronic circuits, or to limit inrush currents, to achieve the soft starting of electrical machines, for example.

Motor temperature monitoring and shutdown using NTC thermistors is unusual, but it is technically possible. The tripping temperature can be set when using suitable tripping devices of this type.

NTC thermistors for tripping 15th position of Article No. letter **Z** and order code **Q2A**

NTC thermistor characteristic



KTY 84-130 temperature sensor

This temperature sensor is a semiconductor which, in a similar manner to a PTC thermistor, changes its resistance as a function of its temperature at a defined rate. Within the measuring range, however, the KTY 84-130 characteristic rises almost linearly. The temperature sensor is embedded in the winding overhang of the motor in the same way as the components mentioned above. It is characterized by its outstanding precision, high reliability and temperature stability, as well as a fast response time. Thanks to these properties, which permit the almost analog monitoring of winding temperature, the KTY 84-130 is preferred for converter-fed operation.

Motor temperature detection with embedded temperature sensor KTY 84-130. Two auxiliary terminals are required in the terminal box.

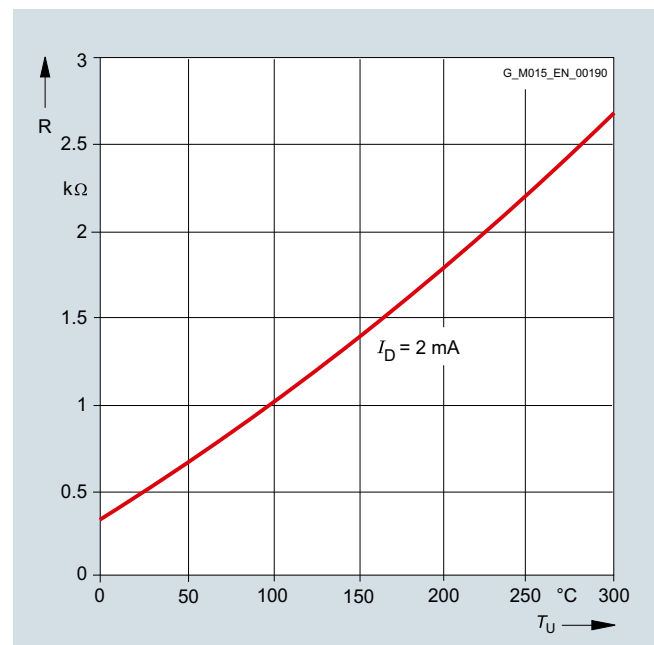
15th position of Article No. letter **F**

Temperatures for warning and shutdown can be set as required when using converters from Siemens that determine the motor temperature in accordance with the measuring principle described above. With these devices, the measured signal is evaluated directly in the converter.

For mains-fed operation, the temperature monitoring device 3RS10, which forms part of the protection equipment, can be ordered separately.

For further details, see Catalog IC 10, Article No.: E86060-K1010-A101-A4-7600.

KTY 84-130 temperature sensor characteristic



Introduction

General technical specifications

Motor protection

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Overview (continued)

Pt100 resistance thermometer

Resistance thermometers utilize the relationship between the temperature and electrical resistance of conductors to measure temperature in a similar manner to the electronic components described above.

Pure metals undergo larger changes in resistance than alloys and have relatively constant temperature coefficients.

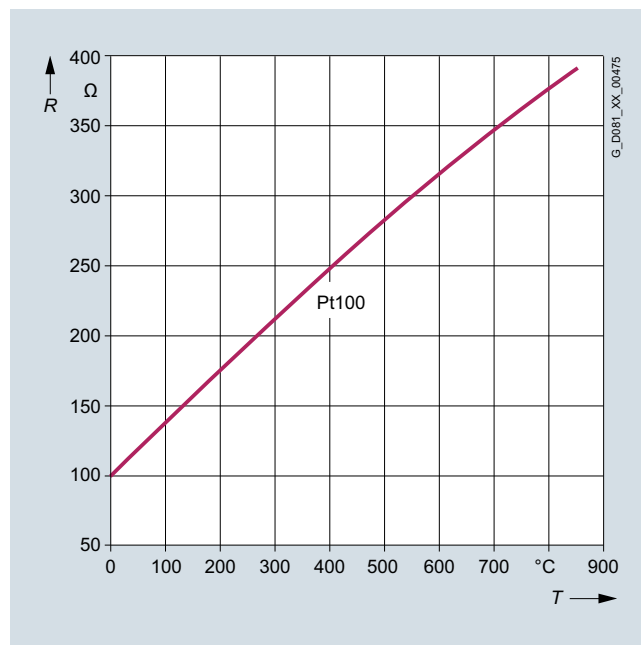
The temperature sensor in the Pt100 is a platinum wire winding, the resistance of which changes in relation to temperature according to a series of reproducible basic values. The changes in resistance are transferred as changes in current. The measuring resistors have a bifilar winding and are calibrated to $100\ \Omega \pm 0\ \Omega$ at $0\ ^\circ\text{C}$. The basic values for the resistances (i.e. the relationship between the resistance and temperature) as well as the admissible deviations are laid down in DIN EN 60751.

Order code **Q72**

Order code **Q78**

Order code **Q79**

Pt100 resistance thermometer characteristic



Overview

Voltages, currents and frequencies

Standard voltages

EN 60034-1 differentiates between Category A (combination of voltage deviation $\pm 5\%$ and frequency deviation $\pm 2\%$) and Category B (combination of voltage deviation $\pm 10\%$ and frequency deviation $+3/-5\%$) for voltage and frequency fluctuations. The motors can supply their rated torque in both Category A and Category B. In Category A, the temperature rise is approx. 10 K higher than during rated operation.

Standard	Category	Category
60034-1	A	B
Voltage deviation	$\pm 5\%$	$\pm 10\%$
Frequency deviation	$\pm 2\%$	$+3\%/-5\%$
Rating plate data stamped with rated voltage a (e.g. 230 V)	a $\pm 5\%$ (e.g. 230 V $\pm 5\%$)	a $\pm 10\%$ (e.g. 230 $\pm 10\%$)
Rating plate data stamped with rated voltage ranges b to c (e.g. 220 to 240 V)	b -5% to c $+5\%$ (e.g. 220 -5% to 240 $+5\%$)	b -10% to c $+10\%$ (e.g. 220 -10% to 240 $+10\%$)

For further details, see EN 60034-1.

In Category B, the standard does not recommend extended operation, so it is not permissible for explosion-proof motors. See "Rating plate and extra rating plates" for details of the rating plate inscriptions and corresponding examples. The selection and ordering data state the rated current at 400 V.

The DIN IEC 60038 standard specifies a tolerance of $\pm 10\%$ for line voltages of 230 V, 400 V and 690 V.

Line voltages	Voltage code
1LE1 motors	
230 V Δ /400 VY, 50 Hz	22
400 V Δ /690 VY, 50 Hz	34
500 VY, 50 Hz	27
500 V Δ , 50 Hz	40

Non-standard voltages and/or frequencies

The tolerance laid down by DIN EN 60034-1 applies to all non-standard voltages.

Order codes have been allocated for a number of non-standard voltages at 50 or 60 Hz. They are ordered by specifying the code digit **9** for voltage in the 12th position of the Article No. as well as the code digit **0** in the 13th position of the Article No. and the appropriate order code.

M1Y Non-standard rated voltage between 200 V and 690 V (voltages outside this range are available on request), frequency, circuit, for 60 Hz additionally required rated output in kW.

Motor series	Frame size	Rated voltages that can be supplied for M1Y	
		Lowest/highest voltage for Delta	Star
1LE1, 1MB1	100 ... 160	200/690 V	250/690 V

Order codes for other rated voltages are listed under "Order No. supplements" in the "Selection and ordering data" as well as "Special versions" under "Voltages".

Line voltages according to NEMA

Assignment of rated voltage of the motor to that of the mains

Line voltage	Motor voltage
208 V	200 V
240 V	230 V
480 V	460 V
600 V	575 V

Outputs

The outputs or rated outputs are listed in the selection tables for both 50 Hz and 60 Hz. For 60 Hz, the rated output values must, in some cases, be increased, e.g. for pole-changing motors.

Assignment of standard outputs kW-HP and vice versa, in accordance with IEC

$$\text{kW} \cdot 1.341 = \text{HP}$$

$$\text{HP} \cdot 0.746 = \text{kW}$$

P_{rated} kW	P_{rated} HP	P_{rated} kW	P_{rated} HP	P_{rated} kW	P_{rated} HP	P_{rated} kW	P_{rated} HP	P_{rated} kW	P_{rated} HP	P_{rated} kW	P_{rated} HP
0.06	0.08	0.37	0.5	2.2	3	11	15	37	50	110	150
0.09	0.12	0.55	0.75	3	4	15	20	45	60	132	200
0.12	0.16	0.75	1	4	5	18.5	25	55	75	160	250
0.18	0.25	1.1	1.5	5.5	7.5	22	30	75	100	200	300
0.25	0.33	1.5	2	7.5	10	30	40	90	125		

Introduction

General technical specifications

Rating plate and extra rating plates

1

Overview

DIN EN 60034-1 lays down that the approximate total weight for all motors is indicated on the rating plate.

An extra rating plate can be supplied loose for all motors, order code **M10**.

A scratch, heat, cold and acid resistant rating plate made of stainless steel is available, order code **M11**.

Supplementary data (maximum of 20 characters) can be indicated on the rating plate or extra rating plate and on the packaging label, order code **Y84**.

An adhesive label can also be supplied loose order code **Y85**

An extra rating plate for identification codes is also possible, additional text: 9 lines of 40 characters each order code **Y82**.

An extra rating plate or a rating plate with different rating plate data can also be ordered, order code **Y80**.

An "extra rating plate for voltage tolerance" can also be ordered. Can be ordered for 230 VΔ/400 VY or 400 VΔ/690 VY (voltage code "22" or "34"). Not possible for pole-changing motors, naturally cooled 1PC1 motors, 8-pole motors and in combination with order code D34. Order code **B07**

In the standard version, the rating plate is available in international format or in the German/English language. The language for the rating plate can be ordered by specifying in plain text. An overview of the languages that can be ordered is provided by the table below.

Overview of the languages on the rating plate

Motor type	Frame size	Rating plate	
		German (de)	English (en)
1LE1	80 ... 160	□	○
1LE15/6	180 ... 315	□	○
1MB1	100 ... 160	□	○
1PC1	100 ... 315	□	○

- Standard version
- Without additional charge

Other languages on request

Examples of rating plates

SIEMENS Made in Germany TH.Cl.2 155(F) CE

3-Mot. 1LE10010EA422AA4 F no UD 1203/1420830 001 1

IEC/EN 60034 FS 90L IM B3 IP 55 WT 16 kg

V	Hz	kW	A	PF	RPM	EFF-CL	ETA %
230 Δ	50	2.2	7.8	0.85	2890	IE2	83.2
400 Y	50	2.2	4.50	0.85	2890	IE2	83.2
460 Y	60	2.55	4.35	0.86	3485	IE2	85.5

IE2 H

SIEMENS Made in Czech Republic IEC H CE

3-Mot. 1LE10030EA422AA4-Z UD 1203/1420830 001

IEC/EN 60034 90L IM B3 IP 55

20 kg Th.Cl.2 155(F) -20°C<=TAMB<=40°C

Bearing DE 6205-2ZC3 NE 6004-2ZC3

V	Hz	A	kW	cos φ	NOM.EFF	1/min	IE-CL
230 Δ	50	7.3	2.2	0.88	85.9	2910	IE3
400 Y	50	4.20	2.2	0.88	85.9	2910	IE3
460 Y	60	4.20	2.55	0.88	86.5	3510	IE3
460 Y	60	3.65	2.2	0.87	86.5	3530	IE3

SIEMENS Made in Czech Republic NEMA IEC H CE

3-Mot. 1LE10231DA222AA4 UD 1203/1420830 001

IEC/EN 60034 160M IM B3 IP 55

75 kg Th.Cl.2 155(F) -20°C<=TAMB<=40°C

Bearing DE 6209-2ZC3 NE 6209-2ZC3

60Hz: SF 1.15 CONT NEMA MG1 12-12 TEFC Design A 15.0 HP

V	Hz	A	kW	PF	NOM.EFF	rpm	IE-CL	CL
230 Δ	50	35.0	11.0	0.87	91.2	2955	IE3	K
400 Y	50	20.0	11.0	0.87	91.2	2955	IE3	K
460 Y	60	19.5	12.6	0.89	91.0	3555	IE3	K
460 Y	60	17.2	11.0	0.88	91.0	3560	MG1	L

SIEMENS Made in Germany IEC H CE

3-Mot. 1LE10011-1DA234AA4 E 1202/5331139 01001

IEC/EN 60034 L-160M IM B3 IP 55

67kg Th.Cl. 155(F) -20°C <=TAMB<=40°C

Bearing DE 6209-2ZC3 NE 6209-2ZC3

V	Hz	A	kW	COS	NOM.EFF	1/min	IE-CL
400 D	50	20.5	11.0	0.87	89.4%	2955	IE2
690 Y	50	11.8	11.0	0.87	89.4%	2955	IE2
450 D	60	19.9	12.6	0.88	90.2%	3555	IE2
460 D	60	17.8	11.0	0.86	90.2%	3560	IE2

- 1 Type of machine: AC low-voltage motor
- 2 Article No.
- 3 Factory number (Ident.-No., serial number)
- 4 Type of construction
- 5 Degree of protection
- 6 Rated voltage [V] and winding connections
- 7 Frequency [Hz]
- 8 Rated current [A]
- 9 Rated output [kW]
- 10 Power factor (cos φ)
- 11 Efficiency
- 12 Rated torque [rpm]
- 13 IE Efficiency Class
- 14 Standards and specifications
- 15 Weight of machine [kg]
- 16 Temperature class
- 17 Frame size
- 18 Supplementary data (optional)
- 19 Operating temperature range (only when deviating from the standard)
- 20 Site altitude (only if higher than 1000 m)
- 21 Customer information (optional)
- 22 Date of manufacturing YYMM
- 23 Half-key balancing
- 24 Code letter "CL"

Overview

Efficiency and power factor

The efficiency η for 4/4, 3/4 and 1/2 load and power factor $\cos \varphi$ for each rated output are listed in the selection tables in the individual sections of this catalog.

Rated speed and direction of rotation

The rated speeds are applicable for the rated data. The synchronous speed changes proportionally with the line frequency. The motors are suitable for clockwise and counter-clockwise rotation.

If U1, V1, W1 are connected to L1, L2, L3, clockwise rotation results as viewed onto the drive-end shaft extension. Counter-clockwise rotation is achieved by swapping two phases (see also "Heating and ventilation" on Page 1/26).

Rated torque

The rated torque in Nm delivered at the motor shaft is

$$T = \frac{9.55 \cdot P \cdot 1000}{n}$$

P Rated output in kW
 n Speed in rpm

Note:

If the voltage deviates from its rated value within the admissible limits, the locked-rotor torque, the pull-up torque and the breakdown torque vary with the approximate square of the value, but the locked-rotor current varies approximately linearly.

In the case of squirrel-cage motors, the locked-rotor torque and breakdown torque are listed in the selection tables as multiples of the rated torque.

The normal practice is to start squirrel-cage motors directly on line. The torque class indicates that with direct-on-line starting, even if there is an undervoltage of -5 %, it is possible to start up the motor against a load torque of

- 160 % for CL 16
- 130 % for CL 13
- 100 % for CL 10
- 70 % for CL 7
- 50 % for CL 5

of the rated torque.

Introduction

General technical specifications

Windings and insulation

1

Overview

DURIGNIT IR 2000 insulation

The DURIGNIT IR 2000 insulation system comprises high-grade enameled wires and insulating sheet materials combined with temperature-resistant impregnating resin.

The system ensures a high level of mechanical and electrical strength as well as good serviceability and a long motor life.

The insulation system protects the winding to a large degree against aggressive gases, vapors, dust, oil and increased air humidity. It can withstand the usual vibration stressing.

The insulation is suitable up to an absolute air humidity of 30 g water per m³ of air. Moisture condensation should be prevented from forming on the winding. Options **N20** and **N21** are available for higher values – see below.

Please inquire about extreme applications.

Restarting against residual field and opposite phase

All motors can be restarted against 100 % residual field after a line voltage failure.

Winding and insulation design with regard to temperature class and air humidity

All motors are designed for temperature class 155 (F).

At rated output with mains-fed operation, the motors can be used in temperature class 130 (B).

Temperature class 155 (F), utilized according to 155 (F), with service factor (SF)

According to the selection table, at rated output and rated voltage, all 1LE1/1PC1 motors in mains-fed operation have a service factor of 1.15, with the exception of IE1 motors, which have a service factor of 1.1.

Order code **N01**

Temperature class 155 (F), utilized according to 155 (F), for increased output

When utilized according to temperature class 155 (F), the rated output specified in the selection and ordering data can be increased by 15 %. Exception for IE1 motors – Can be increased by 10 %.

Order code **N02**

Temperature class 155 (F), utilized according to 155 (F), with increased coolant temperature

With outputs as defined in the catalog and mains-fed operation, coolant temperature is permitted to rise to 55 °C.

Order code **N03**

The service factor (SF) is not indicated on the rating plate for order codes **N02** and **N03**.

For converter-fed operation at the output specified in the catalog, the motors are utilized according to temperature class 155 (F). Order codes **N01**, **N02** and **N03** are not possible.

Temperature class 155 (F), utilized according to 155 (F), other requirements

The motors can be ordered according to temperature class 155 (F) for utilization according to temperature class 155 (F) with other customized requirements if they are specified in plain text in the order.

Order code **Y52**

Temperature class 155 (F), utilized according to 130 (B), other requirements

The motors can be ordered according to temperature class 155 (F) for utilization according to temperature class 130 (B) with other customized requirements if they are specified in plain text in the order.

Order code **Y50**

Temperature class 180 (H), utilized according to 155 (F), other requirements

The motors can be ordered according to temperature class 180 (H) for utilization according to temperature class 155 (F) with other customized requirements if they are specified in plain text in the order.

Order code **Y75**

Temperature class 180 (H), utilized acc. to 180 (H) for rated output and maximum coolant temperature CT 60 °C

With motor series 1LE1, and 1PC1, utilization according to temperature class 180 (H) is permitted at rated output and a maximum coolant temperature of 60 °C. This does not apply to motor series 1LE1 and 1PC1 with UL approval (order code **D31**) and CSA authorization (order code **D40**). The specified service life of grease is applicable to a coolant temperature of 40 °C. For an increase in coolant temperature of 10 K, the service life of grease or relubrication interval is halved.

Order code **N11** (not possible for 1LE15 and 1LE16 motors with increased output)

Temperature class 155 (F), utilized according to 130 (B), coolant temperature 45 °C, derating approx. 4 %

Motor series 1LE1 and 1MB1 can be ordered according to temperature class 155 (F) for utilization according to temperature class 130 (B) and a maximum coolant temperature of 45 °C with derating of 4 %.

Order code **N05**

Temperature class 155 (F), utilized according to 130 (B), coolant temperature 50 °C, derating approx. 8 %

Motor series 1LE1 and 1MB1 can be ordered according to temperature class 155 (F) for utilization according to temperature class 130 (B) and a maximum coolant temperature of 50 °C with derating of 8 %.

Order code **N06**

Temperature class 155 (F), utilized according to 130 (B), coolant temperature 55 °C, derating approx. 13 %

Motor series 1LE1 and 1MB1 can be ordered according to temperature class 155 (F) for utilization according to temperature class 130 (B) and a maximum coolant temperature of 55 °C with derating of 13 %.

Order code **N07**

Temperature class 155 (F), utilized according to 130 (B), coolant temperature 60 °C, derating approx. 18 %

Motor series 1LE1 and 1MB1 can be ordered according to temperature class 155 (F) for utilization according to temperature class 130 (B) and a maximum coolant temperature of 60 °C with derating of 18 %.

Order code **N08**

Overview (continued)

Increased air humidity/temperature with 30 to 60 g water per m³ of air

With motor series, 1LE1, 1MB1 and 1PC1, motors are available in a version designed for increased air humidity in the range of 30 to 60 g water per m³ of air, depending on the temperature, as shown in the table below. This version has condensation drainage holes (sealed).

Order code **N20** (comprises order codes H03 and M11)
Please inquire (QC) before combining order code **N20** with mountings (e.g. rotary pulse encoder, brakes)!

Increased air humidity/temperature with over 60 to 100 g water per m³ of air

With motor series, 1LE1, 1MB1 and 1PC1, motors are available in a version designed for increased air humidity of over 60 to 100 g water per m³ of air, depending on the temperature, as shown in the table below. This version has condensation drainage holes.

Order code **N21** (comprises order codes H03 and M11)
Please inquire (QC) before combining order code **N21** with mountings (e.g. rotary pulse encoder, brakes)!

Absolute/relative conversion of air humidity

Relative humidity	Temperature							
	up to 20 °C	up to 30 °C	up to 40 °C	up to 50 °C	up to 60 °C	up to 70 °C	up to 80 °C	up to 90 °C
10 %	2	3	5	8	13	20	29	42
15 %	3	5	8	12	19	30	44	63
20 %	3	6	10	17	26	39	58	84
25 %	4	8	13	21	32	49	73	105
30 %	5	9	15	25	39	59	87	126
35 %	6	11	18	29	45	69	102	146
40 %	7	12	20	33	52	79	116	167
45 %	8	14	23	37	58	89	131	188
50 %	9	15	26	41	65	98	145	209
55 %	10	17	28	46	71	108	160	230
60 %	10	19	31	50	78	118	174	251
65 %	11	20	33	54	84	128	189	272
70 %	12	21	36	58	91	138	203	293
75 %	13	23	38	62	97	148	218	314
80 %	14	24	41	66	104	157	233	335
85 %	15	26	43	70	110	167	247	356
90 %	16	27	46	74	117	177	262	377
95 %	16	29	49	79	123	187	276	398
100 %	17	30	51	83	130	197	291	419

The values in the table with a blue background are covered by the standard version (up to 30 g water per m³ of air).

The values in the table with a light gray background are covered by order code **N20** (30 to 60 g of water per m³ of air).

The values in the table with a dark gray background are covered by order code **N21** (60 to 100 g of water per m³ of air).

Please contact your local Siemens office regarding requirements exceeding 100 g water per m³ of air.

Introduction

General technical specifications

Heating and ventilation

1

Overview

Anti-condensation heaters

Supply voltage 230 V (1~)
Order code **Q02**

Supply voltage 115 V (1~)
Order code **Q03**

For motors whose windings are at risk of condensation due to the climatic conditions, e.g. inactive motors in humid atmospheres or motors that are subjected to widely fluctuating temperatures, anti-condensation heaters must be used.

An additional M16 x 1.5 cable entry is provided for the connecting cable in the terminal box.

Anti-condensation heaters must not be switched on during operation.

Frame size	Heat output of the anti-condensation heating	
	Supply voltage at	
	230 V	115 V (110 V)
	Order code Q02	Order code Q03
	W	W
1LE1/1PC1 motors		
71 ... 80	12.5	12.5
90 ... 112	25	25
132 ... 200	50	50
225 ... 250	92	92
280 ... 315	109	109
1MB1 motors		
80 ... 112	7	7
132 ... 160	12	12
180 ... 200	57	57
225 ... 250	92	92
280 ... 315	109	109

Instead of an anti-condensation heater, another possibility is to connect a voltage that is approximately 4 to 10 % of the rated motor voltage to stator terminals U1 and V1; 20 to 30% of rated motor current is sufficient to heat the motor.

Fans/Separately driven fans

1LE1 and 1MB1 motors of frame size 100 to 315 have radial-flow fans in the standard version (with the exception of 1LE1, 1MB1 with option **F90** – version "Forced-air cooled motors without external fan and fan cover") that cool regardless of the direction of rotation of the motor (cooling method IC 411 acc. to DIN EN 60034-6). The air flow is forced from the non-drive-end (NDE) to the drive end (DE). For details of separately driven fans for frame size 100 to 315, see also "Separately driven fans" on Page 1/65.

Supply voltage of separately driven fan for 1LE1 motors:
The supply voltage tolerance of the separately driven fan is $\pm 5\%$. For voltage ranges, see Page 1/65.

In confined spaces, it must be ensured that the minimum spacing is maintained between the fan cover and the wall. This also applies to adjacent parts, such as large handwheels and flywheels on the second shaft extension.

Clearance from wall/fan grilles

Frame size	mm
71	15
80, 90, 100	20
112	25
132	30
160	40
180, 200, 225	45
250	100
280, 315	110

For design of the fan/separately driven fan and the fan cover, see the table below.

Motor series	Frame size	Fan material	Fan cover material
1LE10	80 ... 160	Plastic	Plastic ¹⁾
1LE15	71 ... 90	Plastic	Metal
	100 ... 315	Plastic	Plastic ¹⁾
1LE16	100 ... 315	Plastic	Metal
1MB1.3	80, 90	Metal	Metal
1MB1.3	100 ... 315	Plastic	Metal
1MB1.1, 1MB1.2	80 ... 315	Metal	Metal

Metal external fan impeller

The standard fan impeller made of plastic can be replaced with a fan impeller made of metal. This version is available for motor series 1LE1 (with the exception of 1LE1 with option **F90** – version "Forced-air cooled motors without external fan and fan cover"). A metal external fan is already included for the low-noise version. Up to frame size 160, the metal external fan impeller is manufactured from aluminum.

Order code **F76**

Fan cover for textile industry

For 1LE1 motors (with the exception of 1LE1 with option **F90** – version "Forced-air cooled motors without external fan and fan cover") the standard design of the fan cover cannot be used in the textile industry.

For the motor series 1LE1 (with the exception of 1LE1 with option **F90** – version "Forced-air cooled motors without external fan and fan cover") a special design of the fan cover is available for the textile industry. This has a protective cover and is made of non-corrosive sheet steel.

The motor length increases when the fan cover for the textile industry is mounted, see Page 1/82 Figure 12

Order code **F75**

Sheet metal fan cover

In place of the plastic fan cover, a sheet metal fan cover can be ordered for motor series 1LE1 (with the exception of 1LE1 with option **F90** – version "Forced-air cooled motors without external fan and fan cover").

Order code **F74**

The sheet metal fan cover is supplied as standard with 1LE16 motors (Performance Line).

¹⁾ For type of construction codes **A, D, F, H, J, K, L, N, T, U, V** the sheet metal fan cover is used in combination with option **H03** (condensation drainage holes). Mounted separately driven fans or brakes are only available in sheet metal design.

Overview (continued)**Necessary minimum cooling air flow for forced-air-cooled motors in standard duty**

The cooling air flow specified in the selection table applies to continuous duty according to DIN EN 60034-1 at a coolant temperature (CT) or ambient temperature of 40 °C respectively and a site altitude (SA) up to 1000 m above sea level.

In the 1LE1 motor version without external fan and fan cover, order code **F90**, the motor is located in the air flow of the driven

fan that must drive the minimum cooling air flow over the motor housing. The minimum air flow must pass closely over the housing (comparable to self-ventilation of the motor). Otherwise higher air flows are required to comply with admissible motor heating levels.

Frame size	Required cooling air flow for number of poles									
	2		4				6		8	
80	IE2									
	50 Hz m ³ /min	60 Hz m ³ /min	50 Hz m ³ /min	60 Hz m ³ /min		50 Hz m ³ /min	60 Hz m ³ /min	50 Hz m ³ /min	60 Hz m ³ /min	
	1.36	1.66	0.66	0.8		0.42	0.51	0.3	0.38	
90	2.66		3.41	1.34	1.7		0.87	1.06	0.65	0.8
	IE2/IE1		IE2	IE1		IE2/IE1		IE2/IE1		
	50 Hz m ³ /min	60 Hz m ³ /min	50 Hz m ³ /min	60 Hz m ³ /min	50 Hz m ³ /min	60 Hz m ³ /min	50 Hz m ³ /min	60 Hz m ³ /min	50 Hz m ³ /min	60 Hz m ³ /min
100	3.8	4.4	2.1	2.6	2.3	2.8	1.5	1.8	1.2	1.3
112	5.0/5.4 ¹⁾	5.7/6.1 ¹⁾	2.9	3.5	2.9	3.5	1.9	2.3	1.4	1.6
132	6.3	7.3	4.6	5.7	4.6	5.7	3.1	3.8	2.4	2.9
160	10.9	13.3	6.7	8.1	7.6	9.1	5	6.1	3.8	4.5
180	12.4	14.8	7.8	9.4	7.8	9.4	5.2	6.2	4.8	5.8
200	14.3	17.2	10.4	12.5	10.4	12.5	7.9	9.5	6	7.2
225	IE2									
	50 Hz m ³ /min	60 Hz m ³ /min	50 Hz m ³ /min	60 Hz m ³ /min		50 Hz m ³ /min	60 Hz m ³ /min	50 Hz m ³ /min	60 Hz m ³ /min	
	22	26	19	23		15	17.5	11.5	13.5	
250	28	33	21	24.5		19	22.5	14.5	16.3	
280	32	37.5	32.5	39		24	29.5	18	22	
315	48	58	49	58		34	40	25	30.5	
180	IE3									
	50 Hz m ³ /min	60 Hz m ³ /min	50 Hz m ³ /min	60 Hz m ³ /min		50 Hz m ³ /min	60 Hz m ³ /min	50 Hz m ³ /min	60 Hz m ³ /min	
	10.3	12.3	7	8.3		5.2	6.2	–	–	
200	10.4	12.5	7.6	9.1		6.5	7.8	–	–	
225	14	17.5	12	15		15.5	18	–	–	
250	18.5	22	12	15		16	20	–	–	
280	26	30.5	27.5	32.5		22.5	26.5	–	–	
315	40	48.5	32.5	39		31	37	–	–	

1) Value: IE2/IE1

Introduction













General technical specifications

Types of construction


1

Overview

Standard types of construction and special types of construction











Type of construction acc. to DIN EN 60034-7		Frame size	Letter 14th position of the Article No.	Add. identification code -Z with order code
Without flange				
IM B3		80 to 315	A	-
IM B6/IM 1051		80 to 315	T	-
IM B7/IM 1061		80 to 315	U	-
IM B8/IM 1071		80 to 315	V	-
IM V5/IM1011 without protective cover		80 to 315	C ¹⁾	-
IM V6/IM 1031		80 to 315	D	-
IM V5/IM 1011 with protective cover		80 to 315	C	+ H00 ²⁾
With flange				
IM B5/IM 3001		80 to 315	F	-
IM V1/IM 3011 without protective cover		80 to 315	G ²⁾	-
IM V1/IM 3011 with protective cover		80 to 315	G	+ H00 ²⁾
IM V3/IM 3031		80 to 315	H	-
IM B35/IM 2001		80 to 315	J	-

In the DIN EN 50347 standard, flanges FF with through holes and flanges FT with tapped holes are specified.

¹⁾  The following applies for explosion-proof motors:
In the case of the types of construction with shaft extension down, the version "with protective cover" is required. For types of construction with shaft extension pointing upwards, a suitable cover must be implemented to prevent small parts from falling into the fan cover (see the standard IEC/EN 60079-0). The cover must not block the cooling air flow.

²⁾ Second **L05** shaft extension is not possible.

Overview (continued)


Type of construction acc. to DIN EN 60034-7		Frame size	Letter 14th position of the Article No.	Add. identification code -Z with order code
With standard flange				
IM B14/IM 3601		80 to 315	K	–
IM V19/IM 3631		80 to 315	L	–
IM V18/IM 3611 without protective cover		80 to 315	M ¹⁾	–
IM V 18/IM 3611 with protective cover		80 to 315	M	+ H00 ²⁾
IM B34/IM 2101		80 to 315	N	–
With special flange				
IM B14/IM 3601		80 to 315	K	+ P01
IM B34/IM 2101		80 to 315	N	+ P01
IM V18/IM 3611 without protective cover		80 to 315	M ¹⁾	+ P01
IM V 18/IM 3611 with protective cover		80 to 315	M	+ P01 + H00 ²⁾
IM V19/IM 3631		80 to 315	L	+ P01

In DIN EN 50347, standard flanges are assigned to the frame sizes as FT with tapped holes. For flange dimensions, please refer to the relevant section of the catalog.

The dimensions of the following types of construction are identical: IM B3, IM B6, IM B7, IM B8, IM V5 and IM V6
IM B5, IM V1 and IM V3
IM B14, IM V18 and IM V19

Motors in the standard output range can be ordered in basic types of construction IM B3, IM B5 or IM B14 and operated in mounting positions IM B6, IM B7, IM B8, IM V5, IM V6, IM V1, IM V3 (up to frame size 160 L) or IM V18 and IM V19. Eyebolts are available for transport and installation in a horizontal position. In conjunction with the eyebolts, for the purpose of stabilizing the position when the motor is arranged vertically, additional lifting straps (DIN EN 1492-1) and/or clamping bands (DIN EN 12195-2) must be used.

If mounting position IM V1 is ordered, eyebolts are supplied for vertical mounting.

¹⁾  The following applies for explosion-proof motors:
In the case of the types of construction with shaft extension down, the version "with protective cover" is required. For types of construction with shaft extension pointing upwards, a suitable cover must be implemented to prevent small parts from falling into the fan cover (see the standard IEC/EN 60079-0). The cover must not block the cooling air flow.

The motors are designated in accordance with the types of construction on the rating plate.

With motors that have a vertical shaft extension, the end user must prevent an ingress of fluid along the shaft. In the case of all types of construction with shaft end down, the version "with protective cover" is urgently recommended, see the section "Degrees of protection" on Page 1/39.

Frame design

Motors with feet have, in some cases, two fixing holes at the non-drive end (NDE), see dimension tables on Pages 2/70 to 2/94.

A sheet metal fan cover is included as standard for horizontal types of construction and types of construction with shaft pointing upwards (14th position of article number letter **A, T, U, V, D, F, H, J, K, L, N**) on motors up to FS160 in combination with condensation drainage holes, order code **H03**.

²⁾ Second **L05** shaft extension is not possible.

Overview (continued)

Motor connection

Line feeder cables

The line feeder cables must be dimensioned acc. to DIN VDE 0298. The number of required feeder cables, if necessary in parallel, is defined by:

- The max. cable cross-section which can be connected
- The cable type
- Cable routing
- Ambient temperature and the corresponding admissible current in accordance with DIN VDE 0298

For motors with auxiliary terminals (e.g. 15th position of Article No. is letter **B**), an M16 × 1.5 cable entry with sealing plug is also provided.

For further details, see the data sheet function in the DT Configurator.

The terminal box is located on the housing and bolted in place. The terminal box can be turned 4 × 90° degrees on the terminal base of the machine's housing in the case of a terminal board with 6 terminal studs (standard design).

For further information, see tables below and the operating instructions.

Parallel feeders

Some motors must be fitted with parallel feeders due to the maximum permissible current per terminal. These motors are indicated in the selection and ordering data in the respective chapter.

Cable entry on terminal box

With a view onto the the drive end of the motor with the shaft in the horizontal position and the terminal box on the top, the cable entry is always on the right-hand side of the motor, as shown in the figure below. Standard position 0°, (smoke-extraction motors, order code **R13**). The terminal box can be rotated on the base of the motor housing such that the cable entry is located in the positions given below:

- Towards the drive end (DE) (rotation of terminal box by 90°, entry from DE) not possible for B5 construction types. With B14 construction types, the customer must ensure that sufficient space is available for cable outlet. Order code **R10**
- Towards the fan end (NDE) (rotation of terminal box by 90°, entry from NDE) Order code **R11**
- Opposite the standard position 0° (rotation of terminal box by 180°, entry opposite the standard position 0°) Order code **R12**

The dimensions of the terminal box are listed in the section "Dimensions" on Pages 2/70 to 2/94 in accordance with the frame size and the "Dimensional drawings". If the position of the terminal box (RHS, LHS or top) is changed, the position of the cable entry must be checked and, if necessary, ordered with the corresponding order codes (**R10**, **R11** and **R12**).

Location of the cable entries with corresponding order codes

Motor	Frame size	Terminal box	Terminal box position				Retrofitting possible	Rotation of the terminal box and cable entry	Continuously by 360°	-90°	+90°	180°	Retrofitting possible
			Top	Right-hand side	Left-hand side	Article No. with -Z and order code							
Type	Type	16th position of Article No. and with specification of order code, Article No. with -Z	4	5	6	4							
1LE1, 1MB1, 1PC1	80 ... 90	1TB1 D00, 1TB1 D10	✓	✓	✓	H01	✓	✓	✓	✓	✓	✓	Yes
		1TB1 E00, 1TB1 E10	✓	✓	✓	- ¹⁾	-	✓	✓	✓	✓	Yes	
		100, 112	1TB1 F00	✓	✓	✓	- ¹⁾	-	✓	✓	✓	✓	Yes
		132	1TB1 H00	✓	✓	✓	- ¹⁾	-	✓	✓	✓	✓	Yes
1LE15	71	1TB1 J10	✓	✓	✓	- ¹⁾	-	✓	✓	✓	✓	Yes	
		80, 90	TB1 D01	✓	✓	✓	-	-	✓	✓	✓	✓	Yes
1LE15, 1LE16, 1MB15, 1MB16	100 ... 315	1TB1 F01 ... 1TB1 R01	✓	✓	✓	-	-	✓	✓	✓	✓	Yes	



Terminal box in standard position, detailed view

Ordering example:

Terminal box on RHS (16th position of Article No. digit **5**):

Cable entry is from below unless another order code is specified.

Cable entry from drive end (DE) – Article No. with **-Z** and order code **R10**.

For cable entry to a standard terminal box, a metal cable gland can be ordered for motor connection.

One metal cable gland – Article No. with **-Z** and order code **R15**.

¹⁾ Not applicable for smoke-extraction motors.

Introduction

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Motor connection and terminal box

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Overview (continued)

For special requirements for which standard holes for the cable entries are inadequate for the UK market, reduction pieces for M cable glands in accordance with British Standard that are mounted on both cable entries can be supplied (only up to frame size 160).

Order code **R30**

Frame size	Cable entry acc. to	
	IEC	British Standard
100	2 × M32	2 × M20
112/132	2 × M32	2 × M25
160	2 × M40	2 × M32

Motor connectors

Motors of frame sizes 80 to 132 can be supplied with a motor connector.

The motor connectors are mounted on the specially designed terminal box at the factory and are aligned towards NDE in the basic version. The terminal boxes can be rotated by 4 × 90° on the base of the motor housing.

The following motor connector variants are available:

- Motor connector HAN10B-10E
Order code **R70**
- Motor connector HAN10B-10E EMC
Order code **R71**
- Motor connector HAN3A-Q12 EMC
Order code **R72**
- Motor connector HAN3A-Q12
Order code **R73**

Motor connector assignment

Motor	Frame size	Motor connectors	Size of the terminal box
Type		Type	
1LE1/ 1PC1	80 ... 90	HAN3A-Q12 HAN3A-Q12 EMC	TB1E00 with mounted brake TB1E10
	80 ... 90	HAN10B-10E HAN10B-10E EMC	Only possible with TB1E10
	100 ... 132	HAN10B-10E HAN10B-10E EMC	Currently only available with TB1F10 (frame sizes 100 and 112) or TB1H10 (frame size 132)

Technical characteristic values of motor connectors according to DIN EN 60664-1 and DIN EN 61984

Characteristic value	Motor connector			
	HAN3A-Q12		HAN10B-10E	
Degree of pollution	3	2	3	2
Rated current	10 A		16 A	
Rated voltage	400 V	400/690 V	500 V	400/690 V
Rated voltage according to UL/CSA	600 V		600 V	

For further technical specifications of the motor connectors, refer to the catalog of Harting Deutschland GmbH & Co. at www.harting.com
or
<https://b2b.harting.com/ebusiness/en/industrial-connectors-han/100382>.

Protruding cable ends

For confined spaces, protruding cable ends can be ordered, without a terminal box with cover plate.

The following lengths of protruding cables can be ordered as standard using order codes:

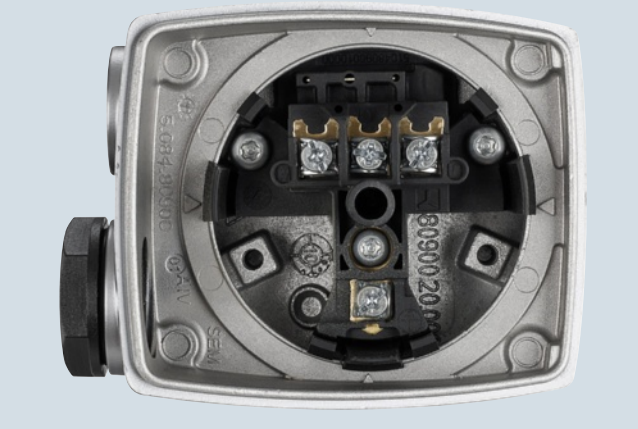
- 3 cables protruding, 0.5 m long ¹⁾
Order code **R20**
- 3 cables protruding, 1.5 m long ¹⁾
Order code **R21**
- 6 cables protruding, 0.5 m long
Order code **R22**
- 6 cables protruding, 1.5 m long
Order code **R23**
- 6 cables protruding, 3.0 m long
Order code **R24**

The cross-section of the named cable refers to a coolant temperature of up to CT 40 °C.

¹⁾ For 3 protruding cables only, it must be specified in plain text whether star or delta connection is required.

Overview (continued)

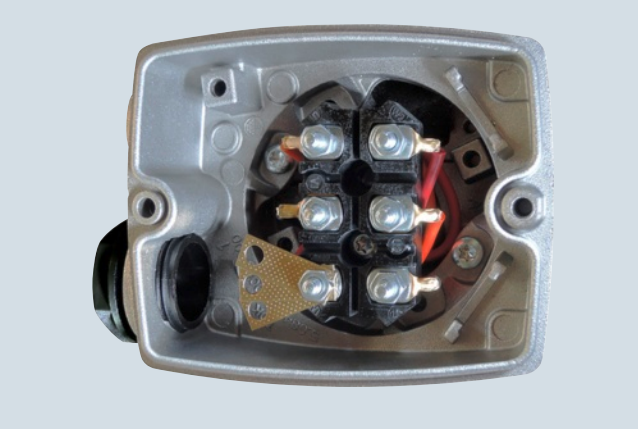
Terminal box type TB1D00



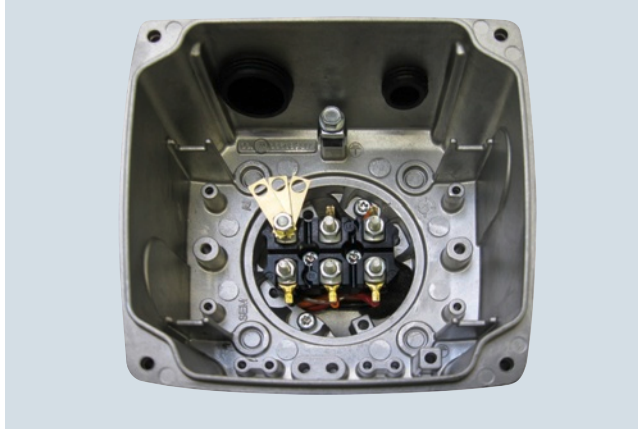
Terminal box type TB1D10



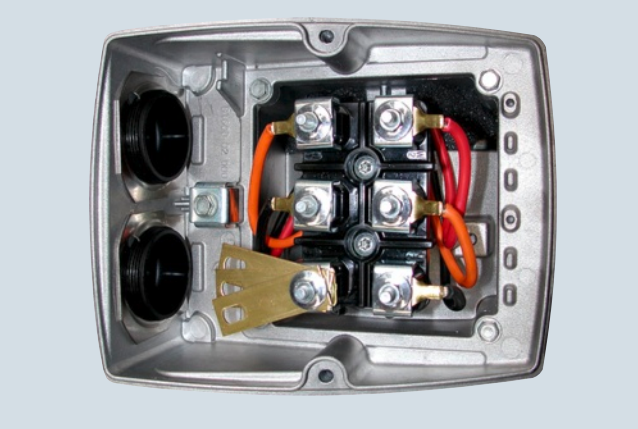
Terminal box type TB1E00



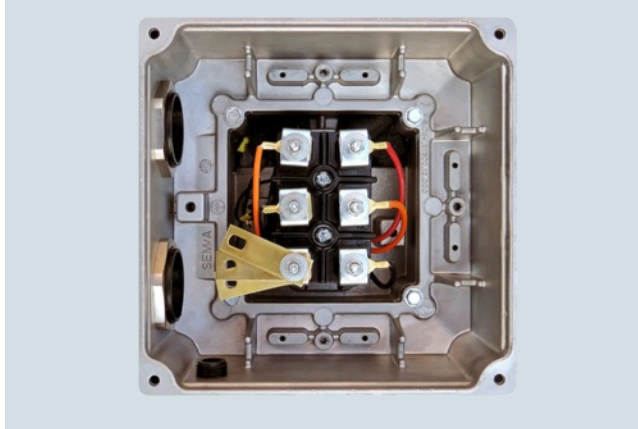
Terminal box type TB1E10



Terminal box type TB1 F00, TB1 H00, TB1 J00



Terminal box type TB1F10, TB1H10, TB1J10 – Order code **R50**



Introduction

General technical specifications

Motor connection and terminal box

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Overview (continued)

Terminal box type TB1 J01



Terminal box type TB1 L01



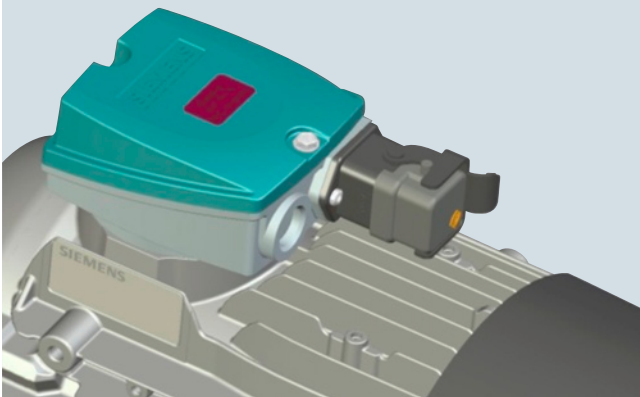
Terminal box type TB1 N01



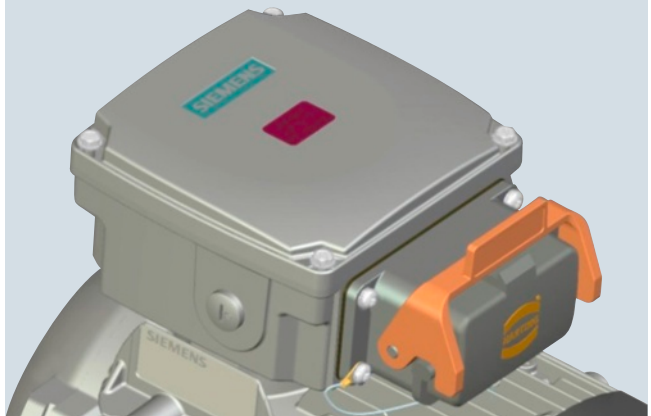
Terminal box type TB1 Q01



Motor connector HAN3A-Q12



Motor connector HAN10B-10E



Overview (continued)

Basic data for terminal boxes for 1LE1, 1MB1 and 1PC1 motors

Motor	Frame size	Terminal box	Cable entries/locking	Terminalbox material	Feeder connection
1LE1/1MB1/1PC1					
1LE1/ 1MB1/ 1PC1	80 ... 90	1TB1 D00	1 entry complete with sealing plug, thread in terminal box (2 entries with additional mounting components in the winding) Locking with snap-on connection and central terminal box screw	Aluminum alloy	<ul style="list-style-type: none"> • Cable lug • Rigid cable, no cable lug • Multicore cable with end sleeve
1LE1/ 1PC1	80 ... 90	1TB1 D10	2 entries complete with sealing plugs, thread in terminal box Locking with snap-on connection and central terminal box screw	Aluminum alloy	<ul style="list-style-type: none"> • Cable lug • Rigid cable, no cable lug • Multicore cable with end sleeve
1LE1/ 1PC1	80 ... 90	1TB1 E00	1 entry complete with sealing plugs, thread in terminal box, (2 entries with additional mounting components in the winding) Terminal box mounted and screwed	Aluminum alloy	<ul style="list-style-type: none"> • Cable lug • Rigid cable, no cable lug
1LE1/ 1PC1	80 ... 90	1TB1 E10	2 entries complete with sealing plugs, thread in terminal box, terminal box mounted and screwed in place	Aluminum alloy	<ul style="list-style-type: none"> • Cable lug • Rigid cable, no cable lug
1LE1/ 1MB1 ¹⁾ / 1PC1	100 ... 160	1TB1 F00 1TB1 H00 1TB1 J00 1TB1 F10 1TB1 H10 1TB1 J10	2 entries complete with sealing plugs and locknuts Terminal box mounted and screwed in place	Aluminum alloy	<ul style="list-style-type: none"> • Cable lug • Rigid cable, no cable lug
1LE15/1LE16/1MB15/1MB16					
1LE15	71 ... 90	TB1D01	2 entries complete with sealing plugs, thread in terminal box, terminal box mounted and screwed in place	Cast iron	<ul style="list-style-type: none"> • Cable lug • Rigid cable, no cable lug
1LE15/ 1LE16/ 1MB15/ 1MB16	100 ... 315	1TB1 F01 ... 1TB1 R01	2 entries complete with sealing plugs, thread in terminal box, terminal box mounted and screwed in place	Cast iron	<ul style="list-style-type: none"> • Cable lug • Rigid cable, no cable lug

Technical specifications for terminal boxes for 1LE1, 1MB1 and 1PC1 motors

Frame size	Terminal box ²⁾	Number of terminals	Contact screw thread	Max. connectable cross-section mm ²	Outer cable diameter (sealing range) mm	Cable entry ³⁾	Cable entry for CSA version, order code D40 ⁴⁾ mm
	Standard / larger						
1LE10/1MB10/1PC1							
80 and 90 ⁵⁾	TB1D00/TB1D10	3	M3.5	1.5/2.5 with cable lug	M16 × 1.5: 4.5 ... 10; M25 × 1.5: 9 ... 17	1 × M25 × 1.5/ 1 × M16 × 1.5 + 1 × M25 × 1.5	–
80 and 90	TB1E00/TB1E10	6	M4	1.5/2.5 with cable lug	M16 × 1.5: 4.5 ... 10; M25 × 1.5: 9 ... 17	1 × M25 × 1.5/ 1 × M16 × 1.5 + 1 × M25 × 1.5	–
100 112	TB1F00/TB1F10	6	M4	4	11 ... 21	2 × M32 × 1.5	NPT 3/4"
132	TB1H00/TB1H10	6	M4	6	11 ... 21	2 × M32 × 1.5	NPT 3/4"
160	TB1J00/TB1J10	6	M5	16	19 ... 28	2 × M40 × 1.5	NPT 1"
1LE15							
71 ... 90	TB1D01	6	M4	1.5/2.5 with cable lug	M16 × 1.5: 4.5 ... 10 M25 × 1.5: 9 ... 17	1 × M16 × 1.5 + 1 × M25 × 1.5	–
1LE15/1LE16/1MB15/1MB16							
100 112	TB1F01/TB1J01	6	M4	4	11 ... 21	2 × M32 × 1.5	M50 × 1.5 ⁶⁾ M63 × 1.5 ⁶⁾
132	TB1H01/TB1J01	6	M4	6	11 ... 21	2 × M32 × 1.5	M63 × 1.5 ⁶⁾
160	TB1J01/TB1K01	6	M5	16	19 ... 28/ 27 ... 35	2 × M40 × 1.5/ 2 × M50 × 1.5	M63 × 1.5 ⁶⁾
180	TB1J01/TB1K01	6	M5/M6	16/25	19 ... 28/ 27 ... 35	M40 × 1.5/ M50 × 1.5	M63 × 1.5 ⁶⁾
200	TB1L01/TB1L01	6	M6/M8	25/35	27 ... 35/ 27 ... 35	2 × M50 × 1.5/ 2 × M50 × 1.5	M50 × 1.5 ⁶⁾
225	TB1L01/TB1N01	6	M8/M10	35/120	27 ... 35/ 34 ... 42	2 × M50 × 1.5/ 2 × M63 × 1.5	M63 × 1.5 ⁶⁾
250 280	TB1N01/TB1Q01	6	M10/M12	120/240	34 ... 42/ 38 ... 45	2 × M63 × 1.5/ 2 × M63 × 1.5	M63 × 1.5 ⁶⁾
315	TB1Q01/TB1R01	6	M12/M16	240/400	38 ... 45/ 44 ... 54	2 × M63 × 1.5/ 2 × M63 × 1.5	M63 × 1.5 ⁶⁾

– Not available

Terminal connection

The terminal board accommodates the terminals that are connected to the leads to the motor windings. The terminals are designed so that for frame sizes 100 to 160, the external (line) connections can be made without the need for cable lugs.

- 1) The certified cable entries are supplied as standard for explosion-proof motors.
 - Frame sizes 80 to 200: One certified metric cable gland and one certified metric sealing plug
 - Frame sizes 225 to 315: Two certified metric cable glands
- 2) In addition to the exact part designation, please specify the machine type and the serial number in all orders for spare parts and repair parts.
- 3) Designed for cable glands with O-ring.
- 4) Not possible for motors in Zone 22.
- 5) Only applicable to motors from Bad Neustadt.
- 6) NPT threads can be ordered with order code **Y61**.

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Motor connection and terminal box

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Overview (continued)

Maximum number of auxiliary terminal boxes for main terminal box

Maximum number of TB2J01 auxiliary terminal boxes (Order code R62) in combination with standard terminal box

Auxiliary terminal box		Frame size								
		100, 112	132	160	180	200	225	250	280	315
Terminal box		Terminal box								
Type	Order code	Type			Type			Type		
TB2J01	R62	TB1F01	TB1H01	TB1J01	TB1L01			TB1N01	TB1Q01	
		–	–	2	2			2	2	

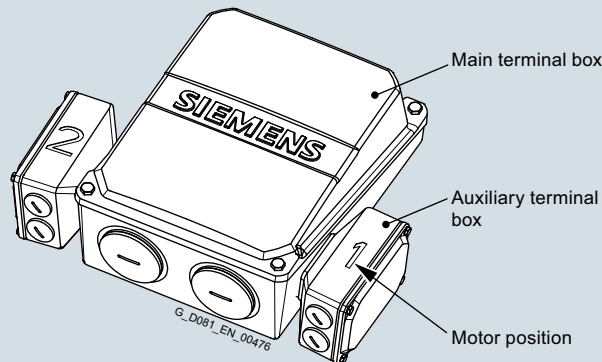
Maximum number of TB2J01 auxiliary terminal boxes (Order code R62) in combination with large terminal box (Order code R50)

Auxiliary terminal box		Frame size								
		100, 112	132	160	180	200	225	250	280	315
Terminal box		Terminal box								
Type	Order code	Type			Type			Type		Type
TB2J01	R62	TB1J01	TB1K01		TB1L01	TB1N01	TB1Q01	TB1R01		TB1R01
		–	–	2	2	2	2	2		2
										(3, 4 on requ.)

Maximum number of TB2J01 auxiliary terminal boxes (Order code R62) in combination with universal terminal box (Order code R52 or R53)

Auxiliary terminal box		Frame size								
		100 ... 160			180	200	225	250	280	315
Terminal box		Terminal box								
Type	Order code	Type			Type		Type		Type	
TB2J01	R62	Not available			TB1J61	TB1L61	TB1N61		TB1Q61	
					2	2	2		2	
							(3, 4 on requ.)		(3, 4 on requ.)	

Position of auxiliary terminal box in relation to position of TB1J01, TB1L01, TB1N01, TB1Q01, TB1K01 main terminal box

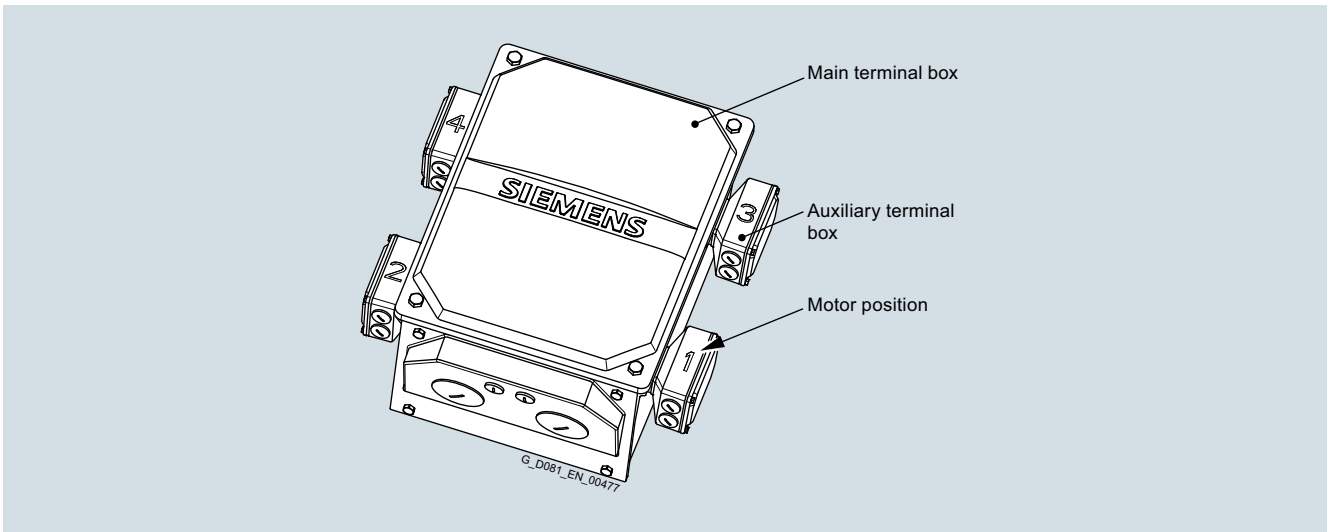


TB2J01 auxiliary terminal box (Order code R62) in combination with TB1J01, TB1L01, TB1N01, TB1Q01, TB1K01 main terminal box

Position of the main terminal box		Right-hand side						Left-hand side					
Top		16th Position of Article No. and when ordering with order code, Article No. with -Z											
		4			5			6					
Rotation of terminal box		0°			0°			0°		90°		180°	
		(Standard)			(Standard)			(Standard)		entry from DE		entry from NDE	
Order code		R10			R11			R12		R10		R11	
Number of auxiliary terminal boxes		R10			R11			R12		R10		R11	
		Positions of auxiliary terminal boxes – see Figure											
1	1	1	1	2	1	2	1	2	2	1	2	1	
2	1 + 2	1 + 2	1 + 2	1 + 2	1 + 2	–	–	1 + 2	1 + 2	–	–	1 + 2	

Overview (continued)

Position of auxiliary terminal box in relation to position of TB1R01, TB1J61, TB1L61, TB1N61, TB1Q61 main terminal box



TB2J01 auxiliary terminal box (Order code R62) in combination with TB1R01, TB1J61, TB1L61, TB1N61, TB1Q61 main terminal box

Position of the main terminal box

Top

Right-hand side

Left-hand side

16. Position of Article No. and when ordering with order code, Article No. with **-Z**

4

5

6

Rotation of terminal box

0°
(Standard)

90°,
entry
from DE

90°,
entry
from NDE

180°

0°
(Standard)

90°,
entry
from DE

90°,
entry
from NDE

180°

0°
(Standard)

90°,
entry
from DE

90°,
entry
from NDE

180°

Order code

–

R10

R11

R12

–

R10

R11

R12

–

R10

R11

R12

Number of
auxiliary
terminal boxes

Positions of auxiliary terminal boxes – see Figure

1	1	1	1	2	1	2	1	2	2	1	2	1
2	1+3	1+3	1+3	2+4	1+3	2+4	1+3	2+4	2+4	1+3	2+4	1+3
(3 on requ.)	1+2+3	1+2+3	1+2+3	1+2+4	1+2+3	–	–	1+2+4	1+2+4	–	–	1+2+3
(4 on requ.)	1+2+3+ 4	1+2+3+ 4	1+2+3+ 4	1+2+3+ 4	1+2+3+ 4	–	–	1+2+3+ 4	1+2+3+ 4	–	–	1+2+3+ 4

Introduction

General technical specifications

Mechanical design and degrees of protection

1

Overview

Preparation for gear mounting

The flange-mounting motors can be equipped with a radial sealing ring in order to mount gearing. Order code **H23**.

It must be ensured that the sealing ring is lubricated using grease, oil mist or oil spray (it is not admissible to use pressurized oil > 0.1 bar). We recommend that the admissible bearing loads are carefully checked.

Eyebolts and transport

1LE1, 1MB1 and 1PC1 motors without feet have four cast eyebolts as standard, each offset by 90°; in the case of screwed-on feet, two eyebolts are covered by the feet, so in this case only two eyebolts are available for use. This data is only valid up to frame size 200.

Housing material			
Motor series	Frame size	Housing material	Frame feet
1LE10, 1PC1 ²⁾	80 ... 160	Aluminum alloy	Cast ¹⁾
1MB10	100 ... 160	Aluminum alloy	Cast ¹⁾
1LE15/6, 1PC1301 ³⁾	71 ... 315	Cast iron	Cast ¹⁾
1MB15/6	100 ... 315	Cast iron	Cast ¹⁾

Preparation for mountings

Brakes as well as rotary encoders of the "modular and special technology" can be retrofitted. The motor must be prepared for this. This is possible for all 1LE1 motors (with the exception of 1LE1 with option **F90** – version "Forced-air cooled motors without external fan and fan cover").

Preparation of the shaft extension at NDE can be ordered with the option "Prepared for mountings, only center hole", order code **G40** for the following frame sizes and mountings:

- Frame sizes 80 to 315: brakes with order code **F01**
- Frame sizes 80 and 90: only rotary encoders with order code **G01** or **G02** from the "modular technology"
- Frame sizes 100 to 315: all rotary encoders of the "modular and special technology"

The length of the motor does not change because the shaft extension is still under the fan cover.

For motors ordered with order code **G40**, the following conversion combinations are possible:

- Frame sizes 80 and 90:
Either brakes with order code **F01** or rotary encoders with order code **G01** or **G02** from the "modular technology". The combination of brake (**F01**) and rotary encoder (**G01/G02**) is not possible.
- Frame sizes 100 to 315:
Brakes with order code **F01** or rotary encoders from the "modular and special technology". The combination of brake (**F01**) and rotary encoder is possible.

Conversion is performed exclusively by the authorized contractual partners of Siemens.

For motors of series 1LE15 and 1LE16 frame sizes 100 to 315, grounding brushes are available for converter-fed operation. Order code **L52**. Please contact your local Siemens office for advice.

For mountings, such as rotary encoders, supplied by the customer, the following applies:

For the encoders:

- 1XP8012-10, order code **G01**
- 1XP8012-20, order code **G02**

from the "modular technology" this preparation of the shaft extension on NDE can be ordered with the option "Prepared for mounting with shaft **D12**".

Order code **G41**

When a rotary pulse encoder is mounted, the length of the motor increases by Δl due to option **G41**. For an explanation of the additional dimensions and weights, see "Modular technology" "Dimensions and weights".

For the encoders:

- LL 861 900 220, order code **G04**
- HOG 9 D 1024 I, order code **G05**
- HOG 10 D 1024 I, order code **G06**

from the "special technology" this preparation of the shaft extension on NDE can be ordered with the option "Prepared for mounting with shaft **D16**" for motors of frame sizes 100 to 160 only.

Order code **G42**

When a rotary pulse encoder is mounted, the length of the motor increases by Δl due to option **G42**. For an explanation of the additional dimensions and weights, see "Modular technology" "Dimensions and weights".

Motors that are prepared for mountings supplied by the customer (order codes **G41**, **G42**) are supplied without a protective cover as standard. These mountings can be installed by the customer.

If a protective cover is requested as a cover or mechanical protection for mountings provided by the customer, this can be ordered with order code **G43**.

This protective cover is designed and mounted differently as described below according to frame size:

FS 80 and 90:

Motors ordered with order code **G43** are fitted with a metal cover as standard. The protective cover is mounted in the factory.

To install the mountings supplied by the customer, the protective cover must be removed beforehand by unscrewing the external fixing screws and reattached afterwards.

Protective covers for motors of these frame sizes are not suitable for mountings that correspond to the shape and size of the rotary encoders of the "special technology" (**G04**, **G05**, **G06**, see above).

FS 100 to 315:

The protective cover must be installed by the customer in accordance with the assembly instructions supplied. It has supports of varying length that can be used for installation according to the height of the planned mountings.

The standard protective cover (order code **H00**) is not suitable for protection of additional mountings, such as rotary encoders.

Order codes **G40**, **G41**, **G42** may only be used in conjunction with order code **L00** vibration quantity level B.

Order code **G43** is only appropriate in combination with order codes **G41** and **G42**, and not in combination with **G40**.

¹⁾ Basic version, cast feet: special version "Screwed-on feet (instead of cast)" with digits **5**, **6**, and **7** in the 16th position of Article No. or digit **4** with order code **H01**. Screwed-on feet are standard for motors with increased output.

²⁾ 1PC1300 motors of frame sizes 80 and 90 without eyebolts.

³⁾ 1LE16 motors frame size 100 and above, 1PC1301 motors frame size 180 and above.

Overview (continued)

Degrees of protection

All motors are designed to IP55 degree of protection. They can be installed in dusty or humid environments. The motors are suitable for operation in tropical climates. Guide value < 60 % relative air humidity at CT 40 °C. Other requirements are available on request (see table on Page 1/25).

Brief explanation of the degree of protection

IP54:

- Protection against harmful dust deposits
- Protection against water spray

IP55:

- Protection against harmful dust deposits
- Protection against water jets from any direction

IP56:

- Protection against harmful dust deposits
- Protection against water jets from any direction

Order code **H22**

Note that submersion by waves or total immersion, even temporarily, is not permitted especially in the case of motors with fans. This corresponds to IP67 or IP68 degree of protection (please inquire).

DIN EN 60034-5 defines protection level 6 for water protection as: "Protection against water due to heavy seas or water in a powerful jet". IP56 degree of protection can only be used with the requirement "Protection against a powerful jet" and not for the requirement "Protection against heavy sea".

Not possible in combination with brake 2LM8 (order code F01).

IP65:

- Complete protection against dust deposits
- Protection against water jets from any direction

Order code **H20**

The code 6 for protection against the ingress of foreign bodies and touch hazard protection for electrical machines is not listed in DIN EN 60034-5 – data for code 6 (protection against the ingress of dust) is given in EN 60529.

Not possible in combination with rotary pulse encoder HOG 9 D 1024I (order code G05) and/or brake 2LM8 (order code F01) and/or unpainted, cast-iron parts primed (order code S00).

DIN EN 60529 contains a comprehensive description of this degree of protection as well as test conditions.

With motors that have a vertical shaft extension, the end user must prevent an ingress of fluid along the shaft.

For motors with shaft extension pointing downwards, the version "Protective cover for types of protection" order code **H00** is urgently recommended, see also the explanations on "Types of construction" on Page 1/28.

With flange-mounting motors, for IM V3 type of construction, collection of fluid in the flange basin can be prevented by drainage holes (on request).

The condensation drainage holes at the drive end (DE) and non-drive end (NDE) are sealed (IP55) on delivery. If the condensation drainage holes are ordered for motors of the IM B6, IM B7 or IM B8 type of construction (feet located on side or top), the position of the drainage holes will be in the correct position for the type of construction.

Order code **H03**

Note:

Motors of the Loher-CHEMSTAR series can be designed in IP66.

A sheet metal fan cover is included as standard for horizontal types of construction and types of construction with shaft pointing upwards (14th position of article number letter **A, T, U, V, D, F, H, J, K, L, N**) in combination with condensation drainage holes, order code (H3), to facilitate assembly/disassembly.

When the motors are used or stored outdoors, we recommend that they be kept under some sort of additional cover so that they are not subjected to direct intensive solar radiation, rain, snow, ice or dust over a long period of time. In such cases, technical consultation may be appropriate.

When the motors are used outdoors or in a corrosive environment, it is recommended that non-rusting screws are used externally.

Order code **H07**

Vibration-proof version

A load of 1.5 g in all 3 planes for up to 1 % of the service life of the motor is possible.

Order code **H02**

For availability of individual options for the relevant motor series, see section "Special versions" in the respective sections of the catalog.

Noise levels for mains-fed operation

The noise levels are measured in accordance with DIN EN ISO 1680 in a dead room. It is specified as the A-valued measuring-surface sound pressure level L_{pFA} in dB (A).

This is the spatial mean value of the sound pressure levels measured on the measuring surface. The measuring surface is a cube 1 m away from the surface of the motor. The sound power level is also specified as L_{WA} in dB (A).

The specified values are valid at 50 Hz and rated output (see the selection and ordering data). The tolerance is +3dB. At 60 Hz, the values are approximately 4 dB (A) higher. Noise values for motors in converter-fed operation on request.

To reduce noise levels, 2-pole motors of frame size 132 S and higher can be equipped with a unidirectional axial fan.

The values are listed in the table "Low-noise version" below.

Clockwise rotation

Order code **F77**

Anti-clockwise rotation

Order code **F78**

Second shaft extension and/or mountings (mounting of brake, separately driven fan or encoder) not possible.

Low-noise version			
Motor series	Frame size	2-pole motors	
		L_{pFA} dB(A)	L_{WA} dB(A)
1LE1 ¹⁾	132	60	72
1MB1 ¹⁾	160	60	72
1LE15/6, 1MB1	180	68	79
	200	70	81
	225	72	86
	250	73	87
	280	72	85
	315	76	90

¹⁾ With the exception of 1LE1 and 1MB1 motors with option **F90** – version "Forced-air cooled motors without external fan and fan cover".

Introduction

General technical specifications

Balance and vibration quantity

1

Overview

All of the rotors are dynamically balanced with an inserted half key. This corresponds to vibration quantity level A (normal or standard). DIN EN 60034-14 Sept. 2004 regulates the vibrational behavior of machinery. Based on DIN ISO 8821, the key convention "half key (H)" must be used for balancing.

The type of key convention is stamped on the face of the shaft extension at the customer side DE/NDE:

- F = Balancing with full key (full-key convention)
- H = Balancing with half key (half-key convention) – standard
- N = Balancing without key – Plain text required (convention without key)

For motors up to frame size 112 the code is stamped on the rating plate.

Full-key balancing or balancing with full feather key (F) is possible, by specifying code **L02** (additional charge).

Balancing without feather key (N) is possible, by specifying code **L01** (additional charge).

Vibration quantity level A is the standard version and is valid up to a rated frequency of 60 Hz. If 2-pole motors of frame sizes 280 and 315 are to be suspended rigidly, cast feet are necessary in

order to comply with the vibration requirements of IEC60034-14. Pole-changing motors only comply with the vibration requirements of IEC60034-14 for 2-pole switching when mounted elastically.

The low-vibration version B can be supplied to fulfill stricter requirements on smooth running (additional charge).

Vibration quantity level B
Not possible with parallel roller bearings.
Order code **L00**

The order code L00 vibration quantity level B is not possible in combination with order codes G40, G41 and G42.

These vibrations are evaluated in accordance with Zones A and B according to ISO 10816-3.

The limits stated in the table are applicable for uncoupled, freely suspended, idling motors.

For converter-fed operation with frequencies higher than 60 Hz, special balancing is required for compliance with the specified limit values (plain text: maximum supply frequency/speed).

For further details, see the online help in the DT Configurator.

Limits (rms values) for max. vibration quantity of vibration distance (s), vibration speed (v) and acceleration (a) for the shaft height H										
Vibration quantity level	Machine installation	Shaft height H in mm								
		56 ≤ H ≤ 132			132 < H ≤ 280			H > 280		
		s_{rms} μm	v_{rms} mm/s	a_{rms} mm/s ²	s_{rms} μm	v_{rms} mm/s	a_{rms} mm/s ²	s_{rms} μm	v_{rms} mm/s	a_{rms} mm/s ²
A	Free suspension	25	1.6	2.5	35	2.2	3.5	45	2.8	4.4
	Rigid clamping	21	1.3	2.0	29	1.8	2.8	37	2.3	3.6
B	Free suspension	11	0.7	1.1	18	1.1	1.7	29	1.8	2.8
	Rigid clamping	–	–	–	14	0.9	1.4	24	1.5	2.4

For details, see DIN EN 60034-14 standard Sept. 2004.

If the type tests for machines with shaft height H > 280 mm demonstrate a specific component with twice the line frequency, the limit for maximum vibration quantity in Table 1 (level A) can be increased from 2.3 mm/s (rms value) to 2.8 mm/s (rms value). Higher values must be agreed beforehand. A component with twice the line frequency is regarded as dominant if the type test shows that it is larger than 2.3 mm/s (rms value).

Overview

Shaft extension

60° center hole acc. to DIN 332, Part 2 with M3 to M24 tapped hole depending on the shaft diameter (see dimension tables in section 2 of the catalog).

DE (shaft extension)	
Diameter mm	Thread mm
7 ... 10	DR M3
> 10 ... 13	DR M4
> 13 ... 16	DR M5
> 16 ... 21	DR M6
> 21 ... 24	DR M8
> 24 ... 30	DR M10
> 30 ... 38	DR M12
> 38 ... 50	DS M16
> 50 ... 85	DS M20
> 85 ... 130	DS M24

Shaft extension with standard dimensions, without feather keyway

For motor series 1LE1, 1MB1 and 1PC1, the standard shaft extension can be ordered with standard dimensions without a feather keyway.
Order code **L04**

Standard shaft made of stainless steel

A standard shaft made of stainless steel can be ordered for the 1LE1, 1MB1 and 1PC1 motor series. This is only possible for shaft extensions of standard dimensions.
Order code **L06**

Special non-rusting materials are only available on request.

Non-standard cylindrical shaft extension

The non-standard cylindrical shaft extension can be used on the drive end (DE). The feather keys are supplied in every case.
Order code **Y58**

For order code **Y58** non-standard cylindrical shaft extension DE:

- Dimension D: less than or equal to the inner diameter of the roller bearing, tolerance band less than tolerance band acc. to EN 50347.
- Dimension E: smaller than or equal to 2 × length E (standard) of the shaft extension

See the table below "Admissible changes to the shaft extension DE" and the dimension tables in the relevant sections of the catalog.

Admissible changes to the shaft extension DE (Y58)

Motor series	Frame size	No. of poles	Shaft extension length E in mm		Shaft extension diameter D in mm		
			Standard	Up to max.	min.	Standard	Up to max. 1)
1LE1	80	2 ... 8	40	80	19	19	20
	90		50	100	24	24	25
1LE1, 1MB1, 1PC1	100	2 ... 8	60	120	24	28	30
	112						
	132	2 ... 8	80	160	28	38	40
	160	2 ... 8	110	220	38	42	45
1LE1, 1MB1	180	2 ... 8	110	220		48	48
	200	2 ... 8	110	220		55	55
	225	2	110	220		55	60
		4 ... 8	140	280		60	60
	250	2	140	280	On request	60	70
		4 ... 8	140	280		65	70
	280	2	140	280		65	70
		4 ... 8	140	280		75	80
315	2	140	280		65	75	
	4 ... 8	140	280		80	90	

Standard, cylindrical shaft extension NDE acc. to EN 50347

Order code **L05** (on request)

For a coupling output, the standard, cylindrical shaft extension can transmit the full rated output.

Please also inquire about the transmitted power and admissible cantilever force if belt pulleys, chains or gear pinions are used on the standard, cylindrical shaft extension.

A standard, cylindrical shaft extension NDE is not available if a rotary pulse encoder and/or a separately driven fan has been mounted onto the motor. Please inquire for mounted brakes.

Dimensions and tolerances for keyways and keys are designed to DIN EN 50347. The motors are always supplied with a key inserted in the shaft.

If the second shaft extension has non-standard dimensions, this must be ordered with order code **L05** in combination with order code **Y59** non-standard shaft dimensions NDE.

The following applies for order code **L05** in combination with order code **Y59** non-standard shaft extension NDE:

- Dimension D: less than or equal to fan hub inner diameter, for frame size 160 tolerance band is less than tolerance band to EN 50347
- Dimension E: smaller than or equal to 2 × length E (standard) of the shaft extension

See the table below "Admissible changes to the shaft extension NDE" and the dimension tables in the relevant sections of the catalog.

Admissible changes to the shaft extension NDE (Y59)

Motor series	Frame size	No. of poles	Shaft extension length E in mm		Shaft extension diameter D in mm			
			Standard	Up to max.	min.	Standard	Up to max. 1)	
1LE1, 1MB1	80/90	2 ... 8	40	80	19		20	
1LE1, 1MB1, 1PC1	100	2 ... 8	50	100	20		25	
	112							
	132	2 ... 8	60	120	25		35	
	160	2 ... 8	110	220	35		45	
1LE1, 1MB1	180	2 ... 8	110	220	48		48	
	200	2 ... 8	110	220	55		55	
	225	2	110	220	48		55	
		4 ... 8	110	220	55		55	
	250	2	110	220	On request	55	70	
		4 ... 8	140	280		60	70	
		280	2	140	280		60	70
			4 ... 8	140	280		65	70
315	2	140	280		60		75	
	4 ... 8	140	280		70		75	

Non-standard, cylindrical shaft extensions up to the specified lengths and diameters can be supplied for the motor series listed in the tables "Admissible changes to the shaft extension DE (Y58)" and "Admissible changes to the shaft extension NDE (Y59)". All other dimensions are available on request.

It is the responsibility of the customer to ensure that the admissible cantilever forces are reduced in accordance with the non-standard shaft extension.

1) At maximum admissible diameter, a step increase in shaft diameter is not possible.

Introduction

General technical specifications

Shaft and rotor

1

Overview (continued)

Concentricity of the shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors

The following are specified in DIN 42955 with Tolerance N (normal) and Tolerance R (reduced):

1. Concentricity tolerances for the shaft extension
2. Coaxiality tolerances for the shaft extension and flange centering
3. Linear movement tolerances for the shaft extension and flange surface

The concentricity of the shaft extension, coaxiality and linear movement according to DIN 42955 Tolerance R for flange-mounting motors can be ordered using order code **L08**.

This order code can be combined for motors with deep-groove bearings of series 60..., 62... and 63... This cannot be supplied in combination with brake or encoder mounting.

Concentricity of the shaft extension can be ordered according to DIN 42955 Tolerance R for types of construction without flange with order code **L07**.

Concentricity tolerance for the shaft extension

Diameter of the cylindrical shaft extension d mm	Concentricity tolerance	
	N (normal) mm	R (reduced) mm
≤ 10	0.03	0.015
> 10 ... 18	0.035	0.018
> 18 ... 30	0.04	0.021
> 30 ... 50	0.05	0.025
> 50 ... 80	0.06	0.03
> 80 ... 120	0.07	0.035
> 120 ... 180	0.08	0.04
> 180 ... 250	0.09	0.045
> 250 ... 315	0.1	0.05
> 315 ... 400	0.11	0.055
> 400 ... 500	0.125	0.063
> 500 ... 600	0.14	0.07

IEC dimension code D

Coaxiality tolerance of the centering spigot and linear movement tolerance of the flange surface to the shaft extension axis

Diameter of the cylindrical shaft extension b ₁ mm	Coaxiality tolerance and linear movement tolerance	
	N (normal) mm	R (reduced) mm
≤ 22	0.05	0.025
> 22 ... < 40	0.06	0.03
40 ... 100	0.08	0.04
> 100 ... 230	0.1	0.05
> 230 ... 450	0.125	0.063
> 450 ... 800	0.16	0.08
> 800 ... 1400	0.2	0.1
> 1400 ... 2000	0.25	0.125
> 2000 ... 2240	0.315	0.16

IEC dimension code N

¹⁾ At maximum admissible diameter, a step increase in shaft diameter is not possible.

Overview

Bearing lifetime (nominal lifetime)

The nominal bearing lifetime is defined acc. to standardized calculation procedures (DIN ISO 281) and is reached or even exceeded for 90 % of the bearings when the motors are operated in compliance with the data provided in the catalog.

Under average operating conditions, a lifetime (L_{10h}) of 100 000 hours can be achieved.

Generally, the bearing lifetime is defined by the bearing size, the bearing load, the operating conditions, the speed and the grease lifetime. A bearing lifetime calculation is possible on request.

Bearing system

The bearing lifetime of motors with horizontal mounting is 40 000 hours if there is no additional axial loading at the coupling output and 20 000 hours when utilized according to the maximum admissible load.

This assumes that the motor is operated at 50 Hz. The nominal bearing lifetime is reduced for converter-fed operation at higher frequencies.

For the admissible vibration values measured at the bearing plate, evaluation zones A and B specified in ISO 10816 are applicable in order to achieve the calculated lifetime under continuous duty. If higher vibration speeds will occur under the operating conditions, special arrangements will be necessary (please inquire).

Due to their physical characteristics, variable-speed motors have a different bearing lifetime under the same load conditions – this relationship is linear.

If the frequency rises by 20 % from 50 Hz to 60 Hz, under the load conditions specified in the catalog, the lifetime drops by 20 % from 20 000 to 16 000 hours and vice-versa.

If the frequency falls by 20 % from 50 Hz to 40 Hz, under the load conditions specified in the catalog, the lifetime rises by 20 % from 20 000 to 24 000 hours and vice-versa.

It should be observed that for types of construction IM B6, IM B7, IM B8, IM V5 and IM V6 the belt tension is only permitted to act parallel to the mounting plane or towards the mounting plane and the feet must be supported. Both feet must be secured for foot-mounting types of construction.

In the basic bearing system, the floating bearing is situated at the drive end (DE) and the located bearing is situated at the non-drive end (NDE).

The bearing system is axially preloaded with a spring element at the drive end (DE) to ensure smooth running of the motor without play (see Figure 1 in the diagrams of bearings on Page 1/48).

From frame size 160 upwards, the located bearing is axially secured at the non-drive end (NDE). Up to frame size 132, an additional axially-secured located bearing can be supplied on the non-drive end (NDE) complete with a retaining ring (see Figure 2 in the diagrams of bearings on Page 1/48).
Order code **L21**

On request, the located bearing can also be supplied at the drive end (DE) (see Figure 3 in the diagrams of bearings on Page 1/48).
Order code **L20**

For increased cantilever forces (e.g. belt drives), reinforced bearings can be used at the drive end (DE).
Order code **L22**

1LE1, 1MB1 and 1PC1 motors can be supplied with reinforced deep-groove bearings (size range 03) at both ends. Special bearings for DE and NDE, bearing size 63, in this case the bearing plates are cast iron.
Order code **L25**

A measuring nipple for SPM shock pulse measurement is mounted to check bearing vibration. The motors have a tapped hole for each bearing plate and a measuring nipple with a protective cap. If a second tapped hole is provided, it is fitted with a sealing cap.
Order code **Q01**

Bearing selection for increased cantilever forces (see the table "Bearing selection for 1LE10, 1MB10 and 1PC10 motors – Bearings for increased cantilever forces" on Page 1/45) – for the maximum axial load, see Page 1/54 onwards.

Insulated bearings

To prevent damage as a result of bearing currents, insulated motor bearings can be supplied from frame sizes 225 to 315 and are recommended from frame size 225 and above. With order code **L51** "Bearing insulation NDE" and frame sizes 225 to 315, the located bearing is always on the drive end (DE).
Order code **L50, L51**

Permanent lubrication

On motors equipped with permanent lubrication, the bearing grease lifetime is matched to the bearing lifetime. This can, however, only be achieved if the motor is operated in accordance with the catalog specifications.
In the basic version, the motors have permanent lubrication.

Relubrication

For motors which can be regreased at defined regreasing intervals, the bearing lifetime can be extended and/or unfavorable factors such as temperature, mounting conditions, speed, bearing size and mechanical load can be compensated.

A regreasing device with lubricating nipple can be optionally provided for frame sizes 100 to 315.

Order code **L23**

(frame sizes > 280 basic design, for the Performance Line motors of frame sizes > 180 basic design)

A regreasing device with M10 × 1 lubricating nipple to DIN 71412-A can be optionally provided for frame sizes 180 to 315.

Order code **L19**

In the case of motors equipped with regreasing device, information regarding regreasing intervals, quantity of grease, type of grease and any additional data is provided on the lubrication plate or rating plate. For regreasing intervals for the basic version, see the table "Grease lifetime and regreasing intervals for horizontal installation".

The regreasing device cannot be mounted in combination with mounting of holding brake (standard arrangement),
order code **F01**.

Mechanical stress and grease lifetime

High speeds that exceed the rated speed with converter-fed operation and the resulting increased vibrations alter the mechanical running smoothness and the bearings are subjected to increased mechanical stress. This reduces the grease lifetime and the bearing lifetime (please inquire where applicable).

The use of rigid couplings should be avoided as far as possible. For converter-fed operation in particular, compliance with the mechanical limit speeds n_{max} at maximum supply frequency f_{max} is essential, see the following table "Mechanical limit speeds n_{max} at maximum supply frequency f_{max} ".

We supply SIPLUS CMS condition monitoring systems for monitoring mechanical components. Servicing procedures are then easier to plan and execute on time in the context of preventative maintenance.

Order code **Q05**

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Overview (continued)

Mechanical limit speeds n_{max} at maximum supply frequency f_{max} (standard values) for 1LE1, 1PC1 motors – Basic version and 1LE15 and 1LE16 motors – Basic version with order codes L22, L25, L28

Frame size	Type	2-pole		4-pole		6-pole		8-pole	
		n_{max} rpm	f_{max} Hz	n_{max} rpm	f_{max} Hz	n_{max} rpm	f_{max} Hz	n_{max} rpm	f_{max} Hz
1LE1 motors, basic version									
80 M	0D...	6000	100	4200	140	3600	180	3000	200
90 S/L	0E...	6000	100	4200	140	3600	180	3000	200
1LE15..-									
1LE15 Basic Line motors – bearings for increased cantilever forces – order code L22									
1LE15 Basic Line motors – deep-groove bearings reinforced at both ends – order code L25									
71 M	1C...	6000	100	4200	140	3600	180	3000	200
80 M	1D...	6000	100	4200	140	3600	180	3000	200
90 S/L	1E...	6000	100	4200	140	3600	180	3000	200
1LE1...- 1PC1...-									
1LE1, 1PC1 motors, basic version									
1LE15 Basic Line and 1LE16 Performance Line – bearings for increased cantilever forces – order code L22									
1LE15 Basic Line and 1LE16 Performance Line – deep-groove bearings reinforced at both ends – order code L25									
100 L	1A...	6000	100	4200	140	3600	180	3000	200
112 M	1B...	6000	100	4200	140	3600	180	3000	200
132 S/M	1C...	5600	90	4200	140	3600	180	3000	200
160 M/L	1D...	4800	80	4200	140	3600	180	3000	200
1LE15..- 1LE16..-									
1LE15 Basic Line and 1LE16 Performance Line – basic version									
1LE15 Basic Line and 1LE16 Performance Line – bearings for increased cantilever forces – order code L22									
1LE15 Basic Line – deep-groove bearings reinforced at both ends – order code L25 and 1LE16 Performance Line									
1LE15 Basic Line and 1LE16 Performance Line – DE cylindrical roller bearings and NDE reinforced bearings – order code L28									
180 M/L	1E...	4600	76	4200	140	3600	180	3000	200
200 L	2A...	4500	75	4200	140	3600	180	3000	200
225 S/M	2B...	4500	75	4500	150	4400	220	4400	293
250 M	2C...	3900	65	3700	123	3700	185	3700	247
280 S/M	2D...	3600	60	3000	100	3000	150	3000	200
315 S/M/L	3A...	3600	60	2600	87	2600	130	2600	173

The specified limit speeds are applicable to motors without additional mountings, such as brakes or rotary encoders. In such applications, the characteristics of the respective mounting parts must be taken into account.

Grease lifetime and regreasing intervals for horizontal installation

Motor series	Frame size	No. of poles	
Permanent lubrication¹⁾			
			Grease lifetime up to CT40 °C ²⁾
1LE1/1MB1/1PC1	71 ... 250	2 ... 8	20000 h or 40000 h ³⁾
Regreasing¹⁾			
			Regreasing interval up to CT40 °C ²⁾
1LE1/1MB1/1PC1	100 ... 160	2 ... 8	8000 h
		2	4000 h
	180 ... 280	4 ... 8	8000 h
		2	3000 h
	315	4 ... 8	6000 h

¹⁾ For special uses and special greases, please inquire about grease lifetime and regreasing intervals.

²⁾ If the coolant temperature is increased by 10 K, the grease lifetime and regreasing interval are halved.

³⁾ 40 000 hours apply to horizontally installed motors with coupling output without additional axial loads.

Overview (continued)**Bearing selection table for 1LE10, 1MB10 and 1PC10 motors – basic version**

The bearing selection tables are only intended for planning purposes. Authoritative information on the actual type of bearings fitted in motors already supplied can be obtained by the factory by quoting the serial number or can be read from the rating plate.

When deep-groove bearings with side plates are used, the side plate is on the inside. Located bearing at drive end (DE) for 1LE1, 1MB1 and 1PC1 motors, see special version Figure 2 in the "Diagrams of bearings" on Page 1/48.

Frame size	No. of poles	Drive end (DE) bearing		Non-drive end (NDE) bearing		Fig. No. on page 1/48
		Horizontal type of construction	Vertical type of construction	Horizontal type of construction	Vertical type of construction	
1LE10/1MB10						
80	2 ... 8	6004 2ZC3	6004 2ZC3	6004 2ZC3	6004 2ZC3	Fig. 1
90	2 ... 8	6205 2ZC3	6205 2ZC3	6004 2ZC3	6004 2ZC3	Fig. 1
1LE10/1MB10/1PC10						
100 L	2 ... 8	6206 2ZC3	6206 2ZC3	6206 2ZC3	6206 2ZC3	Fig. 1
112 M	2 ... 8	6206 2ZC3	6206 2ZC3	6206 2ZC3	6206 2ZC3	Fig. 1
132 S/M	2 ... 8	6208 2ZC3 ¹⁾	6208 2ZC3 ¹⁾	6208 2ZC3 ¹⁾	6208 2ZC3 ¹⁾	Fig. 1
160 M/L	2 ... 8	6209 2ZC3 ¹⁾	6209 2ZC3 ¹⁾	6209 2ZC3 ¹⁾	6209 2ZC3 ¹⁾	Fig. 2

Bearing selection table for 1LE10, 1MB10 and 1PC10 motors – Bearings for increased cantilever forces – Order code L22

Please inquire about noise and vibration data. The bearing selection tables are only intended for planning purposes. Authoritative information on the actual type of bearings fitted in motors already supplied can be obtained by the factory by quoting the serial number or can be read from the rating plate.

When deep-groove bearings with side plates are used, the side plate is on the inside.

Frame size	No. of poles	Drive end (DE) bearing		Non-drive end NDE bearing		Fig. No. on page 1/48
		Horizontal type of construction	Vertical type of construction	Horizontal type of construction	Vertical type of construction	
1LE10/1MB10						
80/90	2 ... 8	Available soon	Available soon	Available soon	Available soon	Available soon
1LE10/1MB10/1PC10						
100 L	2 ... 8	6306 2ZC3 ¹⁾	6306 2ZC3 ¹⁾	6206 2ZC3 ¹⁾	6206 2ZC3 ¹⁾	Fig. 1
112 M	2 ... 8	6306 2ZC3 ¹⁾	6306 2ZC3 ¹⁾	6206 2ZC3 ¹⁾	6206 2ZC3 ¹⁾	
132 S/M	2 ... 8	6308 2ZC3 ¹⁾	6308 2ZC3 ¹⁾	6208 2ZC3 ¹⁾	6208 2ZC3 ¹⁾	
160 M/L	2 ... 8	6309 2ZC3 ¹⁾	6309 2ZC3 ¹⁾	6209 2ZC3 ¹⁾	6209 2ZC3 ¹⁾	Fig. 2

Bearing selection table for 1LE10, 1MB10 and 1PC10 motors – Deep-groove bearings reinforced at both ends – Order code L25

Please inquire about noise and vibration data. The bearing selection tables are only intended for planning purposes. Authoritative information on the actual type of bearings fitted in motors already supplied can be obtained by the factory by quoting the serial number or can be read from the rating plate.

When deep-groove bearings with side plates are used, the side plate is on the inside.

Frame size	No. of poles	Drive end (DE) bearing		Non-drive end (NDE) bearing		Fig. No. on page 1/48
		Horizontal type of construction	Vertical type of construction	Horizontal type of construction	Vertical type of construction	
1LE10/1MB10						
80/90	2 ... 8	Available soon	Available soon	Available soon	Available soon	Available soon
1LE10/1MB10/1PC10						
100 L	2 ... 8	6306 2ZC3 ¹⁾	6306 2ZC3 ¹⁾	6306 2ZC3 ¹⁾	6306 2ZC3 ¹⁾	Fig. 1
112 M	2 ... 8	6306 2ZC3 ¹⁾	6306 2ZC3 ¹⁾	6306 2ZC3 ¹⁾	6306 2ZC3 ¹⁾	
132 S/M	2 ... 8	6308 2ZC3 ¹⁾	6308 2ZC3 ¹⁾	6308 2ZC3 ¹⁾	6308 2ZC3 ¹⁾	
160 M/L	2 ... 8	6309 2ZC3 ¹⁾	6309 2ZC3 ¹⁾	6309 2ZC3 ¹⁾	6309 2ZC3 ¹⁾	Fig. 2

¹⁾ Bearings with a side plate are used for regreasable versions (order code **L23**).

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Overview (continued)

Bearing selection table for 1LE15/1MB15 and 1LE16/1MB16 motors (basic version)

Frame size	No. of poles	Drive end (DE) bearing Horizontal and vertical type of construction	Non-drive end (NDE) bearing Horizontal and vertical type of construction	Fig. No. on page 1/48
1LE15, 1MB15 – Basic Line				
71 M	2 ... 8	6205 2ZC3	6204 2ZC3	Fig. 1
80 M	2 ... 8	6204 2ZC3	6204 2ZC3	Fig. 1
90 S/L	2 ... 8	6202 2ZC3	6202 2ZC3	Fig. 1
100 L	2 ... 8	6206 2ZC3 ¹⁾	6206 2ZC3 ¹⁾	Fig. 1
112 M	2 ... 8	6206 2ZC3 ¹⁾	6206 2ZC3 ¹⁾	
132 S/M	2 ... 8	6208 2ZC3 ¹⁾	6208 2ZC3 ¹⁾	
160 M/L	2 ... 8	6209 2ZC3 ¹⁾	6209 2ZC3 ¹⁾	Fig. 2
180 M/L	2 ... 8	6210 ZC3 ²⁾	6210 ZC3 ²⁾	Fig. 4
200 L	2 ... 8	6212 ZC3 ²⁾	6212 ZC3 ²⁾	
225 S/M	2 ... 8	6213 ZC3 ²⁾	6213 ZC3 ²⁾	Fig. 1
250 M	2 ... 8	6215 ZC3 ²⁾	6215 ZC3 ²⁾	
280 S/M	2	6315 C3	6315 C3	Fig. 2
	4 ... 8	6317 C3	6317 C3	
315 S/M/L	2	6316 C3	6316 C3	
	4 ... 8	6319 C3	6319 C3	
1LE16, 1MB16 – Performance Line				
100 L	2 ... 8	6306 2ZC3	6306 2ZC3	Fig. 1
112 M	2 ... 8	6306 2ZC3	6306 2ZC3	
132 S/M	2 ... 8	6308 2ZC3	6308 2ZC3	
160 M/L	2 ... 8	6309 ZC3	6309 ZC3	Fig. 2
180 M/L	2 ... 8	6310 C3	6310 C3	Fig. 4
200 L	2 ... 8	6312 C3	6312 C3	
225 S/M	2 ... 8	6313 C3	6313 C3	Fig. 3
250 M	2 ... 8	6315 C3	6315 C3	
280 S/M	2	6315 C3	6315 C3	
	4 ... 8	6317 C3	6317 C3	
315 S/M/L	2	6316 C3	6316 C3	
	4 ... 8	6319 C3	6319 C3	

Bearing selection table for 1LE15, 1MB15, 1LE16 and 1MB16 motors (bearings for increased cantilever forces – Order code L22)

Frame size	No. of poles	Drive end (DE) bearing Horizontal and vertical type of construction	Non-drive end (NDE) bearing Horizontal and vertical type of construction	Fig. No. on page 1/48
1LE15/1MB15 – Basic Line				
100 L	2 ... 8	6306 2ZC3	6206 2ZC3	
112 M	2 ... 8	6306 2ZC3	6206 2ZC3	
132 S/M	2 ... 8	6308 2ZC3	6208 2ZC3	
160 M/L	2 ... 8	6309 2ZC3	6209 2ZC3	
180 M/L	2 ... 8	NU 210	6210 C3	
200 L	2 ... 8	NU 212	6212 C3	
225 S/M	2 ... 8	NU 213	6213 C3	Fig. 4
250 M	2 ... 8	NU 215	6215 C3	
280 S/M	2	NU315	6315 C3	Fig. 5
	4 ... 8	NU317	6317 C3	
315 S/M/L	2	NU316	6316 C3	
	4 ... 8	NU319	6319 C3	
1LE16/1MB16 – Performance Line				
100 L	2 ... 8	³⁾		
112 M	2 ... 8	³⁾		
132 S/M	2 ... 8	³⁾		
160 M/L	2 ... 8	³⁾		
180 M/L	2 ... 8	NU 310	6310	
200 L	2 ... 8	NU 312	6312	
225 S/M	2 ... 8	NU 313	6313	Fig. 6
250 M	2 ... 8	NU 315	6315	
280 S/M	2	NU315	6315 ⁴⁾	
	4 ... 8	NU317	6317 ⁴⁾	
315 S/M/L	2	NU316	6316 ⁴⁾	
	4 ... 8	NU319	6319 ⁴⁾	

¹⁾ Deep-groove bearings with a side plate are used for regreasable versions (**L23**).

²⁾ Deep-groove bearings without a side plate are used for regreasable versions (**L23**).

³⁾ Not permitted.

⁴⁾ As for basic version.

Overview (continued)
Bearing selection table for 1LE15/1MB15 and 1LE16/1MB16 motors
(deep-groove bearings reinforced at both ends – Order code L25, for 1LE16 motors - standard)

Frame size	No. of poles	Drive end (DE) bearing		Non-drive end (NDE) bearing		Fig. No. on page 1/48
		Horizontal type of construction	Vertical type of construction	Horizontal type of construction	Vertical type of construction	
1LE15, 1MB15 – Basic Line						
100 L	2 ... 8	6306 2ZC3 ³⁾	6306 2ZC3 ³⁾	6306 2ZC3 ³⁾	6306 2ZC3 ³⁾	
112 M	2 ... 8	6306 2ZC3 ³⁾	6306 2ZC3 ³⁾	6306 2ZC3 ³⁾	6306 2ZC3 ³⁾	
132 S/M	2 ... 8	6308 2ZC3 ³⁾	6308 2ZC3 ³⁾	6308 2ZC3 ³⁾	6308 2ZC3 ³⁾	
160 M/L	2 ... 8	6309 2ZC3 ³⁾	6309 2ZC3 ³⁾	6309 2ZC3 ³⁾	6309 2ZC3 ³⁾	
180 M/L	2 ... 8	6310 ZC3 ¹⁾	6310 ZC3 ¹⁾	6310 ZC3 ¹⁾	6310 ZC3 ¹⁾	
200 L	2 ... 8	6312 ZC3 ¹⁾	6312 ZC3 ¹⁾	6312 ZC3 ¹⁾	6312 ZC3 ¹⁾	
225 S/M	2 ... 8	6313 ZC3 ¹⁾	6313 ZC3 ¹⁾	6313 ZC3 ¹⁾	6313 ZC3 ¹⁾	Fig. 4
250 M	2 ... 8	6315 ZC3 ¹⁾	6315 ZC3 ¹⁾	6315 ZC3 ¹⁾	6315 ZC3 ¹⁾	
280 S/M	2	6315 C3 ²⁾	6315 C3 ²⁾	6315 C3 ²⁾	6315 C3 ²⁾	
	4 ... 8	6317 C3 ²⁾	6317 C3 ²⁾	6317 C3 ²⁾	6317 C3 ²⁾	
315 S/M/L	2	6316 C3 ²⁾	6316 C3 ²⁾	6316 C3 ²⁾	6316 C3 ²⁾	
	4 ... 8	6319 C3 ²⁾	6319 C3 ²⁾	6319 C3 ²⁾	6319 C3 ²⁾	
1LE16, 1MB16 – Performance Line – bearings of size 63 are standard bearings						

¹⁾ Deep-groove bearings without a side plate are used for regreasable versions (**L23**).

²⁾ As for basic version.

³⁾ Deep-groove bearings with a side plate are used for regreasable versions (**L23**).

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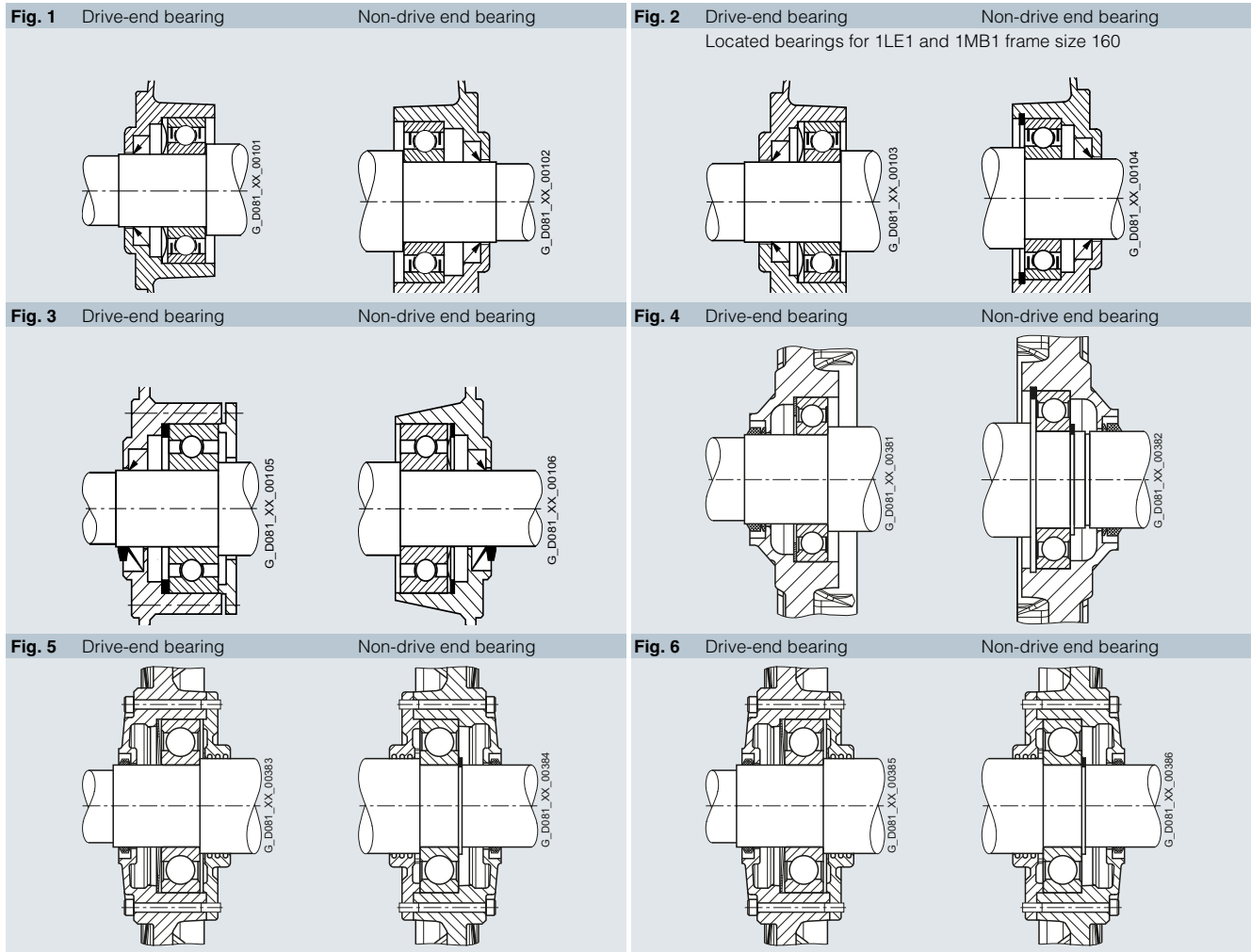
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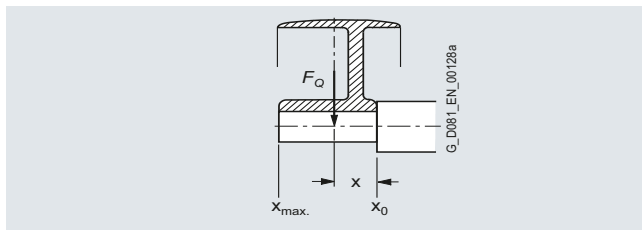
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Overview (continued)

Diagrams of bearings



Admissible cantilever forces



In order to calculate the admissible cantilever forces for a radial load, the line of force (i.e. the centerline of the pulley) of the cantilever force F_Q (N) must lie within the free shaft extension (dimension X).

Dimension x [mm] is the distance between the point of application of force F_Q and the shaft shoulder. Dimension x_{max} corresponds to the length of the shaft extension.

$$\text{Total cantilever force } F_Q = c \cdot F_U$$

The pre-tension factor c is a value gained from experience from the belt manufacturer. The following approximate value can be assumed:

- For normal flat leather belts with an idler pulley $c = 2$;
- for V-belts $c = 2$ to 2.5 ;
- for special synthetic belts (depending on the type of load and type of belt) $c = 2$ to 2.5 .

The circumferential force F_U (N) is calculated using the following equation

$$F_U = 2 \cdot 10^7 \frac{P}{n \cdot D}$$

- F_U circumferential force in N
- P rated motor output (transmitted power) in kW
- n rated motor speed in rpm
- D belt pulley diameter in mm

Overview (continued)

Admissible cantilever forces – basic version

1LE10, 1MB10 and 1PC10 motors at 50 Hz

Valid are: x_0 values for $x = 0$ and x_{max} values for $x = l$
(l = shaft extension)

Frame size	Type	No. of poles	Admissible cantilever force F_Q	
			at x_0	at x_{max}
1LE1 motors – values for IE2 motors with increased output ¹⁾				
80	1LE1001-0DA	2	485	400
	1LE1001-0DB	4	625	515
	1LE1001-0DC	6	735	605
90	1LE1001-0EA	2	725	605
	1LE1001-0EB	4	920	775
	1LE1001-0EC	6	1090	910
100	1LE1001-1AA	2	1010	825
	1LE1001-1AB	4	1230	1010
	1LE1001-1AC	6	1440	1180
112	1LE1001-1BA	2	970	785
	1LE1001-1BB	4	1235	1000
	1LE1001-1BC	6	1440	1165
132	1LE1001-1CA	2	1470	1180
	1LE1001-1CB	4	1830	1470
	1LE1001-1CC	6	2150	1730
160	1LE1001-1DA	2	1550	1270
	1LE1001-1DB	4	1910	1550
	1LE1001-1DC	6	2230	1810

1LE1 motors – standard values for IE2 motors ¹⁾
1MB1 motors – standard values for IE2 motors ¹⁾
1PC1 motors – standard values for IE2 motors ¹⁾

80	1LE1001-0DA	2	485	400
	1MB10.1-0DA			
	1PC1001-1AA			
	1LE1001-0DB			
80	1MB10.1-0DB	4	625	515
	1PC1001-1AB			
	1LE1001-0DC			
80	1MB10.1-0DC	6	735	605
	1PC1001-1AC			
	1LE1001-1AD			
80	1MB10.1-1AD	8	815	675
	1PC1001-1AD			
	1LE1001-0EA			
90	1MB10.1-0EA	2	725	605
	1PC1001-1AA			
	1LE1001-0EB			
90	1MB10.1-0EB	4	920	775
	1PC1001-1AB			
	1LE1001-0EC			
90	1MB10.1-0EC	6	1090	910
	1PC1001-1AC			
	1LE1001-1AD			
90	1MB10.1-1AD	8	1230	1030
	1PC1001-1AD			

1LE10, 1MB10 and 1PC10 motors at 50 Hz

Valid are: x_0 values for $x = 0$ and x_{max} values for $x = l$
(l = shaft extension)

Frame size	Type	No. of poles	Admissible cantilever force F_Q	
			at x_0	at x_{max}
1LE1 motors – standard values for IE2 motors ¹⁾				
1MB1 motors – standard values for IE2 motors ¹⁾				
1PC1 motors – standard values for IE2 motors ¹⁾				
100	1LE1001-1AA	2	1020	815
	1MB10.1-1AA			
	1PC1001-1AA			
100	1LE1001-1AB	4	1250	1000
	1MB10.1-1AB			
	1PC1001-1AB			
100	1LE1001-1AC	6	1450	1155
	1MB10.1-1AC			
	1PC1001-1AC			
100	1LE1001-1AD	8	1615	1290
	1MB10.1-1AD			
	1PC1001-1AD			
112	1LE1001-1BA	2	1000	790
	1MB10.1-1BA			
	1PC1001-1BA			
112	1LE1001-1BB	4	1250	990
	1MB10.1-1BB			
	1PC1001-1BB			
112	1LE1001-1BC	6	1450	1150
	1MB10.1-1BC			
	1PC1001-1BC			
112	1LE1001-1BD	8	1610	1275
	1MB10.1-1BD			
	1PC1001-1BD			
132	1LE1001-1CA	2	1505	1170
	1MB10.1-1CA			
	1PC1001-1CA			
132	1LE1001-1CB	4	1880	1460
	1MB10.1-1CB			
	1PC1001-1CB			
132	1LE1001-1CC	6	2170	1680
	1MB10.1-1CC			
	1PC1001-1CC			
132	1LE1001-1CD	8	2420	1880
	1MB10.1-1CD			
	1PC1001-1CD			
160	1LE1001-1DA	2	1560	1240
	1MB10.1-1DA			
	1PC1001-1DA			
160	1LE1001-1DB	4	2040	1590
	1MB10.1-1DB			
	1PC1001-1DB			
160	1LE1001-1DC	6	2350	1820
	1MB10.1-1DC			
	1PC1001-1DC			
160	1LE1001-1DD	8	2610	2030
	1MB10.1-1DD			
	1PC1001-1DD			

In the case of cantilever forces that exceed this, see "Bearings for increased cantilever forces".

¹⁾ For IE1 motors, the admissible cantilever force can be increased by up to 5 %.

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Overview (continued)

1LE15 and 1MB15 motors at 50 Hz

Valid are: x_0 values for $x = 0$ and x_{max} values for $x = 1$
(l = shaft extension)

Frame size	No. of poles	Admissible cantilever force	
		at x_0	at x_{max}
	N	N	N
1LE1501/03/21/23 – Basic Line			
71	2	400	340
	4	490	420
	6	570	490
80	2	680	570
	4	850	720
	6	980	820
90	2	750	620
	4	940	790
	6	1090	900
100	2	1010	815
	4	1230	1000
	6	1440	1155
	8	1615	1290
112	2	970	785
	4	1235	990
	6	1440	1150
	8	1610	1275
132	2	1470	1170
	4	1830	1460
	6	2150	1680
	8	2420	1880
160	2	1550	1240
	4	1910	1550
	6	2230	1810
	8	2610	2030
180	2	1670	1380
	4	2150	1740
	6	2500	2000
200	2	2460	2070
	4	3180	2630
	6	3600	2980
225	2	2850	2300
	4	3550	2800
	6	4050	3240
	8	4500	3500
250	2	3250	2600
	4	4100	3400
	6	4800	4000
	8	5250	4450
280	2	5200	4200
	4	8500	7000
	6	9800	8150
	8	10800	9000
315 S/M	2	5300	4500
	4	9150	7400
	6	10750	8750
	8	11600	9600
315 L	2	4900	4300
	4	8900	7700
	6	10100	9150
	8	11100	10200

1LE16 and 1MB16 motors at 50 Hz

Valid are: x_0 values for $x = 0$ and x_{max} values for $x = 1$
(l = shaft extension)

Frame size	No. of poles	Admissible cantilever force	
		at x_0	at x_{max}
	N	N	N
1LE1601/03/21/23 – Performance Line			
100	2	1585	1270
	4	1960	1575
	6	2270	1815
	8	2520	2015
112	2	1545	1240
	4	1960	1555
	6	2270	1800
	8	2510	1990
132	2	2285	1795
	4	2860	2250
	6	3320	2580
	8	3700	2870
160	2	2800	2170
	4	3450	2750
	6	4000	3160
	8	4510	3500
180	2	3250	2610
	4	4110	3270
	6	4720	3740
	8	5110	4110
200	2	4320	3550
	4	5480	4500
	6	6220	5110
	8	7200	5750
225	2	5000	4150
	4	6250	4900
	6	7200	5750
	8	7800	6200
250	2	6000	4800
	4	7600	6200
	6	8750	7350
	8	9500	8000
280	2	5200	4200
	4	8500	7000
	6	9800	8150
	8	10800	9000
315 S/M	2	5300	4500
	4	9150	7400
	6	10750	8750
	8	11600	9600
315 L	2	4900	4300
	4	8900	7700
	6	10100	9150
	8	11100	10200

In the case of cantilever forces that exceed this, see "Bearings for increased cantilever forces".

Overview (continued)

Admissible cantilever forces – bearings for increased cantilever forces – order code **L22****1LE10, 1MB10, 1MB15 and 1PC10 motors at 50 Hz with deep-groove bearing (DE)**Valid are: x_0 values for $x = 0$ and x_{max} values for $x = l$ (l = shaft extension)

Frame size	Type	No. of poles	Admissible cantilever force F_Q	
			at x_0	at x_{max}
N				
1LE1 motors – values for IE2 motors with increased output ¹⁾				
100	1LE1001-1AA	2	1585	1300
	1LE1001-1AB	4	1960	1610
	1LE1001-1AC	6	2270	1865
112	1LE1001-1BA	2	1545	1250
	1LE1001-1BB	4	1960	1585
	1LE1001-1BC	6	2270	1835
132	1LE1001-1CA	2	2285	1840
	1LE1001-1CB	4	2860	2300
	1LE1001-1CC	6	3320	2670
160	1LE1001-1DA	2	2800	2240
	1LE1001-1DB	4	3450	2270
	1LE1001-1DC	6	4000	3200

1LE1 motors – standard values for IE2 motors ¹⁾
1MB1 motors – standard values for IE2 motors ¹⁾
1PC1 motors – standard values for IE2 motors ¹⁾

Frame size	Type	No. of poles	Admissible cantilever force F_Q	
			at x_0	at x_{max}
N				
100	1LE1001-1AA 1MB10.1-1AA 1PC1001-1AA	2	1585	1270
	1LE1001-1AB 1MB10.1-1AB 1PC1001-1AB	4	1960	1575
	1LE1001-1AC 1MB10.1-1AC 1PC1001-1AC	6	2270	1815
112	1LE1001-1AD 1MB10.1-1AD 1PC1001-1AD	8	2520	2015
	1LE1001-1BA 1MB10.1-1BA 1PC1001-1BA	2	1545	1240
	1LE1001-1BB 1MB10.1-1BB 1PC1001-1BB	4	1960	1555
132	1LE1001-1BC 1MB10.1-1BC 1PC1001-1BC	6	2270	1800
	1LE1001-1BD 1MB10.1-1BD 1PC1001-1BD	8	2510	1990
	1LE1001-1CA 1MB10.1-1CA 1PC1001-1CA	2	2285	1795
160	1LE1001-1CB 1MB10.1-1CB 1PC1001-1CB	4	2860	2250
	1LE1001-1CC 1MB10.1-1CC 1PC1001-1CC	6	3320	2580
	1LE1001-1CD 1MB10.1-1CD 1PC1001-1CD	8	3700	2870
160	1LE1001-1DA 1MB10.1-1DA 1PC1001-1DA	2	2800	2170
	1LE1001-1DB 1MB10.1-1DB 1PC1001-1DB	4	3450	2750
	1LE1001-1DC 1MB10.1-1DC 1PC1001-1DC	6	4000	3160
160	1LE1001-1DD 1MB10.1-1DD 1PC1001-1DD	8	4510	3500

1LE15 and 1MB15 motors at 50 Hz with deep-groove bearings at DE up to frame size 160 with cylindrical roller bearings at DE in frame size 180 and aboveValid are: x_0 values for $x = 0$ and x_{max} values for $x = l$ (l = shaft extension)

Frame size	No. of poles	Admissible cantilever force	
		at x_0	at x_{max}
N			
1LE1501/03/21/23, 1MB15 – Basic Line			
100	2	1585	1270
	4	1960	1575
	6	2270	1815
	8	2520	2015
112	2	1545	1240
	4	1960	1555
	6	2270	1800
	8	2510	1990
132	2	2285	1795
	4	2860	2250
	6	3320	2580
	8	3700	2870
160	2	2800	2170
	4	3450	2750
	6	4000	3160
	8	4510	3500
180	2	4520	3630
	4	5560	4050
	6	6280	4050
	8	6840	5610
200	2	6840	5610
	4	8440	6000
	6	9480	6000
	8	11100	7300
225	2	8000	6800
	4	9800	7250
	6	11100	7300
	8	11300	7300
250	2	9500	7400
	4	12500	9400
	6	13500	9700
	8	14700	9700
280 ²⁾	2	16500	9800
315 S, M ²⁾	2	18400	7600
315 L ²⁾	2	18400	7600

¹⁾ For IE1 motors, the admissible cantilever force can be increased by up to 5 %.

²⁾ For admissible cantilever forces for frame sizes 280 to 315 in 4-pole and 6-pole versions, see diagrams on the following page.

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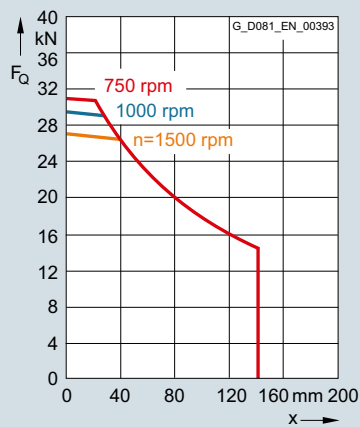
Overview (continued)

1LE16 and 1MB16 motors at 50 Hz with reinforced cylindrical roller bearings (DE)

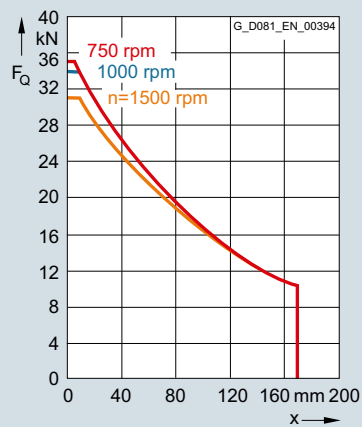
Valid are: x_0 values for $x = 0$ and x_{max} values for $x = l$
(l = shaft extension)

Frame size	No. of poles	Admissible cantilever force	
		at x_0	at x_{max}
N			
1LE1601/03/21/23, 1MB16 – Performance Line			
100	2, 4, 6, 8	–	–
112	2, 4, 6, 8	–	–
132	2, 4, 6, 8	–	–
160	2, 4, 6, 8	–	–
180	2	8150	4050
	4	9800	4050
	6	9800	4050
200	2	11200	6000
	4	13600	6000
	6	13600	6000
225	2	12700	7900
	4	15700	7250
	6	15700	7300
	8	15700	7300
250	2	17000	7750
	4	21000	9400
	6	21000	9700
	8	21000	9700
280 ¹⁾	2	16500	9800
315 S, M ¹⁾	2	18400	7600
315 L ¹⁾	2	18400	7600

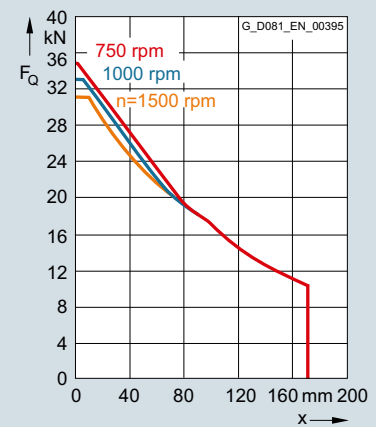
Frame size 280, 4- to 8-pole



Frame size 315 S/M, 4-pole to 8-pole



Frame size 315 L, 4-pole to 8-pole



¹⁾ For admissible cantilever forces for frame sizes 280 to 315 in 4-pole and 6-pole versions, see diagrams on this page.

Overview (continued)

Admissible cantilever forces – deep-groove bearings reinforced at both ends – order code **L25**

1LE15 and 1MB15 motors at 50 Hz, deep-groove bearings reinforced at both ends

Valid are: x_0 values for $x = 0$ and x_{max} values for $x = 1$ ($l =$ shaft extension)

Frame size	No. of poles	Admissible cantilever force	
		at x_0	at x_{max}
Frame size	No. of poles	N	N
1LE1501/03/21/23, 1MB15 – Basic Line			
100	2	1585	1270
	4	1960	1575
	6	2270	1815
	8	2520	2015
112	2	1545	1240
	4	1960	1555
	6	2270	1800
	8	2510	1990
132	2	2285	1795
	4	2860	2250
	6	3320	2580
	8	3700	2870
160	2	2800	2170
	4	3450	2750
	6	4000	3160
	8	4510	3500
180	2	3250	2610
	4	4110	3270
	6	4720	3740
200	2	4320	3550
	4	5480	4500
	6	6220	5110
225	2	5000	4150
	4	6250	4900
	6	7200	5750
	8	7800	6200
250	2	6000	4800
	4	7600	6200
	6	8750	7350
	8	9500	8000
280 ¹⁾	2, 4, 6, 8	–	–
315	2, 4, 6, 8	–	–

Admissible cantilever forces – reinforced bearings at both ends, DE bearings for increased cantilever forces – order code **L28**

1LE15 and 1MB15 motors at 50 Hz, deep-groove bearings reinforced at both ends

Valid are: x_0 values for $x = 0$ and x_{max} values for $x = 1$ ($l =$ shaft extension)

Frame size	No. of poles	Admissible cantilever force	
		at x_0	at x_{max}
Frame size	No. of poles	N	N
1LE1501/03/21/23, 1MB15 – Basic Line			
100	2, 4, 6, 8	–	–
112	2, 4, 6, 8	–	–
132	2, 4, 6, 8	–	–
160	2, 4, 6, 8	–	–
180	2	8150	4050
	4	9800	4050
	6	9800	4050
200	2	11200	6000
	4	13600	6000
	6	13600	6000
225	2	12700	7900
	4	15700	7250
	6	15700	7300
	8	15700	7300
250	2	17000	7750
	4	21000	9400
	6	21000	9700
	8	21000	9700
280	2, 4, 6, 8	–	–
315 S, M	2, 4, 6, 8	–	–
315 L	2, 4, 6, 8	–	–

¹⁾ For values for frame sizes 280 to 315, see page 1/50.
For frame sizes 280 to 315, bearings of size 63 are standard.

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Overview (continued)

Admissible axial load

1LE10, 1MB10 and 1PC10 motors in vertical type of construction – basic version (with the exception of motors with increased output)

Frame size	3000 rpm				1500 rpm				1000 rpm				750 rpm			
	Shaft extension pointing															
	down		up		down		up		down		up		down		up	
	Load		Load		Load		Load		Load		Load		Load		Load	
	down-wards	up-wards	down-wards	up-wards	down-wards	up-wards	down-wards	up-wards	down-wards	up-wards	down-wards	up-wards	down-wards	up-wards	down-wards	up-wards
	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
80	110	425	360	160	100	540	480	165	100	650	590	165	100	760	700	165
90	110	440	360	180	100	680	580	190	100	920	820	190	100	1150	1050	190
100	140	700	550	280	130	990	820	285	130	1280	1110	285	130	1560	1390	285
112	140	710	550	300	130	1000	820	310	130	1290	1110	310	130	1570	1390	310
132	200	1200	950	470	180	1680	1200	470	180	1900	1600	470	190	2200	1900	440
160	1500	1400	950	1900	1900	1800	1300	2200	2200	2200	1600	2700	2700	2700	1950	2900

The values shown do not assume a cantilever force on the shaft extension.

The admissible loads are valid for operation at 50 Hz; for 60 Hz, please inquire.

The calculation of the admissible axial load was based on the drive with generally available coupling. For suppliers, see the relevant section of the catalog "Accessories" on Page 2/65.

Please inquire if the load direction alternates.

1LE10, 1MB10 and 1PC10 motors in horizontal type of construction – basic version (with the exception of motors with increased output)

Frame size	3000 rpm				1500 rpm				1000 rpm				750 rpm			
	Tensile load	Thrust load (N)		without radial load	Tensile load	Thrust load (N)		without radial load	Tensile load	Thrust load (N)		without radial load	Tensile load	Thrust load (N)		without radial load
		with radial load at				with radial load at				with radial load at				with radial load at		
		X ₀	X _{max.}	N	N	X ₀	X _{max.}	N	N	X ₀	X _{max.}	N	N	X ₀	X _{max.}	N
	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
80	140	190	150	400	140	300	260	510	140	330	280	620	140	340	290	730
90	150	300	280	400	150	400	360	630	150	480	430	870	150	550	500	1100
100	220	450	350	630	220	600	500	910	220	650	550	1200	220	750	650	1480
112	220	450	350	630	220	600	500	910	220	650	550	1200	220	750	650	1480
132	350	650	520	1200	350	850	700	1600	350	1020	890	1900	350	1150	1020	2200
160	1500	850	720	1500	1500	1050	920	1800	1500	1250	1120	2200	1500	1350	1220	2600

The values shown do not assume a cantilever force on the shaft extension.

The admissible loads are valid for operation at 50 Hz; for 60 Hz, please inquire.

The calculation of the admissible axial load was based on the drive with generally available coupling. For suppliers, see the the section "Accessories" on Page 2/65.

Please inquire if the load direction alternates.

Overview (continued)

1LE15, 1MB15, 1LE16 and 1MB16 motors in vertical type of construction – Basic version

Frame size	Type	3000 rpm				1500 rpm				1000 rpm				750 rpm								
		Shaft extension pointing								down		up		down		up		down		up		
		Load		Load		Load		Load		Load		Load		Load		Load		Load		Load		
		down	up	down	up	down	up	down	up	down	up	down	up	down	up	down	up	down	up	down	up	
		N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
1LE15, 1MB15 – Basic Line																						
100	1..15.1-1AA4	300	450	340	410	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
	1..15.1-1AA6	290	440	310	420	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
	1..15.3-1AA4	290	440	310	420	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
	1..15.1-1AB4	–	–	–	–	280	720	570	430	–	–	–	–	–	–	–	–	–	–	–	–	
	1..15.1-1AB5	–	–	–	–	270	710	540	440	–	–	–	–	–	–	–	–	–	–	–	–	
	1..15.1-1AB6	–	–	–	–	250	710	500	460	–	–	–	–	–	–	–	–	–	–	–	–	
	1..15.3-1AB4	–	–	–	–	250	710	500	460	–	–	–	–	–	–	–	–	–	–	–	–	
	1..15.3-1AB5	–	–	–	–	250	710	500	460	–	–	–	–	–	–	–	–	–	–	–	–	
	1..15.1-1AC4	–	–	–	–	–	–	–	–	260	930	740	450	–	–	–	–	–	–	–	–	
	1..15.1-1AC6	–	–	–	–	–	–	–	–	240	920	690	470	–	–	–	–	–	–	–	–	
	1..15.1-1AD4	–	–	–	–	–	–	–	–	–	–	–	–	–	280	1100	940	440	–	–	–	
	1..15.1-1AD5	–	–	–	–	–	–	–	–	–	–	–	–	–	260	1100	910	450	–	–	–	
	112	1..15.1-1BA2	280	460	310	430	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		1..15.1-1BA6	260	460	270	450	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1..15.3-1BA2		260	460	270	450	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
1..15.1-1BB2		–	–	–	–	260	730	540	450	–	–	–	–	–	–	–	–	–	–	–	–	
1..15.1-1BB6		–	–	–	–	250	730	510	470	–	–	–	–	–	–	–	–	–	–	–	–	
1..15.3-1BB2		–	–	–	–	250	730	510	470	–	–	–	–	–	–	–	–	–	–	–	–	
1..15.1-1BC2		–	–	–	–	–	–	–	–	250	940	730	460	–	–	–	–	–	–	–	–	
1..15.1-1BC6		–	–	–	–	–	–	–	–	240	930	700	470	–	–	–	–	–	–	–	–	
1..15.3-1BC2		–	–	–	–	–	–	–	–	240	930	700	470	–	–	–	–	–	–	–	–	
1..15.1-1BD2		–	–	–	–	–	–	–	–	–	–	–	–	–	250	1110	900	460	–	–	–	
132		1..15.1-1CA0	510	600	370	740	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		1..15.1-1CA1	490	610	340	760	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		1..15.3-1CA0	490	610	340	760	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		1..15.1-1CA6	450	610	260	800	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	1..15.3-1CA1	450	610	260	800	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
	1..15.1-1CB0	–	–	–	–	490	1000	730	760	–	–	–	–	–	–	–	–	–	–	–	–	
	1..15.1-1CB2	–	–	–	–	460	1000	670	790	–	–	–	–	–	–	–	–	–	–	–	–	
	1..15.1-1CB6	–	–	–	–	410	1010	580	840	–	–	–	–	–	–	–	–	–	–	–	–	
	1..15.3-1CB0	–	–	–	–	410	1010	580	840	–	–	–	–	–	–	–	–	–	–	–	–	
	1..15.3-1CB2	–	–	–	–	410	1010	580	840	–	–	–	–	–	–	–	–	–	–	–	–	
	1..15.1-1CC0	–	–	–	–	–	–	–	–	490	1310	1040	760	–	–	–	–	–	–	–	–	
	1..15.1-1CC2	–	–	–	–	–	–	–	–	470	1310	1000	780	–	–	–	–	–	–	–	–	
	1..15.1-1CC3	–	–	–	–	–	–	–	–	440	1310	940	810	–	–	–	–	–	–	–	–	
	1..15.3-1CC0	–	–	–	–	–	–	–	–	440	1310	940	810	–	–	–	–	–	–	–	–	
	1..15.3-1CC2	–	–	–	–	–	–	–	–	440	1310	940	810	–	–	–	–	–	–	–	–	
	1..15.1-1CC6	–	–	–	–	–	–	–	–	390	1320	850	860	–	–	–	–	–	–	–	–	
	1..15.3-1CC3	–	–	–	–	–	–	–	–	400	1320	850	860	–	–	–	–	–	–	–	–	
	1..15.1-1CD0	–	–	–	–	–	–	–	–	–	–	–	–	–	480	1570	1280	770	–	–	–	
	1..15.1-1CD2	–	–	–	–	–	–	–	–	–	–	–	–	–	450	1580	1220	810	–	–	–	
	160	1..15.1-1DA2	1560	890	500	1950	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		1..15.1-1DA3	1510	900	450	1960	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		1..15.3-1DA2	1510	900	450	1960	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1..15.1-1DA4		1470	900	410	1960	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
1..15.3-1DA3		1470	900	410	1960	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
1..15.1-1DA6		1370	900	310	1960	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
1..15.3-1DA4		1370	900	310	1960	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
1..15.1-1DB2		–	–	–	–	1930	1340	870	2400	–	–	–	–	–	–	–	–	–	–	–	–	
1..15.1-1DB4		–	–	–	–	1840	1350	780	2410	–	–	–	–	–	–	–	–	–	–	–	–	
1..15.3-1DB2		–	–	–	–	1840	1350	780	2410	–	–	–	–	–	–	–	–	–	–	–	–	
1..15.1-1DB6		–	–	–	–	1760	1380	700	2440	–	–	–	–	–	–	–	–	–	–	–	–	
1..15.3-1DB4		–	–	–	–	1760	1380	700	2440	–	–	–	–	–	–	–	–	–	–	–	–	
1..15.1-1DB7		–	–	–	–	1640	1400	580	2460	–	–	–	–	–	–	–	–	–	–	–	–	
1..15.1-1DC2		–	–	–	–	–	–	–	–	2190	1700	1130	2760	–	–	–	–	–	–	–	–	
1..15.1-1DC4		–	–	–	–	–	–	–	–	2070	1710	1010	2770	–	–	–	–	–	–	–	–	
1..15.3-1DC2		–	–	–	–	–	–	–	–	2070	1710	1010	2770	–	–	–	–	–	–	–	–	
1..15.1-1DC6		–	–	–	–	–	–	–	–	1930	1720	870	2780	–	–	–	–	–	–	–	–	
1..15.3-1DC4		–	–	–	–	–	–	–	–	1930	1720	870	2780	–	–	–	–	–	–	–	–	
1..15.1-1DD2		–	–	–	–	–	–	–	–	–	–	–	–	–	2540	1990	1480	3050	–	–	–	
1..15.1-1DD3		–	–	–	–	–	–	–	–	–	–	–	–	–	2430	1980	1370	3040	–	–	–	
1..15.1-1DD4		–	–	–	–	–	–	–	–	–	–	–	–	–	2350	2000	1290	3060	–	–	–	

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Frame size	Type	3000 rpm				1500 rpm				1000 rpm				750 rpm				
		Shaft extension pointing								down		up		down		up		
		down		up		down		up		down		up		down		up		
		Load	Load	Load	Load	Load	Load	Load	Load	Load	Load	Load	Load	Load	Load	Load	Load	
		down	up	down	up	down	up	down	up	down	up	down	up	down	up	down	up	
		N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
180	1..15...1EA2	1290	1220	530	1980	-	-	-	-	-	-	-	-	-	-	-	-	
	1..15...1EA6	1260	1230	500	1990	-	-	-	-	-	-	-	-	-	-	-	-	
	1..15...1EB2	-	-	-	-	1680	1750	920	2500	-	-	-	-	-	-	-	-	
	1..15...1EB4	-	-	-	-	1610	1760	850	2520	-	-	-	-	-	-	-	-	
	1..15...1EB6	-	-	-	-	1600	1770	840	2530	-	-	-	-	-	-	-	-	
	1..15...1EC4	-	-	-	-	-	-	-	-	1920	2120	1160	2880	-	-	-	-	
	1..15...1EC6	-	-	-	-	-	-	-	-	1920	2150	1160	2900	-	-	-	-	
	1..15...1ED4	-	-	-	-	-	-	-	-	-	-	-	-	2270	2440	1510	3200	
	1..15...1ED6	-	-	-	-	-	-	-	-	-	-	-	-	2050	2500	1290	3260	
	200	1..15...2AA4	1920	1680	760	2830	-	-	-	-	-	-	-	-	-	-	-	-
1..15...2AA5		1810	1700	660	2860	-	-	-	-	-	-	-	-	-	-	-	-	
1..15...2AA6		1810	1720	660	2870	-	-	-	-	-	-	-	-	-	-	-	-	
1..15...2AB5		-	-	-	-	2410	2450	1260	3600	-	-	-	-	-	-	-	-	
1..15...2AB6		-	-	-	-	2410	2480	1260	3630	-	-	-	-	-	-	-	-	
1..15...2AC4		-	-	-	-	-	-	-	-	2880	2970	1720	4120	-	-	-	-	
1..15...2AC5		-	-	-	-	-	-	-	-	2770	3010	1620	4160	-	-	-	-	
1..15...2AC6		-	-	-	-	-	-	-	-	2700	3050	1550	4200	-	-	-	-	
1..15...2AD5		-	-	-	-	-	-	-	-	-	-	-	-	3240	3450	2090	4600	
1..15...2AD6		-	-	-	-	-	-	-	-	-	-	-	-	3060	3510	1910	4660	
225	1..15...2BA2	1720	2000	630	3020	-	-	-	-	-	-	-	-	-	-	-	-	
	1..15...2BA6	1720	2000	630	3020	-	-	-	-	-	-	-	-	-	-	-	-	
	1..15...2BB0	-	-	-	-	2200	2800	1180	3830	-	-	-	-	-	-	-	-	
	1..15...2BB2	-	-	-	-	2100	2850	1070	3900	-	-	-	-	-	-	-	-	
	1..15...2BB6	-	-	-	-	2100	2850	1070	3900	-	-	-	-	-	-	-	-	
	1..15...2BC2	-	-	-	-	-	-	-	-	2340	3470	1300	4480	-	-	-	-	
	1..15...2BC6	-	-	-	-	-	-	-	-	2300	3500	1280	4480	-	-	-	-	
	1..15...2BD0	-	-	-	-	-	-	-	-	-	-	-	-	3200	3750	2180	4770	
	1..15...2BD2	-	-	-	-	-	-	-	-	-	-	-	-	3090	3800	2070	4820	
	1..15...2BD6	-	-	-	-	-	-	-	-	-	-	-	-	2780	3950	1770	4970	
250	1..15...2CA2	1630	2600	830	3400	-	-	-	-	-	-	-	-	-	-	-	-	
	1..15...2CA6	1630	2650	830	3450	-	-	-	-	-	-	-	-	-	-	-	-	
	1..15...2CB2	-	-	-	-	1980	3580	1180	4390	-	-	-	-	-	-	-	-	
	1..15...2CB6	-	-	-	-	1940	3740	1140	4530	-	-	-	-	-	-	-	-	
	1..15...2CC2	-	-	-	-	-	-	-	-	2440	4210	1650	5020	-	-	-	-	
	1..15...2CC6	-	-	-	-	-	-	-	-	2440	4320	1640	5120	-	-	-	-	
	1..15...2CD2	-	-	-	-	-	-	-	-	-	-	-	-	3180	4760	2380	5560	
	1..15...2CD6	-	-	-	-	-	-	-	-	-	-	-	-	2950	4850	2150	5650	
	280	1..15...2DA0	3540	4280	1950	5850	-	-	-	-	-	-	-	-	-	-	-	-
		1..15...2DA2	3250	4390	1650	5950	-	-	-	-	-	-	-	-	-	-	-	-
1..15...2DA6		3180	4540	1580	6100	-	-	-	-	-	-	-	-	-	-	-	-	
1..15...2DB0		-	-	-	-	5320	6930	3640	8500	-	-	-	-	-	-	-	-	
1..15...2DB2		-	-	-	-	4790	6990	3170	8580	-	-	-	-	-	-	-	-	
1..15...2DB6		-	-	-	-	4770	7170	3150	8750	-	-	-	-	-	-	-	-	
1..15...2DC0		-	-	-	-	-	-	-	-	6630	7990	5000	9570	-	-	-	-	
1..15...2DC2		-	-	-	-	-	-	-	-	6350	8150	4700	9700	-	-	-	-	
1..15...2DC6		-	-	-	-	-	-	-	-	6230	8400	4600	9900	-	-	-	-	
1..15...2DD0		-	-	-	-	-	-	-	-	-	-	-	-	7930	9030	6200	10500	
1..15...2DD2	-	-	-	-	-	-	-	-	-	-	-	-	7690	9180	6000	10600		
1..15...2DD6	-	-	-	-	-	-	-	-	-	-	-	-	7370	9300	5700	10700		
315	1..15...3AA0	3580	4710	1450	6850	-	-	-	-	-	-	-	-	-	-	-	-	
	1..15...3AA2	3180	4960	1050	7100	-	-	-	-	-	-	-	-	-	-	-	-	
	1..15...3AA4	2890	5080	770	7200	-	-	-	-	-	-	-	-	-	-	-	-	
	1..15...3AA5	2240	5480	100	7600	-	-	-	-	-	-	-	-	-	-	-	-	
	1..15...3AB0	-	-	-	-	5640	7790	3600	9850	-	-	-	-	-	-	-	-	
	1..15...3AB2	-	-	-	-	4780	7920	2700	9900	-	-	-	-	-	-	-	-	
	1..15...3AB4	-	-	-	-	4820	7580	2750	9600	-	-	-	-	-	-	-	-	
	1..15...3AB5	-	-	-	-	3720	7620	1650	9650	-	-	-	-	-	-	-	-	
	1..15...3AC0	-	-	-	-	-	-	-	-	6800	9100	4700	11100	-	-	-	-	
	1..15...3AC2	-	-	-	-	-	-	-	-	6080	9300	4000	11300	-	-	-	-	
	1..15...3AC4	-	-	-	-	-	-	-	-	5400	9750	3350	11700	-	-	-	-	
	1..15...3AC5	-	-	-	-	-	-	-	-	4800	10150	2750	11800	-	-	-	-	
	1..15...3AC6	-	-	-	-	-	-	-	-	4550	10000	2500	11800	-	-	-	-	
	1..15...3AD0	-	-	-	-	-	-	-	-	-	-	-	-	8500	10150	6450	11800	
	1..15...3AD2	-	-	-	-	-	-	-	-	-	-	-	-	8150	10400	6100	11900	
	1..15...3AD4	-	-	-	-	-	-	-	-	-	-	-	-	7250	10650	5200	12000	
	1..15...3AD5	-	-	-	-	-	-	-	-	-	-	-	-	6500	10900	4450	12300	
	1..15...3AD6	-	-	-	-	-	-	-	-	-	-	-	-	5900	11000	3900	12500	

Overview (continued)

Frame size	Type	3000 rpm				1500 rpm				1000 rpm				750 rpm				
		Shaft extension pointing								down		up		down		up		
		down		up		down		up		down		up		down		up		
		Load	up	Load	up	Load	up	Load	up	Load	up	Load	up	Load	up	Load	up	
		N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		
1LE16, 1MB16 – Performance Line																		
100	1..16.1-1AA4	220	930	820	330	–	–	–	–	–	–	–	–	–	–	–	–	
	1..16.1-1AA6	210	930	800	340	–	–	–	–	–	–	–	–	–	–	–	–	
	1..16.3-1AA4	210	930	800	340	–	–	–	–	–	–	–	–	–	–	–	–	
	1..16.1-1AB4	–	–	–	–	200	1330	1180	350	–	–	–	–	–	–	–	–	
	1..16.1-1AB5	–	–	–	–	190	1320	1150	360	–	–	–	–	–	–	–	–	
	1..16.1-1AB6	–	–	–	–	170	1320	1110	380	–	–	–	–	–	–	–	–	
	1..16.3-1AB4	–	–	–	–	170	1320	1110	380	–	–	–	–	–	–	–	–	
	1..16.3-1AB5	–	–	–	–	170	1320	1110	380	–	–	–	–	–	–	–	–	
	1..16.1-1AC4	–	–	–	–	–	–	–	–	180	1640	1450	370	–	–	–	–	
	1..16.1-1AC6	–	–	–	–	–	–	–	–	160	1640	1410	390	–	–	–	–	
	1..16.1-1AD4	–	–	–	–	–	–	–	–	–	–	–	–	200	1900	1740	360	
	1..16.1-1AD5	–	–	–	–	–	–	–	–	–	–	–	–	180	1900	1710	370	
	112	1..16.1-1BA2	200	940	790	350	–	–	–	–	–	–	–	–	–	–	–	–
		1..16.1-1BA6	180	940	750	370	–	–	–	–	–	–	–	–	–	–	–	–
1..16.3-1BA2		180	940	750	370	–	–	–	–	–	–	–	–	–	–	–	–	
1..16.1-1BB2		–	–	–	–	180	1340	1150	370	–	–	–	–	–	–	–	–	
1..16.1-1BB6		–	–	–	–	170	1340	1120	390	–	–	–	–	–	–	–	–	
1..16.3-1BB2		–	–	–	–	170	1340	1120	390	–	–	–	–	–	–	–	–	
1..16.1-1BC2		–	–	–	–	–	–	–	–	170	1650	1440	380	–	–	–	–	
1..16.1-1BC6		–	–	–	–	–	–	–	–	160	1640	1410	390	–	–	–	–	
1..16.3-1BC2		–	–	–	–	–	–	–	–	160	1640	1410	390	–	–	–	–	
1..16.1-1BD2		–	–	–	–	–	–	–	–	–	–	–	–	170	1910	1700	380	
132		1..16.1-1CA0	540	1120	890	770	–	–	–	–	–	–	–	–	–	–	–	–
	1..16.1-1CA1	520	1130	860	790	–	–	–	–	–	–	–	–	–	–	–	–	
	1..16.3-1CA0	520	1130	860	790	–	–	–	–	–	–	–	–	–	–	–	–	
	1..16.1-1CA6	480	1130	780	830	–	–	–	–	–	–	–	–	–	–	–	–	
	1..16.3-1CA1	480	1130	780	830	–	–	–	–	–	–	–	–	–	–	–	–	
	1..16.1-1CB0	–	–	–	–	520	1700	1430	790	–	–	–	–	–	–	–	–	
	1..16.1-1CB2	–	–	–	–	490	1710	1380	820	–	–	–	–	–	–	–	–	
	1..16.1-1CB6	–	–	–	–	440	1710	1280	870	–	–	–	–	–	–	–	–	
	1..16.3-1CB0	–	–	–	–	440	1710	1280	870	–	–	–	–	–	–	–	–	
	1..16.3-1CB2	–	–	–	–	440	1710	1280	870	–	–	–	–	–	–	–	–	
	1..16.1-1CC0	–	–	–	–	–	–	–	–	520	2150	1880	790	–	–	–	–	
	1..16.1-1CC2	–	–	–	–	–	–	–	–	500	2150	1840	810	–	–	–	–	
	1..16.1-1CC3	–	–	–	–	–	–	–	–	470	2150	1780	840	–	–	–	–	
	1..16.3-1CC0	–	–	–	–	–	–	–	–	470	2150	1780	840	–	–	–	–	
	1..16.3-1CC2	–	–	–	–	–	–	–	–	470	2150	1780	840	–	–	–	–	
	1..16.1-1CC6	–	–	–	–	–	–	–	–	420	2160	1690	890	–	–	–	–	
	1..16.3-1CC3	–	–	–	–	–	–	–	–	420	2160	1690	890	–	–	–	–	
	1..16.1-1CD0	–	–	–	–	–	–	–	–	–	–	–	–	510	2530	2240	800	
	1..16.1-1CD2	–	–	–	–	–	–	–	–	–	–	–	–	480	2540	2180	840	
	160	1..16.1-1DA2	2200	1870	1480	2590	–	–	–	–	–	–	–	–	–	–	–	–
1..16.1-1DA3		2150	1880	1430	2600	–	–	–	–	–	–	–	–	–	–	–	–	
1..16.3-1DA2		2150	1880	1430	2600	–	–	–	–	–	–	–	–	–	–	–	–	
1..16.1-1DA4		2120	1890	1400	2610	–	–	–	–	–	–	–	–	–	–	–	–	
1..16.3-1DA3		2120	1890	1400	2610	–	–	–	–	–	–	–	–	–	–	–	–	
1..16.1-1DA6		2020	1890	1300	2610	–	–	–	–	–	–	–	–	–	–	–	–	
1..16.3-1DA4		2020	1890	1300	2610	–	–	–	–	–	–	–	–	–	–	–	–	
1..16.1-1DB2		–	–	–	–	2860	2610	2140	3330	–	–	–	–	–	–	–	–	
1..16.1-1DB4		–	–	–	–	2760	2610	2040	3330	–	–	–	–	–	–	–	–	
1..16.3-1DB2		–	–	–	–	2760	2610	2040	3330	–	–	–	–	–	–	–	–	
1..16.1-1DB6		–	–	–	–	2680	2640	1960	3360	–	–	–	–	–	–	–	–	
1..16.3-1DB4		–	–	–	–	2680	2640	1960	3360	–	–	–	–	–	–	–	–	
1..16.1-1DB7		–	–	–	–	2570	2670	1850	3390	–	–	–	–	–	–	–	–	
1..16.1-1DC2		–	–	–	–	–	–	–	–	3320	3170	2600	3890	–	–	–	–	
1..16.1-1DC4		–	–	–	–	–	–	–	–	3200	3180	2480	3900	–	–	–	–	
1..16.3-1DC2		–	–	–	–	–	–	–	–	3200	3180	2480	3900	–	–	–	–	
1..16.1-1DC6		–	–	–	–	–	–	–	–	3050	3180	2330	3900	–	–	–	–	
1..16.3-1DC4		–	–	–	–	–	–	–	–	3050	3180	2330	3900	–	–	–	–	
1..16.1-1DD2		–	–	–	–	–	–	–	–	–	–	–	–	3830	3620	3110	4340	
1..16.1-1DD3		–	–	–	–	–	–	–	–	–	–	–	–	3730	3620	3010	4340	
1..16.1-1DD4		–	–	–	–	–	–	–	–	–	–	–	–	3650	3640	2930	4360	

Introduction

General technical specifications

Bearings and lubrication

1

Overview (continued)

Frame size	Type	3000 rpm				1500 rpm				1000 rpm				750 rpm				
		Shaft extension pointing								down		up		down		up		
		down		up		down		up		down		up		down		up		
		Load	Load	Load	Load	Load	Load	Load	Load	Load	Load	Load	Load	Load	Load	Load	Load	
180	1..16...1EA2	2510	2050	1360	3200	-	-	-	-	-	-	-	-	-	-	-	-	
	1..16...1EA6	2490	2060	1330	3220	-	-	-	-	-	-	-	-	-	-	-	-	
	1..16...1EB2	-	-	-	-	3240	2920	2090	4070	-	-	-	-	-	-	-	-	
	1..16...1EB4	-	-	-	-	3180	2930	2020	4090	-	-	-	-	-	-	-	-	
	1..16...1EB6	-	-	-	-	3160	2950	2010	4100	-	-	-	-	-	-	-	-	
	1..16...1EC4	-	-	-	-	-	-	-	-	3740	3560	2580	4710	-	-	-	-	
	1..16...1EC6	-	-	-	-	-	-	-	-	3740	3570	2580	4730	-	-	-	-	
	1..16...1ED4	-	-	-	-	-	-	-	-	-	-	-	-	4300	4090	3150	5240	
	1..16...1ED6	-	-	-	-	-	-	-	-	-	-	-	-	4090	4140	2940	5290	
	200	1..16...2AA4	2920	3030	2110	3840	-	-	-	-	-	-	-	-	-	-	-	-
1..16...2AA5		2810	3060	2000	3870	-	-	-	-	-	-	-	-	-	-	-	-	
1..16...2AA6		2810	3060	2000	3870	-	-	-	-	-	-	-	-	-	-	-	-	
1..16...2AB5		-	-	-	-	3820	4210	3010	5020	-	-	-	-	-	-	-	-	
1..16...2AB6		-	-	-	-	3820	4230	3010	5040	-	-	-	-	-	-	-	-	
1..16...2AC4		-	-	-	-	-	-	-	-	4570	5010	3760	5820	-	-	-	-	
1..16...2AC5		-	-	-	-	-	-	-	-	4470	5060	3660	5870	-	-	-	-	
1..16...2AC6		-	-	-	-	-	-	-	-	4400	5090	3590	5900	-	-	-	-	
1..16...2AD5		-	-	-	-	-	-	-	-	-	-	-	-	5200	5750	4390	6560	
1..16...2AD6		-	-	-	-	-	-	-	-	-	-	-	-	5010	5800	4200	6610	
225	1..16...2BA2	3100	3400	2050	4450	-	-	-	-	-	-	-	-	-	-	-	-	
	1..16...2BA6	3100	3400	2050	4450	-	-	-	-	-	-	-	-	-	-	-	-	
	1..16...2BB0	-	-	-	-	4200	4750	3150	5800	-	-	-	-	-	-	-	-	
	1..16...2BB2	-	-	-	-	4100	4850	3000	5850	-	-	-	-	-	-	-	-	
	1..16...2BB6	-	-	-	-	4100	4850	3000	5850	-	-	-	-	-	-	-	-	
	1..16...2BC2	-	-	-	-	-	-	-	-	4700	5800	3650	6850	-	-	-	-	
	1..16...2BC2	-	-	-	-	-	-	-	-	4650	5850	3600	6900	-	-	-	-	
	1..16...2BD0	-	-	-	-	-	-	-	-	-	-	-	-	5900	6400	4850	7650	
	1..16...2BD2	-	-	-	-	-	-	-	-	-	-	-	-	5800	6450	4700	7500	
	1..16...2BD6	-	-	-	-	-	-	-	-	-	-	-	-	5500	6600	4400	7650	
250	1..16...2CA2	3850	4100	2250	5600	-	-	-	-	-	-	-	-	-	-	-	-	
	1..16...2CA6	3850	4100	2250	5600	-	-	-	-	-	-	-	-	-	-	-	-	
	1..16...2CB2	-	-	-	-	4850	5650	3250	7250	-	-	-	-	-	-	-	-	
	1..16...2CB6	-	-	-	-	4800	5750	3200	7400	-	-	-	-	-	-	-	-	
	1..16...2CC2	-	-	-	-	-	-	-	-	5750	6750	4200	8350	-	-	-	-	
	1..16...2CC6	-	-	-	-	-	-	-	-	5750	6750	4200	8450	-	-	-	-	
	1..16...2CD2	-	-	-	-	-	-	-	-	-	-	-	-	6900	7700	5300	9200	
	1..16...2CD6	-	-	-	-	-	-	-	-	-	-	-	-	6700	7800	5000	9300	
	280	1..16...2DA0	3540	4280	1950	5850	-	-	-	-	-	-	-	-	-	-	-	-
		1..16...2DA2	3250	4390	1650	5950	-	-	-	-	-	-	-	-	-	-	-	-
1..16...2DA6		3180	4540	1580	6100	-	-	-	-	-	-	-	-	-	-	-	-	
1..16...2DB0		-	-	-	-	5320	6930	3640	8500	-	-	-	-	-	-	-	-	
1..16...2DB2		-	-	-	-	4790	6990	3170	8580	-	-	-	-	-	-	-	-	
1..16...2DB6		-	-	-	-	4770	7170	3150	8750	-	-	-	-	-	-	-	-	
1..16...2DC0		-	-	-	-	-	-	-	-	6630	7990	5000	9570	-	-	-	-	
1..16...2DC2		-	-	-	-	-	-	-	-	6350	8150	4700	9700	-	-	-	-	
1..16...2DC6		-	-	-	-	-	-	-	-	6230	8400	4600	9900	-	-	-	-	
1..16...2DD0		-	-	-	-	-	-	-	-	-	-	-	-	7930	9030	6200	10500	
315	1..16...3AA0	3580	4710	1450	6850	-	-	-	-	-	-	-	-	-	-	-	-	
	1..16...3AA2	3180	4960	1050	7100	-	-	-	-	-	-	-	-	-	-	-	-	
	1..16...3AA4	2890	5080	770	7200	-	-	-	-	-	-	-	-	-	-	-	-	
	1..16...3AA5	2240	5480	100	7600	-	-	-	-	-	-	-	-	-	-	-	-	
	1..16...3AB0	-	-	-	-	5640	7790	3600	9850	-	-	-	-	-	-	-	-	
	1..16...3AB2	-	-	-	-	4780	7920	2700	9900	-	-	-	-	-	-	-	-	
	1..16...3AB4	-	-	-	-	4820	7580	2750	9600	-	-	-	-	-	-	-	-	
	1..16...3AB5	-	-	-	-	3720	7620	1650	9650	-	-	-	-	-	-	-	-	
	1..16...3AC0	-	-	-	-	-	-	-	-	6800	9100	4700	11100	-	-	-	-	
	1..16...3AC2	-	-	-	-	-	-	-	-	6080	9300	4000	11300	-	-	-	-	
1..16...3AC4	-	-	-	-	-	-	-	-	5400	9750	3350	11700	-	-	-	-		
1..16...3AC5	-	-	-	-	-	-	-	-	4800	10150	2750	11800	-	-	-	-		
1..16...3AC6	-	-	-	-	-	-	-	-	4550	10000	2500	11800	-	-	-	-		
1..16...3AD0	-	-	-	-	-	-	-	-	-	-	-	-	8500	10150	6450	11800		
1..16...3AD2	-	-	-	-	-	-	-	-	-	-	-	-	8150	10400	6100	11900		
1..16...3AD4	-	-	-	-	-	-	-	-	-	-	-	-	7250	10650	5200	12000		
1..16...3AD5	-	-	-	-	-	-	-	-	-	-	-	-	6500	10900	4450	12300		
1..16...3AD6	-	-	-	-	-	-	-	-	-	-	-	-	5900	11000	3900	12500		

Overview (continued)1LE15 and 1MB15 motors in vertical type of construction – Deep-groove bearings reinforced at both ends – Order code **L25**

Frame size	Type	3000 rpm				1500 rpm				1000 rpm				750 rpm									
		Shaft extension pointing								down		up		down		up		down		up			
		down		up		down		up		down		up		down		up		down		up			
		Load	Load	Load	Load	Load	Load	Load	Load	Load	Load	Load	Load	Load	Load	Load	Load	Load	Load	Load	Load		
		down	up	down	up	down	up	down	up	down	up	down	up	down	up	down	up	down	up	down	up		
1LE15, 1MB15 – Basic Line																							
100	1..15.1-1AA4	220	930	820	330	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
	1..15.1-1AA6	210	930	800	340	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
	1..15.3-1AA4	210	930	800	340	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
	1..15.1-1AB4	–	–	–	–	200	1330	1180	350	–	–	–	–	–	–	–	–	–	–	–	–	–	
	1..15.1-1AB5	–	–	–	–	190	1320	1150	360	–	–	–	–	–	–	–	–	–	–	–	–	–	
	1..15.1-1AB6	–	–	–	–	170	1320	1110	380	–	–	–	–	–	–	–	–	–	–	–	–	–	
	1..15.3-1AB4	–	–	–	–	170	1320	1110	380	–	–	–	–	–	–	–	–	–	–	–	–	–	
	1..15.3-1AB5	–	–	–	–	170	1320	1110	380	–	–	–	–	–	–	–	–	–	–	–	–	–	
	1..15.1-1AC4	–	–	–	–	–	–	–	–	180	1640	1450	370	–	–	–	–	–	–	–	–	–	
	1..15.1-1AC6	–	–	–	–	–	–	–	–	160	1640	1410	390	–	–	–	–	–	–	–	–	–	
	1..15.1-1AD4	–	–	–	–	–	–	–	–	–	–	–	–	–	200	1900	1740	360	–	–	–	–	
	1..15.1-1AD5	–	–	–	–	–	–	–	–	–	–	–	–	–	180	1900	1710	370	–	–	–	–	
112	1..15.1-1BA2	200	940	790	350	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
	1..15.1-1BA6	180	940	750	370	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
	1..15.3-1BA2	180	940	750	370	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
	1..15.1-1BB2	–	–	–	–	180	1340	1150	370	–	–	–	–	–	–	–	–	–	–	–	–	–	
	1..15.1-1BB6	–	–	–	–	170	1340	1120	390	–	–	–	–	–	–	–	–	–	–	–	–	–	
	1..15.3-1BB2	–	–	–	–	170	1340	1120	390	–	–	–	–	–	–	–	–	–	–	–	–	–	
	1..15.1-1BC2	–	–	–	–	–	–	–	–	170	1650	1440	380	–	–	–	–	–	–	–	–	–	
	1..15.1-1BC6	–	–	–	–	–	–	–	–	160	1640	1410	390	–	–	–	–	–	–	–	–	–	
	1..15.3-1BC2	–	–	–	–	–	–	–	–	160	1640	1410	390	–	–	–	–	–	–	–	–	–	
	1..15.1-1BD2	–	–	–	–	–	–	–	–	–	–	–	–	–	170	1910	1700	380	–	–	–	–	
	132	1..15.1-1CA0	540	1120	890	770	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
		1..15.1-1CA1	520	1130	860	790	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
1..15.3-1CA0		520	1130	860	790	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
1..15.1-1CA6		480	1130	780	830	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
1..15.3-1CA1		480	1130	780	830	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
1..15.1-1CB0		–	–	–	–	520	1700	1430	790	–	–	–	–	–	–	–	–	–	–	–	–	–	
1..15.1-1CB2		–	–	–	–	490	1710	1380	820	–	–	–	–	–	–	–	–	–	–	–	–	–	
1..15.1-1CB6		–	–	–	–	440	1710	1280	870	–	–	–	–	–	–	–	–	–	–	–	–	–	
1..15.3-1CB0		–	–	–	–	440	1710	1280	870	–	–	–	–	–	–	–	–	–	–	–	–	–	
1..15.3-1CB2		–	–	–	–	440	1710	1280	870	–	–	–	–	–	–	–	–	–	–	–	–	–	
1..15.1-1CC0		–	–	–	–	–	–	–	–	520	2150	1880	790	–	–	–	–	–	–	–	–	–	
1..15.1-1CC2		–	–	–	–	–	–	–	–	500	2150	1840	810	–	–	–	–	–	–	–	–	–	
1..15.1-1CC3		–	–	–	–	–	–	–	–	470	2150	1780	840	–	–	–	–	–	–	–	–	–	
1..15.3-1CC0		–	–	–	–	–	–	–	–	470	2150	1780	840	–	–	–	–	–	–	–	–	–	
1..15.3-1CC2		–	–	–	–	–	–	–	–	470	2150	1780	840	–	–	–	–	–	–	–	–	–	
1..15.1-1CC6		–	–	–	–	–	–	–	–	420	2160	1690	890	–	–	–	–	–	–	–	–	–	
1..15.3-1CC3		–	–	–	–	–	–	–	–	420	2160	1690	890	–	–	–	–	–	–	–	–	–	
1..15.1-1CD0		–	–	–	–	–	–	–	–	–	–	–	–	–	510	2530	2240	800	–	–	–	–	
1..15.1-1CD2		–	–	–	–	–	–	–	–	–	–	–	–	–	480	2540	2180	840	–	–	–	–	
160		1..15.1-1DA2	2200	1870	1480	2590	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	1..15.1-1DA3	2150	1880	1430	2600	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
	1..15.3-1DA2	2150	1880	1430	2600	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
	1..15.1-1DA4	2120	1890	1400	2610	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
	1..15.3-1DA3	2120	1890	1400	2610	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
	1..15.1-1DA6	2020	1890	1300	2610	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
	1..15.3-1DA4	2020	1890	1300	2610	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
	1..15.1-1DB2	–	–	–	–	2860	2610	2140	3330	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	1..15.1-1DB4	–	–	–	–	2760	2610	2040	3330	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	1..15.3-1DB2	–	–	–	–	2760	2610	2040	3330	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	1..15.1-1DB6	–	–	–	–	2680	2640	1960	3360	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	1..15.3-1DB4	–	–	–	–	2680	2640	1960	3360	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	1..15.1-1DB7	–	–	–	–	2570	2670	1850	3390	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	1..15.1-1DC2	–	–	–	–	–	–	–	–	3320	3170	2600	3890	–	–	–	–	–	–	–	–	–	–
	1..15.1-1DC4	–	–	–	–	–	–	–	–	3200	3180	2480	3900	–	–	–	–	–	–	–	–	–	–
	1..15.3-1DC2	–	–	–	–	–	–	–	–	3200	3180	2480	3900	–	–	–	–	–	–	–	–	–	–
	1..15.1-1DC6	–	–	–	–	–	–	–	–	3050	3180	2330	3900	–	–	–	–	–	–	–	–	–	–
	1..15.3-1DC4	–	–	–	–	–	–	–	–	3050	3180	2330	3900	–	–	–	–	–	–	–	–	–	–
	1..15.1-1DD2	–	–	–	–	–	–	–	–	–	–	–	–	–	3830	3620	3110	4340	–	–	–	–	–
	1..15.1-1DD3	–	–	–	–	–	–	–	–	–	–	–	–	–	3730	3620	3010	4340	–	–	–	–	–
	1..15.1-1DD4	–	–	–	–	–	–	–	–	–	–	–	–	–	3650	3640	2930	4360	–	–	–	–	–

Introduction

General technical specifications

Bearings and lubrication

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Overview (continued)

Frame size	Type	3000 rpm				1500 rpm				1000 rpm				750 rpm										
		Shaft extension pointing								down		up		down		up		down		up				
		Load		Load		Load		Load		Load		Load		Load		Load		Load		Load				
		down	up	down	up	down	up	down	up	down	up	down	up	down	up	down	up	down	up	down	up			
		N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		
180	1..15...1EA2	2510	2050	1360	3200	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
	1..15...1EA6	2490	2060	1330	3220	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
	1..15...1EB2	–	–	–	–	3240	2920	2090	4070	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
	1..15...1EB4	–	–	–	–	3180	2930	2020	4090	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
	1..15...1EB6	–	–	–	–	3160	2950	2010	4100	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
	1..15...1EC4	–	–	–	–	–	–	–	–	3740	3560	2580	4710	–	–	–	–	–	–	–	–	–	–	
	1..15...1EC6	–	–	–	–	–	–	–	–	3740	3570	2580	4730	–	–	–	–	–	–	–	–	–	–	
	1..15...1ED4	–	–	–	–	–	–	–	–	–	–	–	–	–	4300	4090	3150	5240	–	–	–	–	–	
	1..15...1ED6	–	–	–	–	–	–	–	–	–	–	–	–	–	4090	4140	2940	5290	–	–	–	–	–	
	200	1..15...2AA4	2920	3030	2110	3840	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1..15...2AA5		2810	3060	2000	3870	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
1..15...2AA6		2810	3060	2000	3870	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
1..15...2AB5		–	–	–	–	3820	4210	3010	5020	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1..15...2AB6		–	–	–	–	3820	4230	3010	5040	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
1..15...2AC4		–	–	–	–	–	–	–	–	4570	5010	3760	5820	–	–	–	–	–	–	–	–	–	–	–
1..15...2AC5		–	–	–	–	–	–	–	–	4470	5060	3660	5870	–	–	–	–	–	–	–	–	–	–	–
1..15...2AC6		–	–	–	–	–	–	–	–	4400	5090	3590	5900	–	–	–	–	–	–	–	–	–	–	–
1..15...2AD5		–	–	–	–	–	–	–	–	–	–	–	–	–	5200	5750	4390	6660	–	–	–	–	–	–
1..15...2AD6		–	–	–	–	–	–	–	–	–	–	–	–	–	5010	5800	4200	6610	–	–	–	–	–	–
225	1..15...2BA2	3100	3400	2050	4450	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
	1..15...2BA6	3100	3400	2050	4450	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
	1..15...2BB0	–	–	–	–	4200	4750	3150	5800	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	1..15...2BB2	–	–	–	–	4100	4850	3000	5850	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	1..15...2BB6	–	–	–	–	4100	4850	3000	5850	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	1..15...2BC2	–	–	–	–	–	–	–	–	4700	5800	3650	6850	–	–	–	–	–	–	–	–	–	–	–
	1..15...2BC6	–	–	–	–	–	–	–	–	4650	5850	3600	6900	–	–	–	–	–	–	–	–	–	–	–
	1..15...2BD0	–	–	–	–	–	–	–	–	–	–	–	–	–	5900	6400	4850	7650	–	–	–	–	–	–
	1..15...2BD2	–	–	–	–	–	–	–	–	–	–	–	–	–	5800	6450	4700	7500	–	–	–	–	–	–
	1..15...2BD6	–	–	–	–	–	–	–	–	–	–	–	–	–	5500	6600	4400	7650	–	–	–	–	–	–
250	1..15...2CA2	3850	4100	2250	5600	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
	1..15...2CA6	3850	4100	2250	5600	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
	1..15...2CB2	–	–	–	–	4850	5650	3250	7250	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	1..15...2CB6	–	–	–	–	4800	5750	3200	7400	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	1..15...2CC2	–	–	–	–	–	–	–	–	5750	6750	4200	8350	–	–	–	–	–	–	–	–	–	–	–
	1..15...2CC6	–	–	–	–	–	–	–	–	5750	6750	4200	8450	–	–	–	–	–	–	–	–	–	–	–
	1..15...2CD2	–	–	–	–	–	–	–	–	–	–	–	–	–	6900	7700	5300	9200	–	–	–	–	–	–
	1..15...2CD6	–	–	–	–	–	–	–	–	–	–	–	–	–	6700	7800	5000	9300	–	–	–	–	–	–

For frame sizes > 250 standard version.

Introduction

General technical specifications

Bearings and lubrication

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Overview (continued)

Frame size	Type	3000 rpm		1500 rpm		1000 rpm		750 rpm		Type	3000 rpm		1500 rpm		1000 rpm		750 rpm				
		Load		Load		Load		Load			Load		Load		Load		Load				
		Tension	Thrust	Tension	Thrust	Tension	Thrust	Tension	Thrust		Tension	Thrust	Tension	Thrust	Tension	Thrust	Tension	Thrust			
		N	N	N	N	N	N	N	N		N	N	N	N	N	N	N	N			
1LE15, 1MB15 – Basic Line										1LE16, 1MB16 – Performance Line											
180	1..15..-1EA2	1640	880	–	–	–	–	–	–	1..16..-1EA2	2860	1710	–	–	–	–	–	–			
	1..15..-1EA6	1630	870	–	–	–	–	–	–	1..16..-1EA6	2850	1700	–	–	–	–	–	–			
	1..15..-1EB2	–	–	–	–	2100	1340	–	–	1..16..-1EB2	–	–	–	–	3660	2510	–	–			
	1..15..-1EB4	–	–	–	–	2070	1310	–	–	1..16..-1EB4	–	–	–	–	3630	2480	–	–			
	1..15..-1EB6	–	–	–	–	2070	1310	–	–	1..16..-1EB6	–	–	–	–	3630	2480	–	–			
	1..15..-1EC4	–	–	–	–	–	–	2420	1660	–	1..16..-1EC4	–	–	–	–	–	–	4230	3080		
1..15..-1EC6	–	–	–	–	–	–	2420	1660	–	1..16..-1EC6	–	–	–	–	–	–	4230	3080			
200	1..15..-2AA4	2380	1230	–	–	–	–	–	–	1..16..-2AA4	3390	2580	–	–	–	–	–	–			
	1..15..-2AA5	2340	1190	–	–	–	–	–	–	1..16..-2AA5	3340	2530	–	–	–	–	–	–			
	1..15..-2AA6	2340	1190	–	–	–	–	–	–	1..16..-2AA6	3340	2530	–	–	–	–	–	–			
	1..15..-2AB5	–	–	–	–	3020	1870	–	–	1..16..-2AB5	–	–	–	–	4430	3620	–	–			
	1..15..-2AB6	–	–	–	–	3020	1870	–	–	1..16..-2AB6	–	–	–	–	4430	3620	–	–			
	–	–	–	–	–	–	–	–	–	–	1..16..-2AC4	–	–	–	–	–	–	5210	4400		
–	–	–	–	–	–	–	–	–	–	1..16..-2AC5	–	–	–	–	–	–	5170	4360			
–	–	–	–	–	–	–	–	–	–	1..16..-2AC6	–	–	–	–	–	–	5150	4340			
225	1..15..-2BA2	2350	1300	–	–	–	–	–	–	1..16..-2BA2	3800	2750	–	–	–	–	–	–			
	1..15..-2BA6	2350	1300	–	–	–	–	–	–	1..16..-2BA6	3800	2750	–	–	–	–	–	–			
	1..15..-2BB0	–	–	–	–	3020	1980	–	–	1..16..-2BB0	–	–	–	–	4950	3900	–	–			
	1..15..-2BB2	–	–	–	–	3020	1980	–	–	1..16..-2BB2	–	–	–	–	4950	3900	–	–			
	1..15..-2BB6	–	–	–	–	3020	1980	–	–	1..16..-2BB6	–	–	–	–	4900	3850	–	–			
	1..15..-2BC2	–	–	–	–	–	–	3400	2400	–	1..16..-2BC2	–	–	–	–	–	–	5750	4700		
	1..15..-2BC6	–	–	–	–	–	–	3400	2400	–	1..16..-2BC6	–	–	–	–	–	–	5700	4650		
	1..15..-2BD0	–	–	–	–	–	–	–	–	1..16..-2BD0	–	–	–	–	–	–	–	–	6600	5550	
	1..15..-2BD2	–	–	–	–	–	–	–	–	–	1..16..-2BD2	–	–	–	–	–	–	–	–	–	
	1..15..-2BD6	–	–	–	–	–	–	–	–	–	1..16..-2BD6	–	–	–	–	–	–	–	–	–	
250	1..15..-2CA2	2600	1750	–	–	–	–	–	–	1..16..-2CA2	4750	3150	–	–	–	–	–	–			
	1..15..-2CA6	2550	1700	–	–	–	–	–	–	1..16..-2CA6	4750	3150	–	–	–	–	–	–			
	1..15..-2CB2	–	–	–	–	3200	2400	–	–	1..16..-2CB2	–	–	–	–	6050	4450	–	–			
	1..15..-2CB6	–	–	–	–	3200	2400	–	–	1..16..-2CB6	–	–	–	–	6050	4450	–	–			
	1..15..-2CC2	–	–	–	–	–	–	3750	3000	–	1..16..-2CC2	–	–	–	–	–	–	7100	5500		
	1..15..-2CC6	–	–	–	–	–	–	3750	3000	–	1..16..-2CC6	–	–	–	–	–	–	7100	5500		
	1..15..-2CD2	–	–	–	–	–	–	–	–	1..16..-2CD2	–	–	–	–	–	–	–	–	8100	6500	
	1..15..-2CD6	–	–	–	–	–	–	–	–	1..16..-2CD6	–	–	–	–	–	–	–	–	8000	6400	
	1..15..-2DA0	4500	2900	–	–	–	–	–	–	1..16..-2DA0	4500	2900	–	–	–	–	–	–	–	–	
	1..15..-2DA2	4450	2850	–	–	–	–	–	–	1..16..-2DA2	4450	2850	–	–	–	–	–	–	–	–	
1..15..-2DA6	4450	2850	–	–	–	–	–	–	1..16..-2DA6	4450	2850	–	–	–	–	–	–	–	–		
1..15..-2DB0	–	–	–	–	6700	5100	–	–	1..16..-2DB0	–	–	–	–	6700	5100	–	–	–	–		
1..15..-2DB2	–	–	–	–	6600	5000	–	–	1..16..-2DB2	–	–	–	–	6600	5000	–	–	–	–		
1..15..-2DB6	–	–	–	–	6600	5000	–	–	1..16..-2DB6	–	–	–	–	6600	5000	–	–	–	–		
1..15..-2DC0	–	–	–	–	–	–	7900	6350	–	1..16..-2DC0	–	–	–	–	–	–	7900	6350	–	–	
1..15..-2DC2	–	–	–	–	–	–	7850	6300	–	1..16..-2DC2	–	–	–	–	–	–	7850	6300	–	–	
1..15..-2DC6	–	–	–	–	–	–	7850	6300	–	1..16..-2DC6	–	–	–	–	–	–	7850	6300	–	–	
1..15..-2DD0	–	–	–	–	–	–	–	–	1..16..-2DD0	–	–	–	–	–	–	–	–	–	8800	7200	
1..15..-2DD2	–	–	–	–	–	–	–	–	1..16..-2DD2	–	–	–	–	–	–	–	–	–	8800	7200	
1..15..-2DD6	–	–	–	–	–	–	–	–	1..16..-2DD6	–	–	–	–	–	–	–	–	–	8800	7200	
315	1..15..-3AA0	5000	2900	–	–	–	–	–	–	1..16..-3AA0	5000	2900	–	–	–	–	–	–			
	1..15..-3AA2	4800	2700	–	–	–	–	–	–	1..16..-3AA2	4800	2700	–	–	–	–	–	–			
	1..15..-3AA4	4750	2650	–	–	–	–	–	–	1..16..-3AA4	4750	2650	–	–	–	–	–	–			
	1..15..-3AA5	4700	2600	–	–	–	–	–	–	1..16..-3AA5	4700	2600	–	–	–	–	–	–	–		
	1..15..-3AB0	–	–	–	–	7550	5500	–	–	1..16..-3AB0	–	–	–	–	7550	5500	–	–	–	–	
	1..15..-3AB2	–	–	–	–	7300	5250	–	–	1..16..-3AB2	–	–	–	–	7300	5250	–	–	–	–	
	1..15..-3AB4	–	–	–	–	7300	5250	–	–	1..16..-3AB4	–	–	–	–	7300	5250	–	–	–	–	
	1..15..-3AB5	–	–	–	–	7050	5000	–	–	1..16..-3AB5	–	–	–	–	7050	5000	–	–	–	–	
	1..15..-3AC0	–	–	–	–	–	–	8900	6850	–	1..16..-3AC0	–	–	–	–	–	–	8900	6850	–	–
	1..15..-3AC2	–	–	–	–	–	–	8900	6850	–	1..16..-3AC2	–	–	–	–	–	–	8900	6850	–	–
	1..15..-3AC4	–	–	–	–	–	–	8550	6500	–	1..16..-3AC4	–	–	–	–	–	–	8550	6500	–	–
	1..15..-3AC5	–	–	–	–	–	–	8250	6200	–	1..16..-3AC5	–	–	–	–	–	–	8250	6200	–	–
	1..15..-3AC6	–	–	–	–	–	–	8250	6200	–	1..16..-3AC6	–	–	–	–	–	–	8250	6200	–	–
	1..15..-3AD0	–	–	–	–	–	–	–	–	1..16..-3AD0	–	–	–	–	–	–	–	–	–	9800	7800
	1..15..-3AD2	–	–	–	–	–	–	–	–	1..16..-3AD2	–	–	–	–	–	–	–	–	–	9800	7800
	1..15..-3AD4	–	–	–	–	–	–	–	–	1..16..-3AD4	–	–	–	–	–	–	–	–	–	9500	7500
	1..15..-3AD5	–	–	–	–	–	–	–	–	1..16..-3AD5	–	–	–	–	–	–	–	–	–	9300	7300
	1..15..-3AD6	–	–	–	–	–	–	–	–	1..16..-3AD6	–	–	–	–	–	–	–	–	–	9100	7100

Overview (continued)

1LE15 and 1MB15 motors in horizontal type of construction – Deep-groove bearings reinforced at both ends – Order code **L25**

Frame Type size	3000 rpm		1500 rpm		1000 rpm		750 rpm		Frame Type size	3000 rpm		1500 rpm		1000 rpm		750 rpm	
	Load		Load		Load		Load			Load		Load		Load			
	Ten- sion N	Thrust N	Ten- sion N	Thrust N	Ten- sion N	Thrust N	Ten- sion N	Thrust N		Ten- sion N	Thrust N	Ten- sion N	Thrust N	Ten- sion N	Thrust N		
1LE15, 1MB15 – Basic Line									1LE15, 1MB15 – Basic Line								
100	1..15.1-1AA4	1440 880	-	-	-	-	-	-	160	1..15.1-1DA2	2400 1680	-	-	-	-	-	-
	1..15.1-1AA6	1430 870	-	-	-	-	-	-		1..15.1-1DA3	2380 1660	-	-	-	-	-	-
	1..15.3-1AA4	1430 870	-	-	-	-	-	-		1..15.3-1DA2	2380 1660	-	-	-	-	-	-
	1..15.1-1AB4	-	-	1820 1260	-	-	-	-		1..15.1-1DA4	2370 1650	-	-	-	-	-	-
	1..15.1-1AB5	-	-	1800 1240	-	-	-	-		1..15.3-1DA3	2370 1650	-	-	-	-	-	-
	1..15.1-1AB6	-	-	1780 1220	-	-	-	-		1..15.1-1DA6	2320 1600	-	-	-	-	-	-
	1..15.3-1AB4	-	-	1780 1220	-	-	-	-		1..15.3-1DA4	2320 1600	-	-	-	-	-	-
	1..15.3-1AB5	-	-	1780 1220	-	-	-	-		1..15.1-1DB2	-	-	3100 2380	-	-	-	-
	1..15.1-1AC4	-	-	-	2110 1550	-	-	-		1..15.1-1DB4	-	-	3050 2330	-	-	-	-
	1..15.1-1AC6	-	-	-	2090 1530	-	-	-		1..15.3-1DB2	-	-	3050 2330	-	-	-	-
	1..15.1-1AD4	-	-	-	-	-	2380 1820	-		1..15.1-1DB6	-	-	3020 2300	-	-	-	-
	1..15.1-1AD5	-	-	-	-	-	2370 1810	-		1..15.3-1DB4	-	-	3020 2300	-	-	-	-
112	1..15.1-1BA2	1430 870	-	-	-	-	-	-		1..15.1-1DB7	-	-	2980 2260	-	-	-	-
	1..15.1-1BA6	1410 850	-	-	-	-	-	-		1..15.1-1DC2	-	-	-	3610 2890	-	-	-
	1..15.3-1BA2	1410 850	-	-	-	-	-	-		1..15.1-1DC4	-	-	-	3550 2830	-	-	-
	1..15.1-1BB2	-	-	1810 1250	-	-	-	-		1..15.3-1DC2	-	-	-	3550 2830	-	-	-
	1..15.1-1BB6	-	-	1790 1230	-	-	-	-		1..15.1-1DC6	-	-	-	3480 2760	-	-	-
	1..15.3-1BB2	-	-	1790 1230	-	-	-	-		1..15.3-1DC4	-	-	-	3480 2760	-	-	-
	1..15.1-1BC2	-	-	-	2110 1550	-	-	-		1..15.1-1DD2	-	-	-	-	-	4090 3370	-
	1..15.1-1BC6	-	-	-	2090 1530	-	-	-		1..15.1-1DD3	-	-	-	-	-	4040 3320	-
	1..15.3-1BC2	-	-	-	2090 1530	-	-	-		1..15.1-1DD4	-	-	-	-	-	4010 3290	-
	1..15.1-1BD2	-	-	-	-	-	2370 1810	-	180	1..15.-1EA2	2860 1710	-	-	-	-	-	-
132	1..15.1-1CA0	2330 1010	-	-	-	-	-	-		1..15.-1EA6	2850 1700	-	-	-	-	-	-
	1..15.1-1CA1	2320 1000	-	-	-	-	-	-		1..15.-1EB2	-	-	3660 2510	-	-	-	-
	1..15.3-1CA0	2320 1000	-	-	-	-	-	-		1..15.-1EB4	-	-	3630 2480	-	-	-	-
	1..15.1-1CA6	2280 960	-	-	-	-	-	-		1..15.-1EB6	-	-	3630 2480	-	-	-	-
	1..15.3-1CA1	2280 960	-	-	-	-	-	-		1..15.-1EC4	-	-	-	4230 3080	-	-	-
	1..15.1-1CB0	-	-	2890 1570	-	-	-	-		1..15.-1EC6	-	-	-	4230 3080	-	-	-
	1..15.1-1CB2	-	-	2870 1550	-	-	-	-		1..15.-1EA2	2860 1710	-	-	-	-	-	-
	1..15.1-1CB6	-	-	2820 1500	-	-	-	-	200	1..15.-2AA4	3390 2580	-	-	-	-	-	-
	1..15.3-1CB0	-	-	2820 1500	-	-	-	-		1..15.-2AA5	3340 2530	-	-	-	-	-	-
	1..15.3-1CB2	-	-	2820 1500	-	-	-	-		1..15.-2AA6	3340 2530	-	-	-	-	-	-
	1..15.1-1CC0	-	-	-	3340 2020	-	-	-		1..15.-2AB5	-	-	4430 3620	-	-	-	-
	1..15.1-1CC2	-	-	-	3320 2000	-	-	-		1..15.-2AB6	-	-	4430 3620	-	-	-	-
	1..15.1-1CC3	-	-	-	3290 1970	-	-	-		1..15.-2AC4	-	-	-	5210 4400	-	-	-
	1..15.3-1CC0	-	-	-	3290 1970	-	-	-		1..15.-2AC5	-	-	-	5170 4360	-	-	-
	1..15.3-1CC2	-	-	-	3290 1970	-	-	-		1..15.-2AC6	-	-	-	5150 4340	-	-	-
	1..15.1-1CC6	-	-	-	3250 1930	-	-	-	225	1..15.-2BA2	3800 2750	-	-	-	-	-	-
	1..15.3-1CC3	-	-	-	3250 1930	-	-	-		1..15.-2BA6	3800 2750	-	-	-	-	-	-
	1..15.1-1CD0	-	-	-	-	-	3710 2390	-		1..15.-2BB0	-	-	4950 3900	-	-	-	-
	1..15.1-1CD2	-	-	-	-	-	3680 2360	-		1..15.-2BB2	-	-	4950 3900	-	-	-	-
										1..15.-2BB6	-	-	4900 3850	-	-	-	-
										1..15.-2BC2	-	-	-	5750 4700	-	-	-
										1..15.-2BC6	-	-	-	5700 4650	-	-	-
										1..15.-2BD0	-	-	-	-	-	6600 5550	-
										1..15.-2BD2	-	-	-	-	-	6550 5500	-
										1..15.-2BD6	-	-	-	-	-	6500 5450	-
									250	1..15.-2CA2	4750 3150	-	-	-	-	-	-
										1..15.-2CA6	4750 3150	-	-	-	-	-	-
										1..15.-2CB2	-	-	6050 4450	-	-	-	-
										1..15.-2CB6	-	-	6050 4450	-	-	-	-
										1..15.-2CC2	-	-	-	7100 5500	-	-	-
										1..15.-2CC6	-	-	-	7100 5500	-	-	-

For frame sizes > 250 standard version.

Introduction

General technical specifications

Coolant temperature and site altitude

1

Overview

The specified rated output is applicable for continuous duty in accordance with IEC 60034-1 at the frequency of 50 Hz, a coolant temperature (CT) or ambient temperature of 40 °C and a site altitude (SA) up to 1000 m above sea level. 1LE1, 1MB1 and 1PC1 motors for ambient temperatures > 40 °C are equipped with silicone seals on the terminal box. Mountings such as brake, terminal box at NDE, type of construction IM V1, type of construction IM V3 can sometimes exceed utilization in accordance with temperature class 130 (B).

For higher coolant temperatures and/or site altitudes greater than 1000 m above sea level, the specified motor output must be reduced using the factor k_{HT} .

Depending on the frame size of the motor or the number of poles, special windings may be added to the motors for the different operating conditions.

This results in an admissible output of the motor of:

$$P_{adm} = P_{rated} \cdot k_{HT}$$

If the admissible motor output is no longer adequate for the drive, it should be checked whether the motor with the next higher rated output fulfills the requirements.

Abbreviation	Description	Unit
P_{adm}	Admissible motor output	kW
P_{rated}	Rated output	kW
k_{HT}	Factor for abnormal coolant temperature and/or site altitude	

The motors are designed for temperature class 155 (F) and utilized in temperature class 130 (B). Under non-standard operating conditions, if they are to be used in this class, the admissible output must be determined from the table below.

Reduction factor k_{HT} for different site altitudes and/or coolant temperatures

Site altitude above sea level m	Site altitude above sea level Coolant temperature					
	< 30 °C	30 °C ... 40 °C	45 °C	50 °C	55 °C	60 °C
1000	1.07	1.00	0.96	0.92	0.87	0.82
1500	1.04	0.97	0.93	0.89	0.84	0.79
2000	1.00	0.94	0.90	0.86	0.82	0.77
2500	0.96	0.90	0.86	0.83	0.78	0.74
3000	0.92	0.86	0.82	0.79	0.75	0.70
3500	0.88	0.82	0.79	0.75	0.71	0.67
4000	0.82	0.77	0.74	0.71	0.67	0.63

Coolant temperature and site altitude are rounded to 5 °C and 500 m respectively.

For details of derating for utilization in temperature class 155 (F), see "DURIGNIT IR 2000 insulation system".

Motors for coolant temperatures other than 40 °C or site altitudes higher than 1000 m above sea level for utilization in temperature class 130 (B), must always be ordered with the additional identification code "-Z" and plain text. In the case of extreme derating, the operating data for the motors, i.e. efficiency and power factor, will also be less favorable due to partial utilization.

The following special versions are possible for 1LE1 and 1PC1 motors:

- Motors for coolant temperatures from -40 to +40 °C order code **D03**
- Motors for coolant temperatures from -30 to +40 °C order code **D04**

When ordering with order codes **D03** or **D04** in combination with mountings, the respective technical specifications have to be observed and it is necessary to inquire.

For details of order codes for use in temperature class 155 (F), see "DURIGNIT IR 2000 insulation system" under "Windings and insulation" on Page 1/24.

Ambient temperature:

All motors can be used in the standard version at ambient temperatures between -20 and +40 °C. Exposure to direct sunlight can result in uncontrollable rises in motor temperature. To prevent this, appropriate shading measures such as a sun canopy are recommended.

Motors can be utilized in temperature class 155 (F)

- at 40 °C with service factor 1.1, i.e. the motor can be continuously overloaded with 10 % of the rated output in the case of IE1 motors
- at 40 °C with service factor 1.15, i.e. the motor can be continuously overloaded with 15 % of the rated output in the case of IE2 motors and higher efficiency classes
- above 40 °C at rated output.

When motors are used in temperature class 130 (B) for higher ambient temperatures and/or site altitudes, derating occurs in accordance with the table "Reduction factor k_{HT} for different site altitudes and/or coolant temperatures".

For motors ex stock, the service factor is indicated on the rating plate.

For other temperatures, special measures are necessary. When brakes are to be mounted on motors intended for operation at temperatures below freezing, please inquire.

Overview

Separately driven fan

The use of a separately driven fan is recommended to increase motor utilization at low speeds and to limit noise generation at speeds significantly higher than the synchronous speed. Both of these results can only be achieved with converter-fed operation. Please inquire about traction and vibratory operation.

The separately driven fan can be supplied already fitted, order code **F70**.

It can also be ordered separately and retrofitted. For selection information and article numbers, see the section "Accessories" (available soon). A rating plate listing all the important data is fitted to the separately driven fan. Please note the direction of rotation of the separately driven fan (axial-flow fan) when connecting it. Admissible coolant temperatures $CT_{min} -25\text{ °C}$, $CT_{max} +65\text{ °C}$ ¹⁾, lower/higher coolant temperatures are available on request. When the separately driven fan is mounted, the length of the motor increases by Δl . For an explanation of the additional dimensions and weights, see "Technology", "Dimensions and weights" from Page 1/77 onwards.

Technical specifications of separately driven fan (according to tolerances of DIN EN 60034-1)

Frame size	Rated voltage range		Frequency	Rated speed	Power consumption	Rated current
	V						Hz	rpm	kW	A
100	1 AC	230 to 277	50	2790	0.075	0.29
	3 AC	200 to 303 Δ	50	2830	0.086	0.27
	3 AC	346 to 525 Y	50	2830	0.086	0.16
	1 AC	230 to 277	60	3280	0.094	0.28
	3 AC	220 to 332 Δ	60	3490	0.093	0.27
	3 AC	380 to 575 Y	60	3490	0.093	0.16
112	1 AC	230 to 277	50	2720	0.073	0.26
	3 AC	200 to 303 Δ	50	2770	0.085	0.27
	3 AC	346 to 500 Y	50	2770	0.085	0.15
	1 AC	230 to 277	60	3000	0.107	0.31
	3 AC	220 to 332 Δ	60	3280	0.094	0.28
	3 AC	380 to 575 Y	60	3280	0.094	0.16
132	1 AC	230 to 277	50	2860	0.115	0.40
	3 AC	200 to 303 Δ	50	2880	0.138	0.45
	3 AC	346 to 500 Y	50	2880	0.138	0.24
	1 AC	230 to 277	60	3380	0.185	0.59
	3 AC	220 to 332 Δ	60	3470	0.148	0.41
	3 AC	380 to 575 Y	60	3470	0.148	0.24
160	1 AC	230 to 277	50	2780	0.236	0.96
	3 AC	200 to 303 Δ	50	2840	0.220	0.76
	3 AC	346 to 500 Y	50	2830	0.220	0.43
	3 AC	220 to 332 Δ	60	3400	0.284	0.94
	3 AC	380 to 575 Y	60	3400	0.284	0.56
180 to 200	1 AC	230 to 277	50	2780	0.236	0.96
	3 AC	200 to 303 Δ	50	2840	0.220	0.76
	3 AC	346 to 500 Y	50	2830	0.220	0.43
	3 AC	220 to 332 Δ	60	3400	0.284	0.94
	3 AC	380 to 575 Y	60	3400	0.284	0.56
225 M to 280 M	3 AC	200 to 240 Δ	50	2720	0.450	2.00
	3 AC	380 to 420 Y	50	2720	0.450	1.15
	3 AC	440 to 480 Y	60	3320	0.520	1.05
315 2-pole	3 AC	200 to 240 Δ	50	2750	0.650	2.85
	3 AC	380 to 420 Y	50	2750	0.650	1.64
	3 AC	440 to 480 Y	60	3365	0.750	1.60
315 4, 6, 8-pole	3 AC	200 to 240 Δ	50	2720	0.450	2.00
	3 AC	380 to 420 Y	50	2720	0.450	1.15
	3 AC	440 to 480 Y	60	3320	0.520	1.05

For article numbers and type details, see operating instructions.

¹⁾ For single-phase variants (1 AC) of frame size 160, the admissible coolant temperature CT_{max} is $+50\text{ °C}$.

Introduction

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Overview (continued)

Brakes

Spring-operated disk brakes are used for the brakes with order code **F01** and function as a holding brake. When the brake is ordered, the supply voltage must be specified. The supply voltage for brakes is explained under "Modular technology – Additional versions" on Page 1/71.

For the design of the braking time, run-on revolutions, braking energy per braking procedure as well as the service life of the brake linings, see "Configuration of motors with brakes" on Page 1/70.

When a brake is mounted, the length of the motor increases by Δl . For an explanation of the additional dimensions and weights, see "Technology", "Dimensions and weights" from Page 1/77 onwards.

*The brake can be retrofitted by authorized partners. The motor must be prepared for this. When the motor is ordered, the option "Prepared for mountings, center hole only" order code **G40** must be specified (see "Mechanical design and degrees of protection" on Page 1/38).*

2LM8 spring-operated disk brake

The 2LM8 brake has IP55 degree of protection.

Please inquire if motors with brakes are to be operated below the freezing point or in very humid environments (e.g. close to the sea) with long standstill times. Please inquire if motors with brakes are to be operated in converter-fed mode at low speeds.

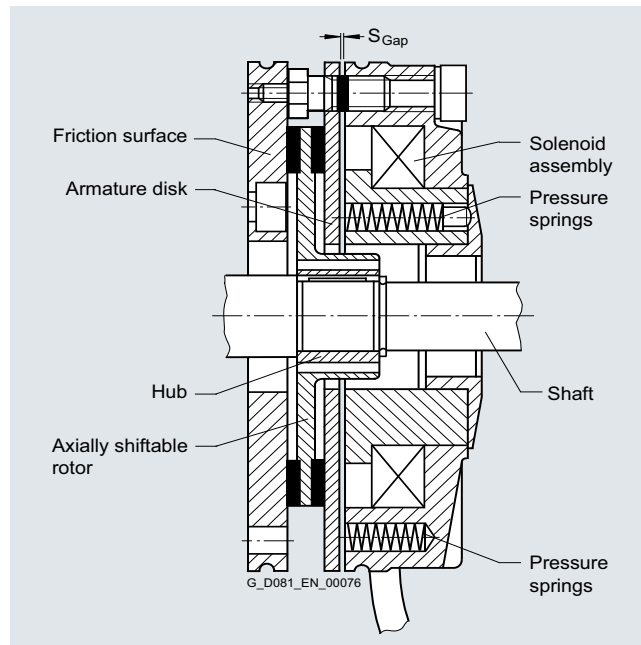
Brake 2LM8 can be operated at ambient temperatures from -20 °C to 40 °C .

Design and mode of operation

The brake takes the form of a single-disk brake with two friction surfaces.

The braking torque is generated by friction when pressure is applied by one or more pressure springs in the de-energized state. The brake is released electromagnetically.

When the motor brakes, the rotor which can be axially shifted on the hub or the shaft is pressed via the armature disk against the friction surface by means of the springs. In the braked state, there is a gap S_{Gap} between the armature disk and the solenoid component. To release the brake, the solenoid is energized with DC voltage. The resulting magnetic force pulls the armature disk against the spring force on to the solenoid component. The spring force is then no longer applied to the rotor which can rotate freely.



Design of the 2LM8 spring-operated disk brake

Rating plate

The following brake data is specified on the motor rating plate.

Brake type, supply voltage, frequency, current, temperature class, braking torque

Overview (continued)

For motor frame size	Brake type	Rated braking torque at 100 rpm Nm	Rated braking torque at 100 rpm in % at the following speeds			Supply voltage V	Current/power input ¹⁾		Brake application time t_2 ²⁾ ms	Brake release time ms	Brake moment of inertia kgm ²	Noise level L_p with rated air gap dB(A)	Service capability of the brake	
			1500 rpm %	3000 rpm %	Max. speed %		A	W					Lifetime of brake lining L Nm · 10 ⁶	Air gap adjustment required after braking energy L_N Nm · 10 ⁶
80	2LM8 010-3NA10	10	85	78	65	AC 230	0.12	25	26	70	0.000045	75	270	29
	AC 400					0.14								
	DC 24					1.04								
90	2LM8 020-4NA10	20	83	76	66	AC 230	0.15	32	37	90	0.00016	75	740	79
	AC 400					0.17								
	DC 24					1.25								
100	2LM8 040-5NA10	40	81	74	66	AC 230	0.2	40	43	140	0.00036	80	1350	115
	AC 400					0.22								
	DC 24					1.67								
112	2LM8 060-6NA10	60	80	73	65	AC 230	0.25	53	60	210	0.00063	77	1600	215
	AC 400					0.28								
	DC 24					2.1								
132	2LM8 100-7NA10	100	79	72	65	AC 230	0.27	55	50	270	0.0015	77	2450	325
	AC 400					0.31								
	DC 24					2.3								
160	2LM8 260-8NA10	260	75	68	65	AC 230	0.5	100	165	340	0.0073	79	7300	935
	AC 400					0.47								
	DC 24					4.2								
180	2LM8 315-0NA10	315	75	68	65	AC 230	0.5	100	152	410	0.0073	79	5500	470
	AC 400					0.56								
	DC 24					4.2								
200, 225	2LM8 400-0NA10	400	73	68	65	AC 230	0.55	110	230	390	0.0200	93	9450	1260
	AC 400					0.61								
	DC 24					4.6								

Lifetime of the brake lining

The braking energy L_N up to when the brake should be adjusted, depends on various factors. The main influencing factors include the masses to be braked, the operating speed, the switching frequency and therefore the temperature at the frictional surfaces. It is therefore not possible to specify a value for the friction energy until readjustment that is valid for all operating conditions.

When used as operating brake, the specific frictional surface wear (wear volume for the frictional work) is approximately 0.05 up to 2 cm³/kWh.

Maximum admissible speeds

The maximum admissible speeds from which emergency stops can be made are listed in the next table. These speeds should be considered as recommended values and must be checked under actual operating conditions.

The maximum admissible friction energy depends on the switching frequency and is shown for the individual brakes in the following diagram. Increased wear can be expected when the brakes are used for emergency stops.

¹⁾ For 400 V AC and for 24 V DC, the power can deviate by up to +10 % as a function of the selected supply voltage.

²⁾ The specified switching times are valid for switching on the DC side with a rated release travel and with the coil already warm.

They are average values which may vary depending on factors such as the rectifier type and the release travel. The brake application time for switching on the AC side, for example, is approximately 6 times longer than for switching on the DC side.

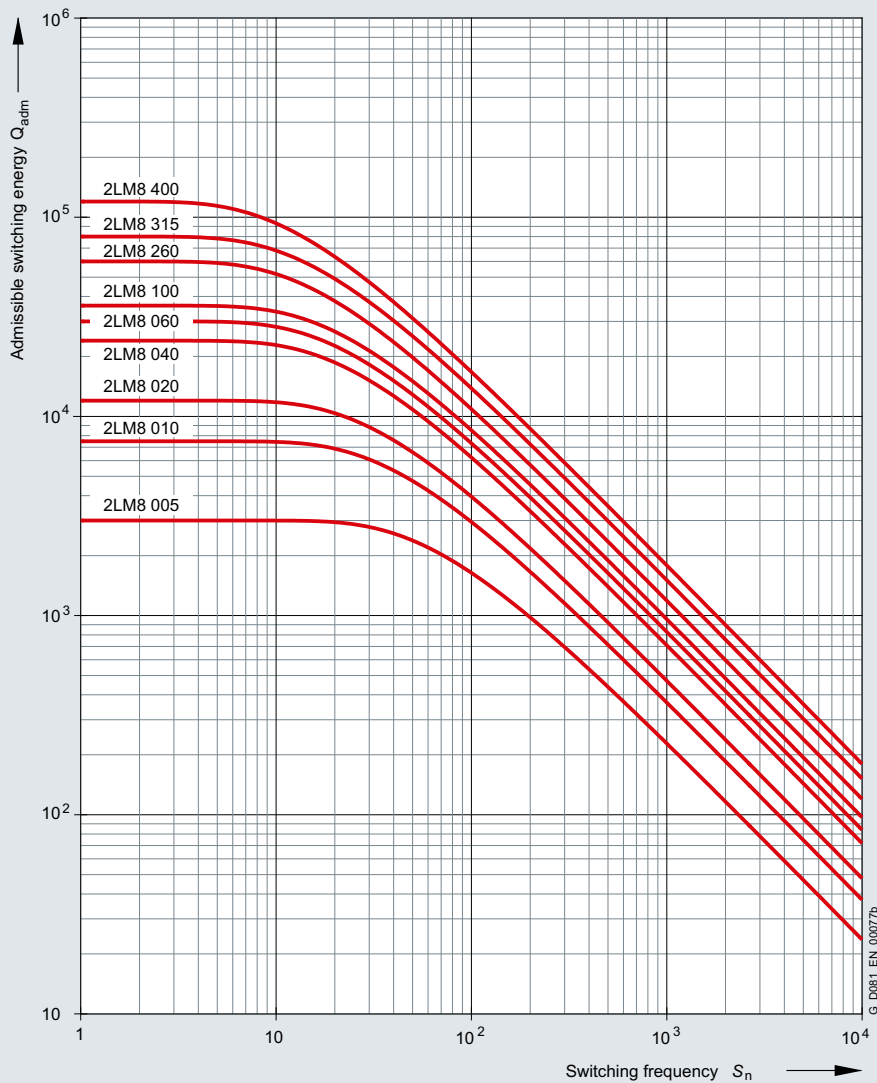
Introduction

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Overview (continued)



G_D081_EN_00077b

For motor frame size	Brake type	Maximum admissible speeds			Changing the braking torque			Readjusting the air gap		
		Max. adm. operating rpm if max. operating energy utilized	Max. adm. no-load rpm with emergency stop function Horizontal mounting	Max. adm. no-load rpm with emergency stop function Vertical mounting	Reduction per notch	Dim. "O1"	Min. braking torque	Rated air gap $S_{\text{Gap Rated}}$	Maximum air gap $S_{\text{Gap max.}}$	Min. rotor thickness $h_{\text{min.}}$
		rpm	rpm	rpm	Nm	mm	Nm	mm	mm	mm
80	2LM8 010-3NA ..	3000	6000	6000	0.35	8.0	7.0	0.2	0.45	5.5
90	2LM8 020-4NA ..	3000	6000	6000	0.76	7.5	18.2	0.2	0.55	7.5
100	2LM8 040-5NA ..	3000	6000	6000	1.29	12.5	21.3	0.3	0.65	8.0
112	2LM8 060-6NA ..	3000	6000	6000	1.66	11.0	32.8	0.3	0.75	7.5
132	2LM8 100-7NA ..	3000	5300	5000	1.55	13.0	61.1	0.3	0.75	8.0
160	2LM8 260-8NA ..	1500	4400	3200	5.6	17.0	157.5	0.4	1.2	12.0
180	2LM8 315-0NA ..	1500	4400	3200	5.6	17.0	178.4	0.4	1.0	12.0
200, 225	2LM8 400-0NA ..	1500	3000	3000	6.15	21.0	248.7	0.5	1.5	15.5

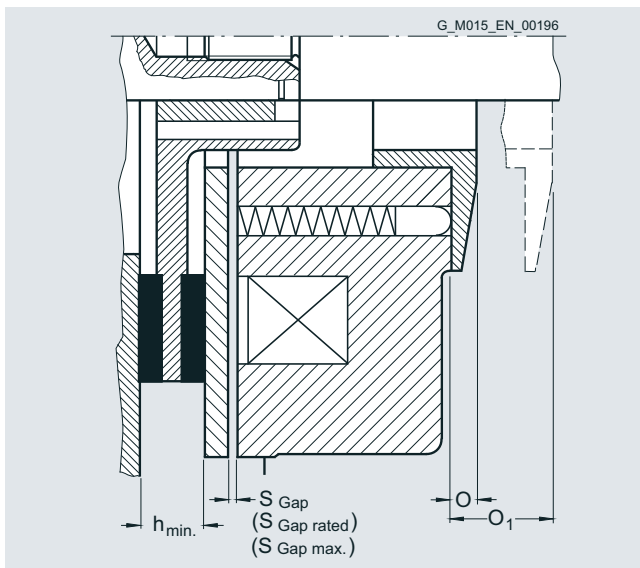
Overview (continued)

Changing the braking torque

The brake is supplied with the braking torque already set. For 2LM8 brakes, the torque can be reduced to the dimension O_1 by unscrewing the adjusting ring with a hook spanner. The braking torque changes by the values shown in the above table for each notch of the adjusting ring.

Readjusting the air gap

Under normal operating conditions, the brake is practically maintenance-free. The air gap S_{Gap} must only be checked at regular intervals if the application requires an extremely large amount of frictional energy and readjusted to the rated gap $S_{Gap Rated}$ at the latest when the maximum air gap $S_{Gap max}$ is reached.



KFB spring-operated brake

This brake is the standard brake for 1LE motors in frame sizes 250 to 315. For frame sizes 180 to 225, apart from the standard brake 2LM8, KFB brakes can also be supplied. Special brake selections are available on request.

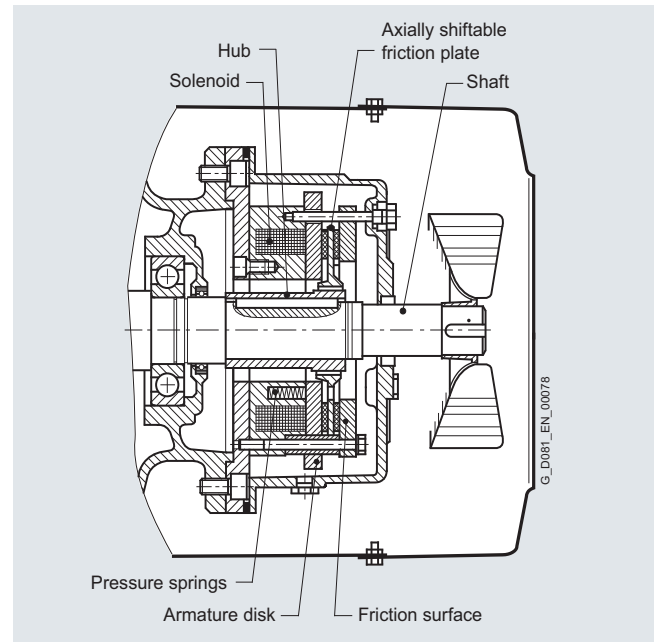


KFB spring-operated brake

The KFB solenoid double-disk spring-operated brake is a safety brake which brakes the motor if the supply is disconnected (power failure, emergency stop). The KFB brake, IP65 degree of protection, is mainly used for electric motors for traversing, cross-traversing and lifting gear in cranes as well as for special industrial applications.

Design and mode of operation

When the brake current is switched on, an electromagnetic field develops which overcomes the spring force of the brake. The corresponding modules, including the motor shaft, can rotate freely. The brake is released. If the brake current is switched off or if there is a power failure, the electromagnetic field of the brake disappears. The mechanical braking energy is transferred to the motor shaft. The motor is braked.



Design of KFB spring-operated brakes

Other characteristics of the KFB brake

- High degree of protection IP67
- Corrosion-resistant in seawater and in the tropics.
- The brake is a dynamic brake, not simply a holding brake. For this reason there is less wear, especially in the case of emergency stops (commissioning).
- High wear reserves – repeated stepless air gap readjustment is possible. This results in extremely long operating times and low service and operating costs.
- The function and wear can be monitored with microswitches and proximity switches. Microswitch On/Off is standard for LE motors. Anti-condensation heating is possible as an option.
- Fully functional brake for enclosure acceptance test. Visual inspection of brake is possible during operation.
- The brake (air gap) can be adjusted in the factory, for example, and mounted on the drive motor without further adjustments.

The wear parts can be replaced without great outlay. After the housing has been opened (three screws), it is easy to replace the friction plate. It is not necessary to disassemble the entire brake.

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Overview (continued)

Overview of brake selection for 1LE motors		For motor Frame size					
		180 ¹⁾	200 ¹⁾	225 ¹⁾	250 ²⁾	280 ²⁾	315 ²⁾
Number of poles		2 to 8	2 to 8	2 to 8	2 to 8	4 to 8	4 to 8
NDE bearing		6310C3	6312C3	6313C3	6215C3	6317C3	6319C3
Flange bearing plate for NDE brake mounting		A300	A350	A350	A400	A450	A550
Max. diameter for 2nd shaft extension		48k6	55m6	55m6	48m6	65m6	70m6
Brake type		KFB 25	KFB 40	KFB 40	KFB 63	KFB 100	KFB 160
Braking torque	Nm	250	400	400	630	1000	1600
n_{\max} – IM B3	rpm	6000	5500	5500	4700	4000	3600
n_{\max} – IM V1	rpm	6000	5500	5500	4700	4000	3600
Current at 110 V DC	W	158	196	196	220	307	344
Current at 230 V AC (207 V DC coil voltage)	A	0.77	0.91	0.91	1	1.53	1.64
Current at 400 V AC (180 V DC coil voltage)	A	0.8	1.18	1.18	1.25	1.8	2.1
Output at 110 V DC	A	1.44	1.78	1.78	2	2.79	3.13
Current at 24 V DC	A	5.21	6.92	6.92	8.17	12.2	12.8
Application time t_2	ms	70	80	80	110	125	180
Release time	ms	240	250	250	340	370	500
Brake moment of inertia	Kg m ²	0.0048	0.0068	0.0068	0.0175	0.036	0.050
Lifetime of brake lining L	Nm · 10 ⁶	3600	3110	3110	4615	7375	10945
Air gap adjustment required after braking energy L_N	Nm · 10 ⁶	810	935	935	1185	2330	3485

Configuration of motors with brakes

Braking time

The time it takes the motor to come to a standstill comprises two components:

- The application time of the brake t_2
- The braking time t_{Br}

$$t_{Br} = \frac{J \cdot n_{rated}}{9.55 \cdot (T_B \pm T_L)}$$

t_{Br} Braking time in s

J Total moment of inertia in kgm²

n_{rated} Rated speed of the motor with brake in rpm

T_B Rated braking torque in Nm

T_L Average load torque in Nm (if T_L supports braking, T_L is positive)

Braking energy per braking operation Q_{adm}

The braking energy per braking operation in Nm comprises the energy of the moments of inertia to be braked Q_{Kin} and the energy Q_L , which must be applied in order to brake against a load torque.

$$Q_{adm} = Q_{Kin} + Q_L$$

- The energy of the moments of inertia in Nm

$$Q_{Kin} = \frac{J \cdot n_{rated}^2}{182.4}$$

n_{rated} Rated speed before braking in rpm

J Total moment of inertia in kg m²

- The braking energy in Nm against a load torque

$$Q_L = \frac{\pm T_L \cdot n_{rated} \cdot t_B}{19.1}$$

T_L average load torque in Nm

T_L is positive if it acts against the brake

T_L is negative if it supports the brake

¹⁾ The standard brake for frame sizes 180 to 225 is the 2LM8 brake. KFB brake on request.

Run-on revolutions U

The number of run-on revolutions U of the motor with brake can be calculated as follows:

$$U = \frac{n_{rated}}{60} \left(t_2 + \frac{t_{Br}}{2} \right)$$

t_2 Brake application time in ms

Lifetime of the brake lining L and readjustment of the air gap

The brake lining wears due to friction which increases the air gap and the release time for the brake at standard excitation.

In order to calculate the lifetime of the brake lining in terms of operations S_{max} , then the lifetime of the brake lining L in Nm must be divided by the braking energy Q_{adm} :

$$S_{max} = \frac{L}{Q_{adm}}$$

The interval between adjustments N can be calculated in terms of operations by dividing the braking energy L_N which the brake can output until it is necessary to readjust the working air gap by Q_{perm} :

$$N = \frac{L_N}{Q_{adm}}$$

²⁾ The standard brake for frame sizes 250 to 315 is the KFB brake.

Overview (continued)**Additional versions**2LM8 spring-operated disk brake**Motor series**

This brake is mounted as standard on 1LE1 motors up to frame size 225 (with the exception of 1LE1 with order code **F90** – version "Forced-air cooled motors without external fan and fan cover" and 1PC1).

Voltage and frequency

The solenoids and the brake rectifier are designed for connection to the following voltages or can be supplied for the following voltages:

- Brake supply voltage 24 V DC
Order code **F10**
- Brake supply voltage 230 V AC
Order code **F11**
- Brake supply voltage 400 V AC
(directly at the terminal strip)
Order code **F12**

When 60 Hz is used, the voltage for the brake must not be increased!

Order codes **F10**, **F11** and **F12** may only be used in conjunction with order code **F01**.

Connections

Labeled terminals are provided in the main terminal box of the motor to connect the brake.

The AC voltage for the brake excitation winding is connected to the two free terminals of the rectifier block (~).

The brake can be released when the motor is at a standstill by separately exciting the solenoid. In this case, an AC voltage must be connected at the rectifier block terminals. The brake remains released as long as this voltage is present.

The rectifier is protected against overvoltages by varistors in the input and output circuits.

For 24 V DC brakes, the brake terminals are directly connected to the DC voltage source.

See the following circuit diagrams.

Fast brake application

If the brake is disconnected from the line supply, the brake is applied. The application time for the brake disk is delayed as a result of the inductance of the solenoid (shutdown on the AC side). This results in a considerable delay before the brake is mechanically applied. In order to achieve short brake application times, the circuit must be interrupted on the DC side. To realize this, the wire jumpers, located between contacts 1+ and 2+ at the rectifier are removed and replaced by the contact of an external switch (see following circuit diagrams).

Manual brake release with lever

The brakes can be supplied with a mechanical manual release with lever.
Order code **F50**

The dimensions of the brake lever depend on the motor frame size and can be read from the dimensional drawing generator for motors in the DT Configurator tool for low-voltage motors.

KFB spring-operated brake**Motor series**

This brake is the standard brake for 1LE motors in frame sizes 250 to 315.

Voltage and frequency

The solenoids and the brake rectifier can be connected to the following voltages:
230 V 1 AC 50 Hz ±10 %

When 60 Hz is used, the voltage for the brake must not be increased!

The brake can also be supplied for other voltages:

- Brake supply voltage: 24 V DC
Order code **F10**
- Brake supply voltage: 400 V AC
(directly at the terminal strip)
Order code **F12**

Order codes **F10** and **F12** may only be used in conjunction with order code **F01**.

Connections

Labeled terminals are provided in the main terminal box of the motor to connect the brake.

KFB brakes are connected through a standard bridge or half-wave rectifier. See the circuit diagrams below.

A special circuit is not required. Optimal switching times are achieved without the need to use special circuits.

Fast brake application

Not available for the KFB brake.

Manual brake release with lever

The brake can be released manually with screws as standard. Mechanical manual release with a lever can be ordered with order code **F50**.

The dimensions of the brake lever depend on the motor frame size and can be read from the dimensional drawing generator for motors in the SD configurator tool for low-voltage motors.

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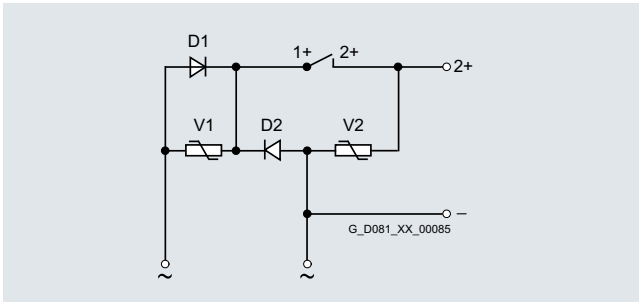
Modular technology

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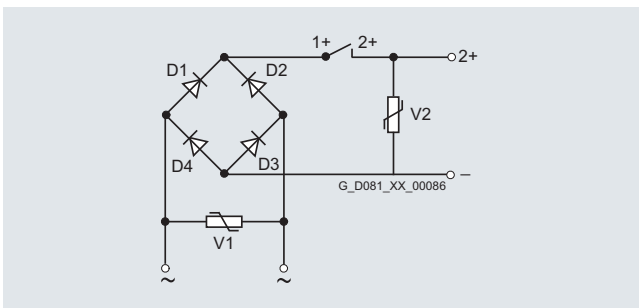
Overview (continued)

Bridge rectifier / half-wave rectifier

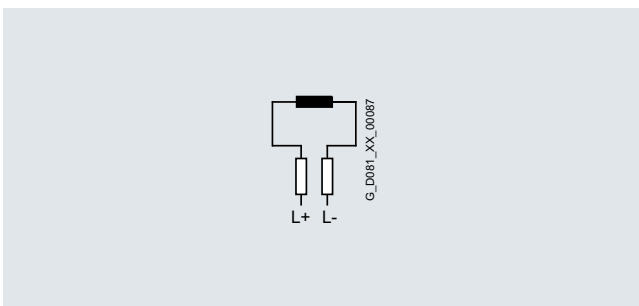
Brakes are connected through a standard bridge or half-wave rectifier or directly to the 2LM8 brake. See the circuit diagrams below.



Half-wave rectifier 400 V AC



Bridge rectifier 230 V AC



Brake connection for 24 V DC

Basic versions

The 1LE1 motors (with the exception of 1LE1 with option **F90** – version "Forced-air cooled motors without external fan and fan cover" and 1PC1) can be used in a much wider range of applications (e.g. as motors with brakes) if the following modules are mounted.

- **1XP8 012** rotary pulse encoder
- Separately driven fan
- Brake

The brake must always be mounted in the factory for safety reasons. The rotary pulse encoder and/or the separately driven fan can also be retrofitted.

The degree of protection of the motors with modular technology is IP55. Higher degrees of protection on request.

When a rotary pulse encoder, brake or separately driven fan is mounted, the length of the motor increases by Δl . For an explanation of the additional dimensions and weights, see "Technology", "Dimensions and weights" from Page 1/77 onwards.

1XP8 012 rotary pulse encoder

The rotary pulse encoder can be supplied already mounted in an HTL version as **1XP8 012-10** with order code **G01** or in a TTL version as **1XP8 012-20** with order code **G02**. In combination with the separately driven fan, rotary pulse encoders are supplied with a plug connector externally. The rotary pulse encoder can only be mounted on a standard non-drive end (NDE), i.e. a second shaft extension cannot be supplied.

The encoder can be retrofitted. The motor must be prepared for this. When the motor is ordered, the option "Prepared for mountings, center hole only" order code **G40** or the option "Prepared for mountings with shaft **D12**" order code **G41** must be specified (see "Mechanical design and degrees of protection" on Page 1/38).

When the rotary pulse encoder is mounted, the length of the motor increases by Δl . For an explanation of the additional dimensions and weights, see "Technology", "Dimensions and weights" from Page 1/77. The rotary pulse encoders of "Modular technology" and "Special technology" are fitted as standard with a protective cover made of non-corrosive sheet steel.

Mounting of encoder for temperatures below -20 °C and higher than $+40\text{ °C}$ available on request.

Technical specifications of the rotary pulse encoder	1XP8 012-10 (HTL version)	1XP8 012-20 (TTL version)
Supply voltage U_B	+10 V to +30 V	5 V $\pm 10\%$
Current input without load	150 mA	120 mA
Admissible load current per output	max. 100 mA	max. 20 mA
Pulses per revolution	1024	1024
Outputs	2 square-wave pulses A, B – 2 inverted square-wave pulses A, B Zero pulse and inverted zero pulse	
Pulse offset between the two outputs	90°	90°
Output amplitude	$U_{\text{High}} = U_B - 2.5\text{ V}$ $U_{\text{Low}} = 1.6\text{ V}$	$U_{\text{High}} > 2.5\text{ V}$ $U_{\text{Low}} < 0.5\text{ V}$
Edge interval	$\geq 0.43\text{ }\mu\text{s}$	$\geq 0.43\text{ }\mu\text{s}$
Sampling rate	$\leq 300\text{ kHz}$	$\leq 300\text{ kHz}$
Maximum speed	6000 rpm	6000 rpm
Transport/storage temperature range	$-30\text{ to }+80\text{ °C}$	$-30\text{ to }+80\text{ °C}$
Operating temperature range flange socket or fixed cable	$-40\text{ to }+100\text{ °C}$	$-40\text{ to }+100\text{ °C}$
Operating temperature range flexible cable	$-10\text{ to }+100\text{ °C}$	$-10\text{ to }+100\text{ °C}$
Degree of protection	IP66	IP66
Maximum admissible radial cantilever force	60 N	60 N
Maximum admissible axial force	40 N	40 N
Connection system	12-pin connector (mating connector is supplied)	
Certifications	CSA, UL	
Weight	0.3 kg	

Overview

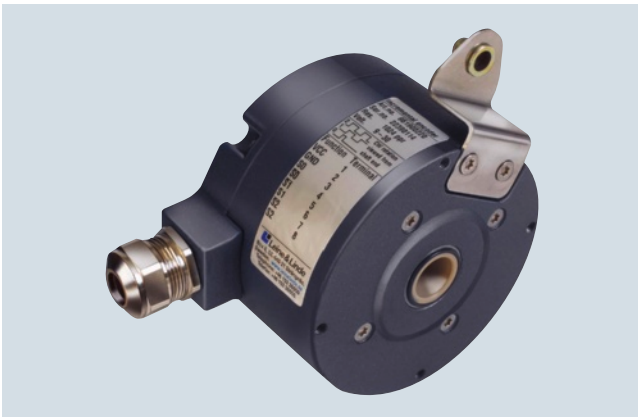
"Special technology" comprises rotary pulse encoders of 1LE1 motors (with the exception of 1LE1 with order code **F90** – version "Forced-air cooled motors without external fan and fan cover" and 1PC1).

1LE1 motors with order codes **F70** (mounting of separately driven fan), **F01** (mounting of holding brake (standard arrangement)) and **F01 + F70** (mounting of brake and separately driven fan) from the modular mounting system can be combined with rotary pulse encoders LL 861 900 200, HOG9 D 1024 I and HOG 10 D 1024 I from the "Special technology" range.

The length of the motor increases by Δl when the rotary pulse encoder is mounted. For an explanation of the additional dimensions and weights, please refer to "Technology", "Dimensions and weights" from Page 1/77.

The rotary pulse encoders of "Modular technology" and "Special technology" are fitted as standard with a protective cover made of non-corrosive sheet steel.

LL 861 900 220 rotary pulse encoder



With its rugged construction, this rotary pulse encoder is also suitable for difficult operating environments. It is resistant to shock and vibration and has insulated bearings.

The LL 861 900 220 rotary pulse encoder can be supplied already mounted.

Order code **G04**

*The LL 861 900 220 rotary pulse encoder can be retrofitted. The motor must be prepared for this. When the motor is ordered, the option "Prepared for mountings, center hole only" order code **G40** or the option "Prepared for mountings with shaft **D16**" order code **G42** must be specified (see "Mechanical design and degrees of protection" on Page 1/38). The rotary pulse encoder is not part of the scope of supply in this case.*

The version of the rotary pulse encoder with a diagnostics system (ADS) can be supplied by Leine and Linde.

Manufacturer:

Leine und Linde (Germany) GmbH
 Bahnhofstrasse 36
 73430 Aalen, Germany
 Tel. +49 (7361) 78093-0
 Fax +49 (7361) 78093-11

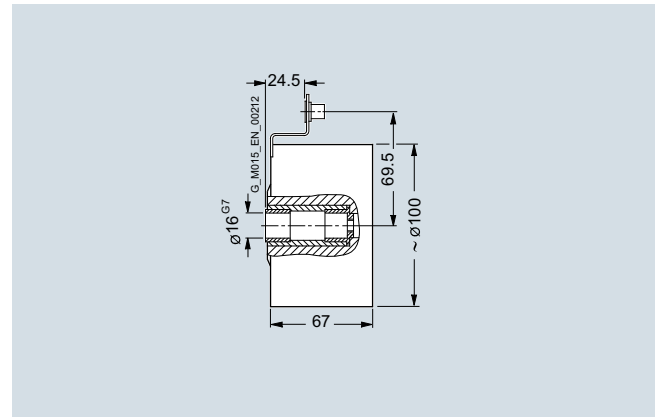
www.leinelinde.com
 E-mail: info@leinelinde.se

Note:

Start of delivery is planned for the options with order codes **G01** and **G02** for frame size 71 for the end of 2014.

For mounting of rotary pulse encoders with order codes **G01** and **G02** for frame sizes 80 to 315, a protective cover is supplied as standard, with order codes **G04**, **G05** and **G06** up to frame size 200.

For frame size 225 and above, a protective cover is not supplied as standard when rotary pulse encoders are mounted for order codes **G04**, **G05**, **G06**, **G07** and **G08**.



Mounting dimension of LL 861 900 220 rotary pulse encoder

Technical specifications for LL 861 900 220 (HTL version)

Mounting of encoder for temperatures below -20 °C and higher than $+40\text{ °C}$ available on request.

Supply voltage U_B	+9 V to +30 V
Current input without load	max. 80 mA
Admissible load current per output	40 mA
Pulses per revolution	1024
Outputs	6 short-circuit proof square-wave pulses A, A', B, B', 0, 0'
Pulse offset between the two outputs	$90^\circ \pm 25^\circ$ el.
Output amplitude	$U_{High} > 20\text{ V}$ $U_{Low} < 2.5\text{ V}$
Mark space ratio	1:1 $\pm 10\%$
Edge steepness	50 V/ μ s (without load)
Maximum frequency	100 kHz for 350 m cable
Maximum speed	4000 rpm
Temperature range	-20 to $+80\text{ °C}$
Degree of protection	IP65
Maximum adm. radial cantilever force	300 N
Maximum adm. axial force	100 N
Connection system	Terminal strips in encoder cable connection M20 \times 1.5 radial
Weight	Approx. 1.3 kg

Introduction

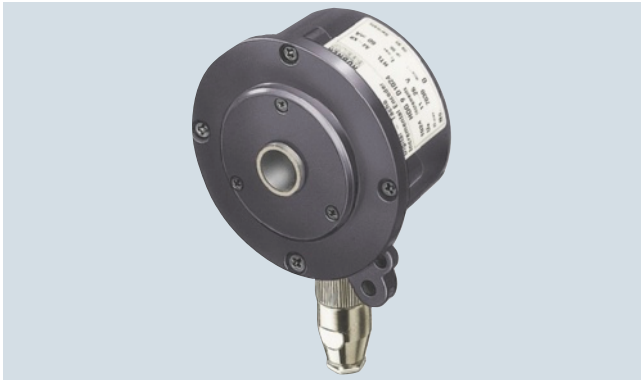
General technical specifications

Special technology

1

Overview (continued)

HOG9 D 1024 I rotary pulse encoder



The encoder is fitted with insulated bearings.

The HOG9 D 1024 I rotary pulse encoder can be supplied already mounted.

Order code **G05**

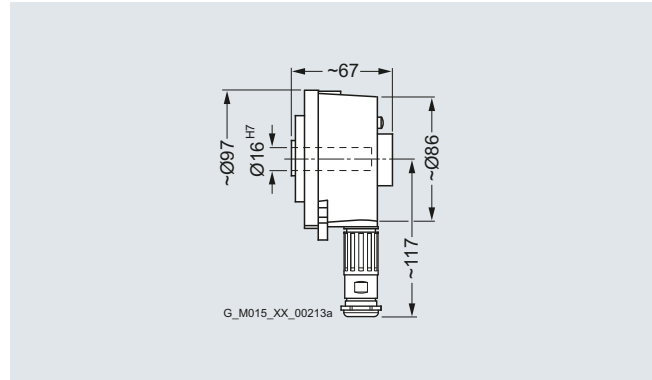
*The HOG9 D 1024 I rotary pulse encoder can be retrofitted. The motor must be prepared for this. When the motor is ordered, the option "Prepared for mountings, center hole only" order code **G40** or the option "Prepared for mountings with shaft **D16**" order code **G42** must be specified (see "Mechanical design and degrees of protection" on Page 1/38). The rotary pulse encoder is not part of the scope of supply in this case.*

Manufacturer:

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Mounting dimensions for HOG9 D 1024 I rotary pulse encoder

Technical specifications for HOG9 D 1024 I (HTL version)

Mounting of encoder for temperatures below -20 °C and higher than $+40\text{ °C}$ available on request.

Supply voltage U_B	+9 V to +30 V
Current input without load	50 to 100 mA
Admissible load current per output	150 mA, 800 mA peak
Pulses per revolution	1024
Outputs	4 short-circuit proof square-wave pulses A, B and A', B'
Pulse offset between the two outputs	$90^\circ \pm 20\%$
Output amplitude	$U_{\text{High}} \geq U_B - 3.5\text{ V}$ $U_{\text{Low}} \leq 1.5\text{ V}$
Mark space ratio	$1:1 \pm 20\%$
Edge steepness	10 V/ μs
Maximum frequency	120 kHz
Maximum speed	7000 rpm
Temperature range	-30 to $+100\text{ °C}$
Degree of protection	IP56
Maximum adm. radial cantilever force	150 N
Maximum adm. axial force	100 N
Connection system	Radial right-angle plug (mating connector is part of the scope of supply)
Mech. design acc. to Baumer Hübner Ident. No.	73 522 B
Weight	Approx. 0.9 kg

Overview (continued)**POG9 rotary pulse encoder**

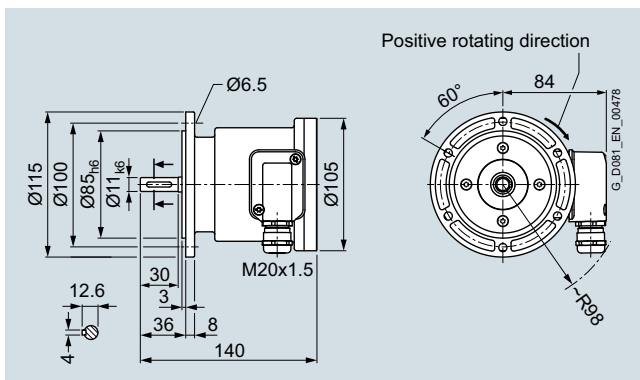
The POG 9 rotary pulse encoder can be supplied already mounted.

Order code **G048**

The POG 9 rotary pulse encoder can be retrofitted. The motor must be prepared for this. When the motor is ordered, the option "Prepared for mountings, center hole only" order code **G40** or the option "Prepared for mountings with shaft D16" order code **G42** must be specified (see "Mechanical design and degrees of protection" on Page 1/38). The rotary pulse encoder is not part of the scope of supply in this case.

Manufacturer:
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Mounting dimensions of POG 9 rotary pulse encoder

Technical specifications for POG 9

Supply voltage U_B	+9 V to +30 V	+5V ±5 %
Current input without load	< 100 mA	
Admissible load current per output	60 mA average value 300 mA peak	25 mA average value 75 mA peak
Pulses per revolution	300 ... 2500	
Output amplitude	$U_{High} \geq U_B - 3.5 V$ $U_{Low} \leq 1.5 V$	$U_{High} \geq 2.5 V$ $U_{Low} \leq 0.5 V$
Mark space ratio	1:1 ±20 %	
Operating speed	≤ 12000 rpm	
Switching rate	120 kHz	
Temperature range	-30 to +100 °C	
Degree of protection	IP56	
Maximum adm. radial cantilever force	150 N	
Maximum adm. axial force	80 N	
Connection system	Terminal box	
Weight	Approx. 1.4 kg	

POG10 rotary pulse encoder

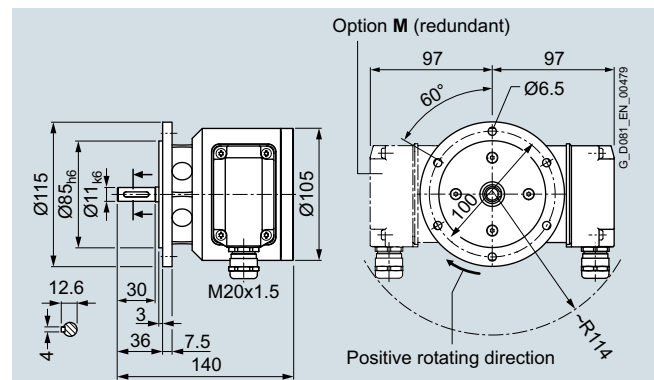
The POG 10 rotary pulse encoder can be supplied already mounted.

Order code **G07**

The POG 10 rotary pulse encoder can be retrofitted. The motor must be prepared for this. When the motor is ordered, the option "Prepared for mountings, center hole only" order code **G40** or the option "Prepared for mountings with shaft D16" order code **G42** must be specified (see "Mechanical design and degrees of protection" on Page 1/38). The rotary pulse encoder is not part of the scope of supply in this case.

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Mounting dimensions of POG 10 rotary pulse encoder

Technical specifications for POG 10

Supply voltage U_B	+9 V to +30 V	
Current input without load	< 100 mA	
Admissible load current per output	60 mA average value 300 mA peak	25 mA average value 75 mA peak
Pulses per revolution	300 ... 2500	
Mark space ratio	40:60 ... 60:40	
Operating speed	≤ 12000 rpm	
Switching rate	120 kHz	
Temperature range	-40 to +100 °C	
Degree of protection	IP66	
Maximum adm. radial cantilever force	≤ 450 N	
Maximum adm. axial force	≤ 300 N	
Connection system	Terminal box	
Weight	Approx. 1.9 kg	

Introduction

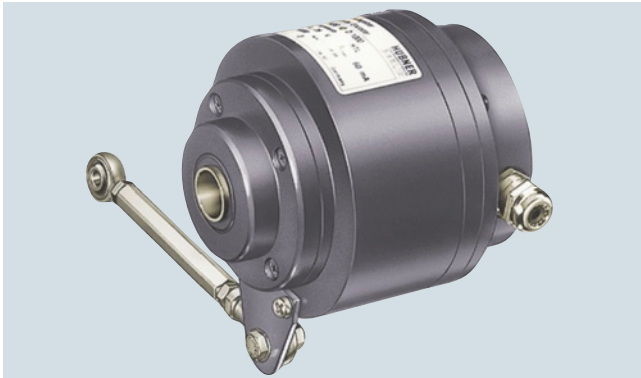
General technical specifications

Special technology

1

Overview (continued)

HOG10 D 1024 I rotary pulse encoder



This encoder is extremely rugged and is therefore suitable for difficult operating conditions. It is fitted with insulated bearings.

The HOG10 D 1024 I rotary pulse encoder can be supplied already mounted.

Order code **G06**

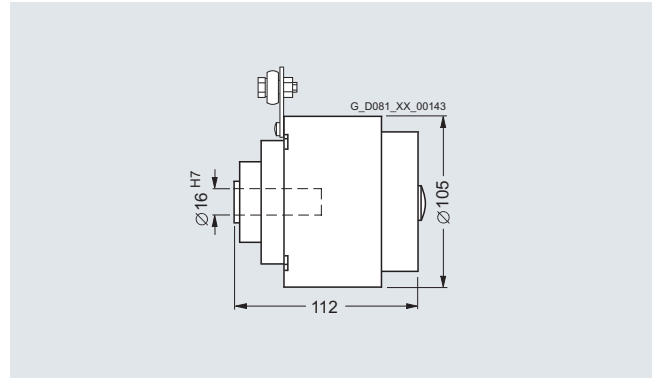
*The HOG10 D 1024 I rotary pulse encoder can be retrofitted. The motor must be prepared for this. When the motor is ordered, the option "Prepared for mountings, center hole only" order code **G40** or the option "Prepared for mountings with shaft **D16**" order code **G42** must be specified (see "Mechanical design and degrees of protection" on Page 1/38). The rotary pulse encoder is not part of the scope of supply in this case.*

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Mounting dimensions for HOG10 D 1024 I rotary pulse encoder

Technical specifications for HOG10 D 1024 I (HTL version)

Mounting of encoder for temperatures below -20 °C and higher than $+40\text{ °C}$ available on request.

Supply voltage U_B	+9 V to +30 V
Current input without load	Approx. 100 mA
Admissible load current per output	600 mA, 300 mA peak
Pulses per revolution	1024
Outputs	4 short-circuit proof square-wave pulses A, B and A', B'
Pulse offset between the two outputs	$90^\circ \pm 20\%$
Output amplitude	$U_{\text{High}} \geq U_B - 3.5\text{ V}$ $U_{\text{Low}} \leq 1.5\text{ V}$
Mark space ratio	1:1 $\pm 20\%$
Edge steepness	10V/ μs
Maximum frequency	120 kHz
Maximum speed	7000 rpm
Temperature range	-40 to $+100\text{ °C}$
Degree of protection	IP66
Maximum adm. radial cantilever force	150 N
Maximum adm. axial force	80 N
Connection system	Terminals, cable connection M20 x 1.5
Mech. design acc. to Baumer Hübner Ident. No.	74 055 B
Weight	Approx. 1.6 kg

Overview (continued)

Dimensions and weights

Fig. 1 Brake
Order code **F01**
[optionally with manual release, order code **F50**]

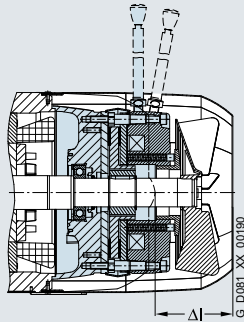
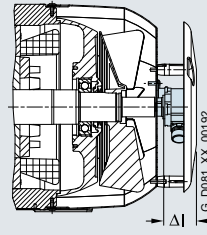


Fig. 2 Rotary pulse encoder (on cover)
Order code **G01/G02/G04/G05/G06**
[**G01, G02** protective cover as standard]



Frame size	Assignment Fig. 1		Assignment Fig. 2		Assignment HOG9 D 1024 I		Assignment HOG10 D 1024 I			
	Order code F01	Weight approx. kg	Order code G01, G02	Weight approx. kg	Order codes G04	Weight approx. kg	Order codes G05	Weight approx. kg	Order codes G06	Weight approx. kg
	Δl mm		Δl mm		Δl mm		Δl mm		Δl mm	
1LE1										
80	60	3.5	68.5	0.7	–	–	–	–	–	–
90	77.5	5.3	68.5	0.7	–	–	–	–	–	–
100	81	5.9	56	0.9	83	1.9	83	1.5	126	2.2
112	88	7.8	56	0.8	83	1.9	83	1.5	126	2.2
132	114	11.9	60	1.3	87	2.4	87	2	130	2.7
160	130	30.7	60	1.5	87	2.7	87	2.3	130	3
180	125	28	91	2.1	91	2.3	91	1.9	127	2.6
200	137	38	91	2.3	91	2.5	91	2.1	127	2.8
225	135	63	63	0.3	86	1.3	72	0.9	116	1.6
250	225	83	63	0.3	86	1.3	72	0.9	116	1.6
280	297	118	63	0.3	86	1.3	72	0.9	116	1.6
315	283	255	63	0.3	86	1.3	72	0.9	116	1.6

Introduction

General technical specifications

Special technology

1

Overview (continued)

Fig. 3 Brake and rotary pulse encoder (on cover)
 Order code **F01**
+ G01/G02/G04/G05/G06
 [optionally with manual release,
 order code **F50**;
G01, G02 protective cover as standard]

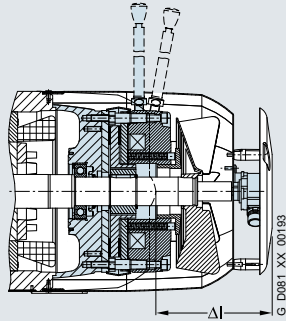
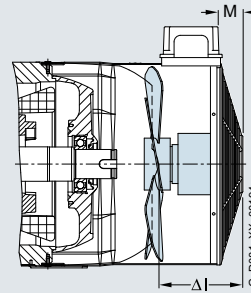
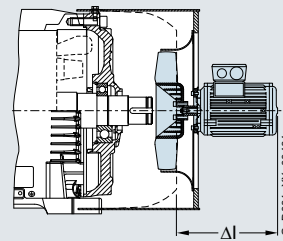


Fig. 4 Separately driven fan
 Order code **F70**



Frame sizes 100 to 200



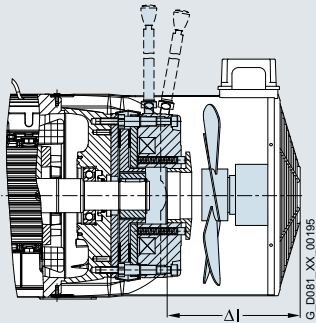
Frame sizes 225 to 315

Assignment

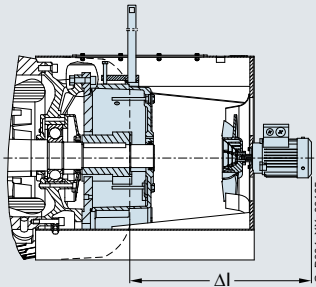
Frame size	Fig. 3 Brake and rotary pulse encoder (on cover)				HOG9 D 1024 I				HOG10 D 1024 I				Fig. 4 Separately driven fan		
	1XP8 012 Order codes F01 + G01/G02		LL 861 900 220 Order codes F01 + G04		Order codes F01 + G05		Order codes F01 + G06		Order codes F01 + G06		Order code F70				
	Δl	Weight approx.	Δl	Weight approx.	Δl	Weight approx.	Δl	Weight approx.	Δl	Weight approx.	Δl	M	Weight approx.		
	mm	kg	mm	kg	mm	kg	mm	kg	mm	kg	mm	mm	kg		
1LE1															
80	128.5	4.2	–	–	–	–	–	–	88.5	30	1.9				
90	146	6	–	–	–	–	–	–	105.5	30	2.4				
100	137	6.8	164	7.8	164	7.4	207	8.1	94	30	2.4				
112	144	8.6	171	9.7	171	9.3	214	10	89	30	2.6				
132	174	13.2	201	14.3	201	13.9	244	14.6	125	40	3.8				
160	190	32.2	217	33.4	217	33	260	33.7	146	40	6.5				
180	216	30.1	216	30.3	216	29.9	252	30.6	257	40	12				
200	228	40.3	228	40.5	228	40.1	264	40.8	262	40	15				
225	198	63.3	157	7.8	157	7.4	200	8.1	221	30	22				
250	288	83.3	164	9.7	164	9.3	207	10	226	30	25				
280	360	118.3	192.5	14.3	192.5	13.9	235.5	14.6	224	40	28				
315	346	255.3	207	33.4	207	33	250	33.7	237	40	36				

Overview (continued)

Fig. 5 Brake and separately driven fan
Order code **F01 + F70**
[optionally with manual release,
order code **F50**]

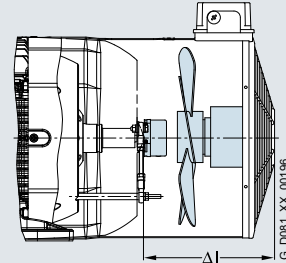


Frame sizes 100 to 200

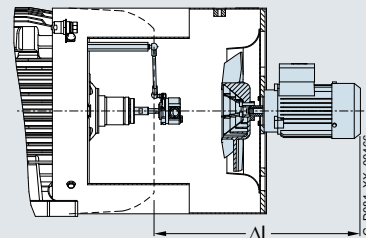


Frame sizes 225 to 315

Fig. 6 Rotary pulse encoder (under cover) and separately driven fan
Order code **F70**
+ G01/G02/G04/G05/G06



Frame sizes 100 to 200



Frame sizes 225 to 315

Assignment

Frame size	Fig. 5 Brake and separately driven fan		Fig. 6 Separately driven fan and rotary pulse encoder (under cover)							
	Order codes F01 + F70		Order codes F70 + G01/G02		Order codes F70 + G04		Order codes F70 + G05		Order codes F70 + G06	
	Δl	Weight approx.	Δl	Weight approx.	Δl	Weight approx.	Δl	Weight approx.	Δl	Weight approx.
	mm	kg	mm	kg	mm	kg	mm	kg	mm	kg
1LE1										
80	161.5	5.4	161.5	2.6	–	–	–	–	–	–
90	174	7.7	174	3.1	–	–	–	–	–	–
100	169	8.3	169	3.3	169	4.3	169	3.9	204	4.6
112	164	10.4	164	3.4	164	4.5	164	4.1	199	4.8
132	195	15.7	195	5.1	195	6.2	195	5.8	250	6.5
160	216	37.2	216	8	216	9.2	216	8.8	281	9.5
180	257	40	257	14.4	257	14.3	257	13.9	257	14.6
200	262	53	262	17.3	262	17.5	262	17.1	262	17.8
225	393	85	240	22.3	161.5	4.3	161.5	3.9	196.5	4.6
250	410	108	255	25.3	156.5	4.5	156.5	4.1	191.5	4.8
280	371	146	261	28.3	186	6.2	186	5.8	241	6.5
315	370	291	262	36.3	205.5	9.2	205.5	8.8	270.5	9.5

Introduction

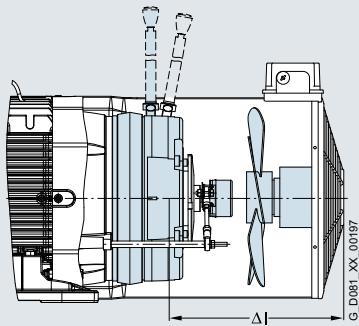
General technical specifications

Special technology

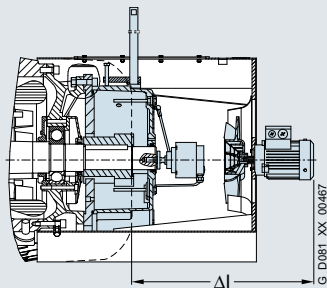
1

Overview (continued)

Fig. 7 Brake, rotary pulse encoder (under cover) and separately driven fan
Order code **F01 + F70**
+ G01/G02/G04/G05/G06
[optionally with manual release,
order code **F50**]

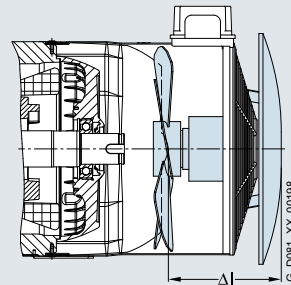


Frame sizes 100 to 200

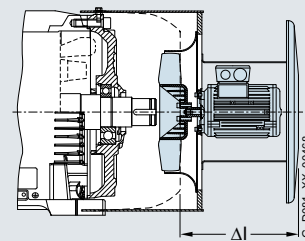


Frame sizes 225 to 315

Fig. 8 Standard protective cover for separately driven fan
Order code **H00**



Frame sizes 100 to 200



Frame sizes 225 to 315

Assignment

Fig. 7

Frame size Brake, separately driven fan and rotary pulse encoder (under cover)

Order codes

F01 + F70
+ G01/G02

Δl Weight approx.
mm kg

Order codes

F01 + F70
+ G04

Δl Weight approx.
mm kg

Order codes

F01 + F70
+ G05

Δl Weight approx.
mm kg

Order codes

F01 + F70
+ G06

Δl Weight approx.
mm kg

Fig. 8

Protective cover for separately driven fan

Order code

H00

Δl Weight approx. Diameter of the fan cover
mm kg mm

1LE1	Δl	Weight approx.	Δl	Weight approx.	Δl	Weight approx.	Δl	Weight approx.	Δl	Weight approx.	Diameter of the fan cover
	mm	kg	mm	kg	mm	kg	mm	kg	mm	kg	mm
80	186.5	6.1	–	–	–	–	–	–	124.5	0.2	157
90	199	8.4	–	–	–	–	–	141.5	0.2	177	
100	204	9.2	204	10.2	204	9.8	254	10.5	124	1.4	210
112	199	11.2	199	12.3	199	11.9	249	12.6	122	1.8	249
132	250	17	250	18.1	250	17.7	300	18.4	149	2.4	300
160	281	38.7	281	39.9	281	39.5	331	40.2	177	3	338
180	257	42.1	257	42.3	257	41.9	400	42.6	288	1.7	338
200	262	55.3	262	55.5	262	55.1	397	55.8	293	1.7	338
225	393	85.3	196.5	10.2	196.5	9.8	246.5	10.5	251	1.4	210
250	410	108.3	191.5	12.3	191.5	11.9	241.5	12.6	259	1.8	249
280	371	146.3	241	18.1	241	17.7	291	18.4	248	2.4	300
315	370	291.3	270.5	39.9	270.5	39.5	320.5	40.2	268	3	338

Overview (continued)

Fig. 9 Prepared for mountings, center hole only
(for 2LM8 brake order code **F01** and/or encoder order code **G01/G02/G04/G05/G06**)
Order code **G40**
(up to frame size 160, standard with frame size 180 and above)

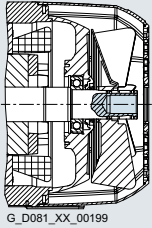
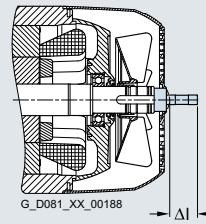


Fig. 10 Prepared for mountings with shaft D12/D16
order code **G41/G42**



Assignment

Fig. 9

Frame size Prepared for mountings, center hole only
(for brake order code **F01** and/or encoder
order code **G01/G02/G04/G05/G06**)
order code **G40**

Order code

G40

Δl

mm

Weight approx.

kg

Fig. 10

Prepared for mountings with shaft D12/D16
order code **G41/G42**

Order code

G41

Δl

mm

Weight approx.

kg

Order code

G42

Δl

mm

Weight approx.

kg

1LE1

Frame size	Δl mm	Weight approx. kg	Order code G41 Δl mm	Weight approx. kg	Order code G42 Δl mm	Weight approx. kg
80	0	0	22	0.1	52	0.1
90	0	0	22	0.1	52	0.1
100	0	0	18.3	0.15	54.3	0.2
112	0	0	14.5	0.15	54.3	0.2
132	0	0.1	18.8	0.3	58.8	0.4
160	0	0.2	18.6	0.4	55.6	0.7
225	0	0	23	0.27	58	0.33
250	0	0	23	0.27	58	0.33
280	0	0	23	0.27	58	0.33
315	0	0	23	0.27	58	0.33

Introduction

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Overview (continued)

Fig. 11 Standard protective cover for types of construction
Order code **H00**

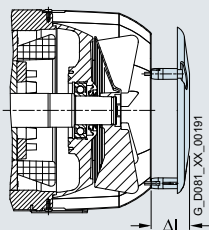
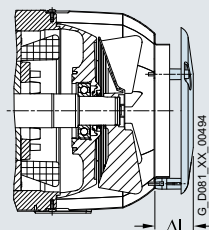


Fig. 12 Protective cover for textile industry
Order code **F75**



Frame size	Assignment		Fig. 12	
	Fig. 11	Protective cover	Protective cover	Order codes
	Order code		Order codes	
	H00		F75	
	Δl	Weight approx.	Δl	Weight approx.
	mm	kg	mm	kg
80	36	0.2	17	0.3
90	36	0.2	15	0.4
100	40	0.4	64	0.7
112	40	0.4	64	0.9
132	60	0.7	71	1.3
160	60	0.7	71	1.9
180	90	1.6	104	3.2
200	90	1.6	104	3.4
225	100	2.2	On request	On request
250	100	2.4	On request	On request
280	110	3.4	On request	On request
315	110	4	On request	On request

SIMOTICS GP/SD

1LE1/1PC1

Standard Motors

2

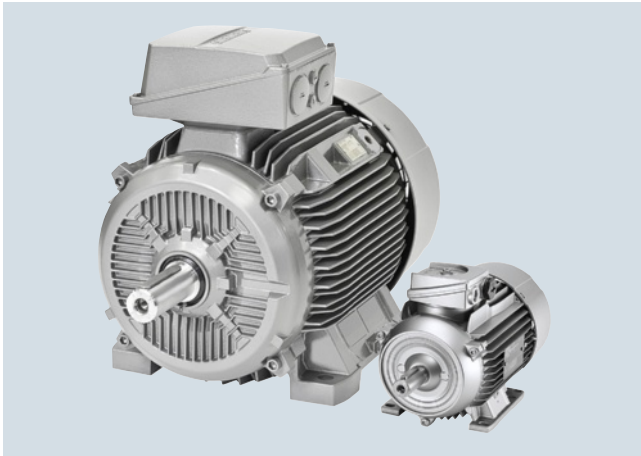


2/2	Orientation	2/38	Supplements to article numbers and special versions
2/2	• Overview	2/38	Voltages
2/3	• Benefits	2/38	• Aluminum series 1LE10, 1PC10
2/4	• Application	2/39	• Aluminum series 1LE1011, 1PC1012 – pole-changing
2/5	• Technical specifications	2/40	• Cast-iron series 1LE15 Basic Line, 1LE16 Performance Line
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2/26	Self-ventilated or forced-air cooled motors – Aluminum series 1LE1021	2/80	Aluminum series 1LE1023 – Forced-air cooled, frame sizes 80 M to 90 L
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2/32	NEMA Premium Efficient MG1 motors, Table 12-12	2/84	Cast-iron series 1LE1501, 1LE1521, 1LE1601, 1LE1621 – Self-ventilated, frame sizes 71 M to 160 L
2/32	Self-ventilated or forced-air cooled motors – Aluminum series 1LE1023	2/86	Cast-iron series 1LE1501, 1LE1521, 1LE1601, 1LE1621 – Self-ventilated, frame sizes 180 M to 250 M
2/33	Self-ventilated motors – Cast-iron series 1LE1523/1LE1623 Basic/Performance Line	2/88	Cast-iron series 1LE1501, 1LE1521, 1LE1601, 1LE1621 – Self-ventilated, frame sizes 280 S to 315 L
2/36	Pole-changing motors	2/90	Cast-iron series 1LE1503, 1LE1523, 1LE1603, 1LE1623 – Self-ventilated, frame sizes 71 M to 160 L
2/36	Self-ventilated motors – Aluminum series 1LE1011 for constant load torque	2/92	Cast-iron series 1LE1503, 1LE1523, 1LE1603, 1LE1623 – Self-ventilated, frame sizes 180 M to 315 L
2/37	Self-ventilated motors – Aluminum series 1LE1011/1LE1012 for square-law load torque	2/94	Flange dimensions

SIMOTICS GP/SD 1LE1/1PC1 Standard Motors

Orientation

Overview



Increasing energy costs have resulted in greater emphasis on the power consumption of drive systems. It is extremely important to utilize the full potential for minimizing energy consumption here to secure competitiveness today and in the future. The environment will also profit from reduced energy consumption.

This is the reason that already today we are developing a new generation of low-voltage motors. Innovative rotors create the best requisites for motors with a high degree of efficiency. IE1 and IE2 motors with the same output have the same dimensions. The new motors for IE2, IE3 and IE4 offer considerable energy savings and protect our environment. We also consider environmental sustainability during production to preserve resources. Potting compounds and coatings are, for example, solvent-free.

The modular mounting concept provides total flexibility. Each motor is based on a uniform concept for all markets worldwide. Our motors are manufactured in accordance with the latest ecological concepts and are launched on the market step by step.

The new 1LE1 motor family is therefore one of the most compact in the world, because it is manufactured using innovative technology. For an optimized design, a compound of highly conductive materials is used in the rotor (up to frame size 200). This results in minimum rotor losses and an excellent starting and switching response.

The design of the 1LE1 motors ensures maximum flexibility and minimum installation costs. Users benefit from integral eyebolts, screw-on feet, reinforced bearing plates with optimum mechanical properties and easily accessible terminal boxes. Encoders, brakes and separately driven fans can also be added without any problems. Smaller inventories make stockkeeping easier, so motor suppliers can respond to customer requirements more quickly.

The 1LE1/1PC1 motor family comprises two main series:

- SIMOTICS GP for general purpose applications: Motors with an aluminum housing

SIMOTICS GP 1LE1/1PC1 motors with an aluminum housing are suitable for a wide range of standard drive tasks in the industrial environment. Thanks to their particular low weight, they are predestined for applications in pumps, fans and compressors. But they also reliably fulfill their tasks in conveyor systems and lifting gear.

Brief overview	
Output and voltage range:	0.37 ... 22 kW for all commonly used voltages
Frame sizes and types of construction:	80 ... 160 in all common types of construction
Rated speed:	750 ... 3600 rpm
Number of poles:	2, 4, 6, 8
Efficiency classes:	<ul style="list-style-type: none"> • IE1 (Standard Efficiency) • IE2 (High Efficiency) • IE3 (Premium Efficiency) • NEE (NEMA Energy Efficient, according to NEMA MG, Table 12-11) • NPE (NEMA Premium Efficient, according to NEMA MG, Table 12-12)

- SIMOTICS SD for severe duty applications: Motors with cast-iron housing

SIMOTICS SD 1LE1 motors with a cast-iron housing are extremely rugged and are therefore the first choice for applications under harsh environmental conditions. They master dust or vibration in mills and mixers as well as the corrosive atmosphere in the petrochemical industry. Their design supports optimized heat dissipation and offers the same handling as the general purpose variants.

Brief overview	
Output and voltage range:	0.18 ... 200 kW for all commonly used voltages
Frame sizes and types of construction:	71 ... 315 in all common types of construction
Rated speed:	750 ... 3600 rpm
Number of poles:	2, 4, 6, 8
Efficiency classes:	<ul style="list-style-type: none"> • IE1 (Standard Efficiency) • IE2 (High Efficiency) • IE3 (Premium Efficiency) • NEE (NEMA Energy Efficient, according to NEMA MG, Table 12-11) • NPE (NEMA Premium Efficient, according to NEMA MG, Table 12-12)

Overview (continued)**High efficiency energy-saving motors for a positive energy balance**

Depending on requirements, energy-saving motors for a positive energy balance are available that are compliant with the legal requirements applicable in the European economic area in accordance with EU Directive 640/2009 as well as for the North American market in accordance with US federal law EISA (Energy Independence Security Act).

Motors with increased output and compact construction (1LE1)

Motors with increased output and compact construction can be used to advantage in confined spaces. For a slightly longer overall length, the output is at least as high as that of the next largest frame size. These compact motors are also optimized for efficiency. They are offered in IE2 and IE3 and therefore reduce operating costs.

Motors without fan cover and without external fan (1LE1 with order code F90)

Forced-air cooled motors with surface cooling without fan cover and without external fan are mainly used for driving fans.

Motors with reduced output without fan cover and without external fan (1PC1)

Naturally cooled motors with surface cooling without fan cover and without external fan are suitable for the following operating conditions:

- Types of duty with adequate cooling times (e.g. temporary duty for positioning drives)
- Environmental conditions that demand compact installation space (e.g. in motors with a stopping function)

Requirements which make an external fan disadvantageous, e.g. simple cleaning in the food industry, textile industry.

Preferred and Express motors

The most popular basic versions of motor series 1LE1 are available under special terms as so-called "Preferred motors". Most of the "Preferred motors" are also available with a shorter delivery time as so-called "Express motors".

The standard delivery time for "Express motors" is 1 to 2 days from the time of clarification of the order at the factory until dispatch from the factory. To determine the delivery date at the customer site, the appropriate shipping time must be added.

The complete range is covered by Price List D 81.1 P Part 1 "Preferred and Express Motors".

Benefits

There is considerable potential in the new 1LE1/1PC1 series of low-voltage motors. As a consistent further development of existing motors, the 1LE1/1PC1 motors offer numerous advantages.

Greater efficiency

Innovative rotor technology and manufacturing technology has been implemented for the IE1, IE2 and IE3 high efficiency motor variants. The energy-efficient motors are therefore considerably more compact.

The energy saving potential and life cycle costs of the new motors can be calculated with the SinaSave software. The SinaSave program can be downloaded from the Internet using the following link:

www.siemens.com/sinasave

The 1LE1 motors also impress customers with their extremely long life and their weight-optimized design has a positive effect on the stability of the equipment unit.

A wider range of applications

The motors are certified for worldwide use and satisfy high standards of quality (confirmed, for example, by CSA ¹⁾, UL ²⁾, CQC ³⁾).

Improved design

The optimized housing in modern EMC design has an attractive appearance and enhances functionality. The rotatable, accessible terminal boxes, integral eyebolts, screw-on feet and reinforced bearing plates ensure this.

Greater output

For the same frame size, the high-performance motors offer one complete rated output level more. We are also consistently implementing energy efficiency improvements here, too. The motors are offered (based on the categories of IEC 60034-30) in various efficiency classes.

More flexibility

The optimized design of the motors makes installation easier in general. Encoders, brakes and separately driven fans can be retrofitted easily. Terminal boxes and feet for flexible mounting can be selected. Smaller inventories make stockkeeping easier and motor suppliers can respond to customer requirements more quickly. Optimized manufacturing processes support fast availability. All motors up to 500 V can be operated either directly on the line or converter-fed.

For general purpose applications: SIMOTICS GP motors with an aluminum housingParticularly user friendly

The previously introduced, well-proven, obliquely partitioned terminal box is being implemented consistently throughout the entire motor series.

Special export line

For exporting to NAFTA, the Eagle Line is available. The motors are supplied with the electrical values stamped on the rating plate in accordance with EISA requirements.

Greater output

If the motor has to be extremely compact because there is insufficient space for a standard motor, a motor with increased output could be the solution. In efficiency class IE2, these motors allow the outputs of a standard motor to be achieved in the next smallest frame size.

¹⁾ Canadian Standard Association

²⁾ Underwriters Laboratories Inc.

³⁾ China Quality Certification

SIMOTICS GP/SD 1LE1/1PC1 Standard Motors

Orientation

Benefits (continued)

For severe duty applications: **SIMOTICS SD motors with a cast-iron housing**

The right motor for various challenges

The following lines are available for severe duty applications:

- **Basic Line (1LE15):** rugged, reliable motors for machine construction
- **Performance Line (1LE16):** motors for the process industry with reinforced bearings and a rugged coating – for requirements that extend beyond the Basic Line
- **"Eagle Line":** motors for exporting to NAFTA; they fulfill the requirements of UL and CSA and are supplied with the electrical values stamped on the rating plate in accordance with EISA requirements

Comparison: Basic Line versus Performance Line

Function	Basic Line	Performance Line
Bearing size	62 (63 from frame size 280 upwards)	63
Relubrication	Optional (standard from frame size 280 upwards)	Standard from frame size 160 upwards (optional for frame size 100 to 132)
Paint system	Standard coating, corrosion class C2 ¹⁾	Special coating, corrosion class C3 ¹⁾
Drainage	Drain plugs	T drains
Rating plate	Plastic	Steel
Motor protection	Optional	PTC
Fan cover	Plastic	Steel
Warranty	12 months	36 months

Compact design

The size of a motor is often an important aspect in the case of machines. For this reason, the 1LE1 motors in IE2 and IE3 are no longer than their predecessors in the 1LG series in IE2.

Another highlight: some of the IE3 motors fit in the same housing as the IE2 motors. The efficiency classes naturally do not differ with regard to shaft height, so that the mechanical interface to the equipment unit remains the same. This also supports a largely problem-free efficiency upgrade to IE3 – without the need to adapt the mechanical design of a machine.

Greater output

In severe duty applications, increased output motors can also be the right solution if sufficient space is not available for a standard motor. Because these motors offer the same output in the next smallest frame size.

Application

As soon as the range of motors and options is complete, it will be possible to use the 1LE1/1PC1 motors from Siemens in all areas and sectors of industry due to their numerous options. They are suitable both for special environmental conditions such as those that predominate in the chemical or petrochemical industry as well as for most climatic requirements such as those of offshore applications.

Their large range of line voltages enables them to be used all over the world.

The wide field of implementation includes the following applications:

- Pumps
- Fans
- Compressors
- Conveyor systems such as cranes, belts and lifting gear
- High-bay warehouses
- Packaging machines
- Automation and drives
- Manufacturing industry
- General machine construction

Motors with a cast-iron housing are particularly suitable for the following severe duty applications:

- Petrochemical industry
- Pharmaceuticals
- Chemical industry
- Printing industry
- Process industry

¹⁾ C2 and C3 are corrosion classes according to DIN EN ISO 12944. The corrosion protection must be selected in accordance with the expected corrosiveness of the environment at the installation location as well as the required service life. Five corrosion classes are defined in the above-mentioned standard, ranging from a non-corrosive indoor atmosphere (C1) to a highly corrosive industrial or marine environment (C5 I and C5 M).

Technical specifications

Overview of technical specifications

This table lists the most important technical specifications. For more information and details, see Catalog Section 1 "Introduction".

Type of motor	SIMOTICS GP/SD 1LE1/1PC1 IEC Low-Voltage Motors
Connection types	Star connection/delta connection The connection type to be used can be established from the Article No. supplements for the required motor.
Number of poles	2, 4, 6, 8
Frame sizes	71 M ... 315 L
Rated output	0.18 ... 200 kW (1LE1 motor series)/0.3 ... 9 kW (1PC1 motor series)
Frequencies	50 Hz and 60 Hz
Versions	Self-ventilated 1LE1 energy-saving motors with: <ul style="list-style-type: none"> • IE1 (Standard Efficiency) • IE2 (High Efficiency) • IE3 (Premium Efficiency) • NEE (NEMA Energy Efficient, according to NEMA MG, Table 12-11) • NPE (NEMA Premium Efficient, according to NEMA MG, Table 12-12) Self-ventilated 1LE1 motors with increased output and: <ul style="list-style-type: none"> • IE1 (Standard Efficiency) • IE2 (High Efficiency) Forced-air cooled 1LE1 motors without external fan and fan cover with: <ul style="list-style-type: none"> • IE1 (Standard Efficiency) • IE2 (High Efficiency) Naturally cooled 1PC1 motors without external fan and fan cover with: <ul style="list-style-type: none"> • IE1 (Standard Efficiency) • IE2 (High Efficiency)
Marking	IEC 60034-30 IE1, IE2, IE3: 2, 4 and 6-pole US Energy Independence Security Act EISA: 2, 4, 6 and 8-pole
Rated speed (synchronous speed)	750 ... 3000 rpm
Rated torque	2.6 ... 1703 Nm (1LE1 motor series)
Insulation of the stator winding in accordance with EN 60034-1 (IEC 60034-1)	Temperature class 155 (F), utilized acc. to temperature class 130 (B) (also for motors with increased output) DURIGNIT IR 2000 insulation system
Degree of protection according to EN 60034-5 (IEC 60034-5)	IP55 as standard
Cooling according to EN 60034-6 (IEC 60034-6)	<ul style="list-style-type: none"> • Self-ventilated (1LE1 motor series) frame size 80 M to 315 L (IC 411), • Forced-air cooled (1LE1 motor series with order code F90) frame size 80 M to 160 L (IC 418) • Naturally cooled (1PC1 motor series) frame size 100 L to 160 L (IC 410)
Admissible coolant temperature and site altitude	-20 ... +40 °C as standard, site altitude up to 1000 m above sea level. See "Coolant temperature and site altitude" in Catalog Section 1 "Introduction".
Standard voltages according to EN 60038 (IEC 60038)	50 Hz: 230 V, 400 V, 500 V, 690 V The voltage to be used can be found in the "Selection and ordering data" for the required motor.
Type of construction according to EN 60034-7 (IEC 60034-7)	<ul style="list-style-type: none"> • Without flange: IM B3, IM B6, IM B7, IM B8, IM V5 without protective cover, IM V6, IM V5 with protective cover • With flange: IM B5, IM V1, IM V3, IM B35 • With standard flange and special flange (next larger flange): IM B14, IM V19, IM V18, IM B34
Paint finish Suitability of paint finish for climate group according to IEC 60721, Part 2-1	Standard: color RAL 7030 stone gray See "Paint finish" in Catalog Section 1 "Introduction".
Vibration severity level according to EN 60034-14 (IEC 60034-14)	Level A (normal – without special vibration requirements) Optionally: level B (with special vibration requirements) See "Balance and vibration quantity" in Catalog Section 1 "Introduction".
Shaft extension according to DIN 748 (IEC 60072)	Balance type: half-key balancing as standard See "Balance and vibration quantity" in Catalog Section 1 "Introduction".
Sound pressure level according to DIN EN ISO 1680 (tolerance +3 dB)	The sound pressure level is listed in the selection and ordering data for the required motor.
Weights	The weight is listed in the selection and ordering data for the required motor.
Modular mounting concept	Rotary pulse encoder, brake, separately driven fan or prepared for mountings
Consistent series concept	<ul style="list-style-type: none"> • Cast housing feet, screwed-on feet available as an option and retrofittable • Terminal box obliquely partitioned and rotatable through 4 x 90° • Bearings at DE and NDE are of identical design, reinforced bearings available as an option
Options	See "Supplements to article numbers and special versions"

More information

For further information, please get in touch with your local Siemens contact.

At:

www.siemens.com/automation/partner

you can find out about certain technologies through Siemens contact partners worldwide.

Wherever possible, you will find a local contact partner for:

- Technical support
- Spare parts/repairs
- Service
- Training
- Marketing & Sales
- Technical consultation/engineering

You start by selecting a:

- country
- product or
- sector

By further specifying the remaining criteria you will find exactly the right contact partner with his/her respective expertise.

SIMOTICS GP/SD 1LE1/1PC1 Standard Motors

Orientation

Converter-fed operation

Overview

Converter-fed operation up to 500 V +10 % line voltage

The standard insulation of 1LE1 motors is designed such that converter-fed operation is possible at line voltages up to $U_N \leq 500$ V. Compliance with the following limit values is essential (voltage values are peak values): $\hat{U}_{\text{phase-to-phase}} \leq 1500$ V, $\hat{U}_{\text{phase-to-ground}} \leq 1100$ V, voltage rise times of $t_s > 0.1$ μs . Operation of 1LE1 motors at higher voltage peaks (e.g. on converters with controlled input, e.g. AFE, ALM) requires motors with higher insulation resistance.

Please inquire in this case. For motors with protruding connection cables (order codes R20, R21, R22, R23 and R24) please inquire in the case of converter-fed operation.

During installation, the EMC guidelines must be complied with

Note:

When motors are operated on SINAMICS converters additional losses occur which, depending on the admissible winding temperature, can make it necessary to reduce the torque. The admissible torque values can be obtained from the SIZER configuring tool. The lowest frequency specified there is 5 Hz. For stationary converter-fed operation at lower frequencies, particularly in the case of frame sizes < 100 , it is necessary to inquire at the Quotation Center.

Benefits

Motors operating with frequency converters offer the user numerous advantages.

The motors feature the future-oriented insulation system DURIGNIT IR 2000 (IR = Inverter Resistant). The DURIGNIT IR 2000 insulating system consists of high-quality enamel wires and insulating sheet materials in conjunction with temperature-resistant resin impregnation.

The motors specially developed for operation on a frequency converter with special insulation are converter-compatible at 690 V (+10 %).

Application

The motors can be used in numerous drive applications with variable-speed drives when they are combined with converters from the MICROMASTER and SINAMICS spectrum.

The wide field of implementation includes the following applications:

- Conveyor systems such as cranes, belts and lifting gear
- High-bay warehouses
- Packaging machines
- Automation and drives

Their large range of line voltages enables them to be used all over the world.

Technical specifications

General note

All the data listed in the catalog is applicable for a 50 Hz line supply. With converter-fed operation, the torque reduction factors for constant torque and drives for fans, pumps and compressors must be configured using the "SIZER for Siemens Drives" engineering tool. Higher noise levels must be expected at frequencies other than 50 Hz for motors operating with converters due to the harmonic content of the supply.

Mechanical limit speeds

When the motor is operated at its rated frequency, it is important to note that the maximum speeds are limited by the limits for the roller bearings, critical rotor speed and rigidity of the rotating parts (see Table on page 1/44).

Motor protection

A motor protection function can be implemented using the \hat{I}_t sensing circuit implemented in the converter software.

If required, more precise motor protection can be afforded by direct temperature measurement using KTY-84 sensors or PTC thermistors in the motor winding. Some converters from Siemens determine the motor temperature using the resistance of the temperature sensor. They can be set to a required temperature for alarm and tripping.

Insulation

The insulation of 1LE motors is designed such that converter-fed operation is possible at voltages up to 500 V +10 %.

$\hat{U}_{\text{phase-to-phase}} \leq 1500$ V, $\hat{U}_{\text{phase-to-ground}} \leq 1100$ V, voltage rise times of $t_s > 0.1$ μs .

All motors with voltage codes 22 and 34 must be operated on a converter under these conditions. For converter-fed operation with the outputs specified in the catalog, the motors are used according to temperature class 155 (F), i.e. in this case neither a service factor > 1 nor an increased coolant temperature is possible (order codes N01, N02 and N03 cannot be ordered).

SIMOTICS GP 1LE1 Standard Motors

Motors with High Efficiency IE2

Self-ventilated or forced-air cooled motors
Aluminum series 1LE1001



Selection and ordering data

Operating values at rated output															Aluminum series		mIM B3 J		Torque class
P_{rated} 50 Hz	P_{rated} 60 Hz 1)	Frame size	n_{rated} 50 Hz	n_{rated} 60 Hz	IE class	η_{rated} 50 Hz	η_{rated} 60 Hz	η_{rated} %	$\cos\phi$ %	I_{rated} 50 Hz	T_{LR} 50 Hz	I_{LR} 50 Hz	T_{β} 50 Hz	L_{pA} 50 Hz	L_{WA} 50 Hz	Article No.	kg	kgm ²	CL
<ul style="list-style-type: none"> • Cooling: self-ventilated (IC 411) or with order code F90 forced-air cooled without external fan and fan cover (IC 416) • Efficiency: High Efficiency IE2, service factor (SF) 1.15 • Insulation: thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B) 															2-pole: 3000 rpm at 50 Hz, 3600 rpm at 60 Hz ¹⁾				
0.75	0.86	80 M	2805	2.6	IE2	77.4	79.5	78.8	0.84	1.67	1.9	4.9	2.3	60	71	1LE1001-0DA2	9.0	0.0080	16
1.1	1.27	80 M	2835	3.7	IE2	79.6	81.3	80.8	0.83	2.40	2.7	6.0	3.1	60	71	1LE1001-0DA3	11	0.0011	16
1.5	1.75	90 S	2885	5.0	IE2	81.3	82.3	80.8	0.84	3.15	2.7	6.9	3.6	65	77	1LE1001-0EA0	13	0.0017	16
2.2	2.55	90 L	2890	7.3	IE2	83.2	83.9	82.3	0.85	4.5	2.5	7.1	3.7	65	77	1LE1001-0EA4	15	0.0021	16
3	3.45	100 L	2905	9.9	IE2	84.6	85.2	84.7	0.84	6.1	2.3	7.0	3.3	67	79	1LE1001-1AA4	21	0.0044	16
4	4.55	112 M	2950	13	IE2	85.8	86.7	86.1	0.86	7.8	2.4	7.4	3.3	69	81	1LE1001-1BA2	27	0.0092	16
5.5	6.3	132 S	2950	18	IE2	87.0	88.0	87.4	0.87	10.5	1.8	6.6	2.9	68	80	1LE1001-1CA0	39	0.020	16
7.5	8.6	132 S	2950	24	IE2	88.1	88.7	88.6	0.87	14.1	2.2	7.5	3.1	68	80	1LE1001-1CA1	43	0.024	16
11	12.6	160 M	2955	36	IE2	89.4	90.0	89.1	0.87	20.5	2.1	7.4	3.2	70	82	1LE1001-1DA2	67	0.045	16
15	17.3	160 M	2955	48	IE2	90.3	90.9	90.3	0.88	27	2.4	7.6	3.4	70	82	1LE1001-1DA3	75	0.053	16
18.5	21.3	160 L	2955	60	IE2	90.9	91.2	90.4	0.88	33.5	2.9	7.9	3.6	70	82	1LE1001-1DA4	84	0.061	16
4-pole: 1500 rpm at 50 Hz, 1800 rpm at 60 Hz ¹⁾																			
0.55	0.63	80 M	1440	3.7	-	78.1	78.9	76.1	0.74	1.37	2.2	5.3	3.1	53	64	1LE1001-0DB2	10	0.0017	16
0.75	0.86	80 M	1440	5.0	IE2	79.6	80.2	78.0	0.76	1.79	2.2	5.6	3.1	53	64	1LE1001-0DB3	11	0.0021	16
1.1	1.27	90 S	1425	7.4	IE2	81.4	81.7	79.9	0.78	2.5	2.3	5.6	2.9	56	68	1LE1001-0EB0	13	0.0028	16
1.5	1.75	90 L	1435	10	IE2	82.8	83.5	82.0	0.79	3.3	2.6	6.4	3.4	56	68	1LE1001-0EB4	16	0.0036	16
2.2	2.55	100 L	1455	14	IE2	84.3	85.1	84.3	0.81	4.65	2.1	6.9	3.3	60	72	1LE1001-1AB4	21	0.0086	16
3	3.45	100 L	1455	20	IE2	85.5	86.7	86.0	0.82	6.2	2.0	6.9	3.1	60	72	1LE1001-1AB5	25	0.011	16
4	4.55	112 M	1460	26	IE2	86.6	87.3	86.5	0.81	8.2	2.5	7.1	3.2	58	70	1LE1001-1BB2	29	0.014	16
5.5	6.3	132 S	1465	36	IE2	87.7	89.0	87.7	0.80	11.3	2.3	6.9	2.9	64	76	1LE1001-1CB0	42	0.027	16
7.5	8.6	132 M	1465	49	IE2	88.7	90.3	88.8	0.83	14.7	2.3	6.9	2.9	64	76	1LE1001-1CB2	49	0.034	16
11	12.6	160 M	1470	71	IE2	89.8	90.9	90.8	0.85	21	2.1	6.7	2.8	65	77	1LE1001-1DB2	71	0.065	16
15	17.3	160 L	1475	97	IE2	90.6	91.3	91.0	0.85	28	2.3	7.3	3.0	65	77	1LE1001-1DB4	83	0.083	16
Voltages			Motor protection	No. of poles	Frame size	Motor type	Version	Order code(s)											
Frame sizes 80 M to 90 L²⁾																			
50 Hz	230 VΔ/400 VY	60 Hz ¹⁾	460 VY	PTC thermistor with 1 temp. sensor	2, 4	80 M ... 90 L	1LE1001-0D ... -0E	Standard	2 2										
50 Hz	400 VΔ/690 VY	60 Hz ¹⁾	460 VΔ	Without	2, 4	80 M ... 90 L	1LE1001-0D ... -0E	Standard	3 4										
50 Hz	400 VY	60 Hz ¹⁾	460 VY	Without	2, 4	80 M ... 90 L	1LE1001-0D ... -0E	Standard	0 2 A										
Frame sizes 100 L to 160 L: use of the 4 x 90° rotatable terminal box																			
50 Hz	230 VΔ/400 VY	60 Hz ¹⁾	460 VY	Any	2, 4	100 L ... 160 L	1LE1001-1A ... -1D	Standard	2 2										
50 Hz	400 VΔ/690 VY	60 Hz ¹⁾	460 VΔ	Any	2, 4	100 L ... 160 L	1LE1001-1A ... -1D	Standard	3 4										
50 Hz	500 VY		Any	Any	2, 4	100 L ... 160 L	1LE1001-1A ... -1D	Without add. charge	2 7										
50 Hz	500 VΔ		Any	Any	2, 4	100 L ... 160 L	1LE1001-1A ... -1D	Without add. charge	4 0										
Further voltages ¹⁾ For price information, code numbers, order codes and descriptions, see from Page 2/38																			
Types of construction																			
Without flange		IM B3 ³⁾		2, 4		80 M ... 160 L	1LE1001-0D ... -1D	Standard	A										
With flange		IM B5 ³⁾		2, 4		80 M ... 160 L	1LE1001-0D ... -1D	With additional charge	F										
With standard flange		IM B14 ³⁾		2, 4		80 M ... 160 L	1LE1001-0D ... -1D	With additional charge	K										
Further types of construction For price information, code letters and descriptions, see from Page 2/41																			
Motor protection																			
Without				2, 4		100 L ... 160 L	1LE1001-1A ... -1D	Standard	A										
PTC thermistor with 3 temperature sensors				2, 4		100 L ... 160 L	1LE1001-1A ... -1D	With additional charge	B										
Further motor protection For price information, code letters and descriptions, see from Page 2/49																			
Terminal box position																			
Terminal box at top				2, 4		80 M ... 160 L	1LE1001-0D ... -1D	Standard	4										
Further terminal box positions For price information, code numbers and descriptions, see from Page 2/51																			
Special versions																			
Forced-air cooled motors without ext. fan/fan cover (IC 416)				2, 4		80 M ... 160 L	1LE1001-0D ... -1D	1LE1001-... -Z F90 +... +... +...											
Options For price information, order codes and descriptions, see from Page 2/53																			

1) Operating values at rated output for 60 Hz are available on request.

2) For converter-fed operation of shaft heights 80 and 90, ordering with PTC thermistors and their connection to the converter is recommended.

3) Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirements exist for condensation drainage holes (H03) and stamping of the type on the rating plate. The basic type IM B3, IM B5 or IM B14 is stamped as standard on the rating plate. When ordering with condensation drainage holes (H03), the type must be specified.

SIMOTICS GP 1LE1 Standard Motors

Motors with High Efficiency IE2



Self-ventilated or forced-air cooled motors
Aluminum series 1LE1001

Selection and ordering data (continued)

Operating values at rated output															Aluminum series		m _{IM B3} J		Torque class	
P _{rated} 50 Hz	P _{rated} 60 Hz	Frame size	n _{rated} 50 Hz	n _{rated} 60 Hz	IE class	η _{rated} 50 Hz	η _{rated} 60 Hz	η _{rated} %	cos φ _{rated}	I _{rated} 50 Hz	I _{rated} 60 Hz	I _R /I _{rated}	T _B /I _{rated}	L _{pFA} 50 Hz	L _{WA} 50 Hz	Article No.	kg	kgm ²	CL	
0.37	0.43	80 M	925	3.85	–	–	71.4	71.5	66.5	0.69	1.08	2.1	4.0	2.4	42	53	1LE1001-0DC2	9	0.0017	16
0.55	0.63	80 M	935	5.6	–	–	74.0	74.0	70.5	0.66	1.63	2.5	4.4	2.9	42	53	1LE1001-0DC3	12	0.0025	16
0.75	0.86	90 S	925	7.7	IE2	IE2	75.9	76.0	73.0	0.70	2.05	2.0	4.1	2.5	43	55	1LE1001-0EC0	13	0.0030	16
1.1	1.27	90 L	935	11.2	IE2	–	78.1	78.5	75.0	0.70	2.90	2.2	4.4	2.6	43	55	1LE1001-0EC4	16	0.0040	16
1.5	1.75	100 L	970	15	IE2	IE2	79.8	80.2	79.0	0.73	3.7	2.0	6.2	2.9	59	71	1LE1001-1AC4	25	0.011	16
2.2	2.55	112 M	965	22	IE2	IE2	81.8	82.5	81.3	0.75	5.2	2.1	6.0	3.1	57	69	1LE1001-1BC2	29	0.014	16
3	3.45	132 S	970	30	IE2	IE2	83.3	84.0	82.8	0.74	7.0	1.6	5.6	2.6	63	75	1LE1001-1CC0	38	0.024	13
4	4.55	132 M	970	39	IE2	IE2	84.6	85.8	85.0	0.78	8.7	1.6	5.6	2.5	63	75	1LE1001-1CC2	43	0.029	13
5.5	6.3	132 M	970	54	IE2	IE2	86.0	87.4	87.0	0.77	12	1.9	6.1	2.8	63	75	1LE1001-1CC3	52	0.037	16
7.5	8.6	160 M	975	73	IE2	IE2	87.2	88.0	87.3	0.74	16.8	1.9	4.7	2.2	67	79	1LE1001-1DC2	77	0.075	16
11	12.6	160 L	975	108	IE2	IE2	88.7	89.6	89.2	0.76	23.5	1.9	4.8	2.2	67	79	1LE1001-1DC4	93	0.098	16
8-pole: 1260 rpm at 50 Hz, 900 rpm at 60 Hz ¹⁾																				
0.75	0.86	100 L	725	9.9	–	–	68.3	65.8	59.3	0.58	2.75	1.6	4.0	2.8	60	72	1LE1001-1AD4	21	0.0086	13
1.1	1.27	100 L	725	14	–	–	68.3	65.4	58.9	0.58	4.0	1.8	4.1	2.8	60	72	1LE1001-1AD5	25	0.011	13
1.5	1.75	112 M	720	20	–	–	75.8	76.0	73.0	0.67	4.25	1.4	4.2	2.4	63	75	1LE1001-1BD2	29	0.014	13
2.2	2.55	132 S	725	29	–	–	78.8	79.3	77.2	0.65	6.2	1.4	4.3	2.1	63	75	1LE1001-1CD0	41	0.027	10
3	3.45	132 M	730	39	–	–	82.7	83.0	80.9	0.65	8.1	1.4	5.0	2.4	63	75	1LE1001-1CD2	49	0.035	10
4	4.55	160 M	730	52	–	–	81.9	82.6	81.7	0.67	10.5	1.6	3.7	1.9	63	75	1LE1001-1DD2	69	0.065	13
5.5	6.3	160 M	730	72	–	–	83.8	84.3	83.1	0.67	14.1	1.7	3.9	2	63	75	1LE1001-1DD3	82	0.083	13
7.5	8.6	160 L	730	98	–	–	85.3	86.5	86.1	0.7	18.1	1.6	3.8	1.9	63	75	1LE1001-1DD4	94	0.098	13
Voltages																				
No. of poles																				
Frame size																				
Motor type																				
Version																				
Order code(s)																				
Frame sizes 80 M to 90 L²⁾																				
50 Hz	230 VΔ/400 VY	60 Hz ¹⁾	460 VY	PTC thermis-	6	80 M ... 90 L	1LE1001-0D ... -0E	Standard	2	2										
50 Hz	400 VΔ/690 VY	60 Hz ¹⁾	460 VΔ	tor with 1 temp. sensor	6	80 M ... 90 L	1LE1001-0D ... -0E	Standard	3	4										
50 Hz	400 VY	60 Hz ¹⁾	460 VY	Without	6	80 M ... 90 L	1LE1001-0D ... -0E	Standard	0	2	A									
Frame sizes 100 L to 160 L: use of the 4 x 90° rotatable terminal box																				
50 Hz	230 VΔ/400 VY	60 Hz ¹⁾	460 VY		6, 8	100 L ... 160 L	1LE1001-1A ... -1D	Standard	2	2										
50 Hz	400 VΔ/690 VY	60 Hz ¹⁾	460 VΔ		6, 8	100 L ... 160 L	1LE1001-1A ... -1D	Standard	3	4										
50 Hz	500 VY				6, 8	100 L ... 160 L	1LE1001-1A ... -1D	Without add. charge	2	7										
50 Hz	500 VΔ				6, 8	100 L ... 160 L	1LE1001-1A ... -1D	Without add. charge	4	0										
Further voltages ¹⁾																				
For price information, code numbers, order codes and descriptions, see from Page 2/38																				
Types of construction																				
No. of poles																				
Frame size																				
Motor type																				
Version																				
Order code(s)																				
Without flange	IM B3 ³⁾				6, 8	80 M ... 160 L	1LE1001-0D ... -1D	Standard	A											
With flange	IM B5 ³⁾				6, 8	80 M ... 160 L	1LE1001-0D ... -1D	With additional charge	F											
With standard flange	IM B14 ³⁾				6, 8	80 M ... 160 L	1LE1001-0D ... -1D	With additional charge	K											
Further types of construction																				
For price information, code letters and descriptions, see from Page 2/41																				
Motor protection																				
No. of poles																				
Frame size																				
Motor type																				
Version																				
Order code(s)																				
Frame sizes 100 L to 160 L: use of the 4 x 90° rotatable terminal box																				
Without					6, 8	100 L ... 160 L	1LE1001-1A ... -1D	Standard	A											
PTC thermistor with 3 temperature sensors					6, 8	100 L ... 160 L	1LE1001-1A ... -1D	With additional charge	B											
Further motor protection																				
For price information, code letters and descriptions, see from Page 2/49																				
Terminal box position																				
No. of poles																				
Frame size																				
Motor type																				
Version																				
Order code(s)																				
Terminal box at top					6, 8	80 M ... 160 L	1LE1001-0D ... -1D	Standard	4											
Further terminal box positions																				
For price information, code numbers and descriptions, see from Page 2/51																				
Special versions																				
No. of poles																				
Frame size																				
Motor type																				
Version																				
Order code(s)																				
Forced-air cooled motors without ext. fan/fan cover (IC 416)					6, 8	80 M ... 160 L	1LE1001-0D ... -1D	1LE1001-... -Z	F90	+	+	+	+	+	+	+	+	+	+	+
Options																				
For price information, order codes and descriptions, see from Page 2/53																				

1) Operating values at rated output for 60 Hz are available on request.
2) For converter-fed operation of shaft heights 80 and 90, ordering with PTC thermistors and their connection to the converter is recommended.

3) Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirements exist for condensation drainage holes (H03) and stamping of the type on the rating plate. The basic type IM B3, IM B5 or IM B14 is stamped as standard on the rating plate. When ordering with condensation drainage holes (H03), the type must be specified.



SIMOTICS GP 1LE1 Standard Motors

Motors with High Efficiency IE2

Self-ventilated motors
Aluminum series 1LE1001 with increased output



Selection and ordering data

Operating values at rated output															Aluminum series		m _M B3 J		Torque class		
P _{rated} 50 Hz	P _{rated} 60 Hz	Frame size	n _{rated} 50 Hz	T _{rated} 50 Hz	IE class	η _{rated} 50 Hz	η _{rated} 50 Hz	η _{rated} 50 Hz	COSφ _{rated}	I _{rated} 50 Hz	T _{rated} 50 Hz	I _R 50 Hz	T _B 50 Hz	L _{pfA} 50 Hz	L _{WA} 50 Hz	1LE1001 – IE2 version in accordance with IEC 60034-30 with increased output Article No.	kg	kgm ²	CL		
kW	kW	FS	rpm	Nm	50 Hz	60 Hz	%	%	%	A											
• Cooling: self-ventilated (IC 411) • Efficiency: High Efficiency IE2, service factor (SF) 1.15 • Insulation: thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B)																					
2-pole: 3000 rpm at 50 Hz, 3600 rpm at 60 Hz ¹⁾																					
4	4.55	100 L	2905	13	IE2	IE2	85.8	87.2	87.0	0.86	7.8	2.5	7.6	3.5	67	79	1LE1001-1AA6	26	0.0054	16	
5.5	6.3	112 M	2950	18	IE2	IE2	87.0	87.5	87.2	0.89	10.3	2.2	7.7	3.3	69	81	1LE1001-1BA6	34	0.012	16	
11	12.6	132 M	2950	36	IE2	IE2	89.4	90.2	90.3	0.89	20	2.3	7.9	3.2	68	80	1LE1001-1CA6	57	0.031	16	
22	25.3	160 L	2955	71	IE2	IE2	91.3	91.7	91.3	0.89	39	3.1	8.4	3.7	70	82	1LE1001-1DA6	94	0.068	16	
4-pole: 1500 rpm at 50 Hz, 1800 rpm at 60 Hz ¹⁾																					
4	4.55	100 L	1460	26	IE2	IE2	86.6	87.4	86.7	0.80	8.3	2.2	7.5	3.5	60	72	1LE1001-1AB6	30	0.014	16	
5.5	6.3	112 M	1460	36	IE2	IE2	87.7	88.1	87.4	0.81	11.2	2.5	7.1	3.2	58	70	1LE1001-1BB6	34	0.017	16	
11	12.6	132 M	1465	72	IE2	IE2	89.8	90.6	90.4	0.84	21	2.6	7.7	3.1	64	76	1LE1001-1CB6	64	0.046	16	
18.5	21.3	160 L	1475	120	IE2	IE2	91.2	91.7	91.6	0.85	34.5	2.5	7.7	3.3	65	77	1LE1001-1DB6	100	0.099	16	
6-pole: 1000 rpm at 50 Hz, 1200 rpm at 60 Hz ¹⁾																					
2.2	2.55	100 L	965	22	IE2	IE2	81.8	82.5	81.5	0.76	5.1	1.9	5.7	2.9	59	71	1LE1001-1AC6	30	0.014	16	
3	3.45	112 M	960	30	IE2	IE2	83.3	84.1	83.6	0.79	6.6	2.1	6.0	3.1	57	69	1LE1001-1BC6	34	0.017	16	
7.5	8.6	132 M	970	74	IE2	IE2	87.2	87.8	87.3	0.77	16.1	2.1	6.5	3.0	63	75	1LE1001-1CC6	64	0.046	16	
15	17.3	160 L	975	147	IE2	IE1	89.7	90.3	89.7	0.75	32.0	2	5.2	2.4	67	79	1LE1001-1DC6	115	0.12	16	
Voltagess																					
					No. of poles	Frame size	Motor type	Version											Order code(s)		
50 Hz	230 VΔ/400 VY	60 Hz ¹⁾	460 VY	2, 4, 6	100 L ... 160 L	1LE1001-1A ... -1D	Standard	2	2											–	
50 Hz	400 VΔ/690 VY	60 Hz ¹⁾	460 VΔ	2, 4, 6	100 L ... 160 L	1LE1001-1A ... -1D	Standard	3	4											–	
50 Hz	500 VY			2, 4, 6	100 L ... 160 L	1LE1001-1A ... -1D	Without add. charge	2	7											–	
50 Hz	500 VΔ			2, 4, 6	100 L ... 160 L	1LE1001-1A ... -1D	Without add. charge	4	0											–	
Further voltagess ¹⁾																					
For price information, code numbers, order codes and descriptions, see from Page 2/38																					
Types of construction																					
					No. of poles	Frame size	Motor type	Version											Order code(s)		
Without flange		IM B3 ²⁾		2, 4, 6	100 L ... 160 L	1LE1001-1A ... -1D	Standard	A											–		
With flange		IM B5 ²⁾		2, 4, 6	100 L ... 160 L	1LE1001-1A ... -1D	With additional charge	F											–		
With standard flange		IM B14 ²⁾		2, 4, 6	100 L ... 160 L	1LE1001-1A ... -1D	With additional charge	K											–		
Further types of construction																					
For price information, code letters and descriptions, see from Page 2/41																					
Motor protection																					
					No. of poles	Frame size	Motor type	Version											Order code(s)		
Without				2, 4, 6	100 L ... 160 L	1LE1001-1A ... -1D	Standard	A											–		
PTC thermistor with 3 temperature sensors				2, 4, 6	100 L ... 160 L	1LE1001-1A ... -1D	With additional charge	B											–		
Further motor protection																					
For price information, code letters and descriptions, see from Page 2/49																					
Terminal box position																					
					No. of poles	Frame size	Motor type	Version											Order code(s)		
Terminal box at top				2, 4, 6	100 L ... 160 L	1LE1001-1A ... -1D	Standard	4											–		
Further terminal box positions																					
For price information, code numbers and descriptions, see from Page 2/51																					
Special versions																					
					No. of poles	Frame size	Motor type	Version											Order code(s)		
Options																					
For price information, order codes and descriptions, see from Page 2/53																					
																1LE1001-....	-Z	...+...+...+...			

¹⁾ Operating values at rated output for 60 Hz are available on request.

²⁾ Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirements exist for condensation drainage holes (H03) and stamping of the type on the rating plate. The basic type IM B3, IM B5 or IM B14 is stamped as standard on the rating plate. When ordering with condensation drainage holes (H03), the type must be specified.

SIMOTICS GP 1PC1 Standard Motors

Motors with High Efficiency IE2



Naturally cooled motors without external fan
Aluminum series 1PC1001

Selection and ordering data

P _{rated} , P _{rated} 50 Hz 60 Hz ¹⁾		Frame size	Operating values at rated output						Aluminum series 1PC1001 – IE2 version in accordance with IEC 60034-30				m _{IM B3} J	Torque class					
kW kW		FS	n _{rated} 50 Hz	T _{rated} 50 Hz	IE class	η _{rated} 50 Hz, 4/4	η _{rated} 50 Hz, 3/4	η _{rated} 50 Hz, 2/4	cos φ _{rated} 50 Hz, 4/4	I _{rated} 50 Hz, 400 V	T _{LR} 50 Hz	I _{LR} 50 Hz	T _B 50 Hz	L _{pFA} 50 Hz	L _{WA} 50 Hz	Article No.	kg	kgm ²	CL
<ul style="list-style-type: none"> • Cooling: naturally cooled without external fan (IC 410) • Efficiency: High Efficiency IE2, service factor (SF) 1.15 • Insulation: thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B) 																			
2-pole: 3000 rpm at 50 Hz, 3600 rpm at 60 Hz ¹⁾																			
1.4	–	100 L	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1001-1AA4	21	0.0044	13
1.6	–	112 M	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1001-1BA2	27	0.0092	16
3.1	–	132 S	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1001-1CA0	39	0.020	13
4.3	–	132 S	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1001-1CA1	43	0.024	13
6.3	–	160 M	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1001-1DA2	67	0.045	10
6.5	–	160 M	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1001-1DA3	75	0.053	13
9	–	160 L	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1001-1DA4	84	0.061	16
4-pole: 1500 rpm at 50 Hz, 1800 rpm at 60 Hz ¹⁾																			
1.1	–	100 L	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1001-1AB4	21	0.0086	13
1.5	–	100 L	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1001-1AB5	25	0.011	13
2	–	112 M	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1001-1BB2	29	0.014	13
2.6	–	132 S	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1001-1CB0	42	0.027	13
4	–	132 M	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1001-1CB2	49	0.034	13
6	–	160 M	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1001-1DB2	71	0.065	10
6.2	–	160 L	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1001-1DB4	83	0.083	16
6-pole: 1000 rpm at 50 Hz, 1200 rpm at 60 Hz ¹⁾																			
0.85	–	100 L	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1001-1AC4	25	0.011	10
1.2	–	112 M	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1001-1BC2	29	0.014	10
1.5	–	132 S	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1001-1CC0	38	0.024	7
2.5	–	132 M	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1001-1CC2	43	0.029	7
2.7	–	132 M	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1001-1CC3	52	0.037	13
5	–	160 M	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1001-1DC2	77	0.075	10
6.5	–	160 L	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1001-1DC4	93	0.098	10
8-pole: 750 rpm at 50 Hz, 900 rpm at 60 Hz ¹⁾																			
0.37	–	100 L	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1001-1AD4	21	0.0086	10
0.55	–	100 L	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1001-1AD5	25	0.011	10
0.75	–	112 M	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1001-1BD2	29	0.014	7
1.1	–	132 S	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1001-1CD0	41	0.027	7
1.5	–	132 M	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1001-1CD2	49	0.035	7
2.4	–	160 M	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1001-1DD2	69	0.065	10
3.3	–	160 M	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1001-1DD3	82	0.083	10
4.6	–	160 L	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1001-1DD4	94	0.098	10
Voltagess			No. of poles	Frame size	Motor type	Version											Order code(s)		
50 Hz	230 VΔ/400 VY	60 Hz ¹⁾	460 VY	2, 4, 6, 8	100 L ... 160 L	1PC1001-1A ... -1D	Standard											–	
50 Hz	400 VΔ/690 VY	60 Hz ¹⁾	460 VΔ	2, 4, 6, 8	100 L ... 160 L	1PC1001-1A ... -1D	Standard											–	
50 Hz	500 VY			2, 4, 6, 8	100 L ... 160 L	1PC1001-1A ... -1D	Without add. charge											–	
50 Hz	500 VΔ			2, 4, 6, 8	100 L ... 160 L	1PC1001-1A ... -1D	Without add. charge											–	
Further voltagess ¹⁾			For price information, code numbers, order codes and descriptions, see from Page 2/38																
Types of construction			No. of poles	Frame size	Motor type	Version											Order code(s)		
Without flange			IM B3 ²⁾	2, 4, 6, 8	100 L ... 160 L	1PC1001-1A ... -1D	Standard											A	
With flange			IM B5 ²⁾	2, 4, 6, 8	100 L ... 160 L	1PC1001-1A ... -1D	With additional charge											F	
With standard flange			IM B14 ²⁾	2, 4, 6, 8	100 L ... 160 L	1PC1001-1A ... -1D	With additional charge											K	
Further types of construction			For price information, code letters and descriptions, see from Page 2/41																
Motor protection			No. of poles	Frame size	Motor type	Version											Order code(s)		
Without				2, 4, 6, 8	100 L ... 160 L	1PC1001-1A ... -1D	Standard											A	
PTC thermistor with 3 temperature sensors				2, 4, 6, 8	100 L ... 160 L	1PC1001-1A ... -1D	With additional charge											B	
Further motor protection			For price information, code letters and descriptions, see from Page 2/49																
Terminal box position			No. of poles	Frame size	Motor type	Version											Order code(s)		
Terminal box at top				2, 4, 6, 8	100 L ... 160 L	1PC1001-1A ... -1D	Standard											4	
Further terminal box positions			For price information, code numbers and descriptions, see from Page 2/51																
Special versions			No. of poles	Frame size	Motor type											Order code(s)			
Options			For price information, order codes and descriptions, see from Page 2/53														1LE1001- ... -Z		

Note: The rated outputs and weights may change slightly after they have been checked. Further electrical data can be calculated and supplied on receipt of order.

¹⁾ Operating values at rated output for 60 Hz are available on request.

²⁾ Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirements exist for condensation drainage holes (H03)

and stamping of the type on the rating plate. The basic type IM B3, IM B5 or IM B14 is stamped as standard on the rating plate. When ordering with condensation drainage holes (H03), the type must be specified.



SIMOTICS SD 1LE1 Standard Motors

Motors with High Efficiency IE2

Self-ventilated motors
Cast-iron series 1LE1501/1LE1601 Basic/Performance Line



Selection and ordering data

P _{rated} 50 Hz	P _{rated} 60 Hz 1)	Frame size	Operating values at rated output		IE class	η _{rated}			COS φ _{rated}	I _{rated}	T _{LR}	I _{LR}	T _B	L _{pFA}	L _{WA}	Cast-iron series	m _{IM} B3	J	Torque class
			50 Hz	50 Hz		50 Hz	50 Hz	50 Hz											
kW	kW	FS	rpm	Nm	50 Hz	60 Hz	%	%	%	A						▲ New	kg	kgm ²	CL
• Cooling: self-ventilated (IC 411) • Efficiency: High Efficiency IE2, service factor (SF) 1.15 • Insulation: thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B) 2-pole: 3000 rpm at 50 Hz, 3600 rpm at 60 Hz 1)																			
0.37	0.5	71 M	2770	1.3	IE2	69.5	70.5	68.5	0.81	0.95	2.5	4.1	2.5	52	63	▲ 1LE1 5 01-0CA2	11.5	0.00035	16
0.55	0.75	71 M	2780	1.9	IE2	74.1	75.0	73.1	0.80	1.34	2.6	4.6	2.6	52	63	▲ 1LE1 5 01-0CA3	13	0.00045	16
0.75	1	80 M	2805	2.6	IE2	77.4	79.5	78.8	0.84	1.67	1.9	4.9	2.3	60	71	▲ 1LE1 5 01-0DA2	16	0.00080	16
1.1	1.5	80 M	2835	3.7	IE2	79.6	81.3	80.8	0.83	2.40	2.7	6.0	3.1	60	71	▲ 1LE1 5 01-0DA3	18	0.0011	16
1.5	2	90 S	2885	5.0	IE2	81.3	82.3	80.8	0.84	3.15	2.7	6.9	3.6	65	77	▲ 1LE1 5 01-0EA0	23	0.0017	16
2.2	3	90 L	2890	7.3	IE2	83.2	83.9	82.3	0.85	4.5	2.5	7.1	3.7	65	77	▲ 1LE1 5 01-0EA4	25.5	0.0021	16
3	3.45	100 L	2905	9.9	IE2	84.6	85.2	84.7	0.84	6.1	2.3	7.0	3.3	67	79	1LE1 01-1AA4	32	0.0044	16
4	4.55	112 M	2950	13	IE2	85.8	86.7	86.1	0.86	7.8	2.4	7.4	3.3	69	81	1LE1 01-1BA2	39	0.0092	16
5.5	6.3	132 S	2950	18	IE2	87.0	88.0	87.4	0.87	10.5	1.8	6.6	2.9	68	80	1LE1 01-1CA0	57	0.020	16
7.5	8.6	132 S	2950	24	IE2	88.1	88.7	88.6	0.87	14.1	2.2	7.5	3.1	68	80	1LE1 01-1CA1	61	0.024	16
11	12.6	160 M	2955	36	IE2	89.4	90.0	89.1	0.87	20.5	2.1	7.4	3.2	70	82	1LE1 01-1DA2	96	0.045	16
15	17.3	160 M	2955	48	IE2	90.3	90.9	90.3	0.88	27	2.4	7.6	3.4	70	82	1LE1 01-1DA3	104	0.053	16
18.5	21.3	160 L	2955	60	IE2	90.9	91.2	90.4	0.88	33.5	2.9	7.9	3.6	70	82	1LE1 01-1DA4	113	0.061	16
22	24.5	180 M	2940	71	IE2	91.3	91.8	91.4	0.87	40.5	2.7	7.4	3.6	69	83	1LE1 01-1EA2	145	0.069	16
30	33.5	200 L	2955	97	IE2	92.0	92.3	91.7	0.87	54	2.5	6.9	3.3	72	85	1LE1 01-2AA4	200	0.13	16
37	41.5	200 L	2960	119	IE2	92.5	92.8	92.3	0.88	66	2.7	7.4	3.5	69	82	1LE1 01-2AA5	225	0.15	16
45	51	225 M	2965	145	IE2	92.9	93.1	92.5	0.88	79	2.7	7.8	3.7	76	89	1LE1 01-2BA2	295	0.23	16
55	62	225 M	2970	177	IE2	93.2	93.3	92.4	0.88	97	2.3	6.8	3.1	76	89	1LE1 01-2CA2	360	0.40	13
75	84	280 S	2978	240	IE2	93.8	93.6	92.4	0.86	137	2.5	7.2	3.2	76	89	1LE1 01-2DA0	490	0.71	13
90	101	280 M	2975	289	IE2	94.1	94.2	93.5	0.88	157	2.5	7.1	3.1	76	89	1LE1 01-2DA2	530	0.83	13
110	123	315 S	2982	352	IE2	94.3	94.2	93.3	0.90	187	2.4	7.3	3.0	77	91	1LE1 01-3AA0	720	1.3	13
132	148	315 M	2982	423	IE2	94.6	94.7	94.1	0.91	220	2.4	7.2	3.1	77	91	1LE1 01-3AA2	880	1.6	13
160	180	315 L	2982	512	IE2	94.8	94.9	94.3	0.92	265	2.3	7.0	3.1	80	95	1LE1 01-3AA4	930	1.8	13
200	224	315 L	2982	640	IE2	95.0	95.2	94.8	0.92	330	2.5	7.3	3.0	80	95	1LE1 01-3AA5	1130	2.2	13

Relubrication	Motor protection	Fan cover	Bearing size	Converter-fed operation, motor mode	Liability for defects	Version	Order code(s)
Optional (standard from FS 280 upwards)	Optional	Plastic	62 (63 from FS 280 upwards)	up to 500 V	12 months	5	
Standard from FS 160 (optional for FS 100 to 132)	Standard PTC	Steel	63	Up to 500 V	36 months	6	
Types of construction		No. of poles	Frame size	Motor type	Version	Order code(s)	
Without flange	IM B3 ³⁾	2	71 M ... 315 L	1LE1 01-0C ... -3A	Standard	A	-
With flange	IM B5 ³⁾	2	71 M ... 315 M	1LE1 01-0C ... -3A	With additional charge	F	-
With standard flange	IM B14 ³⁾	2	71 M ... 160 L	1LE1 01-0C ... -1D	With additional charge	K	-
Further types of construction		For price information, code letters and descriptions, see from Page 2/45					
Motor protection	Line	No. of poles	Frame size	Motor type	Version	Order code(s)	
Without PTC thermistor with 3 temperature sensors	Only possible for Basic Line	2	71 M ... 315 L	1LE1501-0C ... -3A	Standard	A	-
Further motor protection	Performance Line	2	71 M ... 315 L	1LE1501-0C ... -3A	With additional charge	B	-
Terminal box position		No. of poles	Frame size	Motor type	Version	Order code(s)	
Terminal box at top		2	71 M ... 315 L	1LE1 01-0C ... -3A	Standard	4	-
Further terminal box positions		For price information, code numbers and descriptions, see from Page 2/52					
Special versions	Line	No. of poles	Frame size	Motor type	Version	Order code(s)	
Options						1LE1 01- ... -Z ...+...+...+...	

1) Operating values at rated output for 60 Hz are available on request.
 2) Parallel supply lines are required in the case of connection to ≤ 240 V. For frame size 315 with connection to ≤ 240 V, due to the high current, a drilled, removable entry plate (Order code R52) or a larger terminal box (Order code R50) can be used. Order codes R52 and R50 alter the motor dimensions.
 3) Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirement exists for stamping of the type on the rating plate. The basic type IM B3, IM B5 or IM B14 is stamped as standard on the rating plate. If mounted in a different position, the position must be specified to ensure that the condensation drainage holes are positioned correctly.

SIMOTICS SD 1LE1 Standard Motors

Motors with High Efficiency IE2



Self-ventilated motors
Cast-iron series 1LE1501/1LE1601 Basic/Performance Line

Selection and ordering data (continued)

Operating values at rated output															Cast-iron series		mIM B3 J		Torque class			
P _{rated} , 50 Hz	P _{rated} , 60 Hz	Frame size	n _{rated} , 50 Hz	n _{rated} , 60 Hz	IE class	η _{rated} , 50 Hz	η _{rated} , 60 Hz	η _{rated} , 50 Hz	η _{rated} , 60 Hz	cos φ	I _{rated} , 50 Hz	T _{LR} /I _{rated} , 50 Hz	I _{LR} /I _{rated} , 50 Hz	T _p /I _{rated} , 50 Hz	L _{pFA} , 50 Hz	L _{WA} , 50 Hz	1LE1501 – Basic Line	1LE1601 – Performance Line	Article No.	kg	kgm ²	CL
0.25	0.33	71 M	1395	1.7	IE2	68.5	68.2	63.8	63.8	0.69	0.76	2.4	3.7	2.5	44	55	▲ 1LE1 5 01-0CB2	■	12	0.00076	16	
0.37	0.5	71 M	1380	2.6	IE2	72.7	73.2	70.2	70.2	0.72	1.02	2.3	3.8	2.4	44	55	▲ 1LE1 5 01-0CB3	■	13	0.00095	16	
0.55	0.75	80 M	1440	3.7	IE2	78.1	78.9	76.1	76.1	0.74	1.37	2.2	5.3	3.1	53	64	▲ 1LE1 5 01-0DB2	■	17	0.0017	16	
0.75	1	80 M	1440	5.0	IE2	79.6	80.2	78.0	78.0	0.76	1.79	2.2	5.6	3.1	53	64	▲ 1LE1 5 01-0DB3	■	18.5	0.0021	16	
1.1	1.5	90 S	1425	7.4	IE2	81.4	81.7	79.9	79.9	0.78	2.5	2.3	5.6	2.9	56	68	▲ 1LE1 5 01-0EB0	■	23	0.0028	16	
1.5	2	90 L	1435	10	IE2	82.8	83.5	82.0	82.0	0.79	3.3	2.6	6.4	3.4	56	68	▲ 1LE1 5 01-0EA4	■	25	0.0036	16	
2.2	2.55	100 L	1455	14	IE2	84.3	85.1	84.3	84.3	0.81	4.65	2.1	6.9	3.3	60	72	1LE1 01-1AB4	■	32	0.0086	16	
3	3.45	100 L	1455	20	IE2	85.5	86.7	86.0	86.0	0.82	6.2	2.0	6.9	3.1	60	72	1LE1 01-1AB5	■	37	0.011	16	
4	4.55	112 M	1460	26	IE2	86.6	87.3	86.5	86.5	0.81	8.2	2.5	7.1	3.2	58	70	1LE1 01-1BB2	■	46	0.014	16	
5.5	6.3	132 S	1465	36	IE2	87.7	89.0	87.7	87.7	0.80	11.3	2.3	6.9	2.9	64	76	1LE1 01-1CB0	■	61	0.027	16	
7.5	8.6	132 M	1465	49	IE2	88.7	90.3	88.8	88.8	0.83	14.7	2.3	6.9	2.9	64	76	1LE1 01-1CB2	■	75	0.034	16	
11	12.6	160 M	1470	71	IE2	89.8	90.9	90.8	90.8	0.85	21	2.1	6.7	2.8	65	77	1LE1 01-1DB2	■	96	0.065	16	
15	17.3	160 L	1475	97	IE2	90.6	91.3	91.0	91.0	0.85	28	2.3	7.3	3.0	65	77	1LE1 01-1DB4	■	104	0.083	16	
18.5	21.3	180 M	1465	121	IE2	91.2	92.0	91.9	91.9	0.84	35	2.5	7.2	3.4	61	74	1LE1 01-1EB2	■	160	0.12	16	
22	25.3	180 L	1465	143	IE2	91.6	92.2	91.9	91.9	0.84	41.5	2.6	7.3	3.5	62	75	1LE1 01-1EB4	■	170	0.13	16	
30	34.5	200 L	1470	195	IE2	92.3	92.8	92.6	92.6	0.84	56	2.5	6.7	3.3	64	77	1LE1 01-2AB5	■	230	0.20	16	
37	42.5	225 S	1470	240	IE2	92.7	93.5	93.5	93.5	0.88	65	2.3	6.6	2.9	66	79	1LE1 01-2BB0	■	280	0.42	16	
45	52	225 M	1475	291	IE2	93.1	93.8	93.7	93.7	0.87	80	2.5	6.9	3.1	66	79	1LE1 01-2BB2	■	305	0.46	16	
55	63	250 M	1480	355	IE2	93.5	93.9	93.5	93.5	0.85	100	2.7	6.8	3.0	66	79	1LE1 01-2CB2	■	385	0.75	16	
75	86	280 S	1485	482	IE2	94.0	94.2	93.8	93.8	0.87	132	2.5	6.8	3.0	71	85	1LE1 01-2DB0	■	550	1.3	16	
90	104	280 M	1486	578	IE2	94.2	94.3	93.6	93.6	0.87	159	2.6	7.3	3.1	71	85	1LE1 01-2DB2	■	570	1.4	16	
110	127	315 S	1490	705	IE2	94.5	94.6	94.0	94.0	0.86	195	2.7	7.4	3.0	72	86	1LE1 01-3AB0	■	740	2.0	16	
132	152	315 M	1490	846	IE2	94.7	94.9	94.6	94.6	0.87	230	2.7	7.1	2.9	75	89	1LE1 01-3AB2	■	870	2.3	16	
160	184	315 L	1490	1025	IE2	94.9	95.0	94.5	94.5	0.87	280	2.8	7.2	3.1	76	91	1LE1 01-3AB4	■	940	2.8	16	
200	230	315 L	1490	1282	IE2	95.1	95.3	94.7	94.7	0.87	350	3.1	7.5	3.2	77	92	1LE1 01-3AB5	■	1140	3.5	16	

Relubrication	Motor protection	Fan cover	Bearing size	Converter-fed operation, motor mode	Liability for defects
Optional (standard from FS 280 upwards)	Optional	Plastic	62 (63 from FS 280 upwards)	Up to 500 V 12 months	5
Standard from FS 160 (optional for FS 100 to 132)	Standard PTC	Steel	63	Up to 500 V 36 months	6

Voltagess ²⁾	No. of poles	Frame size	Motor type	Version	Order code(s)				
50 Hz	230 VΔ/400 VY	60 Hz ¹⁾	460 VY	4	71 M ... 315 L	1LE1 01-0C ... -3A	Standard	2 2	-
50 Hz	400 VΔ/690 VY	60 Hz ¹⁾	460 VΔ	4	71 M ... 315 L	1LE1 01-0C ... -3A	Standard	3 4	-
50 Hz	500 VY			4	71 M ... 315 L	1LE1 01-0C ... -3A	Without add. charge	2 7	-
50 Hz	500 VΔ			4	71 M ... 315 L	1LE1 01-0C ... -3A	Without add. charge	4 0	-
Further voltagess ¹⁾	For price information, code numbers, order codes and descriptions, see from Page 2/40				9 0	...			

Types of construction	No. of poles	Frame size	Motor type	Version	Order code(s)		
Without flange	IM B3 ³⁾	4	71 M ... 315 L	1LE1 01-0C ... -3A	Standard	A	-
With flange	IM B5 ³⁾	4	71 M ... 315 M	1LE1 01-0C ... -3A	With additional charge	F	-
With standard flange	IM B14 ³⁾	4	71 M ... 160 L	1LE1 01-0C ... -1D	With additional charge	K	-
Further types of construction	For price information, code letters and descriptions, see from Page 2/45				...		

Motor protection	Line	No. of poles	Frame size	Motor type	Version	Order code(s)	
Without PTC thermistor with 3 temperature sensors	Only possible for Basic Line	4	71 M ... 315 L	1LE1501-0C ... -3A	Standard	A	-
	Basic Line	4	71 M ... 315 L	1LE1501-0C ... -3A	With additional charge	B	-
	Performance Line	4	71 M ... 315 L	1LE1601-0C ... -3A	Standard	B	-
Further motor protection	For price information, code letters and descriptions, see from Page 2/50				...		

Terminal box position	No. of poles	Frame size	Motor type	Version	Order code(s)	
Terminal box at top	4	71 M ... 315 L	1LE1 01-0C ... -3A	Standard	4	-
Further terminal box positions	For price information, code numbers and descriptions, see from Page 2/52				...	

Special versions	No. of poles	Frame size	Motor type	Order code(s)
Options	For price information, order codes and descriptions, see from Page 2/58			1LE1 01- ... -Z ...+...+...+...

1) Operating values at rated output for 60 Hz are available on request.
 2) Parallel supply lines are required in the case of connection to ≤ 240 V. For frame size 315 with connection to ≤ 240 V, due to the high current, a drilled, removable entry plate (Order code R52) or a larger terminal box (Order code R50) can be used. Order codes R52 and R50 alter the motor dimensions.

3) Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirement exists for stamping of the type on the rating plate. The basic type IM B3, IM B5 or IM B14 is stamped as standard on the rating plate. If mounted in a different position, the position must be specified to ensure that the condensation drainage holes are positioned correctly.

SIMOTICS SD 1LE1 Standard Motors

Motors with High Efficiency IE2

Self-ventilated motors
Cast-iron series 1LE1501/1LE1601 Basic/Performance Line



Selection and ordering data (continued)

Operating values at rated output														Cast-iron series		mIM B3 J		Torque class			
P _{rated} , 50 Hz	P _{rated} , 60 Hz	Frame size	n _{rated} , 50 Hz	n _{rated} , 60 Hz	IE class	η _{rated} , 50 Hz	η _{rated} , 50 Hz	η _{rated} , 50 Hz	COSφ _{rated}	I _{rated} , 50 Hz	T _{LR} /I _{rated}	I _{LR} /I _{rated}	T _P /I _{rated}	L _p fA, 50 Hz	L _{WA} , 50 Hz	1LE1501 – Basic Line	1LE1601 – Performance Line	Article No.	kg	kgm ²	CL
kW	kW	FS	rpm	Nm	50 Hz	60 Hz	%	%	%	A				dB(A)	dB(A)	▲ New					
• Cooling: self-ventilated (IC 411) • Efficiency: High Efficiency IE2, service factor (SF) 1.15 • Insulation: thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B) 6-pole: 1000 rpm at 50 Hz, 1200 rpm at 60 Hz ¹⁾																					
0.18	0.25	71 M	875	2	IE2	56.6	57.0	53.5	0.68	0.68	2.2	2.5	2.3	39	50	▲	1LE1 5 01-0CC2	■-■■■■■	11.5	0.0008	16
0.25	0.33	71 M	870	2.7	IE2	61.6	62.7	60.0	0.70	0.84	2.3	2.6	2.3	39	50	▲	1LE1 5 01-0CC3	■-■■■■■	12.5	0.0010	16
0.37	0.5	80 M	925	3.8	IE2	71.4	71.5	66.5	0.69	1.08	2.1	4.0	2.4	42	53	▲	1LE1 5 01-0DC2	■-■■■■■	16.5	0.0017	16
0.55	0.75	80 M	935	5.6	IE2	74.0	74.0	70.5	0.66	1.63	2.5	4.4	2.9	42	53	▲	1LE1 5 01-0DC3	■-■■■■■	18.5	0.0025	16
0.75	1	90 S	925	7.7	IE2	75.9	76.0	73.0	0.70	2.05	2.0	4.1	2.5	43	55	▲	1LE1 5 01-0EC0	■-■■■■■	23	0.0030	16
1.1	1.5	90 L	935	11	IE2	78.1	78.5	75.0	0.70	2.90	2.2	4.4	2.6	43	55	▲	1LE1 5 01-0EC4	■-■■■■■	26.5	0.0040	16
1.5	1.75	100 L	970	15	IE2	79.8	80.2	79.0	0.73	3.7	2.0	6.2	2.9	59	71	▲	1LE1 01-1AC4	■-■■■■■	36	0.011	16
2.2	2.55	112 M	965	22	IE2	81.8	82.5	81.3	0.75	5.2	2.1	6.0	3.1	57	69	▲	1LE1 01-1BC2	■-■■■■■	41	0.014	16
3	3.45	132 S	970	30	IE2	83.3	84.0	82.8	0.74	7.0	1.6	5.6	2.6	63	75	▲	1LE1 01-1CC0	■-■■■■■	56	0.024	13
4	4.55	132 M	970	39	IE2	84.6	85.8	85.0	0.78	8.7	1.6	5.6	2.5	63	75	▲	1LE1 01-1CC2	■-■■■■■	61	0.029	13
5.5	6.3	132 M	970	54	IE2	86.0	87.4	87.0	0.77	12	1.9	6.1	2.8	63	75	▲	1LE1 01-1CC3	■-■■■■■	70	0.037	16
7.5	8.6	160 M	975	73	IE2	87.2	88.0	87.3	0.74	16.8	1.9	4.7	2.2	67	79	▲	1LE1 01-1DC2	■-■■■■■	106	0.075	16
11	12.6	160 L	975	108	IE2	88.7	89.6	89.2	0.76	23.5	1.9	4.8	2.2	67	79	▲	1LE1 01-1DC4	■-■■■■■	122	0.098	16
15	18	180 L	975	147	IE2	89.7	90.1	90.2	0.78	31	2.5	6.0	3.1	57	70	▲	1LE1 01-1EC4	■-■■■■■	155	0.17	16
18.5	22	200 L	978	181	IE2	90.4	91.3	91.2	0.82	36	2.4	5.8	2.6	57	71	▲	1LE1 01-2AC4	■-■■■■■	200	0.25	16
22	26.5	200 L	978	215	IE2	90.9	91.6	91.2	0.82	42.5	2.5	6.2	2.6	61	74	▲	1LE1 01-2AC5	■-■■■■■	220	0.30	16
30	36	225 M	980	292	IE2	91.7	92.5	92.3	0.83	57	2.5	5.6	2.7	65	78	▲	1LE1 01-2BC2	■-■■■■■	300	0.58	16
37	44.5	250 M	982	360	IE2	92.2	93.1	93.1	0.83	70	2.8	6.0	2.5	62	77	▲	1LE1 01-2CC2	■-■■■■■	370	0.86	16
45	54	280 S	985	436	IE2	92.7	93.4	93.2	0.84	83	2.7	6.3	2.6	65	79	▲	1LE1 01-2DC0	■-■■■■■	460	1.1	16
55	66	280 M	985	533	IE2	93.1	93.9	94.0	0.86	99	2.5	6.4	2.6	65	79	▲	1LE1 01-2DC2	■-■■■■■	510	1.4	16
75	90	315 S	988	725	IE2	93.7	94.0	93.6	0.84	138	2.5	6.7	2.8	65	79	▲	1LE1 01-3AC0	■-■■■■■	660	2.1	16
90	108	315 M	988	870	IE2	94.0	94.3	93.6	0.84	165	2.6	6.9	2.8	65	79	▲	1LE1 01-3AC2	■-■■■■■	730	2.5	16
110	132	315 L	988	1063	IE2	94.3	94.6	94.5	0.86	196	2.7	7.0	2.8	68	82	▲	1LE1 01-3AC4	■-■■■■■	940	3.6	16
132	158	315 L	988	1276	IE2	94.6	94.9	94.7	0.86	235	3.0	7.5	2.9	69	84	▲	1LE1 01-3AC5	■-■■■■■	990	4.0	16
160	192	315 L	988	1546	IE2	94.8	94.7	94.4	0.86	285	3.1	7.7	3.3	69	84	▲	1LE1 01-3AC6	■-■■■■■	1160	4.7	16
Relubrication		Motor protection		Fan cover		Bearing size		Converter-fed operation, motor mode		Liability for defects											
Basic Line		Optional (standard from FS 280 upwards)		Optional		Plastic		62 (63 from FS 280 upwards)		Up to 500 V		12 months		5							
Performance Line		Standard from FS 160 (optional for FS 100 to 132)		Standard PTC		Steel		63		Up to 500 V		36 months		6							
Voltages ²⁾		No. of poles		Frame size		Motor type		Version												Order code(s)	
50 Hz		230 VΔ/400 VY		60 Hz ¹⁾		460 VY		6		71 M ... 315 L		1LE1 01-0C ... -3A		Standard		2 2				-	
50 Hz		400 VΔ/690 VY		60 Hz ¹⁾		460 VΔ		6		71 M ... 315 L		1LE1 01-0C ... -3A		Standard		3 4				-	
50 Hz		500 VY						6		71 M ... 315 L		1LE1 01-0C ... -3A		Without add. charge		2 7				-	
50 Hz		500 VΔ						6		71 M ... 315 L		1LE1 01-0C ... -3A		Without add. charge		4 0				-	
Further voltages ¹⁾		For price information, code numbers, order codes and descriptions, see from Page 2/40																			
Types of construction		No. of poles		Frame size		Motor type		Version												Order code(s)	
Without flange		IM B3 ³⁾		6		71 M ... 315 L		1LE1 01-0C ... -3A		Standard		A								-	
With flange		IM B5 ³⁾		6		71 M ... 315 M		1LE1 01-0C ... -3A		With additional charge		F								-	
With standard flange		IM B14 ³⁾		6		71 M ... 160 L		1LE1 01-0C ... -1D		With additional charge		K								-	
Further types of construction		For price information, code letters and descriptions, see from Page 2/45																			
Motor protection		Line		No. of poles		Frame size		Motor type		Version										Order code(s)	
Without PTC thermistor with 3 temperature sensors		Only possible for Basic Line		6		71 M ... 315 L		1LE1501-0C ... -3A		Standard		A								-	
		Basic Line		6		71 M ... 315 L		1LE1501-0C ... -3A		With additional charge		B								-	
		Performance Line		6		71 M ... 315 L		1LE1601-0C ... -3A		Standard		B								-	
Further motor protection		For price information, code letters and descriptions, see from Page 2/50																			
Terminal box position		No. of poles		Frame size		Motor type		Version												Order code(s)	
Terminal box at top		6		71 M ... 315 L		1LE1 01-0C ... -3A		Standard		4										-	
Further terminal box positions		For price information, code numbers and descriptions, see from Page 2/52																			
Special versions		No. of poles		Frame size		Motor type														Order code(s)	
Options		For price information, order codes and descriptions, see from Page 2/58																			
																				1LE1 01-... ■-■■■■■-Z ...+...+...+...	

¹⁾ Operating values at rated output for 60 Hz are available on request.

²⁾ Parallel supply lines are required in the case of connection to ≤ 240 V. For frame size 315 with connection to ≤ 240 V, due to the high current, a drilled, removable entry plate (Order code R52) or a larger terminal box (Order code R50) can be used. Order codes R52 and R50 alter the motor dimensions.

³⁾ Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirement exists for stamping of the type on the rating plate. The basic type IM B3, IM B5 or IM B14 is stamped as standard on the rating plate. If mounted in a different position, the position must be specified to ensure that the condensation drainage holes are positioned correctly.

SIMOTICS SD 1LE1 Standard Motors

Motors with High Efficiency IE2



Self-ventilated motors
Cast-iron series 1LE1501/1LE1601 Basic/Performance Line

Selection and ordering data (continued)

Operating values at rated output														Cast-iron series		m _{IM B3} J		Torque class					
P _{rated} , 50 Hz	P _{rated} , 60 Hz	Frame size	n _{rated} , 50 Hz	n _{rated} , 60 Hz	IE class	η _{rated} , 50 Hz	η _{rated} , 60 Hz	η _{rated} , 50 Hz	η _{rated} , 60 Hz	cos φ	I _{rated} , 50 Hz	I _L /I _N , 50 Hz	I _L /I _N , 60 Hz	T _B , 50 Hz	L _{pfA} , 50 Hz	L _{WA} , 50 Hz	1LE1501 – Basic Line	1LE1601 – Performance Line	IE2 version in accordance with IEC 60034-30	Article No.	kg	kgm ²	CL
<ul style="list-style-type: none"> • Cooling: self-ventilated (IC 411) • Efficiency: High Efficiency IE2, service factor (SF) 1.15 • Insulation: thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B) 																							
8-pole: 750 rpm at 50 Hz, 900 rpm at 60 Hz ¹⁾																							
0.75	0.86	100 L	725	9.9	–	–	68.3	65.8	59.3	0.58	2.8	1.6	4.0	2.8	60	72	1LE1 01-1AD4	–	–	–	32	0.0086	13
1.1	1.3	100 L	725	14	–	–	68.3	65.4	58.9	0.58	4.0	1.8	4.1	2.8	60	72	1LE1 01-1AD5	–	–	–	36	0.011	13
1.5	1.75	112 M	720	20	–	–	75.8	76.0	73.0	0.67	4.25	1.4	4.2	2.4	63	75	1LE1 01-1BD2	–	–	–	51	0.014	13
2.2	2.55	132 S	725	29	–	–	78.8	79.3	77.2	0.65	6.2	1.4	4.3	2.1	63	75	1LE1 01-1CD0	–	–	–	59	0.027	10
3	3.45	132 M	730	39	–	–	82.7	83.0	80.9	0.65	8.1	1.4	5.0	2.4	63	75	1LE1 01-1CD2	–	–	–	67	0.035	10
4	4.55	160 M	730	52	–	–	81.9	82.6	81.7	0.67	10.5	1.6	3.7	1.9	63	75	1LE1 01-1DD2	–	–	–	98	0.065	13
5.5	6.3	160 M	730	72	–	–	83.8	84.3	83.1	0.67	14.1	1.7	3.9	2	63	75	1LE1 01-1DD3	–	–	–	111	0.083	13
7.5	8.6	160 L	730	98	–	–	85.3	86.5	86.1	0.7	18.1	1.6	3.8	1.9	63	75	1LE1 01-1DD4	–	–	–	123	0.098	13
11	13.2	180 L	720	146	–	–	86.6	87.6	87.1	0.70	26	2.3	4.9	2.6	65	78	1LE1 01-1ED4	–	–	–	155	0.20	13
15	18	200 L	718	200	–	–	88.9	90.8	91.2	0.76	32	2.4	5.4	2.8	55	69	1LE1 01-2AD5	–	–	–	220	0.34	13
18.5	22	225 S	730	242	–	–	89.0	89.9	89.5	0.78	38.5	2.2	5.4	2.7	59	72	1LE1 01-2BD0	–	–	–	250	0.43	13
22	26.5	225 M	730	288	–	–	90.3	91.3	91.1	0.80	44	2.3	5.5	2.7	58	71	1LE1 01-2BD2	–	–	–	270	0.50	13
30	36	250 M	732	391	–	–	91.3	92.2	92.0	0.80	59	2.4	5.6	2.7	60	73	1LE1 01-2CD2	–	–	–	370	0.86	13
37	44.5	280 S	736	480	–	–	91.9	92.5	92.1	0.78	75	2.3	5.4	2.4	63	77	1LE1 01-2DD0	–	–	–	460	1.10	13
45	54	280 M	738	582	–	–	92.4	92.8	92.4	0.79	89	2.5	5.7	2.5	66	80	1LE1 01-2DD2	–	–	–	510	1.40	13
55	66	315 S	740	710	–	–	92.9	93.3	92.9	0.80	107	2.2	5.8	2.6	69	83	1LE1 01-3AD0	–	–	–	640	2.00	13
75	90	315 M	738	970	–	–	93.5	94.4	94.5	0.81	143	2.3	5.9	2.7	69	84	1LE1 01-3AD2	–	–	–	710	2.50	13
90	108	315 L	740	1161	–	–	93.5	94.3	94.4	0.83	167	2.2	5.8	2.5	69	84	1LE1 01-3AD4	–	–	–	860	3.10	13
110	132	315 L	740	1419	–	–	94.2	95.0	95.1	0.82	205	2.7	6.7	2.9	74	88	1LE1 01-3AD5	–	–	–	980	3.90	13
132	158	315 L	740	1703	–	–	94.4	94.8	94.4	0.81	250	2.9	7.2	3.3	76	90	1LE1 01-3AD6	–	–	–	1060	4.50	16
Relubrication		Motor protection		Fan cover		Bearing size		Converter-fed operation, motor mode		Liability for defects													
Basic Line		Optional (standard from FS 280 upwards)		Optional		Plastic		62 (63 from FS 280 upwards)		Up to 500 V 12 months		5											
Performance Line		Standard from FS 160 (optional for FS 100 to 132)		Standard PTC		Steel		63		Up to 500 V 36 months		6											
Voltages ²⁾		No. of poles		Frame size		Motor type		Version															
50 Hz		230 VΔ/400 VY		60 Hz ¹⁾		460 VY		8		100 L ... 315 L		1LE1 01-1A ... -3A		Standard		2 2							
50 Hz		400 VΔ/690 VY		60 Hz ¹⁾		460 VΔ		8		100 L ... 315 L		1LE1 01-1A ... -3A		Standard		3 4							
50 Hz		500 VY						8		100 L ... 315 L		1LE1 01-1A ... -3A		Without add. charge		2 7							
50 Hz		500 VΔ						8		100 L ... 315 L		1LE1 01-1A ... -3A		Without add. charge		4 0							
Further voltages ¹⁾																9 0						...	
Types of construction		No. of poles		Frame size		Motor type		Version															
Without flange		IM B3 ³⁾		8		100 L ... 315 L		1LE1 01-1A ... -3A		Standard		A											
With flange		IM B5 ³⁾		8		100 L ... 315 M		1LE1 01-1A ... -3A		With additional charge		F											
With standard flange		IM B14 ³⁾		8		100 L ... 160 L		1LE1 01-1A ... -1D		With additional charge		K											
Further types of construction																							
Motor protection		Line		No. of poles		Frame size		Motor type		Version													
Without PTC thermistor with 3 temperature sensors		Only possible for Basic Line		8		100 L ... 315 L		1LE1501-1A ... -3A		Standard		A											
Further motor protection		Performance Line		8		100 L ... 315 L		1LE1601-1A ... -3A		Standard		B											
Terminal box position		No. of poles		Frame size		Motor type		Version															
Terminal box at top		8		100 L ... 315 L		1LE1 01-1A ... -3A		Standard				4											
Further terminal box positions																							
Special versions		No. of poles		Frame size		Motor type																	
Options																							

1) Operating values at rated output for 60 Hz are available on request.
 2) Parallel supply lines are required in the case of connection to ≤ 240 V. For frame size 315 with connection to ≤ 240 V, due to the high current, a drilled, removable entry plate (Order code R52) or a larger terminal box (Order code R50) can be used. Order codes R52 and R50 alter the motor dimensions.

3) Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirement exists for stamping of the type on the rating plate. The basic type IM B3, IM B5 or IM B14 is stamped as standard on the rating plate. If mounted in a different position, the position must be specified to ensure that the condensation drainage holes are positioned correctly.



SIMOTICS SD 1LE1 Standard Motors

Motors with High Efficiency IE2

Self-ventilated motors
Cast-iron series 1LE1501/1LE1601 with increased output



Selection and ordering data

Operating values at rated output													Cast-iron series		m _{IM B3} J		Torque class				
P _{rated} , P _{rated} 50 Hz 60 Hz 1)	Frame size	n _{rated} , n _{rated} 50 Hz 50 Hz	IE class	η _{rated} , η _{rated} , η _{rated} 50 Hz, 50 Hz, 50 Hz	cos φ _{rated} 50 Hz, 4/4	I _{rated} , I _L /I _N , I _L /I _N , I _B /I _N 50 Hz, 400 V 50 Hz 50 Hz 50 Hz	L _{pfA} , L _{WA} , L _{WA} , 50 Hz	dB(A) dB(A) ▲ New		kg	kgm ²	CL	1LE1501 – Basic Line	1LE1601 – Performance Line	IE2 version in accordance with IEC 60034-30 with increased output		Article No.				
<p>• Cooling: self-ventilated (IC 411) • Efficiency: High Efficiency IE2, service factor (SF) 1.15 • Insulation: thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B)</p>																					
2-pole: 3000 rpm at 50 Hz, 3600 rpm at 60 Hz ¹⁾																					
4	4.55	100 L	2905	13	IE2	IE2	85.8	87.2	87.0	0.86	7.8	2.5	7.6	3.5	67	79	1LE1 01-1AA6	45	0.0054	16	
5.5	6.3	112 M	2950	18	IE2	IE2	87.0	87.5	87.2	0.89	10.3	2.2	7.7	3.3	69	81	1LE1 01-1BA6	53	0.012	16	
11	12.6	132 M	2950	36	IE2	IE2	89.4	90.2	90.3	0.89	20	2.3	7.9	3.2	68	80	1LE1 01-1CA6	80	0.031	16	
22	25.3	160 L	2955	71	IE2	IE2	91.3	91.7	91.3	0.89	39	3.1	8.4	3.7	70	82	1LE1 01-1DA6	126	0.068	16	
30	33.5	180 L	2940	97	IE2	IE2	92.0	92.5	92.2	0.89	53	2.3	7.8	3.4	70	83	1LE1 01-1EA6	180	0.09	16	
45	51	200 L	2950	146	IE2	IE2	92.9	93.4	93.1	0.87	81	2.5	7.1	3.2	72	85	1LE1 01-2AA6	245	0.18	16	
55	62	225 M	2960	177	IE2	IE2	93.2	93.6	93.2	0.86	99	2.5	7.0	3.3	76	89	1LE1 01-2BA6	320	0.26	16	
75	84	250 M	2970	241	IE2	IE2	93.8	93.6	92.6	0.84	137	2.2	7.0	3.3	75	89	1LE1 01-2CA6	390	0.46	13	
110	123	280 M	2978	353	IE2	IE2	94.3	94.5	94.1	0.90	187	2.9	8.5	3.6	80	91	1LE1 01-2DA6	650	1.20	16	
4-pole: 1500 rpm at 50 Hz, 1800 rpm at 60 Hz ¹⁾																					
4	4.55	100 L	1460	26	IE2	IE2	86.6	87.4	86.7	0.80	8.3	2.2	7.5	3.5	60	72	1LE1 01-1AB6	46	0.014	16	
5.5	6.3	112 M	1460	36	IE2	IE2	87.7	88.1	87.4	0.81	11.2	2.5	7.1	3.2	58	70	1LE1 01-1BB6	58	0.017	16	
11	12.6	132 M	1465	72	IE2	IE2	89.8	90.6	90.4	0.84	21	2.6	7.7	3.1	64	76	1LE1 01-1CB6	80	0.046	16	
18.5	21.3	160 L	1475	120	IE2	IE2	91.2	91.7	91.6	0.85	34.5	2.5	7.7	3.3	65	77	1LE1 01-1DB6	116	0.099	16	
30	34.5	180 L	1465	196	IE2	IE2	92.3	93.0	92.9	0.81	58	2.5	7.3	3.3	64	77	1LE1 01-1EB6	185	0.16	16	
37	42.5	200 L	1470	240	IE2	IE2	92.7	93.6	93.8	0.84	69	2.4	7.0	3.0	62	75	1LE1 01-2AB6	240	0.25	16	
55	63	225 M	1475	356	IE2	IE2	93.5	94.2	94.1	0.84	101	2.5	5.8	2.7	69	82	1LE1 01-2BB6	320	0.47	16	
75	86	250 M	1480	484	IE2	IE2	94.0	94.5	94.3	0.86	134	2.3	6.2	2.8	74	87	1LE1 01-2CB6	440	0.85	13	
110	127	280 M	1485	707	IE2	IE2	94.5	94.9	94.8	0.87	193	2.5	6.9	3.0	73	87	1LE1 01-2DB6	680	1.70	13	
Relubrication		Motor protection		Fan cover		Bearing size		Converted operation, motor mode		Liability for defects											
Basic Line		Optional (standard from FS 280 upwards)		Optional		Plastic		62 (63 from FS 280 upwards)		Up to 500 V 12 months		5									
Performance Line		Standard from FS 160 (optional for FS 100 to 132)		Standard		Steel		63		Up to 500 V 36 months		6									
Voltages ²⁾		No. of poles		Frame size		Motor type		Version		Order code(s)											
50 Hz		230 VΔ/400 VY		60 Hz ¹⁾		460 VY		2, 4		100 L ... 280 M		1LE1 01-1A ... -2D		Standard		2 2					
50 Hz		400 VΔ/690 VY		60 Hz ¹⁾		460 VΔ		2, 4		100 L ... 280 M		1LE1 01-1A ... -2D		Standard		3 4					
50 Hz		500 VY						2, 4		100 L ... 280 M		1LE1 01-1A ... -2D		Without add. charge		2 7					
50 Hz		500 VΔ						2, 4		100 L ... 280 M		1LE1 01-1A ... -2D		Without add. charge		4 0					
Further voltages ¹⁾		For price information, code numbers, order codes and descriptions, see from Page 2/40										9 0									
Types of construction		No. of poles		Frame size		Motor type		Version		Order code(s)											
Without flange		IM B3 ³⁾		2, 4		100 L ... 280 M		1LE1 01-1A ... -2D		Standard		A									
With flange		IM B5 ³⁾		2, 4		100 L ... 280 M		1LE1 01-1A ... -2D		With additional charge		F									
With standard flange		IM B14 ³⁾		2, 4		100 L ... 280 M		1LE1 01-1A ... -2D		With additional charge		K									
Further types of construction		For price information, code letters and descriptions, see from Page 2/45										...									
Motor protection		Line		No. of poles		Frame size		Motor type		Version		Order code(s)									
Without PTC thermistor with 3 temperature sensors		Only possible for Basic Line		2, 4		100 L ... 280 M		1LE1501-1A ... -2D		Standard		A									
Further motor protection		Performance Line		2, 4		100 L ... 280 M		1LE1601-1A ... -2D		Standard		B									
Terminal box position		No. of poles		Frame size		Motor type		Version		Order code(s)											
Terminal box at top		2, 4		100 L ... 280 M		1LE1 01-1A ... -2D		Standard		4											
Further terminal box positions		For price information, code numbers and descriptions, see from Page 2/52										...									
Special versions		No. of poles		Frame size		Motor type		Version		Order code(s)											
Forced-air cooled motors without ext. fan/fan cover (IC 416)		2, 4		100 L ... 280 M		1LE1 01-1A ... -2D		1LE1 01- ... -Z		F90 + . . . + . . .											
Options		For price information, order codes and descriptions, see from Page 2/58										1LE1 01- ... -Z . . . + . . . + . . .									

¹⁾ Operating values at rated output for 60 Hz are available on request.

²⁾ Parallel supply lines are required in the case of connection to ≤ 240 V. For frame size 315 with connection to ≤ 240 V, due to the high current, a drilled, removable entry plate (Order code R52) or a larger terminal box (Order code R50) can be used. Order codes R52 and R50 alter the motor dimensions.

³⁾ Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirement exists for stamping of the type on the rating plate. The basic type IM B3, IM B5 or IM B14 is stamped as standard on the rating plate. If mounted in a different position, the position must be specified to ensure that the condensation drainage holes are positioned correctly.

SIMOTICS SD 1LE1 Standard Motors

Motors with High Efficiency IE2



Self-ventilated motors
Cast-iron series 1LE1501/1LE1601 with increased output

Selection and ordering data (continued)

Operating values at rated output														Cast-iron series		m _{IM B3} J		Torque class				
P _{rated}	P _{rated}	Frame size	n _{rated}	i _{rated}	IE class	η _{rated}	η _{rated}	η _{rated}	cosφ	I _{rated}	I _{FL} /I _{rated}	I _{FL} /I _{rated}	T _B /I _{rated}	L _{pfA}	L _{WA}	1LE1501 – Basic Line	1LE1601 – Performance Line	IE2 version in accordance with IEC 60034-30 with increased output	Article No.	kg	kgm ²	CL
50 Hz	60 Hz	1)	50 Hz	50 Hz		50 Hz	50 Hz	50 Hz	rated	50 Hz	I _{FL} /I _{rated}	I _{FL} /I _{rated}	I _{FL} /I _{rated}	50 Hz	50 Hz							
2.2	2.55	100 L	965	22	IE2	81.8	82.5	81.5	0.76	5.1	1.9	5.7	2.9	59	71	1LE1 01-1AC6	49	0.014	16			
3	3.45	112 M	960	30	IE2	83.3	84.1	83.6	0.79	6.6	2.1	6.0	3.1	57	69	1LE1 01-1BC6	53	0.017	16			
7.5	8.6	132 M	970	74	IE2	87.2	87.8	87.3	0.77	16.1	2.1	6.5	3.0	63	75	1LE1 01-1CC6	87	0.046	16			
15	17.3	160 L	975	147	IE2	89.7	90.3	89.7	0.75	32.0	2	5.2	2.4	67	79	1LE1 01-1DC6	147	0.12	16			
18.5	22	180 L	975	181	IE2	90.4	91.1	90.8	0.77	38.5	2.3	6.0	2.9	67	80	1LE1 01-1EC6	165	0.21	16			
30	34.5	200 L	975	294	IE2	91.7	92.5	92.5	0.77	61	2.6	6.3	2.7	62	75	1LE1 01-2AC6	245	0.38	16			
37	44.5	225 M	978	361	IE2	92.2	93.0	92.9	0.83	70	2.5	6.3	2.9	64	77	1LE1 01-2BC6	325	0.67	16			
45	54	250 M	985	436	IE2	92.7	93.7	94.0	0.84	83	2.4	6.6	2.7	67	81	1LE1 01-2CC6	410	1.00	16			
75	90	280 M	986	726	IE2	93.7	94.3	94.4	0.85	136	3.2	7.0	2.9	66	80	1LE1 01-2DC6	570	1.80	16			
8-pole: 750 rpm at 50 Hz, 900 rpm at 60 Hz ¹⁾																						
15	18	180 L	720	199	IE2	87.9	88.9	88.2	0.73	33.5	2.2	4.9	2.5	67	75	1LE1 01-1ED6	190	0.26	13			
18.5	22	200 L	720	245	IE2	88.6	89.9	90.1	0.78	38.5	2.6	5.8	3.0	65	72	1LE1 01-2AD6	250	0.42	13			
30	36	225 M	732	391	IE2	90.8	92.0	92.1	0.76	63	2.8	6.1	3.2	62	76	1LE1 01-2BD6	325	0.67	16			
37	44.5	250 M	730	484	IE2	91.6	92.6	92.7	0.83	70	2.3	5.5	2.6	63	77	1LE1 01-2CD6	405	1.00	13			
55	66	280 M	736	714	IE2	92.9	93.4	93.0	0.8	107	2.5	5.9	2.5	70	81	1LE1 01-2DD6	550	1.60	13			
Relubrication																						
Motor protection																						
Fan cover																						
Bearing size																						
Converted operation, motor defects mode																						
Liability for defects																						
5																						
6																						
Order code(s)																						
Further voltages ²⁾																						
For price information, code numbers, order codes and descriptions, see from Page 2/40																						
Types of construction																						
No. of poles																						
Frame size																						
Motor type																						
Version																						
Order code(s)																						
Without flange IM B3 ³⁾																						
With flange IM B5 ³⁾																						
With standard flange IM B14 ³⁾																						
Further types of construction																						
For price information, code letters and descriptions, see from Page 2/45																						
Motor protection																						
Line																						
No. of poles																						
Frame size																						
Motor type																						
Version																						
Order code(s)																						
Without PTC thermistor with 3 temperature sensors																						
Only possible for Basic Line																						
Basic Line																						
Performance Line																						
Further motor protection																						
For price information, code letters and descriptions, see from Page 2/50																						
Terminal box position																						
No. of poles																						
Frame size																						
Motor type																						
Version																						
Order code(s)																						
Terminal box at top																						
6, 8																						
100 L ... 280 M																						
1LE1 01-1A ... -2D																						
Standard																						
4																						
Further terminal box positions																						
For price information, code numbers and descriptions, see from Page 2/52																						
Special versions																						
No. of poles																						
Frame size																						
Motor type																						
Version																						
Order code(s)																						
Forced-air cooled motors without ext. fan/fan cover (IC 416)																						
6, 8																						
100 L ... 280 M																						
1LE1 01-1A ... -2D																						
1LE1 01-... -Z																						
F90 + . . . + . . .																						
Options																						
For price information, order codes and descriptions, see from Page 2/58																						
1LE1 01-... -Z																						
. . . + . . . + . . .																						

1) Operating values at rated output for 60 Hz are available on request.
2) Parallel supply lines are required in the case of connection to ≤ 240 V. For frame size 315 with connection to ≤ 240 V, due to the high current, a drilled, removable entry plate (Order code R52) or a larger terminal box (Order code R50) can be used. Order codes R52 and R50 alter the motor dimensions.

3) Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirement exists for stamping of the type on the rating plate. The basic type IM B3, IM B5 or IM B14 is stamped as standard on the rating plate. If mounted in a different position, the position must be specified to ensure that the condensation drainage holes are positioned correctly.



SIMOTICS GP 1LE1 Standard Motors

Motors with Premium Efficiency IE3

Self-ventilated motors
Aluminum series 1LE1003



Selection and ordering data

Operating values at rated output															Aluminum series		mIM B3 J		Torque class					
P_{rated} 50 Hz	P_{rated} 60 Hz	Frame size	n_{rated} 50 Hz	T_{rated} 50 Hz	IE class	η_{rated} 50 Hz	η_{rated} 50 Hz	η_{rated} 50 Hz	$\cos\phi$ rated	I_{rated} 50 Hz	T_{LR} 50 Hz	I_{LR} 50 Hz	T_B 50 Hz	L_{pfa} 50 Hz	L_{WA} 50 Hz	Article No.	kg	kgm ²	CL					
<ul style="list-style-type: none"> Cooling: self-ventilated (IC 411) Efficiency: Premium Efficiency IE3, service factor (SF) 1.15 Insulation: thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B) 															1LE1003 – IE3 version in accordance with IEC 60034-30									
2-pole: 3000 rpm at 50 Hz, 3600 rpm at 60 Hz ¹⁾															New									
0.75	0.86	80 M	2850	2.5	IE3	80.7	82.0	81.5	0.86	1.56	2.6	6.2	3.0	60	71	1LE1003-0DA2	11	0.0011	16					
1.1	1.3	80 M	2885	3.6	IE3	82.7	82.7	81.7	0.85	2.25	2.8	7.4	3.8	60	71	1LE1003-0DA3	12	0.0013	16					
1.5	1.75	90 S	2910	4.9	IE3	84.2	84.5	83.5	0.86	3.00	2.7	8.1	4.2	65	77	1LE1003-0EA0	15	0.0021	16					
2.2	2.55	90 L	2920	7.2	IE3	85.9	86.8	86.1	0.88	4.2	2.6	8.3	4.0	65	77	1LE1003-0EA1	19	0.0031	16					
3	3.45	100 L	2920	9.8	IE3	87.1	87.1	86.1	0.88	5.6	2.8	8.0	4.3	67	79	1LE1003-1AA4	26	0.0054	16					
4	4.55	112 M	2950	12.9	IE3	88.1	88.1	87.1	0.89	7.4	1.9	7.5	3.9	69	81	1LE1003-1BA2	34	0.012	16					
5.5	6.3	132 S	2950	17.8	IE3	89.2	89.2	88.2	0.90	9.9	1.8	7.4	3.6	68	80	1LE1003-1CA0	43	0.024	16					
7.5	8.6	132 S	2950	24.3	IE3	90.1	90.1	89.1	0.92	13.1	1.9	8.3	3.9	68	80	1LE1003-1CA1	57	0.031	16					
11	12.6	160 M	2955	35.5	IE3	91.2	91.2	90.2	0.89	19.6	2.4	7.9	3.8	70	82	1LE1003-1DA2	75	0.053	16					
15	18	160 M	2960	48.4	IE3	91.9	91.9	90.9	0.87	27.0	2.7	8.7	4.3	70	82	1LE1003-1DA3	84	0.061	16					
18.5	22	160 L	2955	60.0	IE3	92.4	92.4	91.4	0.90	32.0	2.8	9.0	4.2	70	82	1LE1003-1DA4	94	0.068	16					
4-pole: 1500 rpm at 50 Hz, 1800 rpm at 60 Hz ¹⁾															New									
0.55	0.63	80 M	1440	3.6	–	81.3	82.0	80.2	0.78	1.25	2.1	5.9	3.1	53	64	1LE1003-0DB2	11	0.0021	16					
0.75	0.86	80 M	1450	4.9	IE3	82.5	82.3	80.0	0.75	1.75	2.7	7.1	3.9	53	64	1LE1003-0DB3	14	0.0029	16					
1.1	1.3	90 S	1440	7.3	IE3	84.1	84.6	83.5	0.78	2.4	2.9	6.9	3.6	56	68	1LE1003-0EB0	16	0.0036	16					
1.5	1.75	90 L	1445	9.9	IE3	85.3	85.9	84.9	0.80	3.15	2.6	7.2	2.7	56	68	1LE1003-0EB4	19	0.0049	16					
2.2	2.55	100 L	1465	14.3	IE3	86.7	86.7	85.7	0.83	4.4	2.1	7.6	3.6	60	72	1LE1003-1AB4	30	0.014	16					
3	3.45	100 L	1460	19.6	IE3	87.7	87.7	86.7	0.83	5.9	2.3	7.3	3.7	60	72	1LE1003-1AB5	30	0.014	16					
4	4.55	112 M	1460	26.0	IE3	88.6	88.6	87.6	0.82	7.9	2.4	7.1	3.7	58	70	1LE1003-1BB2	34	0.017	16					
5.5	6.3	132 S	1470	35.7	IE3	89.6	89.6	88.6	0.84	10.5	2.1	7.2	3.4	64	76	1LE1003-1CB0	64	0.046	16					
7.5	8.6	132 M	1470	48.7	IE3	90.4	90.4	89.4	0.84	14.3	2.4	7.4	3.5	64	76	1LE1003-1CB2	64	0.046	16					
11	12.6	160 M	1475	71.0	IE3	91.4	91.4	90.4	0.84	20.5	2.2	6.9	3.2	65	77	1LE1003-1DB2	83	0.083	16					
15	17.3	160 L	1475	97.0	IE3	92.1	92.1	91.1	0.82	28.5	2.5	8.5	3.8	65	77	1LE1003-1DB4	100	0.99	16					
Voltages			Motor protection		No. of poles	Frame size	Motor type	Version	Order code(s)															
Frame sizes 80 M to 90 L: use of the 360° freely rotatable terminal box for 2 and 4-pole motors²⁾																								
50 Hz	230 VΔ/400 VY	60 Hz ¹⁾	460 VY	PTC thermistor with 1 temp. sensor	2, 4	80 M ... 90 L	1LE1003-0D ... -0E	Standard	2	2	–													
50 Hz	400 VΔ/690 VY	60 Hz ¹⁾	460 VΔ	Without	2, 4	80 M ... 90 L	1LE1003-0D ... -0E	Standard	3	4	–													
50 Hz	400 VY	60 Hz ¹⁾	460 VY	Without	2, 4	80 M ... 90 L	1LE1003-0D ... -0E	Standard	0	2	A	–												
Frame sizes 100 L to 160 L: use of the 4 x 90° rotatable terminal box																								
50 Hz	230 VΔ/400 VY	60 Hz ¹⁾	460 VY	Any	2, 4	100 L ... 160 L	1LE1003-1A ... -1D	Standard	2	2	–													
50 Hz	400 VΔ/690 VY	60 Hz ¹⁾	460 VΔ	Any	2, 4	100 L ... 160 L	1LE1003-1A ... -1D	Standard	3	4	–													
50 Hz	500 VY			Any	2, 4	100 L ... 160 L	1LE1003-1A ... -1D	Without add. charge	2	7	–													
50 Hz	500 VΔ			Any	2, 4	100 L ... 160 L	1LE1003-1A ... -1D	Without add. charge	4	0	–													
Further voltages ¹⁾															9 0					...				
For price information, code numbers, order codes and descriptions, see from Page 2/38																								
Types of construction			No. of poles	Frame size	Motor type	Version	Order code(s)																	
Without flange			IM B3 ³⁾	2, 4	80 M ... 160 L	1LE1003-0D ... -1D	Standard	A	–															
With flange			IM B5 ³⁾	2, 4	80 M ... 160 L	1LE1003-0D ... -1D	With add. charge	F	–															
With standard flange			IM B14 ³⁾	2, 4	80 M ... 160 L	1LE1003-0D ... -1D	With add. charge	K	–															
Further types of construction															...									
Motor protection			No. of poles	Frame size	Motor type	Version	Order code(s)																	
Without				2, 4	80 L ... 160 L	1LE1003-0D ... -1D	Standard	A	–															
PTC thermistor with 3 temperature sensors				2, 4	80 L ... 160 L	1LE1003-0D ... -1D	With add. charge	B	–															
Further motor protection															...									
For price information, code letters and descriptions, see from Page 2/49																								
Terminal box position			No. of poles	Frame size	Motor type	Version	Order code(s)																	
Terminal box at top				2, 4	80 M ... 160 L	1LE1003-0D ... -1D	Standard	4	–															
Further terminal box positions															...									
For price information, code numbers and descriptions, see from Page 2/51																								
Special versions			No. of poles	Frame size	Motor type	Version		Order code(s)																
Forced-air cooled motors without ext. fan/fan cover (IC 416)				2, 4	80 M ... 160 L	1LE1003-0D ... -1D	1LE1003-... -Z	F90 +...+...+...	–															
Options															1LE1003-... -Z ...+...+...+...									
For price information, order codes and descriptions, see from Page 2/53																								

¹⁾ Operating values at rated output for 60 Hz are available on request.

²⁾ For converter-fed operation of shaft heights 80 and 90, ordering with PTC thermistors and their connection to the converter is recommended.

³⁾ Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirements exist for condensation drainage holes (H03) and stamping of the type on the rating plate. The basic type IM B3, IM B5 or IM B14 is stamped as standard on the rating plate. When ordering with condensation drainage holes (H03), the type must be specified.

SIMOTICS GP 1LE1 Standard Motors

Motors with Premium Efficiency IE3



Self-ventilated motors
Aluminum series 1LE1003

Selection and ordering data (continued)

Operating values at rated output															Aluminum series		m _{IM B3} J		Torque class	
P _{rated} , 50 Hz	P _{rated} , 60 Hz	Frame size	n _{rated} , 50 Hz	T _{rated} , 50 Hz	IE class	η _{rated} , 50 Hz	η _{rated} , 50 Hz	η _{rated} , 50 Hz	COS φ, 50 Hz	I _{rated} , 50 Hz	T _{LR} /I _{rated} , 50 Hz	I _{LR} /I _{rated} , 50 Hz	T _B /I _{rated} , 50 Hz	L _{pfA} , 50 Hz	L _{WA} , 50 Hz	Article No.	kg	kgm ²	CL	
kW	kW	FS	rpm	Nm	50 Hz	60 Hz	%	%	%	A						▲ New				
• Cooling: self-ventilated (IC 411) • Efficiency: Premium Efficiency IE3, service factor (SF) 1.15 • Insulation: thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B) 6-pole: 1000 rpm at 50 Hz, 1200 rpm at 60 Hz ¹⁾																				
0.37	0.43	80 M	940	3.8	-	-	74.8	74.3	70.5	0.66	1.08	2.3	4.2	2.7	42	53	1LE1003-0DC2	12	0.0025	13
0.55	0.63	80 M	935	5.6	-	-	77.2	77.2	75.5	0.67	1.53	2.5	4.5	2.8	42	53	1LE1003-0DC3	14	0.0031	13
0.75	0.86	90 S	945	7.6	IE3	IE3	78.9	80.0	78.5	0.70	1.96	2.2	4.6	2.6	43	55	1LE1003-0EC0	16	0.0040	13
1.1	1.3	90 L	940	11.0	IE3	-	81.0	81.0	79.5	0.69	2.85	2.3	4.6	2.7	43	55	1LE1003-0EC4	19	0.0048	13
1.5	1.75	100 L	970	15.0	IE3	IE2	82.5	82.5	81.5	0.76	3.45	1.9	6.9	3.0	59	71	1LE1003-1AC4	30	0.014	13
2.2	2.55	112 M	970	22.0	IE3	IE2	84.3	84.3	83.3	0.8	4.7	2.3	6.8	3.4	59	71	1LE1003-1BC2	29	0.014	13
3	3.45	132 S	970	29.4	IE3	IE2	85.6	85.6	84.6	0.77	6.6	1.7	5.2	2.6	63	75	1LE1003-1CC0	43	0.029	13
4	4.55	132 M	970	39.3	IE3	IE2	86.8	86.8	85.8	0.77	8.6	1.9	5.7	2.9	63	75	1LE1003-1CC2	52	0.037	13
5.5	6.3	132 M	970	54.0	IE3	IE2	88.0	88.0	87.0	0.78	11.6	1.9	5.9	2.9	63	75	1LE1003-1CC3	52	0.037	13
7.5	8.6	160 M	980	73.0	IE3	IE2	89.1	89.9	89.3	0.76	16.0	1.9	4.9	2.3	67	79	1LE1003-1DC2	93	0.098	13
11	12.6	160 L	975	108.0	IE3	IE2	90.3	91.1	90.7	0.77	23.0	1.9	5	2.3	67	79	1LE1003-1DC4	115	0.12	13
Voltages		Motor protection		No. of poles		Frame size		Motor type		Version		Order code(s)								
Frame sizes 80 M to 90 L: use of the 360° freely rotatable terminal box for 2 and 4-pole motors²⁾																				
50 Hz	230 VΔ/400 VY	60 Hz ¹⁾	460 VY	PTC thermistor with 1 temp. sensor	6	80 M ... 90 L	1LE1003-0D ... -0E	Standard	2	2	-									
50 Hz	400 VΔ/690 VY	60 Hz ¹⁾	460 VΔ	Without	6	80 M ... 90 L	1LE1003-0D ... -0E	Standard	3	4	-									
50 Hz	400 VY	60 Hz ¹⁾	460 VY	Without	6	80 M ... 90 L	1LE1003-0D ... -0E	Standard	0	2	A	-								
Frame sizes 100 L to 160 L: use of the 4 x 90° rotatable terminal box																				
50 Hz	230 VΔ/400 VY	60 Hz ¹⁾	460 VY	Any	6	100 L ... 160 L	1LE1003-1A ... -1D	Standard	2	2	-									
50 Hz	400 VΔ/690 VY	60 Hz ¹⁾	460 VΔ	Any	6	100 L ... 160 L	1LE1003-1A ... -1D	Standard	3	4	-									
50 Hz	500 VY			Any	6	100 L ... 160 L	1LE1003-1A ... -1D	Without add. charge	2	7	-									
50 Hz	500 VΔ			Any	6	100 L ... 160 L	1LE1003-1A ... -1D	Without add. charge	4	0	-									
Further voltages ¹⁾		For price information, code numbers, order codes and descriptions, see from Page 2/38								9		0								
Types of construction		No. of poles		Frame size		Motor type		Version		Order code(s)										
Without flange		IM B3 ³⁾		6		80 M ... 160 L		1LE1003-0D ... -1D		Standard		A								
With flange		IM B5 ³⁾		6		80 M ... 160 L		1LE1003-0D ... -1D		With additional charge		F								
With standard flange		IM B14 ³⁾		6		80 M ... 160 L		1LE1003-0D ... -1D		With additional charge		K								
Further types of construction		For price information, code letters and descriptions, see from Page 2/41										...								
Motor protection		No. of poles		Frame size		Motor type		Version		Order code(s)										
Without		6		80 L ... 160 L		1LE1003-0D ... -1D		Standard		A		-								
PTC thermistor with 3 temperature sensors		6		80 L ... 160 L		1LE1003-0D ... -1D		With additional charge		B		-								
Further motor protection		For price information, code letters and descriptions, see from Page 2/49										...								
Terminal box position		No. of poles		Frame size		Motor type		Version		Order code(s)										
Terminal box at top		6		80 M ... 160 L		1LE1003-0D ... -1D		Standard		4		-								
Further terminal box positions		For price information, code numbers and descriptions, see from Page 2/51										...								
Special versions		No. of poles		Frame size		Motor type		Version		Order code(s)										
Forced-air cooled motors without ext. fan/fan cover (IC 416)		6		80 M ... 160 L		1LE1003-0D ... -1D		1LE1003-...-Z		F90 +...+...+		...								
Options		For price information, order codes and descriptions, see from Page 2/53						1LE1003-...-Z		...+...+...+		...								

¹⁾ Operating values at rated output for 60 Hz are available on request.
²⁾ For converter-fed operation of shaft heights 80 and 90, ordering with PTC thermistors and their connection to the converter is recommended.

³⁾ Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirements exist for condensation drainage holes (H03) and stamping of the type on the rating plate. The basic type IM B3, IM B5 or IM B14 is stamped as standard on the rating plate. When ordering with condensation drainage holes (H03), the type must be specified.

2

SIMOTICS SD 1LE1 Standard Motors

Motors with Premium Efficiency IE3

Self-ventilated motors
Cast-iron series 1LE1503/1LE1603 Basic/Performance Line



Selection and ordering data

Operating values at rated output														Cast-iron series		m _{IM B3} J		Torque class		
P _{rated} , 50 Hz	P _{rated} , 60 Hz	Frame size	n _{rated} , 50 Hz	n _{rated} , 60 Hz	IE class	η _{rated} , 50 Hz	η _{rated} , 60 Hz	η _{rated} , 50 Hz	η _{rated} , 60 Hz	cos φ	I _{rated} , 50 Hz	I _{LR} /I _{rated} , 50 Hz	I _{LR} /I _{rated} , 60 Hz	T _B /I _{rated} , 50 Hz	L _{pfA} , 50 Hz	L _{WA} , 50 Hz	Article No.	kg	kgm ²	CL
0.37	0.5	71 M	2850	1.2	IE3	73.8	73.2	69.6	0.76	0.95	3.5	5.8	3.5	52	63	▲ 1LE1 5 03-0CA2	13	0.00045	16	
0.55	0.75	71 M	2860	1.8	IE3	77.8	77.4	74.3	0.76	1.34	3.5	6.1	3.5	52	63	▲ 1LE1 5 03-0CA3	14.5	0.00056	16	
0.75	1	80 M	2850	2.5	IE3	80.7	82.0	81.5	0.86	1.56	2.6	6.2	3.0	60	71	▲ 1LE1 5 03-0DA2	18	0.0011	16	
1.1	1.5	80 M	2885	3.6	IE3	82.7	82.7	81.7	0.85	2.25	2.8	7.4	3.8	60	71	▲ 1LE1 5 03-0DA3	21	0.0013	16	
1.5	2	90 S	2910	4.9	IE3	84.2	84.5	83.5	0.86	3	2.7	8.1	4.2	65	77	▲ 1LE1 5 03-0EA0	25.5	0.0021	16	
2.2	3	90 L	2920	7.2	IE3	85.9	86.8	86.1	0.88	4.2	2.6	8.3	4.0	65	77	▲ 1LE1 5 03-0EA4	32	0.0031	16	
3	3.45	100 L	2920	9.8	IE3	87.1	87.1	86.1	0.88	5.6	2.8	8.0	4.3	67	79	1LE1 03-1AA4	36	0.0054	16	
4	4.55	112 M	2950	12.9	IE3	88.1	88.1	87.1	0.89	7.4	1.9	7.5	3.9	69	81	1LE1 03-1BA2	45	0.012	16	
5.5	6.3	132 S	2950	17.8	IE3	89.2	89.2	88.2	0.90	9.9	1.8	7.4	3.6	68	80	1LE1 03-1CA0	58	0.024	16	
7.5	8.6	132 S	2950	24.3	IE3	90.1	90.1	89.1	0.92	13.1	1.9	8.3	3.9	68	80	1LE1 03-1CA1	73	0.031	16	
11	12.6	160 M	2955	35.5	IE3	91.2	91.2	90.2	0.89	19.6	2.4	7.9	3.8	70	82	1LE1 03-1DA2	100	0.053	16	
15	17.3	160 M	2960	48.4	IE3	91.9	91.9	90.9	0.87	27.0	2.7	8.7	4.3	70	82	1LE1 03-1DA3	110	0.061	16	
18.5	21.3	160 L	2955	60.0	IE3	92.4	92.4	91.4	0.90	32.0	2.8	9.0	4.2	70	82	1LE1 03-1DA4	127	0.068	16	
22	24.5	180 M	2950	71	IE3	92.7	93.0	92.4	0.89	38.5	2.5	7.5	3.5	73	80	1LE1 03-1EA2	160	0.080	16	
30	33.5	200 L	2955	97	IE3	93.3	93.7	93.3	0.87	53	2.5	6.6	3.3	73	80	1LE1 03-2AA4	225	0.13	16	
37	41.5	200 L	2955	120	IE3	93.7	94.1	93.8	0.88	65	2.5	6.6	3.2	74	81	1LE1 03-2AA5	250	0.16	16	
45	51	225 M	2960	145	IE3	94.0	94.5	94.4	0.89	78	2.4	6.9	3.3	73	87	1LE1 03-2BA2	315	0.26	16	
55	62	250 M	2975	177	IE3	94.3	94.5	93.9	0.89	95	2.3	6.7	3.1	73	87	1LE1 03-2CA2	385	0.46	13	
75	84	280 S	2975	241	IE3	94.7	94.8	94.1	0.89	128	2.4	6.8	3.0	74	88	1LE1 03-2DA0	510	0.77	13	
90	101	280 M	2975	289	IE3	95.0	95.1	94.6	0.90	152	2.4	7.2	3.1	74	88	1LE1 03-2DA2	590	0.94	13	
110	123	315 S	2982	352	IE3	95.2	95.4	94.9	0.91	183	2.4	7.1	3.1	75	89	1LE1 03-3AA0	750	1.4	13	
132	148	315 M	2982	423	IE3	95.4	95.5	95.2	0.91	220	2.5	7.2	3.1	75	89	1LE1 03-3AA2	880	1.6	13	
160	180	315 L	2982	512	IE3	95.6	95.7	95.2	0.92	265	2.8	7.8	3.3	77	91	1LE1 03-3AA4	980	1.9	13	
200	224	315 L	2982	640	IE3	95.8	95.9	95.5	0.92	330	2.5	7.2	3.0	77	91	1LE1 03-3AA5	1150	2.3	13	

Relubrication	Motor protection	Fan cover	Bearing size	Converted operation, motor mode	Liability for defects	Version	Order code(s)
Optional (standard from FS 280 upwards)	Optional	Plastic	62 (63 from FS 280 upwards)	up to 500 V	12 months	5	
Standard from FS 160 (optional for FS 100 to 132)	Standard PTC	Steel	63	Up to 500 V	36 months	6	
Types of construction		No. of poles	Frame size	Motor type	Version	Order code(s)	
Without flange	IM B3 ³⁾	2	71 M ... 315 L	1LE1 03-0C ... -3A	Standard	A	
With flange	IM B5 ³⁾	2	71 M ... 315 M	1LE1 03-0C ... -3A	With additional charge	F	
Further types of construction		For price information, code letters and descriptions, see from Page 2/45					...
Motor protection		No. of poles	Frame size	Motor type	Version	Order code(s)	
Without PTC thermistor with 3 temperature sensors	Only possible for Basic Line	2	71 M ... 315 L	1LE1503-0C ... -3A	Standard	A	
	Performance Line	2	71 M ... 315 L	1LE1603-0C ... -3A	Standard	B	
Further motor protection		For price information, code letters and descriptions, see from Page 2/50					...
Terminal box position		No. of poles	Frame size	Motor type	Version	Order code(s)	
Terminal box at top		2	71 M ... 315 L	1LE1 03-0C ... -3A	Standard	4	
Further terminal box positions		For price information, code numbers and descriptions, see from Page 2/52					
Special versions		No. of poles	Frame size	Motor type	Version	Order code(s)	
Options		For price information, order codes and descriptions, see from Page 2/58					1LE1 03- ... -Z ... + ... + ... + ...

1) Operating values at rated output for 60 Hz are available on request.
2) Parallel supply lines are required in the case of connection to ≤ 240 V. For frame size 315 with connection to ≤ 240 V, due to the high current, a drilled, removable entry plate (Order code **R52**) or a larger terminal box (Order code **R50**) can be used. Order codes **R52** and **R50** alter the motor dimensions.

3) Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirement exists for stamping of the type on the rating plate. The basic type IM B3, IM B5 or IM B14 is stamped as standard on the rating plate. If mounted in a different position, the position must be specified to ensure that the condensation drainage holes are positioned correctly.

SIMOTICS SD 1LE1 Standard Motors

Motors with Premium Efficiency IE3



Self-ventilated motors
Cast-iron series 1LE1503/1LE1603 Basic/Performance Line

Selection and ordering data (continued)

Operating values at rated output														Cast-iron series		m _{IM B3} J		Torque class		
P _{rated} , 50 Hz	P _{rated} , 60 Hz	Frame size	n _{rated} , 50 Hz	T _{rated} , 50 Hz	IE class	η _{rated} , 50 Hz	η _{rated} , 50 Hz	η _{rated} , 50 Hz	cos φ, rated	I _{rated} , 50 Hz	T _{Lr} /I _r	I _{Lr} /I _r	T _B /I _r	L _{pfA} , 50 Hz	L _{WA} , 50 Hz	1LE1503 – Basic Line	1LE1603 – Performance Line	kg	kgm ²	CL
														IE3 version in accordance with IEC 60034-30						
														Article No.				▲ New		
0.25	0.33	71 M	1395	1.7	IE3	73.5	73.6	70.3	0.72	0.68	2.5	4.2	2.6	44	55	▲ 1LE1 5 03-0CB2	13	0.00095	16	
0.37	0.5	71 M	1410	2.5	IE3	77.3	76.5	72.7	0.69	1	2.6	4.5	2.8	44	55	▲ 1LE1 5 03-0CB3	16	0.0014	16	
0.55	0.75	80 M	1440	3.6	IE3	81.3	82.0	80.2	0.78	1.25	2.1	5.9	3.1	53	64	▲ 1LE1 5 03-0DB2	18.5	0.0021	16	
0.75	1	80 M	1450	4.9	IE3	82.5	82.3	80.0	0.75	1.75	2.7	7.1	3.9	53	64	▲ 1LE1 5 03-0DB3	22.5	0.0029	16	
1.1	1.5	90 S	1440	7.3	IE3	84.1	84.6	83.5	0.78	2.4	2.9	6.9	3.6	56	68	▲ 1LE1 5 03-0EB0	25	0.0036	16	
1.5	2	90 L	1445	9.9	IE3	85.3	85.9	84.9	0.80	3.15	2.6	7.2	2.7	56	68	▲ 1LE1 5 03-0EB4	31	0.0049	16	
2.2	2.55	100 L	1465	14.3	IE3	86.7	86.7	85.7	0.83	4.4	2.1	7.6	3.6	60	72	1LE1 03-1AB4	40	0.014	16	
3	3.45	100 L	1460	19.6	IE3	87.7	87.7	86.7	0.83	5.9	2.3	7.3	3.7	60	72	1LE1 03-1AB5	40	0.014	16	
4	4.55	112 M	1460	26	IE3	88.6	88.6	87.6	0.82	7.9	2.4	7.1	3.7	58	70	1LE1 03-1BB2	46	0.017	16	
5.5	6.3	132 S	1470	35.7	IE3	89.6	89.6	88.6	0.84	10.5	2.1	7.2	3.4	64	76	1LE1 03-1CB0	74	0.046	16	
7.5	8.6	132 M	1470	48.7	IE3	90.4	90.4	89.4	0.84	14.3	2.4	7.4	3.5	64	76	1LE1 03-1CB2	80	0.046	16	
11	12.6	160 M	1475	71.0	IE3	91.4	91.4	90.4	0.82	21.0	2.2	6.9	3.2	65	77	1LE1 03-1DB2	109	0.083	16	
15	17.3	160 L	1475	97	IE3	92.1	92.1	91.1	0.82	28.5	2.5	8.5	3.8	65	77	1LE1 03-1DB4	127	0.099	16	
18.5	21.3	180 M	1470	120	IE3	92.6	93.2	93.2	0.82	35	2.5	6.9	3.3	66	73	1LE1 03-1EB2	165	0.13	16	
22	25.3	180 L	1470	143	IE3	93.0	93.7	93.7	0.83	41	2.5	6.8	3.3	68	75	1LE1 03-1EB4	170	0.14	16	
30	34.5	200 L	1470	195	IE3	93.6	94.3	94.4	0.84	55	2.6	6.9	3.1	65	72	1LE1 03-2AB5	240	0.22	16	
37	42.5	225 S	1478	239	IE3	93.9	94.5	94.4	0.86	66	2.5	6.4	2.7	65	78	1LE1 03-2BB0	285	0.42	16	
45	52	225 M	1478	291	IE3	94.2	94.9	95.1	0.86	80	2.6	6.4	2.7	65	78	1LE1 03-2BB2	320	0.47	16	
55	63	250 M	1482	354	IE3	94.6	95.1	95.0	0.87	96	2.5	6.8	2.9	66	79	1LE1 03-2CB2	420	0.85	16	
75	86	280 S	1485	482	IE3	95.0	95.3	95.0	0.86	133	2.5	6.9	3.0	69	83	1LE1 03-2DB0	570	1.4	16	
90	104	280 M	1485	579	IE3	95.2	95.5	95.3	0.87	157	2.6	7.2	3.0	70	84	1LE1 03-2DB2	670	1.7	16	
110	127	315 S	1488	706	IE3	95.4	95.8	95.5	0.87	191	2.6	6.8	2.9	70	84	1LE1 03-3AB0	760	2.2	16	
132	152	315 M	1490	846	IE3	95.6	95.9	95.9	0.87	230	2.8	7.3	3.0	73	87	1LE1 03-3AB2	960	2.9	16	
160	184	315 L	1490	1025	IE3	95.8	96.1	96.1	0.87	275	2.9	7.3	3.1	73	87	1LE1 03-3AB4	990	3.1	16	
200	230	315 L	1488	1284	IE3	96.0	96.3	96.1	0.88	340	3.2	7.4	3.0	73	87	1LE1 03-3AB5	1190	3.7	16	

Relubrication		Motor protection		Fan cover		Bearing size		Converted operation, motor mode		Liability for defects					
Basic Line	Optional (standard from FS 280 upwards)	Optional	Plastic	62 (63 from FS 280 upwards)	Up to 500 V	12 months	5								
Performance Line	Standard from FS 160 (optional for FS 100 to 132)	Standard PTC	Steel	63	Up to 500 V	36 months	6								
Voltages ²⁾		No. of poles		Frame size		Motor type		Version						Order code(s)	
50 Hz	230 VΔ/400 VY	60 Hz ¹⁾	460 VY	4	71 M ... 315 L	1LE1 03-0C ... -3A	Standard	2	2						
50 Hz	400 VΔ/690 VY	60 Hz ¹⁾	460 VΔ	4	71 M ... 315 L	1LE1 03-0C ... -3A	Standard	3	4						
50 Hz	500 VY			4	71 M ... 315 L	1LE1 03-0C ... -3A	Without add. charge	2	7						
50 Hz	500 VΔ			4	71 M ... 315 L	1LE1 03-0C ... -3A	Without add. charge	4	0						
Further voltages ¹⁾		For price information, code numbers, order codes and descriptions, see from Page 2/40										9	0	...	
Types of construction		No. of poles		Frame size		Motor type		Version						Order code(s)	
Without flange	IM B3 ³⁾	4	71 M ... 315 L	1LE1 03-0C ... -3A	Standard	A									
With flange	IM B5 ³⁾	4	71 M ... 315 M	1LE1 03-0C ... -3A	With additional charge	F									
Further types of construction		For price information, code letters and descriptions, see from Page 2/45												...	
Motor protection		No. of poles		Frame size		Motor type		Version						Order code(s)	
Without PTC thermistor with 3 temperature sensors	Only possible for Basic Line	4	71 M ... 315 L	1LE1503-0C ... -3A	Standard	A									
	Basic Line	4	71 M ... 315 L	1LE1503-0C ... -3A	With additional charge	B									
	Performance Line	4	71 M ... 315 L	1LE1603-0C ... -3A	Standard	B									
Further motor protection		For price information, code letters and descriptions, see from Page 2/50												...	
Terminal box position		No. of poles		Frame size		Motor type		Version						Order code(s)	
Terminal box at top		4	71 M ... 315 L	1LE1 03-0C ... -3A	Standard	4									
Further terminal box positions		For price information, code numbers and descriptions, see from Page 2/52													
Special versions		No. of poles		Frame size		Motor type								Order code(s)	
Options		For price information, order codes and descriptions, see from Page 2/58										1LE1 03-	...	-Z	...+...+...+...

1) Operating values at rated output for 60 Hz are available on request.

2) Parallel supply lines are required in the case of connection to ≤ 240 V. For frame size 315 with connection to ≤ 240 V, due to the high current, a drilled, removable entry plate (Order code R52) or a larger terminal box (Order code R50) can be used. Order codes R52 and R50 alter the motor dimensions.

3) Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirement exists for stamping of the type on the rating plate. The basic type IM B3, IM B5 or IM B14 is stamped as standard on the rating plate. If mounted in a different position, the position must be specified to ensure that the condensation drainage holes are positioned correctly.



SIMOTICS SD 1LE1 Standard Motors

Motors with Premium Efficiency IE3

Self-ventilated motors
Cast-iron series 1LE1503/1LE1603 Basic/Performance Line



Selection and ordering data (continued)

P _{rated} 50 Hz	P _{rated} 60 Hz 1)	Frame size	Operating values at rated output		IE class	η _{rated} 50 Hz	η _{rated} 50 Hz	η _{rated} 50 Hz	COS φ _{rated} 50 Hz	I _{rated} 50 Hz	I _L /I _{rated} 50 Hz	I _L /I _{rated} 50 Hz	I _B /I _{rated} 50 Hz	L _{pfA} 50 Hz	L _{WA} 50 Hz	Cast-iron series	m _{IM B3}	J	Torque class
			50 Hz	60 Hz															

• Cooling: self-ventilated (IC 411)
• Efficiency: Premium Efficiency IE3, service factor (SF) 1.15
• Insulation: thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B)
6-pole: 1000 rpm at 50 Hz, 1200 rpm at 60 Hz 1)

kW	kW	FS	rpm	Nm	50 Hz	60 Hz	%	%	%	A						Article No.	kg	kgm ²	CL	
0.18	0.25	71 M	885	1.9	IE3	63.9	64.6	60.8	0.69	0.59	2.3	2.8	2.3	39	50	▲ 1LE1 5 03-0CC2	12.5	0.0010	16	
0.25	0.33	71 M	900	2.7	IE3	68.6	69.3	65.7	0.67	0.79	2.7	3.1	2.8	39	50	▲ 1LE1 5 03-0CC3	15.5	0.0015	16	
0.37	0.5	80 M	940	3.8	IE3	74.8	74.3	70.5	0.66	1.08	2.3	4.2	2.7	42	53	▲ 1LE1 5 03-0DC2	18.5	0.0025	13	
0.55	0.75	80 M	935	5.6	IE3	77.2	77.2	75.5	0.67	1.53	2.5	4.5	2.8	42	53	▲ 1LE1 5 03-0DC3	22.5	0.0031	13	
0.75	1	90 S	945	7.6	IE3	78.9	80.0	78.5	0.70	1.96	2.2	4.6	2.6	43	55	▲ 1LE1 5 03-0EC0	26.5	0.0040	13	
1.1	1.5	90 L	940	11.0	IE3	81.0	81.0	79.5	0.69	2.85	2.3	4.6	2.7	43	55	▲ 1LE1 5 03-0EC4	32	0.0048	13	
1.5	1.75	100 L	970	15	IE3	IE2	82.5	82.5	81.5	0.76	3.45	1.9	6.9	3.0	59	71	1LE1 03-1AC4	34	0.014	13
2.2	2.55	112 M	970	22	IE3	IE2	84.3	84.3	83.3	0.80	4.7	2.3	6.8	3.4	59	71	1LE1 03-1BC2	47	0.014	13
3	3.45	132 S	970	29.4	IE3	IE2	85.6	85.6	84.6	0.77	6.6	1.7	5.2	2.6	63	75	1LE1 03-1CC0	68	0.029	13
4	4.55	132 M	970	39.3	IE3	IE2	86.8	86.8	85.8	0.77	8.6	1.9	5.7	2.9	63	75	1LE1 03-1CC2	68	0.037	13
5.5	6.3	132 M	970	54.0	IE3	IE2	88.0	88.0	87.0	0.78	11.6	1.9	5.9	2.9	63	75	1LE1 03-1CC3	81	0.037	13
7.5	8.6	160 M	980	73.0	IE3	IE2	89.1	89.9	89.3	0.76	16.0	1.9	4.9	2.3	67	79	1LE1 03-1DC2	120	0.098	13
11	12.6	160 L	975	108	IE3	IE2	90.3	91.1	90.7	0.77	23.0	1.9	5	2.3	67	79	1LE1 03-1DC4	149	0.122	13
15	18	180 L	975	147	IE3	IE2	91.2	92.4	92.6	0.80	29.5	2.3	5.9	2.8	61	68	1LE1 03-1EC4	180	0.19	16
18.5	22	200 L	978	181	IE3	IE2	91.7	92.5	92.5	0.79	37	2.5	5.6	2.6	64	71	1LE1 03-2AC4	215	0.28	16
22	26.5	200 L	978	215	IE3	IE2	92.2	93.1	93.3	0.79	43.5	2.5	5.6	2.6	61	68	1LE1 03-2AC5	230	0.32	16
30	36	225 M	982	292	IE3	IE2	92.9	93.6	93.5	0.83	56	2.6	6.6	3.0	64	77	1LE1 03-2BC2	325	0.67	16
37	44.5	250 M	985	359	IE3	IE2	93.3	94.0	94.0	0.85	67	2.7	7.0	2.9	62	75	1LE1 03-2CC2	405	1.0	16
45	54	280 S	988	435	IE3	IE2	93.7	94.3	94.2	0.85	82	3.0	6.8	2.8	60	74	1LE1 03-2DC0	510	1.4	16
55	66	280 M	988	532	IE3	IE2	94.1	94.5	94.2	0.85	99	3.2	7.2	3.0	60	74	1LE1 03-2DC2	560	1.6	16
75	90	315 S	990	723	IE3	IE3	94.6	94.7	94.1	0.84	136	2.6	7.5	3.1	63	78	1LE1 03-3AC0	750	2.6	16
90	108	315 M	991	867	IE3	IE2	94.9	95.1	94.7	0.85	161	2.5	6.7	2.8	63	78	1LE1 03-3AC2	890	3.1	16
110	132	315 L	991	1060	IE3	IE2	95.1	95.3	95.1	0.84	199	2.8	7.2	3.0	63	78	1LE1 03-3AC4	990	3.9	16
132	158	315 L	991	1272	IE3	IE2	95.4	95.3	94.5	0.84	240	2.7	7.2	3.0	67	82	1LE1 03-3AC5	1110	4.4	16
160	192	315 L	991	1542	IE3	IE2	95.6	95.8	95.4	0.83	290	3.3	7.7	3.5	67	82	1LE1 03-3AC6	1160	4.6	16

Relubrication	Motor protection	Fan cover	Bearing size	Converted operation, motor mode	Liability for defects	Version	Order code(s)	
Optional (standard from FS 280 upwards)	Optional	Plastic	62 (63 from FS 280 upwards)	Up to 500 V	12 months	5		
Standard from FS 160 (optional for FS 100 to 132)	Standard PTC	Steel	63	Up to 500 V	36 months	6		
Types of construction		No. of poles	Frame size	Motor type	Version	Order code(s)		
Without flange	IM B3 ³⁾	6	71 M ... 315 L	1LE1 03-0C ... -3A	Standard	2 2	-	
With flange	IM B5 ³⁾	6	71 M ... 315 M	1LE1 03-0C ... -3A	Standard	3 4	-	
Further types of construction		For price information, code letters and descriptions, see from Page 2/45					2 7	-
Further types of construction		For price information, code letters and descriptions, see from Page 2/45					4 0	-
Further types of construction		For price information, code letters and descriptions, see from Page 2/45					9 0	...
Motor protection		No. of poles	Frame size	Motor type	Version	Order code(s)		
Without PTC thermistor with 3 temperature sensors	Only possible for Basic Line	6	71 M ... 315 L	1LE1503-0C ... -3A	Standard	A	-	
Further motor protection	Basic Line	6	71 M ... 315 L	1LE1503-0C ... -3A	With additional charge	B	-	
Further motor protection	Performance Line	6	71 M ... 315 L	1LE1603-0C ... -3A	Standard	B	-	
Further motor protection		For price information, code letters and descriptions, see from Page 2/50						...
Terminal box position		No. of poles	Frame size	Motor type	Version	Order code(s)		
Terminal box at top		6	71 M ... 315 L	1LE1 03-0C ... -3A	Standard	4	-	
Further terminal box positions		For price information, code numbers and descriptions, see from Page 2/52						
Special versions		No. of poles	Frame size	Motor type	Order code(s)			
Options		For price information, order codes and descriptions, see from Page 2/58					1LE1 03- ... -Z ... + ... + ... + ...	

1) Operating values at rated output for 60 Hz are available on request.
 2) Parallel supply lines are required in the case of connection to ≤ 240 V. For frame size 315 with connection to ≤ 240 V, due to the high current, a drilled, removable entry plate (Order code R52) or a larger terminal box (Order code R50) can be used. Order codes R52 and R50 alter the motor dimensions.
 3) Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirement exists for stamping of the type on the rating plate. The basic type IM B3, IM B5 or IM B14 is stamped as standard on the rating plate. If mounted in a different position, the position must be specified to ensure that the condensation drainage holes are positioned correctly.

SIMOTICS GP 1LE1 Standard Motors

Motors with Standard Efficiency IE1

Self-ventilated or forced-air cooled motors
Aluminum series 1LE1002



IE1

Selection and ordering data

P _{rated} , 50 Hz	P _{rated} , 60 Hz 1)	Frame size	Operating values at rated output											Aluminum series 1LE1002 – IE1 version in accordance with IEC 60034-30 Article No.	m _{IM B3} J	Torque class			
			η _{rated} , 50 Hz	η _{rated} , 50 Hz	IE class	η _{rated} , 50 Hz, 4/4	η _{rated} , 50 Hz, 3/4	η _{rated} , 50 Hz, 2/4	COS φ rated, 4/4	I _r rated, 50 Hz, 400 V	T _{LR} /I _r rated, 50 Hz	I _R /I _r rated, 50 Hz	T _B /I _r rated, 50 Hz				L _{pfA} , 50 Hz	L _{WA} , 50 Hz	
kW	kW	FS	rpm	Nm	%	%	%	A								kg	kgm ²	CL	
• Cooling: self-ventilated (IC 411) or with order code F90 forced-air cooled without external fan and fan cover (IC 416) • Efficiency: Standard Efficiency IE1, service factor (SF) 1.1 • Insulation: thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B)																			
2-pole: 3000 rpm at 50 Hz, 3600 rpm at 60 Hz ¹⁾																			
3	3.45	100 L	2835	10	IE1	81.5	82.8	82.1	0.87	6.1	3.2	6.2	2.9	67	79	1LE1002-1AA4	20	0.0034	16
4	4.55	112 M	2930	13	IE1	83.1	83.8	82.2	0.86	8.1	2.7	7.3	3.7	69	81	1LE1002-1BA2	25	0.0067	16
5.5	6.3	132 S	2905	18	IE1	84.7	85.7	85.0	0.89	10.5	1.9	5.6	2.5	68	80	1LE1002-1CA0	35	0.013	16
7.5	8.6	132 S	2925	24	IE1	86.0	86.9	85.8	0.87	14.5	2.1	6.3	3.2	68	80	1LE1002-1CA1	40	0.016	16
11	12.6	160 M	2925	36	IE1	87.6	87.6	86.1	0.85	21.5	2.0	5.8	2.6	70	82	1LE1002-1DA2	60	0.030	16
15	17.3	160 M	2930	49	IE1	88.7	89.0	88.0	0.84	29	2.5	6.1	3.1	70	82	1LE1002-1DA3	68	0.036	16
18.5	21.3	160 L	2935	60	IE1	89.3	90.0	89.7	0.86	35	2.5	7.0	3.2	70	82	1LE1002-1DA4	78	0.044	16
4-pole: 1500 rpm at 50 Hz, 1800 rpm at 60 Hz ¹⁾																			
2.2	2.55	100 L	1425	15	IE1	79.7	80.5	78.5	0.81	4.9	2.2	5.1	2.3	60	72	1LE1002-1AB4	18	0.0059	16
3	3.45	100 L	1425	20	IE1	81.5	83.0	82.3	0.85	6.3	2.4	5.4	2.6	60	72	1LE1002-1AB5	22	0.0078	16
4	4.55	112 M	1435	27	IE1	83.1	84.5	84.0	0.85	8.2	2.2	5.3	2.6	58	70	1LE1002-1BB2	27	0.010	16
5.5	6.3	132 S	1450	36	IE1	84.7	85.7	84.9	0.82	11.2	2.3	5.7	2.7	64	76	1LE1002-1CB0	38	0.019	16
7.5	8.6	132 M	1450	49	IE1	86.0	86.9	86.3	0.82	15.2	2.6	6.6	3.1	64	76	1LE1002-1CB2	44	0.024	16
11	12.6	160 M	1460	72	IE1	87.6	88.0	86.6	0.82	22	2.3	6.4	3.1	65	77	1LE1002-1DB2	62	0.044	16
15	17.3	160 L	1460	98	IE1	88.7	89.3	88.3	0.82	30	2.5	7.0	3.4	65	77	1LE1002-1DB4	73	0.056	16
6-pole: 1000 rpm at 50 Hz, 1200 rpm at 60 Hz ¹⁾																			
1.5	1.75	100 L	940	15	IE1	75.2	76.0	72.4	0.74	3.9	2.0	4.0	2.2	59	71	1LE1002-1AC4	19	0.0065	16
2.2	2.55	112 M	930	23	IE1	77.7	78.8	76.9	0.75	5.4	2.3	4.1	2.5	57	69	1LE1002-1BC2	25	0.0092	16
3	3.45	132 S	955	30	IE1	79.7	80.2	77.7	0.74	7.3	2.0	4.6	2.6	63	75	1LE1002-1CC0	34	0.017	16
4	4.55	132 M	950	40	IE1	81.4	82.9	82.1	0.76	9.3	2.1	4.7	2.5	63	75	1LE1002-1CC2	39	0.021	16
5.5	6.3	132 M	950	55	IE1	83.1	84.6	84.0	0.75	12.7	2.5	5.2	2.8	63	75	1LE1002-1CC3	48	0.027	16
7.5	8.6	160 M	970	74	IE1	84.7	85.4	85.0	0.73	17.5	2.1	5.5	2.9	67	79	1LE1002-1DC2	72	0.056	16
11	12.6	160 L	965	109	IE1	86.4	86.4	85.4	0.77	24	1.9	5.9	2.7	67	79	1LE1002-1DC4	92	0.078	16
8-pole: 750 rpm at 50 Hz, 900 rpm at 60 Hz ¹⁾																			
0.75	0.86	100 L	705	10	-	62.6	60.8	53.9	0.62	3.0	1.9	3.0	2.2	60	72	1LE1002-1AD4	17	0.0056	16
1.1	1.27	100 L	705	15	-	65.5	64.2	60.0	0.63	3.9	2.0	3.2	2.3	60	72	1LE1002-1AD5	22	0.0078	16
1.5	1.75	112 M	700	20	-	71.6	72.2	68.5	0.65	4.7	1.6	3.3	1.9	63	75	1LE1002-1BD2	29	0.0094	16
2.2	2.55	132 S	715	29	-	76.8	77.4	75.2	0.66	6.3	1.7	3.9	2.4	63	75	1LE1002-1CD0	37	0.019	16
3	3.45	132 M	715	40	-	76.6	77.8	75.8	0.66	8.6	1.8	3.9	2.2	63	75	1LE1002-1CD2	44	0.024	16
4	4.55	160 M	720	53	-	78.3	78.5	75.6	0.69	10.7	1.7	3.8	2.3	63	75	1LE1002-1DB2	60	0.044	16
5.5	6.3	160 M	720	73	-	81.7	82.5	81.4	0.70	13.9	1.6	4.0	2.2	63	75	1LE1002-1DD3	72	0.056	16
7.5	8.6	160 L	715	100	-	83.5	84.5	83.6	0.70	18.5	1.7	3.8	2.2	63	75	1LE1002-1DD4	91	0.077	16
Voltages			No. of poles		Frame size	Motor type		Version		Order code(s)									
50 Hz	230 VΔ/400 VY	60 Hz ¹⁾	460 VY	2, 4, 6, 8	100 L ... 160 L	1LE1002-1A ... -1D	Standard	2	2	-									
50 Hz	400 VΔ/690 VY	60 Hz ¹⁾	460 VΔ	2, 4, 6, 8	100 L ... 160 L	1LE1002-1A ... -1D	Standard	3	4	-									
50 Hz	500 VY			2, 4, 6, 8	100 L ... 160 L	1LE1002-1A ... -1D	Without add. charge	2	7	-									
50 Hz	500 VΔ			2, 4, 6, 8	100 L ... 160 L	1LE1002-1A ... -1D	Without add. charge	4	0	-									
Further voltages ¹⁾			For price information, code numbers, order codes and descriptions, see from Page 2/38					9	0	...									
Types of construction			No. of poles		Frame size	Motor type		Version		Order code(s)									
Without flange			IM B3 ²⁾		2, 4, 6, 8	100 L ... 160 L	1LE1002-1A ... -1D	Standard	A	-									
With flange			IM B5 ²⁾		2, 4, 6, 8	100 L ... 160 L	1LE1002-1A ... -1D	With additional charge	F	-									
With standard flange			IM B14 ²⁾		2, 4, 6, 8	100 L ... 160 L	1LE1002-1A ... -1D	With additional charge	K	-									
Further types of construction			For price information, code letters and descriptions, see from Page 2/41							...									
Motor protection			No. of poles		Frame size	Motor type		Version		Order code(s)									
Without					2, 4, 6, 8	100 L ... 160 L	1LE1002-1A ... -1D	Standard	A	-									
PTC thermistor with 3 temperature sensors					2, 4, 6, 8	100 L ... 160 L	1LE1002-1A ... -1D	With additional charge	B	-									
Further motor protection			For price information, code letters and descriptions, see from Page 2/49							...									
Terminal box position			No. of poles		Frame size	Motor type		Version		Order code(s)									
Terminal box at top					2, 4, 6, 8	100 L ... 160 L	1LE1002-1A ... -1D	Standard	4	-									
Further terminal box positions			For price information, code numbers and descriptions, see from Page 2/51																
Special versions			No. of poles		Frame size	Motor type		Version		Order code(s)									
Forced-air cooled motors without ext. fan/fan cover (IC 416)					100 L ... 160 L	1LE1002-1A ... -1D		1LE1002- ...	-Z	F90 + . . . + . . .									
Options			For price information, order codes and descriptions, see from Page 2/53					1LE1002- ...	-Z	. . . + . . . + . . .									

¹⁾ Operating values at rated output for 60 Hz are available on request.

²⁾ Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirements exist for condensation drainage holes (H03)

and stamping of the type on the rating plate. The basic type IM B3, IM B5 or IM B14 is stamped as standard on the rating plate. When ordering with condensation drainage holes (H03), the type must be specified.

2

SIMOTICS GP 1LE1 Standard Motors

Motors with Standard Efficiency IE1



IE1

Self-ventilated motors
Aluminum series 1LE1002 with increased output

Selection and ordering data

Operating values at rated output															Aluminum series		m _{IM B3} J		Torque class
P _{rated} , 50 Hz	P _{rated} , 60 Hz 1)	Frame size	n _{rated} , 50 Hz	T _{rated} , 50 Hz	IE class	η _{rated} , 50 Hz, 4/4	η _{rated} , 50 Hz, 3/4	η _{rated} , 50 Hz, 2/4	COSφ _{rated} , 50 Hz, 4/4	I _{rated} , 50 Hz, 400 V	I _L /I _{rated} , 50 Hz	I _R /I _{rated} , 50 Hz	T _B /T _{rated} , 50 Hz	L _{pfA} , 50 Hz	L _{WA} , 50 Hz	1LE1002 – IE1 version in accordance with IEC 60034-30 with increased output Article No.	kg	kgm ²	CL
kW	kW	FS	rpm	Nm		%	%	%		A				dB(A)	dB(A)				
<ul style="list-style-type: none"> Cooling: self-ventilated (IC 411) Efficiency: Standard Efficiency IE1, (SF) 1.1 Insulation: thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B) 																			
2-pole: 3000 rpm at 50 Hz, 3600 rpm at 60 Hz 1)																			
4	4.55	100 L	2850	13	IE1	83.1	84.8	84.5	0.85	8.2	4.5	7.0	4.1	67	79	1LE1002-1AA6	25	0.0044	16
5.5	6.3	112 M	2935	18	IE1	84.7	85.5	84.7	0.86	10.9	2.9	7.5	3.8	69	81	1LE1002-1BA6	31	0.0085	16
11	12.6	132 M	2920	36	IE1	87.6	89.0	88.8	0.90	20	2.8	7.5	3.7	68	80	1LE1002-1CA6	53	0.022	16
22	24.5	160 L	2935	72	IE1	89.9	90.6	90.3	0.90	39	2.8	7.5	3.2	70	82	1LE1002-1DA6	85	0.049	16
4-pole: 1500 rpm at 50 Hz, 1800 rpm at 60 Hz 1)																			
4	4.55	100 L	1435	27	IE1	83.1	83.8	82.8	0.81	8.6	3.2	6.5	3.1	60	72	1LE1002-1AB6	27	0.010	16
5.5	6.3	112 M	1420	37	IE1	84.7	86.5	86.4	0.81	11.6	3.0	5.8	3.1	58	70	1LE1002-1BB6	33	0.012	16
11	12.6	132 M	1450	72	IE1	87.6	88.8	88.7	0.84	21.5	2.5	7.2	3.0	64	76	1LE1002-1CB6	58	0.033	16
18.5	21.3	160 L	1460	121	IE1	89.3	90.4	89.9	0.85	35	2.7	7.2	3.2	65	77	1LE1002-1DB6	85	0.068	16
6-pole: 1000 rpm at 50 Hz, 1200 rpm at 60 Hz 1)																			
2.2	2.55	100 L	930	22	IE1	77.7	78.5	77.5	0.78	5.2	2.0	4.0	2.2	59	71	1LE1002-1AC6	24	0.0084	16
3	3.45	112 M	945	30	IE1	79.7	79.7	76.6	0.72	7.5	2.5	4.6	2.6	57	69	1LE1002-1BC6	32	0.013	16
7.5	8.6	132 M	950	75	IE1	84.7	84.2	82.6	0.74	17.3	2.8	5.3	3.0	63	75	1LE1002-1CC6	54	0.032	16
15	17.3	160 L	965	148	IE1	87.7	88.2	86.8	0.75	33	2.9	6.0	3.4	67	79	1LE1002-1DC6	109	0.094	16
Voltagess			No. of poles		Frame size		Motor type		Version						Order code(s)				
50 Hz	230 VΔ/400 VY	60 Hz 1)	460 VY	2, 4, 6	100 L ... 160 L	1LE1002-1A ... -1D	Standard	2	2					-					
50 Hz	400 VΔ/690 VY	60 Hz 1)	460 VΔ	2, 4, 6	100 L ... 160 L	1LE1002-1A ... -1D	Standard	3	4					-					
50 Hz	500 VY			2, 4, 6	100 L ... 160 L	1LE1002-1A ... -1D	Without add. charge	2	7					-					
50 Hz	500 VΔ			2, 4, 6	100 L ... 160 L	1LE1002-1A ... -1D	Without add. charge	4	0					-					
Further voltagess 1)			For price information, code numbers, order codes and descriptions, see from Page 2/38													9 0		...	
Types of construction			No. of poles		Frame size		Motor type		Version						Order code(s)				
Without flange		IM B3 2)		2, 4, 6	100 L ... 160 L	1LE1002-1A ... -1D	Standard	A							-				
With flange		IM B5 2)		2, 4, 6	100 L ... 160 L	1LE1002-1A ... -1D	With additional charge	F							-				
With standard flange		IM B14 2)		2, 4, 6	100 L ... 160 L	1LE1002-1A ... -1D	With additional charge	K							-				
Further types of construction			For price information, code letters and descriptions, see from Page 2/41													...			
Motor protection			No. of poles		Frame size		Motor type		Version						Order code(s)				
Without				2, 4, 6	100 L ... 160 L	1LE1002-1A ... -1D	Standard	A							-				
PTC thermistor with 3 temperature sensors				2, 4, 6	100 L ... 160 L	1LE1002-1A ... -1D	With additional charge	B							-				
Further motor protection			For price information, code letters and descriptions, see from Page 2/49													...			
Terminal box position			No. of poles		Frame size		Motor type		Version						Order code(s)				
Terminal box at top				2, 4, 6	100 L ... 160 L	1LE1002-1A ... -1D	Standard	4							-				
Further terminal box positions			For price information, code numbers and descriptions, see from Page 2/51																
Special versions			No. of poles		Frame size		Motor type		Version						Order code(s)				
Options			For price information, order codes and descriptions, see from Page 2/53													1LE1002-... -Z		...+...+...+...	

1) Operating values at rated output for 60 Hz are available on request.
 2) Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirements exist for condensation drainage holes (H03) and stamping of the type on the rating plate. The basic type IM B3, IM B5 or IM B14 is stamped as standard on the rating plate. When ordering with condensation drainage holes (H03), the type must be specified.

SIMOTICS GP 1PC1 Standard Motors

Motors with Standard Efficiency IE1

Naturally cooled motors without external fan Aluminum series 1PC1002



IE1

Selection and ordering data

P _{rated} , P _{rated} 50 Hz 60 Hz 1)		Frame size	Operating values at rated output										Aluminum series 1PC1002 – IE1 version in accordance with IEC 60034-30		m _M B3 J	Torque class	
n _{rated} , 50 Hz	T _{rated} , 50 Hz	IE class	η _{rated} , 50 Hz, 4/4	η _{rated} , 50 Hz, 3/4	η _{rated} , 50 Hz, 2/4	cos φ _{rated} , 50 Hz, 4/4	I _{rated} , 50 Hz, 400 V	T _{LR} / I _{rated} , 50 Hz	I _{LR} / I _{rated} , 50 Hz	T _β / I _{rated} , 50 Hz	L _{pA} , 50 Hz	L _{WA} , 50 Hz	Article No.	kg	kgm ²	CL	
kW	kW	FS	rpm	Nm	%	%	%	A									
• Cooling: naturally cooled without external fan (IC 410) • Efficiency: Standard Efficiency IE1, service factor (SF) 1.1 • Insulation: thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B) 2-pole: 3000 rpm at 50 Hz, 3600 rpm at 60 Hz ¹⁾																	
1.2	–	100 L	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1002-1AA4	20	0.0034	16	
1.6	–	112 M	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1002-1BA2	25	0.0067	13	
2.2	–	132 S	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1002-1CA0	35	0.013	10	
3	–	132 S	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1002-1CA1	40	0.016	13	
4.4	–	160 M	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1002-1DA2	60	0.030	13	
6	–	160 M	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1002-1DA3	68	0.036	16	
7.4	–	160 L	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1002-1DA4	78	0.044	16	
4-pole: 1500 rpm at 50 Hz, 1800 rpm at 60 Hz ¹⁾																	
0.88	–	100 L	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1002-1AB4	18	0.0059	13	
1.2	–	100 L	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1002-1AB5	22	0.0078	13	
1.6	–	112 M	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1002-1BB2	27	0.010	13	
2.2	–	132 S	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1002-1CB0	38	0.019	13	
3	–	132 M	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1002-1CB2	44	0.024	16	
4.4	–	160 M	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1002-1DB2	62	0.044	13	
6	–	160 L	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1002-1DB4	73	0.056	16	
6-pole: 1000 rpm at 50 Hz, 1200 rpm at 60 Hz ¹⁾																	
0.6	–	100 L	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1002-1AC4	19	0.0065	10	
0.88	–	112 M	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1002-1BC2	25	0.0092	13	
1.2	–	132 S	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1002-1CC0	34	0.017	10	
1.6	–	132 M	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1002-1CC2	39	0.021	13	
2.2	–	132 M	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1002-1CC3	48	0.027	13	
3	–	160 M	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1002-1DC2	72	0.056	13	
4.4	–	160 L	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1002-1DC4	92	0.078	13	
8-pole: 750 rpm at 50 Hz, 900 rpm at 60 Hz ¹⁾																	
0.3	–	100 L	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1002-1AD4	17	0.0056	10	
0.44	–	100 L	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1002-1AD5	22	0.0078	10	
0.6	–	112 M	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1002-1BD2	25	0.0094	10	
0.88	–	132 S	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1002-1CD0	37	0.019	10	
1.2	–	132 M	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1002-1CD2	44	0.024	10	
1.6	–	160 M	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1002-1DD2	60	0.044	10	
2.2	–	160 M	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1002-1DD3	72	0.056	10	
3	–	160 L	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	O.R.	1PC1002-1DD4	91	0.077	10	
Voltagess			No. of poles	Frame size	Motor type	Version											Order code(s)
50 Hz	230 VΔ/400 VY	60 Hz ¹⁾	460 VY	2, 4, 6, 8	100 L ... 160 L	1PC1002-1A ... -1D	Standard	2	2								–
50 Hz	400 VΔ/690 VY	60 Hz ¹⁾	460 VΔ	2, 4, 6, 8	100 L ... 160 L	1PC1002-1A ... -1D	Standard	3	4								–
50 Hz	500 VY			2, 4, 6, 8	100 L ... 160 L	1PC1002-1A ... -1D	Without add. charge	2	7								–
50 Hz	500 VΔ			2, 4, 6, 8	100 L ... 160 L	1PC1002-1A ... -1D	Without add. charge	4	0								–
Further voltages ¹⁾			For price information, code numbers, order codes and descriptions, see from Page 2/38														
Types of construction			No. of poles	Frame size	Motor type	Version											Order code(s)
Without flange			IM B3 ²⁾	2, 4, 6, 8	100 L ... 160 L	1PC1002-1A ... -1D	Standard	A									–
With flange			IM B5 ²⁾	2, 4, 6, 8	100 L ... 160 L	1PC1002-1A ... -1D	With additional charge	F									–
With standard flange			IM B14 ²⁾	2, 4, 6, 8	100 L ... 160 L	1PC1002-1A ... -1D	With additional charge	K									–
Further types of construction			For price information, code letters and descriptions, see from Page 2/41														
Motor protection			No. of poles	Frame size	Motor type	Version											Order code(s)
Without				2, 4, 6, 8	100 L ... 160 L	1PC1002-1A ... -1D	Standard	A									–
PTC thermistor with 3 temperature sensors				2, 4, 6, 8	100 L ... 160 L	1PC1002-1A ... -1D	With additional charge	B									–
Further motor protection			For price information, code letters and descriptions, see from Page 2/49														
Terminal box position			No. of poles	Frame size	Motor type	Version											Order code(s)
Terminal box at top				2, 4, 6, 8	100 L ... 160 L	1PC1002-1A ... -1D	Standard	4									–
Further terminal box positions			For price information, code numbers and descriptions, see from Page 2/51														
Special versions			No. of poles	Frame size	Motor type											Order code(s)	
Options			For price information, order codes and descriptions, see from Page 2/53														
			1PC1002-....-Z ...+...+...+...														

Note: The rated outputs and weights may change slightly after they have been checked. Further electrical data can be calculated and supplied on receipt of order.

¹⁾ Operating values at rated output for 60 Hz are available on request.

²⁾ Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirements exist for condensation drainage holes (H03)

and stamping of the type on the rating plate. The basic type IM B3, IM B5 or IM B14 is stamped as standard on the rating plate. When ordering with condensation drainage holes (H03), the type must be specified.

2

SIMOTICS GP 1LE1 Standard Motors – Eagle Line

NEMA Energy Efficient MG1 motors, Table 12-11

Self-ventilated or forced-air cooled motors
Aluminum series 1LE1021



Selection and ordering data

P _{rated} , P _{rated} 50 Hz 60 Hz		Frame size	Operating values at rated output										Aluminum series		m _{IM B3} J		Torque class		
n _{rated} , n _{rated} 60 Hz 60 Hz	EISA CC No. CC032A	n _{rated} , n _{rated} 60 Hz, 60 Hz	η _{rated} , η _{rated} 60 Hz, 60 Hz	η _{rated} , η _{rated} 60 Hz, 60 Hz	η _{rated} , η _{rated} 60 Hz, 60 Hz	cos φ _{rated} 4/4	I _{rated} , I _{rated} 60 Hz, 460 V	T _{rated} , T _{rated} 60 Hz	I _{FL} /I _{rated} 60 Hz	I _{FL} /I _{rated} 60 Hz	T _B /T _{rated} 60 Hz	L _{pFA} , L _{pFA} 60 Hz	L _{WA} , L _{WA} 60 Hz	Article No.	kg	kgm ²	CL		
kW	hp	FS	rpm	Nm	%	%	%	A				dB(A)	dB(A)						
2-pole: 3000 rpm at 50 Hz, 3600 rpm at 60 Hz																			
0.75	1	80 M	3445	2.1	–	75.5	75.5	72.5	0.83	1.5	2.1	6.0	3.0	64	75	1LE1021-0DA2	9	0.0008	16
1.1	1.5	80 M	3465	3.0	–	82.5	82.5	81.5	0.82	2.05	3.1	7.2	3.8	64	75	1LE1021-0DA3	11	0.0011	16
1.5	2	90 S	3505	4.1	–	84.0	84.0	83.0	0.82	2.75	3.1	8.5	4.5	69	81	1LE1021-0EA0	13	0.0017	16
2.2	3	90 L	3510	6.0	–	85.5	85.5	84.5	0.83	3.9	3.0	8.7	4.6	69	81	1LE1021-0EA4	15	0.0021	16
3	4	100 L	3520	8.1	–	87.5	87.3	86.2	0.83	5.2	2.6	8.1	3.8	71	83	1LE1021-1AA4	21	0.0044	16
4	5	112 M	3565	9.9	✓	87.5	87.4	85.8	0.84	6.3	2.9	9.3	4.0	73	85	1LE1021-1BA2	27	0.0092	16
5.5	7.5	132 S	3555	15	✓	88.5	88.3	88.1	0.86	9.1	2.0	7.6	3.3	72	84	1LE1021-1CA0	39	0.020	16
7.5	10	132 S	3560	20	✓	89.5	89.6	89.6	0.87	12.1	2.3	8.2	3.6	72	84	1LE1021-1CA1	43	0.024	16
11	15	160 M	3560	30	✓	90.2	89.6	87.8	0.86	17.8	2.4	8.2	3.6	77	89	1LE1021-1DA2	67	0.045	16
15	20	160 M	3565	40	✓	90.2	89.9	88.0	0.87	24	2.8	8.4	3.9	77	89	1LE1021-1DA3	75	0.053	16
18.5	25	160 L	3565	50	✓	91.0	90.5	89.4	0.87	29.5	3.3	8.9	4.1	77	89	1LE1021-1DA4	84	0.061	16
4-pole: 1500 rpm at 50 Hz, 1800 rpm at 60 Hz																			
0.55	0.75	80 M	1750	3.0	–	80.0	80.0	79.0	0.74	1.17	2.4	5.7	3.3	55	66	1LE1021-0DB2	10	0.0017	16
0.75	1	80 M	1750	4.1	–	82.5	82.5	81.5	0.72	1.58	2.5	6.8	3.8	55	66	1LE1021-0DB3	11	0.0021	16
1.1	1.5	90 S	1740	6.0	–	84.0	84.0	83.0	0.74	2.2	2.7	7.0	3.6	58	70	1LE1021-0EB0	13	0.0028	16
1.5	2	90 L	1745	8.2	–	84.0	84.0	83.0	0.75	3.0	2.9	7.5	4.0	58	70	1LE1021-0EB4	16	0.0036	16
2.2	3	100 L	1760	12	–	87.5	87.5	86.5	0.78	4.05	2.5	8.1	3.9	62	74	1LE1021-1AB4	21	0.0086	16
3	4	100 L	1765	16	–	87.5	88.3	87.1	0.79	5.4	2.4	8.3	3.7	62	74	1LE1021-1AB5	25	0.011	16
4	5	112 M	1770	20	✓	87.5	87.0	86.0	0.77	6.9	3.0	8.7	4.0	62	74	1LE1021-1BB2	29	0.014	16
5.5	7.5	132 S	1770	30	✓	89.5	89.6	88.3	0.78	9.9	2.6	8.0	3.3	68	80	1LE1021-1CB0	42	0.027	16
7.5	10	132 M	1770	40	✓	89.5	90.3	89.5	0.82	12.8	2.7	8.0	3.4	68	80	1LE1021-1CB2	49	0.034	16
11	15	160 M	1775	59	✓	91.0	91.3	90.5	0.84	18.1	2.5	7.7	3.2	69	81	1LE1021-1DB2	71	0.065	16
15	20	160 L	1780	80	✓	91.0	90.7	89.9	0.84	24.5	2.6	8.5	3.4	69	81	1LE1021-1DB4	83	0.083	16
Voltages (≤ 600 V) ¹⁾																			
50 Hz 230 VΔ/400 VY			60 Hz 460 VY			No. of poles	Frame size	Motor type	Version					Order code(s)					
50 Hz 400 VΔ			60 Hz 460 VΔ			2, 4	80 M ... 160 L	1LE1021-0D ... -1D	Standard	2	2			–					
50 Hz 500 VY						2, 4	80 M ... 160 L	1LE1021-0D ... -1D	Standard	3	4			–					
50 Hz 500 VΔ						2, 4	80 M ... 160 L	1LE1021-0D ... -1D	Without add. charge	2	7			–					
Further voltages						2, 4	80 M ... 160 L	1LE1021-0D ... -1D	Without add. charge	4	0			–					
										9	0			...					
Types of construction ²⁾																			
With flange			IM B5 ³⁾			No. of poles	Frame size	Motor type	Version					Order code(s)					
						2, 4	80 M ... 160 L	1LE1021-0D ... -1D	With additional charge	F			–						
With standard flange			IM B14 ³⁾			2, 4	80 M ... 160 L	1LE1021-0D ... -1D	With additional charge	K			–						
Further types of construction													...						
Motor protection																			
Without						No. of poles	Frame size	Motor type	Version					Order code(s)					
PTC thermistor with 3 temperature sensors						2, 4	80 M ... 160 L	1LE1021-0D ... -1D	Standard	A			–						
Further motor protection						2, 4	80 M ... 160 L	1LE1021-0D ... -1D	With additional charge	B			–						
													...						
Terminal box position																			
Terminal box at top						No. of poles	Frame size	Motor type	Version					Order code(s)					
						2, 4	80 M ... 160 L	1LE1021-0D ... -1D	Standard	4			–						
Further terminal box positions													...						
Special versions																			
Forced-air cooled motors without ext. fan/fan cover (IC 416)						No. of poles	Frame size	Motor type	Version					Order code(s)					
Options						2, 4	80 M ... 160 L	1LE1021-0D ... -1D	1LE1021-... -Z F90 +... +... +...					1LE1021-... -Z ... +... +... +...					
													...						

- Not required
- ✓ available

¹⁾ Operating voltages only ≤ 600 V admissible in accordance with MG1 Table 12-11.
²⁾ Types of construction with feet are not possible for 2-pole, 4-pole and 6-pole motors ≤ 200 hp in accordance with MG1 Table 12-11.

³⁾ Types derived from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirements exist for condensation drainage holes (H03) and stamping of the type on the rating plate. The basic type IM B5 or IM B14 is stamped as standard on the rating plate. When ordering with condensation drainage holes (H03), the type must be specified.

SIMOTICS GP 1LE1 Standard Motors – Eagle Line

NEMA Energy Efficient MG1 motors, Table 12-11



Self-ventilated or forced-air cooled motors
Aluminum series 1LE1021

Selection and ordering data (continued)

Operating values at rated output															Aluminum series			
P_{rated} , 50 Hz	P_{rated} , 60 Hz	Frame size	n_{rated} , 60 Hz	T_{rated} , 60 Hz	EISA CC No. CC032A	η_{rated} , 60 Hz, 4/4	η_{rated} , 60 Hz, 3/4	η_{rated} , 60 Hz, 2/4	$\cos\phi$ rated, 60 Hz, 4/4	I_{rated} , 60 Hz, 460 V	$T_{LR}/$ T_{rated} , 60 Hz	$I_{LR}/$ I_{rated} , 60 Hz	$T_{\beta}/$ T_{rated} , 60 Hz	L_{pFA} , 60 Hz	L_{WA} , 60 Hz	Article No.	$m_{IM B3}$ J	Tor- que class
kW	hp	FS	rpm	Nm		%	%	%	A							kg	kgm ²	CL
• Cooling: self-ventilated (IC 411) or with order code F90 forced-air cooled without external fan and fan cover (IC 416) • Efficiency: NEMA Energy Efficient, UL, CSA and service factor (SF) 1.15 – for operation in the USA and Canada, not admissible for exporting to Mexico • Insulation: thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B)																		
6-pole: 1000 rpm at 50 Hz, 1200 rpm at 60 Hz																		
0.37	0.5	80 M	1140	3.1	–	75.3	74.1	69.5	0.63	0.98	2.3	4.6	2.9	45	56	1LE1021-0DC2	9	0.0017 16
0.55	0.75	80 M	1135	4.6	–	77.0	77.5	74.0	0.61	1.47	2.9	5.2	3.6	45	56	1LE1021-0DC3	12	0.0025 16
0.75	1	90 S	1155	6.2	–	80.0	80.0	79.0	0.69	1.98	2.2	5.3	3.0	46	58	1LE1021-0EC0	16	0.0040 16
1.1	1.5	100 L	1175	12.0	–	85.5	85.5	84.5	0.73	2.8	2.3	6.8	3.3	62	74	1LE1021-1AC3	25	0.011 16
1.5	2	100 L	1175	12	–	86.5	86.0	84.4	0.69	3.15	2.3	7.0	3.4	62	74	1LE1021-1AC4	25	0.011 16
2.2	3	112 M	1170	18	✓	87.5	87.4	85.9	0.73	4.3	2.3	7.3	3.4	60	72	1LE1021-1BC2	29	0.014 16
3	4	132 S	1175	24	–	87.5	87.6	85.9	0.70	6.1	1.8	6.5	3.0	67	79	1LE1021-1CC0	38	0.024 13
4	5	132 M	1180	30	✓	87.5	88.3	87.0	0.73	7.3	2.1	6.6	3.2	67	79	1LE1021-1CC2	43	0.029 13
5.5	7.5	132 M	1175	45	✓	89.5	89.7	88.7	0.74	10.4	2.0	7.1	3.2	67	79	1LE1021-1CC3	52	0.037 16
7.5	10	160 M	1180	61	✓	89.5	89.6	88.4	0.73	14.4	2.1	5.4	2.5	70	82	1LE1021-1DC2	77	0.075 16
11	15	160 L	1180	89	✓	90.2	90.5	89.5	0.74	20.5	2.2	5.5	2.5	70	82	1LE1021-1DC4	93	0.098 16
Voltagess (≤ 600 V) ¹⁾																		
						No. of poles	Frame size	Motor type	Version						Order code(s)			
50 Hz	230 VΔ/400 VY	60 Hz	460 VY	6	80 M ... 160 L	1LE1021-0D ... -1D	Standard	2 2						–				
50 Hz	400 VΔ	60 Hz	460 VΔ	6	80 M ... 160 L	1LE1021-0D ... -1D	Standard	3 4						–				
50 Hz	500 VY			6	80 M ... 160 L	1LE1021-0D ... -1D	Without add. charge	2 7						–				
50 Hz	500 VΔ			6	80 M ... 160 L	1LE1021-0D ... -1D	Without add. charge	4 0						–				
Further voltages										9 0						...		
For price information, code numbers, order codes and descriptions, see from Page 2/38																		
Types of construction ²⁾																		
				No. of poles	Frame size	Motor type	Version						Order code(s)					
With flange		IM B5 ³⁾		6	80 M ... 160 L	1LE1021-0D ... -1D	With additional charge	F						–				
With standard flange		IM B14 ³⁾		6	80 M ... 160 L	1LE1021-0D ... -1D	With additional charge	K						–				
Further types of construction															...			
For price information, code letters and descriptions, see from Page 2/41																		
Motor protection																		
				No. of poles	Frame size	Motor type	Version						Order code(s)					
Without				6	80 M ... 160 L	1LE1021-0D ... -1D	Standard	A						–				
PTC thermistor with 3 temperature sensors				6	80 M ... 160 L	1LE1021-0D ... -1D	With additional charge	B						–				
Further motor protection															...			
For price information, code letters and descriptions, see from Page 2/49																		
Terminal box position																		
				No. of poles	Frame size	Motor type	Version						Order code(s)					
Terminal box at top				6	80 M ... 160 L	1LE1021-0D ... -1D	Standard	4						–				
Further terminal box positions															...			
For price information, code numbers and descriptions, see from Page 2/51																		
Special versions																		
				No. of poles	Frame size	Motor type	Version						Order code(s)					
Forced-air cooled motors without ext. fan/fan cover (IC 416)				6	100 L ... 160 L	1LE1021-0D ... -1D	1LE1021- ... -Z	F90						...				
Options							1LE1021- ... -Z						...					
For price information, order codes and descriptions, see from Page 2/53																		

– Not required
✓ available

¹⁾ Operating voltages only ≤ 600 V admissible in accordance with MG1 Table 12-11.
²⁾ Types of construction with feet are not possible for 2-pole, 4-pole and 6-pole motors ≤ 200 hp in accordance with MG1 Table 12-11.

³⁾ Types derived from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirements exist for condensation drainage holes (H03) and stamping of the type on the rating plate. The basic type IM B5 or IM B14 is stamped as standard on the rating plate. When ordering with condensation drainage holes (H03), the type must be specified.



SIMOTICS SD 1LE1 Standard Motors – Eagle Line

NEMA Energy Efficient MG1 motors, Table 12-11

Self-ventilated motors
Cast-iron series 1LE1521/1LE1621 Basic/Performance Line



Selection and ordering data

P _{rated} 50 Hz	P _{rated} 60 Hz	Frame size	Operating values at rated output										Cast-iron series 1LE1521 – Basic Line 1LE1621 – Performance Line NEMA Energy Efficient version Article No.	m _{IM} B3 J	Torque class				
			η _{rated} 60 Hz	T _{rated} 60 Hz	EISA CC No. CC032A	η _{rated} 60 Hz, 4/4	η _{rated} 60 Hz, 3/4	η _{rated} 60 Hz, 2/4	cos φ _{rated} 4/4	I _{rated} 60 Hz, 460 V	T _{LR} / I _{rated}	I _{LR} / I _{rated}				T _B / I _{rated}	L _{pfA} 60 Hz	L _{WA} 60 Hz	
kW	hp	FS	rpm	Nm	%	%	%	A											
0.37	0.5	71 M	3410	1.0	–	72.0	71.2	67.6	0.77	0.84	2.9	5.1	3.0	57	68	▲ 1LE1 5 21-0CA2	11.5	0.00035	16
0.55	0.75	71 M	3420	1.5	–	74.0	73.3	69.2	0.76	1.23	3.4	5.4	3.4	57	68	▲ 1LE1 5 21-0CA3	13	0.00045	16
0.75	1	80 M	3445	2.1	✓	75.5	75.5	72.5	0.83	1.5	2.1	6.0	3.0	64	75	▲ 1LE1 5 21-0DA2	16	0.0008	16
1.1	1.5	80 M	3465	3.0	✓	82.5	82.5	81.5	0.82	2.05	3.1	7.2	3.8	64	75	▲ 1LE1 5 21-0DA3	18	0.0011	16
1.5	2	90 S	3505	4.1	✓	84.0	84.0	83.0	0.82	2.75	3.1	8.5	4.5	69	81	▲ 1LE1 5 21-0EA0	23	0.0017	16
2.2	3	90 L	3510	6.0	✓	85.5	85.5	84.5	0.83	3.9	3.0	8.7	4.6	69	81	▲ 1LE1 5 21-0EA4	25.5	0.0021	16
3	4	100 L	3520	8.1	–	87.5	87.3	86.2	0.83	5.2	2.6	8.1	3.8	71	83	1LE1 21-1AA4	32	0.0044	16
4	5	112 M	3565	9.9	✓	87.5	87.4	85.8	0.84	6.3	2.9	9.3	4.0	73	85	1LE1 21-1BA2	39	0.0092	16
5.5	7.5	132 S	3555	15	✓	88.5	88.3	88.1	0.86	9.1	2.0	7.6	3.3	72	84	1LE1 21-1CA0	57	0.020	16
7.5	10	132 S	3560	20	✓	89.5	89.6	89.6	0.87	12.1	2.3	8.2	3.6	72	84	1LE1 21-1CA1	61	0.024	16
11	15	160 M	3560	30	✓	90.2	89.6	87.8	0.86	17.8	2.4	8.2	3.6	77	89	1LE1 21-1DA2	96	0.045	16
15	20	160 M	3565	40	✓	90.2	89.9	88.0	0.87	24	2.8	8.4	3.9	77	89	1LE1 21-1DA3	104	0.053	16
18.5	25	160 L	3555	50	✓	91.0	90.5	89.4	0.87	29.5	3.3	8.9	4.1	77	89	1LE1 21-1DA4	113	0.061	16
22	30	180 M	3550	60	✓	91.0	91.0	89.6	0.86	36	3.0	8.4	4.1	74	88	1LE1 21-1EA2	145	0.069	16
30	40	200 L	3565	80	✓	91.7	91.2	89.6	0.86	44.5	2.9	7.7	3.8	76	89	1LE1 21-2AA4	200	0.13	16
37	50	200 L	3565	100	✓	92.4	92.1	91.0	0.87	58	3.3	8.1	3.8	78	91	1LE1 21-2AA5	225	0.15	16
45	60	225 M	3570	120	✓	93.0	92.7	91.3	0.88	69	3.1	8.7	3.8	77	90	1LE1 21-2BA2	295	0.23	16
55	75	250 M	3575	149	–	93.0	92.5	91.0	0.89	85	2.4	7.4	3.5	80	94	1LE1 21-2CA2	360	0.40	13
75	100	280 S	3580	199	–	93.6	92.9	91.1	0.87	115	2.8	7.7	3.5	81	95	1LE1 21-2DA0	490	0.71	13
90	125	280 M	3578	249	✓	94.5	94.2	93.1	0.88	141	2.7	7.9	3.4	81	95	1LE1 21-2DA2	530	0.83	13
110	150	315 S	3585	298	✓	94.5	94.0	92.5	0.90	165	2.6	7.9	3.3	82	96	1LE1 21-3AA0	720	1.3	13
132	175	315 M	3585	348	–	95.0	94.7	93.6	0.91	190	2.7	8.1	3.4	82	96	1LE1 21-3AA2	880	1.6	13
150	200	315 L	3585	397	✓	95.0	94.6	93.3	0.92	215	2.9	8.3	3.5	84	99	1LE1 21-3AA4	930	1.8	13
185	250	315 L	3585	497	✓	95.4	95.2	94.2	0.92	265	3.5	8.9	3.5	84	99	1LE1 21-3AA5	1130	2.2	13

Relubrication	Motor protection	Fan cover	Bearing size	Converter-fed operation, motor mode	Liability for defects	Version	Order code(s)
Basic Line	Optional (standard from FS 280 upwards)	Optional	Plastic	62 (63 from FS 280 upwards)	Up to 500 V 12 months	5	–
Performance Line	Standard from FS 160 (optional for FS 100 to 132)	Standard PTC	Steel	63	Up to 500 V 36 months	6	–
Voltages (≤ 600 V) ¹⁾		No. of poles	Frame size	Motor type	Version	Order code(s)	
50 Hz	230 VΔ/400 VY	60 Hz	460 VY	2	71 M ... 315 L	1LE1 21-0C ... -3A	Standard
50 Hz	400 VΔ	60 Hz	460 VΔ	2	71 M ... 315 L	1LE1 21-0C ... -3A	Standard
50 Hz	500 VY	2	71 M ... 315 L	1LE1 21-0C ... -3A	Without add. charge	2 2	–
50 Hz	500 VΔ	2	71 M ... 315 L	1LE1 21-0C ... -3A	Without add. charge	3 4	–
Further voltages	For price information, code numbers, order codes and descriptions, see from Page 2/40					2 7	–
Further voltages	For price information, code numbers, order codes and descriptions, see from Page 2/40					4 0	–
Further voltages	For price information, code numbers, order codes and descriptions, see from Page 2/40					9 0	...
Types of construction ²⁾		No. of poles	Frame size	Motor type	Version	Order code(s)	
Without flange	IM B3 ³⁾	2	315 L > 200 hp	1LE1 21-3AA5	Standard	A	–
With flange	IM B5 ³⁾	2	71 M ... 315 M	1LE1 21-0C ... -3A	With additional charge	F	–
With standard flange	IM B14 ³⁾	2	71 M ... 160 L	1LE1 21-0C ... -1D	With additional charge	K	–
Further types of construction	For price information, code letters and descriptions, see from Page 2/45					–	...
Motor protection		No. of poles	Frame size	Motor type	Version	Order code(s)	
Without PTC thermistor with 3 temperature sensors	Only possible for Basic Line	2	71 M ... 315 L	1LE1521-0C ... -3A	Standard	A	–
Further motor protection	Basic Line	2	71 M ... 315 L	1LE1521-0C ... -3A	With additional charge	B	–
Further motor protection	Performance Line	2	71 M ... 315 L	1LE1621-0C ... -3A	Standard	B	–
Further motor protection	Performance Line	2	71 M ... 315 L	1LE1621-0C ... -3A	With additional charge	–	...
Terminal box position		No. of poles	Frame size	Motor type	Version	Order code(s)	
Terminal box at top	–	2	71 M ... 315 L	1LE1 21-0C ... -3A	Standard	4	–
Further terminal box positions	For price information, code numbers and descriptions, see from Page 2/52					–	Order code(s)
Special versions		No. of poles	Frame size	Motor type	Version	Order code(s)	
Options	For price information, order codes and descriptions, see from Page 2/58					1LE1 21-... -Z	...+...+...+...

- Not required
- ✓ available

1) Operating voltages only ≤ 600 V admissible in accordance with MG1 Table 12-11. Parallel supply lines are required in the case of connection to ≤ 240 V. For frame size 315 with connection to ≤ 240 V, due to the high current, a drilled, removable entry plate (Order code R52) or a larger terminal box (Order code R50) can be used. Order codes R52 and R50 alter the motor dimensions.

2) Types of construction with feet are not possible for 2-pole, 4-pole and 6-pole motors ≤ 200 hp in accordance with MG1 Table 12-11.

3) Types derived from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirement exists for stamping of the type on the rating plate. The basic type IM B5 or IM B14 is stamped as standard on the rating plate. If mounted in a different position, the position must be specified to ensure that the condensation drainage holes are positioned correctly.

SIMOTICS SD 1LE1 Standard Motors – Eagle Line

NEMA Energy Efficient MG1 motors, Table 12-11



Self-ventilated motors
Cast-iron series 1LE1521/1LE1621 Basic/Performance Line

Selection and ordering data (continued)

P _{rated} 50 Hz	P _{rated} 60 Hz	Frame size	Operating values at rated output			EISA CC No. CC032A	η _{rated} 60 Hz	η _{rated} 60 Hz	η _{rated} 60 Hz	cos φ _{rated} 60 Hz	I _{rated} 60 Hz	T _{LR} 60 Hz	I _{LR} 60 Hz	T _P 60 Hz	L _{pfA} 60 Hz	L _{WA} 60 Hz	Cast-iron series 1LE1521 – Basic Line 1LE1621 – Performance Line NEMA Energy Efficient version Article No.	m _{IM} B3 J	Torque class
			n _{rated} 60 Hz	T _{rated} 60 Hz	η _{rated} 4/4														
kW	hp	FS	rpm	Nm	%	%	%	A	dB(A)	dB(A)	▲ New	kg	kgm ²	CL					
0.25	0.33	71 M	1715	1.4	–	70.0	68.5	63.5	0.64	0.7	2.8	4.4	3.1	47	58	▲ 1LE1 5 21-0CB2	12	0.00076	16
0.37	0.5	71 M	1705	2.1	–	72.0	71.5	67.5	0.67	0.96	2.8	4.4	2.8	47	58	▲ 1LE1 5 21-0CB3	13	0.00095	16
0.55	0.75	80 M	1750	3.0	–	80.0	80.0	79.0	0.74	1.17	2.4	5.7	3.3	55	66	▲ 1LE1 5 21-0DB2	17	0.0017	16
0.75	1	80 M	1750	4.1	–	82.5	82.5	81.5	0.72	1.58	2.5	6.8	3.8	55	66	▲ 1LE1 5 21-0DB3	18.5	0.0021	16
1.1	1.5	90 S	1740	6.0	–	84.0	84.0	83.0	0.74	2.2	2.7	7.0	3.6	58	70	▲ 1LE1 5 21-0EB0	23	0.0028	16
1.5	2	90 L	1745	8.2	–	84.0	84.0	83.0	0.75	3.0	2.9	7.5	4.0	58	70	▲ 1LE1 5 21-0EB4	25	0.0036	16
2.2	3	100 L	1760	12	–	87.5	87.5	86.5	0.78	4.05	2.5	8.1	3.9	62	74	1LE1 21-1AB4	32	0.0086	16
3	4	100 L	1765	16	–	87.5	88.3	87.1	0.79	5.4	2.4	8.3	3.7	62	74	1LE1 21-1AB5	37	0.011	16
4	5	112 M	1770	20	✓	87.5	87.0	86.0	0.77	6.9	3.0	8.7	4.0	62	74	1LE1 21-1BB2	46	0.014	16
5.5	7.5	132 S	1770	30	✓	89.5	89.6	88.3	0.78	9.9	2.6	8.0	3.3	68	80	1LE1 21-1CB0	61	0.027	16
7.5	10	132 M	1770	40	✓	89.5	90.3	89.5	0.82	12.8	2.7	8.0	3.4	68	80	1LE1 21-1CB2	75	0.034	16
11	15	160 M	1775	59	✓	91.0	91.3	90.5	0.84	18.1	2.5	7.7	3.2	69	81	1LE1 21-1DB2	96	0.065	16
15	20	160 L	1780	80	✓	91.0	90.7	89.9	0.84	24.5	2.6	8.5	3.4	69	81	1LE1 21-1DB4	104	0.083	16
18.5	25	180 M	1770	101	✓	92.4	92.6	91.8	0.83	31	2.8	7.7	3.9	64	77	1LE1 21-1EB2	160	0.12	16
22	30	180 L	1770	121	✓	92.4	92.5	91.8	0.83	36.5	3.0	8.4	3.9	63	76	1LE1 21-1EB4	170	0.13	16
30	40	200 L	1778	160	✓	93.0	92.9	92.2	0.84	48	3.2	8.2	3.7	66	79	1LE1 21-2AB5	230	0.20	16
37	50	225 S	1778	200	✓	93.0	93.2	92.5	0.87	58	2.7	7.2	3.3	69	82	1LE1 21-2BB0	280	0.42	16
45	60	225 M	1778	240	✓	93.6	93.8	93.1	0.86	70	3.0	7.6	3.5	69	83	1LE1 21-2BB2	305	0.46	16
55	75	250 M	1785	299	–	94.1	94.1	93.3	0.84	89	3.1	7.3	3.3	69	83	1LE1 21-2CB2	385	0.75	16
75	100	280 S	1788	398	–	94.5	94.3	93.2	0.87	114	2.7	7.6	3.2	79	92	1LE1 21-2DB0	550	1.3	16
90	125	280 M	1788	498	✓	94.5	94.3	93.3	0.87	142	2.9	8.1	3.4	78	92	1LE1 21-2DB2	570	1.4	16
110	150	315 S	1790	597	✓	95.0	94.8	93.8	0.86	172	3.1	8.0	3.3	79	93	1LE1 21-3AB0	740	2.0	16
132	175	315 M	1790	696	–	95.0	94.8	94.0	0.86	200	3.1	7.8	3.2	79	93	1LE1 21-3AB2	870	2.3	16
150	200	315 L	1790	796	✓	95.0	94.7	93.5	0.87	225	3.5	8.6	3.6	80	95	1LE1 21-3AB4	940	2.8	16
185	250	315 L	1792	994	✓	95.0	94.7	93.6	0.86	285	4.3	9.3	3.9	84	98	1LE1 21-3AB5	1140	3.5	16

Relubrication	Motor protection	Fan cover	Bearing size	Converter-fed operation, motor mode	Liability for defects	Order code(s)			
Basic Line	Optional (standard from FS 280 upwards)	Plastic	62 (63 from FS 280 upwards)	Up to 500 V 12 months	5	–			
Performance Line	Standard from FS 160 (optional for FS 100 to 132)	Standard PTC	63	Up to 500 V 36 months	6	–			
Voltages (≤ 600 V) ¹⁾		No. of poles	Frame size	Motor type	Version	Order code(s)			
50 Hz	230 VΔ/400 VY	60 Hz	460 VY	4	71 M ... 315 L	1LE1 21-0C ... -3A	Standard	2 2	–
50 Hz	400 VΔ	60 Hz	460 VΔ	4	71 M ... 315 L	1LE1 21-0C ... -3A	Standard	3 4	–
50 Hz	500 VY			4	71 M ... 315 L	1LE1 21-0C ... -3A	Without add. charge	2 7	–
50 Hz	500 VΔ			4	71 M ... 315 L	1LE1 21-0C ... -3A	Without add. charge	4 0	–
Further voltages	For price information, code numbers, order codes and descriptions, see from Page 2/40					9 0	...		
Types of construction ²⁾		No. of poles	Frame size	Motor type	Version	Order code(s)			
Without flange	IM B3 ³⁾	4	315 L > 200 hp	1LE1 21-3AB5	Standard	A	–		
With flange	IM B5 ³⁾	4	71 M ... 315 M	1LE1 21-0C ... -3A	With additional charge	F	–		
With standard flange	IM B14 ³⁾	4	71 M ... 160 L	1LE1 21-0C ... -1D	With additional charge	K	–		
Further types of construction	For price information, code letters and descriptions, see from Page 2/45					Z	...		
Motor protection		No. of poles	Frame size	Motor type	Version	Order code(s)			
Without PTC thermistor with 3 temperature sensors	Only possible for Basic Line	4	71 M ... 315 L	1LE1521-0C ... -3A	Standard	A	–		
Further motor protection	Performance Line	4	71 M ... 315 L	1LE1621-0C ... -3A	Standard	B	–		
Terminal box position	For price information, code letters and descriptions, see from Page 2/50					Z	...		
Terminal box position		No. of poles	Frame size	Motor type	Version	Order code(s)			
Terminal box at top		4	71 M ... 315 L	1LE1 21-0C ... -3A	Standard	4	–		
Further terminal box positions	For price information, code numbers and descriptions, see from Page 2/52						–		
Special versions		No. of poles	Frame size	Motor type	Version	Order code(s)			
Options	For price information, order codes and descriptions, see from Page 2/58					1LE1 21-... -Z	...+...+...+...		

- Not required
- ✓ available

1) Operating voltages only ≤ 600 V admissible in accordance with MG1 Table 12-11. Parallel supply lines are required in the case of connection to ≤ 240 V. For frame size 315 with connection to ≤ 240 V, due to the high current, a drilled, removable entry plate (Order code R52) or a larger terminal box (Order code R50) can be used. Order codes R52 and R50 alter the motor dimensions.

3) Types derived from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirement exists for stamping of the type on the rating plate. The basic type IM B5 or IM B14 is stamped as standard on the rating plate. If mounted in a different position, the position must be specified to ensure that the condensation drainage holes are positioned correctly.

2) Types of construction with feet are not possible for 2-pole, 4-pole and 6-pole motors ≤ 200 hp in accordance with MG1 Table 12-11.

2

SIMOTICS SD 1LE1 Standard Motors – Eagle Line

NEMA Energy Efficient MG1 motors, Table 12-11

Self-ventilated motors
Cast-iron series 1LE1521/1LE1621 Basic/Performance Line



Selection and ordering data (continued)

Operating values at rated output														Cast-iron series		m _{IM} B3 J		Torque class		
P _{rated} , 50 Hz	P _{rated} , 60 Hz	Frame size	n _{rated} , 60 Hz	T _{rated} , 60 Hz	EISA CC No. CC032A	η _{rated} , 60 Hz, 4/4	η _{rated} , 60 Hz, 3/4	η _{rated} , 60 Hz, 2/4	cos φ, rated, 4/4	I _{rated} , 60 Hz, 460 V	T _{LR} /I _{rated} , 60 Hz	I _{LR} /I _{rated} , 60 Hz	T _B /I _{rated} , 60 Hz	L _{pfA} , 60 Hz	L _{WA} , 60 Hz	Article No.	▲ New	kg	kgm ²	CL
kW	hp	FS	rpm	Nm	%	%	%	%	A	dB(A)	dB(A)	▲ New	kg	kgm ²	CL	kg	kgm ²	CL		
6-pole: 1000 rpm at 50 Hz, 1200 rpm at 60 Hz																				
0.18	0.25	71 M	1105	1.6	-	55.0	54.0	49.0	0.61	0.67	2.9	2.7	2.9	42	53	▲ 1LE1 5 21-0CC2	-	11.5	0.00080	16
0.25	0.33	71 M	1100	2.2	-	59.5	59.0	55.1	0.64	0.82	2.7	3.0	2.7	42	53	▲ 1LE1 5 21-0CC3	-	12.5	0.00100	16
0.37	0.5	80 M	1140	3.1	-	75.3	74.1	69.5	0.63	0.98	2.3	4.6	2.9	45	56	▲ 1LE1 5 21-0DC2	-	16.5	0.0017	16
0.55	0.75	80 M	1135	4.6	-	77.0	77.5	74.0	0.61	1.47	2.9	5.2	3.6	45	56	▲ 1LE1 5 21-0DC3	-	18.5	0.0025	16
0.75	1	90 S	1155	6.2	-	80.0	80.5	78.0	0.68	1.98	2.2	5.3	3.0	46	58	▲ 1LE1 5 21-0EC0	-	26	0.0040	16
1.1	1.5	90 L	1175	12	-	85.5	85.5	84.5	0.73	2.8	2.3	6.8	3.3	62	74	▲ 1LE1 5 21-0EC4	-	32	0.011	16
1.5	2	100 L	1175	12	-	86.5	86.0	84.4	0.69	3.15	2.3	7.0	3.4	62	74	1LE1 21-1AC4	-	36	0.011	16
2.2	3	112 M	1170	18	✓	87.5	87.4	85.9	0.73	4.3	2.3	7.3	3.4	60	72	1LE1 21-1BC2	-	41	0.014	16
3	4	132 S	1175	24	-	87.5	87.6	85.9	0.70	6.1	1.8	6.5	3.0	67	79	1LE1 21-1CC0	-	56	0.024	13
4	5	132 M	1180	30	✓	87.5	88.3	87.0	0.73	7.3	2.1	6.6	3.2	67	79	1LE1 21-1CC2	-	61	0.029	13
5.5	7.5	132 M	1175	45	✓	89.5	89.7	88.7	0.74	10.4	2.0	7.1	3.2	67	79	1LE1 21-1CC3	-	70	0.037	16
7.5	10	160 M	1180	61	✓	89.5	89.6	88.4	0.73	14.4	2.1	5.4	2.5	70	82	1LE1 21-1DC2	-	106	0.075	16
11	15	160 L	1180	89	✓	90.2	90.5	89.5	0.74	20.5	2.2	5.5	2.5	70	82	1LE1 21-1DC4	-	122	0.098	16
15	20	180 L	1178	121	✓	90.2	90.2	89.0	0.77	27	2.8	6.9	3.4	59	72	1LE1 21-1EC4	-	155	0.17	16
18.5	25	200 L	1182	151	✓	91.7	92.1	91.5	0.81	31.5	2.6	6.7	3.0	58	71	1LE1 21-2AC4	-	200	0.25	16
22	30	200 L	1182	181	✓	91.7	92.1	91.5	0.81	38	3.0	7.4	3.0	62	76	1LE1 21-2AC5	-	220	0.30	16
30	40	225 M	1182	241	✓	93.0	93.3	92.6	0.83	48.5	2.9	7.0	3.1	66	79	1LE1 21-2BC2	-	300	0.58	16
37	50	250 M	1185	301	-	93.0	93.3	92.6	0.83	61	3.3	7.3	2.8	66	79	1LE1 21-2CC2	-	370	0.86	16
45	60	280 S	1188	360	-	93.6	93.8	93.1	0.84	71	3.1	7.4	3.0	67	81	1LE1 21-2DC0	-	460	1.1	16
55	75	280 M	1188	450	-	93.6	93.9	93.4	0.85	88	3.1	7.2	2.9	67	81	1LE1 21-2DC2	-	510	1.4	16
75	100	315 S	1190	599	✓	94.1	94.1	93.2	0.83	120	2.7	7.5	3.0	67	82	1LE1 21-3AC0	-	670	2.1	16
90	125	315 M	1190	748	✓	94.1	94.4	93.5	0.84	148	2.9	7.6	3.1	68	83	1LE1 21-3BC2	-	730	2.5	16
110	150	315 L	1190	898	✓	95.0	95.0	94.6	0.85	174	3.3	8.1	3.2	69	84	1LE1 21-3AC4	-	940	3.6	16
132	175	315 L	1190	1048	-	95.0	95.0	94.4	0.85	205	3.7	9.2	3.6	69	84	1LE1 21-3AC5	-	990	4.0	16
150	200	315 L	1192	1195	✓	95.0	94.9	94.2	0.85	230	4.3	9.6	3.8	72	87	1LE1 21-3AC6	-	1160	4.7	16

Relubrication	Motor protection	Fan cover	Bearing size	Converter-fed operation, motor mode	Liability for defects	Version	Order code(s)	
Basic Line	Optional (standard from FS 280 upwards)	Optional Plastic	62 (63 from FS 280 upwards)	Up to 500 V 12 months	5			
Performance Line	Standard from FS 160 (optional for FS 100 to 132)	Standard PTC	63	Up to 500 V 36 months	6			
Voltages (≤ 600 V) ¹⁾								
50 Hz	230 V Δ/400 V Y	60 Hz	460 V Y	6	71 M ... 315 L	1LE1 21-0C ... -3A	Standard 2 2	
50 Hz	400 V Δ	60 Hz	460 V Δ	6	71 M ... 315 L	1LE1 21-0C ... -3A	Standard 3 4	
50 Hz	500 V Y			6	71 M ... 315 L	1LE1 21-0C ... -3A	Without add. charge 2 7	
50 Hz	500 V Δ			6	71 M ... 315 L	1LE1 21-0C ... -3A	Without add. charge 4 0	
Further voltages	For price information, code numbers, order codes and descriptions, see from Page 2/40						9 0	...
Types of construction ²⁾								
With flange	IM B5 ³⁾		6	71 M ... 315 M	1LE1 21-0C ... -3A	With additional charge	F -	
With standard flange	IM B14 ³⁾		6	71 M ... 160 L	1LE1 21-0C ... -1D	With additional charge	K -	
Further types of construction	For price information, code letters and descriptions, see from Page 2/45						Z	...
Motor protection								
Without PTC thermistor with 3 temperature sensors	Only possible for Basic Line		6	71 M ... 315 L	1LE1521-0C ... -3A	Standard	A -	
Further motor protection	Performance Line		6	71 M ... 315 L	1LE1621-0C ... -3A	Standard	B -	
Terminal box position	For price information, code letters and descriptions, see from Page 2/50						Z	...
Terminal box at top			6	71 M ... 315 L	1LE1 21-0C ... -3A	Standard	4 -	
Further terminal box positions	For price information, code numbers and descriptions, see from Page 2/52							
Special versions								
Options	For price information, order codes and descriptions, see from Page 2/58						1LE1 21- ... -Z ...+...+...+...	

- Not required
- ✓ available

¹⁾ Operating voltages only ≤ 600 V admissible in accordance with MG1 Table 12-11. Parallel supply lines are required in the case of connection to ≤ 240 V. For frame size 315 with connection to ≤ 240 V, due to the high current, a drilled, removable entry plate (Order code R52) or a larger terminal box (Order code R50) can be used. Order codes R52 and R50 alter the motor dimensions.

²⁾ Types of construction with feet are not possible for 2-pole, 4-pole and 6-pole motors ≤ 200 hp in accordance with MG1 Table 12-11.

³⁾ Types derived from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirement exists for stamping of the type on the rating plate. The basic type IM B5 or IM B14 is stamped as standard on the rating plate. If mounted in a different position, the position must be specified to ensure that the condensation drainage holes are positioned correctly.

SIMOTICS SD 1LE1 Standard Motors – Eagle Line

NEMA Energy Efficient MG1 motors, Table 12-11



Self-ventilated motors Cast-iron series 1LE1521/1LE1621 Basic/Performance Line

Selection and ordering data (continued)

Operating values at rated output														Cast-iron series		mM B3 J	Torque class					
P _{rated} , 50 Hz	P _{rated} , 60 Hz	Frame size	n _{rated} , 60 Hz	T _{rated} , 60 Hz	EISA CC No. CC032A	η _{rated} , 60 Hz, 4/4	η _{rated} , 60 Hz, 3/4	η _{rated} , 60 Hz, 2/4	cosφ _{rated} , 4/4	I _{rated} , 60 Hz, 460 V	T _{LR} /I _{rated} , 60 Hz	I _{LR} /I _{rated} , 60 Hz	T _p /I _{rated} , 60 Hz	L _{pfA} , 60 Hz	L _{WA} , 60 Hz			1LE1521 – Basic Line	1LE1621 – Performance Line	Article No.	kg	kgm ²	CL
kW	hp	FS	rpm	Nm	%	%	%	A														
<ul style="list-style-type: none"> Cooling: self-ventilated (IC 411) Efficiency: NEMA Energy Efficient, UL, CSA and service factor (SF) 1.15 – for operation in the USA and Canada, not admissible for exporting to Mexico Insulation: thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B) 																						
8-pole: 750 rpm at 50 Hz, 900 rpm at 60 Hz																						
11	15	180 L	875	122	✓	88.5	88.8	87.7	0.69	23	2.6	5.6	2.9	66	79	1LE1 21-1ED4	155	0.20	13			
15	20	200 L	875	163	✓	89.5	90.7	90.9	0.74	28	2.8	6.3	3.3	59	72	1LE1 21-2AD5	220	0.34	13			
18.5	25	225 S	885	201	✓	89.5	89.7	88.6	0.75	35	2.5	6.3	3.1	60	73	1LE1 21-2BD0	250	0.43	13			
22	30	225 M	885	241	✓	91.0	91.3	90.4	0.78	39.5	2.5	6.4	3.0	61	74	1LE1 21-2BD2	270	0.50	13			
30	40	250 M	885	322	✓	91.0	91.3	90.5	0.79	52	2.7	6.4	3.0	61	75	1LE1 21-2CD2	370	0.86	13			
37	50	280 S	890	400	–	91.7	91.8	90.9	0.77	66	2.5	6.1	2.6	64	78	1LE1 21-2DD0	460	1.10	16			
45	60	280 M	890	480	–	91.7	91.7	90.8	0.78	79	2.7	6.5	2.7	64	78	1LE1 21-2DD2	510	1.40	16			
55	75	315 S	890	600	–	93.0	93.0	92.1	0.79	96	2.4	6.6	2.9	70	84	1LE1 21-3AD0	640	2.00	13			
75	100	315 M	890	800	✓	93.0	93.3	92.9	0.80	126	2.5	6.7	3.0	73	87	1LE1 21-3AD2	710	2.50	16			
90	125	315 L	890	1001	✓	93.6	93.9	93.6	0.81	154	2.4	6.5	2.8	74	88	1LE1 21-3AD4	860	3.10	13			
110	150	315 L	891	1199	✓	93.6	93.9	93.6	0.81	185	2.8	7.2	3.2	72	86	1LE1 21-3AD5	980	3.90	16			
132	175	315 L	892	1398	–	94.1	94.2	93.7	0.80	220	3.2	7.9	3.7	78	93	1LE1 21-3AD6	1060	4.50	16			
Basic Line		Optional (standard from FS 280 upwards)		Motor protection	Optional	Fan cover	Plastic	Bearing size	62 (63 from FS 280 upwards)	Converter-Liability for fed operation, motor mode	Up to 500 V 12 months	5										
Performance Line		Standard from FS 160 (optional for FS 100 to 132)		Motor protection	Standard	Fan cover	Steel	Bearing size	63	Converter-Liability for fed operation, motor mode	Up to 500 V 36 months	6										
Voltages (≤ 600 V) ¹⁾				No. of poles		Frame size		Motor type		Version												Order code(s)
50 Hz	230 VΔ/400 VY	60 Hz	460 VY	6		180 L ... 315 L		1LE1 21-1E ... -3A	Standard	2 2												–
50 Hz	400 VΔ	60 Hz	460 VΔ	6		180 L ... 315 L		1LE1 21-1E ... -3A	Standard	3 4												–
50 Hz	500 VY			6		180 L ... 315 L		1LE1 21-1E ... -3A	Without add. charge	2 7												–
50 Hz	500 VΔ			6		180 L ... 315 L		1LE1 21-1E ... -3A	Without add. charge	4 0												–
Further voltages		For price information, code numbers, order codes and descriptions, see from Page 2/40										9 0										...
Types of construction ²⁾				No. of poles		Frame size		Motor type		Version												Order code(s)
With flange	IM B5 ³⁾			6		180 L ... 315 M		1LE1 21-1E ... -3A	With additional charge	F												–
With standard flange	IM B14 ³⁾			6		180 L ... 160 L		1LE1 21-1E ... -1D	With additional charge	K												–
Further types of construction		For price information, code letters and descriptions, see from Page 2/45										Z										...
Motor protection				No. of poles		Frame size		Motor type		Version												Order code(s)
Without PTC thermistor with 3 temperature sensors	Only possible for Basic Line			6		180 L ... 315 L		1LE1521-1E ... -3A	Standard	A												–
	Basic Line			6		180 L ... 315 L		1LE1521-1E ... -3A	With additional charge	B												–
	Performance Line			6		180 L ... 315 L		1LE1621-1E ... -3A	Standard	B												–
Further motor protection		For price information, code letters and descriptions, see from Page 2/50										Z										...
Terminal box position				No. of poles		Frame size		Motor type		Version												Order code(s)
Terminal box at top				6		180 L ... 315 L		1LE1 21-1E ... -3A	Standard	4												–
Further terminal box positions		For price information, code numbers and descriptions, see from Page 2/52																				
Special versions				No. of poles		Frame size		Motor type														Order code(s)
Options		For price information, order codes and descriptions, see from Page 2/58										1LE1 21- ... -Z										...+...+...+...

– Not required
✓ available

1) Operating voltages only ≤ 600 V admissible in accordance with MG1 Table 12-11. Parallel supply lines are required in the case of connection to ≤ 240 V. For frame size 315 with connection to ≤ 240 V, due to the high current, a drilled, removable entry plate (Order code R52) or a larger terminal box (Order code R50) can be used. Order codes R52 and R50 alter the motor dimensions.

2) Types of construction with feet are not possible for 2-pole, 4-pole and 6-pole motors ≤ 200 hp in accordance with MG1 Table 12-11.

3) Types derived from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirement exists for stamping of the type on the rating plate. The basic type IM B5 or IM B14 is stamped as standard on the rating plate. If mounted in a different position, the position must be specified to ensure that the condensation drainage holes are positioned correctly.



SIMOTICS GP 1LE1 Standard Motors – Eagle Line

NEMA Premium Efficient MG1 motors, Table 12-12



Self-ventilated or forced-air cooled motors
Aluminum series 1LE1023



Selection and ordering data

P _{rated} , P _{rated} 50 Hz 60 Hz		Frame size	Operating values at rated output		EISA CC No. CC032A		η _{rated} , η _{rated} , η _{rated}			cos φ	I _{rated}	T _{LR}	I _{LR}	T _B	L _{pFA}	L _{WA}	Aluminum series	m _{IM B3}	J	Torque class
kW	hp	FS	rpm	Nm	%	%	%	%	%	A	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	1LE1023 – NEMA Premium Efficient version	kg	kgm ²	CL
• Cooling: self-ventilated (IC 411) or with order code F90 forced-air cooled without external fan and fan cover (IC 416) • Efficiency: NEMA Premium Efficient, UL, CSA and service factor (SF) 1.15 – for operation in the USA, Canada and Mexico • Insulation: thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B)																				
2-pole: 3000 rpm at 50 Hz, 3600 rpm at 60 Hz																				
0.75	1	80 M	3480	2.1	✓	77.0	78.0	76.0	0.84	1.46	3.0	7.1	3.6	64	75		1LE1023-0DA2	11	0.0011	16
1.1	1.5	80 M	3500	3	✓	84.0	84.0	83.0	0.83	1.98	3.3	8.4	4.5	64	75		1LE1023-0DA3	12	0.0013	16
1.5	2	90 S	3525	4.1	✓	85.5	85.0	82.5	0.84	2.60	3.1	9.8	4.9	69	81		1LE1023-0EA0	15	0.0021	16
2.2	3	90 L	3530	6	✓	86.5	86.3	84.5	0.87	3.65	3.0	9.6	4.9	69	81		1LE1023-0EA4	19	0.0031	16
3	4	100 L	3525	8.1	–	88.5	88.5	87.5	0.87	4.90	3.8	9.7	5.5	71	83		1LE1023-1AA4	26	0.0054	16
4	5	112 M	3565	9.9	✓	88.5	88.5	87.5	0.87	6.0	3.8	10.0	5.6	73	85		1LE1023-1BA2	34	0.012	16
5.5	7.5	132 S	3555	15	✓	89.5	89.5	88.5	0.90	8.6	2.1	8.6	4.4	72	84		1LE1023-1CA0	43	0.024	16
7.5	10	132 S	3555	20	✓	90.2	90.2	89.2	0.91	11.5	2.4	9.5	4.7	72	84		1LE1023-1CA1	57	0.031	16
11	15	160 M	3560	30	✓	91.0	91.0	90.0	0.88	17.2	2.8	8.5	4.3	77	89		1LE1023-1DA2	75	0.053	16
15	20	160 M	3565	40	✓	91.0	91.0	90.0	0.86	24	3.1	9.7	4.8	77	89		1LE1023-1DA3	84	0.061	16
18.5	25	160 L	3560	50	✓	91.7	91.7	90.7	0.90	28	3.1	9.4	4.4	77	89		1LE1023-1DA4	94	0.068	16
4-pole: 1500 rpm at 50 Hz, 1800 rpm at 60 Hz																				
0.55	0.75	80 M	1750	3	–	82.5	82.2	79.4	0.74	1.15	2.7	6.9	3.8	55	66		1LE1023-0DB2	11	0.0021	16
0.75	1	80 M	1760	4.1	✓	85.5	84.5	81.0	0.71	1.53	3.1	8.3	4.7	55	66		1LE1023-0DB3	14	0.0029	16
1.1	1.5	90 S	1750	6	✓	86.5	86.3	84.1	0.75	2.10	3.4	8.2	4.4	58	70		1LE1023-0EB0	16	0.0036	16
1.5	2	90 L	1755	8.2	✓	86.5	87.0	85.0	0.77	2.85	3.0	8.4	4.3	58	70		1LE1023-0EB4	19	0.0049	16
2.2	3	100 L	1770	12	–	89.5	89.5	88.5	0.81	3.80	3.5	9.6	5.1	62	74		1LE1023-1AB4	30	0.014	16
3	4	100 L	1760	16	–	89.5	89.5	88.5	0.82	5.1	3.1	9.5	4.6	62	74		1LE1023-1AB5	30	0.014	16
4	5	112 M	1770	20	✓	89.5	89.5	88.5	0.80	6.5	2.9	8.2	4.3	62	74		1LE1023-1BB2	34	0.017	16
5.5	7.5	132 S	1780	30	✓	91.7	91.7	90.7	0.83	9.1	2.9	9.5	4.4	68	80		1LE1023-1CB0	64	0.046	16
7.5	10	132 M	1770	40	✓	91.7	91.7	90.7	0.83	12.4	2.7	9.6	4.2	68	80		1LE1023-1CB2	64	0.046	16
11	15	160 M	1775	59	✓	92.4	92.4	91.4	0.83	18	3.0	8.9	3.8	69	81		1LE1023-1DB2	83	0.083	16
15	20	160 L	1780	80	✓	93.0	93.0	91.5	0.81	25	2.9	9.5	4.3	69	81		1LE1023-1DB4	100	0.099	16
6-pole: 1000 rpm at 50 Hz, 1200 rpm at 60 Hz																				
0.37	0.5	80 M	1150	3.1	–	78.5	77.5	73.0	0.61	0.97	2.7	5.0	3.3	45	56		1LE1023-0DC2	12	0.0025	13
0.55	0.75	80 M	1145	4.6	–	81.7	81.3	78.0	0.63	1.34	2.8	5.3	3.4	45	56		1LE1023-0DC3	14	0.0031	13
0.75	1	90 S	1155	6.2	✓	82.5	82.3	79.5	0.65	1.76	2.4	5.3	3.1	46	58		1LE1023-0EC0	16	0.0040	13
1.1	1.5	100 L	1175	8.9	–	87.5	87.5	86.5	0.71	2.2	2.4	7.0	3.8	62	74		1LE1023-1AC3	25	0.014	13
3	4	132 S	1175	24	✓	89.5	89.5	88.5	0.76	5.5	1.9	7.6	3.4	67	79		1LE1023-1CC0	52	0.037	13
4	5	132 M	1175	30	✓	89.5	89.5	88.5	0.76	6.8	2.2	7.9	3.7	67	79		1LE1023-1CC2	52	0.037	13
5.5	7.5	132 M	1175	45	✓	91.0	91.0	90.0	0.76	10	2.2	7.5	3.5	67	79		1LE1023-1CC3	52	0.037	13
7.5	10	160 M	1180	61	✓	91.0	91.0	89.8	0.75	13.8	2.4	5.9	2.6	70	82		1LE1023-1DC2	93	0.098	13
11	15	160 L	1180	89	✓	91.7	91.9	91.0	0.75	20.0	2.3	5.8	2.6	70	82		1LE1023-1DC4	115	0.12	13
Voltagess (≤ 600 V)¹⁾																				
50 Hz 230 VΔ/400 VY		60 Hz 460 VY		No. of poles	Frame size	Motor type	Version											Order code(s)		
50 Hz 400 VΔ		60 Hz 460 VΔ		2, 4, 6	80 M ... 160 L	1LE1023-0D ... -1D	Standard	2		2								–		
50 Hz 500 VY				2, 4, 6	80 M ... 160 L	1LE1023-0D ... -1D	Standard	3		4								–		
50 Hz 500 VΔ				2, 4, 6	80 M ... 160 L	1LE1023-0D ... -1D	Without add. charge	2		7								–		
Further voltages				2, 4, 6	80 M ... 160 L	1LE1023-0D ... -1D	Without add. charge	4		0								–		
								9		0								...		
For price information, code numbers, order codes and descriptions, see from Page 2/38																				
Types of construction																				
		No. of poles	Frame size	Motor type	Version													Order code(s)		
Without flange		IM B3 ²⁾	2, 4, 6	80 M ... 160 L	1LE1023-0D ... -1D	Standard	A												–	
With flange		IM B5 ²⁾	2, 4, 6	80 M ... 160 L	1LE1023-0D ... -1D	With additional charge	F												–	
With standard flange		IM B14 ²⁾	2, 4, 6	80 M ... 160 L	1LE1023-0D ... -1D	With additional charge	K												–	
Further types of construction For price information, code letters and descriptions, see from Page 2/41																				
Motor protection																				
		No. of poles	Frame size	Motor type	Version													Order code(s)		
Without		2, 4, 6	80 M ... 160 L	1LE1023-0D ... -1D	Standard	A												–		
PTC thermistor with 3 temperature sensors		2, 4, 6	80 M ... 160 L	1LE1023-0D ... -1D	With additional charge	B												–		
Further motor protection For price information, code letters and descriptions, see from Page 2/49																				
Terminal box position																				
		No. of poles	Frame size	Motor type	Version													Order code(s)		
Terminal box at top		2, 4, 6	80 M ... 160 L	1LE1023-0D ... -1D	Standard	4												–		
Further terminal box positions For price information, code numbers and descriptions, see from Page 2/51																				
Special versions																				
		No. of poles	Frame size	Motor type	Version													Order code(s)		
Forced-air cooled motors without ext. fan/fan cover (IC 416)		2, 4, 6	80 M ... 160 L	1LE1023-0D ... -1D	1LE1023- ...	-Z F90 +...+...+...												–		
Options					1LE1023- ...	-Z ...+...+...+...												–		
For price information, order codes and descriptions, see from Page 2/53																				

- Not required
- ✓ available

1) Operating voltages only ≤ 600 V admissible in accordance with MG1 Table 12-12.
 2) Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible,

provided that no requirements exist for condensation drainage holes (H03) and stamping of the type on the rating plate. The basic type IM B3, IM B5 or IM B14 is stamped as standard on the rating plate. When ordering with condensation drainage holes (H03), the type must be specified.



SIMOTICS SD 1LE1 Standard Motors – Eagle Line

NEMA Premium Efficient MG1 motors, Table 12-12

Self-ventilated motors
Cast-iron series 1LE1523/1LE1623 Basic/Performance Line

Selection and ordering data

P _{rated} 50 Hz	P _{rated} 60 Hz	Frame size	Operating values at rated output										Cast-iron series 1LE1523 – Basic Line 1LE1623 – Performance Line NEMA Premium Efficient version Article No.	m _{IM} B3 J	Torque class				
			η _{rated} 60 Hz	T _{rated} 60 Hz	EISA CC No. CC032A	η _{rated} 60 Hz, 4/4	η _{rated} 60 Hz, 3/4	η _{rated} 60 Hz, 2/4	COS φ rated, 60 Hz, 4/4	I _{rated} 60 Hz, 460 V	T _{LR} / I _{rated} , 60 Hz	I _{LR} / I _{rated} , 60 Hz				T _B / I _{rated} , 60 Hz	L _p IA, 60 Hz	L _{WA} , 60 Hz	
kW	hp	FS	rpm	Nm	%	%	%	A								kg	kgm ²	CL	
0.37	0.5	71 M	3470	1.0	–	73.4	71.7	67.1	0.73	0.83	4.2	6.8	4.2	57	68	▲ 1LE1 5 23-0CA2	13	0.00045	16
0.55	0.75	71 M	3480	1.5	–	81.1	79.6	75.2	0.73	1.17	4.2	7.1	4.2	57	68	▲ 1LE1 5 23-0CA3	14.5	0.00056	16
0.75	1	80 M	3480	2.1	✓	77.0	78.0	76.0	0.84	1.46	3.0	7.1	3.6	64	75	▲ 1LE1 5 23-0DA2	18	0.0011	16
1.1	1.5	80 M	3500	3	✓	84.0	84.0	83.0	0.83	1.98	3.3	8.4	4.5	64	75	▲ 1LE1 5 23-0DA3	21	0.0013	16
1.5	2	90 S	3525	4.1	✓	85.5	85.0	82.5	0.84	2.60	3.1	9.8	4.9	69	81	▲ 1LE1 5 23-0EA0	25.5	0.0021	16
2.2	3	90 L	3530	6	✓	86.5	86.3	84.5	0.87	3.65	3.0	9.6	4.9	69	81	▲ 1LE1 5 23-0EA4	32	0.0031	16
3	4	100 L	3525	8.1	–	88.5	88.5	87.5	0.87	4.90	3.8	9.7	5.5	71	83	▲ 1LE1 5 23-1AA4	36	0.0054	16
4	5	112 M	3565	9.9	✓	88.5	88.5	87.5	0.87	6.0	3.8	10.0	5.6	73	85	▲ 1LE1 5 23-1BA2	45	0.012	16
5.5	7.5	132 S	3555	15	✓	89.5	89.5	88.5	0.90	8.6	2.1	8.6	4.4	72	84	▲ 1LE1 5 23-1CA0	58	0.024	16
7.5	10	132 S	3555	20	✓	90.2	90.2	89.2	0.91	11.5	2.4	9.5	4.7	72	84	▲ 1LE1 5 23-1CA1	73	0.031	16
11	15	160 M	3560	30	✓	91.0	91.0	90.0	0.88	17.2	2.8	8.5	4.3	77	89	▲ 1LE1 5 23-1DA2	100	0.053	16
15	20	160 M	3565	40	✓	91.0	91.0	90.0	0.86	24	3.1	9.7	4.8	77	89	▲ 1LE1 5 23-1DA3	110	0.061	16
18.5	25	160 L	3560	50	✓	91.7	91.7	90.7	0.90	28	3.1	9.4	4.4	77	89	▲ 1LE1 5 23-1DA4	127	0.068	16
22	30	180 M	3560	60	✓	91.7	91.4	90.0	0.89	34.5	2.8	8.3	3.9	78	85	▲ 1LE1 5 23-1EA2	160	0.080	16
30	40	200 L	3560	80	✓	92.4	92.2	91.4	0.87	46.5	2.9	7.6	3.6	78	86	▲ 1LE1 5 23-2AA4	225	0.13	16
37	50	200 L	3560	100	✓	93.0	92.8	91.6	0.88	57	2.8	7.5	3.6	79	86	▲ 1LE1 5 23-2AA5	250	0.16	16
45	60	225 M	3570	120	✓	93.6	93.7	93.1	0.88	68	2.7	7.6	3.5	75	89	▲ 1LE1 5 23-2BA2	315	0.26	16
55	75	250 M	3578	149	–	93.6	93.4	92.3	0.89	84	2.5	7.3	3.3	76	90	▲ 1LE1 5 23-2CA2	385	0.46	13
75	100	280 S	3578	199	–	94.1	93.9	92.7	0.89	112	2.7	7.6	3.2	78	92	▲ 1LE1 5 23-2DA0	510	0.77	13
90	125	280 M	3578	249	✓	95.0	94.8	93.8	0.90	137	2.7	8.1	3.3	78	92	▲ 1LE1 5 23-2DA2	590	0.94	13
110	150	315 S	3585	298	✓	95.0	94.8	93.8	0.91	162	2.6	8.0	3.3	79	93	▲ 1LE1 5 23-3AA0	750	1.4	13
132	175	315 M	3585	348	–	95.4	95.1	94.0	0.91	189	2.8	8.0	3.4	79	93	▲ 1LE1 5 23-3AA2	880	1.6	13
150	200	315 L	3588	397	✓	95.4	95.1	93.9	0.91	215	3.3	9.1	3.7	82	96	▲ 1LE1 5 23-3AA4	980	1.9	13
185	250	315 L	3586	497	–	95.8	95.7	94.8	0.92	265	3.5	8.5	3.5	82	96	▲ 1LE1 5 23-3AA5	1150	2.3	13

Relubrication	Motor protection	Fan cover	Bearing size	Converter-fed operation, motor mode	Liability for defects													
Optional (standard from FS 280 upwards)	Optional	Plastic	62 (63 from FS 280 upwards)	Up to 500 V 12 months	5													
Standard from FS 160 (optional for FS 100 to 132)	Standard PTC	Steel	63	Up to 500 V 36 months	6													
Voltages (≤ 600 V) ¹⁾		No. of poles	Frame size	Motor type	Version													Order code(s)
50 Hz	230 VΔ/400 VY	60 Hz	460 VY	2	71 M ... 315 L	1LE1 23-0C ... -3A	Standard	2 2	–									
50 Hz	400 VΔ	60 Hz	460 VΔ	2	71 M ... 315 L	1LE1 23-0C ... -3A	Standard	3 4	–									
50 Hz	500 VY			2	71 M ... 315 L	1LE1 23-0C ... -3A	Without add. charge	2 7	–									
50 Hz	500 VΔ			2	71 M ... 315 L	1LE1 23-0C ... -3A	Without add. charge	4 0	–									
Further voltages	For price information, code numbers, order codes and descriptions, see from Page 2/40										9 0						...	
Types of construction		No. of poles	Frame size	Motor type	Version													Order code(s)
Without flange	IM B3 ²⁾	2	71 M ... 315 L	1LE1 23-0C ... -3A	Standard		A	–										
With flange	IM B5 ²⁾	2	71 M ... 315 M	1LE1 23-0C ... -3A	With additional charge		F	–										
With standard flange	IM B14 ²⁾	2	71 M ... 160 L	1LE1 23-0C ... -1D	With additional charge		K	–										
Further types of construction	For price information, code letters and descriptions, see from Page 2/45																...	
Motor protection		Line	No. of poles	Frame size	Motor type	Version												Order code(s)
Without PTC thermistor with 3 temperature sensors	Only possible for Basic Line	Basic Line	2	71 M ... 315 L	1LE1523-0C ... -3A	Standard		A	–									
Further motor protection	Performance Line	Performance Line	2	71 M ... 315 L	1LE1623-0C ... -3A	Standard		B	–									
Terminal box position	For price information, code numbers and descriptions, see from Page 2/52																	...
Terminal box at top			2	71 M ... 315 L	1LE1 23-0C ... -3A	Standard		4	–									
Further terminal box positions	For price information, code numbers and descriptions, see from Page 2/52																	...
Special versions		No. of poles	Frame size	Motor type	Version													Order code(s)
Options	For price information, order codes and descriptions, see from Page 2/58										1LE1 23- ... -Z						...+...+...+...	

- Not required
- ✓ available

¹⁾ Operating voltages only ≤ 600 V admissible in accordance with MG1 Table 12-12. Parallel supply lines are required in the case of connection to ≤ 240 V. For frame size 315 with connection to ≤ 240 V, due to the high current, a drilled, removable entry plate (Order code R52) or a larger terminal box (Order code R50) can be used. Order codes R52 and R50 alter the motor dimensions.

²⁾ Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirement exists for stamping of the type on the rating plate. The basic type IM B3, IM B5 or IM B14 is stamped as standard on the rating plate. If mounted in a different position, the position must be specified to ensure that the condensation drainage holes are positioned correctly.

2

SIMOTICS SD 1LE1 Standard Motors – Eagle Line

NEMA Premium Efficient MG1 motors, Table 12-12



Self-ventilated motors
Cast-iron series 1LE1523/1LE1623 Basic/Performance Line



Selection and ordering data (continued)

P _{rated} 50 Hz	P _{rated} 60 Hz	Frame size	Operating values at rated output			EISA CC No. CC032A	η _{rated} 60 Hz	η _{rated} 60 Hz	η _{rated} 60 Hz	cos φ _{rated} 60 Hz	I _{rated} 60 Hz	T _{LR} 60 Hz	I _{LR} 60 Hz	T _B 60 Hz	L _{pfA} 60 Hz	L _{WA} 60 Hz	Cast-iron series 1LE1523 – Basic Line 1LE1623 – Performance Line NEMA Premium Efficient version Article No.	m _{IM} B3 J	Torque class
			n _{rated} 60 Hz	T _{rated} 60 Hz	η _{rated} 4/4														
0.25	0.33	71 M	1715	1.4	–	73.4	72.3	68.2	0.68	0.65	2.9	4.9	3.1	47	58	▲ 1LE1 5 23-0CB2	13	0.00095	16
0.37	0.5	71 M	1725	2	–	78.2	76.6	71.9	0.65	0.90	2.9	5.4	3.3	47	58	▲ 1LE1 5 23-0CB3	16	0.0014	16
0.55	0.75	80 M	1750	3	–	82.5	82.2	79.4	0.74	1.13	2.7	6.9	3.8	55	66	▲ 1LE1 5 23-0DB2	18.5	0.0021	16
0.75	1	80 M	1760	4.1	✓	85.5	84.5	81.0	0.71	1.55	3.1	8.3	4.7	55	66	▲ 1LE1 5 23-0DB3	22.5	0.0029	16
1.1	1.5	90 S	1750	6	✓	86.5	86.3	84.1	0.75	2.15	3.4	8.2	4.4	58	70	▲ 1LE1 5 23-0EB0	25	0.0036	16
1.5	2	90 L	1755	8.2	✓	86.5	87.0	85.0	0.77	2.85	3.0	8.4	4.3	58	70	▲ 1LE1 5 23-0EB4	31	0.0049	16
2.2	3	100 L	1770	12	–	89.5	89.5	88.5	0.81	3.80	3.5	9.6	5.1	62	74	1LE1 23-1AB4	40	0.014	16
3	4	100 L	1760	16	–	89.5	89.5	88.5	0.82	5.1	3.1	9.5	4.6	62	74	1LE1 23-1AB5	40	0.014	16
4	5	112 M	1770	20	✓	89.5	89.5	88.5	0.80	6.5	2.9	8.2	4.3	62	74	1LE1 23-1BB2	46	0.017	16
5.5	7.5	132 S	1780	30	✓	91.7	91.7	90.7	0.83	9.1	2.9	9.5	4.4	68	80	1LE1 23-1CB0	80	0.046	16
7.5	10	132 M	1770	40	✓	91.7	91.7	90.7	0.83	12.4	2.7	9.6	4.2	68	80	1LE1 23-1CB2	80	0.046	16
11	15	160 M	1775	59	✓	92.4	92.4	91.4	0.83	18	3.0	8.9	3.8	69	81	1LE1 23-1DB2	109	0.083	16
15	20	160 L	1780	80	✓	93.0	93.0	91.5	0.81	25	2.9	9.5	4.3	69	81	1LE1 23-1DB4	127	0.099	16
18.5	25	180 M	1775	100	✓	93.6	93.7	93.1	0.81	31	2.7	7.8	3.6	68	75	1LE1 23-1EB2	165	0.13	16
22	30	180 L	1775	120	✓	93.6	93.8	93.3	0.81	37	2.8	7.7	3.7	70	77	1LE1 23-1EB4	170	0.14	16
30	40	200 L	1778	160	✓	94.1	94.3	93.8	0.83	48	3.0	8.1	3.5	67	74	1LE1 23-2AB5	240	0.22	16
37	50	225 S	1782	200	–	94.5	94.7	94.2	0.85	58	2.8	7.5	3.0	66	80	1LE1 23-2BB0	285	0.42	16
45	60	225 M	1782	240	✓	95.0	95.3	94.9	0.84	70	2.9	7.2	3.0	67	81	1LE1 23-2BB2	320	0.47	16
55	75	250 M	1786	299	–	95.4	95.6	95.1	0.86	86	2.8	7.6	3.2	67	81	1LE1 23-2CB2	420	0.85	16
75	100	280 S	1788	398	–	95.4	95.3	94.5	0.85	115	2.8	7.7	3.3	77	91	1LE1 23-2DB0	570	1.4	16
90	125	280 M	1788	498	✓	95.4	95.5	94.9	0.87	141	2.9	8.0	3.3	79	93	1LE1 23-2DB2	670	1.7	16
110	150	315 S	1790	597	✓	95.8	95.9	95.4	0.86	170	3.0	7.5	3.1	73	87	1LE1 23-3AB0	760	2.2	16
132	175	315 M	1790	696	–	96.2	96.3	95.8	0.87	196	3.1	8.2	3.2	76	90	1LE1 23-3AB2	960	2.9	16
150	200	315 L	1791	796	✓	96.2	96.2	95.7	0.87	225	3.5	8.8	3.6	76	90	1LE1 23-3AB4	990	3.1	16
185	250	315 L	1791	994	–	96.2	96.2	95.5	0.87	280	3.9	9.0	3.6	78	93	1LE1 23-3AB5	1190	3.7	16

Relubrication	Motor protection	Fan cover	Bearing size	Converter-fed operation, motor mode	Liability for defects	Order code(s)	
Optional (standard from FS 280 upwards)	Optional	Plastic	62 (63 from FS 280 upwards)	Up to 500 V 12 months	5	–	
Standard from FS 160 (optional for FS 100 to 132)	Standard PTC	Steel	63	Up to 500 V 36 months	6	–	
Voltagess (≤ 600 V) ¹⁾	No. of poles	Frame size	Motor type	Version	Order code(s)		
50 Hz 230 VΔ/400 VY	60 Hz 460 VY	71 M ... 315 L	1LE1 23-0C ... -3A	Standard	2 2	–	
50 Hz 400 VΔ	60 Hz 460 VΔ	71 M ... 315 L	1LE1 23-0C ... -3A	Standard	3 4	–	
50 Hz 500 VY		71 M ... 315 L	1LE1 23-0C ... -3A	Without add. charge	2 7	–	
50 Hz 500 VΔ		71 M ... 315 L	1LE1 23-0C ... -3A	Without add. charge	4 0	–	
Further voltagess	For price information, code numbers, order codes and descriptions, see from Page 2/40				9 0	...	
Types of construction	No. of poles	Frame size	Motor type	Version	Order code(s)		
Without flange IM B3 ²⁾	4	71 M ... 315 L	1LE1 23-0C ... -3A	Standard	A	–	
With flange IM B5 ²⁾	4	71 M ... 315 M	1LE1 23-0C ... -3A	With additional charge	F	–	
With standard flange IM B14 ²⁾	4	71 M ... 160 L	1LE1 23-0C ... -1D	With additional charge	K	–	
Further types of construction	For price information, code letters and descriptions, see from Page 2/45				...	...
Motor protection	Line	No. of poles	Frame size	Motor type	Version	Order code(s)	
Without PTC thermistor with 3 temperature sensors	Only possible for Basic Line	4	71 M ... 315 L	1LE1523-0C ... -3A	Standard	A	–
Further motor protection	Performance Line	4	71 M ... 315 L	1LE1623-0C ... -3A	Standard	B	–
Terminal box position	For price information, code letters and descriptions, see from Page 2/50				...	...
Terminal box position	No. of poles	Frame size	Motor type	Version	Order code(s)		
Terminal box at top	4	71 M ... 315 L	1LE1 23-0C ... -3A	Standard	4	–	
Further terminal box positions	For price information, code numbers and descriptions, see from Page 2/52				...	...
Special versions	No. of poles	Frame size	Motor type	Version	Order code(s)		
Options	For price information, order codes and descriptions, see from Page 2/58				1LE1 23- ... -Z ... + ... + ... + ...	...

- Not required
- ✓ available

¹⁾ Operating voltages only ≤ 600 V admissible in accordance with MG1 Table 12-12. Parallel supply lines are required in the case of connection to ≤ 240 V. For frame size 315 with connection to ≤ 240 V, due to the high current, a drilled, removable entry plate (Order code **R52**) or a larger terminal box (Order code **R50**) can be used. Order codes **R52** and **R50** alter the motor dimensions.

²⁾ Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirement exists for stamping of the type on the rating plate. The basic type IM B3, IM B5 or IM B14 is stamped as standard on the rating plate. If mounted in a different position, the position must be specified to ensure that the condensation drainage holes are positioned correctly.



SIMOTICS SD 1LE1 Standard Motors – Eagle Line

NEMA Premium Efficient MG1 motors, Table 12-12

Self-ventilated motors
Cast-iron series 1LE1523/1LE1623 Basic/Performance Line

Selection and ordering data (continued)

P _{rated} 50 Hz	P _{rated} 60 Hz	Frame size	Operating values at rated output			EISA CC No. CC032A	η _{rated} 60 Hz, 4/4	η _{rated} 60 Hz, 3/4	η _{rated} 60 Hz, 2/4	cos φ _{rated} 60 Hz, 4/4	I _{rated} 60 Hz, 460 V	I _{L/R} 60 Hz	I _{R/L} 60 Hz	I _B 60 Hz	L _{pFA} 60 Hz	L _{WA} 60 Hz	Cast-iron series 1LE1523 – Basic Line 1LE1623 – Performance Line NEMA Premium Efficient version Article No.	m _{IM} B3 J	Torque class
			kW	hp	FS														
0.18	0.25	71 M	1110	1.5	–	67.5	66.3	61.0	0.63	0.53	2.8	3.5	2.9	42	53	▲ 1LE1 5 23-0CC2	12.5	0.001	16
0.25	0.33	71 M	1120	2.1	–	71.4	70.2	65.6	0.62	0.71	3.1	3.8	3.3	42	53	▲ 1LE1 5 23-0CC3	15.5	0.015	16
0.37	0.5	80 M	1150	3.1	–	78.5	77.5	73.0	0.61	0.97	2.7	5.0	3.3	45	56	▲ 1LE1 5 23-0DC2	18.5	0.0025	13
0.55	0.75	80 M	1145	4.6	–	81.7	81.3	78.0	0.63	1.34	2.8	5.3	3.4	45	56	▲ 1LE1 5 23-0DC3	22.5	0.0031	13
0.75	1	90 S	1155	6.2	✓	82.5	82.3	79.5	0.65	1.76	2.4	5.3	3.1	46	58	▲ 1LE1 5 23-0EC0	26.5	0.0040	13
1.1	1.5	90 L	1175	8.9	✓	87.5	87.5	86.5	0.71	2.2	2.4	7.0	3.8	62	74	▲ 1LE1 5 23-0EC4	30	0.014	13
3	4	132 S	1175	24	✓	89.5	89.5	88.5	0.76	5.5	1.9	7.6	3.4	67	79	1LE1 23-1CC0	31	0.037	13
4	5	132 M	1175	30	✓	89.5	89.5	88.5	0.76	6.8	2.2	7.9	3.7	67	79	1LE1 23-1CC2	68	0.037	13
5.5	7.5	132 M	1175	45	✓	91.0	91.0	90.0	0.76	10	2.2	7.5	3.5	67	79	1LE1 23-1CC3	81	0.037	13
7.5	10	160 M	1180	61	✓	91.0	91.0	89.8	0.75	13.8	2.4	5.9	2.6	70	82	1LE1 23-1DC2	128	0.098	13
11	15	160 L	1180	89	✓	91.7	91.9	91.0	0.75	20.0	2.3	5.8	2.6	70	82	1LE1 23-1DC4	149	0.12	13
15	20	180 L	1178	121	✓	91.7	92.0	91.5	0.79	26	2.5	6.8	3.0	61	68	1LE1 23-1EC4	180	0.19	16
18.5	25	200 L	1180	151	✓	93.0	93.2	92.6	0.78	32.5	2.8	6.5	3.0	64	71	1LE1 23-2AC4	215	0.28	16
22	30	200 L	1180	181	✓	93.0	93.6	93.5	0.79	38	2.6	6.3	2.8	63	70	1LE1 23-2AC5	230	0.32	16
30	40	225 M	1185	240	✓	94.1	94.4	94.1	0.82	48.5	2.9	7.6	3.3	66	79	1LE1 23-2BC2	325	0.67	16
37	50	250 M	1188	300	–	94.1	94.4	93.9	0.83	60	3.1	8.0	3.1	63	76	1LE1 23-2CC2	405	1.0	16
45	60	280 S	1190	359	–	94.5	94.6	94.1	0.83	72	3.3	7.7	3.1	66	80	1LE1 23-2DC0	510	1.4	16
55	75	280 M	1190	449	–	94.5	94.6	94.0	0.83	90	3.6	7.9	3.3	66	80	1LE1 23-2DC2	560	1.6	16
75	100	315 S	1192	598	✓	95.0	94.9	94.1	0.82	120	3.1	8.4	3.3	64	79	1LE1 23-3AC0	750	2.6	16
90	125	315 M	1192	747	✓	95.0	95.1	94.4	0.84	147	2.7	7.7	3.0	64	79	1LE1 23-3AC2	890	3.1	16
110	150	315 L	1192	896	✓	95.8	96.0	95.5	0.83	177	3.2	8.2	3.4	64	79	1LE1 23-3AC4	990	3.9	16
132	175	315 L	1192	1046	–	95.8	96.0	95.6	0.84	205	3.1	8.4	3.3	65	80	1LE1 23-3AC5	1110	4.4	16
150	200	315 L	1192	1195	✓	95.8	95.7	95.0	0.81	240	3.6	9.6	4.1	69	83	1LE1 23-3AC6	1160	4.6	16

– Not required
✓ available

¹⁾ Operating voltages only ≤ 600 V admissible in accordance with MG1 Table 12-12. Parallel supply lines are required in the case of connection to ≤ 240 V. For frame size 315 with connection to ≤ 240 V, due to the high current, a drilled, removable entry plate (Order code **R52**) or a larger terminal box (Order code **R50**) can be used. Order codes **R52** and **R50** alter the motor dimensions.

²⁾ Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirement exists for stamping of the type on the rating plate. The basic type IM B3, IM B5 or IM B14 is stamped as standard on the rating plate. If mounted in a different position, the position must be specified to ensure that the condensation drainage holes are positioned correctly.

2

SIMOTICS GP 1LE1 Standard Motors

Pole-changing motors

Self-ventilated motors

Aluminum series 1LE1011 for constant load torque

Selection and ordering data

P		Frame size	Operating values at rated output for N1										Operating values at rated output for N2						Aluminum series 1LE1011 – One winding pole-changing for constant load torque Article No.	m IM B3	J	Torque class
rated1, 50 Hz	rated2, 50 Hz		n_{rated1} 50 Hz	T_{rated1} 50 Hz	η_{rated1} 50 Hz	$\cos\phi$ 50 Hz	I_{rated1} 50 Hz	T_{LR} 50 Hz	I_{FR} 50 Hz	T_{LR} 50 Hz	I_{FR} 50 Hz	n_{rated2} 50 Hz	T_{rated2} 50 Hz	η_{rated2} 50 Hz	$\cos\phi$ 50 Hz	I_{rated2} 50 Hz	T_{LR} 50 Hz	I_{FR} 50 Hz				
kW	kW	FS	rpm	Nm	%	A				rpm	Nm	%	A				kg	kgm ²	CL			
<ul style="list-style-type: none"> Cooling: self-ventilated (IC 411) Line operation: Double pole-changing for constant load torque Insulation: thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B) 																						
4/2-pole: 1500/3000 rpm at 50 Hz with one winding connected in Dahlander circuit																						
1500 rpm	3000 rpm		1500 rpm								3000 rpm											
1.9	2.4	100 L	1390	13	72.0	0.87	4.40	1.7	4.1	1.8	2800	8.2	70.0	0.88	5.6	1.8	4.2	1.8	1LE1011-1AJ4	18	0.0059	13
2.5	3.1	100 L	1400	17	76.3	0.87	5.4	1.9	5.2	2.8	2840	10.0	77.3	0.90	6.4	2.1	5.2	2.9	1LE1011-1AJ5	22	0.0078	13
3.7	4.4	112 M	1420	25	79.4	0.86	7.8	1.8	4.9	2.3	2885	15.0	80.8	0.92	8.5	2.1	6.4	2.6	1LE1011-1BJ2	27	0.010	13
4.7	5.9	132 S	1440	31	82.0	0.84	9.8	1.6	5.6	2.7	2875	20.0	80.0	0.89	12.0	1.8	5.6	2.8	1LE1011-1CJ0	38	0.019	13
6.5	8.0	132 M	1435	43	82.0	0.86	13.3	1.7	5.4	2.6	2880	27.0	82.0	0.92	15.3	1.8	6.3	2.8	1LE1011-1CJ2	44	0.024	13
9.3	11.5	160 M	1440	62	84.5	0.87	18.3	1.7	5.7	2.8	2870	38.0	82.0	0.92	22.0	1.8	6.0	2.9	1LE1011-1DJ2	62	0.044	13
13.0	16	160 L	1450	86	87.0	0.85	25.5	1.6	6.0	2.3	2920	52.0	86.0	0.94	28.5	1.9	7.1	2.8	1LE1011-1DJ6	85	0.068	13
8/4-pole: 750/1500 rpm at 50 Hz with one winding connected in Dahlander circuit																						
750 rpm	1500 rpm		750 rpm								1500 rpm											
0.55	1.1	100 L	715	7.3	57.0	0.53	2.65	2.0	3.0	2.7	1425	7.4	77.7	0.87	2.35	1.7	4.6	2.1	1LE1011-1AL4	18	0.0059	10
0.9	1.5	100 L	700	12	64.2	0.64	3.15	1.5	2.9	2.0	1415	10.0	77.7	0.89	3.15	1.5	4.5	1.9	1LE1011-1AL5	22	0.0078	10
1.1	1.9	112 M	715	15	66.5	0.60	4.00	1.6	3.2	2.3	1440	13.0	80.9	0.87	3.90	1.6	5.4	2.3	1LE1011-1BL2	27	0.010	10
1.6	3.2	132 S	730	21	61.5	0.53	7.1	1.6	3.3	2.6	1450	21.0	82.3	0.87	6.5	1.4	5.0	2.1	1LE1011-1CL0	38	0.019	10
2.2	4.4	132 M	730	29	68.0	0.52	9.0	2.0	3.8	3.0	1450	29.0	84.5	0.88	8.5	1.5	5.5	2.3	1LE1011-1CL2	44	0.024	10
3.5	7	160 M	730	46	77.5	0.57	11.4	2.0	4.2	2.8	1450	46.0	84.0	0.90	13.4	1.6	5.2	2.2	1LE1011-1DL2	62	0.044	10
5.6	11	160 L	725	74	80.2	0.60	16.8	1.9	4.0	2.7	1445	73.0	84.4	0.90	21.0	1.5	5.1	2.2	1LE1011-1DL4	73	0.056	10
Voltages			No. of poles	Frame size	Motor type	Version														Order code(s)		
50 Hz	230 V		4/2, 8/4	100 L ... 160 L	1LE1011-1A ... -1D	Standard	2	2												–		
50 Hz	400 V		4/2, 8/4	100 L ... 160 L	1LE1011-1A ... -1D	Standard	3	4												–		
50 Hz	500 V		4/2, 8/4	100 L ... 160 L	1LE1011-1A ... -1D	Without add. charge	4	0												–		
50 Hz	690 V		4/2, 8/4	100 L ... 160 L	1LE1011-1A ... -1D	Without add. charge	4	7												–		
Further voltages ¹⁾							9	0												...		
Types of construction			No. of poles	Frame size	Motor type	Version														Order code(s)		
Without flange		IM B3 ²⁾	4/2, 8/4	100 L ... 160 L	1LE1011-1A ... -1D	Standard	A													–		
With flange		IM B5 ²⁾	4/2, 8/4	100 L ... 160 L	1LE1011-1A ... -1D	With additional charge	F													–		
With standard flange		IM B14 ²⁾	4/2, 8/4	100 L ... 160 L	1LE1011-1A ... -1D	With additional charge	K													–		
Further types of construction																				...		
Motor protection			No. of poles	Frame size	Motor type	Version														Order code(s)		
Without			4/2, 8/4	100 L ... 160 L	1LE1011-1A ... -1D	Standard	A													–		
PTC thermistor with 3 temperature sensors			4/2, 8/4	100 L ... 160 L	1LE1011-1A ... -1D	With additional charge	B													–		
Further motor protection																				...		
Terminal box position			No. of poles	Frame size	Motor type	Version														Order code(s)		
Terminal box at top			4/2, 8/4	100 L ... 160 L	1LE1011-1A ... -1D	Standard	4													–		
Further terminal box positions																				For price information, code numbers and descriptions, see from Page 2/51		
Special versions																				Order code(s)		
Options																				1LE1011- ... -Z	...+...+...+...	

¹⁾ Operating values at rated output for 60 Hz are available on request.

²⁾ Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirements exist for condensation drainage holes (H03) and stamping of the type on the rating plate. The basic type IM B3, IM B5 or IM B14 is stamped as standard on the rating plate. When ordering with condensation drainage holes (H03), the type must be specified.

SIMOTICS GP 1LE1/1PC1 Standard Motors

Supplements to article numbers and special versions

Voltages Aluminum series 1LE10, 1PC10

Selection and ordering data

Voltages	Voltage code 12th and 13th position of the Article No.	Additional identifica- tion code with order code and plain text if required	Motor category								
			Motor version	Motor type (alum.)	Motor type – Frame size						
					80	90	100	112	132	160	
			High Efficiency IE2	1LE1001	1LE1001 ①						
				1PC1001	1PC1001 ②						
			IE3 Premium Efficiency	1LE1003	1LE1003 ③						
			IE1 Standard Efficiency	1LE1002	1LE1002 ④						
				1PC1002	1PC1002 ⑤						
			NEMA Energy Efficient	1LE1021	1LE1021 Eagle Line ⑥						
NEMA Premium Efficient	1LE1023	1LE1023 Eagle Line ⑦									
			Motor version	Motor type	Frame size						
					80	90	100	112	132	160	
Order code											
1LE10 - - - - -											
1PC10 - - - - -											
Voltage at 50 Hz or 60 Hz											
50 Hz 230 VΔ/400 VY, 60 Hz 460 VY	2	2	–	All	All	☐	☐	☐	☐	☐	☐
50 Hz 400 VΔ/690 VY, 60 Hz 460 VΔ ¹⁾	3	4	–	All except ⑥ and ⑦		☐	☐	☐	☐	☐	☐
50 Hz 400 VΔ, 60 Hz 460 VΔ ¹⁾				Only applicable for ⑥ and ⑦		☐	☐	☐	☐	☐	☐
50 Hz 400 VY, 60 Hz 460 VY ^{2) 3)}	0	2		All	All	☐	☐	–	–	–	–
50 Hz 500 VY ²⁾ 60 Hz 575 VΔ	2	7	–	All	All	○	○	○	○	○	○
50 Hz 500 VΔ 60 Hz 575 VΔ	4	0	–	All	All	–	–	○	○	○	○
50 Hz 220 VΔ/380 VY 60 Hz 440 VY	2	1	–	All	All	✓	✓	✓	✓	✓	✓
50 Hz 380 VΔ/660 VY ¹⁾ , 60 Hz 440 VΔ	3	3	–	All except ⑥ and ⑦		✓	✓	✓	✓	✓	✓
50 Hz 380 VΔ ¹⁾				Only applicable for ⑥ and ⑦		–	–	✓	✓	✓	✓
50 Hz 240 VΔ/415 VY, 60 Hz 480 VY	2	3	–	All	All	✓	✓	✓	✓	✓	✓
50 Hz 415 VΔ, 60 Hz 480 VΔ	3	5	–	All	All	✓	✓	✓	✓	✓	✓
Voltage at 60 Hz and required output at 60 Hz											
220 VΔ/380 VY; 50 Hz output	9	0	M2A	All	All	✓	✓	✓	✓	✓	✓
220 VΔ/380 VY; 60 Hz output ⁴⁾	9	0	M1A	All except ⑥ and ⑦		✓	✓	✓	✓	✓	✓
380 VΔ/660 VY; 50 Hz output ¹⁾	9	0	M2B	All except ⑥ and ⑦		✓	✓	✓	✓	✓	✓
380 VΔ; 50 Hz output ¹⁾				Only applicable for ⑥ and ⑦		–	–	✓	✓	✓	✓
380 VΔ/660 VY; 60 Hz output ^{1) 4)}	9	0	M1B	All except ⑥ and ⑦		✓	✓	✓	✓	✓	✓
440 VY; 50 Hz output	9	0	M2C	All	All	✓	✓	✓	✓	✓	✓
440 VY; 60 Hz output ⁴⁾	9	0	M1C	All except ⑥ and ⑦		✓	✓	✓	✓	✓	✓
440 VΔ; 50 Hz output	9	0	M2D	All	All	✓	✓	✓	✓	✓	✓
440 VΔ; 60 Hz output ⁴⁾	9	0	M1D	All except ⑥ and ⑦		✓	✓	✓	✓	✓	✓
460 VY; 50 Hz output	9	0	M2E	All	All	✓	✓	✓	✓	✓	✓
460 VY; 60 Hz output ⁴⁾	9	0	M1E	All except ⑥ and ⑦		○	○	○	○	○	○
460 VΔ; 50 Hz output	9	0	M2F	All	All	✓	✓	✓	✓	✓	✓
460 VΔ; 60 Hz output ⁴⁾	9	0	M1F	All except ⑥ and ⑦		○	○	○	○	○	○
575 VY; 50 Hz output	9	0	M2G	All	All	✓	✓	✓	✓	✓	✓
575 VY; 60 Hz output ⁴⁾	9	0	M1G	All except ⑥ and ⑦		✓	✓	✓	✓	✓	✓
575 VΔ; 50 Hz output	9	0	M2H	All	All	✓	✓	✓	✓	✓	✓
575 VΔ; 60 Hz output ⁴⁾	9	0	M1H	All except ⑥ and ⑦		✓	✓	✓	✓	✓	✓
Voltage at 87 Hz and 87 Hz output											
400 VΔ ⁵⁾	9	0	M3A	All	All	✓	✓	✓	✓	✓	✓
Non-standard voltage and/or frequencies											
Non-standard winding ⁶⁾	9	0	M1Y • and identifica- tion code	All	All	✓	✓	✓	✓	✓	✓

- ☐ Standard version
- Without additional charge
- This order code only determines the price of the version – Additional plain text is required.

- ✓ With additional charge
- Not possible

¹⁾ For North America export versions Eagle Line 1LE1021 NEMA Energy Efficient and 1LE1023 NEMA Premium Efficient, voltages above 600 V will not be stamped.

²⁾ Frame sizes 80 and 90 with voltage code 02 can only be supplied without motor protection (motor protection code A).

³⁾ Delta connection is not possible.

⁴⁾ Not admissible for North America export versions Eagle Line 1LE1021 NEMA Energy Efficient and 1LE1023 NEMA Premium Efficient.

⁵⁾ Only possible for 4-pole, 6-pole and 8-pole motors. The operating data for converter-fed operation is also provided in a table on the rating plate.

⁶⁾ Plain text must be specified in the order: Voltage between 200 and 690 V (voltages outside this range are available on request), frequency, circuit, for 60 Hz additionally required rated output in kW.

SIMOTICS GP 1LE1 Standard Motors

Supplements to article numbers and special versions

Voltages
Aluminum series 1LE1011, 1LE1012 – pole-changing

Selection and ordering data

Voltages	Voltage code 12th and 13th position of the Article No.	Additional identification code with order code and plain text if required	Motor category						
			Motor version	Motor type (alum.)	Motor type – Frame size				
					100	112	132	160	
			Pole-changing	1LE1011 1LE1012	1LE1011 1LE1012				
			Motor version	Motor type	Frame size				
					100	112	132	160	
1LE1...-...-...-...-... Order code									
Voltage at 50 Hz and 50 Hz output									
230 V	2	2	–	All	All	□	□	□	□
400 V	3	4	–	All	All	□	□	□	□
500 V	4	0	–	All	All	○	○	○	○
690 V	4	7	–	All	All	○	○	○	○
Voltage at 60 Hz and required output									
220 V; 50 Hz output	9	0	M5K	All	All	✓	✓	✓	✓
220 V; 60 Hz output	9	0	M5C	All	All	✓	✓	✓	✓
380 V; 50 Hz output	9	0	M5L	All	All	✓	✓	✓	✓
380 V; 60 Hz output	9	0	M5D	All	All	✓	✓	✓	✓
440 V; 50 Hz output	9	0	M5M	All	All	✓	✓	✓	✓
440 V; 60 Hz output	9	0	M5E	All	All	✓	✓	✓	✓
460 V; 50 Hz output	9	0	M5N	All	All	✓	✓	✓	✓
460 V; 60 Hz output	9	0	M5F	All	All	✓	✓	✓	✓
575 V; 50 Hz output	9	0	M5P	All	All	✓	✓	✓	✓
575 V; 60 Hz output	9	0	M5G	All	All	✓	✓	✓	✓
Non-standard voltage and/or frequencies									
Non-standard winding ¹⁾	9	0	M1Y • and identifica- tion code	All	All	✓	✓	✓	✓

- Standard version
- Without additional charge
- This order code only determines the price of the version – Additional plain text is required.
- ✓ With additional charge

¹⁾ Plain text must be specified in the order: Voltage between 200 and 690 V (voltages outside this range are available on request), frequency, circuit, for 60 Hz additionally required rated output in kW.

SIMOTICS SD 1LE1 Standard Motors

Supplements to article numbers and special versions

Voltages Cast-iron series 1LE15 Basic Line, 1LE16 Performance Line

Selection and ordering data

Voltages	Voltage code 12th and 13th position of the Article No.	Additional identification code with order code and plain text if required	Motor category		Motor type – Frame size												
			Motor version	Motor type (cast-iron)	71	80	90	100	112	132	160	180	200	225	250	280	315
			High Efficiency IE2	1LE1501 1LE1601	1LE1501 Basic Line ① 1LE1601 Performance Line ②												
IE3 Premium Efficiency	1LE1503 1LE1603	1LE1503 Basic Line ③ 1LE1603 Performance Line ④															
NEMA Energy Efficient	1LE1521 1LE1621	1LE1521 Eagle Line Basic ⑤ 1LE1621 Eagle Line Performance ⑥															
NEMA Premium Efficient	1LE1523 1LE1623	1LE1523 Eagle Line Basic ⑦ 1LE1623 Eagle Line Performance ⑧															
1LE1.....-... Order code			Motor version	Motor type	Frame size												
					71	80	90	100	112	132	160	180	200	225	250	280	315
Voltage at 50 Hz or 60 Hz																	
50 Hz 230 VΔ/400 VY, 60 Hz 460 VY ¹⁾	2	2	–	All	All	□	□	□	□	□	□	□	□	□	□	□	□
50 Hz 400 VΔ/690 VY, 60 Hz 460 VΔ ²⁾	3	4	–	All except ⑤, ⑥, ⑦ and ⑧		□	□	□	□	□	□	□	□	□	□	□	□
50 Hz 400 VΔ, 60 Hz 460 VΔ ²⁾				Only applicable for ⑤, ⑥, ⑦ and ⑧		□	□	□	□	□	□	□	□	□	□	□	□
50 Hz 500 VY	2	7	–	All	All	□	□	□	○	○	○	○	○	○	○	○	○
50 Hz 500 VΔ	4	0	–	All	All	–	–	–	○	○	○	○	○	○	○	○	○
50 Hz 220 VΔ/380 VY, 60 Hz 440 VY ¹⁾	2	1	–	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
50 Hz 380 VΔ/660 VY, 60 Hz 440 VΔ ²⁾	3	3	–	All except ⑤, ⑥, ⑦ and ⑧		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
50 Hz 380 VΔ ²⁾				Only applicable for ⑤, ⑥, ⑦ and ⑧		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
50 Hz 240 VΔ/415 VY, 60 Hz 480 VY ¹⁾	2	3	–	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
50 Hz 415 VΔ, 60 Hz 480 VΔ	3	5	–	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Voltage at 60 Hz and required output																	
220 VΔ/380 VY; 50 Hz output ⁵⁾	9	0	M2A	All	All	–	–	–	✓	✓	✓	✓	✓	✓	✓	✓	✓
220 VΔ/380 VY; 60 Hz output ^{1) 3)}	9	0	M1A	All except ⑤, ⑥, ⑦ and ⑧		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
380 VΔ/660 VY; 50 Hz output ²⁾	9	0	M2B	All except ⑤, ⑥, ⑦ and ⑧		–	–	–	✓	✓	✓	✓	✓	✓	✓	✓	✓
380 VΔ; 50 Hz output ²⁾				Only applicable for ⑤, ⑥, ⑦ and ⑧		–	–	–	✓	✓	✓	✓	✓	✓	✓	✓	✓
380 VΔ/660 VY; 60 Hz output ^{2) 3)}	9	0	M1B	All except ⑤, ⑥, ⑦ and ⑧		–	–	–	✓	✓	✓	✓	✓	✓	✓	✓	✓
440 VY; 50 Hz output	9	0	M2C	All	All	–	–	–	✓	✓	✓	✓	✓	✓	✓	✓	✓
440 VY; 60 Hz output ³⁾	9	0	M1C	All except ⑤, ⑥, ⑦ and ⑧		–	–	–	✓	✓	✓	✓	✓	✓	✓	✓	✓
440 VΔ; 50 Hz output	9	0	M2D	All	All	–	–	–	✓	✓	✓	✓	✓	✓	✓	✓	✓
440 VΔ; 60 Hz output ³⁾	9	0	M1D	All except ⑤, ⑥, ⑦ and ⑧		–	–	–	✓	✓	✓	✓	✓	✓	✓	✓	✓
460 VY; 50 Hz output	9	0	M2E	All	All	–	–	–	○	○	○	○	○	○	○	○	○
460 VY; 60 Hz output ³⁾	9	0	M1E	All except ⑤, ⑥, ⑦ and ⑧		–	–	–	○	○	○	○	○	○	○	○	○
460 VΔ; 50 Hz output	9	0	M2F	All	All	–	–	–	✓	✓	✓	✓	✓	✓	✓	✓	✓
460 VΔ; 60 Hz output ³⁾	9	0	M1F	All except ⑤, ⑥, ⑦ and ⑧		–	–	–	○	○	○	○	○	○	○	○	○
575 VY; 50 Hz output	9	0	M2G	All	All	–	–	–	✓	✓	✓	✓	✓	✓	✓	✓	✓
575 VY; 60 Hz output ³⁾	9	0	M1G	All except ⑤, ⑥, ⑦ and ⑧		–	–	–	✓	✓	✓	✓	✓	✓	✓	✓	✓
575 VΔ; 50 Hz output	9	0	M2H	All	All	–	–	–	✓	✓	✓	✓	✓	✓	✓	✓	✓
575 VΔ; 60 Hz output ³⁾	9	0	M1H	All except ⑤, ⑥, ⑦ and ⑧		–	–	–	✓	✓	✓	✓	✓	✓	✓	✓	✓
Voltage at 87 Hz and 87 Hz output																	
400 VΔ ⁴⁾	9	0	M3A	All	All	–	–	–	✓	✓	✓	✓	✓	✓	✓	✓	✓
Non-standard voltage and/or frequencies																	
Non-standard winding ⁵⁾	9	0	M1Y • and identification code	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

- Standard version
- Without additional charge
- This order code only determines the price of the version – Additional plain text is required.
- ✓ With additional charge

¹⁾ Parallel supply lines are required in the case of connection to ≤ 240 V. For frame size 315 with connection to ≤ 240 V, due to the high current, a drilled, removable entry plate (Order code **R52**) or a larger terminal box (Order code **R50**) can be used. Order codes **R52** and **R50** alter the motor dimensions.

²⁾ For North America export versions Eagle Line 1LE1521/1LE1621 NEMA Energy Efficient and 1LE1523/1LE1623 NEMA Premium Efficient, voltages above 600 V will not be stamped.

³⁾ Not admissible for North America export versions Eagle Line 1LE1521/1LE1621 NEMA Energy Efficient and 1LE1523/1LE1623 NEMA Premium Efficient.

⁴⁾ Only possible for 4-pole, 6-pole and 8-pole motors. The operating data for converter-fed operation is also provided in a table on the rating plate.

⁵⁾ Plain text must be specified in the order: Voltage between 200 and 690 V (voltages outside this range are available on request), frequency, circuit, for 60 Hz additionally required rated output in kW.













SIMOTICS GP 1LE1/1PC1 Standard Motors

Supplements to article numbers and special versions

Types of construction Aluminum series 1LE10, 1PC10

2

Selection and ordering data

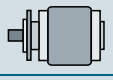
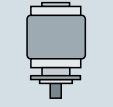
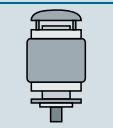

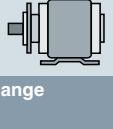
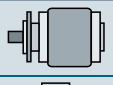
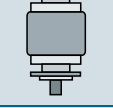
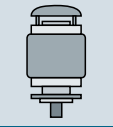


Types of construction	Type of construction letter 14th position of the Article No.	For types of construction with order code(s) Article No. with additional identification code -Z	Motor category							
			Motor version	Motor type (alum.)	Motor type – Frame size					
					80	90	100	112	132	160
			High Efficiency IE2	1LE1001	1LE1001 ①					
				1PC1001	1PC1001 ②					
			IE3 Premium Efficiency	1LE1003	1LE1003 ③					
			IE1 Standard Efficiency	1LE1002	1LE1002 ④					
				1PC1002	1PC1002 ⑤					
			NEMA Energy Efficient	1LE1021	1LE1021 Eagle Line ⑥					
			NEMA Premium Efficient	1LE1023	1LE1023 Eagle Line ⑦					
			Pole-changing	1LE1011	1LE1011 ⑧					
				1LE1012	1LE1012 ⑨					
			Motor version	Motor type	Frame size					
					80	90	100	112	132	160
			1LE10 .....	.. (-Z)						
			1PC10 .....	.. (-Z)						
				Order code						
Without flange										
IM B3 ^{1) 2) 3)}		A	–	All except ⑥						
IM B6 ^{2) 3)}		T	–	All except ⑥						
IM B7 ^{2) 3)}		U	–	All except ⑥						
IM B8 ^{2) 3)}		V	–	All except ⑥						
IM V6 ^{2) 3)}		D	–	All except ⑥						
IM V5 without protective cover ^{2) 3)}		C	–	All except ⑥						
IM V5 with protective cover ^{2) 3) 4) 5) 6)}		C	H00	All except ②, ⑤, ⑥ and in combination with order code F90	✓	✓	✓	✓	✓	✓
With flange					FF165 A 200	FF165 A 200	FF215 A 250	FF215 A 250	FF265 A 300	FF300 A 350
IM B5 ^{2) 7)}		F	–	All	✓	✓	✓	✓	✓	✓
IM V1 without protective cover ²⁾		G	–	All	✓	✓	✓	✓	✓	✓
IM V1 with protective cover ^{2) 4) 5) 6)}		G	H00	All except ②, ⑤ and in combination with order code F90	✓	✓	✓	✓	✓	✓
IM V3 ⁴⁾		H	–	All	✓	✓	✓	✓	✓	✓
IM B35 ³⁾		J	–	All except ⑥	✓	✓	✓	✓	✓	✓

For legends and footnotes, see Page 2/44.

SIMOTICS GP 1LE1/1PC1 Standard Motors

Supplements to article numbers and special versions

Types of construction Aluminum series 1LE10, 1PC10

Types of construction	Type of construction letter 14th position of the Article No.	For types of construction with order code(s) Article No. with additional identification code -Z	Motor category							
			Motor version	Motor type (alum.)	Motor type – Frame size					
					80	90	100	112	132	160
			High Efficiency IE2	1LE1001	1LE1001 ①					
				1PC1001	1PC1001 ②					
			IE3 Premium Efficiency	1LE1003	1LE1003 ③					
			IE1 Standard Efficiency	1LE1002	1LE1002 ④					
				1PC1002	1PC1002 ⑤					
			NEMA Energy Efficient	1LE1021	1LE1021 Eagle Line ⑥					
			NEMA Premium Efficient	1LE1023	1LE1023 Eagle Line ⑦					
			Pole-changing	1LE1011	1LE1011 ⑧					
				1LE1012	1LE1012 ⑨					
			Motor version	Motor type	Frame size					
					80	90	100	112	132	160
			With special flange next larger	acc. to DIN EN 50347	–	–	FF265	FF265	FF300	–
				acc. to DIN 42948	–	–	A 300	A 300	A 350	–
IM B5 2) 7)		F	P01	All	All	–	–	✓	✓	✓
IM V1 without protective cover 2)		G	P01	All	All	–	–	✓	✓	✓
IM V1 with protective cover 2) 4) 5) 6)		G	P01+H00	All except ②, ⑥ and in combination with order code F90	All	–	–	✓	✓	✓
IM V3 4)		H	P01	All	All	–	–	✓	✓	✓
IM B35 3)		J	P01	All except ⑥	All	–	–	✓	✓	✓
			With special flange next smaller	acc. to DIN EN 50347	–	–	FF165	FF165	FF215	FF265
				acc. to DIN 42948	–	–	A 200	A 200	A 250	A 300
IM B5 2) 7)		F	P02	All	All	–	–	✓	✓	✓
IM V1 without protective cover 2)		G	P02	All	All	–	–	✓	✓	✓
IM V1 with protective cover 2) 4) 5) 6)		G	P02+H00	All except ②, ⑥ and in combination with order code F90	All	–	–	✓	✓	✓
IM V3 4)		H	P02	All	All	–	–	✓	✓	✓
IM B35 3)		J	P02	All except ⑥	All	–	–	✓	✓	✓

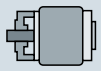


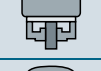

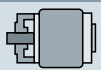




For legends and footnotes, see Page 2/44.

SIMOTICS GP 1LE1/1PC1 Standard Motors

Supplements to article numbers and special versions

Types of construction Aluminum series 1LE10, 1PC10

2

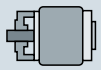
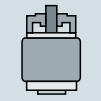
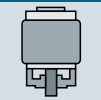
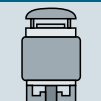
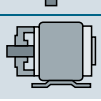
Types of construction	Type of construction letter 14th position of the Article No.	For types of construction with order code(s) Article No. with additional identification code -Z	Motor category								
			Motor version	Motor type (alum.)	Motor type – Frame size						
			80	90	100	112	132	160			
			High Efficiency IE2	1LE1001	1LE1001 ①						
				1PC1001	1PC1001 ②						
			IE3 Premium Efficiency	1LE1003	1LE1003 ③						
			IE1 Standard Efficiency	1LE1002	1LE1002 ④						
				1PC1002	1PC1002 ⑤						
			NEMA Energy Efficient	1LE1021	1LE1021 Eagle Line ⑥						
			NEMA Premium Efficient	1LE1023	1LE1023 Eagle Line ⑦						
			Pole-changing	1LE1011	1LE1011 ⑧						
				1LE1012	1LE1012 ⑨						
			Motor version	Motor type	Frame size						
					80	90	100	112	132	160	
			With standard flange	acc. to DIN EN 50347 acc. to DIN 42948	FT100 C 120	FT115 C 140	FT130 C 160	FT130 C 160	FT165 C 200	FT215 C 250	
IM B14 2) 8)		K	–	All	✓	✓	✓	✓	✓	✓	
IM V19 2)		L	–	All	✓	✓	✓	✓	✓	✓	
IM V18 without protective cover 2)		M	–	All	✓	✓	✓	✓	✓	✓	
IM V18 with protective cover 2) 4) 5) 6)		M	H00	All except ②, ⑤ and in combination with order code F90	✓	✓	✓	✓	✓	✓	
IM B34 3)		N	–	All except ⑥	✓	✓	✓	✓	✓	✓	
			With special flange next larger	acc. to DIN EN 50347 acc. to DIN 42948	FT130 C 160	FT130 C 160	FT165 C 200	FT165 C 200	FT215 C 250	–	
IM B14 2) 8)		K	P01	All	✓	✓	✓	✓	✓	–	
IM V19 2)		L	P01	All	✓	✓	✓	✓	✓	–	
IM V18 without protective cover 2)		M	P01	All	✓	✓	✓	✓	✓	–	
IM V18 with protective cover 2) 4) 5) 6)		M	P01+H00	All except ②, ⑤ and in combination with order code F90	✓	✓	✓	✓	✓	–	
IM B34 3)		N	P01	All except ⑥	✓	✓	✓	✓	✓	–	

For legends and footnotes, see Page 2/44.

SIMOTICS GP 1LE1/1PC1 Standard Motors

Supplements to article numbers and special versions

Types of construction Aluminum series 1LE10, 1PC10

Types of construction	Type of construction letter 14th position of the Article No.	For types of construction with order code(s) Article No. with additional identification code -Z	Motor category							
			Motor version	Motor type (alum.)	Motor type – Frame size					
					80	90	100	112	132	160
			High Efficiency IE2	1LE1001	1LE1001 ①					
				1PC1001	1PC1001 ②					
			IE3 Premium Efficiency	1LE1003	1LE1003 ③					
			IE1 Standard Efficiency	1LE1002	1LE1002 ④					
				1PC1002	1PC1002 ⑤					
			NEMA Energy Efficient	1LE1021	1LE1021 Eagle Line ⑥					
			NEMA Premium Efficient	1LE1023	1LE1023 Eagle Line ⑦					
			Pole-changing	1LE1011	1LE1011 ⑧					
				1LE1012	1LE1012 ⑨					
			Motor version	Motor type	Frame size					
					80	90	100	112	132	160
With special flange next smaller			acc. to DIN EN 50347		–	–	FT115	FT115	FT130	FT165
			acc. to DIN 42948		–	–	C 140	C 140	C 160	C 200
1LE10 ■ . . (-Z)										
1PC10 ■ . . (-Z)		Order code								
IM B14 ^{2) 3)}		K	P02	All	All	–	–	O. R.	O. R.	O. R.
IM V19 ²⁾		L	P02	All	All	–	–	O. R.	O. R.	O. R.
IM V18 without protective cover ²⁾		M	P02	All	All	–	–	O. R.	O. R.	O. R.
IM V18 with protective cover ^{2) 4) 5) 6)}		M	P02+H00	All except ②, ⑤ and in combination with order code F90	–	–	O. R.	O. R.	O. R.	O. R.
IM B34 ³⁾		N	P02	All except ⑥	–	–	O. R.	O. R.	O. R.	O. R.

- Standard version
- ✓ With additional charge
- Not possible
- O. R. Possible on request

- 1) The types of construction IM B6/7/8, IM V6 and IM V5 with/without protective cover are also possible as long as no condensation drainage holes (order code **H03**) and no stamping of these types of construction on the rating plate are required. As standard the type of construction IM B3 is then stamped on the rating plate. With type of construction IM V5 with protective cover, the protective cover has to be additionally ordered with order code **H00**. The protective cover is not stamped on the rating plate.
- 2) The type of construction is stamped on the rating plate. When ordering with condensation drainage holes (order code **H03**), if mounted in a different position, the position must be specified to ensure that the condensation drainage holes are positioned correctly.
- 3) For North America export version Eagle Line 1LE1021 NEMA Energy Efficient, types of construction with feet are not possible for 2-pole, 4-pole and 6-pole motors ≤ 200 hp in accordance with NEMA MG1 Table 12-11.
- 4) The "Second shaft extension" option (order code **L05**) is not possible.
- 5) In combination with an encoder it is not necessary to order the protective cover (order code **H00**), as this is delivered as a protection for the encoder as standard. In this case the protective cover is standard version (without additional charge).

- 6) Not possible for 1PC1 naturally cooled motors and 1LE1 forced-air cooled motors with order code **F90** without external fan and fan cover.
- 7) The types of construction IM V3 and IM V1 with/without protective cover are also possible as long as no condensation drainage holes (order code **H03**) and no stamping of these types of construction on the rating plate are required. As standard the type of construction IM B5 is then stamped on the rating plate. With type of construction IM V1 with protective cover, the protective cover has to be additionally ordered with order code **H00**. The protective cover is not stamped on the rating plate.
- 8) The types of construction IM V19 and IM V18 with/without protective cover are also possible as long as no condensation drainage holes (order code **H03**) and no stamping of these types of construction on the rating plate are required. As standard the type of construction IM B14 is then stamped on the rating plate. With type of construction IM V18 with protective cover, the protective cover has to be additionally ordered with order code **H00**. The protective cover is not stamped on the rating plate.













SIMOTICS SD 1LE1 Standard Motors

Supplements to article numbers and special versions

Types of construction
Cast-iron series 1LE15 Basic Line, 1LE16 Performance Line

2

Selection and ordering data

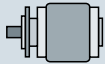

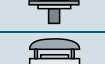


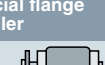

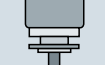


Types of construction	Type of construc. code 14th pos. of Article No.	For types of construc. with order code(s) Article No. with additional identification code -Z	Motor category																	
			Motor version	Motor type (cast-iron)	Motor type – Frame size													315 S/M	315 L 2-pole	315 L 4-, 6-, 8-pole
					71	80	90	100	112	132	160	180	200	225	250	280				
			High Efficiency IE2	1LE1501	1LE1501 Basic Line ①															
				1LE1601	1LE1601 Performance Line ②															
			IE3 Premium Efficiency	1LE1503	1LE1503 Basic Line ③															
				1LE1603	1LE1603 Performance Line ④															
			NEMA Energy Efficient	1LE1521	1LE1521 Eagle Line Basic ⑤															
				1LE1621	1LE1621 Eagle Line Performance ⑥															
			NEMA Premium Efficient	1LE1523	1LE1523 Eagle Line Basic ⑦															
				1LE1623	1LE1623 Eagle Line Performance ⑧															
			Order code	1LE1.....-Z																
			Motor version	Motor type	71	80	90	100	112	132	160	180	200	225	250	280	315 S/M	315 L 2-pole	315 L 4-, 6-, 8-pole	
Without flange																				
IM B3 1) 2) 3)		A	-	All except ⑤, ⑥ 2, 4, 6-pole ≤ 200 hp and ⑦, ⑧ 8-pole ≤ 200 hp	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	
IM B6 2) 3)		T	-	All except ⑤, ⑥ 2, 4, 6-pole ≤ 200 hp and ⑦, ⑧ 8-pole ≤ 200 hp	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	
IM B7 2) 3)		U	-	All except ⑤, ⑥ 2, 4, 6-pole ≤ 200 hp and ⑦, ⑧ 8-pole ≤ 200 hp	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	
IM B8 2) 3)		V	-	All except ⑤, ⑥ 2, 4, 6-pole ≤ 200 hp and ⑦, ⑧ 8-pole ≤ 200 hp	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	
IM V6 2) 3)		D	-	All except ⑤, ⑥ 2, 4, 6-pole ≤ 200 hp and ⑦, ⑧ 8-pole ≤ 200 hp	□	□	□	□	□	□	□	□	□	□	□	□	□	✓	□	
IM V5 without protective cover 2) 3)		C	-	All except ⑤, ⑥ 2, 4, 6-pole ≤ 200 hp and ⑦, ⑧ 8-pole ≤ 200 hp	□	□	□	□	□	□	□	□	□	□	□	□	□	✓	□	
IM V5 with protective cover 2) 3) 4) 5)		C	H00	All except ⑤, ⑥ 2, 4, 6-pole ≤ 200 hp and ⑦, ⑧ 8-pole ≤ 200 hp	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
With flange																				
		acc. to DIN EN 50347			FF130	FF165	FF165	FF215	FF215	FF265	FF300	FF300	FF350	FF400	FF500	FF500	FF600	FF600	FF600	
		acc. to DIN 42948			A 160	A 200	A 200	A 250	A 250	A 300	A 350	A 350	A 400	A 450	A 550	A 550	A 660	A 660	A 660	
IM B5 2) 6)		F	-	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	
IM V1 without protective cover 2)		G	-	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
IM V1 with protective cover 2) 4) 5)		G	H00	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
IM V3 ⁵⁾		H	-	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	
IM B35 ³⁾		J	-	All except ⑤, ⑥ 2, 4, 6-pole ≤ 200 hp and ⑦, ⑧ 8-pole ≤ 200 hp	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	

For legends, see Page 2/47; for footnotes, see Page 2/48.

SIMOTICS SD 1LE1 Standard Motors

Supplements to article numbers and special versions

Types of construction Cast-iron series 1LE15 Basic Line, 1LE16 Performance Line

Types of construction	Type of construction code 14th pos. of Article No.	For types of construction with order code(s) Article No. with additional identification code -Z	Motor category																	
			Motor version	Motor type (cast-iron)	Motor type – Frame size													315 S/M	315 L 2-pole	315 L 4-, 6-, 8-pole
					71	80	90	100	112	132	160	180	200	225	250	280				
			High Efficiency IE2	1LE1501	1LE1501 Basic Line ①															
				1LE1601	1LE1601 Performance Line ②															
			IE3 Premium Efficiency	1LE1503	1LE1503 Basic Line ③															
				1LE1603	1LE1603 Performance Line ④															
			NEMA Energy Efficient	1LE1521	1LE1521 Eagle Line Basic ⑤															
				1LE1621	1LE1621 Eagle Line Performance ⑥															
			NEMA Premium Efficient	1LE1523	1LE1523 Eagle Line Basic ⑦															
				1LE1623	1LE1623 Eagle Line Performance ⑧															
			Motor version	Motor type	Frame size															
					71	80	90	100	112	132	160	180	200	225	250	280	315 S/M	315 L 2-pole	315 L 4-, 6-, 8-pole	
			1LE1..... (-Z)	Order code																
			With special flange next larger	acc. to DIN EN 50347 acc. to DIN 42948	-	-	-	FF265	FF265	FF300	-	-	-	-	-	-	-	-		
			IM B5 2) 6)		F	P01	All	All				✓	✓	✓	-	-	-	-		
			IM V1 without protective cover 2)		G	P01	All	All				✓	✓	✓	-	-	-	-		
			IM V1 with protective cover 2) 4) 5)		G	P01+H00	All	All				✓	✓	✓	-	-	-	-		
			IM V3 5)		H	P01	All	All				✓	✓	✓	-	-	-	-		
			IM B35 3)		J	P01	All except ⑤, ⑥ 2, 4, 6-pole ≤ 200 hp and ⑦, ⑧ 8-pole ≤ 200 hp					✓	✓	✓	-	-	-	-		
			With special flange next smaller	acc. to DIN EN 50347 acc. to DIN 42948	-	-	-	FF165	FF165	FF215	FF265	-	-	-	-	-	-	-		
			IM B5 2) 6)		F	P02	All	All				O. R.	O. R.	O. R.	O. R.	-	-	-		
			IM V1 without protective cover 2)		G	-Z P02	All	All				O. R.	O. R.	O. R.	O. R.	-	-	-		
			IM V1 with protective cover 2) 4) 5)		G	P02+H00	All	All				O. R.	O. R.	O. R.	O. R.	-	-	-		
			IM V3 5)		H	P02	All	All				O. R.	O. R.	O. R.	O. R.	-	-	-		
			IM B35 3)		J	P02	All except ⑤, ⑥ 2, 4, 6-pole ≤ 200 hp and ⑦, ⑧ 8-pole ≤ 200 hp					O. R.	O. R.	O. R.	O. R.	-	-	-		

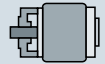



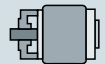





For legends, see Page 2/47; for footnotes, see Page 2/48.

SIMOTICS SD 1LE1 Standard Motors

Supplements to article numbers and special versions

Types of construction Cast-iron series 1LE15 Basic Line, 1LE16 Performance Line

2

Types of construction	Type of construc- code 14th pos. of Article No.	For types of construc- tion with order code(s) Article No. with addi- tional identi- fication code -Z	Motor category																		
			Motor version	Motor type (cast-iron)	Motor type – Frame size													315 S/M	315 L 2-pole	315 L 4-, 6-, 8-pole	
			High Efficiency IE2	1LE1501 1LE1601	1LE1501 Basic Line ① 1LE1601 Performance Line ②																
			IE3 Premium Efficiency	1LE1503 1LE1603	1LE1503 Basic Line ③ 1LE1603 Performance Line ④																
			NEMA Energy Efficient	1LE1521 1LE1621	1LE1521 Eagle Line Basic ⑤ 1LE1621 Eagle Line Performance ⑥																
			NEMA Premium Efficient	1LE1523 1LE1623	1LE1523 Eagle Line Basic ⑦ 1LE1623 Eagle Line Performance ⑧																
			Motor version	Motor type	Frame size																
					71	80	90	100	112	132	160	180	200	225	250	280	315 S/M	315 L 2-pole	315 L 4-pole, 6-pole, 8-pole		
			Order code																		
			1LE1.....-Z																		
With flange			acc. to DIN EN 50347 acc. to DIN 42948		-	-	-	FT130	FT130	FT165	FT215	-	-	-	-	-	-	-	-		
					-	-	-	C 160	C 160	C 200	C 250	-	-	-	-	-	-	-	-		
IM B14 2) 7)		K	-	All	All	-	-	-	✓	✓	✓	✓	-	-	-	-	-	-	-		
IM V19 2)		L	-	All	All	-	-	-	✓	✓	✓	✓	-	-	-	-	-	-	-		
IM V18 without protective cover 2)		M	-	All	All	-	-	-	✓	✓	✓	✓	-	-	-	-	-	-	-		
IM V18 with protective cover 2) 4) 5)		M	H00	All	All	-	-	-	✓	✓	✓	✓	-	-	-	-	-	-	-		
IM B34 3)		N	-	All except ⑤, ⑥ 2, 4, 6-pole ≤ 200 hp and ⑦, ⑧ 8-pole ≤ 200 hp		-	-	-	✓	✓	✓	✓	-	-	-	-	-	-	-		
With special flange next larger			acc. to DIN EN 50347 acc. to DIN 42948		-	-	-	FT165	FT165	FT215	-	-	-	-	-	-	-	-	-		
					-	-	-	C 200	C 200	C 250	-	-	-	-	-	-	-	-	-		
IM B14 2) 7)		K	P01	All	All	-	-	-	✓	✓	✓	-	-	-	-	-	-	-	-		
IM V19 2)		L	P01	All	All	-	-	-	✓	✓	✓	-	-	-	-	-	-	-	-		
IM V18 without protective cover 2)		M	P01	All	All	-	-	-	✓	✓	✓	-	-	-	-	-	-	-	-		
IM V18 with protective cover 2) 4) 5)		M	P01+H00	All	All	-	-	-	✓	✓	✓	-	-	-	-	-	-	-	-		
IM B34 3)		N	P01	All except ⑤, ⑥ 2, 4, 6-pole ≤ 200 hp and ⑦, ⑧ 8-pole ≤ 200 hp		-	-	-	✓	✓	✓	-	-	-	-	-	-	-	-		

- Standard version
- ✓ With additional charge
- Not possible
- O. R. Possible on request

For footnotes, see Page 2/48.

SIMOTICS SD 1LE1 Standard Motors

Supplements to article numbers and special versions

Types of construction

Cast-iron series 1LE15 Basic Line, 1LE16 Performance Line

2

- 1) The types of construction IM B6/7/8, IM V6 and IM V5 with/without protective cover are also possible as long as no stamping of these types of construction on the rating plate is required. As standard the type of construction IM B3 is then stamped on the rating plate. With type of construction IM V5 with protective cover, the protective cover has to be additionally ordered with order code **H00**. The protective cover is not stamped on the rating plate.
- 2) The type of construction is stamped on the rating plate. If mounted in a different position, the position must be specified to ensure that the condensation drainage holes are positioned correctly.
- 3) For North America export version Eagle Line 1LE1521/1LE1621 NEMA Energy Efficient, types of construction with feet are not possible for 2-pole, 4-pole and 6-pole motors ≤ 200 hp in accordance with NEMA MG1 Table 12-11.
- 4) In combination with an encoder it is not necessary to order the protective cover (order code **H00**), as this is delivered as a protection for the encoder as standard. In this case the protective cover is standard design (without extra price).
- 5) The "Second shaft extension" option (order code **L05**) is not possible.
- 6) The types of construction IM V3 and IM V1 with/without protective cover are also possible as long as no stamping of these types of construction on the rating plate is required. As standard the type of construction IM B5 is then stamped on the rating plate. With type of construction IM V1 with protective cover, the protective cover has to be additionally ordered with order code **H00**. The protective cover is not stamped on the rating plate.
- 7) The types of construction IM V19 and IM V18 with/without protective cover are also possible as long as no stamping of these types of construction on the rating plate is required. As standard the type of construction IM B14 is then stamped on the rating plate. With type of construction IM V18 with protective cover, the protective cover has to be additionally ordered with order code **H00**. The protective cover is not stamped on the rating plate.

SIMOTICS GP 1LE1/1PC1 Standard Motors

Supplements to article numbers and special versions

Motor protection
Aluminum series 1LE10, 1PC10

Selection and ordering data

Motor protection	Motor protection code 15th position in Article No.	Additional identification code with order code and plain text if required	Motor category								
			Motor version	Motor type (alum.)	Motor type – Frame size						
					80	90	100	112	132	160	
1LE10 ■ . 1PC10 ■ .			High Efficiency IE2	1LE1001	1LE1001						
				1PC1001		1PC1001					
			IE3 Premium Efficiency	1LE1003	1LE1003						
			IE1 Standard Efficiency	1LE1002		1LE1002					
				1PC1002		1PC1002					
			NEMA Energy Efficient	1LE1021	1LE1021 Eagle Line						
			NEMA Premium Efficient	1LE1023	1LE1023 Eagle Line						
			Pole-changing	1LE1011		1LE1011					
	1LE1012		1LE1012								
		Order code	Motor version	Motor type	Frame size						
					80	90	100	112	132	160	
Motor protection (winding protection)											
Without motor protection ¹⁾	A	–	All	All	☐	☐	☐	☐	☐	☐	
Motor protection with PTC thermistors with 1 or 3 embedded temperature sensors for tripping ²⁾	B	–	All	All	✓	✓	✓	✓	✓	✓	
Motor protection with PTC thermistors with 6 embedded temperature sensors for alarm and tripping ²⁾	C	–	All	All	✓	✓	✓	✓	✓	✓	
Motor temperature detection with embedded temperature sensor KTY 84-130 ²⁾	F	–	All	All	✓	✓	✓	✓	✓	✓	
Motor temperature detection with embedded temperature sensor 2 × KTY 84-130 ²⁾	G	–	All	All	✓	✓	✓	✓	✓	✓	
Installation of 3 Pt100 resistance thermometers ²⁾	H	–	All	All	–	–	✓	✓	✓	✓	
NTC thermistors for tripping	Z	Q2A	All	All	–	–	✓	✓	✓	✓	
Temperature detectors for tripping ²⁾	Z	Q3A	All	All	✓	✓	✓	✓	✓	✓	

- ☐ Standard version
- ✓ With additional charge
- Not possible

¹⁾ Frame sizes 80 and 90 with voltage code 02 can only be supplied without motor protection (motor protection code A).

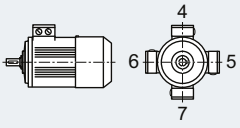
²⁾ Evaluation with appropriate tripping unit (see Catalog IC 10) is recommended. For pole-changing motors, double the number of temperature sensors or temperature detectors is required. This also results in a double additional charge.

SIMOTICS GP 1LE1/1PC1 Standard Motors

Supplements to article numbers and special versions

Terminal box position
Aluminum series 1LE10, 1PC10

Selection and ordering data

Terminal box position		Terminal box position code 16th position of the Article No.	Additional identification code with order code and plain text if required	Motor category							
				Motor version	Motor type (alum.)	Motor type – Frame size					
						80	90	100	112	132	160
1LE10		■		High Efficiency IE2	1LE1001	1LE1001					
1PC10		■			1PC1001	1PC1001					
				IE3 Premium Efficiency	1LE1003	1LE1003					
				IE1 Standard Efficiency	1LE1002	1LE1002					
					1PC1002	1PC1002					
				NEMA Energy Efficient	1LE1021	1LE1021 Eagle Line					
				NEMA Premium Efficient	1LE1023	1LE1023 Eagle Line					
				Pole-changing	1LE1011	1LE1011					
					1LE1012	1LE1012					
			Order code	Motor version	Motor type	Frame size					
						80	90	100	112	132	160
Terminal box position											
Terminal box top ¹⁾		4	–	All	All	□	□	□	□	□	□
Terminal box on RHS ²⁾		5	–	All	All	✓	✓	✓	✓	✓	✓
Terminal box on LHS ²⁾		6	–	All	All	✓	✓	✓	✓	✓	✓
Terminal box at bottom ^{2) 3)}		7	–	All	All	–	–	✓	✓	✓	✓

- Standard version
- ✓ With additional charge
- Not possible

¹⁾ For types of construction with feet and flange-mounted with feet, cast feet are standard. Screwed-on feet are available with order code **H01**.

²⁾ For types of construction with feet and flange-mounted with feet, screwed-on feet are standard.
For types of construction with feet and flange-mounted with feet, cast feet are standard. Screwed-on feet are available with order code **H01**.

³⁾ Not generally possible for motors with feet.

SIMOTICS SD 1LE1 Standard Motors

Supplements to article numbers and special versions

Terminal box position Cast-iron series 1LE15 Basic Line, 1LE16 Performance Line

Selection and ordering data

Terminal box position	Terminal box position code 16th position of the Article No.	Additional identification code with order code and plain text if required	Motor category																	
			Motor version	Motor type (cast-iron)	Motor type – Frame size															
					71	80	90	100	112	132	160	180	200	225	250	280	315			
			High Efficiency IE2	1LE1501	1LE1501 Basic Line ①															
				1LE1601	1LE1601 Performance Line ②															
			IE3 Premium Efficiency	1LE1503	1LE1503 Basic Line ③															
				1LE1603	1LE1603 Performance Line ④															
			NEMA Energy Efficient	1LE1521	1LE1521 Eagle Line Basic ⑤															
				1LE1621	1LE1621 Eagle Line Performance ⑥															
			NEMA Premium Efficient	1LE1523	1LE1523 Eagle Line Basic ⑦															
				1LE1623	1LE1623 Eagle Line Performance ⑧															
			Motor version Motor type Frame size					71	80	90	100	112	132	160	180	200	225	250	280	315
			Terminal box position																	
Terminal box top ¹⁾	4	–	All	All	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐			
Terminal box on RHS ²⁾	5	–	All	All	–	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Terminal box on LHS ²⁾	6	–	All	All	–	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
Terminal box at bottom ³⁾	7	–	All	All	–	–	–	✓	✓	✓	–	–	–	–	–	–	–			

- ☐ Standard version
 ✓ With additional charge
 – Not possible

¹⁾ For types of construction with feet and flange-mounted with feet, cast feet are standard. Screwed-on feet are available with order code **H01**.

²⁾ For types of construction with feet and flange-mounted with feet, screwed-on feet are standard. Except for frame sizes 225, 250, 280 and 315: in which case for types of construction with feet and flange-mounted with feet, cast feet are standard. Screwed-on feet are available with order code **H01**.

³⁾ Not generally possible for motors with feet.

SIMOTICS GP 1LE1/1PC1 Standard Motors

Supplements to article numbers and special versions

Options
Aluminum series 1LE10, 1PC10

Selection and ordering data

Special versions	Additional identification code -Z with order code and plain text if required	Motor category							
		Motor version	Motor type (alum.)	Motor type – Frame size					
				80	90	100	112	132	160
		High Efficiency IE2	1LE1001 1PC1001	1LE1001 ①			1PC1001 ②		
		IE3 Premium Efficiency	1LE1003	1LE1003 ③					
		IE1 Standard Efficiency	1LE1002				1LE1002 ④		
			1PC1002				1PC1002 ⑤		
		NEMA Energy Efficient	1LE1021	1LE1021 Eagle Line ⑥					
		NEMA Premium Efficient	1LE1023	1LE1023 Eagle Line ⑦					
		Pole-changing	1LE1011				1LE1011 ⑧		
			1LE1012				1LE1012 ⑨		
1LE10 -Z 1PC10 -Z		Motor version	Motor type	Frame size					
				80	90	100	112	132	160
Motor connection and terminal box									
External grounding	H04	All	All	✓	✓	✓	✓	✓	✓
Terminal box on NDE ³⁾	H08	All	All	✓	✓	✓	✓	✓	✓
Rotation of the terminal box through 90°, entry from DE ¹⁾	R10	All	All	○	○	○	○	○	○
Rotation of the terminal box through 90°, entry from NDE	R11	All	All	○	○	○	○	○	○
Rotation of the terminal box through 180°	R12	All	All	○	○	○	○	○	○
One metal cable gland	R15	All	All	✓	✓	✓	✓	✓	✓
3 cables protruding, 0.5 m long ⁴⁾⁵⁾	R20	All except ⑧ and ⑨	All	✓	✓	✓	✓	✓	✓
3 cables protruding, 1.5 m long ⁴⁾⁵⁾	R21	All except ⑧ and ⑨	All	✓	✓	✓	✓	✓	✓
6 cables protruding, 0.5 m long ⁴⁾	R22	All	All	✓	✓	✓	✓	✓	✓
6 cables protruding, 1.5 m long ⁴⁾	R23	All	All	✓	✓	✓	✓	✓	✓
6 cables protruding, 3 m long ⁴⁾	R24	All	All	✓	✓	✓	✓	✓	✓
Reduction piece for M cable gland in accordance with British Standard, both cable entries mounted ²⁾	R30	All	All	–	–	✓	✓	✓	✓
Larger terminal box	R50	All, standard version for Eagle Line ⑥ and ⑦ < frame size 100	All	✓	✓	✓	✓	✓	✓
Motor connector Han-Drive 10e for 230 VΔ/400 VY ³⁰⁾	R70	All	All	✓	✓	✓	✓	✓	–
Motor connector Han-Drive 10e EMC for 230 VΔ/400 VY ³⁰⁾	R71	All	All	✓	✓	✓	✓	✓	–
Small motor connector CQ12 with EMC	R72	All	All	✓	✓	–	–	–	–
Small motor connector CQ12 without EMC	R73	All	All	✓	✓	–	–	–	–
Windings and insulation									
Temperature class 155 (F), utilized acc. to 155 (F), with service factor (SF)	N01	All	All	–	–	✓	✓	✓	✓
Temperature class 155 (F), utilized acc. to 155 (F), with increased output	N02	All	All	–	–	✓	✓	✓	✓
Temperature class 155 (F), utilized acc. to 155 (F), with increased coolant temperature	N03	All	All	✓	✓	✓	✓	✓	✓
Temperature class 155 (F), utilized acc. to 130 (B), coolant temperature 45 °C, derating approx. 4 %	N05	All	All	✓	✓	✓	✓	✓	✓
Temperature class 155 (F), utilized acc. to 130 (B), coolant temperature 50 °C, derating approx. 8 %	N06	All	All	✓	✓	✓	✓	✓	✓
Temperature class 155 (F), utilized acc. to 130 (B), coolant temperature 55 °C, derating approx. 13 %	N07	All	All	✓	✓	✓	✓	✓	✓
Temperature class 155 (F), utilized acc. to 130 (B), coolant temperature 60 °C, derating approx. 18 %	N08	All	All	✓	✓	✓	✓	✓	✓
Temperature class H	N10 <i>New!</i>	All	All	✓	✓	–	–	–	–
Temperature class 180 (H) at rated output and max. CT 60 °C ⁶⁾	N11	All	All	✓	✓	✓	✓	✓	✓
Increased air humidity/temperature with 30 to 60 g water per m ³ of air	N20	All	All	✓	✓	✓	✓	✓	✓
Increased air humidity/temperature with 60 to 100 g water per m ³ of air	N21	All	All	✓	✓	✓	✓	✓	✓

For legends and footnotes, see Page 2/57.

SIMOTICS GP 1LE1/1PC1 Standard Motors

Supplements to article numbers and special versions

Options Aluminum series 1LE10, 1PC10

Special versions	Additional identification code -Z with order code and plain text if required	Motor category							
		Motor version	Motor type (alum.)	Motor type – Frame size					
				80	90	100	112	132	160
		High Efficiency IE2	1LE1001	1LE1001 ①					
			1PC1001	1PC1001 ②					
		IE3 Premium Efficiency	1LE1003	1LE1003 ③					
		IE1 Standard Efficiency	1LE1002	1LE1002 ④					
			1PC1002	1PC1002 ⑤					
		NEMA Energy Efficient	1LE1021	1LE1021 Eagle Line ⑥					
		NEMA Premium Efficient	1LE1023	1LE1023 Eagle Line ⑦					
		Pole-changing	1LE1011	1LE1011 ⑧					
			1LE1012	1LE1012 ⑨					
		Motor version	Motor type	Frame size					
				80	90	100	112	132	160
Windings and insulation (continued)									
Temperature class 155 (F), utilized acc. to 130 (B), with higher coolant temperature and/or site altitude	Y50 • and specified output, CT ... °C or SA m above sea level	All	All	✓	✓	✓	✓	✓	✓
Temperature class 155 (F), utilized according to 155 (F), other requirements	Y52 • and identification code	All	All	✓	✓	✓	✓	✓	✓
Colors and paint finish									
Special finish in RAL 7030 stone gray		All	All	□	□	□	□	□	□
Unpainted (only cast-iron parts primed)	S00	All	All	○	○	○	○	○	○
Unpainted, only primed	S01	All	All	✓	✓	✓	✓	✓	✓
Special finish sea air resistant	S03	All	All	–	–	✓	✓	✓	✓
Special finish in special RAL colors: For RAL colors, see "Special finish in special RAL colors" (see Catalog Section 1 "Introduction")	Y51 • and special finish RAL....	All	All	✓	✓	✓	✓	✓	✓
Special finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005 (see Catalog Section 1 "Introduction")	Y54 • and special finish RAL....	All	All	✓	✓	✓	✓	✓	✓
Modular technology – Basic versions 7)									
Mounting of holding brake (standard assignment) 8) 28)	F01	All except ②, ⑤ and in combination with order code F90		✓	✓	✓	✓	✓	✓
Mounting of brake for higher switching frequency (operating brake)	F02	All	All	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.
Mounting of separately driven fan 29)	F70	All except ②, ⑤ and in combination with order code F90		✓	✓	✓	✓	✓	✓
Mounting of 1XP8012-10 (HTL) rotary pulse encoder 9) 10)	G01	All except ②, ⑤ and in combination with order code F90		✓	✓	✓	✓	✓	✓
Mounting of 1XP8012-20 (TTL) rotary pulse encoder 9) 10)	G02	All except ②, ⑤ and in combination with order code F90		✓	✓	✓	✓	✓	✓
Modular technology – Additional versions									
Brake supply voltage 24 V DC	F10	All except ②, ⑤ and in combination with order code F90		✓	✓	✓	✓	✓	✓
Brake supply voltage 230 V AC, 50/60 Hz	F11	All except ②, ⑤ and in combination with order code F90		✓	✓	○	○	○	○
Brake supply voltage 400 V AC, 50/60 Hz	F12	All except ②, ⑤ and in combination with order code F90		✓	✓	✓	✓	✓	✓
Mechanical manual brake release with lever (no locking)	F50	All except ②, ⑤ and in combination with order code F90		✓	✓	✓	✓	✓	✓
Special technology 6)									
Mounting of LL 861 900 220 rotary pulse encoder 9)	G04	All except ②, ⑤ and in combination with order code F90		–	–	✓	✓	✓	✓
Mounting of HOG 9 D 1024 I rotary pulse encoder 9)	G05	All except ②, ⑤ and in combination with order code F90		–	–	✓	✓	✓	✓
Mounting of HOG 10 D 1024 I rotary pulse encoder 9)	G06	All except ②, ⑤ and in combination with order code F90		–	–	✓	✓	✓	✓
Mechanical design and degrees of protection									
Low-noise version for 2-pole motors with clockwise direction of rotation	F77	All except ②, ⑤ and in combination with order code F90		–	–	–	–	✓	✓
Low-noise version for 2-pole motors with counter-clockwise direction of rotation	F78	All except ②, ⑤ and in combination with order code F90		–	–	–	–	✓	✓
Prepared for mountings, center hole only 10)	G40	All except ②, ⑤ and in combination with order code F90		✓	✓	✓	✓	✓	✓

For legends and footnotes, see Page 2/57.

SIMOTICS GP 1LE1/1PC1 Standard Motors

Supplements to article numbers and special versions

Options
Aluminum series 1LE10, 1PC10

Special versions	Additional identification code -Z with order code and plain text if required	Motor category							
		Motor version	Motor type (alum.)	Motor type – Frame size					
				80	90	100	112	132	160
		High Efficiency IE2	1LE1001	1LE1001 ①					
			1PC1001	1PC1001 ②					
		IE3 Premium Efficiency	1LE1003	1LE1003 ③					
		IE1 Standard Efficiency	1LE1002	1LE1002 ④					
			1PC1002	1PC1002 ⑤					
		NEMA Energy Efficient	1LE1021	1LE1021 Eagle Line ⑥					
		NEMA Premium Efficient	1LE1023	1LE1023 Eagle Line ⑦					
		Pole-changing	1LE1011	1LE1011 ⑧					
		1LE1012	1LE1012 ⑨						
1LE10 -Z		Motor version	Motor type	Frame size					
1PC10 -Z	Order code			80	90	100	112	132	160
Mechanical design and degrees of protection (continued)									
Prepared for mountings with D12 shaft ¹⁵⁾	G41	All except ②, ⑤ and in combination with order code F90		✓	✓	✓	✓	✓	✓
Prepared for mountings with D16 shaft ¹⁵⁾	G42	All except ②, ⑤ and in combination with order code F90		✓	✓	✓	✓	✓	✓
Protective cover for encoder (supplied loose – only for mountings with order codes G40, G41 and G42 ²⁾)	G43	All except ②, ⑤ and in combination with order code F90		✓	✓	✓	✓	✓	✓
Protective cover ^{9) 11)}	H00	All except ②, ⑤ and in combination with order code F90		✓	✓	✓	✓	✓	✓
Screwed-on (instead of cast) feet	H01	All	All	✓	✓	✓	✓	✓	✓
Vibration-proof version	H02	All	All	–	–	✓	✓	✓	✓
Condensation drainage holes ¹⁴⁾	H03	All	All	✓	✓	✓	✓	✓	✓
Rust-resistant screws (externally)	H07	All	All	–	–	✓	✓	✓	✓
Housing with screw mounting	H10	Only possible for ③, ⑥ and ⑦		✓	✓	–	–	–	–
IP65 degree of protection ¹³⁾	H20	All	All	✓	✓	✓	✓	✓	✓
IP56 degree of protection ¹²⁾	H22	All	All	✓	✓	✓	✓	✓	✓
Drive-end seal for flange-mounting motors, oil-tight to 0.1 bar ¹¹⁾	H23	All	All	✓	✓	✓	✓	✓	✓
Next larger standard flange	P01	All	All	–	–	✓	✓	✓	–
Next smaller standard flange	P02	All	All	–	–	O. R.	O. R.	O. R.	O. R.
Coolant temperature and site altitude									
Coolant temperature –40 to +40 °C ^{16) 28)}	D03	All	All	✓	✓	✓	✓	✓	✓
Coolant temperature –30 to +40 °C ^{16) 28)}	D04	All	All	✓	✓	✓	✓	✓	✓
Designs in accordance with standards and specifications									
VIK version	C02	Only possible for ① and ③		–	–	✓	✓	✓	✓
IE1 motor without CE marking for export outside EEA (see EU Directive 640/200 ⁹⁾)	D22	Only possible for ④ and ⑤		–	–	○	○	○	○
Electrical according to NEMA MG1-12 ¹⁸⁾	D30	All, standard version for ⑥ and ⑦		✓	✓	✓	✓	✓	✓
Design according to UL with "Recognition Mark" ¹⁹⁾	D31	All, standard version for ⑥ and ⑦		✓	✓	✓	✓	✓	✓
China Energy Efficiency Label	D34	Only possible for ① and ②		–	–	○	○	○	○
Canadian regulations (CSA) ¹⁷⁾	D40	All, standard version for ⑥ and ⑦		✓	✓	✓	✓	✓	✓
Train-compatible version	L82	All except ② and ⑤		✓	✓	✓	✓	✓	✓
Bearings and lubrication									
Located bearing DE	L20	All	All	✓	✓	✓	✓	✓	✓
Located bearing NDE	L21	All	All	✓	✓	✓	✓	✓	□
Bearing design for increased cantilever forces	L22	All	All	–	–	✓	✓	✓	✓
Regreasing device ²⁰⁾	L23	All	All	–	–	✓	✓	✓	✓
Special bearing for DE and NDE, bearing size 63	L25	All	All	–	–	✓	✓	✓	✓
Measuring nipple for SPM shock pulse measurement for bearing inspection ²⁰⁾	Q01	All	All	–	–	✓	✓	✓	✓
Balance and vibration quantity									
Vibration severity grade A		All	All	□	□	□	□	□	□
Vibration quantity level B	L00	All	All	✓	✓	✓	✓	✓	✓
Half-key balancing (standard)		All	All	□	□	□	□	□	□
Balancing without key	L01	All	All	✓	✓	✓	✓	✓	✓
Full-key balancing	L02	All	All	✓	✓	✓	✓	✓	✓

SIMOTICS GP 1LE1/1PC1 Standard Motors

Supplements to article numbers and special versions

Options Aluminum series 1LE10, 1PC10

Special versions	Additional identification code -Z with order code and plain text if required	Motor category							
		Motor version	Motor type (alum.)	Motor type – Frame size					
				80	90	100	112	132	160
		High Efficiency IE2	1LE1001	1LE1001 ①					
			1PC1001	1PC1001 ②					
		IE3 Premium Efficiency	1LE1003	1LE1003 ③					
		IE1 Standard Efficiency	1LE1002	1LE1002 ④					
			1PC1002	1PC1002 ⑤					
		NEMA Energy Efficient	1LE1021	1LE1021 Eagle Line ⑥					
		NEMA Premium Efficient	1LE1023	1LE1023 Eagle Line ⑦					
		Pole-changing	1LE1011	1LE1011 ⑧					
		1LE1012	1LE1012 ⑨						
1LE10 -Z 1PC10 -Z	Order code	Motor version	Motor type	Frame size					
				80	90	100	112	132	160
Shaft and rotor									
Shaft extension with standard dimensions, without feather keyway	L04	All	All	–	–	✓	✓	✓	✓
Second standard shaft extension	L05	All except ②, ⑤ and in combination with order code F90		✓	✓	✓	✓	✓	✓
Standard shaft made of stainless steel	L06	All	All	✓	✓	✓	✓	✓	✓
Concentricity of shaft extension in accordance with DIN 42955 Tolerance R	L07	All	All	✓	✓	✓	✓	✓	✓
Concentricity of shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors	L08	All	All	✓	✓	✓	✓	✓	✓
Non-standard shaft extension, DE ²¹⁾	Y58 • and identification code	All	All	✓	✓	✓	✓	✓	✓
Non-standard shaft extension, NDE ²¹⁾	Y59 • and identification code	All	All	✓	✓	✓	✓	✓	✓
Heating and ventilation									
Sheet metal fan cover	F74	All except ②, ⑤ and in combination with order code F90		✓	✓	✓	✓	✓	✓
Fan cover for textile industry ²²⁾	F75	All except ②, ⑤ and in combination with order code F90		✓	✓	✓	✓	✓	✓
Metal external fan ^{23) 29)}	F76	All except ②, ⑤ and in combination with order code F90		✓	✓	✓	✓	✓	✓
Without external fan and without fan cover	F90	All except ②, ⑤, ⑧ and ⑨		✓	✓	✓	✓	✓	✓
Anti-condensation heating for 230 V	Q02	All	All	✓	✓	✓	✓	✓	✓
Anti-condensation heating for 115 V	Q03	All	All	–	–	✓	✓	✓	✓
Rating plate and extra rating plates									
Extra rating plate for voltage tolerance ²⁴⁾	B07	All except ②, ⑤, ⑧, ⑨ and 8-pole motors		✓	✓	✓	✓	✓	✓
Second rating plate, loose ²⁵⁾	M10	All	All	✓	✓	✓	✓	✓	✓
Rating plate, stainless steel	M11	All	All	✓	✓	✓	✓	✓	✓
Extra rating plate or rating plate with deviating rating plate data	Y80 • and identification code	All	All	✓	✓	✓	✓	✓	✓
Extra rating plate with identification codes	Y82 • and identification code	All	All	✓	✓	✓	✓	✓	✓
Additional information on rating plate and on package label (max. 20 characters)	Y84 • and identification code	All	All	✓	✓	✓	✓	✓	✓
Adhesive label, supplied loose (Printed with: Article No., Serial No.: 2 lines of text)	Y85 • and identification code	All	All	–	–	✓	✓	✓	✓
Packaging, safety notes, documentation and test certificates									
Printed German/English Operating Instructions (Compact) enclosed ²⁷⁾		All	All	□	□	□	□	□	□
Printed German/English Operating Instructions (Compact) enclosed in each wire-lattice pallet ²⁷⁾	B01	All	All	○	○	○	○	○	○
Acceptance test certificate 3.1 according to EN 10204 ²⁶⁾	B02	All	All	✓	✓	✓	✓	✓	✓
Printed German/English operating instructions enclosed	B04	All	All	✓	✓	✓	✓	✓	✓
Document - Electrical data sheet	B60	All	All	✓	✓	✓	✓	✓	✓

For legends and footnotes, see Page 2/57.

SIMOTICS GP 1LE1/1PC1 Standard Motors

Supplements to article numbers and special versions

Options
Aluminum series 1LE10, 1PC10

Special versions	Additional identification code -Z with order code and plain text if required	Motor category							
		Motor version	Motor type (alum.)	Motor type – Frame size					
				80	90	100	112	132	160
		High Efficiency IE2	1LE1001	1LE1001 ①					
			1PC1001	1PC1001 ②					
		IE3 Premium Efficiency	1LE1003	1LE1003 ③					
		IE1 Standard Efficiency	1LE1002	1LE1002 ④					
			1PC1002	1PC1002 ⑤					
		NEMA Energy Efficient	1LE1021	1LE1021 Eagle Line ⑥					
		NEMA Premium Efficient	1LE1023	1LE1023 Eagle Line ⑦					
		Pole-changing	1LE1011	1LE1011 ⑧					
			1LE1012	1LE1012 ⑨					
		Motor version	Motor type	Frame size					
				80	90	100	112	132	160
1LE10 -Z									
1PC10 -Z									
		Order code							
Packaging, safety notes, documentation and test certificates (continued)									
Document - Order dimensional drawing	B61	All	All	✓	✓	✓	✓	✓	✓
Type test with heat run for horizontal motors, with acceptance	B83	All	All	✓	✓	✓	✓	✓	✓
Wire-lattice pallet packaging	B99	All	All	○	○	○	○	○	○
Connected in star for dispatch	M01	All	All	–	–	✓	✓	✓	✓
Connected in delta for dispatch	M02	All	All	–	–	✓	✓	✓	✓

- Standard version
- Without additional charge
- This order code only determines the price of the version – Additional plain text is required.
- ✓ With additional charge
- R. Possible on request
- Not possible

1) With IM B5 flange, only possible in combination with **H08**.

2) Not possible in combination with order code **R15** "One metal cable gland".

3) With **H08**, feet dimensions C and CA differ from EN 50347! Further information is available in DT Configurator (see Appendix, "Tools and Configuring").

4) In combination with motor protection (15th position of the Article No.) or anti-condensation heating option, please inquire before ordering.

5) Not possible in combination with voltage code **22** or **34**.

6) Cannot be used for motors in UL version (order code **D31**). The grease lifetime specified in Catalog Section 1 "Introduction" refers to CT 40 °C. When the coolant temperature rises by 10 K, the grease service lifetime or relubrication interval is halved.

7) A second shaft extension is not possible. Please inquire for mounted brakes.

8) For order codes **F10**, **F11** and **F12**, the brake supply voltage must be specified or ordered.

9) All encoders are supplied with a protective cover as standard. The protective cover is omitted at the factory when a rotary pulse encoder is combined with a separately driven fan, because in this case the rotary pulse encoder is installed under the fan cover. In combination with a separately driven fan (order code **F70**) the 1XP8032-10 rotary pulse encoder is used instead of 1XP8012-10 or 1XP8032-20 is used instead of 1XP8012-20.

10) Motors that are prepared for additional mountings (order codes **G40**, **G41**, **G42**) are supplied without a protective cover as standard. If a protective cover is requested as a cover or mechanical protection for mountings provided by the customer, this can be ordered with order code **G43**. Not possible in combination with order code **L00** vibration quantity level B. In combination with a separately driven fan (order code **F70**) the 1XP803210 rotary pulse encoder is used instead of 1XP8012-10 or 1XP8032-20 is used instead of 1XP8012-20.

11) Order code **H00** provides mechanical protection for encoders.

12) Not possible in combination with brake 2LM8 – order code **F01**.

13) Not possible in combination with HOG 9 D 1024l rotary pulse encoder (order code **G05**) and/or brake 2LM8 (order code **F01**).

14) Supplied with the condensation drainage holes sealed at the drive end DE and non-drive end NDE (IP55, IP56, IP65). If the condensation drainage holes are required for motors of the IM B6, IM B7 or IM B8 type of construction (feet on side or top), the motors must be ordered in the respective type of construction and with order code **H03**, so that the condensation drainage holes will be placed in the correct position.

15) Motors that are prepared for additional mountings (order codes **G40**, **G41**, **G42**) are supplied without a protective cover as standard. If a protective cover is requested as a cover or mechanical protection for mountings provided by the customer, this can be ordered with order code **G43**. Not possible in combination with order code **L00** vibration quantity level B.

16) Not possible for type of construction IM V3.

17) CCC certification is required for
– 2-pole motors ≤2.2 kW
– 4-pole motors ≤1.1 kW
– 6-pole motors ≤0.75 kW
– 8-pole motors ≤0.55 kW

18) Possible up to 600 V max. The rated voltage is indicated on the rating plate without voltage range. Order codes **D30** and **D31** do not authorize importing into USA and Mexico. The North America export versions Eagle Line 1LE1021 NEMA Energy Efficient and 1LE1023 NEMA Premium Efficient are available for this purpose.

19) In connection with mountings, the respective technical specifications must be observed, please inquire before ordering.

20) Not possible when brake is mounted.

21) When motors are ordered that have a longer or shorter shaft extension than normal, the required position and length of the feather keyway must be specified in a sketch. It must be ensured that only feather keys in accordance with DIN 6885, Form A are permitted to be used. The feather keyway is positioned centrally on the shaft extension. The length is defined by the manufacturer normatively. Not valid for: Conical shafts, non-standard threaded journals, non-standard shaft tolerances, friction welded journals, extremely "thin" shafts, special geometry dimensions (e.g. square journals), hollow shafts. Valid for non-standard shaft extensions DE or NDE. The feather keys are supplied in every case. For order codes **Y58**, **Y59** and **L05**:

– Dimensions D and DA ≤ Inner diameter of roller bearing

(see tables under "Dimensions")

– Dimensions E and EA ≤2 × length E (normal) of the shaft extension.

22) The special requirements of the textile industry regarding the sheet metal cover open up the possibility that a finger may be inserted between the cover and enclosure. The customer must implement appropriate measures to ensure that the installed system is "finger-safe".

23) Converter-fed operation is permitted for 1LE1 motors with metal external fans. The metal external fan is not possible in combination with the low-noise version – order code **F77** or **F78**.

24) Can be ordered for 230 VΔ/400 VY or 400 VΔ/690 VY (voltage code "22" or "34"). Not possible in combination with order code **D34**.

25) As adhesive label for frame sizes 80 and 90.

26) The delivery time for the factory test certificate may differ from the delivery time for the motor and it will be dispatched by email.

27) The Operating Instructions (compact) are available in PDF format for all official EU languages at <http://support.automation.siemens.com/WWW/view/en/40761976>.

28) Not possible in combination with order code **N05**, **N06**, **N07**, **N08** and **N11**.

29) Order codes **F70** and **F76** cannot be combined.

30) When ordering with order code **R70** and **R71**, order code **R50** is included.

SIMOTICS SD 1LE1 Standard Motors

Supplements to article numbers and special versions

Options Cast-iron series 1LE15 Basic Line, 1LE16 Performance Line

2

Special versions	Additional identification code -Z with order code and plain text if required	Motor category														
		Motor version	Motor type (cast-iron)	Motor type – Frame size												
				71	80	90	100	112	132	160	180	200	225	250	280	315
		High Efficiency IE2	1LE1501	1LE1501 Basic Line ①												
			1LE1601	1LE1601 Performance Line ②												
		IE3 Premium Efficiency	1LE1503	1LE1503 Basic Line ③												
			1LE1603	1LE1603 Performance Line ④												
		NEMA Energy Efficient	1LE1521	1LE1521 Eagle Line Basic ⑤												
			1LE1621	1LE1621 Eagle Line Performance ⑥												
		NEMA Premium Efficient	1LE1523	1LE1523 Eagle Line Basic ⑦												
			1LE1623	1LE1623 Eagle Line Performance ⑧												
		Motor version	Motor type	Frame size												
				71	80	90	100	112	132	160	180	200	225	250	280	315
Rating plate and extra rating plates (continued)																
Extra rating plate with identification codes	Y82 • and identification code	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Additional information on rating plate and on package label (max. 20 characters)	Y84 • and identification code	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Adhesive label, supplied loose (Printed with: Article No., Serial No.: 2 lines of text)	Y85 • and identification code	All	All	-	-	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Extension of the liability for defects																
Extension of the liability for defects by 12 months to a total of 24 months (2 years) from delivery ²⁴⁾	Q80	All, for Performance Line ②, ④, ⑥ and ⑧ 36 months standard		-	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓
Extension of the liability for defects by 24 months to a total of 36 months (3 years) from delivery ²⁴⁾	Q82	All, for Performance Line ②, ④, ⑥ and ⑧ 36 months standard		-	-	-	-	-	-	✓	✓	✓	✓	✓	✓	✓
Packaging, safety notes, documentation and test certificates																
Acceptance test certificate 3.1 according to EN 10204 ²⁵⁾	B02	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Printed German/English Operating Instructions enclosed ²⁶⁾	B04	All	All	-	-	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Document - Electrical data sheet	B60	All	All	-	-	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Document - Order dimensional drawing	B61	All	All	-	-	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Standard test (routine test) with acceptance	B65	All	All	-	-	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Type test with heat run for horizontal motors, without acceptance	B82 <i>New!</i>	All	All	-	-	-	✓ ^{*)}	✓ ^{*)}	✓ ^{*)}	✓ ^{*)}	✓ ^{*)}	✓ ^{*)}	✓ ^{*)}	✓ ^{*)}	✓ ^{*)}	✓ ^{*)}
Type test with heat run for horizontal motors, with acceptance	B83	All	All	-	-	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Connected in star for dispatch	M01	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Connected in delta for dispatch	M02	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

- Standard version
- Without additional charge
- This order code only determines the price of the version – Additional plain text is required.
- ✓ With additional charge
- O. R. Possible on request
- Not possible

For footnotes, see Page 2/64.

SIMOTICS SD 1LE1 Standard Motors

Supplements to article numbers and special versions

Options

Cast-iron series 1LE15 Basic Line, 1LE16 Performance Line

2

- *) Start of delivery ex stock planned for end of 2014.
- 1) Up to frame size 160 not possible when brake is mounted.
- 2) Evaluation with appropriate tripping unit (see Catalog IC 10) is recommended.
- 3) Parallel Whitworth threaded pipe DIN ISO 228 (DIN 259) BSPP (British Standard Pipe Parallel) Threaded pipe for connections not sealed in the thread (cylindrical), external = G.
- 4) Cannot be used for motors in UL version (order code **D31**). The grease lifetime specified in Catalog Section 1 "Introduction" refers to CT 40 °C. When the coolant temperature rises by 10 K, the grease service lifetime or relubrication interval is halved.
- 5) Not possible for 1LE15 and 1LE16 motors with increased output.
- 6) A second shaft extension is not possible. Please inquire for mounted brakes.
- 7) For order codes **F10**, **F11** and **F12**, the brake supply voltage must be specified or ordered.
- 8) The 1XP8 rotary pulse encoders are fitted with a protective cover as standard. The protective cover is omitted at the factory when a rotary pulse encoder is combined with a separately driven fan, because in this case the rotary pulse encoder is installed under the fan cover.
- 9) In combination with a separately driven fan (order code **F70**) the 1XP803210 rotary pulse encoder is used instead of 1XP8012-10 or 1XP8032-20 is used instead of 1XP8012-20.
- 10) LL and HOG rotary pulse encoders up to frame size 160 are fitted with a protective cover as standard. The protective cover is omitted at the factory when a rotary pulse encoder is combined with a separately driven fan, because in this case the rotary pulse encoder is installed under the fan cover.
- 11) Option (encoder mounting) is only possible for motors with a mounted separately driven fan or for naturally cooled motors (without a separately driven fan). This option can be used in combination with brakes of type KFB. This option cannot be used in combination with brakes of type 2LM8.
- 12) Order code **H00** provides mechanical protection for encoders.
- 13) Not possible for type of construction IM V3.
- 14) Not possible in combination with HOG 9 D 1024l rotary pulse encoder (order code **G05**) and/or brake 2LM8 (order code **F01**).
- 15) Not possible in combination with brake 2LM8 – order code **F01**.
- 16) In connection with mountings, the respective technical specifications must be observed, please inquire before ordering.
- 17) The rated voltage is indicated on the rating plate without voltage range. Order code **D40** does not authorize importing into Canada. The North America export versions Eagle Line 1LE1521/1LE1621 NEMA Energy Efficient and 1LE1523/1LE1623 NEMA Premium Efficient are available for this purpose.
- 18) Possible up to 600 V max. The rated voltage is indicated on the rating plate without voltage range. Order codes **D30** and **D31** do not authorize importing into USA and Mexico. The North America export versions Eagle Line 1LE1521/1LE1621 NEMA Energy Efficient and 1LE1523/1LE1623 NEMA Premium Efficient are available for this purpose.
- 19) For Performance Line motors (all frame sizes) and Basic Line motors (from frame size 280) in the standard version.
- 20) On request for 2-pole motors (concerns frame sizes 225 to 315).
- 21) When motors are ordered that have a longer or shorter shaft extension than normal, the required position and length of the feather keyway must be specified in a sketch. It must be ensured that only feather keys in accordance with DIN 6885, Form A are permitted to be used. The feather keyway is positioned centrally on the shaft extension. The length is defined by the manufacturer normatively. Not valid for: Conical shafts, non-standard threaded journals, non-standard shaft tolerances, friction welded journals, extremely "thin" shafts, special geometry dimensions (e.g. square journals), hollow shafts. Valid for non-standard shaft extensions DE or NDE. The feather keys are supplied in every case. For order codes **Y58**, **Y59** and **L05**:
 - Dimensions D and DA ≤ Inner diameter of roller bearing (see tables under "Dimensions")
 - Dimensions E and EA ≤ 2 × length E (normal) of the shaft extension.
- 22) Converter-fed operation is permitted for 1LE1 motors with metal external fans.
- 23) Can be ordered for 230 VΔ/400 VY or 400 VΔ/690 VY (voltage code **"22"** or **"34"**). Not possible for 8-pole motors and in combination with order code **D34**.
- 24) Wear parts (bearings) are excluded from the warranty extension.
- 25) The delivery time for the factory test certificate may differ from the delivery time for the motor.
- 26) The Operating Instructions (compact) are available in PDF format for all official EU languages at <http://support.automation.siemens.com/WWW/view/en/10803948/133300>.
- 27) With **H08**, feet dimensions C and CA differ from EN 50347! Further information is available in DT Configurator (see Appendix, "Tools and Configuring").
- 28) Order codes **F70** and **F76** cannot be combined.
- 29) Not possible in combination with order codes **Q72** and **Q78**.
- 30) For frame sizes 100 to 132 only possible in combination with order code **R50**.
- 31) Not possible in combination with order codes **N05**, **N06**, **N07**, **N08** and **N11**.
- 32) For frame size 315, when combining order codes **F01** and **F12**, the rectifier for the brake will be supplied separately as a single part.

SIMOTICS GP/SD 1LE1/1PC1 Standard Motors

Supplements to article numbers and special versions

Accessories

Overview

Slide rails with fixing bolts and tensioning screws according to DIN 42923

Slide rails are used to tension the belt of a machine easily and conveniently when a belt tightener is not available. They are fixed to the base using stone bolts or foundation blocks.

The assignment of slide rails to motor size can be found in DIN 42923. For motors of frame sizes 355 to 450, there are no standardized slide rails (please inquire).

Available from:

Lütgert & Co. GmbH
Postfach 42 51
33276 Gütersloh, Germany
Tel. +49 (5241) 7407-0
Fax +49 (5241) 7407-90

www.luetgert-antriebe.de
E-mail: info@luetgert-antriebe.de

Foundation block acc. to DIN 799

The foundation blocks are inserted into the stone foundation and embedded in concrete. They are used for fixing machines of medium size, slide rails, pedestal bearings, baseframes, etc. After the fixing bolts have been unscrewed, the machine can be dragged without it having to be lifted.

When the machine is initially installed, the foundation block that is bolted to the machine (without washers) and fitted with taper pins is not embedded with concrete until the machine has been fully aligned. In this case, the machine is positioned 2 to 3 mm lower. The difference in shaft height is compensated by inserting shims on final installation. The taper pins safeguard the exact position of the machine when it is repeatedly removed and replaced without the need for realignment.

Available from:

Lütgert & Co. GmbH
Postfach 42 51
33276 Gütersloh, Germany
Tel. +49 (5241) 7407-0
Fax +49 (5241) 7407-90

www.luetgert-antriebe.de
E-mail: info@luetgert-antriebe.de

Taper pins to DIN 258 with threaded ends and constant taper lengths

Taper pins are used for components that are repeatedly removed. The drilled hole is ground conical using a conical reamer until the pin can be pushed in by hand until the cone shoulder lies approx. 3 to 4 mm above the rim of the hole.

It can then be driven in using a hammer until it is correctly seated. The pin is removed from the drilled hole by screwing on the nut and tightening it.

Standardized taper pins are available from general engineering suppliers.

Available from:

Otto Roth GmbH & Co. KG
Rutesheimer Straße 22
70499 Stuttgart, Germany
Tel. +49 (711) 1388-0
Fax. +49 (711) 1388-233

www.ottoroth.de
E-mail: info@ottoroth.de

Couplings

The motor from Siemens is connected to the machine or gear unit through a coupling. Siemens is an important coupling manufacturer with a wide range of products.

For standard applications, Siemens recommends that elastic couplings of types N-EUPEX and RUPEX or torsionally rigid couplings of types ARPEX and ZAPEX are used. For special applications, FLUDEX and ELPEX-S couplings are recommended.

Available from:

Siemens contact partner - ordering from catalog
Siemens MD 10.1 "FLENDER Standard Couplings"

or

SIEMENS AG
Kupplungswerk Mussum
Industriepark Bocholt
Schlavenhorst 100
46395 Bocholt, Germany
Tel. +49 (2871) 922185
Fax +49 (2871) 922579

www.siemens.com
E-mail: flendercouplings@siemens.com

More information

Spare motors and repair parts

- Supply commitment for spare motors and repair parts following delivery of the motor:
 - For up to 5 years, in the event of total motor failure, Siemens will supply a comparable motor with regard to the mounting dimensions and functions (the type series may vary).
 - Spare parts will be available for up to five years.
 - Within the time period of up to five years, Siemens will provide information about spare parts and will supply documents when required.
 - Replacement motors delivered after the active production of the machine series are also identified with "Spare motor" on the rating plate. Spare parts are offered only on request for these motors.

- When repair parts are ordered, the following details must be provided:
 - Designation and part number
 - Article No. and factory number of the motor.

Example for ordering a fan cover 1LE1002, frame size 112 M, 4-pole:

Fan cover No. 7.40, 1LE1002-1BB23-4AA4-Z, factory No. E1001/5236197_01_001

- For bearing types, see Catalog section 1 "Introduction".
- Repair parts for 1MJ6, 1MJ7, 1MJ8, 1MJ1, 1ME8, 1ML8 are available on request.
- For standard components, a supply commitment does not apply.
- Support – Hotline
In Germany
Tel.: +49 (180) 5050448

You will find telephone numbers for other countries on our Internet site:

www.siemens.com/automation/service&support

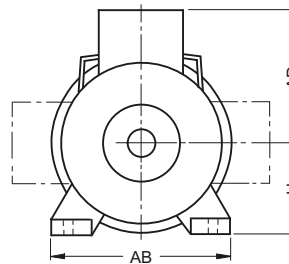
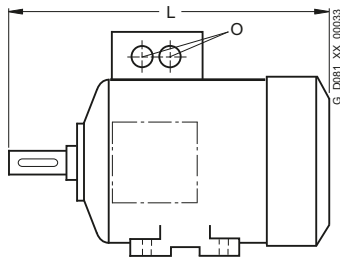
2

SIMOTICS GP/SD 1LE1/1PC1 Standard Motors

Dimensions

Overall dimensions

Overview



Frame size	Type	Dimension				
		L	AD	H	AB	O
71 M	Cast-iron series, self-ventilated					
	1LE1501, 1LE1521, 1LE1503-, 1LE1523-0CA2, 0CB2, 0CC2	240	148	71	132	2 × M25 × 1.5
	1LE1503-, 1LE1523-0CA3, 0CB3, 0CC3	280	148	71	132	2 × M25 × 1.5
80 M	Aluminum series, self-ventilated					
	1LE1001	292	121	80	150	1 × M25 × 1.5
	Aluminum series, forced-air cooled or naturally cooled					
	1LE1001	253	121	80	150	1 × M25 × 1.5
	Cast-iron series, self-ventilated					
	1LE1501, 1LE1521, 1LE1503-, 1LE1523-0CA2, 0CB2, 0CC2	292	158	80	150	2 × M25 × 1.5
1LE1503-, 1LE1523-0CA3, 0CB3, 0CC3	327	158	80	150	2 × M25 × 1.5	
90 S/ 90 L	Aluminum series, self-ventilated					
	1LE1001	347	126	90	165	1 × M25 × 1.5
	Aluminum series, forced-air cooled or naturally cooled					
	1LE1001	295	126	90	165	1 × M25 × 1.5
	Cast-iron series, self-ventilated					
	1LE1501, 1LE1521, 1LE1503-, 1LE1523-0CA2, 0CB2, 0CC2	347	163	90	165	2 × M25 × 1.5
1LE1503-, 1LE1523-0CA3, 0CB3, 0CC3	387	163	90	165	2 × M25 × 1.5	
100 L	Aluminum series, self-ventilated					
	1LE1001, 1LE1002, 1LE1011, 1LE1012, 1LE1021	396 ¹⁾	166	100	196	2 × M32 × 1.5
	Aluminum series, self-ventilated with increased output					
	1LE1001, 1LE1002	431 ¹⁾	166	100	196	2 × M32 × 1.5
	Aluminum series, forced-air cooled or naturally cooled					
	1LE1001, 1PC1001, 1LE1002, 1PC1002, 1LE1021	322	166	100	196	2 × M32 × 1.5
	Aluminum series, self-ventilated					
	1LE1003, 1LE1023	431	166	100	196	2 × M32 × 1.5
	Aluminum series, forced-air cooled					
	1LE1023	357	166	100	196	2 × M32 × 1.5
	Cast-iron series, self-ventilated					
	1LE1501, 1LE1503, 1LE1521, 1LE1601, 1LE1603, 1LE1621	389	193	100	196	2 × M32 × 1.5
1LE1523, 1LE1623	425	193	100	196	2 × M32 × 1.5	

Frame size	Type	Dimension				
		L	AD	H	AB	O
112 M	Aluminum series, self-ventilated					
	1LE1001, 1LE1002, 1LE1011, 1LE1012, 1LE1021	389 ¹⁾	177	112	226	2 × M32 × 1.5
	Aluminum series, self-ventilated with increased output					
	1LE1001, 1LE1002	414 ¹⁾	177	112	226	2 × M32 × 1.5
	Aluminum series, forced-air cooled or naturally cooled					
	1LE1001, 1PC1001, 1LE1002, 1PC1002, 1LE1021	311	177	112	226	2 × M32 × 1.5
	Aluminum series, self-ventilated					
	1LE1003, 1LE1023	414	177	112	226	2 × M32 × 1.5
	Aluminum series, forced-air cooled					
	1LE1023	336	177	112	226	2 × M32 × 1.5
	Cast-iron series, self-ventilated					
	1LE1501, 1LE1503, 1LE1521, 1LE1601, 1LE1603, 1LE1621	382	195	112	226	2 × M32 × 1.5
1LE1523, 1LE1623	409	195	112	226	2 × M32 × 1.5	
132 S/M	Aluminum series, self-ventilated					
	1LE1001, 1LE1002, 1LE1011, 1LE1012, 1LE1021	465 ¹⁾	202	132	256	2 × M32 × 1.5
	Aluminum series, self-ventilated with increased output					
	1LE1001, 1LE1002	515 ¹⁾	202	132	256	2 × M32 × 1.5
	Aluminum series, forced-air cooled or naturally cooled					
	1LE1001, 1PC1001, 1LE1002, 1PC1002, 1LE1021	381	202	132	256	2 × M32 × 1.5
	Aluminum series, self-ventilated					
	1LE1003-, 1LE1023-					
	1CA0, 1CC0, 1CC2	465	202	132	256	2 × M32 × 1.5
	1CA1, 1CB0, 1CB2, 1CC3	515	202	132	256	2 × M32 × 1.5
	Aluminum series, forced-air cooled					
	1LE1023-					
	1CA0, 1CC0, 1CC2	381	202	132	256	2 × M32 × 1.5
	1CA1, 1CB0, 1CB2, 1CC3	431	202	132	256	2 × M32 × 1.5
	Cast-iron series, self-ventilated					
	1LE1501, 1LE1503, 1LE1521, 1LE1601, 1LE1603, 1LE1621	457	215	132	256	2 × M32 × 1.5
	1LE1523-, 1LE1623-					
	1CA0, 1CC0, 1CC2	458	215	132	256	2 × M32 × 1.5
1CA1, 1CB0, 1CB2, 1CC3	508	215	132	256	2 × M32 × 1.5	

¹⁾ The length is specified as far as the tip of the fan cover.

²⁾ Only for pole-changing types 1LE1011-1DP6 and 1LE1012-1DQ6 the dimension L is 664 mm.

Overview (continued)

Frame size	Type	Dimension					
		L	AD	H	AB	O	
160 M/L	Aluminum series, self-ventilated 1LE1001, 1LE1002, 1LE1011, 1LE1012, 1LE1021	604 ^{1) 2)}	237	160	300	2 × M40 × 1.5	
	Aluminum series, self-ventilated with increased output 1LE1001, 1LE1002	664 ¹⁾	237	160	300	2 × M40 × 1.5	
	Aluminum series, forced-air cooled or naturally cooled 1LE1001, 1PC1001, 1LE1002, 1PC1002, 1LE1021	510	237	160	300	2 × M40 × 1.5	
	Cast-iron series, self-ventilated 1LE1501, 1LE1503, 1LE1521, 1LE1601, 1LE1603, 1LE1621	594	265	160	300	2 × M40 × 1.5	
	160 M	Aluminum series, self-ventilated 1LE1003, 1LE1023	604	237	160	300	2 × M40 × 1.5
	Aluminum series, forced-air cooled 1LE1023	510	237	160	300	2 × M40 × 1.5	
	Cast-iron series, self-ventilated 1LE1523, 1LE1623	596	261	160	300	2 × M40 × 1.5	
	160 L	Aluminum series, self-ventilated 1LE1003, 1LE1023	664	237	160	300	2 × M40 × 1.5
	Aluminum series, forced-air cooled 1LE1023	570	237	160	300	2 × M40 × 1.5	
	Cast-iron series, self-ventilated 1LE1523, 1LE1623	656	261	160	300	2 × M40 × 1.5	
180 M	Cast-iron series, self-ventilated 1LE15.1-, 1LE16.1- 1EA2, 1EB2	668	286	180	339	2 × M40 × 1.5	
	1EA6	698					
	1LE15.3-, 1LE16.3- 1EB2	668	286	180	339	2 × M40 × 1.5	
	1EA2	698					
	180 L	Cast-iron series, self-ventilated 1LE15.1-, 1LE16.1- 1EC4, 1EC6	668	286	180	339	2 × M40 × 1.5
	1EB6	698					
1LE15.3-, 1LE16.3- 1EC4	668	286	180	339	2 × M40 × 1.5		
1EB4	698						
200 L	Cast-iron series, self-ventilated 1LE15.1-, 1LE16.1- 2AA4, 2AA5, 2AB5, 2AC4, 2AC5	721	315	200	378	2 × M50 × 1.5	
	2AA6	746					
	1LE15.3-, 1LE16.3- 2AA4, 2AC4	721	315	200	378	2 × M50 × 1.5	
	2AA5, 2AB5, 2AC5	746					
	225 S	Cast-iron series, self-ventilated 1LE15.1-, 1LE16.1- 2BB0, 2BD0	788	338	225	436	2 × M50 × 1.5
1LE15.3-, 1LE16.3- 2BB0	788	338	225	436	2 × M50 × 1.5		
225 M	Cast-iron series, self-ventilated 1LE15.1-, 1LE16.1- 2BA2, 2BA6	818	338	225	436	2 × M50 × 1.5	
	2BB2, 2BB6, 2BC2, 2BC6, 2BD6	848					
	1LE15.3-, 1LE16.3- 2BA2	818	338	225	436	2 × M50 × 1.5	
	2BB2, 2BC2	848					
	250 M	Cast-iron series, self-ventilated 1LE15.1-, 1LE16.1- 2CA2, 2CA6, 2CB2, 2CC2, 2CC6, 2CD2, 2CD6	887	410	250	490	2 × M63 × 1.5
	2CB6	957					
	1LE15.3-, 1LE16.3- 2CA2, 2CB2, 2CC2	887	410	250	490	2 × M63 × 1.5	
	280 S	Cast-iron series, self-ventilated 1LE15.1-, 1LE16.1- 2DA0, 2DB0, 2DC0, 2DD0	960	433	280	540	2 × M63 × 1.5
	1LE15.3, 1LE16.3 2DA0, 2DB0, 2DC0	960	433	280	540	2 × M63 × 1.5	
	280 M	Cast-iron series, self-ventilated 1LE15.1-, 1LE16.1- 2DA2, 2DB2, 2DC2, 2DC6, 2DD2, 2DD6	960	433	280	540	2 × M63 × 1.5
2DA6, 2DB6		1070					
1LE15.3-, 1LE16.3- 2DC2		960	433	280	540	2 × M63 × 1.5	
2DA2, 2DB2		1070					
315 S		Cast-iron series, self-ventilated 1LE15.1-, 1LE16.1- 3AA0	1052	515	315	610	2 × M63 × 1.5
3AB0, 3AC0, 3AD0	1082						
1LE15.3-, 1LE16.3- 3AA0	1052	515	315	610	2 × M63 × 1.5		
3AB0, 3AC0	1082						
315 M	Cast-iron series, self-ventilated 1LE15.1-, 1LE16.1- 3AC2, 3AD2	1082	515	315	610	2 × M63 × 1.5	
	3AA2	1217					
	3AB2	1247					
	1LE15.3-, 1LE16.3- 3AA2	1217	515	315	610	2 × M63 × 1.5	
	3AB2, 3AC2	1247					
315 L	Cast-iron series, self-ventilated 1LE15.1-, 1LE16.1- 3AA4	1217	515	315	610	2 × M63 × 1.5	
	3AB4, 3AC4, 3AC5, 3AD4, 3AD5, 3AD6	1247					
	3AA5, 3AA6	1372					
	3AB5, 3AB6, 3AC6	1402					
	1LE15.3-, 1LE16.3- 3AA4	1217	515	315	610	2 × M63 × 1.5	
	3AB4, 3AC4	1247	515	315	610	2 × M63 × 1.5	
	3AA5	1372					
	3AB5, 3AC5, 3AC6	1402					

SIMOTICS GP/SD 1LE1/1PC1 Standard Motors

Dimensions

Notes on the dimensions

Overview (continued)

- Dimensional drawings according to DIN EN 50347 and IEC 60072.

- Fits

The shaft extensions specified in the dimension tables (DIN 748) and centering spigot diameters (DIN EN 50347) are machined with the following fits:

Dimension designation	ISO fit DIN ISO 286-2	
D, DA	to 30	j6
	over 30 to 50	k6
	over 50	m6
N	to 250	j6
	over 250	h6
F, FA		h9
K		H17
S	Flange (FF)	H17

The drilled holes of couplings and belt pulleys should have an ISO fit of at least H7.

- Dimension tolerances

For the following dimensions, the admissible deviations are given below:

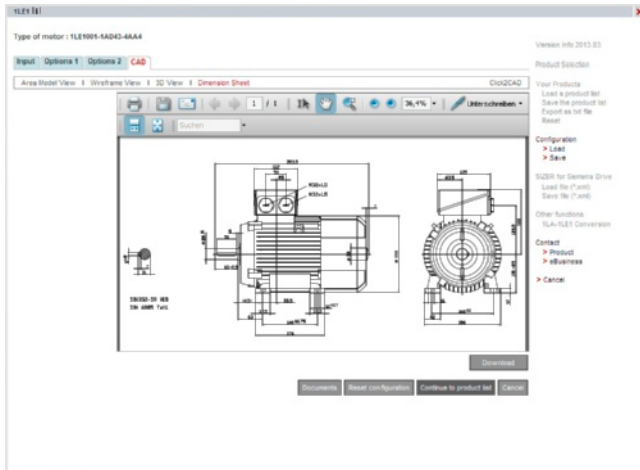
Dimension designation	Dimension	Admissible deviation
H	to 250	- 0.5
	over 250	- 1.0
E, EA		- 0.5

Keyways and feather keyways (dimensions GA, GC, F and FA) are made in compliance with DIN 6885 Part 1.

- All dimensions are specified in mm.

Overview (continued)

A dimensional drawing can be created in the DT Configurator for every configurable motor. A dimensional drawing can be requested for every other motor.



When a complete Article No. is entered with or without order codes, a dimensional drawing can be called up under the "Documentation" tab.

These dimensional drawings can be presented in different views and sections and printed.

The corresponding dimension sheets can be exported, saved and processed further in DXF format (interchange/import format for CAD systems) or as bitmap graphics.

Online access in the Siemens Industry Mall

The DT Configurator is integrated into the Siemens Industry Mall and can be used on the Internet without installation.

German: www.siemens.de/dt-konfigurator
English: www.siemens.com/dt-configurator

Offline access in the Interactive Catalog CA 01

The DT Configurator is also part of the Interactive Catalog CA 01 on DVD – the offline version of Siemens Industry Mall. CA 01 can be ordered from the relevant Siemens sales office or via the Internet: www.siemens.com/automation/CA01

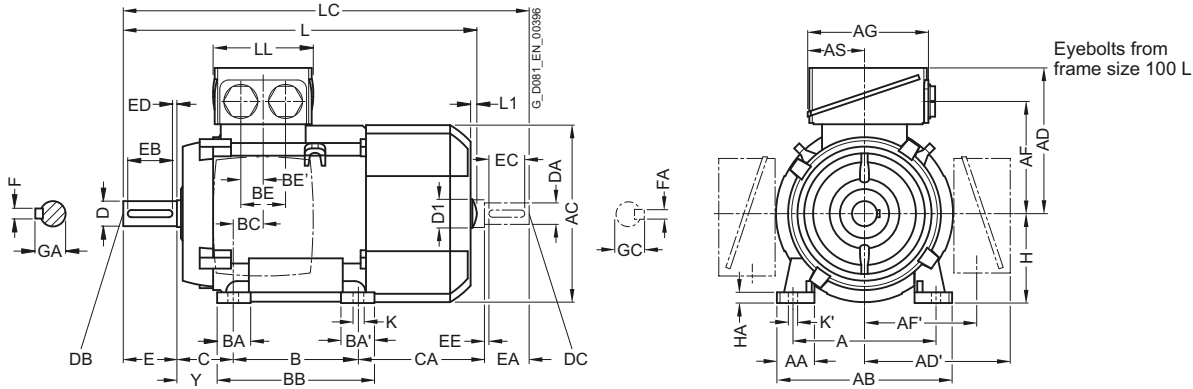
SIMOTICS GP 1LE1 Standard Motors

Dimensions

Aluminum series 1LE1001, 1LE1002, 1LE1011, 1LE1012, 1LE1021
Self-ventilated, frame sizes 100 L (80 M) to 160 L

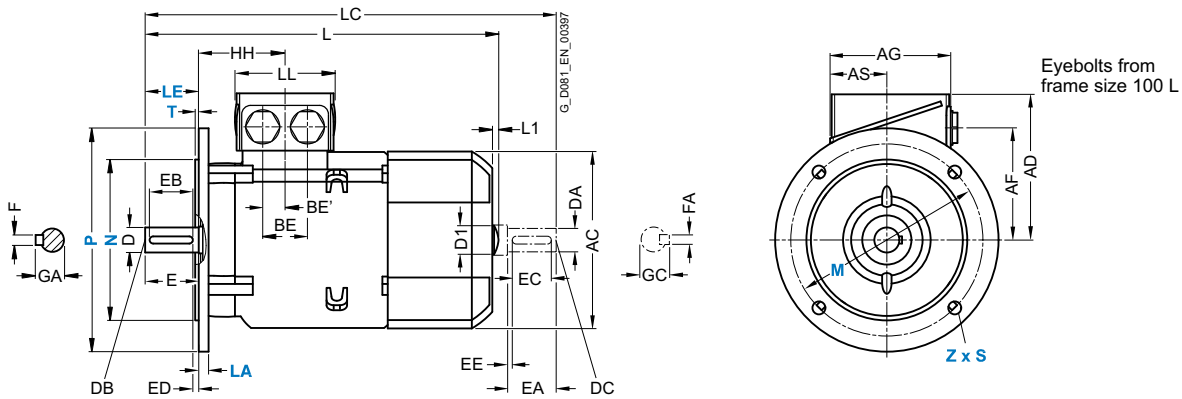
Dimensional drawings

Type of construction IM B3



Types of construction IM B5 and IM V1

For flange dimensions, see Page 2/94 (Z = the number of retaining holes)



For motor		Dimension designation acc. to IEC																						
Frame size	Motor type	No. of poles	A	AA	AB	AC	AD	AD'	AF	AF'	AG	AS	B*	BA	BA'	BB	BC	BE	BE'	C	CA*	H	HA	Y
80 M	1LE1001	2, 4, 6	125	30.5	150	159	121	-	96.5	-	93	43	100	32	-	118	23	-	18 ¹⁾	50	-	80	8	41
90 S		2, 4, 6	140	30.5	165	178	126	-	101.5	-	93	43	100	33	-	143	22.5	-	18 ¹⁾	56	-	90	10	47
90 L		2, 4, 6	140	30.5	165	178	126	-	101.5	-	93	43	125	33	-	143	22.5	-	18 ¹⁾	56	-	90	10	47
100 L	All	2, 4, 6, 8	160	42	196	198	166	166	125.5	125.5	135	63.5	140	37.5	-	176	33.5	50	25	63	141	100	12	45
112 M	All	2, 4, 6, 8	190	46	226	222	177	177	136.5	136.5	135	63.5	140	35.4	-	176	26	50	25	70	129.7	112	12	52
132 S	All	2, 4, 6, 8	216	53	256	262	202	202	159.5	159.5	155	70.5	140	38	76	218	26.5	48	24	89	128.5	132	15	69
132 M	All	2, 4, 6, 8	216	53	256	262	202	202	159.5	159.5	155	70.5	178	38	76	218	26.5	48	24	89	128.5	132	15	69
160 M	All	2, 4, 6, 8	254	60	300	314	236.5	236.5	190	190	175	77.5	210	44	89	300	47	57	28.5	108	148	160	18	85
160 L	All	2, 4, 6, 8	254	60	300	314	236.5	236.5	190	190	175	77.5	254	44	89	300	47	57	28.5	108	148 ²⁾	160	18	85

* This dimension is assigned in DIN EN 50347 to the frame size listed.

¹⁾ Connecting hole for terminal box is on the side at the rear of the terminal box.

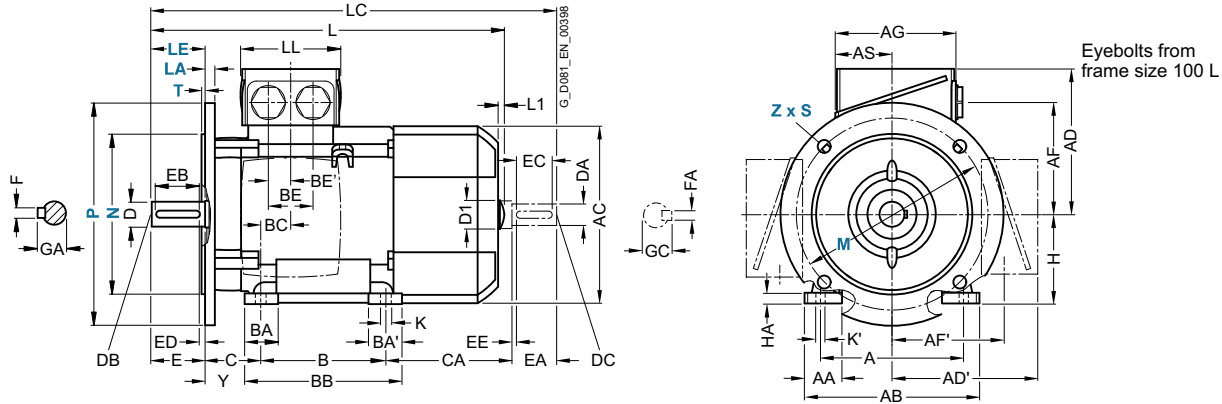
²⁾ Only for pole-changing types 1LE1011-1DP6 and 1LE1012-1DQ6 the dimension CA* is 208 mm.

Aluminum series 1LE1001, 1LE1002, 1LE1011, 1LE1012, 1LE1021
Self-ventilated, frame sizes 100 L (80 M) to 160 L

Dimensional drawings (continued)

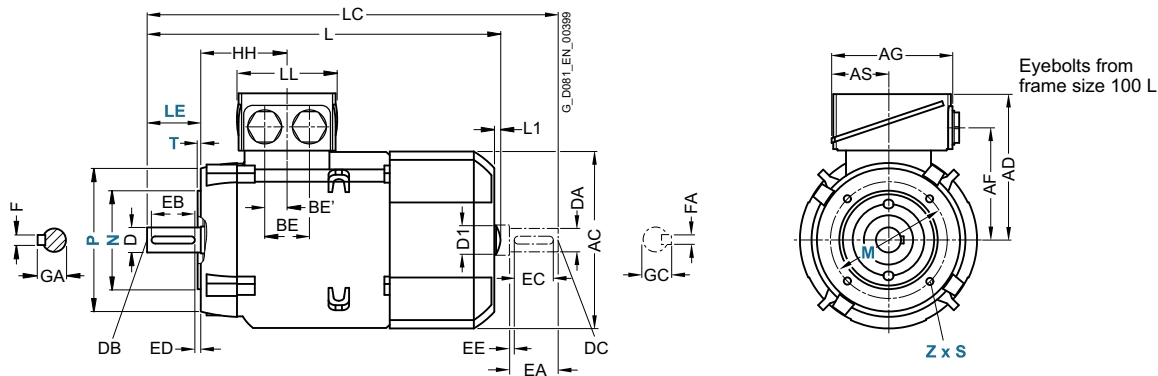
Type of construction IM B35

For flange dimensions, see Page 2/94 (**Z** = the number of retaining holes)



Type of construction IM B14

For flange dimensions, see Page 2/94 (**Z** = the number of retaining holes)



For motor		Dimension designation acc. to IEC										DE shaft extension					NDE shaft extension							
Frame size	Motor type	No. of poles	HH	K	K'	L	L1	D1	LC	LL	D	DB	E	EB	ED	F	GA	DA	DC	EA	EC	EE	FA	GC
80 M	1LE1001	2, 4, 6	73	9.5	13.5	292	-	-	-	79	19	M6	40	32	4	6	21.5	19	M6	40	32	4	6	21.5
90 S		2, 4, 6	78.5	10	14	347	-	-	-	79	24	M8	50	40	5	8	27	19	M6	40	32	4	6	21.5
90 L		2, 4, 6	78.5	10	14	347	-	-	-	79	24	M8	50	40	5	8	27	19	M6	40	32	4	6	21.5
100 L	All	2, 4, 6, 8	96.5	12	16	395.5 ¹⁾	7	32	454	112	28	M10	60	50	5	8	31	24	M8	50	40	5	8	27
112 M	All	2, 4, 6, 8	96	12	16	389 ¹⁾	7	32	450	112	28	M10	60	50	5	8	31	24	M8	50	40	5	8	27
132 S	All	2, 4, 6, 8	115.5	12	16	465 ¹⁾	8.5	39	535.5	130	38	M12	80	70	5	10	41	28	M10	60	50	5	8	31
132 M	All	2, 4, 6, 8	115.5	12	16	465 ¹⁾	8.5	39	535.5	130	38	M12	80	70	5	10	41	28	M10	60	50	5	8	31
160 M	All	2, 4, 6, 8	155	15	19	604 ¹⁾	10	45	730	145	42	M16	110	90	10	12	45	42	M16	110	90	10	12	45
160 L	All	2, 4, 6, 8	155	15	19	604 ¹⁾²⁾	10	45	730 ³⁾	145	42	M16	110	90	10	12	45	42	M16	110	90	10	12	45

¹⁾ The length is specified as far as the tip of the fan cover.

²⁾ Only for pole-changing types 1LE1011-1DP6 and 1LE1012-1DQ6 the dimension L is 664 mm.

³⁾ Only for pole-changing types 1LE1011-1DP6 and 1LE1012-1DQ6 the dimension LC is 790 mm.

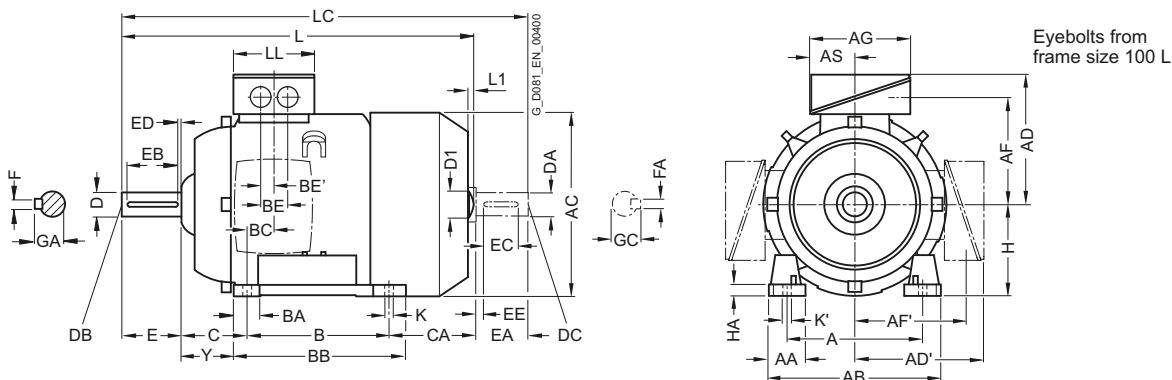
SIMOTICS GP 1LE1 Standard Motors

Dimensions

Aluminum series 1LE1001, 1LE1002
Self-ventilated, with increased output, frame sizes 100 L to 160 L

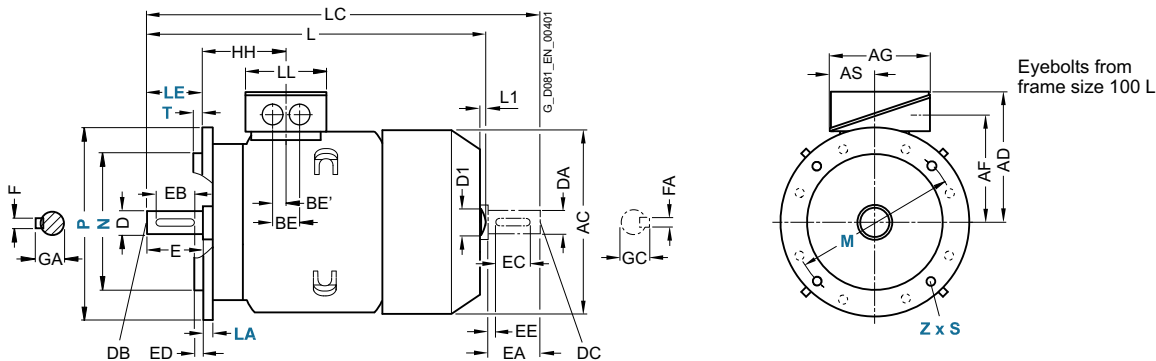
Dimensional drawings

Type of construction IM B3



Types of construction IM B5 and IM V1

For flange dimensions, see Page 2/94 (Z = the number of retaining holes)



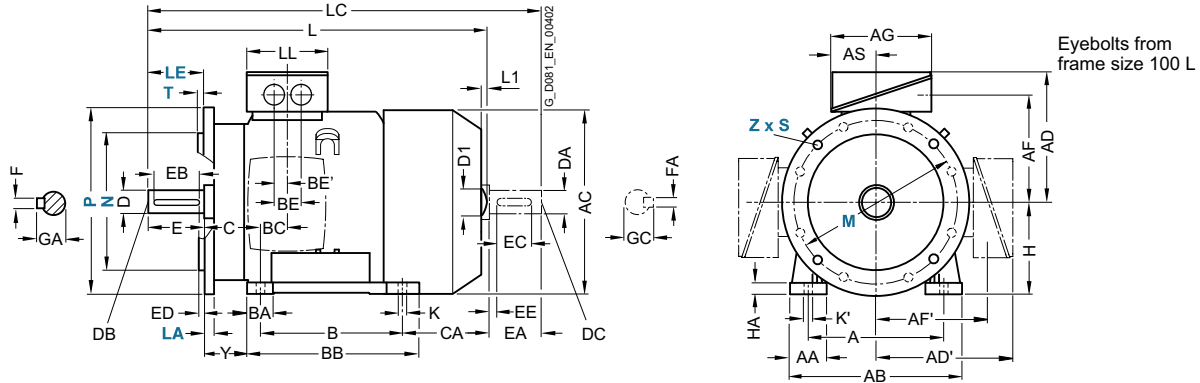
For motor			Dimension designation acc. to IEC																					
Frame size	Motor type 1LE1001 1LE1002	No. of poles	A	AA	AB	AC	AD	AD'	AF	AF'	AG	AS	B*	BA	BA'	BB	BC	BE	BE'	C	CA*	H	HA	Y
100 L	All	2, 4, 6, 8	160	42	196	198	166	166	125.5	125.5	135	63.5	140	37.5	-	176	33.5	50	25	63	176	100	12	45
112 M	All	2, 4, 6, 8	190	46	226	222	177	177	136.5	136.5	135	63.5	140	35.4	-	176	26	50	25	70	155	112	12	52
132 M	All	2, 4, 6, 8	216	53	256	262	202	202	159.5	159.5	155	70.5	178	38	-	218	26.5	48	24	89	178.5	132	15	69
160 L	All	2, 4, 6, 8	254	60	300	314	236.5	236.5	190	190	175	77.5	254	44	-	300	47	57	28.5	108	208	160	18	85

* This dimension is assigned in DIN EN 50347 to the frame size listed.

Dimensional drawings (continued)

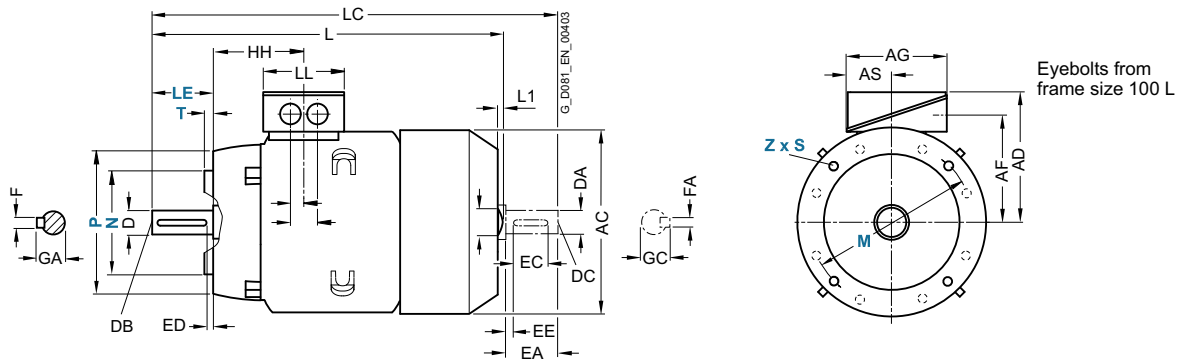
Type of construction IM B35

For flange dimensions, see Page 2/94 (**Z** = the number of retaining holes)



Type of construction IM B14

For flange dimensions, see Page 2/94 (**Z** = the number of retaining holes)



For motor			Dimension designation acc. to IEC							DE shaft extension						NDE shaft extension								
Frame size	Motor type	No. of poles	HH	K	K'	L ¹⁾	L1	D1	LC	LL	D	DB	E	EB	ED	F	GA	DA	DC	EA	EC	EE	FA	GC
100 L	All	2, 4, 6, 8	96.5	12	16	430.5	7	32	489	112	28	M10	60	50	5	8	31	24	M8	50	40	5	8	27
112 M	All	2, 4, 6, 8	96	12	16	414	7	32	475	112	28	M10	60	50	5	8	31	24	M8	50	40	5	8	27
132 M	All	2, 4, 6, 8	115.5	12	16	515	8.5	39	585.5	130	38	M12	80	70	5	10	41	28	M10	60	50	5	8	31
160 L	All	2, 4, 6, 8	155	15	19	664	10	45	790	145	42	M16	110	90	10	12	45	42	M16	110	90	10	12	45

¹⁾ The length is specified as far as the tip of the fan cover.

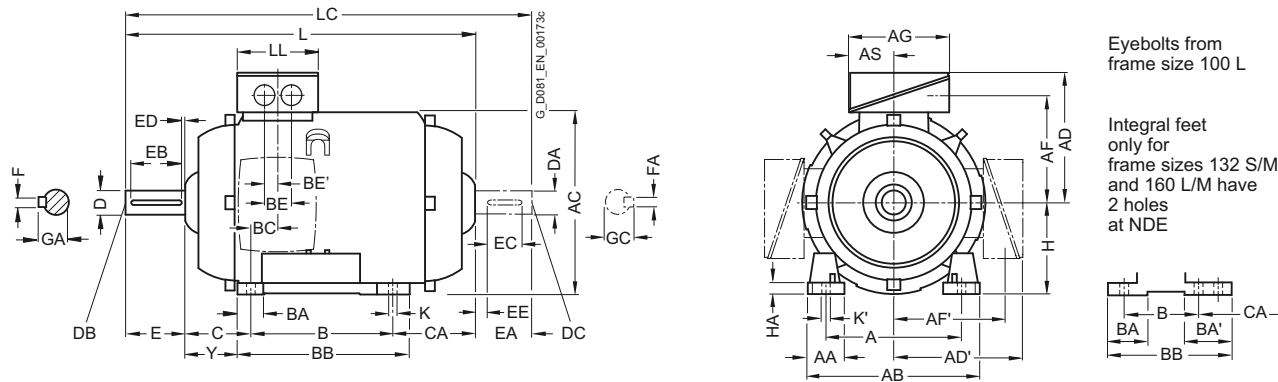
SIMOTICS GP 1LE1/1PC1 Standard Motors

Dimensions

Aluminum series 1LE1001, 1PC1001, 1LE1002, 1PC1002, 1LE1021
 Forced-air cooled or naturally cooled, frame sizes 80 M to 160 L

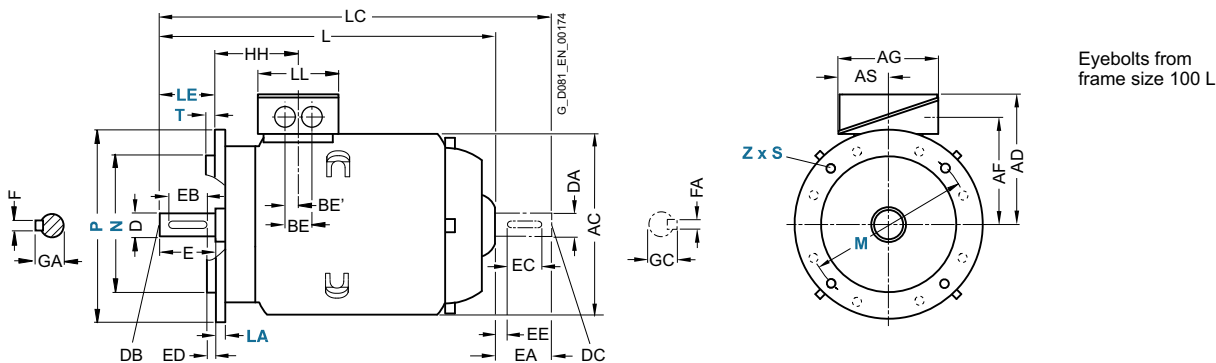
Dimensional drawings

Type of construction IM B3



Types of construction IM B5 and IM V1

For flange dimensions, see Page 2/94 (Z = the number of retaining holes)



For motor			Dimension designation acc. to IEC																					
Frame size	Motor type	No. of poles	A	AA	AB	AC	AD	AD'	AF	AF'	AG	AS	B*	BA	BA'	BB	BC	BE	BE'	C	CA*	H	HA	Y
80 M	1LE1001	2, 4, 6	125	30.5	150	159	121	-	96.5	-	93	43	100	32	-	118	23	-	18	50	-	80	8	41
	1LE1021	2, 4, 6					149		112		119.5	61.5												
90 S	1LE1001	2, 4, 6	140	30.5	165	178	126	-	101.5	-	93	43	100	33	-	143	22.5	-	18	56	-	90	10	47
	1LE1021	2, 4, 6					154		117		119.5	61.5												
90 L	1LE1001	2, 4, 6	140	30.5	165	178	126	-	101.5	-	93	43	125	33	-	143	22.5	-	18	56	-	90	10	47
	1LE1021	2, 4, 6					154		117		119.5	61.5												
100 L	All	2, 4, 6, 8	160	42	196	197	166	166	125.5	125.5	135	63.5	140	37.5	-	176	33.5	50	25	63	-	100	12	45
112 M	All	2, 4, 6, 8	190	46	226	221	177	177	136.5	136.5	135	63.5	140	35.4	-	176	26	50	25	70	-	112	12	52
132 S	All	2, 4, 6, 8	216	53	256	261	202	202	159.5	159.5	155	70.5	140	38	76 ¹⁾	218 ²⁾	26.5	48	24	89	-	132	15	69
132 M	All	2, 4, 6, 8	216	53	256	261	202	202	159.5	159.5	155	70.5	178	38	76	218	26.5	48	24	89	-	132	15	69
160 M	All	2, 4, 6, 8	254	60	300	314	236.5	236.5	190	190	175	77.5	210	44	89 ³⁾	300 ⁴⁾	47	57	28.5	108	-	160	18	85
160 L	All	2, 4, 6, 8	254	60	300	314	236.5	236.5	190	190	175	77.5	254	44	89	300	47	57	28.5	108	-	160	18	85

* This dimension is assigned in DIN EN 50347 to the frame size listed.

1) With screwed-on feet, dimension BA' is 38 mm.

2) With screwed-on feet, dimension BB is 180 mm.

3) With screwed-on feet, dimension BA' is 44 mm.

4) With screwed-on feet, dimension BB is 256 mm.

SIMOTICS GP 1LE1/1PC1 Standard Motors

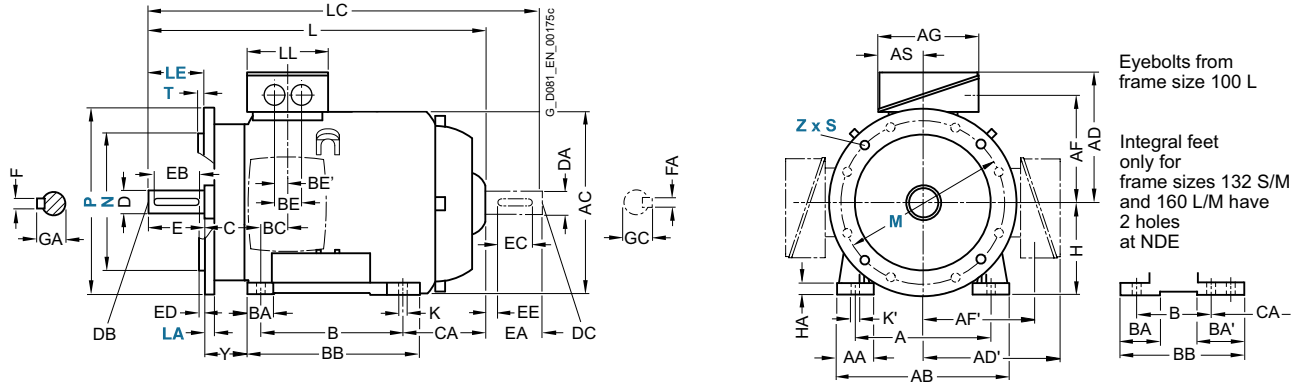
Dimensions

Aluminum series 1LE1001, 1PC1001, 1LE1002, 1PC1002, 1LE1021
Forced-air cooled or naturally cooled, frame sizes 80 M to 160 L

Dimensional drawings (continued)

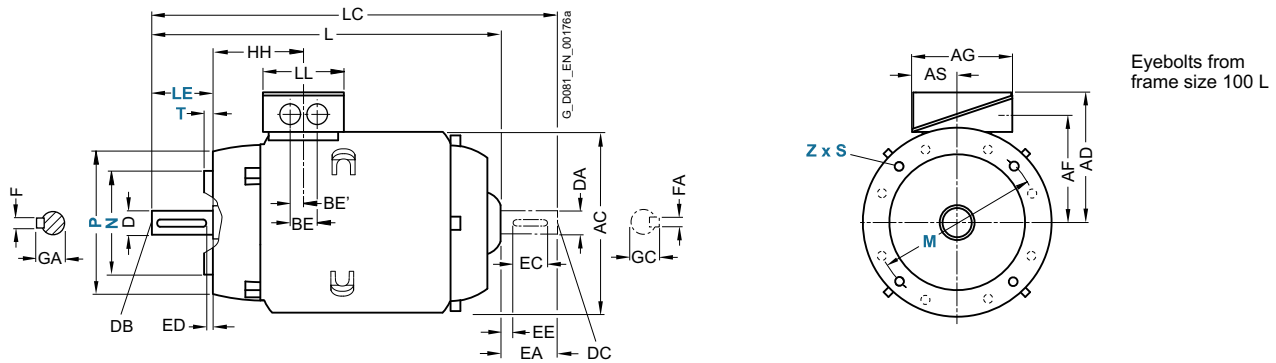
Type of construction IM B35

For flange dimensions, see Page 2/94 (**Z** = the number of retaining holes)



Type of construction IM B14

For flange dimensions, see Page 2/94 (**Z** = the number of retaining holes)



For motor			Dimension designation acc. to IEC							DE shaft extension					NDE shaft extension							
Frame size	Motor type	No. of poles	HH	K	K'	L	LC	LL	D	DB	E	EB	ED	F	GA	DA	DC	EA	EC	EE	FA	GC
80 M	1LE1001	2, 4, 6	73	9.5	13.5	253	-	79	19	M6	40	32	4	6	21.5	-	-	-	-	-	-	-
	1LE1021	2, 4, 6						123														
90 S	1LE1021	2, 4, 6	78.5	10	14	295	-	79	24	M8	50	40	5	8	27	-	-	-	-	-	-	-
	1LE1021	2, 4, 6						123														
90 L	1LE1021	2, 4, 6	78.5	10	14	295	-	123	24	M8	50	40	5	8	27	-	-	-	-	-	-	-
	1LE1021	2, 4, 6						123														
100 L	All	2, 4, 6, 8	96.5	12	16	321.5	-	112	28	M10	60	50	5	8	31	-	-	-	-	-	-	-
112 M	All	2, 4, 6, 8	96	12	16	311	-	112	28	M10	60	50	5	8	31	-	-	-	-	-	-	-
132 S	All	2, 4, 6, 8	115.5	12	16	380.5	-	130	38	M12	80	70	5	10	41	-	-	-	-	-	-	-
132 M	All	2, 4, 6, 8	115.5	12	16	380.5	-	130	38	M12	80	70	5	10	41	-	-	-	-	-	-	-
160 M	All	2, 4, 6, 8	155	15	19	510	-	145	42	M16	110	90	10	12	45	-	-	-	-	-	-	-
160 L	All	2, 4, 6, 8	155	15	19	510	-	145	42	M16	110	90	10	12	45	-	-	-	-	-	-	-

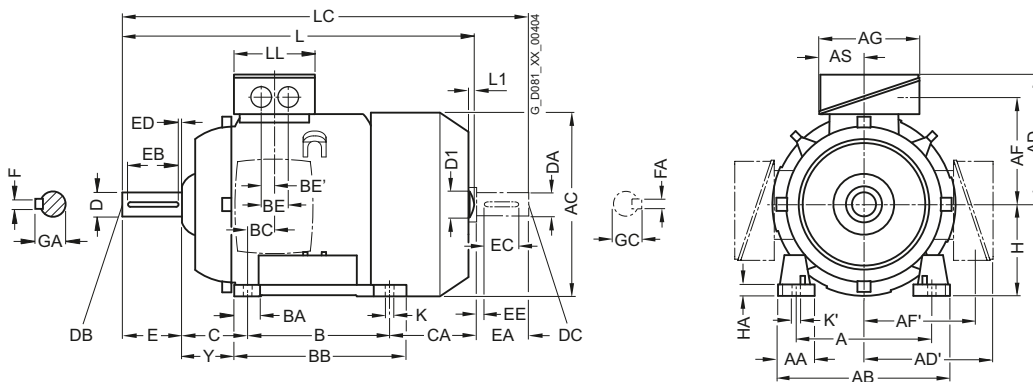
SIMOTICS GP 1LE1 Standard Motors

Dimensions

Aluminum series 1LE1003, 1LE1023
Self-ventilated, frame sizes 80 M to 90 L

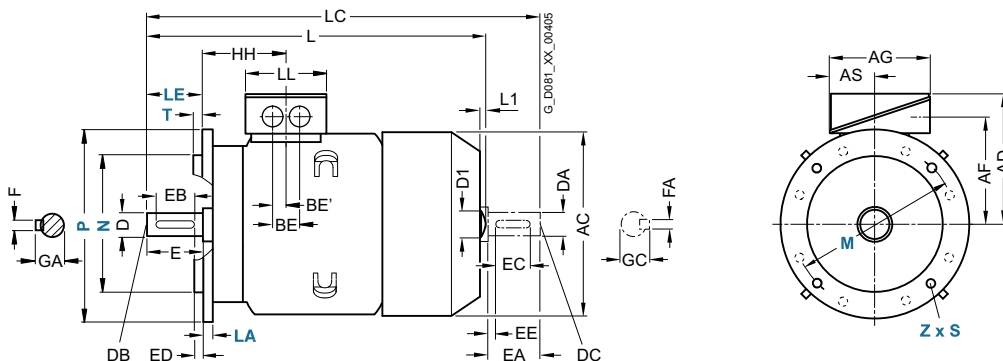
Dimensional drawings

Type of construction IM B3



Types of construction IM B5 and IM V1

For flange dimensions, see Page 2/94 (Z = the number of retaining holes)



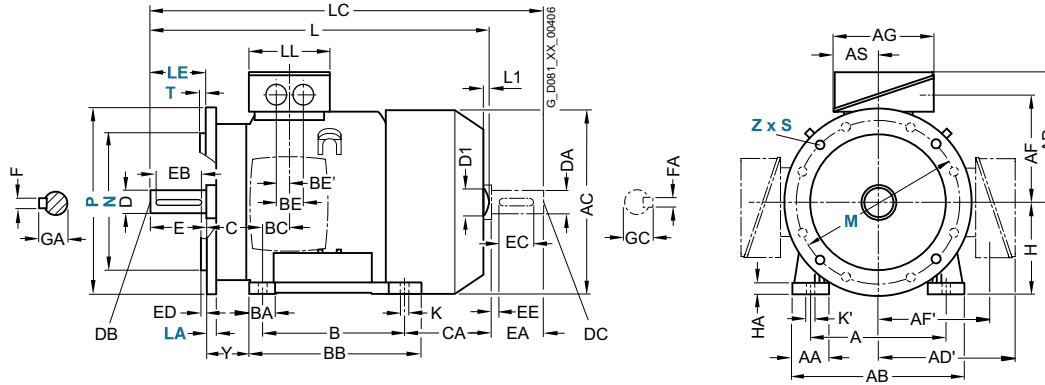
For motor		Dimension designation acc. to IEC																					
Frame size	Motor type	No. of poles	A	AA	AB	AC	AD	AD'	AF	AF'	AG	AS	B*	BA	BB	BC	BE	BE'	C	CA*	H	HA	Y
80 M	1LE1003-0DA2, -0DB2, -0DC2 -0DA3, -0DB3, -0DC3	2, 4, 6	125	30.5	150	159	121	-	96.5	-	93	43	100	32	118	23	-	18	50	-	80	8	41
	1LE1023-0DA2, -0DB2, -0DC2 -0DA3, -0DB3, -0DC3	2, 4, 6					149		112		119.5	61.5											
90 S	1LE1003-0EA0, -0EB0, -0EC0	2, 4, 6	140	30.5	165	178	126	-	101.5	-	93	43	100	33	143	22.5	-	18	56	-	90	10	47
	1LE1023-0EA0, -0EB0, -0EC0	2, 4, 6					154		117		119.5	61.5											
90 L	1LE1003-0EA4, -0EB4, -0EC4	2, 4, 6	140	30.5	165	178	126	-	101.5	-	93	43	100	33	143	22.5	-	18	56	-	90	10	47
	1LE1023-0EA4, -0EB4, -0EC4	2, 4, 6					154		117		119.5	61.5											

* This dimension is assigned in DIN EN 50347 to the frame size listed.

Dimensional drawings (continued)

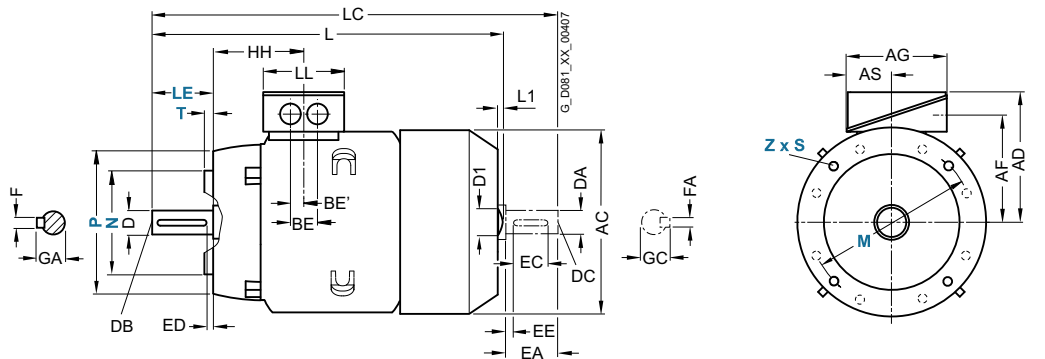
Type of construction IM B35

For flange dimensions, see Page 2/94 (**Z** = the number of retaining holes)



Type of construction IM B14

For flange dimensions, see Page 2/94 (**Z** = the number of retaining holes)



For motor		Dimension designation acc. to IEC																																													
Frame size	Motor type	No. of poles	HH	K	K'	L ¹⁾	L1	D1	LC	LL	D	DB	E	EB	ED	F	GA	DA	DC	EA	EC	EE	FA	GC																							
80 M	1LE1003-0DA2, -0DB2, -0DC2,	2, 4, 6	73	9.5	13.5	292	-	-	-	79	19	M6	40	32	4	6	21.5	19	M6	40	32	4	6	21.5																							
	-0DA3, -0DB3, -0DC3																								327																						
	1LE1023-0DA2, -0DB2, -0DC2, -0DA3, -0DB3, -0DC3																									2, 4, 6	123																				
	1LE1003-0EA0, -0EB0, -0EC0	2, 4, 6				78.5																						10	14	347	-	-	-	79	24	M8	50	40	5	8	27	19	M6	40	32	4	6
	1LE1023-0EA0, -0EB0, -0EC0																																														
	90 L	1LE1003-0EA4, -0EB4, -0EC4				2, 4, 6																			78.5	10	14	387	-	-	-	79	24	M8	50	40	5	8	27	19	M6	40	32	4	6	21.5	
1LE1023-0EA4, -0EB4, -0EC4		2, 4, 6	123																																												

¹⁾ The length is specified as far as the tip of the fan cover.

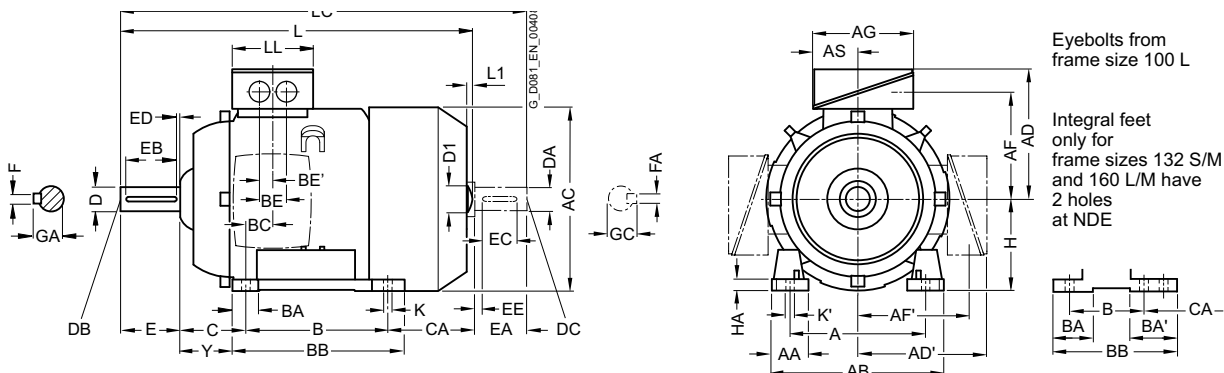
SIMOTICS GP 1LE1 Standard Motors

Dimensions

Aluminum series 1LE1003, 1LE1023
Self-ventilated, frame sizes 100 L to 160 L

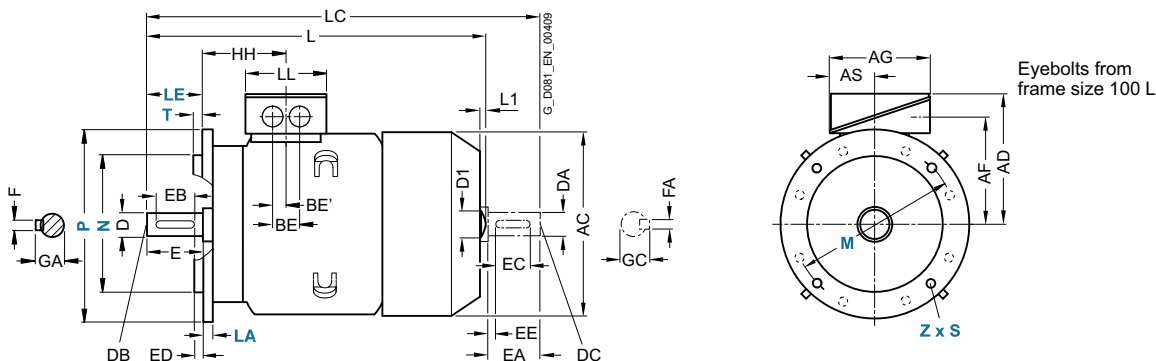
Dimensional drawings

Type of construction IM B3



Types of construction IM B5 and IM V1

For flange dimensions, see Page 2/94 (Z = the number of retaining holes)



For motor			Dimension designation acc. to IEC																					
Frame size	Motor type	No. of poles	A	AA	AB	AC	AD	AD'	AF	AF'	AG	AS	B*	BA	BA'	BB	BC	BE	BE'	C	CA*	H	HA	Y
100 L	1AA4, 1AB4, 1AB5	2, 4, 6	160	42	196	198	166	166	125.5	125.5	135	63.5	140	37.5	-	176	33.5	50	25	63	176	100	12	45
112 M	1BA2, 1BB2	2, 4, 6	190	46	226	222	177	177	136.5	136.5	135	63.5	140	35.4	-	176	26	50	25	70	155	112	12	52
132 S	1CA0, 1CC0, 1CA1, 1CB0	2, 6 2, 4	216	53	256	262	202	202	159.5	159.5	155	70.5	140	38	76 ¹⁾	218 ²⁾	26.5	48	24	89	128.5 ³⁾	132	15	69
132 M	1CC2, 1CB2, 1CC3	6 4, 6, 8	216	53	256	262	202	202	159.5	159.5	155	70.5	178	38	76	218	26.5	48	24	89	128.5 ³⁾	132	15	69
160 M	1DA2, 1DA3, 1DB2, 1DC2	2, 4, 6	254	60	300	314	236.5	236.5	190	190	175	77.5	210	44	89 ⁴⁾	300 ⁵⁾	47	57	28.5	108	148 ⁶⁾	160	18	85
160 L	1DA4, 1DB4, 1DC4	2, 4, 6	254	60	300	314	236.5	236.5	190	190	175	77.5	254	44	-	300	47	57	28.5	108	208	160	18	85

* This dimension is assigned in DIN EN 50347 to the frame size listed.

1) With screwed-on feet, dimension BA' is 38 mm.

2) With screwed-on feet, dimension BB is 180 mm.

3) With screwed-on feet, dimension CA is 166.5 mm.

4) With screwed-on feet, dimension BA' is 44 mm.

5) With screwed-on feet, dimension BB is 256 mm.

6) With screwed-on feet, dimension CA is 192 mm.

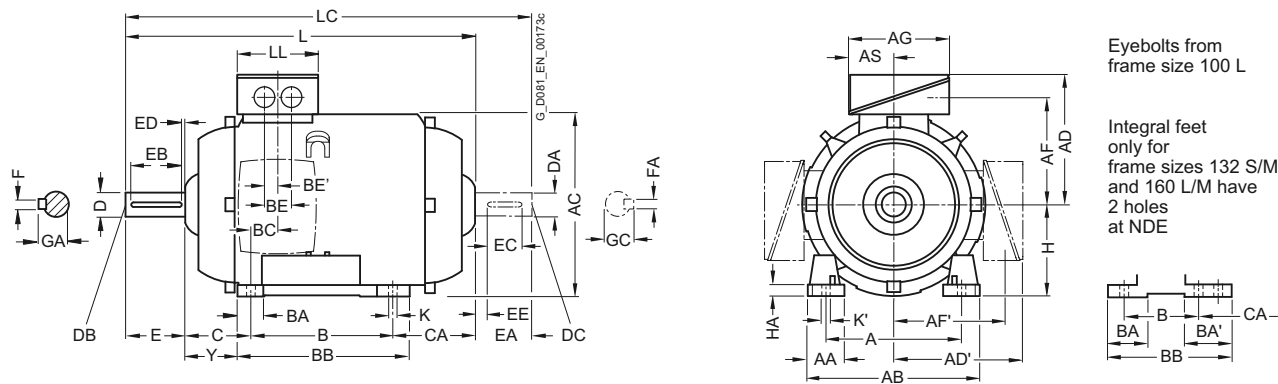
SIMOTICS GP 1LE1 Standard Motors

Dimensions

Aluminum series 1LE1023
Forced-air cooled, frame sizes 80 M to 90 L

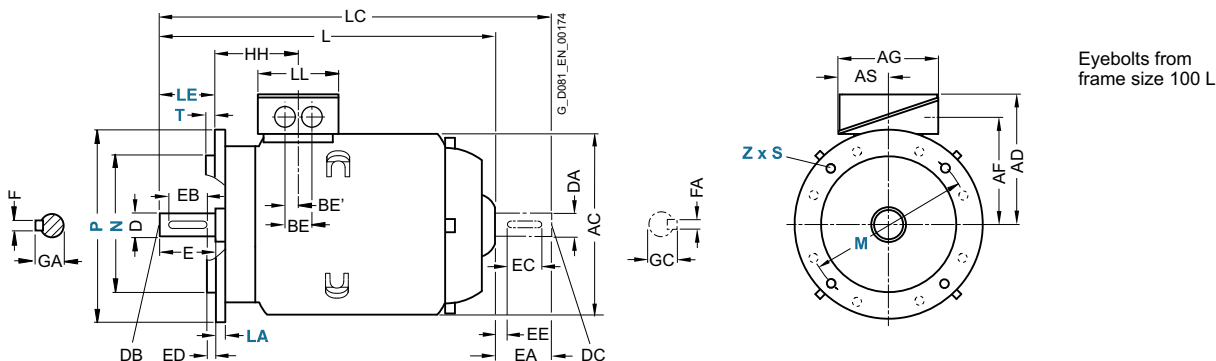
Dimensional drawings

Type of construction IM B3



Types of construction IM B5 and IM V1

For flange dimensions, see Page 2/94 (Z = the number of retaining holes)



For motor			Dimension designation acc. to IEC																					
Frame size	Motor type	No. of poles	A	AA	AB	AC	AD	AD'	AF	AF'	AG	AS	B*	BA	BA'	BB	BC	BE	BE'	C	CA*	H	HA	Y
80 M	0DA2, 0DB2, 0DC2	2, 4, 6	125	30.5	150	159	121	-	96.5	-	93	43	100	32	-	118	23	-	18	50	-	80	8	41
	0DA3, 0DB3, 0DC3	2, 4, 6																						
90 S	0EA0, 0EB0, 0EC0	2, 4, 6	140	30.5	165	178	126	-	101.5	-	93	43	100	33	-	143	22.5	-	18	56	-	90	10	47
90 L	0EA4, 0EB4, 0EC4	2, 4, 6	140	30.5	165	178	126	-	101.5	-	93	43	100	33	-	143	22.5	-	18	56	-	90	10	47

* This dimension is assigned in DIN EN 50347 to the frame size listed.

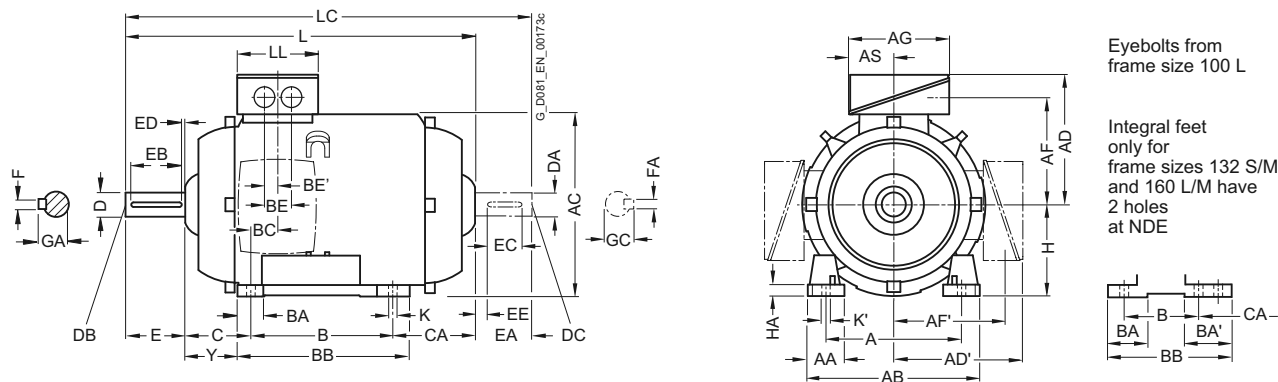
SIMOTICS GP 1LE1 Standard Motors

Dimensions

Aluminum series 1LE1023
Forced-air cooled, frame sizes 100 L to 160 L

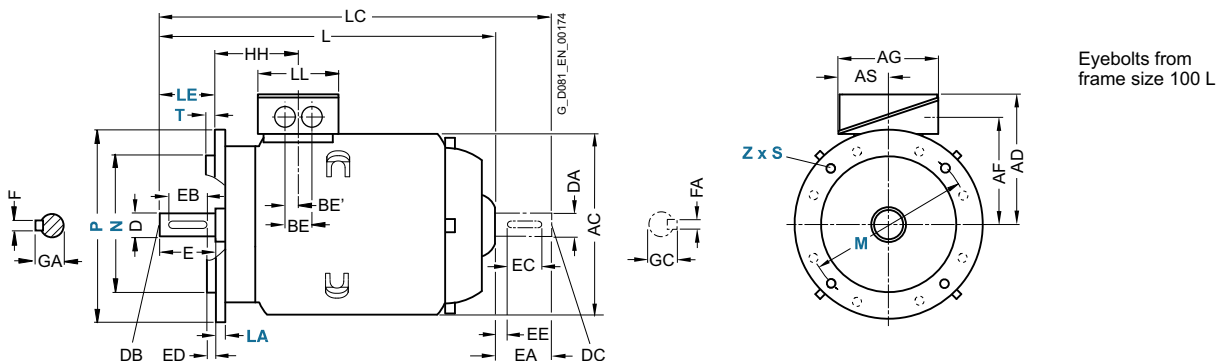
Dimensional drawings

Type of construction IM B3



Types of construction IM B5 and IM V1

For flange dimensions, see Page 2/94 (Z = the number of retaining holes)



For motor			Dimension designation acc. to IEC																						
Frame size	Motor type	No. of poles	A	AA	AB	AC	AD	AD'	AF	AF'	AG	AQ	AS	B*	BA	BA'	BB	BC	BE	BE'	C	CA*	H	HA	Y
100 L	1AA4, 1AB4, 1AB5	2, 4	160	42	196	198	166	166	125.5	125.5	135	195	63.5	140	37.5	-	176	33.5	50	25	63	-	100	12	45
112 M	1BA2, 1BB2	2, 4	190	46	226	222	177	177	136.5	136.5	135	195	63.5	140	35.4	-	176	26	50	25	70	-	112	12	52
132 S	1CA0, 1CC0	2, 6	216	53	256	262	202	202	159.5	159.5	155	260	70.5	140	38	76 ¹⁾	218 ²⁾	26.5	48	24	89	-	132	15	69
	1CA1, 1CB0	2, 4														-									
132 M	1CC2	6	216	53	256	262	202	202	159.5	159.5	155	260	70.5	178	38	76	218	26.5	48	24	89	-	132	15	69
	1CB2, 1CC3	4, 6, 8														-									
160 M	1DA2, 1DA3, 1DB2, 1DC2	2, 4, 6	254	60	300	314	236.5	236.5	190	190	175	260	77.5	210	44	89 ³⁾	300 ⁴⁾	47	57	28.5	108	-	160	18	85
160 L	1DA4, 1DB4, 1DC4	2, 4, 6	254	60	300	314	236.5	236.5	190	190	175	260	77.5	254	44	-	300	47	57	28.5	108	-	160	18	85

* This dimension is assigned in DIN EN 50347 to the frame size listed.

1) With screwed-on feet, dimension BA' is 38 mm.

2) With screwed-on feet, dimension BB is 180 mm.

3) With screwed-on feet, dimension BA' is 44 mm.

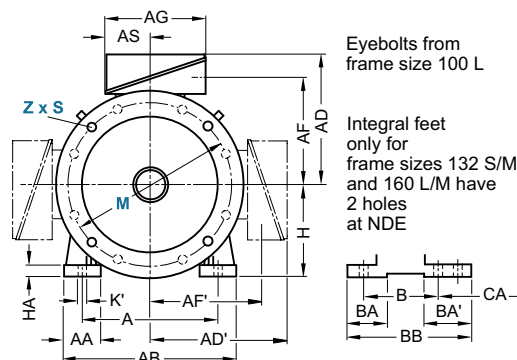
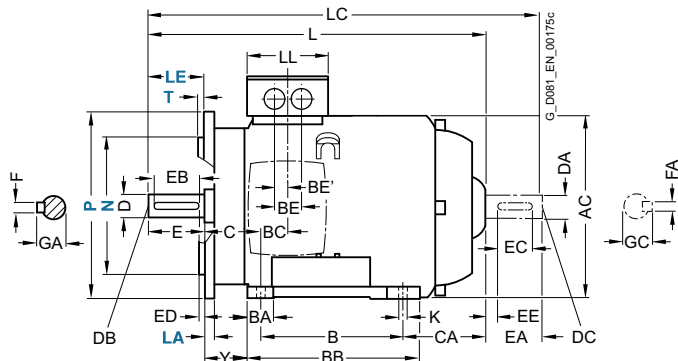
4) With screwed-on feet, dimension BB is 256 mm.

Aluminum series 1LE1023
Forced-air cooled, frame sizes 100 L to 160 L

Dimensional drawings (continued)

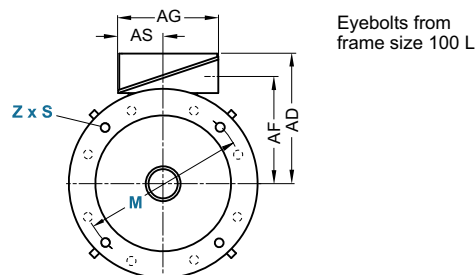
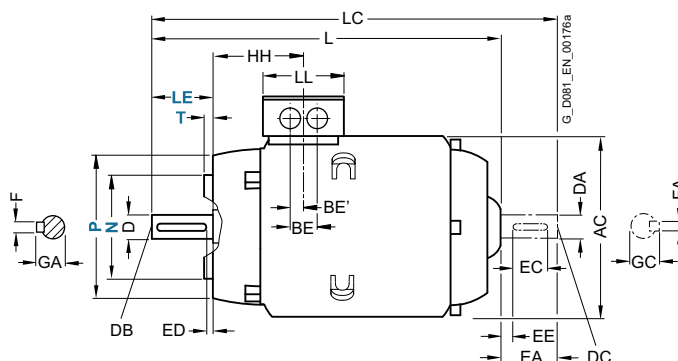
Type of construction IM B35

For flange dimensions, see Page 2/94 (**Z** = the number of retaining holes)



Type of construction IM B14

For flange dimensions, see Page 2/94 (**Z** = the number of retaining holes)



For motor			Dimension designation acc. to IEC											DE shaft extension					NDE shaft extension				
Frame size	Motor type	No. of poles	HH	K	K'	L ¹⁾	LC	LL	D	DB	E	EB	ED	F	GA	DA	DC	EA	EC	EE	FA	GC	
100 L	1AA4, 1AB4, 1AB5	2, 4	96.5	12	16	356.5	-	112	28	M10	60	50	5	8	31	-	-	-	-	-	-	-	
112 M	1BA2, 1BB2	2, 4	96	12	16	336	-	112	28	M10	60	50	5	8	31	-	-	-	-	-	-	-	
132 S	1CA0, 1CC0	2, 6	115.5	12	16	380.5	-	130	38	M12	80	70	5	10	41	-	-	-	-	-	-	-	
	1CA1, 1CB0	2, 4				430.5	-									-	-	-	-	-	-	-	
132 M	1CC2	6	115.5	12	16	380.5	-	130	38	M12	80	70	5	10	41	-	-	-	-	-	-	-	
	1CB2, 1CC3	4, 6				430.5	-									-	-	-	-	-	-	-	
160 M	1DA2, 1DA3, 1DB2, 1DC2	2, 4, 6	155	15	19	510	-	145	42	M16	110	90	10	12	45	-	-	-	-	-	-	-	
160 L	1DA4, 1DB4, 1DC4	2, 4, 6	155	15	19	570	-	145	42	M16	110	90	10	12	45	-	-	-	-	-	-	-	

¹⁾ The length is specified as far as the tip of the fan cover.



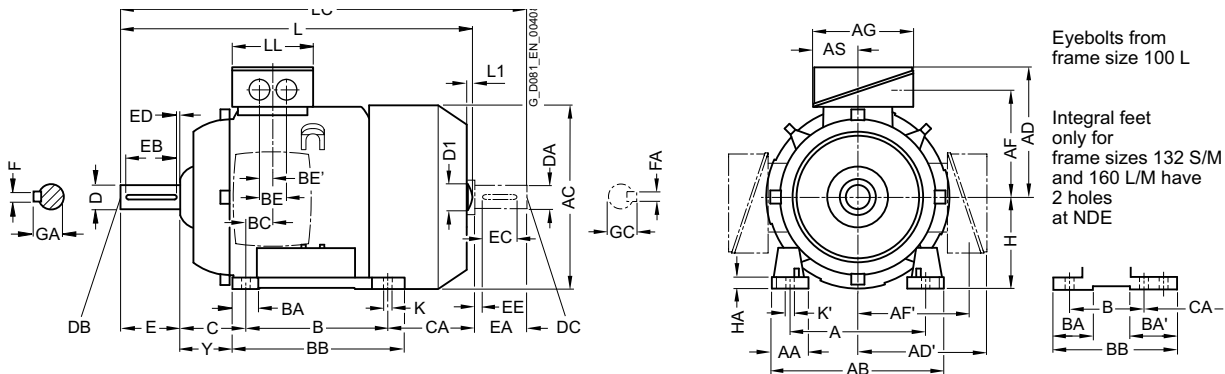
SIMOTICS SD 1LE1 Standard Motors

Dimensions

Cast-iron series 1LE1501, 1LE1521, 1LE1601, 1LE1621
Self-ventilated, frame sizes 71 M to 160 L

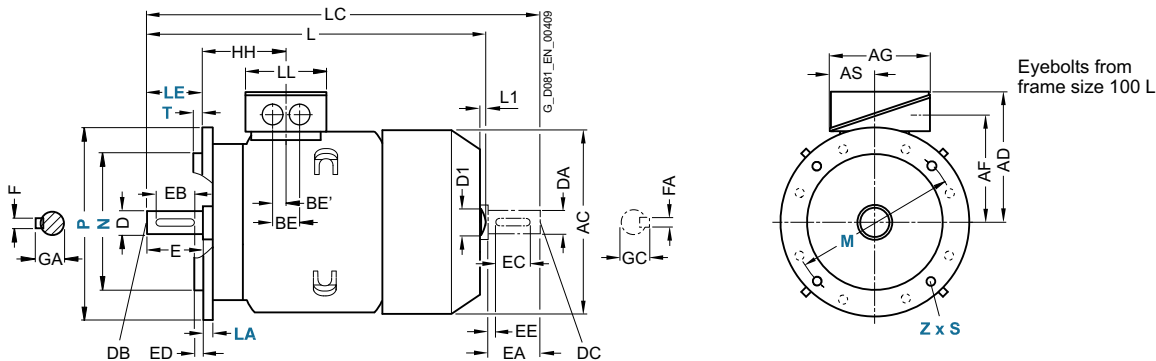
Dimensional drawings

Type of construction IM B3



Types of construction IM B5 and IM V1

For flange dimensions, see Page 2/94 (Z = the number of retaining holes)



For motor			Dimension designation acc. to IEC																					
Frame size	Motor type	No. of poles	A	AA	AB	AC	AD	AD'	AF	AF'	AG	AS	B*	BA	BA'	BB	BC	BE	BE'	C	CA*	H	HA	Y
71 M	1LE15.1	2, 4, 6	112	27	132	138.5	148	148	112	112	126	62	90	-	-	106	20.5	36	18	45	-	71	7	37
80 M	1LE15.1	2, 4, 6	125	27	150	156	158	158	122	122	129	62	100	-	-	118	21.5	36	18	50	-	80	8.5	41
90 S	1LE15.1	2, 4, 6	140	30.5	165	173.5	163	163	127	127	129	62	100	-	-	143	23.5	36	18	56	-	90	11	47
90 L	1LE15.1	2, 4, 6	140	30.5	165	173.5	163	163	127	127	129	62	125	-	-	143	23.5	36	18	56	-	90	11	47
100 L	All	2, 4, 6, 8	160	42	196	198	193	193	147	147	163	80.5	140	40	-	176	37.5	48	24	63	141	100	12	45
112 M	All	2, 4, 6, 8	190	46	226	222	195	195	150	150	163	80.5	140	40	-	176	30	48	24	70	129.7	112	12	52
132 S	All	2, 4, 6, 8	216	53	256	262	214.5	214.5	169	169	163	80.5	140	44	81 ¹⁾	218 ³⁾	26.5	48	24	89	-	132	15	69
132 M	All	2, 4, 6, 8	216	53	256	262	214.5	214.5	169	169	163	80.5	178	44	81 ¹⁾	218	26.5	48	24	89	-	132	15	69
160 M	All	2, 4, 6, 8	254	60	300	314	265	265	213	213	190	92	210	51	95 ²⁾	300 ⁴⁾	37	60	30	108	-	160	18	85
160 L	All	2, 4, 6, 8	254	60	300	314	265	265	213	213	190	92	254	51	95 ²⁾	300	37	60	30	108	-	160	18	85

* This dimension is assigned in DIN EN 50347 to the frame size listed.

1) With screwed-on feet, dimension BA' is 43 mm.

2) With screwed-on feet, dimension BA' is 51 mm.

3) With screwed-on feet, dimension BB is 180 mm.

4) With screwed-on feet, dimension BB is 256 mm.

SIMOTICS SD 1LE1 Standard Motors

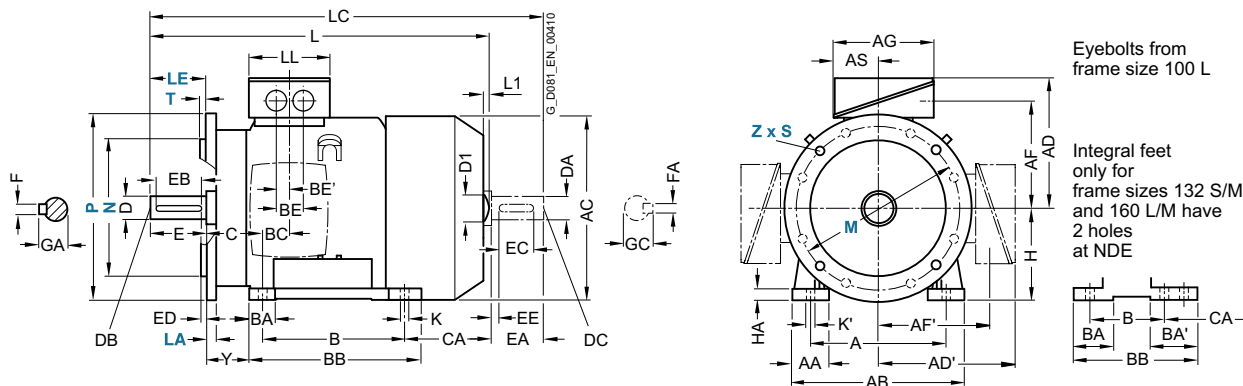
Dimensions

Cast-iron series 1LE1501, 1LE1521, 1LE1601, 1LE1621
Self-ventilated, frame sizes 71 M to 160 L

Dimensional drawings (continued)

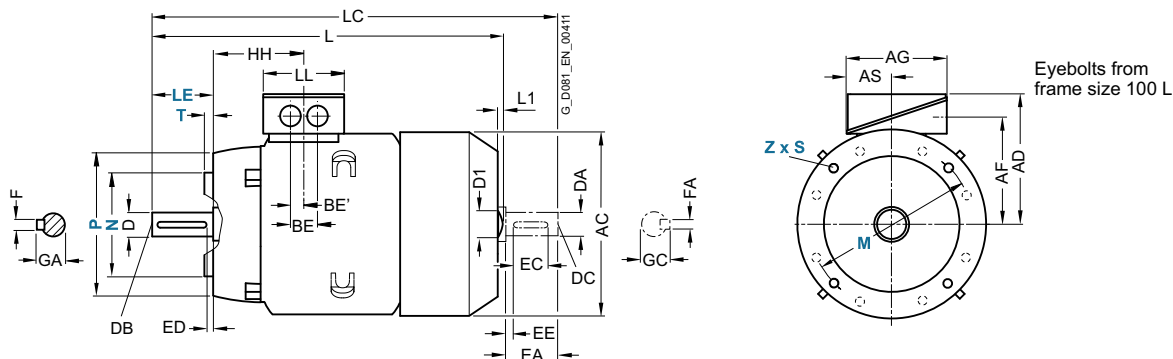
Type of construction IM B35

For flange dimensions, see Page 2/94 (**Z** = the number of retaining holes)



Type of construction IM B14

For flange dimensions, see Page 2/94 (**Z** = the number of retaining holes)



For motor			Dimension designation acc. to IEC							DE shaft extension							NDE shaft extension							
Frame size	Motor type	No. of poles	HH	K	K'	L ¹⁾	L ¹⁾²⁾	D1	LC	LL	D	DB	E	EB	ED	F	GA	DA	DC	EA	EC	EE	FA	GC
71 M	1LE15.1	2, 4, 6	64.5	7	7	240	-	-	278	102	14	M5	30	22	4	5	16	14	M5	30	16	4	5	16
80 M	1LE15.1	2, 4, 6	71.5	10	10	292	-	-	343	102	19	M6	40	32	4	6	21.5	19	M6	40	22	4	6	21.5
90 S	1LE15.1	2, 4, 6	79.5	10	10	347	-	-	405	102	24	M8	50	40	5	8	27	19	M6	40	32	4	6	21.5
90 L	1LE15.1	2, 4, 6	79.5	10	10	347	-	-	405	102	24	M8	50	40	5	8	27	19	M6	40	32	4	6	21.5
100 L	All	2, 4, 6, 8	100.5	12	16	388.5	7	32	454	134	28	M10	60	50	5	8	31	24	M8	50	40	5	8	27
112 M	All	2, 4, 6, 8	100.5	12	16	382	7	32	450	134	28	M10	60	50	5	8	31	24	M8	50	40	5	8	27
132 S	All	2, 4, 6, 8	115.5	12	16	456.5	8.5	39	535.5	134	38	M12	80	70	5	10	41	28	M10	60	50	5	8	31
132 M	All	2, 4, 6, 8	115.5	12	16	456.5	8.5	39	535.5	134	38	M12	80	70	5	10	41	28	M10	60	50	5	8	31
160 M	All	2, 4, 6, 8	145	15	19	594	10	45	730	165	42	M16	110	90	10	12	45	42	M16	110	90	10	12	45
160 L	All	2, 4, 6, 8	145	15	19	594	10	45	730	165	42	M16	110	90	10	12	45	42	M16	110	90	10	12	45

1) For 1LE15 motors, plus dimension L1.

2) Only for 1LE15 motors.

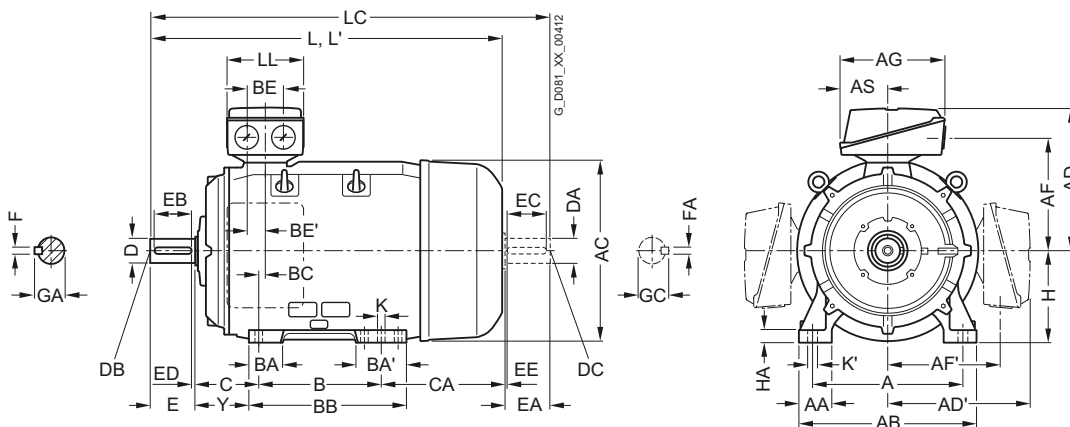
SIMOTICS SD 1LE1 Standard Motors

Dimensions

Cast-iron series 1LE1501, 1LE1521, 1LE1601, 1LE1621
Self-ventilated, frame sizes 180 M to 250 M

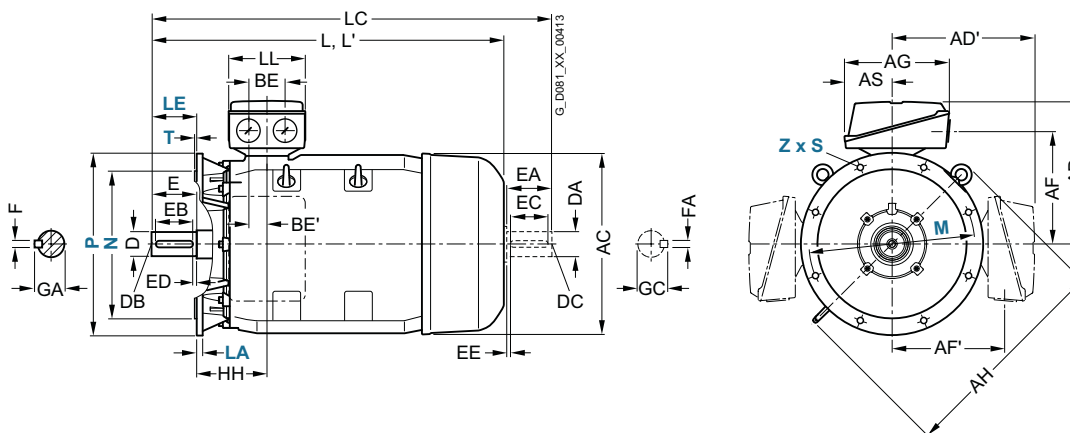
Dimensional drawings

Type of construction IM B3



Types of construction IM B5 and IM V1

For flange dimensions, see Page 2/94 (Z = the number of retaining holes)



For motor Frame size	Motor type 1LE1501-, 1LE1521- 1LE1601-, 1LE1621-	No. of poles	Dimension designation acc. to IEC																			
			A	AA	AB	AC	AD	AD'	AF	AF'	AG	AH	AS	B*	BA	BA'	BB	BC	BE	BE'	C	CA*
180 M/ 180 L	1EA2, 1EB2, 1EC6 1EB4, 1EC4, 1EA6, 1EB6	2, 4, 6 2, 4, 6	279	65	339	356	286	286	234	234	190	468	92	241	85	120	328	34	60	30	121	202
200 L	2AA4, 2AA5, 2AB5, 2AC4, 2AC5 2AA6, 2AB6, 2AC6	2, 4, 6 2, 4, 6	318	70	378	396	315	315	259	259	266	533	112	305	104	104	355	31	85	42.5	133	177
225 S/ 225 M	2BB0, 2BD0, 2BB2, 2BC2, 2BD2, 2BB6, 2BC6, 2BD6 2BA2, 2BA6	4, 8 4, 6, 8 2	356	80	436	449	338	338	282	282	266	556	112	311	92	117	361	15	85	42.5	149	253
250 M	2CA2, 2CA6 2CB2, 2CC2, 2CD2, 2CC6, 2CD6, 2CB6	2 4, 6, 8 4	406	100	490	497	410	410	322	322	319	620	145	349	102	102	409	24	110	55	168	230

300

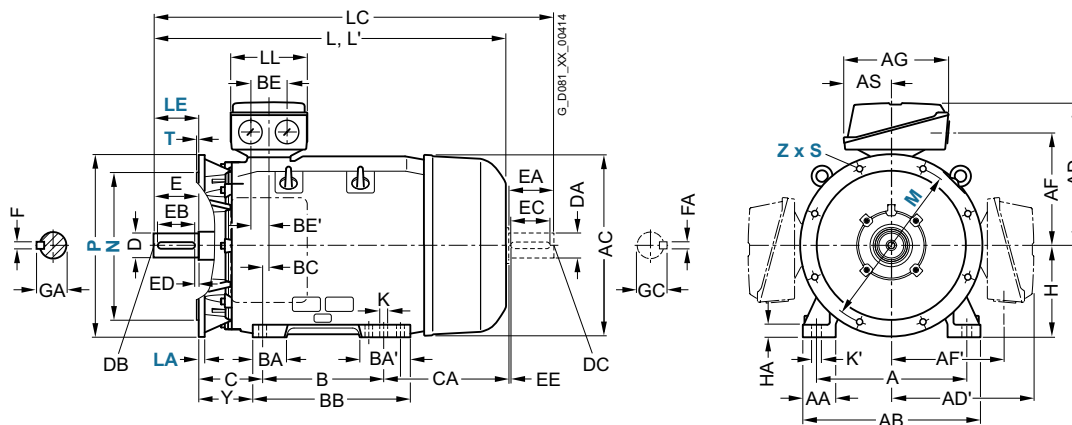
* This dimension is assigned in DIN EN 50347 to the frame size listed.

Cast-iron series 1LE1501, 1LE1521, 1LE1601, 1LE1621
Self-ventilated, frame sizes 180 M to 250 M

Dimensional drawings (continued)

Type of construction IM B35

For flange dimensions, see Page 2/94 (**Z** = the number of retaining holes)



2

Motor type 1LE1501-, 1LE1521- 1LE1601-, 1LE1621-	DE shaft extension										NDE shaft extension													
	H	HA	Y	HH	K	K'	L	L' ¹⁾	LC ²⁾	LL	D	DB	E	EB	ED	F	GA	DA	DC	EA	EC	EE	FA	GC
1EA2, 1EB2, 1EC6	180	20	95	155	15	19	668	668	784	165	48	M16	110	100	5	14	52	48	M16	110	100	5	14	51.5
1EB4, 1EC4, 1EA6, 1EB6							698	698	814															
2AA4,2AA5, 2AB5, 2AC4,2AC5	200	25	108	164	19	25	721	755	835	197	55	M20	110	100	5	16	59	55	M20	110	100	5	16	59
2AA6, 2AB6, 2AC6							746	780	860															
2BB0, 2BD0	225	34	124	164	19	25	788	-	903	197	60	M20	140	125	10	18	64	55	M20	110	100	5	16	59
2BB2, 2BC2, 2BD2, 2BB6, 2BC6, 2BD6							848		963															
2BA2, 2BA6							818	852	933		55		110	100	5	16	59	48	M16				14	51.5
2CA2, 2CA6	250	40	138	192	24	30	887	924	1002	233	60	M20	140	125	10	18	64	55	M20	110	100	5	16	59
2CB2, 2CC2, 2CD2, 2CC6, 2CD6							-		1032		65						69	60		140	125	10	18	64
2CB6							957		1072															

¹⁾ For version with low-noise fan for 2-pole motors.

²⁾ In the low-noise version, a second shaft extension and/or mounted encoder is not possible.

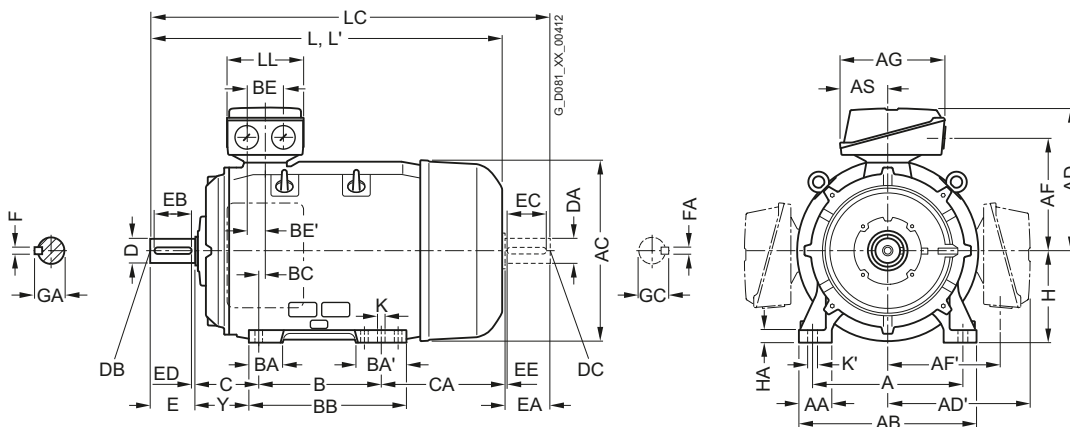
SIMOTICS SD 1LE1 Standard Motors

Dimensions

Cast-iron series 1LE1501, 1LE1521, 1LE1601, 1LE1621
Self-ventilated, frame sizes 280 S to 315 L

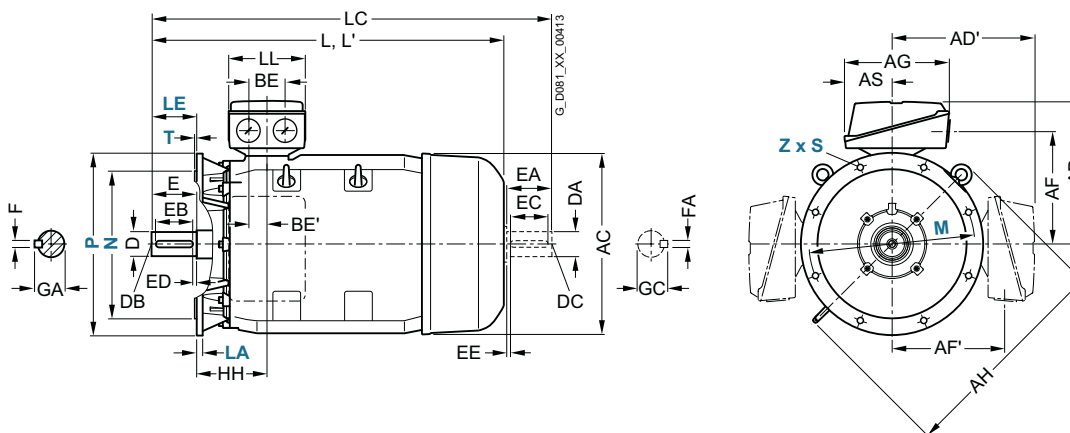
Dimensional drawings

Type of construction IM B3



Types of construction IM B5 and IM V1

For flange dimensions, see Page 2/94 (Z = the number of retaining holes)



For motor		Dimension designation acc. to IEC																				
Frame size	Motor type 1LE1501-, 1LE1521- 1LE1601-, 1LE1621-		No. of poles	A	AA	AB	AC	AD	AD'	AF	AF'	AG	AH	AS	B*	BA	BA'	BB	BC	BE	BE'	C	CA*
280 S	2DA0	2	457	100	540	551	433	433	345	345	319	672	145	368	101	152	479	20	110	55	190	267
	2DB0, 2DC0, 2DD0	4, 6, 8												368								267
280 M	2DA6	2												419								326
	2DA2																					216
	2DB2, 2DC2, 2DD2, 2DC6, 2DD6	4, 6, 8																				
	2DB6	4																				326
315 S	3AA0	2	508	120	610	616	515	515	404	404	374	780	164	406	113	170	527	22	110	55	216	295
	3AB0, 3AC0, 3AD0	4, 6, 8																				
315 M	3AA2 ¹⁾	2												457			578					409
	3AB2 ¹⁾	4																				
	3AC2, 3AD2	6, 8												406			527					244
315 L ¹⁾	3AA4	2												508			578					358
	3AB4, 3AC4, 3AD4, 3AC5, 3AD5, 3AD6	4, 6, 8																				
	3AA5, 3AA6	2												508	176	227	648					513
	3AB5, 3AB6, 3AC6	4, 6																				

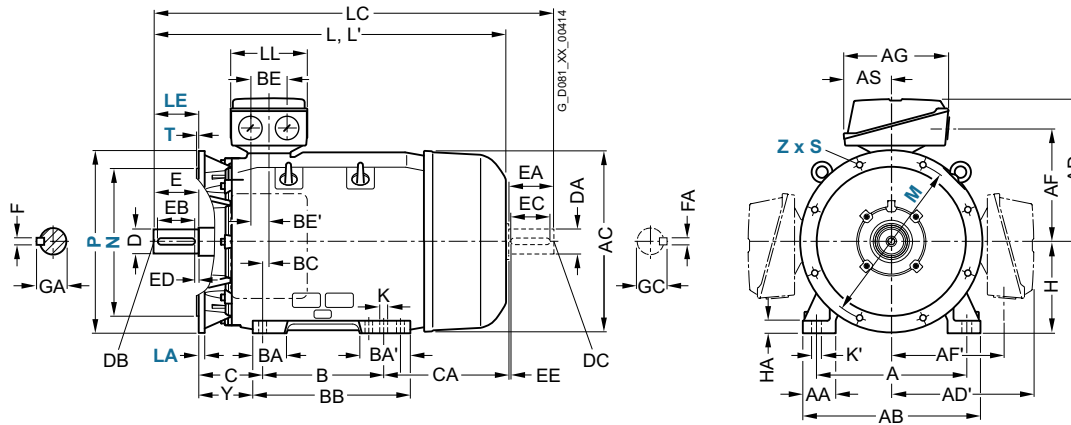
* This dimension is assigned in DIN EN 50347 to the frame size listed.

¹⁾ With terminal box position right, terminal box left, and with order code **H01** only screwed-on feet with 3 drilled holes with dimension "B" (406, 457 and 508 mm). The dimension "BB" will then be 666 mm.

Dimensional drawings (continued)

Type of construction IM B35

For flange dimensions, see Page 2/94 (Z = the number of retaining holes)



Motor type 1LE1501-, 1LE1521- 1LE1601-, 1LE1621-	DE shaft extension											NDE shaft extension												
	H	HA	Y	HH	K	K'	L	L' ¹⁾	LC ²⁾	LL	D	DB	E	EB	ED	F	GA	DA	DC	EA	EC	EE	FA	GC
2DA0	280	40	160	210	24	30	960	998	1105	233	65	M20	140	125	10	18	69	60	M20	140	125	10	18	64
2DB0, 2DC0, 2DD0											75					20	79.5	65						69
2DA6							1070	1108	1215		65					18	69	60						64
2DA2							960	998	1105															
2DB2, 2DC2, 2DD2, 2DC6, 2DD6											75					20	79.5	65						69
2DB6							1070		1215															
3AA0	315	50	181	238	28	35	1052	1122	1197	299	65	M20	140	125	10	18	69	60	M20	140	125	10	18	64
3AB0, 3AC0, 3AD0							1082		1227		80		170	140	25	22	85	70					20	74.5
3AA2							1217	1287	1362		65		140	125	10	18	69	60						18
3AB2							1247		1392		80		170	140	25	22	85	70						20
3AC2, 3AD2							1082		1227															
3AA4							1217	1287	1362		65		140	125	10	18	69	60						18
3AB4, 3AC4, 3AD4, 3AC5, 3AD5, 3AD6							1247		1392		80		170	140	25	22	85	70						20
3AA5, 3AA6			146				1372	1442	1517		65		140	125	10	18	69	60						18
3AB5, 3AB6, 3AC6							1402		1547		80		170	140	25	22	85	70						20

1) For version with low-noise fan for 2-pole motors.

2) In the low-noise version, a second shaft extension and/or mounted encoder is not possible.

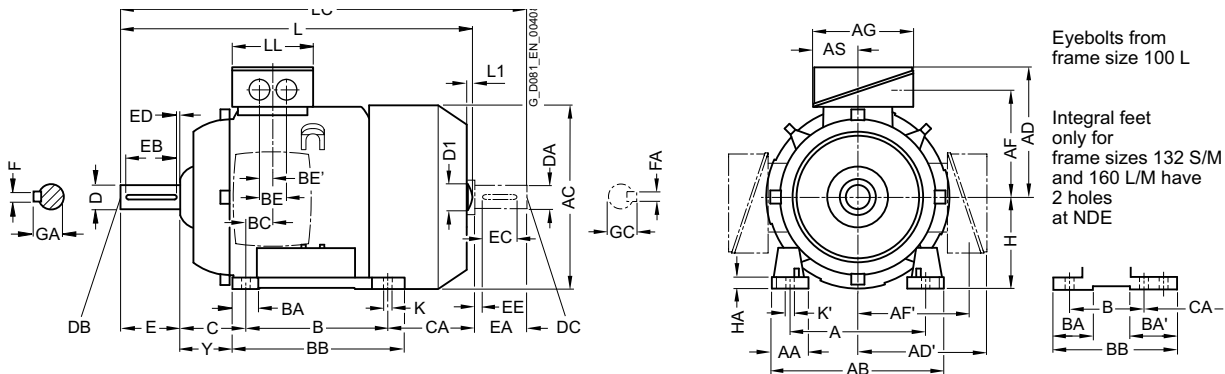
SIMOTICS SD 1LE1 Standard Motors

Dimensions

Cast-iron series 1LE1503, 1LE1523, 1LE1603, 1LE1623
Self-ventilated, frame sizes 71 M to 160 L

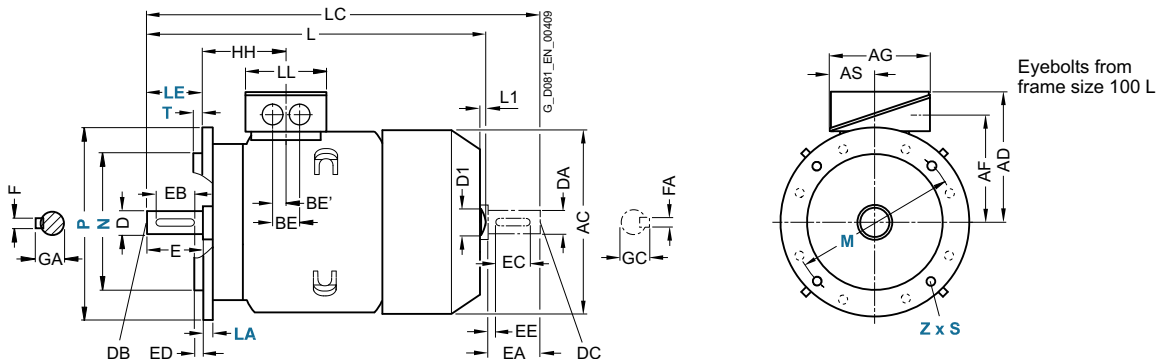
Dimensional drawings

Type of construction IM B3



Types of construction IM B5 and IM V1

For flange dimensions, see Page 2/94 (Z = the number of retaining holes)



For motor			Dimension designation acc. to IEC																					
Frame size	Motor type	No. of poles	A	AA	AB	AC	AD	AD'	AF	AF'	AG	AS	B*	BA	BA'	BB	BC	BE	BE'	C	CA*	H	HA	Y
71 M	1LE15.3-0..0, 0.2 0..3, 0.4	2, 4, 6	112	27	132	138.5	148	148	112	112	126	62	90	-	-	106	20.5	36	18	45	-	71	7	37
80 M	1LE15.3-0..0, 0.2 0..3, 0.4	2, 4, 6	125	27	150	156	158	158	122	122	129	62	100	-	-	118	21.5	36	18	50	-	80	8.5	41
90 S	1LE15.3-0..0, 0.2 0..3, 0.4	2, 4, 6	140	30.5	165	173.5	163	163	127	127	129	62	100	-	-	143	23.5	36	18	56	-	90	11	47
90 L	1LE15.3	2, 4, 6	140	30.5	165	173.5	163	163	127	127	129	62	125	-	-	143	23.5	36	18	56	-	90	11	47
100 L	All	2, 4, 6	160	42	196	198	193	193	147	147	163	80.5	140	40	-	176	37.5	48	24	63	176	100	12	45
112 M	All	2, 4, 6	190	46	226	222	195	195	150	150	163	80.5	140	40	-	176	30	48	24	70	155	112	12	52
132 S	1CA0, 1CC0	2, 6	216	53	256	262	214.5	214.5	169	169	163	80.5	140	44	81 ¹⁾	218 ²⁾	26.5	48	24	89	128.5	132	15	69
	1CA1, 1CB0	2, 4													-						178.5			
132 M	1CC2	6	216	53	256	262	214.5	214.5	169	169	163	80.5	178	44	81 ¹⁾	218	26.5	48	24	89	128.5	132	15	69
	1CB2, 1CC3	4, 6, 8													-						178.5			
160 M	All	2, 4, 6	254	60	300	314	261	261	213	213	190	92	210	51	95 ³⁾	300 ⁴⁾	37	60	30	108	148	160	18	85
160 L	All	2, 4, 6	254	60	300	314	261	261	213	213	190	92	254	51	95 ³⁾	300	37	60	30	108	208	160	18	85

* This dimension is assigned in DIN EN 50347 to the frame size listed.

1) With screwed-on feet, dimension BA' is 43 mm.

2) With screwed-on feet, dimension BB is 180 mm.

3) With screwed-on feet, dimension BA' is 51 mm.

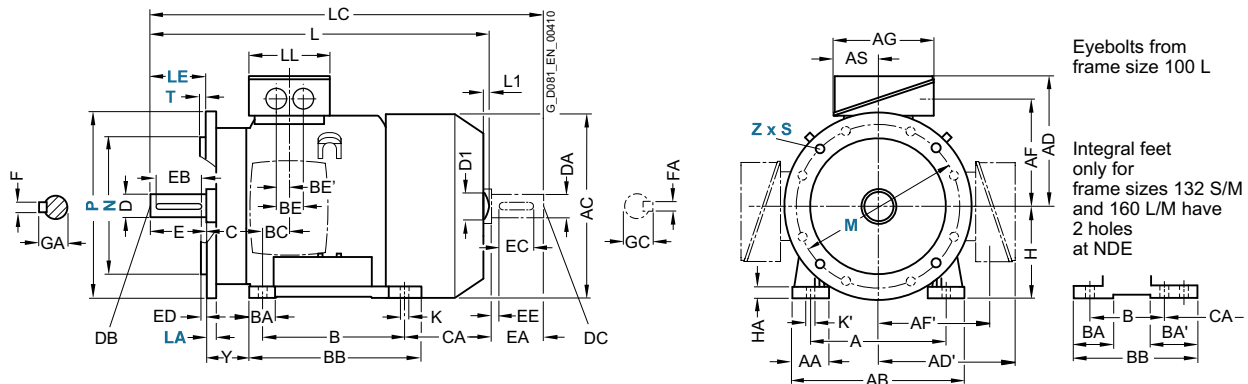
4) With screwed-on feet, dimension BB is 256 mm.

Cast-iron series 1LE1503, 1LE1523, 1LE1603, 1LE1623
Self-ventilated, frame sizes 71 M to 160 L

Dimensional drawings (continued)

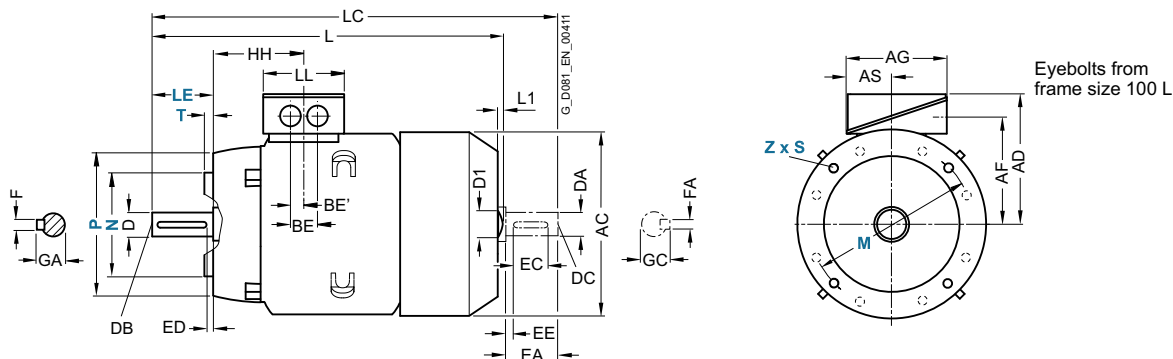
Type of construction IM B35

For flange dimensions, see Page 2/94 (**Z** = the number of retaining holes)



Type of construction IM B14

For flange dimensions, see Page 2/94 (**Z** = the number of retaining holes)



For motor			Dimension designation acc. to IEC					DE shaft extension					NDE shaft extension											
Frame size	Motor type	No. of poles	HH	K	K'	L ¹⁾	L ¹⁾²⁾	D1	LC	LL	D	DB	E	EB	ED	F	GA	DA	DC	EA	EC	EE	FA	GC
71 M	1LE15.3-0..0, 0..2 0..3, 0..4	2, 4, 6	64.5	7	7	240 280	-	-	278 318	102	14	M5	30	22	4	5	16	14	M5	30	16	4	5	16
80 M	1LE15.3-0..0, 0..2 0..3, 0..4	2, 4, 6	71.5	10	10	292 327	-	-	343 378	102	19	M6	40	32	4	6	21.5	19	M6	40	16	4	6	21.5
90 S	1LE15.3-0..0, 0..2 0..3, 0..4	2, 4, 6	79.5	10	10	347 387	-	-	405 445	102	24	M8	50	40	5	8	27	19	M6	40	27	4	6	21.5
90 L	1LE15.3	2, 4, 6	79.5	10	10	387	-	-	445	102	24	M8	50	40	5	8	27	19	M6	40	27	4	6	21.5
100 L	All	2, 4, 6	100.5	12	16	425	7	32	489	134	28	M10	60	50	5	8	31	24	M8	50	40	5	8	27
112 M	All	2, 4, 6	100.5	12	16	408.5	7	32	475	134	28	M10	60	50	5	8	31	24	M8	50	40	5	8	27
132 S	1CA0, 1CC0	2, 6	115.5	12	16	458	8.5	39	535.5	134	38	M12	80	70	5	10	41	28	M10	60	50	5	8	31
	1CA1, 1CB0	2, 4				508			585.5															
132 M	1CC2	6	115.5	12	16	458	8.5	39	535.5	134	38	M12	80	70	5	10	41	28	M10	60	50	5	8	31
	1CB2, 1CC3	4, 6				508			585.5															
160 M	All	2, 4, 6	145	15	19	596	10	45	730	165	42	M16	110	90	10	12	45	42	M16	110	90	10	12	45
160 L	All	2, 4, 6	145	15	19	656	10	45	790	165	42	M16	110	90	10	12	45	42	M16	110	90	10	12	45

1) For 1LE15 motors, plus dimension L1.
2) Only for 1LE15 motors.

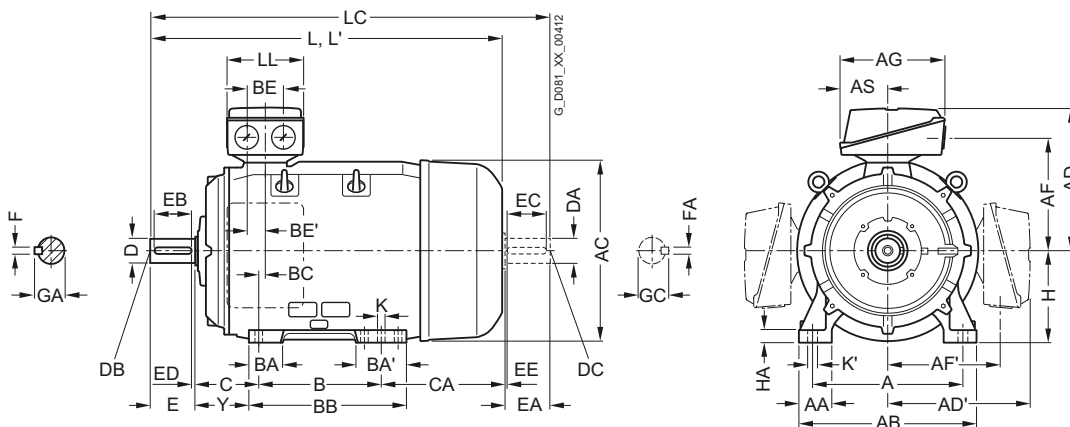
SIMOTICS SD 1LE1 Standard Motors

Dimensions

Cast-iron series 1LE1503, 1LE1523, 1LE1603, 1LE1623
Self-ventilated, frame sizes 180 M to 315 L

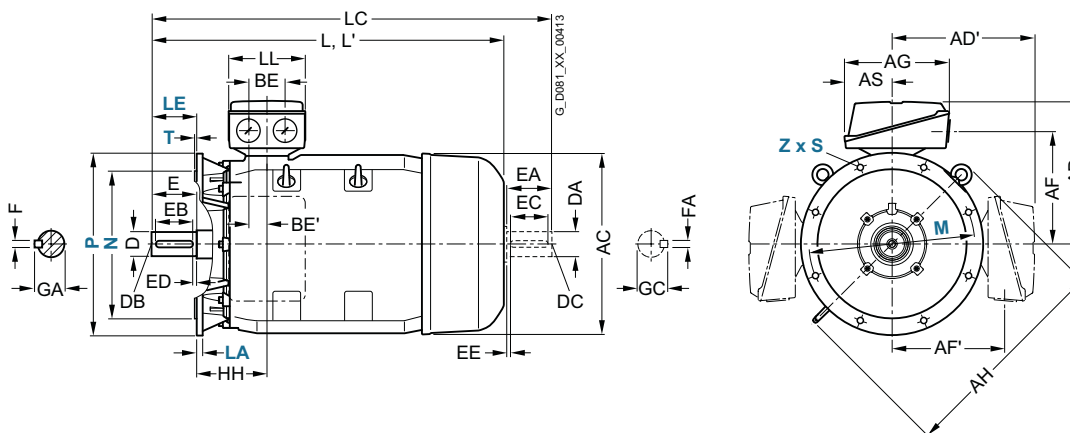
Dimensional drawings

Type of construction IM B3



Types of construction IM B5 and IM V1

For flange dimensions, see Page 2/94 (Z = the number of retaining holes)



For motor Frame size	Motor type 1LE1503-, 1LE1523- 1LE1603-, 1LE1623-	No. of poles	Dimension designation acc. to IEC																			
			A	AA	AB	AC	AD	AD'	AF	AF'	AG	AH	AS	B*	BA	BA'	BB	BC	BE	BE'	C	CA*
180 M/ 180 L	1EB2, 1EC4 1EA2, 1EB4	4, 6 2, 4	279	65	339	356	286	286	234	234	190	468	92	241	85	120	328	34	60	30	121	202
200 L	2AA4, 2AC4 2AA5, 2AB5, 2AC5	2, 6 2, 4, 6	318	70	378	396	315	315	259	259	266	533	112	305	104	104	355	31	85	42.5	133	177
225 S	2BB0	4	356	80	436	449	338	338	282	282	266	556	112	286	92	117	361	15	85	42.5	149	218
225 M	2BA2 2BB2, 2BC2	2 4, 6	356	80	436	449	338	338	282	282	266	556	112	311	92	117	361	15	85	42.5	149	253
250 M	2CA2 2CB2, 2CC2	2 4, 6	406	100	490	497	410	410	322	322	319	620	145	349	102	102	409	24	110	55	168	230
280 S	2DA0 2DB0, 2DC0	2 4, 6	457	100	540	551	433	433	345	345	319	672	145	368	101	152	479	20	110	55	190	267
280 M	2DC2 2DA2 2DB2	6 2 4	457	100	540	551	433	433	345	345	319	672	145	419	101	152	479	20	110	55	190	216 326
315 S	3AA0 3AB0, 3AC0	2 4, 6	508	120	610	616	515	515	404	404	374	780	164	406	113	170	527	22	110	55	216	295
315 M ¹⁾	3AA2 3AB2, 3AC2	2 4, 6	508	120	610	616	515	515	404	404	374	780	164	457	113	170	578	22	110	55	216	409
315 L ¹⁾	3AA4 3AB4, 3AC4 3AA5 3AB5, 3AC5, 3AC6	2 4, 6 2 4, 6	508	120	610	616	515	515	404	404	374	780	164	508	113	170	578	22	110	55	216	358 513

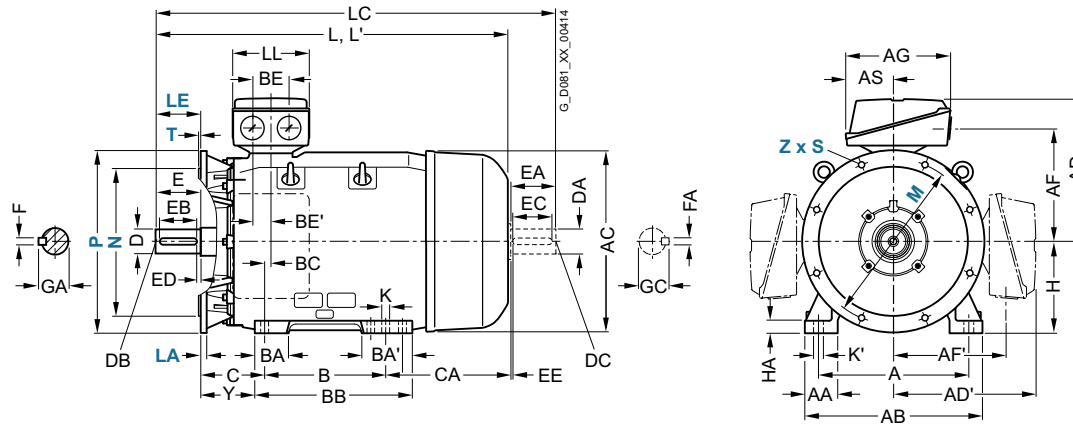
* This dimension is assigned in DIN EN 50347 to the frame size listed.

¹⁾ With order codes for terminal box positions (K05, K06, H01) only screwed on feet with 3 drilled holes with dimension "B" (406, 457 and 506 mm). The dimension "BB" will then be 666 mm.

Dimensional drawings (continued)

Type of construction IM B35

For flange dimensions, see Page 2/94 (Z = the number of retaining holes)



Motor type 1LE1503-, 1LE1523- 1LE1603-, 1LE1623-	DE shaft extension													NDE shaft extension											
	H	HA	Y	HH	K	K'	L	L' ¹⁾	LC ²⁾	LL	D	DB	E	EB	ED	F	GA	DA	DC	EA	EC	EE	FA	GC	
1EB2, 1EC4 1EA2, 1EB4	180	20	95	155	15	19	668	668	784	165	48	M16	110	100	5	14	52	48	M16	110	100	5	14	51.5	
2AA4, 2AC4 2AA5, 2AB5, 2AC5	200	25	108	164	19	25	721	755	835	197	55	M20	110	100	5	16	59	55	M20	110	100	5	16	59	
2BB0	225	34	124	164	19	25	788	–	903	197	60	M20	140	125	10	18	64	55	M20	110	100	5	16	59	
2BA2	225	34	124	164	19	25	818	852	933	197	55	M20	110	100	5	16	59	48	M16	110	100	5	14	51.5	
2BB2, 2BC2							848	–	963		60		140	125	10	18	64	55	M20				16	59	
2CA2	250	40	138	192	24	30	887	924	1002	233	60	M20	140	125	10	18	64	55	M20	110	100	5	16	59	
2CB2, 2CC2							–	1032			65						69	60		140	125	10	18	64	
2DA0	280	40	160	210	24	30	960	998	1105	233	65	M20	140	125	10	18	69	60	M20	140	125	10	18	64	
2DB0, 2DC0							–	–	–		75					20	79.5	65						69	
2DC2	280	40	160	210	24	30	960	–	1105	233	75	M20	140	125	10	20	79.5	65	M20	140	125	10	18	69	
2DA2							1070	1108	1215		65					18	69	60						64	
2DB2							–	–	–		75					20	79.5	65						69	
3AA0	315	50	181	238	28	35	1052	1122	1197	299	65	M20	140	125	10	18	69	60	M20	140	125	10	18	64	
3AB0, 3AC0							1082	–	1227		80		170	140	25	22	85	70						20	74.5
3AA2	315	50	181	238	28	35	1217	1287	1362	299	65	M20	140	125	10	18	69	60	M20	140	125	10	18	64	
3AB2, 3AC2							1247	–	1392		80		170	140	25	22	85	70						20	74.5
3AA4	315	50	181	238	28	35	1217	1287	1362	299	65	M20	140	125	10	18	69	60	M20	140	125	10	18	64	
3AB4, 3AC4							1247	–	1392		80		170	140	25	22	85	70						20	74.5
3AA5			146				1372	1442	1517		65		140	125	10	18	69	60						18	64
3AB5, 3AC5, 3AC6							1402	–	1547		80		170	140	25	22	85	70						20	74.5

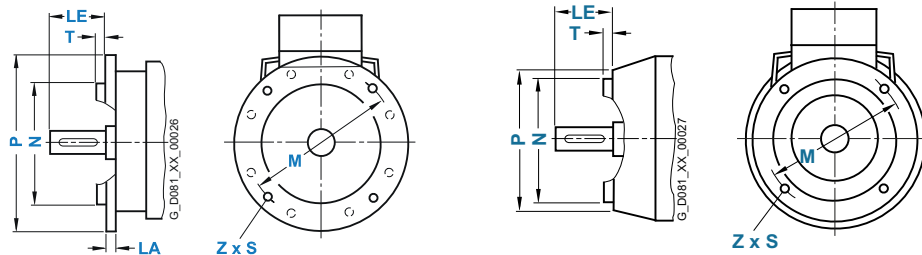
¹⁾ For version with low-noise fan for 2-pole motors.²⁾ In the low-noise version, a second shaft extension and/or mounted encoder is not possible.

SIMOTICS GP/SD 1LE1/1PC1 Standard Motors

Dimensions

Flange dimensions

Dimensional drawings



In DIN EN 50347, the frame sizes are allocated flange FF with through holes and flange FT with tapped holes.

The designation of flange A and C according to DIN 42948 (invalid since September 2003) are also listed for information purposes. See the table below.

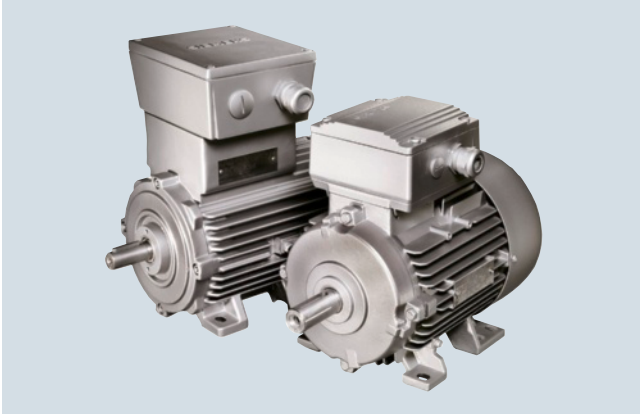
(Z = the number of retaining holes)

Frame size	Type of construction	Flange type	Flange with through holes (FF/A) tapped holes (FT/C) acc. to DIN EN 50347 acc. to DIN 42948	Dimension designation acc. to IEC							
				LA	LE	M	N	P	S	T	Z
71 M	IM B5, IM B35, IM V1, IM V3	Standard flange	FF 130 A 160	9	30	130	110	160	10	3.5	4
	IM B14, IM B34, IM V18, IM V19	Standard flange	FT 85 C 105	–	30	85	70	105	M6	2.5	4
80 M	IM B5, IM B35, IM V1, IM V3	Standard flange	FF 165 A 200	10	40	165	130	200	12	3.5	4
	IM B14, IM B34, IM V18, IM V19	Standard flange	FT 100 C 120	–	40	100	80	120	M6	3	4
90 S, 90 L	IM B5, IM B35, IM V1, IM V3	Standard flange	FF 165 A 200	10	50	165	130	200	12	3.5	4
	IM B14, IM B34, IM V18, IM V19	Standard flange	FT 115 C 140	–	50	115	95	140	M8	3	4
100 L	IM B5, IM B35, IM V1, IM V3	Standard flange	FF 215 A 250	11	60	215	180	250	14.5	4	4
	IM B5, IM B35, IM V1, IM V3	Next larger standard flange – Order code P01	FF 265 A 300	12	60	265	230	300	14.5	4	4
	IM B5, IM B35, IM V1, IM V3	Next smaller standard flange – Order code P02	FF 165 A 200	11	60	165	130	200	12	3.5	4
	IM B14, IM B34, IM V18, IM V19	Standard flange	FT 130 C 160	–	60	130	110	160	M8	3.5	4
	IM B14, IM B34, IM V18, IM V19	Next larger standard flange – Order code P01	FT 165 C 200	–	60	165	130	200	M10	3.5	4
	IM B14, IM B34, IM V18, IM V19	Next smaller standard flange – Order code P02	FT 130 C 160	–	60	130	110	160	M8	3.5	4
112 M	IM B5, IM B35, IM V1, IM V3	Standard flange	FF 215 A 250	11	60	215	180	250	14.5	4	4
	IM B5, IM B35, IM V1, IM V3	Next larger standard flange – Order code P01	FF 265 A 300	12	60	265	230	300	14.5	4	4
	IM B5, IM B35, IM V1, IM V3	Next smaller standard flange – Order code P02	FF 165 A 200	11	60	165	130	200	12	3.5	4
	IM B14, IM B34, IM V18, IM V19	Standard flange	FT 130 C 160	–	60	130	110	160	M8	3.5	4
	IM B14, IM B34, IM V18, IM V19	Next larger standard flange – Order code P01	FT 165 C 200	–	60	165	130	200	M10	3.5	4
	IM B14, IM B34, IM V18, IM V19	Next smaller standard flange – Order code P02	FT 130 C 160	–	60	130	110	160	M8	3.5	4
132 S, 132 M	IM B5, IM B35, IM V1, IM V3	Standard flange	FF 265 A 300	12	80	265	230	300	14.5	4	4
	IM B5, IM B35, IM V1, IM V3	Next larger standard flange – Order code P01	FF 300 A 350	13	80	300	250	350	18.5	5	4
	IM B5, IM B35, IM V1, IM V3	Next smaller standard flange – Order code P02	FF 215 A 250	11	80	215	180	250	14.5	4	4
	IM B14, IM B34, IM V18, IM V19	Standard flange	FT 165 C 200	–	80	165	130	200	M10	3.5	4
	IM B14, IM B34, IM V18, IM V19	Next larger standard flange – Order code P01	FT 215 C 250	–	80	215	180	250	M12	4	4
	IM B14, IM B34, IM V18, IM V19	Next smaller standard flange – Order code P02	FT 165 C 200	–	80	165	130	200	M10	3.5	4
160 M, 160 L	IM B5, IM B35, IM V1, IM V3	Standard flange	FF 300 A 350	13	110	300	250	350	18.5	5	4
	IM B5, IM B35, IM V1, IM V3	Next smaller standard flange – Order code P02	FF 265 A 300	12	110	265	230	300	14.5	4	4
	IM B14, IM B34, IM V18, IM V19	Standard flange	FT 215 C 250	–	110	215	180	250	M12	4	4
	IM B14, IM B34, IM V18, IM V19	Next larger standard flange – Order code P01	FT 265 C 300	–	110	265	230	300	M14	4	4
180 M, 180 L	IM B5, IM B35, IM V1, IM V3	Standard flange	FF300 A350	13	110	300	250	350	18.5	5	4
	IM B5, IM B35, IM V1, IM V3	Next smaller standard flange – Order code P02	FF 265 A 300	12	110	265	230	300	14.5	4	4
200 L	IM B5, IM B35, IM V1, IM V3	Standard flange	FF350 A400	15	110	350	300	400	18.5	5	4
	IM B5, IM B35, IM V1, IM V3	Next smaller standard flange – Order code P02	FF300 A350	13	110	300	250	350	18.5	5	4
225 S, 225 M	IM B5, IM B35, IM V1, IM V3	Standard flange	FF400 A450	16	110	400	350	450	18.5	5	8
250 M	IM B5, IM B35, IM V1, IM V3	Standard flange	FF500 A550	18	140	500	450	550	18.5	5	8
280 S, 280 M	IM B5, IM B35, IM V1, IM V3	Standard flange	FF500 A550	18	140	500	450	550	18.5	5	8
315 S, 315 M, 315 L	IM B5, IM B35, IM V1, IM V3	Standard flange	FF600 A660	22	140	600	550	660	24	6	8
2-pole to 8-pole				170							

SIMOTICS XP 1MB1 Explosion-Proof Motors

Orientation

Overview



In many industrial and public sectors, explosion protection or explosion hazards are ever-present, e.g. in the chemicals industry, in refineries, on drilling platforms, at petrol stations, in feed manufacturing and in sewage treatment plants.

The risk of explosion is always present when gases, fumes, mist or dust are mixed with oxygen in the air in an explosive ratio close to sources of ignition that are able to release the so-called minimum ignition energy.

In the chemical and petrochemical industries in particular, when crude oil and natural gas are transported, or in mining, milling (e.g. grain and granular solids), this can result in serious injury to persons and damage to equipment.

To ensure maximum safety in these areas, legislators in most countries have implemented appropriate stipulations in the form of laws and regulations based on national and international standards.

Explosion-protected equipment is designed such that an explosion can be prevented when it is used properly.

The explosion-protected equipment can be designed in accordance with various types of protection.

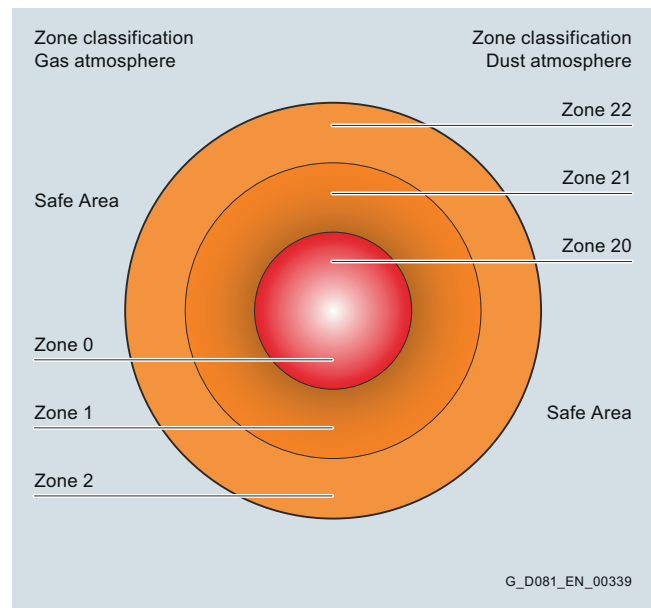
The local conditions must be subdivided into specified zones by the user with the assistance of the responsible authorities in accordance with the frequency of occurrence of an explosion hazard. Device (equipment) categories are assigned to these zones. The zones are then subdivided into possible types of protection and therefore into possible equipment (product) types.

Classification of zones

Areas subject to explosion hazard are divided into zones. Division into zones depends on the chronological and geographical probability of the presence of a hazardous, potentially explosive atmosphere. Information and specifications for classification of the zones are laid down in the following standards:

- IEC/EN 60079-10-1 for gas atmospheres
- IEC/EN 60079-10-2 for dust atmospheres

Further, a distinction is made between various explosion groups as well as temperature classes and these are included in the hazard assessment.



Depending on the particular zone and therefore the associated hazard, operating equipment must comply with defined minimum requirements regarding the type of protection. The different types of protection require corresponding measures to prevent ignition that should be implemented at the motor in order to prevent that a surrounding explosive atmosphere is ignited.

Zone		Zone definition acc. to	Assigned types of protection	Category according to 94/9/EC	Equipment protection level acc. to IEC/EN 60079-0
Gas 1) 2)	Dust 1) 2)	IEC/EN 60079-10-1 for gas atmospheres IEC/EN 60079-10-2 for dust atmospheres			
0	–	An area in which there is an explosive gas atmosphere constantly, over a long period or frequently .	Low voltage motors not permitted	1	Ga
1	–	An area in which it is expected that an explosive gas atmosphere will occur occasionally during normal operation.	Ex e Ex de Ex d	2	Gb
2	–	An area in which in normal operation it is expected that an explosive gas atmosphere will occur only rarely and then only briefly .	Ex nA	3	Gc
–	20	An area in which there is an explosive gas atmosphere comprising a dust-air mixture constantly, over a long period or frequently .	Low voltage motors not permitted	1	Da
–	21	An area in which it is expected that an explosive gas atmosphere comprising a dust-air mixture will occur occasionally during normal operation.	Ex tb	2	Db
–	22	An area in which in normal operation it is expected that an explosive gas atmosphere in the form of a cloud of flammable dust in air will occur only rarely and then only briefly .	Ex tc ³⁾	3	Dc

1) Motors of
- Zone 1 can also be used in Zone 2
- Zone 21 can also be used in Zone 22

2) Motors which are certified for gas or dust protection must not be used in hybrid mixtures! Hybrid mixtures: when explosive gas and dust atmospheres occur simultaneously.

3) Motors are not approved for operation in environments containing conductive dust.

Overview (continued)**Types of protection**

Type of protection "Increased safety" **Ex e** acc. to IEC/EN 60079-7

Additional measures are taken to prevent the possibility of high temperatures and to prevent sparks or arcs from occurring on the inside and on external components of the motor.

Motors of the 1MA6 and 1MA7 series are designed with "Increased safety" – see Catalog D 81.1 · January 2012.

Type of protection "Explosion-proof enclosure" **Ex d** acc. to IEC/EN 60079-1

The components that can ignite an explosive atmosphere are located in an enclosure that is not damaged by an internal explosion and flameproof joints prevent flames from escaping to the explosive atmosphere on the outside.

The following motor series are designed with "Explosion-proof enclosure" **Ex d**:

- 1MJ6/7 frame sizes 71 to 315 – see Catalog D 81.1 · January 2012
- 1MD5 (IE2)

Type of protection "Non-sparking" **Ex nA** acc. to IEC/EN 60079-15

The type of protection **Ex nA** ensures that a motor in normal operation as well as when operated under deviating conditions as specified in the standard is not in a position to ignite a surrounding explosive gas atmosphere.

1MB103, 1MB153 and 1MB163 motors are available in the **Ex nA** version. For motors of the 1LA7/9, 1LA6 and 1LG series, see Catalog D 81.1 · January 2012.

Type of protection "Dust explosion protection" **Ex t** acc. to IEC/EN 60079-31

This type of protection applies for electrical equipment protected using an enclosure and with limited surface temperature for use in areas in which combustible dust can occur in concentration levels that could cause a fire or an explosion.

1MB101/2, 1MB151/2 and 1MB161/2 motors are available in the **Ex t** version. For motors of the 1LA7/9, 1LA6 and 1LG series, see Catalog D 81.1 · January 2012.

Explosion-proof motors for converter-fed operation


Principally, explosion-proof motors (except for **Ex e**) can be fed from converters. Particular attention must be paid to the interaction between the motor and converter system, especially with regard to the following aspects:

- The harmonic content of the supply voltage raises the motor temperature, so the motor output must be reduced
- Less cooling of the motor at speeds below the rated speed
- Voltage stress on the motor winding
- Bearing currents

Certification

IEC motors for use in hazardous zones are certified according to the EU Directive 94/9/EC (ATEX) and are marked according to the following schematic.

Example "Non-sparking":

	CE	0158		II	3	G	Ex	nA	IIC	T3	Gc
CE marking											
Number of the certifying "notified" body (0158 = EXAM)											
Explosion protection marking											
Device group:	I = Underground II = All other areas										
Category:	2 (Zone 1/21) 3 (Zone 2/22)										
Ex atmosphere	G = Gas D = Dust										
Explosion protected equipment											
Type of protection nA, d, de, e, tb or tc (de = Ex d motor enclosure with Ex e terminal box)											
Explosion group and explosion subgroup	II = Gas (IIA, IIB or IIC) III = Dust (IIIA, IIIB or IIIC)										
Temperature class with max. surface temperature	T1 = 450 °C T4 = 135 °C T2 = 300 °C T5 = 100 °C T3 = 200 °C T6 = 85 °C										
Equipment protection level (G = Gas; D = Dust):	Ga = Very high protection, Da = Very high protection, Gb = High protection, Db = High protection, Gc = Increased protection, Dc = Increased protection										

Additional information on the subject of explosion protection, types of protection and zones is provided in the Siemens brochure "Explosion Protection".

SIMOTICS XP 1MB1 Explosion-Proof Motors

Orientation

Overview (continued)

Overview of SIMOTICS XP 1MA/1MB1/1MJ/1LA/1LG/1PQ8 explosion-proof motors

The table below contains a complete overview of our products, their types of protection and the assignment of motor types to categories. It is important to note that depending on whether the

motor is used for converter-fed operation or mains-fed operation, different order codes are required for unique selection of the required product.

Sector	Category	Zone	Frequency of occurrence of the Ex atmosphere	Type of protection	Temperature class	Equipment protection level	Degree of protection	Motor type and if applicable order code	Operation	Order code	Utilization according to temperature class	Standard
Gases and vapors (G)	1G	0	constantly or long-term	Not admissible with low-voltage motors								
	2G	1	occasionally	Ex de IIC ¹⁾ (explosion-proof enclosure)	T1 – T4	Gb	IP55	1MJ6, 1MJ7	Mains	–	130 (B)	IEC/EN 60079-0
				Ex e IIC ¹⁾ (increased safety)	T1 – T3	Gb	IP55	1MA6, 1MA7	Mains	–	130 (B)/155 (F) ³⁾	IEC/EN 60079-0 IEC/EN 60079-7
3G	2	rarely or briefly	Ex nA IIC ¹⁾ (non-sparking)	T1 – T3	Gc	IP55	1LA6, 1LA7, 1LA8, 1PQ8 ²⁾ , 1LA9, 1LG4/6	Mains M72 Converter M73		130 (B)	IEC/EN 60079-0 IEC/EN 60079-15	
Dust (D)	1D	20	constantly or long-term	Not admissible with low-voltage motors								
	2D	21	occasionally	Ex tb IIIC ¹⁾ ; conductive and non-conductive dust	Max. enclosure temperature T125 °C ⁶⁾	Db	IP65	1LA5, 1LA6, 1LA7, 1LA8 ⁴⁾ , 1PQ8 ²⁾ , 1LA9, 1LG4/6	Mains	M34	130 (B)	IEC/EN 60079-0 IEC/EN 60079-31
									Converter	M38		
3D	22	rarely or briefly	Ex tc IIIB ¹⁾ ; non-conductive dust		Dc	IP55		Mains	M35			
Gases and vapors (G) and dusts (D) ⁵⁾	2G	1	occasionally	Ex de IIC ¹⁾ (explosion-proof enclosure)/ Ex tb IIIC ¹⁾ ; conductive and non-conductive dust	T1 – T4/ Max. enclosure temperature T135 °C	Gb	IP65	1MJ6, 1MJ7	Mains	M76	130 (B)	IEC/EN 60079-0 IEC/EN 60079-1 IEC/EN 60079-31
	2D	21							Converter	M77			155 (F)
	3G	2	rarely or briefly	Ex nA IIC ¹⁾ (non-sparking)/ Ex tc IIIB; non-conductive dust	T1 – T3/ Max. enclosure temperature T125 °C ⁶⁾	Gc	IP55	1LA6, 1LA7, 1LA9, 1LG4/6	Mains	M74	130 (B)	IEC/EN 60079-0 IEC/EN 60079-15 IEC/EN 60079-31
3D	22	Converter							M75			
								1MB103, 1MB153, 1MB163	Mains			
								1MB101/2, 1MB151/2, 1MB161/2	Mains			
								1MB103 +B30 1MB153 +B30 1MB163 +B30	Mains			

1) Highest explosion group IIC includes IIB and IIA.
IIIA stands for lint, IIIB for non-conductive dust and IIIC for conductive dust. 1MJ optionally with Ex d terminal box (order code **K53**).

2) 1PQ8 is not possible for Zone 21. Zone 2 and 22 for 1PQ8 available on request. Utilization according to temperature class 155 (F).

3) See EC type-examination certificate.

4) 1LA8 only available for Zone 22 (order codes **M35, M39**).
Converter: utilization as standard according to temperature class 155 (F)

5) The Ex motor is not admissible in an explosive atmosphere of dust and air (hybrid). A standard is not currently available that describes the product requirements for a hybrid mixture.

6) For 1MB1 IE1: T140 °C
IE2: T120 °C (except T130 °C for 1MB1.11-1AD5,
1MB1.11-3AD6, 1MB1.21-1AD5 and 1MB1.21-3AD6)
IE3: T120 °C

Benefits

The explosion-proof motors from Siemens offer the user numerous advantages:

- The motors are designed in accordance with Directive 94/9/EC (ATEX 95 previously ATEX 100a). As product supplier, Siemens accepts responsibility for compliance with the applicable product standards for the selected equipment.
- By using this product, the plant operating company satisfies Directive 1999/92/EC in accordance with Appendix II B (ATEX 137 previously ATEX 118a). The plant manufacturer or plant operating company is responsible for correct selection and proper usage of the equipment.
- Comprehensive series of Ex motors for protection against gas and dust.
- Individual versions of motors are possible thanks to the numerous catalog options.
- Further special versions are possible on request.
- Factory certificates 2.1 are available for a defined spectrum of Siemens motors/converters.
- The Operating Instructions (Compact) are available in all the official EU languages as well as Russian and Chinese.

For applications in harsh environments: SIMOTICS XP motors with a cast-iron housing

The right motor for various challenges

The following motor series are available with cast-iron housings for applications in harsh, hazardous environments:

- **Basic Line:** rugged, reliable motors for machine construction
- **Performance Line:** motors for the process industry with reinforced bearings and a rugged coating – for requirements that extend beyond the Basic Line

Comparison: Basic Line versus Performance Line

	Basic Line – 1MB15	Performance Line – 1MB16
Bearing size	62 (63 from frame size 280 upwards)	63
Relubrication	Optional (standard from frame size 280 upwards)	Standard from frame size 160 upwards (optional for frame size 100 to 132)
Paint system	Standard coating, corrosion class C2	Special coating, corrosion class C3
Motor protection	Optional	PTC
Warranty	12 months	36 months

Application

The explosion-proof motors are used in the following sectors to prevent explosion hazards that result in serious injury to persons and severe damage to equipment.

- Chemical and petrochemical industry
- Production of mineral oil and gas
- Gas works
- Gas supply companies
- Petrol stations
- Coking plants
- Mills (e.g. grain, solids)
- Sewage treatment plants
- Wood processing (e.g. sawdust, tree resin)
- Other industries subject to explosion hazards

SIMOTICS XP 1MB1 Explosion-Proof Motors

Orientation

Technical specifications

General information

Ex motors in vertical type of construction with shaft extension pointing down must have a protective cover.

Operating Instructions (Compact) are supplied as standard with explosion-proof motors in English and German. Translations are also available in all the other official EU languages as well as in Russian and Chinese.

For all explosion-proof motors, designs according to UL and CSA are not possible.

Motor connection

Certified metric cable glands/sealing plugs are included in the scope of supply of 1MB1 motors.

The certificates for the motors for hazardous areas are stored with the documentation in the selection tool DT Configurator.

Certified motor protection switches/tripping units must always be used for motor protection, see Catalog IC 10.

Zone 1 with Ex e II type of protection increased safety "e"

See Catalog D 81.1 · January 2012.

Zone 1 with type of protection Ex de IIC explosion-proof enclosure "d"

See Catalog D 81.1 · January 2012.

Type of protection Ex nA for use in Zone 2

- Standard version Ex nA IIC T3 Gc for paint coat thicknesses < 200 µm
- Optional version Ex nA IIB T3 Gc for paint coat thicknesses > 200 µm to < 2 mm (order code **B31**)
- For design for Zone 2 for converter-fed operation ³⁾, see Catalog D 81.1 · January 2012

1MB1, 1LA or 1LG motors are modified for this purpose in the "Non-sparking" design and are suitable for use in hazardous areas of Zone 2 for temperature classes T1 to T3. The maximum surface temperature that can occur during operation must lie below the limit temperature of the respective temperature class. The ventilation system must be in accordance with IEC/EN 60079-0. The motors are equipped with an external grounding terminal. The terminal box is similar to the Ex e design.


Please inquire in the case of:

- Utilization according to temperature class 155 (F)
- For pole-changing versions

For motors in the "Non-sparking" version, a conformity declaration is available from a recognized testing authority.

Ambient temperature –20 °C to +60 °C, whereby derating applies from 40 °C upwards. Other temperatures are available on request.

The rating plate or the extra rating plate contains the text:

 II 3G Ex nA IIC T3 Gc

Number of the "Conformity statement"

Type of protection Ex tb IIIC and Ex tc IIIB for use in Zones 21 and 22

The distinction between Zones 21 and 22 is as follows:

- Ex tb IIIC acc. to IEC/EN 60079-31 ¹⁾ for Zone 21
- Design for Zone 21 ²⁾, as well as Zone 22 for conductive dust (IP65) for mains-fed operation (1MB101, 1MB151, 1MB161)
- Ex tc IIIB acc. to IEC/EN 60079-31 ¹⁾ for Zone 22
- Version for Zone 22 for non-conductive dust (IP55) for mains-fed operation (1MB102, 1MB152, 1MB162)
- For design for Zone 21/22 for converter-fed operation, see Catalog D 81.1 · January 2012

The 1MB1 motors are modified for this purpose for use in zones subject to dust explosion hazards. The surface temperature is ≤ 120 °C ⁴⁾ at rated duty.



An external grounding terminal and a metal external fan are fitted to the motors.

Pole-changing versions are not possible for Zone 21 – they are possible for Zone 22 on request.

Certification:

- Zone 21: EC type-examination certificate (ATEX) and EC Declaration of Conformity
- Zone 22: conformity declaration and EC Declaration of Conformity

Identification on the rating plate:


- Zone 21:  II 2D Ex tb IIIC T120 °C Db ⁴⁾
- Zone 22:  II 3D Ex tc IIIB T120 °C Dc ⁴⁾

Ambient temperature –20 °C to +60 °C, whereby derating applies from 40 °C upwards. Other temperatures are available on request.

Type of protection Ex nA/Ex tc for use in Zone 2/22

The motors must be ordered with:

- Design for Zone 2 and 22 for non-conductive dust for mains-fed operation – Order code **B30**

Zone 2/22:  II 3G Ex nA IIC T3 Gc

 II 3D Ex tc IIIB T120 °C Dc ⁴⁾

Converter-fed operation

See Catalog D 81.1 · January 2012.

¹⁾ Zone 21 only up to frame size 315 L.

²⁾ Zone 21 includes conductive and non-conductive dust.

³⁾ Not possible for 1MB1.

⁴⁾ IE1: T140 °C
IE2: T120 °C (except T130 °C for 1MB1.11-1AD5, 1MB1.11-3AD6, 1MB1.21-1AD5 and 1MB1.21-3AD6)
IE3: T120 °C

Technical specifications (continued)**VIK version**

- **VIK standard version** – 1LE1 + order code **C02**
"VIK" identification on rating plate.
- **VIK-Ex n version** – 1MB1.3 + order code **C02**
"VIK" and "Ex nA IIC T3 Gc" marking on the rating plate according to Directive 94/9/EC (ATEX).

Both versions include technology for Zone 2 to type of protection Ex nA IIC T3 Gc.

Motors up to frame size 355 can be supplied in accordance with the technical requirements of the VIK (Verband der Industriellen Energie- und Kraftwirtschaft e.V.).

Not possible for 1LE1.02 (IE1) and 1MB1.32 (IE1) motors, because the VIK "standard version" must be designed to efficiency class IE2 as a minimum and "Ex n" should have efficiency class IE2 as a minimum in accordance with the VIK recommendation published in March 2011.

Note:

8-pole motors or all motors < 0.75 kW are still possible as these motors are outside the output range specified for IE stamping.

Please inquire about converter-fed operation in all cases.

Motors in VIK design with mounted technology (brake, rotary pulse encoder and separately driven fan) are not compatible with Zone 2. Designs for Zone 21/22 are not possible.

For 1LA/1LG VIK motors, see Catalog D 81.1 · January 2012.

Coolant temperature

Coolant temperature –40 to +40 °C for explosion-proof motor

For all 1MB10 motors, frame sizes 100 to 160 and 1MB15/6, frame sizes 100 to 315 in explosion protection types Ex nA or Ex t (Zone 21/22), the operating ambient temperature range can be optionally increased to –40 °C. Extensive technical measures are necessary in this case.

Order code **D03**

Order code **D03** is not possible in combination with order code **H02** "Vibration-proof version".

SIMOTICS XP 1MB1 Explosion-Proof Motors

Orientation

Article number code

Selection and ordering data

The article number consists of a combination of digits and letters and is divided into three hyphenated blocks to provide a better overview, e.g.:

**1MB1511-1DB22-2AB4-Z
R10**

The first block (positions 1 to 7) identifies the motor type; the second block (positions 8 to 12) defines the motor frame size and length, the number of poles and in some cases the frequency/output; and in the third block (positions 13 to 16), the frequency/output, type of construction and other design features are encoded.

For deviations in the second and third block from the catalog codes, either **-Z** or **90** should be used as appropriate.

Ordering data:

- Complete Article No. and order code(s) or plain text
- If a quotation has been requested, please specify the quotation number in addition to the Article No.
- When ordering a complete motor as a spare part, please specify the works serial No. for the previously supplied motor as well as the Article No.

Structure of the Article No.:		Position:	1	2	3	4	5	6	7	-	8	9	10	11	12	-	13	14	15	16	
Positions 1 to 4: Digit, letter, letter, digit	Explosion-proof – Self-ventilated by fan mounted on and driven by rotor		1	M	B	1															
Position 5: Digit	Aluminum housing Cast-iron housing Basic Line Cast-iron housing Performance Line						0 5 6														
Positions 6 to 7: 2 digits	Ex tb IIIC (Ex Zone 21) Ex tC IIIB (Ex Zone 22) Ex nA IIC T3 (Ex Zone 2)	Motors with High Efficiency IE2 Motors with Standard Efficiency IE1 Motors with Premium Efficiency IE3 Motors with High Efficiency IE2 Motors with Standard Efficiency IE1 Motors with Premium Efficiency IE3 Motors with High Efficiency IE2 Motors with Standard Efficiency IE1 Motors with Premium Efficiency IE3						1 1 1 2 2 2 3 3 3	1 2 3 1 2 3 1 2 3												
Positions 8, 9 and 11: Digit, letter, digit	Motor frame size (frame size as a combination of shaft height and overall length, encoded)										0 ... 3	A ... E		0 ... 6							
Position 10: Letter	No. of poles A: 2-pole, B: 4-pole, C: 6-pole, D: 8-pole											A ... D									
Positions 12 and 13: 2 digits	Voltage, circuit and frequency (encoded with two digits, 9-0 requires order code M.. (e. g. M1Y))														0 ... 9		0 ... 7				
Position 14: Letter	Type of construction (encoded with A ... V)																	A ... V			
Position 15: Letter	Motor protection (encoded with A ... J)																		A ... J		
Position 16: Digit	Terminal box position 4: Terminal box top, 5: Terminal box right, 6: Terminal box left, 7: Terminal box below																			4 ... 7	
	Special order versions: encoded – additional order code required not encoded – additional plain text required																				- Z

Ordering example

Selection criteria	Requirement	Structure of the Article No.
Motor type 1MB1	Self-ventilated motor with explosion protection of type Ex tb IIIC (Ex Zone 21), cast-iron version, with High Efficiency IE2, IP55 degree of protection	1MB1511-■■■■■-■■■■■
Motor frame size/No. of poles/Speed	160 M/4-pole/1500 rpm	1MB1511-1DB2■-■■■■■
Rated output	11 kW	
Voltage and frequency	230 VΔ/400 VY, 50 Hz	1MB1511-1DB22-2■■■■■
Type of construction with special version	IM B3	1MB1511-1DB22-2A■■■
Motor protection	Motor protection with PTC thermistor with 3 embedded temperature sensors for tripping	1MB1511-1DB22-2AB■
Terminal box position	Terminal box at top	1MB1511-1DB22-2AB4
Special version	Rotation of the terminal box through 90°, entry from DE	1MB1511-1DB22-2AB4-Z R10

SIMOTICS XP 1MB1 Explosion-Proof Motors

Motors for Zone 21/22 or 2 in type of protection Ex t or Ex n



Self-ventilated motors with Standard Efficiency
Aluminum series 1MB10

Selection and ordering data

P _{rated} , P _{rated} 50 Hz 60 Hz		Frame size	Operating values at rated output										Aluminum series		m _{IM B3} J		Torque class		
n _{rated} , 50 Hz	T _{rated} , 50 Hz	IE class	η _{rated} , 50 Hz, 4/4	η _{rated} , 50 Hz, 3/4	η _{rated} , 50 Hz, 2/4	COSφ _{rated} , 50 Hz, 4/4	I _{rated} , 50 Hz, 400 V	T _{L/R} , I _{rated}	I _{R/L} , I _{rated}	T _β , I _{rated}	L _{pfA} , 50 Hz	L _{WA} , 50 Hz	Article No.	kg	kgm ²	CL			
kW	kW	FS	rpm	Nm	%	%	%	A											
<ul style="list-style-type: none"> Cooling: self-ventilated (IC 411) Efficiency: Standard Efficiency IE1 Insulation: thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B) 																			
2-pole: 3000 rpm at 50 Hz, 3600 rpm at 60 Hz ¹⁾																			
3	3.45	100 L	2835	10	IE1	81.5	82.8	82.1	0.87	6.1	3.2	6.2	2.9	67	79	1MB10-2-1AA4-20	20	0.0034	16
4	4.55	112 M	2930	13	IE1	83.1	83.8	82.2	0.86	8.1	2.7	7.3	3.7	69	81	1MB10-2-1BA2-25	25	0.0067	16
5.5	6.3	132 S	2905	18	IE1	84.7	85.7	85.0	0.89	10.5	1.9	5.6	2.5	68	80	1MB10-2-1CA0-35	35	0.013	16
7.5	8.6	132 S	2925	24	IE1	86.0	86.9	85.8	0.87	14.5	2.1	6.3	3.2	68	80	1MB10-2-1CA1-40	40	0.016	16
11	12.6	160 M	2925	36	IE1	87.6	87.6	86.1	0.85	21.5	2.0	5.8	2.6	70	82	1MB10-2-1DA2-60	60	0.030	16
15	17.3	160 M	2930	49	IE1	88.7	89.0	88.0	0.84	29	2.5	6.1	3.1	70	82	1MB10-2-1DA3-68	68	0.036	16
18.5	21.3	160 L	2935	60	IE1	89.3	90.0	89.7	0.86	35	2.5	7.0	3.2	70	82	1MB10-2-1DA4-78	78	0.044	16
4-pole: 1500 rpm at 50 Hz, 1800 rpm at 60 Hz ¹⁾																			
2.2	2.55	100 L	1425	15	IE1	79.7	80.5	78.5	0.81	4.9	2.2	5.1	2.3	60	72	1MB10-2-1AB4-18	18	0.0059	16
3	3.45	100 L	1425	20	IE1	81.5	83.0	82.3	0.85	6.3	2.4	5.4	2.6	60	72	1MB10-2-1AB5-22	22	0.0078	16
4	4.55	112 M	1435	27	IE1	83.1	84.5	84.0	0.85	8.2	2.2	5.3	2.6	58	70	1MB10-2-1BB2-27	27	0.010	16
5.5	6.3	132 S	1450	36	IE1	84.7	85.7	84.9	0.82	11.2	2.3	5.7	2.7	64	76	1MB10-2-1CB0-38	38	0.019	16
7.5	8.6	132 M	1450	49	IE1	86.0	86.9	86.3	0.82	15.2	2.6	6.6	3.1	64	76	1MB10-2-1CB2-44	44	0.024	16
11	12.6	160 M	1460	72	IE1	87.6	88.0	86.6	0.82	22	2.3	6.4	3.1	65	77	1MB10-2-1DB2-62	62	0.044	16
15	17.3	160 L	1460	98	IE1	88.7	89.3	88.3	0.82	30	2.5	7.0	3.4	65	77	1MB10-2-1DB4-73	73	0.056	16
Zones																			
Zone 21 (occasionally conductive and non-conductive dust) Ex tb IIIC																			
Zone 22 (rarely conductive or temporarily non-conductive dust) Ex tc IIIB																			
Zone 2 (rarely explosive or temporarily explosive gases) Ex nA IIC																			
Voltages																			
		No. of poles	Frame size	Motor type	Version											Order code(s)			
50 Hz	230 VΔ/400 VY	60 Hz ¹⁾	460 VY	2, 4	100 L ... 160 L	1MB10 . 2-1A ... -1D	Standard	2	2							-			
50 Hz	400 VΔ/690 VY	60 Hz ¹⁾	460 VΔ	2, 4	100 L ... 160 L	1MB10 . 2-1A ... -1D	Standard	3	4							-			
50 Hz	500 VY			2, 4	100 L ... 160 L	1MB10 . 2-1A ... -1D	Without add. charge	2	7							-			
50 Hz	500 VΔ			2, 4	100 L ... 160 L	1MB10 . 2-1A ... -1D	Without add. charge	4	0							-			
Further voltages ¹⁾ For price information, code numbers, order codes and descriptions, see from Page 4/21																			
Types of construction																			
		No. of poles	Frame size	Motor type	Version											Order code(s)			
Without flange		IM B3 ²⁾	2, 4	100 L ... 160 L	1MB10 . 2-1A ... -1D	Standard	A									-			
With flange		IM B5 ²⁾	2, 4	100 L ... 160 L	1MB10 . 2-1A ... -1D	With additional charge	F									-			
With standard flange		IM B14 ²⁾	2, 4	100 L ... 160 L	1MB10 . 2-1A ... -1D	With additional charge	K									-			
Further types of construction For price information, code letters and descriptions, see from Page 4/23																			
Motor protection																			
		No. of poles	Frame size	Motor type	Version											Order code(s)			
Without		2, 4	100 L ... 160 L	1MB10 . 2-1A ... -1D	Standard	A											-		
PTC thermistor with 3 temperature sensors		2, 4	100 L ... 160 L	1MB10 . 2-1A ... -1D	With additional charge	B											-		
Further motor protection For price information, code letters and descriptions, see from Page 4/27																			
Terminal box position																			
		No. of poles	Frame size	Motor type	Version											Order code(s)			
Terminal box at top		2, 4	100 L ... 160 L	1MB10 . 2-1A ... -1D	Standard	4											-		
Further terminal box positions For price information, code numbers and descriptions, see from Page 4/29																			
Special versions																			
		No. of poles	Frame size	Motor type													Order code(s)		
Options						1MB10-2-....-Z										...+...+...+...			



¹⁾ Operating values at rated output for 60 Hz are available on request.
²⁾ Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirements exist for condensation drainage holes (H03) and stamping of the type on the rating plate. The basic type IM B3, IM B5 or IM B14 is stamped as standard on the rating plate. When ordering with condensation drainage holes (H03), the type must be specified.

SIMOTICS XP 1MB1 Explosion-Proof Motors

Motors for Zone 21/22 or 2 in type of protection Ex t or Ex n

Self-ventilated motors with Standard Efficiency
Aluminum series 1MB10



Selection and ordering data (continued)

Operating values at rated output															Aluminum series		m _{IM B3} J		Torque class
P _{rated} , 50 Hz	P _{rated} , 60 Hz	Frame size	n _{rated} , 50 Hz	T _{rated} , 50 Hz	IE class	η _{rated} , 50 Hz, 4/4	η _{rated} , 50 Hz, 3/4	η _{rated} , 50 Hz, 2/4	COSφ _{rated} , 50 Hz, 4/4	I _{rated} , 50 Hz, 400 V	T _{LR} /I _{rated}	I _{LR} /I _{rated}	T _p /I _{rated}	L _{pfA} , 50 Hz	L _{WA} , 50 Hz	Article No.	kg	kgm ²	CL
kW	kW	FS	rpm	Nm		%	%	%		A									
<ul style="list-style-type: none"> Cooling: self-ventilated (IC 411) Efficiency: Standard Efficiency IE1 Insulation: thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B) 																			
6-pole: 1000 rpm at 50 Hz, 1200 rpm at 60 Hz ¹⁾																			
1.5	1.75	100 L	940	15	IE1	75.2	76.0	72.4	0.74	3.9	2.0	4.0	2.2	59	71	1MB10-2-1AC4	19	0.0065	16
2.2	2.55	112 M	930	23	IE1	77.7	78.8	76.9	0.75	5.4	2.3	4.1	2.5	57	69	1MB10-2-1BC2	25	0.0092	16
3	3.45	132 S	955	30	IE1	79.7	80.2	77.7	0.74	7.3	2.0	4.6	2.6	63	75	1MB10-2-1CC0	34	0.017	16
4	4.55	132 M	950	40	IE1	81.4	82.9	82.1	0.76	9.3	2.1	4.7	2.5	63	75	1MB10-2-1CC2	39	0.021	16
5.5	6.3	132 M	950	55	IE1	83.1	84.6	84.0	0.75	12.7	2.5	5.2	2.8	63	75	1MB10-2-1CC3	48	0.027	16
7.5	8.6	160 M	970	74	IE1	84.7	85.4	85.0	0.73	17.5	2.1	5.5	2.9	67	79	1MB10-2-1DC2	72	0.056	16
11	12.6	160 L	965	109	IE1	86.4	86.4	85.4	0.77	24	1.9	5.9	2.7	67	79	1MB10-2-1DC4	92	0.078	16
8-pole: 750 rpm at 50 Hz, 900 rpm at 60 Hz ¹⁾																			
0.75	0.86	100 L	705	10	-	62.6	60.8	53.9	0.62	3.0	1.9	3.0	2.2	60	72	1MB10-2-1AD4	17	0.0056	16
1.1	1.27	100 L	705	15	-	65.5	64.2	60.0	0.63	3.9	2.0	3.2	2.3	60	72	1MB10-2-1AD5	22	0.0078	16
1.5	1.75	112 M	700	20	-	71.6	72.2	68.5	0.65	4.7	1.6	3.3	1.9	63	75	1MB10-2-1BD2	29	0.0094	16
2.2	2.55	132 S	715	29	-	76.8	77.4	75.2	0.66	6.3	1.7	3.9	2.4	63	75	1MB10-2-1CD0	37	0.019	16
3	3.45	132 M	715	40	-	76.6	77.8	75.8	0.66	8.6	1.8	3.9	2.2	63	75	1MB10-2-1CD2	44	0.024	16
4	4.55	160 M	720	53	-	78.3	78.5	75.6	0.69	10.7	1.7	3.8	2.3	63	75	1MB10-2-1DD2	60	0.044	16
5.5	6.3	160 M	720	73	-	81.7	82.5	81.4	0.70	13.9	1.6	4.0	2.2	63	75	1MB10-2-1DD3	72	0.056	16
7.5	8.6	160 L	715	100	-	83.5	84.5	83.6	0.70	18.5	1.7	3.8	2.2	63	75	1MB10-2-1DD4	91	0.077	16
Zones																			
Zone 21 (occasionally conductive and non-conductive dust) Ex tb IIC															1				
Zone 22 (rarely conductive or temporarily non-conductive dust) Ex tc IIIB															2				
Zone 2 (rarely explosive or temporarily explosive gases) Ex nA IIC															3				
Voltages																			
50 Hz		230 VΔ/400 VY		60 Hz ¹⁾		460 VY		No. of poles		Frame size		Motor type		Version		Order code(s)			
50 Hz		400 VΔ/690 VY		60 Hz ¹⁾		460 VΔ		6, 8		100 L ... 160 L		1MB10 . 2-1A ... -1D		Standard		2 2			
50 Hz		500 VY						6, 8		100 L ... 160 L		1MB10 . 2-1A ... -1D		Without add. charge		3 4			
50 Hz		500 VΔ						6, 8		100 L ... 160 L		1MB10 . 2-1A ... -1D		Without add. charge		2 7			
Further voltages ¹⁾																9 0			
For price information, code numbers, order codes and descriptions, see from Page 4/21																			
Types of construction																			
Without flange		IM B3 ²⁾		No. of poles		Frame size		Motor type		Version		Order code(s)							
With flange		IM B5 ²⁾		6, 8		100 L ... 160 L		1MB10 . 2-1A ... -1D		Standard		A							
With standard flange		IM B14 ²⁾		6, 8		100 L ... 160 L		1MB10 . 2-1A ... -1D		With additional charge		F							
										With additional charge		K							
Further types of construction For price information, code letters and descriptions, see from Page 4/23																			
Motor protection																			
Without				No. of poles		Frame size		Motor type		Version		Order code(s)							
PTC thermistor with 3 temperature sensors				6, 8		100 L ... 160 L		1MB10 . 2-1A ... -1D		Standard		A							
										With additional charge		B							
Further motor protection For price information, code letters and descriptions, see from Page 4/27																			
Terminal box position																			
Terminal box at top				No. of poles		Frame size		Motor type		Version		Order code(s)							
Further terminal box positions				6, 8		100 L ... 160 L		1MB10 . 2-1A ... -1D		Standard		4							
For price information, code numbers and descriptions, see from Page 4/29																			
Special versions																			
Options				No. of poles		Frame size		Motor type		Version		Order code(s)							
										1MB10-2-...-Z		...+...+...+...							

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¹⁾ Operating values at rated output for 60 Hz are available on request.
²⁾ Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirements exist for condensation drainage holes (H03) and stamping of the type on the rating plate. The basic type IM B3, IM B5 or IM B14 is stamped as standard on the rating plate. When ordering with condensation drainage holes (H03), the type must be specified.

SIMOTICS XP 1MB1 Explosion-Proof Motors

Motors for Zone 21/22 or 2 in type of protection Ex t or Ex n



Self-ventilated motors with High Efficiency Aluminum series 1MB10

Selection and ordering data (continued)

Operating values at rated output														Aluminum series		m _{IM B3} J		Torque class			
P _{rated} , 50 Hz	P _{rated} , 60 Hz	Frame size	n _{rated} , 50 Hz	T _{rated} , 50 Hz	IE class	η _{rated} , 50 Hz, 4/4	η _{rated} , 50 Hz, 3/4	η _{rated} , 50 Hz, 2/4	cos φ _{rated} , 50 Hz, 4/4	I _{rated} , 50 Hz, 400 V	T _r /I _r	I _R /I _r	T _p /I _r	L _{ptA} , 50 Hz	L _{WA} , 50 Hz	Article No.	kg	kgm ²	CL		
kW	kW	FS	rpm	Nm	%	%	%	%	A							▲ New					
• Cooling: self-ventilated (IC 411) • Efficiency: High Efficiency IE2 • Insulation: thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B)																					
2-pole: 3000 rpm at 50 Hz, 3600 rpm at 60 Hz ¹⁾																					
0.75	0.86	80 M	2805	2.6	IE2	77.4	79.5	78.8	0.84	1.67	1.9	4.9	2.3	60	71	▲ 1MB10-1-0DA2	9	0.0008	16		
1.1	1.27	80 M	2835	3.7	IE2	79.6	81.3	80.8	0.83	2.4	2.7	6.0	3.1	60	71	▲ 1MB10-1-0DA3	11	0.0011	16		
1.5	1.75	90 S	2885	5.0	IE2	81.3	82.3	80.8	0.84	3.15	2.7	6.9	3.6	65	77	▲ 1MB10-1-0EA0	13	0.0017	16		
2.2	2.55	90 L	2890	7.3	IE2	83.2	83.9	82.3	0.85	4.5	2.5	7.1	3.7	65	77	▲ 1MB10-1-0EA4	15	0.0021	16		
3	3.45	100 L	2905	9.9	IE2	84.6	85.2	84.7	0.84	6.1	2.3	7.0	3.3	67	79	1MB10-1-1AA4	21	0.0044	16		
4	4.55	112 M	2950	13	IE2	85.8	86.7	86.1	0.86	7.8	2.4	7.4	3.3	69	81	1MB10-1-1BA2	27	0.0092	16		
5.5	6.3	132 S	2950	18	IE2	87.0	88.0	87.4	0.87	10.5	1.8	6.6	2.9	68	80	1MB10-1-1CA0	39	0.020	16		
7.5	8.6	132 S	2950	24	IE2	88.1	88.7	88.6	0.87	14.1	2.2	7.5	3.1	68	80	1MB10-1-1CA1	43	0.024	16		
11	12.6	160 M	2955	36	IE2	89.4	90.0	89.1	0.87	20.5	2.1	7.4	3.2	70	82	1MB10-1-1DA2	67	0.045	16		
15	17.3	160 M	2955	48	IE2	90.3	90.9	90.3	0.88	27	2.4	7.6	3.4	70	82	1MB10-1-1DA3	75	0.053	16		
18.5	21.3	160 L	2955	60	IE2	90.9	91.2	90.4	0.88	33.5	2.9	7.9	3.6	70	82	1MB10-1-1DA4	84	0.061	16		
4-pole: 1500 rpm at 50 Hz, 1800 rpm at 60 Hz ¹⁾																					
0.55	0.63	80 M	1440	3.7	-	78.1	78.9	76.1	0.74	1.37	2.2	5.3	3.1	53	64	▲ 1MB10-1-0DB2	10	0.0017	16		
0.75	0.86	80 M	1440	5.0	IE2	79.6	80.2	78.0	0.76	1.79	2.2	5.6	3.1	53	64	▲ 1MB10-1-0DB3	11	0.0021	16		
1.1	1.27	90 S	1425	7.4	IE2	81.4	81.7	79.9	0.78	2.5	2.3	5.6	2.9	56	68	▲ 1MB10-1-0EB0	13	0.0028	16		
1.5	1.75	90 L	1430	10	IE2	82.8	83.5	82.0	0.79	3.3	2.6	6.4	3.4	56	68	▲ 1MB10-1-0EB4	16	0.0036	16		
2.2	2.55	100 L	1455	14	IE2	84.3	85.1	84.3	0.81	4.65	2.1	6.9	3.3	60	72	1MB10-1-1AB4	21	0.0086	16		
3	3.45	100 L	1455	20	IE2	85.5	86.7	86.0	0.82	6.2	2.0	6.9	3.1	60	72	1MB10-1-1AB5	25	0.011	16		
4	4.55	112 M	1460	26	IE2	86.6	87.3	86.5	0.81	8.2	2.5	7.1	3.2	58	70	1MB10-1-1BB2	29	0.014	16		
5.5	6.3	132 S	1465	36	IE2	87.7	89.0	87.7	0.80	11.3	2.3	6.9	2.9	64	76	1MB10-1-1CB0	42	0.027	16		
7.5	8.6	132 M	1465	49	IE2	88.7	90.3	88.8	0.83	14.7	2.3	6.9	2.9	64	76	1MB10-1-1CB2	49	0.034	16		
11	12.6	160 M	1470	71	IE2	89.8	90.9	90.8	0.85	21	2.1	6.7	2.8	65	77	1MB10-1-1DB2	71	0.065	16		
15	17.3	160 L	1475	97	IE2	90.6	91.3	91.0	0.85	28	2.3	7.3	3.0	65	77	1MB10-1-1DB4	83	0.083	16		
Zones																					
Zone 21 (occasionally conductive and non-conductive dust) Ex tb IIIC																		1			
Zone 22 (rarely conductive or temporarily non-conductive dust) Ex tc IIIB																		2			
Zone 2 (rarely explosive or temporarily explosive gases) Ex nA IIC																		3			
Voltages																					
50 Hz		230 VΔ/400 VY		60 Hz ¹⁾		460 VY		No. of poles		Frame size		Motor type		Version		Order code(s)					
50 Hz		400 VΔ/690 VY		60 Hz ¹⁾		460 VΔ		2, 4		80 M ... 160 L		1MB10 . 1-0D ... -1D		Standard		2 2 -					
50 Hz		500 VY						2, 4		80 M ... 160 L		1MB10 . 1-0D ... -1D		Without add. charge		3 4 -					
50 Hz		500 VΔ						2, 4		80 M ... 160 L		1MB10 . 1-0D ... -1D		Without add. charge		2 7 -					
Further voltages ¹⁾		For price information, code numbers, order codes and descriptions, see from Page 4/21																			
Types of construction																					
		IM B3 ²⁾						2, 4		80 M ... 160 L		1MB10 . 1-0D ... -1D		Standard		A -					
		IM B5 ²⁾						2, 4		80 M ... 160 L		1MB10 . 1-0D ... -1D		With additional charge		F -					
		IM B14 ²⁾						2, 4		80 M ... 160 L		1MB10 . 1-0D ... -1D		With additional charge		K -					
Further types of construction		For price information, code letters and descriptions, see from Page 4/23																			
Motor protection																					
								2, 4		80 M ... 160 L		1MB10 . 1-0D ... -1D		Standard		A -					
								2, 4		80 M ... 160 L		1MB10 . 1-0D ... -1D		With additional charge		B -					
Further motor protection		For price information, code letters and descriptions, see from Page 4/27																			
Terminal box position																					
								2, 4		80 M ... 160 L		1MB10 . 1-0D ... -1D		Standard		4 -					
Further terminal box positions		For price information, code numbers and descriptions, see from Page 4/29																			
Special versions																					
																		Order code(s)			
Options		For price information, order codes and descriptions, see from Page 4/31 1MB10-1-...-Z ...+...+...+...																			

¹⁾ Operating values at rated output for 60 Hz are available on request.

²⁾ Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirements exist for condensation drainage holes (H03) and stamping of the type on the rating plate. The basic type IM B3, IM B5 or IM B14 is stamped as standard on the rating plate. When ordering with condensation drainage holes (H03), the type must be specified.



SIMOTICS XP 1MB1 Explosion-Proof Motors

Motors for Zone 21/22 or 2 in type of protection Ex t or Ex n

Self-ventilated motors with High Efficiency
Aluminum series 1MB10



Selection and ordering data (continued)

Operating values at rated output															Aluminum series		m _{IM} B3 J		Torque class
P _{rated} , 50 Hz	P _{rated} , 60 Hz	Frame size	n _{rated} , 50 Hz	T _{rated} , 50 Hz	IE class	η _{rated} , 50 Hz, 4/4	η _{rated} , 50 Hz, 3/4	η _{rated} , 50 Hz, 2/4	COSφ _{rated} , 50 Hz, 4/4	I _r , 50 Hz, 400 V	I _R /I _r	I _R /I _r	T _p /I _r	L _{pfA} , 50 Hz	L _{WA} , 50 Hz	Article No.	kg	kgm ²	CL
kW	kW	FS	rpm	Nm	%	%	%	%	A							▲ New			
<ul style="list-style-type: none"> Cooling: self-ventilated (IC 411) Efficiency: High Efficiency IE2 Insulation: thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B) 																			
6-pole: 1000 rpm at 50 Hz, 1200 rpm at 60 Hz ¹⁾																			
0.37	0.43	80 M	925	3.85	–	71.4	71.5	66.5	0.69	1.08	2.1	4.0	2.4	42	53	▲ 1MB10-1-0DC2	9	0.0017	16
0.55	0.63	80 M	935	5.6	–	74.0	74.0	70.5	0.66	1.63	2.5	4.4	2.9	42	53	▲ 1MB10-1-0DC3	12	0.0025	16
0.75	0.86	90 S	925	7.7	IE2	75.9	76.0	73.0	0.70	2.05	2.0	4.1	2.5	43	55	▲ 1MB10-1-0EC0	13	0.0030	16
1.1	1.27	90 L	935	11.2	IE2	78.1	78.5	75.0	0.70	2.90	2.2	4.4	2.6	43	55	▲ 1MB10-1-0EC4	16	0.0040	16
1.5	1.75	100 L	970	15	IE2	79.8	80.2	79.0	0.73	3.7	2.0	6.2	2.9	59	71	1MB10-1-1AC4	25	0.011	16
2.2	2.55	112 M	965	22	IE2	81.8	82.5	81.3	0.75	5.2	2.1	6.0	3.1	57	69	1MB10-1-1BC2	29	0.014	16
3	3.45	132 S	970	30	IE2	83.3	84.0	82.8	0.74	7.0	1.6	5.6	2.6	63	75	1MB10-1-1CC0	38	0.024	13
4	4.55	132 M	970	39	IE2	84.6	85.8	85.0	0.78	8.7	1.6	5.6	2.5	63	75	1MB10-1-1CC2	43	0.029	13
5.5	6.3	132 M	970	54	IE2	86.0	87.4	87.0	0.77	12	1.9	6.1	2.8	63	75	1MB10-1-1CC3	52	0.037	16
7.5	8.6	160 M	975	73	IE2	87.2	88.0	87.3	0.74	16.8	1.9	4.7	2.2	67	79	1MB10-1-1DC2	77	0.075	16
11	12.6	160 L	975	108	IE2	88.7	89.6	89.2	0.76	23.5	1.9	4.8	2.2	67	79	1MB10-1-1DC4	93	0.098	16
8-pole: 750 rpm at 50 Hz, 900 rpm at 60 Hz ¹⁾																			
0.75	0.86	100 L	725	9.9	–	68.3	65.8	59.3	0.58	2.75	1.6	4.0	2.8	60	72	1MB10-1-1AD4	21	0.0086	13
1.1	1.27	100 L	725	14	–	68.3	65.4	58.9	0.58	4.0	1.8	4.1	2.8	60	72	1MB10-1-1AD5	25	0.011	13
1.5	1.75	112 M	720	20	–	75.8	76.0	73.0	0.67	4.25	1.4	4.2	2.4	63	75	1MB10-1-1BD2	29	0.014	13
2.2	2.55	132 S	725	29	–	78.8	79.3	77.2	0.65	6.2	1.4	4.3	2.1	63	75	1MB10-1-1CD0	41	0.027	10
3	3.45	132 M	730	39	–	82.7	83.0	80.9	0.65	8.1	1.4	5.0	2.4	63	75	1MB10-1-1CD2	49	0.035	10
4	4.55	160 M	730	52	–	81.9	82.6	81.7	0.67	10.5	1.6	3.7	1.9	63	75	1MB10-1-1DD2	69	0.065	13
5.5	6.3	160 M	730	72	–	83.8	84.3	83.1	0.67	14.1	1.7	3.9	2	63	75	1MB10-1-1DD3	82	0.083	13
7.5	8.6	160 L	730	98	–	85.3	86.5	86.1	0.7	18.1	1.6	3.8	1.9	63	75	1MB10-1-1DD4	94	0.098	13

Zones

Zone 21 (occasionally conductive and non-conductive dust) Ex tb IIIC

Zone 22 (rarely conductive or temporarily non-conductive dust) Ex tc IIIB

Zone 2 (rarely explosive or temporarily explosive gases) Ex nA IIC

Voltages		No. of poles	Frame size	Motor type	Version	Order code(s)
50 Hz 230 VΔ/400 VY	60 Hz ¹⁾ 460 VY	6, 8	80 M ... 160 L	1MB10 . 1-0D ... -1D	Standard	2 2 –
50 Hz 400 VΔ/690 VY	60 Hz ¹⁾ 460 VΔ	6, 8	80 M ... 160 L	1MB10 . 1-0D ... -1D	Standard	3 4 –
50 Hz 500 VY		6, 8	80 M ... 160 L	1MB10 . 1-0D ... -1D	Without add. charge	2 7 –
50 Hz 500 VΔ		6, 8	80 M ... 160 L	1MB10 . 1-0D ... -1D	Without add. charge	4 0 –
Further voltages ¹⁾		For price information, code numbers, order codes and descriptions, see from Page 4/21				9 0 ...
Types of construction		No. of poles	Frame size	Motor type	Version	Order code(s)
Without flange		6, 8	80 M ... 160 L	1MB10 . 1-0D ... -1D	Standard	A –
With flange		6, 8	80 M ... 160 L	1MB10 . 1-0D ... -1D	With additional charge	F –
With standard flange		6, 8	80 M ... 160 L	1MB10 . 1-0D ... -1D	With additional charge	K –
Further types of construction		For price information, code letters and descriptions, see from Page 4/23				...
Motor protection		No. of poles	Frame size	Motor type	Version	Order code(s)
Without		6, 8	80 M ... 160 L	1MB10 . 1-0D ... -1D	Standard	A –
PTC thermistor with 3 temperature sensors		6, 8	80 M ... 160 L	1MB10 . 1-0D ... -1D	With additional charge	B –
Further motor protection		For price information, code letters and descriptions, see from Page 4/27				...
Terminal box position		No. of poles	Frame size	Motor type	Version	Order code(s)
Terminal box at top		6, 8	80 M ... 160 L	1MB10 . 1-0D ... -1D	Standard	4 –
Further terminal box positions		For price information, code numbers and descriptions, see from Page 4/29				...
Special versions		No. of poles	Frame size	Motor type	Version	Order code(s)
Options		For price information, order codes and descriptions, see from Page 4/31				1MB10-1-...-Z ...+...+...+...

¹⁾ Operating values at rated output for 60 Hz are available on request.

²⁾ Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirements exist for condensation drainage holes (H03) and stamping of the type on the rating plate. The basic type IM B3, IM B5 or IM B14 is stamped as standard on the rating plate. When ordering with condensation drainage holes (H03), the type must be specified.

SIMOTICS XP 1MB1 Explosion-Proof Motors

Motors for Zone 21/22 or 2 in type of protection Ex t or Ex n



Self-ventilated motors with High Efficiency
Cast-iron series 1MB15, 1MB16

Selection and ordering data

P _{rated} , P _{rated} 50 Hz 60 Hz		Frame size	Operating values at rated output										Cast-iron series		m _{IM B3} J	Torque class			
kW	kW	FS	rpm	Nm	%	%	%	COSφ	I _{rated}	T _{LR} /I _{rated}	T _{LR} /I _{rated}	T _B /I _{rated}	L _p fA	L _{WA}	1MB15.1 – Basic Line	1MB16.1 – Performance Line	kg	kgm ²	CL
													IE2 version acc. to IEC 60034-30 Article No.						
<ul style="list-style-type: none"> Cooling: self-ventilated (IC 411) Efficiency: High Efficiency IE2 Insulation: thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B) 																			
2-pole: 3000 rpm at 50 Hz, 3600 rpm at 60 Hz ¹⁾																			
3	3.45	100 L	2905	10	IE2	84.6	85.2	84.7	0.84	6.1	2.3	7.0	3.3	67	79	▲ 1MB1 1-1AA4	32	0.0044	16
4	4.55	112 M	2950	13	IE2	85.8	86.7	86.1	0.86	7.8	2.4	7.4	3.3	69	81	▲ 1MB1 1-1BA2	39	0.0092	16
5.5	6.3	132 S	2950	18	IE2	87.0	88.0	87.4	0.87	10.5	1.8	6.6	2.9	68	80	▲ 1MB1 1-1CA0	57	0.02	16
7.5	8.6	132 S	2950	24	IE2	88.1	88.7	88.6	0.87	14.1	2.2	7.5	3.1	68	80	▲ 1MB1 1-1CA1	61	0.024	16
11	12.6	160 M	2955	36	IE2	89.4	90.0	89.1	0.87	20.5	2.1	7.4	3.2	70	82	▲ 1MB1 1-1DA2	96	0.045	16
15	17.3	160 M	2955	48	IE2	90.3	90.9	90.3	0.88	27.2	2.4	7.6	3.4	70	82	▲ 1MB1 1-1DA3	104	0.053	16
18.5	21.3	160 L	2955	60	IE2	90.9	91.2	90.4	0.88	33.5	2.9	7.9	3.6	70	82	▲ 1MB1 1-1DA4	113	0.061	16
22	24.5	180 M	2940	71	IE2	91.3	91.8	91.4	0.87	40	2.7	7.4	3.6	68	82	▲ 1MB1 1-1EA2	145	0.069	16
30	33.5	200 L	2960	97	IE2	92.0	92.3	91.7	0.87	54	2.5	6.9	3.3	71	84	▲ 1MB1 1-2AA4	200	0.13	16
37	41.5	200 L	2960	119	IE2	92.5	92.8	92.3	0.88	66	2.7	7.4	3.5	71	84	▲ 1MB1 1-2AA5	225	0.15	16
45	51	225 M	2965	145	IE2	92.9	93.1	92.5	0.88	79	2.7	7.8	3.7	71	84	▲ 1MB1 1-2BA2	295	0.23	16
55	62	250 M	2970	177	IE2	93.2	93.3	92.4	0.89	96	2.3	6.8	3.1	74	88	▲ 1MB1 1-2CA2	360	0.4	13
75	84	280 S	2978	240	IE2	93.8	93.6	92.4	0.87	133	2.5	7.2	3.2	74	88	▲ 1MB1 1-2DA0	490	0.71	13
90	101	280 M	2975	289	IE2	94.1	94.2	93.5	0.88	157	2.5	7.1	3.1	74	88	▲ 1MB1 1-2DA2	530	0.83	13
110	123	315 S	2982	352	IE2	94.3	94.2	93.3	0.90	187	2.4	7.3	3.0	76	90	▲ 1MB1 1-3AA0	720	1.3	13
132	148	315 M	2982	423	IE2	94.6	94.7	94.1	0.91	220	2.4	7.2	3.1	76	90	▲ 1MB1 1-3AA2	880	1.6	13
160	180	315 L	2982	512	IE2	94.8	94.9	94.3	0.92	265	2.3	7.0	3.1	78	93	▲ 1MB1 1-3AA4	930	1.8	13
200	224	315 L	2982	640	IE2	95.0	95.2	94.8	0.92	330	2.4	7.1	3.0	78	93	▲ 1MB1 1-3AA5	1130	2.2	13
Relubrication		Motor protection		Fan cover		Bearing size		Warranty											
Basic Line		Optional (standard from FS 280 upwards)		Optional Steel		62 (63 from FS 280 upwards)		12 months		5									
Performance Line		Standard from FS 160 (optional for FS 100 to 132)		Standard PTC		63		36 months		6									
Zones																			
Zone 21 (occasionally conductive and non-conductive dust) Ex tb IIIC																			
Zone 22 (rarely conductive or temporarily non-conductive dust) Ex tc IIIB																			
Zone 2 (rarely explosive or temporarily explosive gases) Ex nA IIC																			
Voltagess¹⁾																			
50 Hz		230 VΔ/400 VY		60 Hz ²⁾		460 VY		2		100 L ... 315 L		1MB1 1-1A ... -3A		Standard		2 2		-	
50 Hz		400 VΔ/690 VY		60 Hz ²⁾		460 VΔ		2		100 L ... 315 L		1MB1 1-1A ... -3A		Standard		3 4		-	
50 Hz		500 VY						2		100 L ... 315 L		1MB1 1-1A ... -3A		Without add. charge		2 7		-	
50 Hz		500 VΔ						2		100 L ... 315 L		1MB1 1-1A ... -3A		Without add. charge		4 0		-	
Further voltagess ²⁾		For price information, code numbers, order codes and descriptions, see from Page 4/22																	
Types of construction																			
		IM B3 ³⁾				2		100 L ... 315 L		1MB1 1-1A ... -3A		Standard		A		-			
		IM B5 ³⁾				2		100 L ... 315 M		1MB1 1-1A ... -3A		With additional charge		F		-			
		IM B14 ³⁾				2		100 L ... 160 L		1MB1 1-1A ... -1D		With additional charge		K		-			
Further types of construction		For price information, code letters and descriptions, see from Page 4/25																	
Motor protection																			
		Only possible for Basic Line				2		100 L ... 315 L		1MB15 1-1A ... -3A		Standard		A		-			
		Basic Line				2		100 L ... 315 L		1MB15 1-1A ... -3A		With additional charge		B		-			
		Performance Line				2		100 L ... 315 L		1MB16 1-1A ... -3A		Standard		B		-			
Further motor protection		For price information, code letters and descriptions, see from Page 4/28																	
Terminal box position																			
						2		100 L ... 315 L		1MB1 1-1A ... -3A		Standard		4		-			
Further terminal box positions		For price information, code numbers and descriptions, see from Page 4/30																	
Special versions																			
Options		For price information, order codes and descriptions, see from Page 4/34 1MB1 1-... -Z ...+...+...+...																	

1) Parallel supply lines are required in the case of connection to ≤ 240 V. For frame size 315 with connection to ≤ 240 V, due to the high current, a drilled, removable entry plate (Order code R52) or a larger terminal box (Order code R50) can be used. Order codes R52 and R50 alter the motor dimensions.

2) Operating values at rated output for 60 Hz are available on request.

3) Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirements exist for condensation drainage holes (H03) and stamping of the type on the rating plate. The basic type IM B3, IM B5 or IM B14 is stamped as standard on the rating plate. When ordering with condensation drainage holes (H03), the type must be specified.



SIMOTICS XP 1MB1 Explosion-Proof Motors

Motors for Zone 21/22 or 2 in type of protection Ex t or Ex n

Self-ventilated motors with High Efficiency
Cast-iron series 1MB15, 1MB16



Selection and ordering data (continued)

P _{rated} , P _{rated} 50 Hz 60 Hz		Frame size	Operating values at rated output										Cast-iron series		mIM B3 J	Torque class					
kW	kW	FS	rpm	Nm	%	%	%	COSφ	I _{rated}	T _{LR} /I _{rated}	I _{LR} /I _{rated}	T _p /I _{rated}	L _{pFA}	L _{WA}	1MB15.1 – Basic Line	1MB16.1 – Performance Line	kg	kgm ²	CL		
													IE2 version acc. to IEC 60034-30 Article No.								
• Cooling: self-ventilated (IC 411) • Efficiency: High Efficiency IE2 • Insulation: thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B)																					
4-pole: 1500 rpm at 50 Hz, 1800 rpm at 60 Hz ¹⁾																					
2.2	2.55	100 L	1455	14	IE2	84.3	85.1	84.3	0.81	4.65	2.1	6.9	3.3	60	72	▲ 1MB1 ■■■ 1-1AB4 ■■■■	32	0.0086	16		
3	3.45	100 L	1455	20	IE2	85.5	86.7	86.0	0.82	6.2	2.0	6.9	3.1	60	72	▲ 1MB1 ■■■ 1-1AB5 ■■■■	37	0.011	16		
4	4.55	112 M	1460	26	IE2	86.6	87.3	86.5	0.81	8.2	2.5	7.1	3.2	58	70	▲ 1MB1 ■■■ 1-1BB2 ■■■■	46	0.014	16		
5.5	6.3	132 S	1465	36	IE2	87.7	89.0	87.7	0.8	11.3	2.3	6.9	2.9	64	76	▲ 1MB1 ■■■ 1-1CB0 ■■■■	61	0.027	16		
7.5	8.6	132 M	1465	49	IE2	88.7	90.3	88.8	0.83	14.7	2.3	6.9	2.9	64	76	▲ 1MB1 ■■■ 1-1CB2 ■■■■	75	0.034	16		
11	12.6	160 M	1470	71	IE2	89.8	90.9	90.8	0.85	21	2.1	6.7	2.8	65	77	▲ 1MB1 ■■■ 1-1DB2 ■■■■	96	0.065	16		
15	17.3	160 L	1475	97	IE2	90.6	91.3	91.0	0.85	28	2.3	7.3	3.0	65	77	▲ 1MB1 ■■■ 1-1DB4 ■■■■	104	0.083	16		
18.5	21.3	180 M	1465	121	IE2	91.2	92.0	91.9	0.84	35	2.5	7.2	3.4	58	71	▲ 1MB1 ■■■ 1-1EB2 ■■■■	160	0.12	16		
22	25.3	180 L	1465	143	IE2	91.6	92.2	91.9	0.84	41.5	2.6	7.3	3.5	58	71	▲ 1MB1 ■■■ 1-1EB4 ■■■■	170	0.13	16		
30	34.5	200 L	1470	195	IE2	92.3	92.8	92.6	0.84	56	2.5	6.7	3.3	62	75	▲ 1MB1 ■■■ 1-2AB5 ■■■■	230	0.2	16		
37	42.5	225 S	1470	240	IE2	92.7	93.5	93.5	0.88	65	2.3	6.6	2.9	62	75	▲ 1MB1 ■■■ 1-2BB0 ■■■■	280	0.42	16		
45	52	225 M	1475	291	IE2	93.1	93.8	93.7	0.87	80	2.5	6.9	3.1	63	76	▲ 1MB1 ■■■ 1-2BB2 ■■■■	305	0.46	16		
55	63	250 M	1480	355	IE2	93.5	93.9	93.5	0.85	100	2.7	6.8	3.0	62	75	▲ 1MB1 ■■■ 1-2CB2 ■■■■	385	0.75	16		
75	86	280 S	1485	482	IE2	94.0	94.2	93.8	0.87	132	2.5	6.8	3.0	69	83	▲ 1MB1 ■■■ 1-2DB0 ■■■■	550	1.3	16		
90	104	280 M	1486	578	IE2	94.2	94.3	93.6	0.87	159	2.6	7.3	3.1	68	82	▲ 1MB1 ■■■ 1-2DB2 ■■■■	570	1.4	16		
110	127	315 S	1490	705	IE2	94.5	94.6	94.0	0.86	195	2.7	7.4	3.0	69	83	▲ 1MB1 ■■■ 1-3AB0 ■■■■	740	2.0	16		
132	152	315 M	1490	847	IE2	94.7	94.9	94.6	0.87	230	2.7	7.1	2.9	68	83	▲ 1MB1 ■■■ 1-3AB2 ■■■■	870	2.3	16		
160	184	315 L	1490	1025	IE2	94.9	95.0	94.5	0.87	280	2.8	7.2	3.1	72	86	▲ 1MB1 ■■■ 1-3AB4 ■■■■	940	2.8	16		
200	230	315 L	1490	1282	IE2	95.1	95.3	94.7	0.87	350	3.1	7.5	3.2	72	87	▲ 1MB1 ■■■ 1-3AB5 ■■■■	1140	3.5	16		
Relubrication			Motor protection cover		Fan		Bearing size		Warranty												
Basic Line			Optional (standard from FS 280 upwards)		Optional Steel		62 (63 from FS 280 upwards)		12 months		5										
Performance Line			Standard from FS 160 (optional for FS 100 to 132)		Standard PTC		Steel 63		36 months		6										
Zones																					
Zone 21 (occasionally conductive and non-conductive dust) Ex tb IIIC																					
Zone 22 (rarely conductive or temporarily non-conductive dust) Ex tc IIIB																					
Zone 2 (rarely explosive or temporarily explosive gases) Ex nA IIC																					
Voltagess ¹⁾																					
		No. of poles		Frame size		Motor type		Version												Order code(s)	
50 Hz		230 VΔ/400 VY		60 Hz ²⁾ 460 VY		4		100 L ... 315 L		1MB1 ■■■ 1-1A ... -3A		Standard		2 2						-	
50 Hz		400 VΔ/690 VY		60 Hz ²⁾ 460 VΔ		4		100 L ... 315 L		1MB1 ■■■ 1-1A ... -3A		Standard		3 4						-	
50 Hz		500 VY				4		100 L ... 315 L		1MB1 ■■■ 1-1A ... -3A		Without add. charge		2 7						-	
50 Hz		500 VΔ				4		100 L ... 315 L		1MB1 ■■■ 1-1A ... -3A		Without add. charge		4 0						-	
Further voltagess ²⁾		For price information, code numbers, order codes and descriptions, see from Page 4/22																			
Types of construction																					
		No. of poles		Frame size		Motor type		Version												Order code(s)	
Without flange		IM B3 ³⁾		4		100 L ... 315 L		1MB1 ■■■ 1-1A ... -3A		Standard		A								-	
With flange		IM B5 ³⁾		4		100 L ... 315 M		1MB1 ■■■ 1-1A ... -3A		With additional charge		F								-	
With standard flange		IM B14 ³⁾		4		100 L ... 160 L		1MB1 ■■■ 1-1A ... -1D		With additional charge		K								-	
Further types of construction		For price information, code letters and descriptions, see from Page 4/25																			
Motor protection																					
		No. of poles		Frame size		Motor type		Version												Order code(s)	
Without PTC thermistor with 3 temperature sensors		Only possible for Basic Line		4		100 L ... 315 L		1MB15 ■■■ 1-1A ... -3A		Standard		A								-	
		Basic Line		4		100 L ... 315 L		1MB15 ■■■ 1-1A ... -3A		With additional charge		B								-	
		Performance Line		4		100 L ... 315 L		1MB16 ■■■ 1-1A ... -3A		Standard		B								-	
Further motor protection		For price information, code letters and descriptions, see from Page 4/28																			
Terminal box position																					
		No. of poles		Frame size		Motor type		Version												Order code(s)	
Terminal box at top		4		100 L ... 315 L		1MB1 ■■■ 1-1A ... -3A		Standard				4								-	
Further terminal box positions		For price information, code numbers and descriptions, see from Page 4/30																			
Special versions																					
		No. of poles		Frame size		Motor type														Order code(s)	
Options		For price information, order codes and descriptions, see from Page 4/34 1MB1 ■■■ 1-... ■■■■ -Z ...+...+...+...																			

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¹⁾ Parallel supply lines are required in the case of connection to ≤ 240 V. For frame size 315 with connection to ≤ 240 V, due to the high current, a drilled, removable entry plate (Order code **R52**) or a larger terminal box (Order code **R50**) can be used. Order codes **R52** and **R50** alter the motor dimensions.

²⁾ Operating values at rated output for 60 Hz are available on request.

³⁾ Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirements exist for condensation drainage holes (**H03**) and stamping of the type on the rating plate. The basic type IM B3, IM B5 or IM B14 is stamped as standard on the rating plate. When ordering with condensation drainage holes (**H03**), the type must be specified.

SIMOTICS XP 1MB1 Explosion-Proof Motors

Motors for Zone 21/22 or 2 in type of protection Ex t or Ex n



Self-ventilated motors with High Efficiency
Cast-iron series 1MB15, 1MB16

Selection and ordering data (continued)

Operating values at rated output													Cast-iron series		mIM B3 J		Torque class						
P _{rated} , 50 Hz	P _{rated} , 60 Hz	Frame size	n _{rated} , 50 Hz	T _{rated} , 50 Hz	IE class	η _{rated} , 50 Hz	η _{rated} , 50 Hz	η _{rated} , 50 Hz	η _{rated} , 50 Hz	cos φ, 50 Hz	I _{rated} , 50 Hz	T _{LR} /I _{rated}	L _R /I _{rated}	T _p /I _{rated}	L _p /A, 50 Hz	L _{WA} , 50 Hz	1MB15.1 – Basic Line	1MB16.1 – Performance Line	IE2 version acc. to IEC 60034-30	Article No.	kg	kgm ²	CL
kW	kW	FS	rpm	Nm	%	%	%	%	%	A							▲ New						
<ul style="list-style-type: none"> • Cooling: self-ventilated (IC 411) • Efficiency: High Efficiency IE2 • Insulation: thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B) 																							
6-pole: 1000 rpm at 50 Hz, 1200 rpm at 60 Hz ¹⁾																							
1.5	1.75	100 L	970	15	IE2	82.5	82.5	81.5	0.76	3.45	1.9	6.9	3.0	59	71	▲	1MB1	1-1AC4	-	36	0.014	13	
2.2	2.55	112 M	970	22	IE2	84.3	84.3	83.3	0.80	4.7	2.3	6.8	3.4	59	71	▲	1MB1	1-1BC2	-	41	0.014	13	
3	3.45	132 S	970	30	IE2	83.3	84	82.8	0.74	7	1.6	5.6	2.6	63	75	▲	1MB1	1-1CC0	-	56	0.024	13	
4	4.55	132 M	970	39	IE2	84.6	85.8	85	0.78	8.7	1.6	5.6	2.5	63	75	▲	1MB1	1-1CC2	-	61	0.029	13	
5.5	6.3	132 M	970	54	IE2	86	87.4	87	0.77	12	1.9	6.1	2.8	63	75	▲	1MB1	1-1CC3	-	70	0.037	16	
7.5	8.6	160 M	975	73	IE2	87.2	88.0	87.3	0.74	16.8	1.9	4.7	2.2	67	79	▲	1MB1	1-1DC2	-	106	0.075	16	
11	12.6	160 L	975	108	IE2	88.7	89.6	89.2	0.76	23.5	1.9	4.8	2.2	67	79	▲	1MB1	1-1DC4	-	122	0.098	16	
15	18	180 L	975	148	IE2	88.7	90.1	89.5	0.78	31	2.5	6	3.1	56	70	▲	1MB1	1-1EC4	-	155	0.17	16	
18.5	22	200 L	978	181	IE2	90.4	91.3	91.2	0.82	36	2.4	5.8	2.6	58	72	▲	1MB1	1-1DC2	-	200	0.25	16	
22	26.5	200 L	978	215	IE2	90.9	91.6	91.2	0.82	42.5	2.5	6.2	2.6	58	72	▲	1MB1	1-2AC5	-	220	0.3	16	
30	36	225 M	980	292	IE2	91.7	92.5	92.3	0.83	57	2.5	6.1	2.8	56	70	▲	1MB1	1-2BC2	-	285	0.58	16	
37	44.5	250 M	982	360	IE2	92.2	93.1	93.1	0.83	70	2.8	6	2.5	57	71	▲	1MB1	1-2CC2	-	370	0.86	16	
45	54	280 S	985	436	IE2	92.7	93.4	93.2	0.84	83	2.7	6.3	2.6	61	75	▲	1MB1	1-2DC0	-	460	1.1	16	
55	66	280 M	985	533	IE2	93.1	93.9	94	0.86	99	2.5	6.4	2.6	61	75	▲	1MB1	1-2DC2	-	510	1.37	16	
75	90	315 S	988	725	IE2	93.7	94	93.6	0.84	136	2.5	6.7	2.8	62	76	▲	1MB1	1-3AC0	-	660	2.1	16	
90	108	315 M	988	870	IE2	94	94.3	93.6	0.84	165	2.6	6.9	2.8	64	78	▲	1MB1	1-3AC2	-	730	2.5	16	
110	132	315 L	988	1063	IE2	94.3	94.6	94.5	0.86	196	2.7	7	2.8	62	76	▲	1MB1	1-3AC4	-	920	3.6	16	
132	158	315 L	988	1276	IE2	94.6	94.9	94.7	0.86	235	3	7.5	2.9	64	78	▲	1MB1	1-3AC5	-	990	4.02	16	
160	192	315 L	988	1546	IE2	94.8	94.7	94.4	0.85	285	3.3	8.1	3.4	65	80	▲	1MB1	1-3AC6	-	1160	4.7	16	
Basic Line		Optional (standard from FS 280 upwards)		Motor protection	Fan cover	Bearing size		Warranty															
Performance Line		Standard from FS 160 (optional for FS 100 to 132)		Standard PTC	Steel	63 (63 from FS 280 upwards)		36 months															
Zones																							
Zone 21 (occasionally conductive and non-conductive dust) Ex tb IIIC																							
Zone 22 (rarely conductive or temporarily non-conductive dust) Ex tc IIIB																							
Zone 2 (rarely explosive or temporarily explosive gases) Ex nA IIC																							
Voltagess ¹⁾																							
		No. of poles		Frame size		Motor type		Version														Order code(s)	
50 Hz		230 VΔ/400 VY		60 Hz ²⁾		460 VY		6		100 L ... 315 L		1MB1 1-1A ... -3A		Standard		2 2						-	
50 Hz		400 VΔ/690 VY		60 Hz ²⁾		460 VΔ		6		100 L ... 315 L		1MB1 1-1A ... -3A		Standard		3 4						-	
50 Hz		500 VY						6		100 L ... 315 L		1MB1 1-1A ... -3A		Without add. charge		2 7						-	
50 Hz		500 VΔ						6		100 L ... 315 L		1MB1 1-1A ... -3A		Without add. charge		4 0						-	
Further voltagess ²⁾				For price information, code numbers, order codes and descriptions, see from Page 4/22												9 0						...	
Types of construction																							
		No. of poles		Frame size		Motor type		Version														Order code(s)	
Without flange		IM B3 ²⁾		6		100 L ... 315 L		1MB1 1-1A ... -3A		Standard		A										-	
With flange		IM B5 ²⁾		6		100 L ... 315 M		1MB1 1-1A ... -3A		With additional charge		F										-	
With standard flange		IM B14 ²⁾		6		100 L ... 160 L		1MB1 1-1A ... -1D		With additional charge		K										-	
Further types of construction		For price information, code letters and descriptions, see from Page 4/25																				...	
Motor protection																							
		No. of poles		Frame size		Motor type		Version														Order code(s)	
Without PTC thermistor with 3 temperature sensors		Only possible for Basic Line		6		100 L ... 315 L		1MB15 1-1A ... -3A		Standard		A										-	
		Basic Line		6		100 L ... 315 L		1MB15 1-1A ... -3A		With additional charge		B										-	
		Performance Line		6		100 L ... 315 L		1MB16 1-1A ... -3A		Standard		B										-	
Further motor protection		For price information, code letters and descriptions, see from Page 4/28																				...	
Terminal box position																							
		No. of poles		Frame size		Motor type		Version														Order code(s)	
Terminal box at top		6		100 L ... 315 L		1MB1 1-1A ... -3A		Standard				4										-	
Further terminal box positions		For price information, code numbers and descriptions, see from Page 4/30																				-	
Special versions																							
		No. of poles		Frame size		Motor type																Order code(s)	
Options		For price information, order codes and descriptions, see from Page 4/34																				1MB1 1-... -Z ...+...+...+...	

¹⁾ Parallel supply lines are required in the case of connection to ≤ 240 V. For frame size 315 with connection to ≤ 240 V, due to the high current, a drilled, removable entry plate (Order code **R52**) or a larger terminal box (Order code **R50**) can be used. Order codes **R52** and **R50** alter the motor dimensions.

²⁾ Operating values at rated output for 60 Hz are available on request.

³⁾ Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirements exist for condensation drainage holes (**H03**) and stamping of the type on the rating plate. The basic type IM B3, IM B5 or IM B14 is stamped as standard on the rating plate. When ordering with condensation drainage holes (**H03**), the type must be specified.



SIMOTICS XP 1MB1 Explosion-Proof Motors

Motors for Zone 21/22 or 2 in type of protection Ex t or Ex n

Self-ventilated motors with High Efficiency
Cast-iron series 1MB15, 1MB16



Selection and ordering data (continued)

P _{rated} , P _{rated} 50 Hz 60 Hz		Frame size	Operating values at rated output										Cast-iron series		mIM B3 J	Torque class					
kW	kW	FS	rpm	Nm	%	%	%	COSφ	I _r rated	T _{LR} /I _r rated	L _R /I _r rated	T _p /I _r rated	L _p fA, 50 Hz	L _{WA} , 50 Hz	1MB15.1 – Basic Line	1MB16.1 – Performance Line	kg	kgm ²	CL		
													IE2 version acc. to IEC 60034-30 Article No.								
• Cooling: self-ventilated (IC 411) • Efficiency: High Efficiency IE2 • Insulation: thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B) 8-pole: 750 rpm at 50 Hz, 900 rpm at 60 Hz ¹⁾																					
0.75	0.86	100 L	725	9.9	–	68.3	65.8	59.3	0.58	2.75	1.6	4.0	2.8	60	72	▲ 1MB1 ■■ 1-1AD4 ■-■■■■■	32	0.0086	13		
1.1	1.27	100 L	725	14	–	68.3	65.4	58.9	0.58	4.0	1.8	4.1	2.8	60	72	▲ 1MB1 ■■ 1-1AD5 ■-■■■■■	36	0.011	13		
1.5	1.75	112 M	720	20	–	75.8	76.0	73.0	0.67	4.25	1.4	4.2	2.4	63	75	▲ 1MB1 ■■ 1-1BD2 ■-■■■■■	51	0.014	13		
2.2	2.55	132 S	725	29	–	78.8	79.3	77.2	0.65	6.2	1.4	4.3	2.1	63	75	▲ 1MB1 ■■ 1-1CD0 ■-■■■■■	59	0.027	10		
3	3.45	132 M	730	39	–	82.7	83.0	80.9	0.65	8.1	1.4	5.0	2.4	63	75	▲ 1MB1 ■■ 1-1CD2 ■-■■■■■	67	0.035	10		
4	4.55	160 M	730	52	–	81.9	82.6	81.7	0.67	10.5	1.6	3.7	1.9	63	75	▲ 1MB1 ■■ 1-1DD2 ■-■■■■■	98	0.065	13		
5.5	6.3	160 M	730	72	–	83.8	84.3	83.1	0.67	14.1	1.7	3.9	2.0	63	75	▲ 1MB1 ■■ 1-1DD3 ■-■■■■■	111	0.083	13		
7.5	8.6	160 L	730	98	–	85.3	86.5	86.1	0.7	18.1	1.6	3.8	1.9	63	75	▲ 1MB1 ■■ 1-1DD4 ■-■■■■■	123	0.098	13		
11	13.2	180 L	720	146	–	86.6	87.6	87.1	0.70	26	2.3	4.9	2.6	67	74	▲ 1MB1 ■■ 1-1ED4 ■-■■■■■	155	0.20	13		
15	18	200 L	718	200	–	88.9	90.8	91.2	0.76	32	2.4	5.4	2.8	57	64	▲ 1MB1 ■■ 1-2AD5 ■-■■■■■	220	0.34	13		
18.5	22	225 S	730	242	–	89.0	89.9	89.5	0.78	38.5	2.2	5.4	2.7	53	66	▲ 1MB1 ■■ 1-2BD0 ■-■■■■■	250	0.43	13		
22	26.5	225 M	730	288	–	90.3	91.3	91.1	0.80	44	2.3	5.5	2.7	53	66	▲ 1MB1 ■■ 1-2BD2 ■-■■■■■	270	0.50	13		
30	36	250 M	732	391	–	91.3	92.2	92.0	0.80	59	2.4	5.6	2.7	58	72	▲ 1MB1 ■■ 1-2CD2 ■-■■■■■	370	0.86	13		
37	44.5	280 S	736	480	–	91.9	92.5	92.1	0.78	75	2.3	5.4	2.4	61	74	▲ 1MB1 ■■ 1-2DD0 ■-■■■■■	460	1.10	13		
45	54	280 M	738	582	–	92.4	92.8	92.4	0.79	89	2.5	5.7	2.5	62	76	▲ 1MB1 ■■ 1-2DD2 ■-■■■■■	510	1.40	13		
55	66	315 S	740	710	–	92.9	93.3	92.9	0.80	107	2.2	5.8	2.6	61	75	▲ 1MB1 ■■ 1-3AD0 ■-■■■■■	640	2.00	13		
75	90	315 M	738	971	–	93.5	94.4	94.5	0.81	143	2.3	5.9	2.7	63	77	▲ 1MB1 ■■ 1-3AD2 ■-■■■■■	720	2.50	13		
90	108	315 L	740	1161	–	93.5	94.3	94.4	0.83	167	2.2	5.8	2.5	64	79	▲ 1MB1 ■■ 1-3AD4 ■-■■■■■	860	3.10	13		
110	132	315 L	740	1420	–	94.2	95.0	95.1	0.82	205	2.7	6.7	2.9	67	82	▲ 1MB1 ■■ 1-3AD5 ■-■■■■■	980	3.90	13		
132	158	315 L	740	1703	–	94.4	94.8	94.4	0.81	250	2.9	7.2	3.3	66	80	▲ 1MB1 ■■ 1-3AD6 ■-■■■■■	1070	4.50	16		
Relubrication		Motor protection		Fan cover		Bearing size		Warranty													
Basic Line		Optional (standard from FS 280 upwards)		Optional Steel		62 (63 from FS 280 upwards)		12 months		5											
Performance Line		Standard from FS 160 (optional for FS 100 to 132)		Standard PTC		63		36 months		6											
Zones																					
Zone 21 (occasionally conductive and non-conductive dust) Ex tb IIIC																					
Zone 22 (rarely conductive or temporarily non-conductive dust) Ex tc IIIB																					
Zone 2 (rarely explosive or temporarily explosive gases) Ex nA IIC																					
Voltages ¹⁾																					
		No. of poles		Frame size		Motor type		Version		Order code(s)											
50 Hz		230 VΔ/400 VY		60 Hz ²⁾ 460 VY		8		100 L ... 315 L		1MB1 ■■ 1-1A ... -3A		Standard		2 2		–					
50 Hz		400 VΔ/690 VY		60 Hz ²⁾ 460 VΔ		8		100 L ... 315 L		1MB1 ■■ 1-1A ... -3A		Standard		3 4		–					
50 Hz		500 VY				8		100 L ... 315 L		1MB1 ■■ 1-1A ... -3A		Without add. charge		2 7		–					
50 Hz		500 VΔ				8		100 L ... 315 L		1MB1 ■■ 1-1A ... -3A		Without add. charge		4 0		–					
Further voltages ²⁾		For price information, code numbers, order codes and descriptions, see from Page 4/22																			
Types of construction																					
		No. of poles		Frame size		Motor type		Version		Order code(s)											
Without flange		IM B3 ³⁾		8		100 L ... 315 L		1MB1 ■■ 1-1A ... -3A		Standard		A		–							
With flange		IM B5 ³⁾		8		100 L ... 315 M		1MB1 ■■ 1-1A ... -3A		With additional charge		F		–							
With standard flange		IM B14 ³⁾		8		100 L ... 160 L		1MB1 ■■ 1-1A ... -1D		With additional charge		K		–							
Further types of construction		For price information, code letters and descriptions, see from Page 4/25																			
Motor protection																					
		No. of poles		Frame size		Motor type		Version		Order code(s)											
Without PTC thermistor with 3 temperature sensors		Only possible for Basic Line		8		100 L ... 315 L		1MB15 ■■ 1-1A ... -3A		Standard		A		–							
Further motor protection		Basic Line		8		100 L ... 315 L		1MB15 ■■ 1-1A ... -3A		With additional charge		B		–							
Terminal box position		Performance Line		8		100 L ... 315 L		1MB16 ■■ 1-1A ... -3A		Standard		B		–							
Further terminal box positions		For price information, code numbers and descriptions, see from Page 4/30																			
Special versions																					
		No. of poles		Frame size		Motor type		Version		Order code(s)											
Options				8		100 L ... 315 L		1MB1 ■■ 1-1A ... -3A		Standard		4		–							
		For price information, order codes and descriptions, see from Page 4/34 1MB1 ■■ 1-... ■-■■■■■ -Z ...+...+...+...																			

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1) Parallel supply lines are required in the case of connection to ≤ 240 V. For frame size 315 with connection to ≤ 240 V, due to the high current, a drilled, removable entry plate (Order code R52) or a larger terminal box (Order code R50) can be used. Order codes R52 and R50 alter the motor dimensions.

2) Operating values at rated output for 60 Hz are available on request.

3) Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirements exist for condensation drainage holes (H03) and stamping of the type on the rating plate. The basic type IM B3, IM B5 or IM B14 is stamped as standard on the rating plate. When ordering with condensation drainage holes (H03), the type must be specified.

SIMOTICS XP 1MB1 Explosion-Proof Motors

Motors for Zone 21/22 or 2 in type of protection Ex t or Ex n



Self-ventilated motors with Premium Efficiency
Aluminum series 1MB10

Selection and ordering data

Operating values at rated output										Aluminum series				m _{IM B3} J		Torque class			
P _{rated} , 50 Hz	P _{rated} , 60 Hz	Frame size	n _{rated} , 50 Hz	T _{rated} , 50 Hz	IE class	η _{rated} , 50 Hz, 4/4	η _{rated} , 50 Hz, 3/4	η _{rated} , 50 Hz, 2/4	cos φ _{rated} , 50 Hz, 4/4	I _{rated} , 50 Hz, 400 V	T _{LR} /I _{rated}	L _{LR} /I _{rated}	T _B /I _{rated}	L _{pfA} , 50 Hz	L _{WA} , 50 Hz	Article No.	kg	kgm ²	CL
kW	kW	FS	rpm	Nm	%	%	%	%	A							▲ New			
• Cooling: self-ventilated (IC 411) • Efficiency: Premium Efficiency IE3 • Insulation: thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B)																			
2-pole: 3000 rpm at 50 Hz, 3600 rpm at 60 Hz ¹⁾																			
0.75	0.86	80 M	2850	2.5	IE3	80.7	82.0	81.5	0.86	1.56	2.6	6.2	3.0	60	71	▲ 1MB10 3-0DA2	11	0.0011	16
1.1	1.27	80 M	2885	3.6	IE3	82.7	82.7	81.7	0.85	2.25	2.8	7.4	3.8	60	71	▲ 1MB10 3-0DA3	12	0.0013	16
1.5	1.75	90 S	2910	4.9	IE3	84.2	84.5	83.5	0.86	3.00	2.7	8.1	4.2	65	77	▲ 1MB10 3-0EA0	15	0.0021	16
2.2	2.55	90 L	2910	7.2	IE3	85.9	86.8	86.1	0.88	4.2	2.6	8.3	4.0	65	77	▲ 1MB10 3-0EA4	19	0.0031	16
3	3.45	100 L	2920	9.8	IE3	87.1	87.1	86.1	0.88	5.6	3.2	8.1	4.6	67	79	1MB10 3-1AA4	26	0.0054	16
4	4.55	112 M	2955	13.0	IE3	88.1	88.1	87.1	0.89	7.4	2.9	8.0	4.4	69	81	1MB10 3-1BA2	34	0.012	16
5.5	6.3	132 S	2950	18.0	IE3	89.2	89.2	88.2	0.90	9.9	1.9	7.3	3.7	68	80	1MB10 3-1CA0	43	0.024	16
7.5	8.6	132 S	2950	24.0	IE3	90.1	90.1	89.1	0.92	13.1	2.1	8.3	4.0	68	80	1MB10 3-1CA1	57	0.031	16
11	12.6	160 M	2955	36.0	IE3	91.2	91.2	90.2	0.87	20.0	2.5	7.6	3.8	70	82	1MB10 3-1DA2	75	0.053	16
15	17.3	160 M	2960	49.0	IE3	91.9	91.9	90.9	0.87	27.0	2.8	8.8	4.3	70	82	1MB10 3-1DA3	84	0.061	16
18.5	21.3	160 L	2955	60.0	IE3	92.4	92.4	91.4	0.90	32.0	2.8	8.3	3.9	70	82	1MB10 3-1DA4	94	0.068	16
4-pole: 1500 rpm at 50 Hz, 1800 rpm at 60 Hz ¹⁾																			
0.55	0.63	80 M	1440	3.6	–	81.3	82.0	80.2	0.78	1.25	2.1	5.9	3.1	53	64	▲ 1MB10 3-0DB2	11	0.0021	16
0.75	0.86	80 M	1450	4.9	IE3	82.5	82.3	80.0	0.75	1.75	2.7	7.1	3.9	53	64	▲ 1MB10 3-0DB3	14	0.0029	16
1.1	1.27	90 S	1440	7.3	IE3	84.1	84.6	83.5	0.78	2.4	2.9	6.9	3.6	56	68	▲ 1MB10 3-0EB0	16	0.0036	16
1.5	1.75	90 L	1445	9.9	IE3	85.3	85.9	84.9	0.80	3.15	2.6	7.2	2.7	56	68	▲ 1MB10 3-0EB4	19	0.0049	16
2.2	2.55	100 L	1465	14.0	IE3	86.7	86.7	85.7	0.83	4.4	3.2	8.4	4.4	60	72	1MB10 3-1AB4	30	0.014	16
3	3.45	100 L	1460	20.0	IE3	87.7	87.7	86.7	0.83	5.9	2.5	8.3	3.9	60	72	1MB10 3-1AB5	30	0.014	16
4	4.55	112 M	1460	26.0	IE3	88.6	88.6	87.6	0.82	7.9	2.4	7.1	3.7	58	70	1MB10 3-1BB2	34	0.017	16
5.5	6.3	132 S	1475	36.0	IE3	89.6	89.6	88.6	0.84	10.5	2.8	8.2	3.9	64	76	1MB10 3-1CB0	64	0.046	16
7.5	8.6	132 M	1465	49.0	IE3	90.4	90.4	89.4	0.84	14.3	2.6	8.2	3.7	64	76	1MB10 3-1CB2	64	0.046	16
11	12.6	160 M	1475	71.0	IE3	91.4	91.4	90.4	0.84	20.5	2.6	7.6	3.4	65	77	1MB10 3-1DB2	83	0.083	16
15	17.3	160 L	1475	97.0	IE3	92.1	92.1	91.1	0.82	28.5	2.5	8.5	3.8	65	77	1MB10 3-1DB4	100	0.099	16
6-pole: 1000 rpm at 50 Hz, 1200 rpm at 60 Hz ¹⁾																			
0.37	0.43	80 M	940	3.8	–	74.8	74.3	70.5	0.66	1.08	2.3	4.2	2.7	42	53	▲ 1MB10 3-0DC2	12	0.0025	13
0.55	0.63	80 M	935	5.6	–	77.2	77.2	75.5	0.67	1.53	2.5	4.5	2.8	42	53	▲ 1MB10 3-0DC3	14	0.0031	13
0.75	0.86	90 S	945	7.6	IE3	78.9	80.0	78.5	0.70	1.96	2.2	4.6	2.6	43	55	▲ 1MB10 3-0EC0	16	0.0040	13
1.1	1.3	90 L	940	11.0	IE3	81.0	81.0	79.5	0.69	2.85	2.3	4.6	2.7	43	55	▲ 1MB10 3-0EC4	19	0.0048	13
1.5	1.75	100 L	970	15.0	IE3	82.5	82.5	81.5	0.76	3.45	1.9	6.9	3.0	59	71	1MB10 3-1AC4	30	0.014	13
2.2	2.55	112 M	970	22.0	IE3	84.3	84.3	83.3	0.8	4.7	2.3	6.8	3.4	59	71	1MB10 3-1BC2	29	0.014	13
3	3.45	132 S	970	29.4	IE3	85.6	85.6	84.6	0.77	6.6	1.7	5.2	2.6	63	75	1MB10 3-1CC0	52	0.037	13
4	4.55	132 M	970	39.3	IE3	86.8	86.8	85.8	0.77	8.6	1.9	5.7	2.9	63	75	1MB10 3-1CC2	52	0.037	13
5.5	6.3	132 M	970	54.0	IE3	88.0	88.0	87.0	0.78	11.6	1.9	5.9	2.9	63	75	1MB10 3-1CC3	52	0.037	13
7.5	8.6	160 M	980	73.0	IE3	89.1	89.9	89.3	0.76	16.0	1.9	4.9	2.3	67	79	1MB10 3-1DC2	93	0.098	13
11	12.6	160 L	975	108.0	IE3	90.3	91.1	90.7	0.77	23.0	1.9	5	2.3	67	79	1MB10 3-1DC4	115	0.12	13
Zones																			
Zone 21 (occasionally conductive and non-conductive dust) Ex tb IIC																	1		
Zone 22 (rarely conductive or temporarily non-conductive dust) Ex tc IIIc																	2		
Zone 2 (rarely explosive or temporarily explosive gases) Ex nA IIC																	3		
Voltages																			
50 Hz		230 VΔ/400 VY		60 Hz ¹⁾		460 VY		2, 4, 6		80 M ... 160 L		1MB10 . 3-0D ... -1D		Standard		2 2	–		
50 Hz		400 VΔ/690 VY		60 Hz ¹⁾		460 VΔ		2, 4, 6		80 M ... 160 L		1MB10 . 3-0D ... -1D		Standard		3 4	–		
50 Hz		500 VY						2, 4, 6		80 M ... 160 L		1MB10 . 3-0D ... -1D		Without add. charge		2 7	–		
50 Hz		500 VΔ						2, 4, 6		80 M ... 160 L		1MB10 . 3-0D ... -1D		Without add. charge		4 0	–		
Further voltages ¹⁾ For price information, code numbers, order codes and descriptions, see from Page 4/21																			
Types of construction																			
		IM B3 ²⁾				2, 4, 6		80 M ... 160 L		1MB10 . 3-0D ... -1D		Standard		A	–				
		IM B5 ²⁾				2, 4, 6		80 M ... 160 L		1MB10 . 3-0D ... -1D		With add. charge		F	–				
		IM B14 ²⁾				2, 4, 6		80 M ... 160 L		1MB10 . 3-0D ... -1D		With add. charge		K	–				
Further types of construction For price information, code letters and descriptions, see from Page 4/23																			
Motor protection																			
						2, 4, 6		80 M ... 160 L		1MB10 . 3-0D ... -1D		Standard		A	–				
		PTC thermistor with 3 temperature sensors				2, 4, 6		80 M ... 160 L		1MB10 . 3-0D ... -1D		With add. charge		B	–				
Further motor protection For price information, code letters and descriptions, see from Page 4/27																			
Terminal box position																			
						2, 4, 6		80 M ... 160 L		1MB10 . 3-0D ... -1D		Standard		4	–				
Further terminal box positions For price information, code numbers and descriptions, see from Page 4/29																			
Special versions																			
																1MB10 3-... -Z		...+...+...+...	
Options For price information, order codes and descriptions, see from Page 4/31																			

¹⁾ Operating values at rated output for 60 Hz are available on request.

²⁾ Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirements exist for condensation drainage holes (H03)

and stamping of the type on the rating plate. The basic type IM B3, IM B5 or IM B14 is stamped as standard on the rating plate. When ordering with condensation drainage holes (H03), the type must be specified.



SIMOTICS XP 1MB1 Explosion-Proof Motors

Motors for Zone 21/22 or 2 in type of protection Ex t or Ex n

Self-ventilated motors with Premium Efficiency
Cast-iron series 1MB15, 1MB16



Selection and ordering data

P _{rated} , P _{rated} 50 Hz 60 Hz		Frame size	Operating values at rated output										Cast-iron series		m _{IM B3} J	Torque class			
kW	kW	FS	rpm	Nm	%	%	%	COSφ	I _{rated}	T _{LR} /I _{rated}	L _R /I _{rated}	T _B /I _{rated}	L _{pFA}	L _{WA}	Article No.	kg	kgm ²	CL	
• Cooling: self-ventilated (IC 411) • Efficiency: High Efficiency IE3 • Insulation: thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B)																			
2-pole: 3000 rpm at 50 Hz, 3600 rpm at 60 Hz ¹⁾																			
3	3.45	100 L	2920	10	IE3	87.1	87.1	86.1	0.88	5.6	3.2	8.1	4.6	67	79	▲ 1MB1 3-1AA4	36	0.0054	16
4	4.55	112 M	2955	13	IE3	88.1	88.1	87.1	0.89	7.4	2.9	8.0	4.4	69	81	▲ 1MB1 3-1BA2	45	0.012	16
5.5	6.3	132 S	2950	18	IE3	89.2	89.2	88.2	0.90	9.9	1.9	7.3	3.7	68	80	▲ 1MB1 3-1CA0	58	0.024	16
7.5	8.6	132 S	2950	24	IE3	90.1	90.1	89.1	0.92	13.1	2.1	8.3	4.0	68	80	▲ 1MB1 3-1CA1	73	0.031	16
11	12.6	160 M	2955	36	IE3	91.2	91.2	90.2	0.87	20	2.5	7.6	3.8	70	82	▲ 1MB1 3-1DA2	100	0.053	16
15	17.3	160 M	2960	48	IE3	91.9	91.9	90.9	0.87	27	2.8	8.8	4.3	70	82	▲ 1MB1 3-1DA3	110	0.061	16
18.5	21.3	160 L	2955	60	IE3	92.4	92.4	91.4	0.90	32	2.8	8.3	3.9	70	82	▲ 1MB1 3-1DA4	127	0.068	16
22	24.5	180 M	2950	71	IE3	92.7	93.0	92.4	0.89	38.5	2.5	7.4	3.5	67	80	▲ 1MB1 3-1EA2	160	0.08	16
30	33.5	200 L	2955	97	IE3	93.3	93.7	93.3	0.87	53	2.5	6.6	3.3	67	80	▲ 1MB1 3-2AA4	225	0.134	16
37	41.5	200 L	2955	120	IE3	93.7	94.1	93.8	0.88	65	2.5	6.6	3.2	67	80	▲ 1MB1 3-2AA5	250	0.158	16
45	51	225 M	2960	145	IE3	94.0	94.5	94.4	0.89	78	2.4	6.9	3.3	67	80	▲ 1MB1 3-2BA2	315	0.26	16
55	62	250 M	2975	177	IE3	94.3	94.5	93.9	0.89	95	2.3	6.7	3.1	71	84	▲ 1MB1 3-2CA2	385	0.46	13
75	84	280 S	2975	241	IE3	94.7	94.8	94.1	0.89	128	2.4	6.8	3.0	73	87	▲ 1MB1 3-2DA0	510	0.77	13
90	101	280 M	2975	289	IE3	95.0	95.1	94.6	0.90	152	2.4	7.2	3.1	73	86	▲ 1MB1 3-2DA2	590	0.94	13
110	123	315 S	2982	352	IE3	95.2	95.4	94.9	0.91	183	2.4	7.1	3.1	73	87	▲ 1MB1 3-3AA0	750	1.39	13
132	148	315 M	2982	423	IE3	95.4	95.5	95.2	0.91	220	2.5	7.2	3.1	73	87	▲ 1MB1 3-3AA2	880	1.6	13
160	180	315 L	2982	512	IE3	95.6	95.7	95.2	0.92	265	2.8	7.8	3.3	76	90	▲ 1MB1 3-3AA4	980	1.9	13
200	224	315 L	2982	640	IE3	95.8	95.9	95.5	0.92	330	2.5	7.0	3.0	76	90	▲ 1MB1 3-3AA5	1150	2.3	13

Basic Line	Performance Line	Zones	Voltagess ¹⁾	Types of construction	Motor protection	Terminal box position	Special versions
Optional (standard from FS 280 upwards)	Standard from FS 160 (optional for FS 100 to 132)	Zone 21 (occasionally conductive and non-conductive dust) Ex tb IIIC Zone 22 (rarely conductive or temporarily non-conductive dust) Ex tc IIIB Zone 2 (rarely explosive or temporarily explosive gases) Ex nA IIC	No. of poles | Frame size | Motor type | Version	No. of poles | Frame size | Motor type | Version	No. of poles | Frame size | Motor type | Version	No. of poles | Frame size | Motor type | Version	Options
Standard from FS 160 (optional for FS 100 to 132)	Standard from FS 160 (optional for FS 100 to 132)		50 Hz 230 VΔ/400 VY 60 Hz ²⁾ 460 VY 2 | 100 L ... 315 L | 1MB1 3-1A ... -3A | Standard	Without flange IM B3 ³⁾ 2 | 100 L ... 315 L | 1MB1 3-1A ... -3A | Standard	Without PTC thermistor with 3 temperature sensors Basic Line 2 | 100 L ... 315 L | 1MB15 3-1A ... -3A | Standard	Terminal box at top 2 | 100 L ... 315 L | 1MB1 3-1A ... -3A | Standard	1MB1 3-... -Z ...+...+...+...
			50 Hz 400 VΔ/690 VY 60 Hz ²⁾ 460 VΔ 2 | 100 L ... 315 L | 1MB1 3-1A ... -3A | Standard	With flange IM B5 ³⁾ 2 | 100 L ... 315 M | 1MB1 3-1A ... -3A | With additional charge	PTC thermistor with 3 temperature sensors Performance Line 2 | 100 L ... 315 L | 1MB16 3-1A ... -3A | Standard	Further terminal box positions For price information, code numbers and descriptions, see from Page 4/30	
			50 Hz 500 VY 2 | 100 L ... 315 L | 1MB1 3-1A ... -3A | Without add. charge	With standard flange IM B14 ³⁾ 2 | 100 L ... 160 L | 1MB1 3-1A ... -1D | With additional charge	Further motor protection For price information, code letters and descriptions, see from Page 4/28		
			50 Hz 500 VΔ 2 | 100 L ... 315 L | 1MB1 3-1A ... -3A | Without add. charge	Further types of construction For price information, code letters and descriptions, see from Page 4/25			
			Further voltagess ²⁾ For price information, code numbers, order codes and descriptions, see from Page 4/22				

¹⁾ Parallel supply lines are required in the case of connection to ≤ 240 V. For frame size 315 with connection to ≤ 240 V, due to the high current, a drilled, removable entry plate (Order code R52) or a larger terminal box (Order code R50) can be used. Order codes R52 and R50 alter the motor dimensions.

²⁾ Operating values at rated output for 60 Hz are available on request.

³⁾ Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirements exist for condensation drainage holes (H03) and stamping of the type on the rating plate. The basic type IM B3, IM B5 or IM B14 is stamped as standard on the rating plate. When ordering with condensation drainage holes (H03), the type must be specified.

SIMOTICS XP 1MB1 Explosion-Proof Motors

Motors for Zone 21/22 or 2 in type of protection Ex t or Ex n



Self-ventilated motors with Premium Efficiency
Cast-iron series 1MB15, 1MB16

Selection and ordering data (continued)

P _{rated} , P _{rated} 50 Hz 60 Hz		Frame size	Operating values at rated output										Cast-iron series		mIM B3 J	Torque class			
kW	kW	FS	rpm	Nm	%	%	%	%	A	dB(A)	dB(A)	▲ New	kg	kgm ²	CL				
• Cooling: self-ventilated (IC 411) • Efficiency: High Efficiency IE3 • Insulation: thermal class 155 (temperature class F), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B) 4-pole: 1500 rpm at 50 Hz, 1800 rpm at 60 Hz ¹⁾																			
2.2	2.55	100 L	1465	14	IE3	86.7	86.7	85.7	0.83	4.4	3.2	8.4	4.4	60	72	▲ 1MB1 ■■■ 3-1AB4 ■■■■	40	0.014	16
3	3.45	100 L	1460	20	IE3	87.7	87.7	86.7	0.83	5.9	2.5	8.3	3.9	60	72	▲ 1MB1 ■■■ 3-1AB5 ■■■■	40	0.014	16
4	4.55	112 M	1460	26	IE3	88.6	88.6	87.6	0.82	7.9	2.4	7.1	3.7	58	70	▲ 1MB1 ■■■ 3-1BB2 ■■■■	46	0.017	16
5.5	6.3	132 S	1475	36	IE3	89.6	89.6	88.6	0.84	10.5	2.8	8.2	3.9	64	76	▲ 1MB1 ■■■ 3-1CB0 ■■■■	74	0.046	16
7.5	8.6	132 M	1465	49	IE3	90.4	90.4	89.4	0.84	14.3	2.6	8.2	3.7	64	76	▲ 1MB1 ■■■ 3-1CB2 ■■■■	80	0.046	16
11	12.6	160 M	1475	71	IE3	91.4	91.4	90.4	0.84	20.5	2.6	7.6	3.4	65	77	▲ 1MB1 ■■■ 3-1DB2 ■■■■	109	0.083	16
15	17.3	160 L	1475	97	IE3	92.1	92.1	91.1	0.82	28.5	2.5	8.5	3.8	65	77	▲ 1MB1 ■■■ 3-1DB4 ■■■■	127	0.099	16
18.5	21.3	180 M	1470	120	IE3	92.6	93.2	93.2	0.81	35.5	2.5	6.9	3.3	57	70	▲ 1MB1 ■■■ 3-1EB2 ■■■■	165	0.13	16
22	25.3	180 L	1470	143	IE3	93.0	93.7	93.7	0.82	41.5	2.5	6.8	3.4	57	70	▲ 1MB1 ■■■ 3-1EB4 ■■■■	170	0.14	16
30	34.5	200 L	1470	195	IE3	93.6	94.3	94.4	0.85	54	3.0	6.7	3.1	57	70	▲ 1MB1 ■■■ 3-2AB5 ■■■■	240	0.22	16
37	42.5	225 S	1478	239	IE3	93.9	94.5	94.4	0.86	66	2.5	6.4	2.7	57	70	▲ 1MB1 ■■■ 3-2BB0 ■■■■	285	0.42	16
45	52	225 M	1478	291	IE3	94.2	94.9	95.1	0.86	80	2.6	6.4	2.7	57	70	▲ 1MB1 ■■■ 3-2BB2 ■■■■	320	0.47	16
55	63	250 M	1482	354	IE3	94.6	95.1	95.0	0.87	96	2.5	6.8	2.9	57	70	▲ 1MB1 ■■■ 3-2CB2 ■■■■	420	0.85	16
75	86	280 S	1485	482	IE3	95.0	95.3	95.0	0.86	133	2.5	6.9	3.0	65	79	▲ 1MB1 ■■■ 3-2DB0 ■■■■	570	1.39	16
90	104	280 M	1485	579	IE3	95.2	95.5	95.3	0.87	157	2.6	7.2	3.0	65	79	▲ 1MB1 ■■■ 3-2DB2 ■■■■	670	1.7	16
110	127	315 S	1488	706	IE3	95.4	95.8	95.5	0.87	191	2.6	6.8	2.9	65	79	▲ 1MB1 ■■■ 3-3AB0 ■■■■	760	2.2	16
132	152	315 M	1490	846	IE3	95.6	95.9	95.9	0.87	230	2.8	7.3	3.0	65	79	▲ 1MB1 ■■■ 3-3AB2 ■■■■	960	2.9	16
160	184	315 L	1490	1025	IE3	95.8	96.1	96.1	0.87	275	2.9	7.3	3.1	65	79	▲ 1MB1 ■■■ 3-3AB4 ■■■■	990	3.1	16
200	230	315 L	1490	1282	IE3	96.0	96.3	96.1	0.88	340	2.9	7.6	3.0	65	79	▲ 1MB1 ■■■ 3-3AB5 ■■■■	1190	3.7	16
Relubrication		Motor protection cover		Fan		Bearing size		Warranty											
Basic Line		Optional (standard from FS 280 upwards)		Optional Steel		62 (63 from FS 280 upwards)		12 months		5									
Performance Line		Standard from FS 160 (optional for FS 100 to 132)		Standard PTC		Steel 63		36 months		6									
Zones																			
Zone 21 (occasionally conductive and non-conductive dust) Ex tb IIIC																			
Zone 22 (rarely conductive or temporarily non-conductive dust) Ex tc IIIB																			
Zone 2 (rarely explosive or temporarily explosive gases) Ex nA IIC																			
Voltagess ¹⁾																			
		No. of poles		Frame size		Motor type		Version		Order code(s)									
50 Hz		230 VΔ/400 VY		60 Hz ²⁾ 460 VY		4		100 L ... 315 L		1MB1 ■■■ 3-1A ... -3A		Standard		2 2			-		
50 Hz		400 VΔ/690 VY		60 Hz ²⁾ 460 VΔ		4		100 L ... 315 L		1MB1 ■■■ 3-1A ... -3A		Standard		3 4			-		
50 Hz		500 VY				4		100 L ... 315 L		1MB1 ■■■ 3-1A ... -3A		Without add. charge		2 7			-		
50 Hz		500 VΔ				4		100 L ... 315 L		1MB1 ■■■ 3-1A ... -3A		Without add. charge		4 0			-		
Further voltagess ²⁾		For price information, code numbers, order codes and descriptions, see from Page 4/22										9 0		...					
Types of construction																			
		No. of poles		Frame size		Motor type		Version		Order code(s)									
Without flange		IM B3 ³⁾		4		100 L ... 315 L		1MB1 ■■■ 3-1A ... -3A		Standard		A			-				
With flange		IM B5 ³⁾		4		100 L ... 315 M		1MB1 ■■■ 3-1A ... -3A		With additional charge		F			-				
With standard flange		IM B14 ³⁾		4		100 L ... 160 L		1MB1 ■■■ 3-1A ... -1D		With additional charge		K			-				
Further types of construction		For price information, code letters and descriptions, see from Page 4/25																	
Motor protection																			
		No. of poles		Frame size		Motor type		Version		Order code(s)									
Without PTC thermistor with 3 temperature sensors		Only possible for Basic Line		4		100 L ... 315 L		1MB15 ■■■ 3-1A ... -3A		Standard		A			-				
		Basic Line		4		100 L ... 315 L		1MB15 ■■■ 3-1A ... -3A		With additional charge		B			-				
		Performance Line		4		100 L ... 315 L		1MB16 ■■■ 3-1A ... -3A		Standard		B			-				
Further motor protection		For price information, code letters and descriptions, see from Page 4/28																	
Terminal box position																			
		No. of poles		Frame size		Motor type		Version		Order code(s)									
Terminal box at top		4		100 L ... 315 L		1MB1 ■■■ 3-1A ... -3A		Standard		4									
Further terminal box positions		For price information, code numbers and descriptions, see from Page 4/30																	
Special versions																			
		No. of poles		Frame size		Motor type		Order code(s)											
Options		For price information, order codes and descriptions, see from Page 4/34 1MB1 ■■■ 3-... ■■■■ -Z ...+...+...+...																	

¹⁾ Parallel supply lines are required in the case of connection to ≤ 240 V. For frame size 315 with connection to ≤ 240 V, due to the high current, a drilled, removable entry plate (Order code **R52**) or a larger terminal box (Order code **R50**) can be used. Order codes **R52** and **R50** alter the motor dimensions.

²⁾ Operating values at rated output for 60 Hz are available on request.

³⁾ Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirements exist for condensation drainage holes (**H03**) and stamping of the type on the rating plate. The basic type IM B3, IM B5 or IM B14 is stamped as standard on the rating plate. When ordering with condensation drainage holes (**H03**), the type must be specified.



SIMOTICS XP 1MB1 Explosion-Proof Motors

Motors for Zone 21/22 or 2 in type of protection Ex t or Ex n

Self-ventilated motors with Premium Efficiency
Cast-iron series 1MB15, 1MB16



Selection and ordering data (continued)

P _{rated} , P _{rated} 50 Hz 60 Hz		Frame size	Operating values at rated output										Cast-iron series		mIM B3 J	Torque class			
kW	kW	FS	rpm	Nm	%	%	%	%	A	dB(A)	dB(A)	▲ New	kg	kgm ²	CL				
1.5	1.75	100 L	970	15	IE2	82.5	82.5	81.5	0.76	3.45	1.9	6.9	3.0	59	71	▲ 1MB1 3-1AC4	34	0.014	13
2.2	2.55	112 M	970	22	IE2	84.3	84.3	83.3	0.80	4.7	2.3	6.8	3.4	59	71	▲ 1MB1 3-1BC2	47	0.014	13
3	3.45	132 S	970	30	IE3	85.6	85.6	84.6	0.78	6.5	1.8	6.5	3	63	75	▲ 1MB1 3-1CC0	68	0.037	13
4	4.55	132 M	970	39	IE3	86.8	86.8	85.8	0.79	8.4	1.9	6.6	3	63	75	▲ 1MB1 3-1CC2	68	0.037	13
5.5	6.3	132 M	970	54	IE3	88.0	88.0	87.0	0.78	11.6	2	6.6	3.1	63	75	▲ 1MB1 3-1CC3	81	0.037	13
7.5	8.6	160 M	975	73	IE3	89.1	89.9	89.3	0.76	16.0	1.9	4.9	2.3	67	79	▲ 1MB1 3-1DC2	120	0.098	13
11	12.6	160 L	975	108	IE3	90.3	91.1	90.7	0.77	23.0	1.9	5.0	2.3	67	79	▲ 1MB1 3-1DC4	149	0.12	13
15	18	180 L	970	148	IE3	91.2	92.4	92.6	0.80	29.5	2.4	5.8	2.8	56	69	▲ 1MB1 3-1EC4	180	0.19	16
18.5	22	200 L	978	181	IE3	91.7	92.5	92.5	0.79	37	2.5	5.6	2.6	57	70	▲ 1MB1 3-2AC4	215	0.28	16
22	26.5	200 L	978	215	IE3	92.2	93.1	93.3	0.80	43	2.5	5.5	2.5	57	70	▲ 1MB1 3-2AC5	230	0.32	16
30	36	225 M	982	292	IE3	92.9	93.6	93.5	0.83	56	2.6	6.6	3	57	70	▲ 1MB1 3-2BC2	325	0.67	16
37	44.5	250 M	985	359	IE3	93.3	94.0	94.0	0.85	67	2.7	7	2.9	57	70	▲ 1MB1 3-2CC2	405	1	16
45	54	280 S	988	435	IE3	93.7	94.3	94.2	0.85	82	3	6.8	2.8	58	71	▲ 1MB1 3-2DC0	510	1.4	16
55	66	280 M	988	532	IE3	94.1	94.6	94.4	0.85	99	3.2	7.2	3	58	71	▲ 1MB1 3-2DC2	560	1.6	16
75	90	315 S	990	723	IE3	94.6	94.7	94.1	0.84	136	2.6	7.3	3.1	59	73	▲ 1MB1 3-3AC0	750	2.6	16
90	108	315 M	991	867	IE3	94.9	95.3	95.0	0.85	161	2.5	6.7	2.8	59	73	▲ 1MB1 3-3AC2	890	3.1	16
110	132	315 L	991	1060	IE3	95.1	95.3	95.1	0.84	199	2.6	7.3	2.8	60	74	▲ 1MB1 3-3AC4	990	3.9	16
132	158	315 L	991	1272	IE3	95.4	95.9	95.8	0.85	235	2.7	7.1	3	60	74	▲ 1MB1 3-3AC5	1110	4.4	16
160	192	315 L	991	1542	IE3	95.6	95.8	95.3	0.83	290	2.8	7.7	3.8	63	77	▲ 1MB1 3-3AC6	1160	4.6	16
Basic Line		Optional (standard from FS 280 upwards)	Optional	Steel	62 (63 from FS 280 upwards)	12 months	5												
Performance Line		Standard from FS 160 (optional for FS 100 to 132)	Standard	Steel	63	36 months	6												
Zones																			
Zone 21 (occasionally conductive and non-conductive dust) Ex tb IIIC																			
Zone 22 (rarely conductive or temporarily non-conductive dust) Ex tc IIIB																			
Zone 2 (rarely explosive or temporarily explosive gases) Ex nA IIC																			
Voltagess¹⁾																			
		No. of poles	Frame size	Motor type	Version														
50 Hz	230 VΔ/400 VY	60 Hz ²⁾	460 VY	6	100 L ... 315 L	1MB1 3-1A ... -3A	Standard	2	2										
50 Hz	400 VΔ/690 VY	60 Hz ²⁾	460 VΔ	6	100 L ... 315 L	1MB1 3-1A ... -3A	Standard	3	4										
50 Hz	500 VY			6	100 L ... 315 L	1MB1 3-1A ... -3A	Without add. charge	2	7										
50 Hz	500 VΔ			6	100 L ... 315 L	1MB1 3-1A ... -3A	Without add. charge	4	0										
Further voltagess ²⁾		For price information, code numbers, order codes and descriptions, see from Page 4/22										9	0						
Types of construction																			
		No. of poles	Frame size	Motor type	Version														
Without flange	IM B3 ³⁾	6	100 L ... 315 L	1MB1 3-1A ... -3A	Standard														
With flange	IM B5 ³⁾	6	100 L ... 315 M	1MB1 3-1A ... -3A	With additional charge														
With standard flange	IM B14 ³⁾	6	100 L ... 160 L	1MB1 3-1A ... -1D	With additional charge														
Further types of construction		For price information, code letters and descriptions, see from Page 4/25																	
Motor protection																			
		No. of poles	Frame size	Motor type	Version														
Without PTC thermistor with 3 temperature sensors	Only possible for Basic Line	6	100 L ... 315 L	1MB15 3-1A ... -3A	Standard														
	Basic Line	6	100 L ... 315 L	1MB15 3-1A ... -3A	With additional charge														
	Performance Line	6	100 L ... 315 L	1MB16 3-1A ... -3A	Standard														
Further motor protection		For price information, code letters and descriptions, see from Page 4/28																	
Terminal box position																			
		No. of poles	Frame size	Motor type	Version														
Terminal box at top		6	100 L ... 315 L	1MB1 3-1A ... -3A	Standard														
Further terminal box positions		For price information, code numbers and descriptions, see from Page 4/30																	
Special versions																			
		No. of poles	Frame size	Motor type	Order code(s)														
Options		For price information, order codes and descriptions, see from Page 4/34										1MB1 3-... -Z ...+...+...+...							

1) Parallel supply lines are required in the case of connection to ≤ 240 V. For frame size 315 with connection to ≤ 240 V, due to the high current, a drilled, removable entry plate (Order code **R52**) or a larger terminal box (Order code **R50**) can be used. Order codes **R52** and **R50** alter the motor dimensions.

2) Operating values at rated output for 60 Hz are available on request.

3) Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirements exist for condensation drainage holes (**H03**) and stamping of the type on the rating plate. The basic type IM B3, IM B5 or IM B14 is stamped as standard on the rating plate. When ordering with condensation drainage holes (**H03**), the type must be specified.

SIMOTICS XP 1MB1 Explosion-Proof Motors

Supplements to article numbers and special versions

Voltages
Aluminum series 1MB10

Selection and ordering data

Voltages	Voltage code 12th and 13th position of the Article No.	Additional identification code with order code and plain text if required	Motor category								
			Motor version	Motor type (alum.)	Motor type – Frame size						
					80	90	100	112	132	160	
			Ex t (Zone 21/22) Ex n (Zone 2) IE1 Standard Efficiency	1MB10.2	1MB10.2						
			Ex t (Zone 21/22) Ex n (Zone 2) IE2 High Efficiency	1MB10.1	1MB10.1						
			Ex t (Zone 21/22) Ex n (Zone 2) IE3 Premium Efficiency	1MB10.3	1MB10.3						
1MB1.....-...-... Order code			Motor version	Motor type	Frame size						
					80	90	100	112	132	160	
Voltage at 50 Hz or 60 Hz (50 Hz output)											
50 Hz 230 VΔ/400 VY, 60 Hz 460 VY	2	2	–	All	All	□	□	□	□	□	□
50 Hz 400 VΔ/690 VY, 60 Hz 460 VΔ	3	4	–	All	All	□	□	□	□	□	□
50 Hz 500 VY	2	7	–	All	All	○	○	○	○	○	○
50 Hz 500 VΔ	4	0	–	All	All	–	–	○	○	○	○
50 Hz 220 VΔ/380 VY, 60 Hz 440 VY	2	1	–	All	All	✓	✓	✓	✓	✓	✓
50 Hz 380 VΔ/660 VY, 60 Hz 440 VΔ	3	3	–	All	All	✓	✓	✓	✓	✓	✓
50 Hz 240 VΔ/415 VY, 60 Hz 480 VY	2	3	–	All	All	✓	✓	✓	✓	✓	✓
50 Hz 415 VΔ, 60 Hz 480 VΔ	3	5	–	All	All	✓	✓	✓	✓	✓	✓
50 Hz 400 VY	0	2	–	All	All	○	○	○	○	○	○
50 Hz 400 VΔ	0	4	–	All	All	○	○	○	○	○	○
Voltage at 60 Hz (50 Hz output)											
220 VΔ/380 VY; 50 Hz output ¹⁾	9	0	M2A	All	All	✓	✓	✓	✓	✓	✓
220 VΔ/380 VY; 60 Hz output	9	0	M1A	All	All	✓	✓	✓	✓	✓	✓
380 VΔ/660 VY; 50 Hz output ¹⁾	9	0	M2B	All	All	✓	✓	✓	✓	✓	✓
380 VΔ/660 VY; 60 Hz output	9	0	M1B	All	All	✓	✓	✓	✓	✓	✓
440 VY; 50 Hz output ¹⁾	9	0	M2C	All	All	✓	✓	✓	✓	✓	✓
440 VY; 60 Hz output	9	0	M1C	All	All	✓	✓	✓	✓	✓	✓
440 VΔ; 50 Hz output ¹⁾	9	0	M2D	All	All	✓	✓	✓	✓	✓	✓
440 VΔ; 60 Hz output	9	0	M1D	All	All	✓	✓	✓	✓	✓	✓
460 VY; 50 Hz output ¹⁾	9	0	M2E	All	All	✓	✓	✓	✓	✓	✓
460 VY; 60 Hz output	9	0	M1E	All	All	○	○	○	○	○	○
460 VΔ; 50 Hz output ¹⁾	9	0	M2F	All	All	✓	✓	✓	✓	✓	✓
460 VΔ; 60 Hz output	9	0	M1F	All	All	○	○	○	○	○	○
575 VY; 50 Hz output ¹⁾	9	0	M2G	All	All	✓	✓	✓	✓	✓	✓
575 VY; 60 Hz output	9	0	M1G	All	All	✓	✓	✓	✓	✓	✓
575 VΔ; 50 Hz output ¹⁾	9	0	M2H	All	All	✓	✓	✓	✓	✓	✓
575 VΔ; 60 Hz output	9	0	M1H	All	All	✓	✓	✓	✓	✓	✓
Non-standard voltage and/or frequencies											
Non-standard winding ²⁾	9	0	M1Y • and identification code	All	All	✓	✓	✓	✓	✓	✓

- Standard version
- Without additional charge
- This order code only determines the price of the version – Additional plain text is required.
- ✓ With additional charge
- Not possible

¹⁾ An output of 3.7 kW is stamped on the rating plate for versions 1MB1... - 1BA2, 1MB1... - 1BB2, 1MB1... - 1CC2 and 1MB1... - 1DD2 at 60 Hz with 50 Hz output in accordance with the international efficiency classification to IEC 60034-30.

²⁾ Plain text must be specified in the order: Voltage between 200 and 690 V (voltages outside this range are available on request), frequency, circuit, for 60 Hz additionally required rated output in kW.

SIMOTICS XP 1MB1 Explosion-Proof Motors

Supplements to article numbers and special versions

Voltages
Cast-iron series 1MB15 Basic Line, 1MB16 Performance Line

Selection and ordering data

Voltages	Voltage code 12th and 13th position of the Article No.	Additional identification code with order code and plain text if required	Motor category											
			Motor version	Motor type (cast-iron)	Motor type – Frame size									
					100	112	132	160	180	200	225	250	280	315
			Ex t (Zone 21/22)	1MB15.1	1MB15.1 Basic Line									
			Ex n (Zone 2) IE2 High Efficiency	1MB16.1	1MB16.1 Performance Line									
			Ex t (Zone 21/22)	1MB15.3	1MB15.3 Basic Line									
			Ex n (Zone 2) IE3 Premium Efficiency	1MB16.3	1MB16.3 Performance Line									
			Motor version	Motor type	Frame size									
					100	112	132	160	180	200	225	250	280	315
1MB15	■	■												
1MB16	■	■												
			Order code											
Voltage at 50 Hz or 60 Hz														
50 Hz 230 VΔ/400 VY, 60 Hz 460 VY ¹⁾	2	2	–	All	All	□	□	□	□	□	□	□	□	□
50 Hz 400 VΔ/60 VY, 60 Hz 460 VΔ	3	4	–	All	All	□	□	□	□	□	□	□	□	□
50 Hz 500 VY	2	7	–	All	All	○	○	○	○	○	○	○	○	○
50 Hz 500 VΔ	4	0	–	All	All	○	○	○	○	○	○	○	○	○
50 Hz 220 VΔ/380 VY, 60 Hz 440 VY ¹⁾	2	1	–	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓
50 Hz 380 VΔ/660 VY, 60 Hz 440 VΔ	3	3	–	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓
50 Hz 240 VΔ/415 VY, 60 Hz 480 VY ¹⁾	2	3	–	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓
50 Hz 415 VΔ, 60 Hz 480 VΔ	3	5	–	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓
50 Hz 400 VY	0	2	–	All	All	○	○	○	○	○	○	○	○	○
50 Hz 400 VΔ	0	4	–	All	All	○	○	○	○	○	○	○	○	○
Voltage at 60 Hz and required output														
220 VΔ/380 VY; 50 Hz output ^{1) 2)}	9	0	M2A	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓
220 VΔ/380 VY; 60 Hz output ¹⁾	9	0	M1A	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓
380 VΔ/660 VY; 50 Hz output ¹⁾	9	0	M2B	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓
380 VΔ/660 VY; 60 Hz output	9	0	M1B	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓
440 VY; 50 Hz output ¹⁾	9	0	M2C	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓
440 VY; 60 Hz output	9	0	M1C	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓
440 VΔ; 50 Hz output ¹⁾	9	0	M2D	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓
440 VΔ; 60 Hz output	9	0	M1D	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓
460 VY; 50 Hz output ¹⁾	9	0	M2E	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓
460 VY; 60 Hz output	9	0	M1E	All	All	○	○	○	○	○	○	○	○	○
460 VΔ; 50 Hz output ¹⁾	9	0	M2F	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓
460 VΔ; 60 Hz output	9	0	M1F	All	All	○	○	○	○	○	○	○	○	○
575 VY; 50 Hz output ¹⁾	9	0	M2G	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓
575 VY; 60 Hz output	9	0	M1G	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓
575 VΔ; 50 Hz output ¹⁾	9	0	M2H	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓
575 VΔ; 60 Hz output	9	0	M1H	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓
Non-standard voltage and/or frequencies														
Non-standard winding ³⁾	9	0	M1Y • and identification code	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓

- Standard version
- Without additional charge
- This order code only determines the price of the version – Additional plain text is required.
- ✓ With additional charge
- Not possible

¹⁾ Parallel supply lines are required in the case of connection to ≤ 240 V. For frame size 315 with connection to ≤ 240 V, due to the high current, a drilled, removable entry plate (Order code **R52**) or a larger terminal box (Order code **R50**) can be used. Order codes **R52** and **R50** alter the motor dimensions.

²⁾ An output of 3.7 kW is stamped on the rating plate for versions 1MB1... - 1BA2, 1MB1... - 1BB2, 1MB1... - 1CC2 and 1MB1... - 1DD2 at 60 Hz with 50 Hz output in accordance with the international efficiency classification to IEC 60034-30.


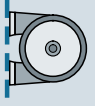
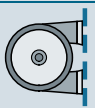

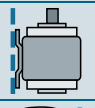
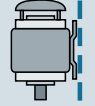

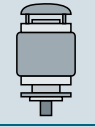
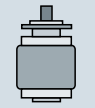

³⁾ Plain text must be specified in the order: Voltage between 200 and 690 V (voltages outside this range are available on request), frequency, circuit, for 60 Hz additionally required rated output in kW.

SIMOTICS XP 1MB1 Explosion-Proof Motors

Supplements to article numbers and special versions

Types of construction
Aluminum series 1MB10

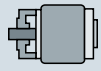
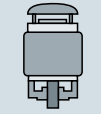
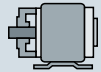
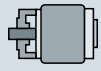
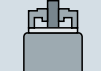
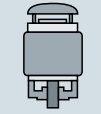
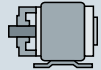
Selection and ordering data

Types of construction	Type of construc. code 14th position of the Article No.	For types of construction with order code(s) Article No. with additional identification code -Z	Motor category								
			Motor version	Motor type (alum.)	Motor type – Frame size						
			Ex t (Zone 21/22) Ex n (Zone 2) IE1 Standard Efficiency	1MB10.2	80	90	100	112	132	160	
			Ex t (Zone 21/22) Ex n (Zone 2) IE2 High Efficiency	1MB10.1	1MB10.1						
			Ex t (Zone 21/22) Ex n (Zone 2) IE3 Premium Efficiency	1MB10.3	1MB10.3						
1MB10 -Z			Order code	Motor version	Motor type	Frame size					
						80	90	100	112	132	160
Without flange											
IM B3		A	–	All	All	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
IM B6 ¹⁾		T	–	All	All	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
IM B7 ¹⁾		U	–	All	All	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
IM B8 ¹⁾		V	–	All	All	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
IM V6 ¹⁾		D	–	All	All	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
IM V5 with protective cover ¹⁾		C	H00	All	All	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
With flange						FF165 A 200	FF165 A 200	FF215 A 250	FF215 A 250	FF265 A 300	FF300 A 350
IM B5		F	–	All	All	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
IM V1 with protective cover ^{1) 2)}		G	H00	All	All	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
IM V3 ¹⁾		H	–	All	All	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
IM B35		J	–	All	All	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

SIMOTICS XP 1MB1 Explosion-Proof Motors

Supplements to article numbers and special versions

Types of construction Aluminum series 1MB10

Types of construction	Type of construc. code 14th position of the Article No.	For types of construction with order code(s) Article No. with additional identification code -Z	Motor category								
			Motor version	Motor type (alum.)	Motor type – Frame size						
					80	90	100	112	132	160	
			Ex t (Zone 21/22) Ex n (Zone 2) IE1 Standard Efficiency	1MB10.2	1MB10.2						
			Ex t (Zone 21/22) Ex n (Zone 2) IE2 High Efficiency	1MB10.1	1MB10.1						
			Ex t (Zone 21/22) Ex n (Zone 2) IE3 Premium Efficiency	1MB10.3	1MB10.3						
1MB10 (-Z) Order code			Motor version	Motor type	Frame size						
With standard flange			acc. to DIN EN 50347 acc. to DIN 42 948		FT100 C 120	FT115 C 140	FT130 C 160	FT130 C 160	FT165 C 200	FT215 C 250	
IM B14 ¹⁾		K	–	All	All	✓	✓	✓	✓	✓	✓
IM V19 ¹⁾		L	–	All	All	✓	✓	✓	✓	✓	✓
IM V18 with protective cover ¹⁾		M	H00	All	All	✓	✓	✓	✓	✓	✓
IM B34		N	–	All	All	✓	✓	✓	✓	✓	✓
With special flange next larger			acc. to DIN EN 50347 acc. to DIN 42 948		FT130 C 160	FT130 C 160	FT165 C 200	FT165 C 200	FT215 C 250	FT265 C 300	
IM B14 ¹⁾		K	P01	All	All	✓	✓	✓	✓	–	
IM V19 ¹⁾		L	P01	All	All	–	–	✓	✓	–	
IM V18 with protective cover ¹⁾		M	P01+H00	All	All	–	–	✓	✓	–	
IM B34		N	P01	All	All	–	–	✓	✓	–	

- Standard version
- ✓ With additional charge
- Not possible

¹⁾ The following applies for explosion-proof motors: in the case of the types of construction with shaft extension down, the version "with protective cover" is required. For types of construction with shaft extension pointing upwards, a suitable cover must be implemented to prevent small parts from falling into the fan cover (see the standard IEC/EN 60079-0). The cover must not block the cooling air flow.

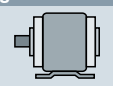
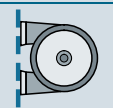
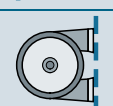

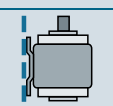
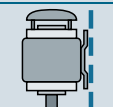
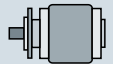
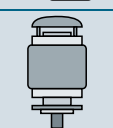

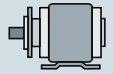
²⁾ The "Second shaft extension" option order code **L05** is not possible.

SIMOTICS XP 1MB1 Explosion-Proof Motors

Supplements to article numbers and special versions

Types of construction
Cast-iron series 1MB15 Basic Line, 1MB16 Performance Line

Selection and ordering data

Types of construction	Type of construc. code 14th pos. of Article No.	For types of construction with order code(s) Article No. with additional identification code -Z	Motor category		Motor type – Frame size											
			Motor version	Motor type (cast-iron)	100	112	132	160	180	200	225	250	280	315 S/M	315 L	
			Ex t (Zone 21/22)	1MB15.1	1MB15.1 Basic Line											
			Ex n (Zone 2)	1MB16.1	1MB16.1 Performance Line											
			IE2 High Efficiency													
			Ex t (Zone 21/22)	1MB15.3	1MB15.3 Basic Line											
			Ex n (Zone 2)	1MB16.3	1MB16.3 Performance Line											
			IE3 Premium Efficiency													
			Motor version	Motor type	Frame size											
					100	112	132	160	180	200	225	250	280	315 S/M	315 L	
Without flange																
IM B3		A	-	All	All											
IM B6 ¹⁾		T	-	All	All											
IM B7 ¹⁾		U	-	All	All											
IM B8 ¹⁾		V	-	All	All											
IM V6 ¹⁾		D	-	All	All											
IM V5 with protective cover ¹⁾		C	H00	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
With flange		acc. to DIN EN 50347 acc. to DIN 42 948				FF215 A 250	FF215 A 250	FF265 A 300	FF300 A 350	FF300 A 350	FF350 A 400	FF400 A 450	FF500 A 550	FF500 A 550	FF600 A 660	FF600 A 660
IM B5		F	-	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-
IM V1 with protective cover ^{1) 2)}		G	H00	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
IM V3 ¹⁾		H	-	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-
IM B35 ¹⁾		J	-	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓









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For legends and footnotes, see Page 4/26.

SIMOTICS XP 1MB1 Explosion-Proof Motors

Supplements to article numbers and special versions

Types of construction Cast-iron series 1MB15 Basic Line, 1MB16 Performance Line

Types of construction	Type of construction code 14th pos. of Article No.	For types of construction with order code(s) Article No. with additional identification code -Z	Motor category												
			Motor version	Motor type (cast-iron)	Motor type – Frame size										
					100	112	132	160	180	200	225	250	280	315 S/M	315 L
			Ex t (Zone 21/22)	1MB15.1	1MB15.1 Basic Line										
			Ex n (Zone 2)	1MB16.1	1MB16.1 Performance Line										
			IE2 High Efficiency												
			Ex t (Zone 21/22)	1MB15.3	1MB15.3 Basic Line										
			Ex n (Zone 2)	1MB16.3	1MB16.3 Performance Line										
			IE3 Premium Efficiency												
1MB15 .....	...(-Z)		Motor version	Motor type	Frame size										
1MB16 .....	...(-Z)	Order code			100	112	132	160	180	200	225	250	280	315 S/M	315 L
With standard flange			acc. to DIN EN 50347 acc. to DIN 42 948		FT130 C 160	FT130 C 160	FT165 C 200	FT215 C 250	–	–	–	–	–	–	–
IM B14 ¹⁾		K	–	All	All	✓	✓	✓	✓	–	–	–	–	–	–
IM V19 ¹⁾		L	–	All	All	✓	✓	✓	✓	–	–	–	–	–	–
IM V18 with protective cover ^{1) 2)}		M	H00	All	All	✓	✓	✓	✓	–	–	–	–	–	–
IM B34		N	–	All	All	✓	✓	✓	✓	–	–	–	–	–	–
With special flange next larger			acc. to DIN EN 50347 acc. to DIN 42 948		FT165 C 200	FT165 C 200	FT215 C 250	–	–	–	–	–	–	–	–
IM B14 ¹⁾		K	P01	All	All	✓	✓	✓	–	–	–	–	–	–	–
IM V19 ¹⁾		L	P01	All	All	✓	✓	✓	–	–	–	–	–	–	–
IM V18 with protective cover ^{1) 2)}		M	P01+H00	All	All	✓	✓	✓	–	–	–	–	–	–	–
IM B34		N	P01	All	All	✓	✓	✓	–	–	–	–	–	–	–

- Standard version
- ✓ With additional charge
- Not possible

¹⁾ The following applies for explosion-proof motors: in the case of the types of construction with shaft extension down, the version "with protective cover" is required. For types of construction with shaft extension pointing upwards, a suitable cover must be implemented to prevent small parts from falling into the fan cover (see the standard IEC/EN 60079-0). The cover must not block the cooling air flow.

²⁾ The "Second shaft extension" option order code **L05** is not possible.

SIMOTICS XP 1MB1 Explosion-Proof Motors

Supplements to article numbers and special versions

Motor protection
Aluminum series 1MB10

Selection and ordering data

Motor protection	Motor protection code 15th position of the Article No.	Additional identification code with order code and plain text if required	Motor category								
			Motor version	Motor type (AI)	Motor type – Frame size						
					80	90	100	112	132	160	
			Ex t (Zone 21/22) Ex n (Zone 2) IE1 Standard Efficiency	1MB10.2	1MB10.2						
			Ex t (Zone 21/22) Ex n (Zone 2) IE2 High Efficiency	1MB10.1	1MB10.1						
			Ex t (Zone 21/22) Ex n (Zone 2) IE3 Premium Efficiency	1MB10.3	1MB10.3						
1MB10...-.....-... ■ .			Order code	Motor version	Motor type	Frame size					
Motor protection (winding protection)						80	90	100	112	132	160
Without motor protection			A	–	All	All	☐	☐	☐	☐	☐
Motor protection with PTC thermistors with 3 embedded temperature sensors for tripping ¹⁾			B	–	All	All	✓	✓	✓	✓	✓
Motor protection with PTC thermistors with 6 embedded temperature sensors for alarm and tripping ¹⁾			C	–	All	All	✓	✓	✓	✓	✓
Motor temperature detection with embedded temperature sensor KTY 84-130 ¹⁾			F	–	All	All	✓	✓	✓	✓	✓
Motor temperature detection with embedded temperature sensor 2 × KTY 84-130 ¹⁾			G	–	All	All	✓	✓	✓	✓	✓
Installation of 3 external PT 100 resistance thermometers ^{1) 2)}			H	–	All	All	–	–	✓	✓	✓

- ☐ Standard version
✓ With additional charge

¹⁾ Evaluation with appropriate tripping unit (see Catalog IC 10) is recommended.

²⁾ Order codes **Q02** and **Q03** are not possible for frame sizes 100 to 160 in combination with 15th position of Article No. **"H"**. It can only be supplied with a star or delta winding for direct switch-on (3 terminals).

SIMOTICS XP 1MB1 Explosion-Proof Motors

Supplements to article numbers and special versions

Motor protection
Cast-iron series 1MB15 Basic Line, 1MB16 Performance Line

Selection and ordering data

Motor protection	Motor protection code 15th position of the Article No.	Additional identification code with order code and plain text if required	Motor category												
			Motor version	Motor type (cast-iron)	Motor type – Frame size										
					100	112	132	160	180	200	225	250	280	315	
			Ex t (Zone 21/22)	1MB15.1	1MB15.1 Basic Line										
			Ex n (Zone 2) IE2 High Standard	1MB16.1	1MB16.1 Performance Line										
			Ex t (Zone 21/22)	1MB15.3	1MB15.3 Basic Line										
			Ex n (Zone 2) IE3 Premium Efficiency	1MB16.3	1MB16.3 Performance Line										
			Motor version	Motor type	Frame size										
					100	112	132	160	180	200	225	250	280	315	
Motor protection (winding protection)															
Without motor protection	A	–	All except 1MB16.. Performance Line	All	□	□	□	□	□	□	□	□	□	□	
Motor protection with PTC thermistors with 3 embedded temperature sensors for tripping ^{1) 2)}	B	–	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Motor protection with PTC thermistors with 6 embedded temperature sensors for alarm and tripping ²⁾	C	–	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Motor temperature detection with embedded temperature sensor KTY 84-130 ²⁾	F	–	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Motor temperature detection with embedded temperature sensor 2 x KTY 84-130 ²⁾	G	–	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Installation of 3 external PT 100 resistance thermometers ^{2) 3)}	H	–	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Installation of 6 external PT 100 resistance thermometers in stator winding ²⁾	J	–	All	All	–	–	–	–	✓	✓	✓	✓	✓	✓	

- Standard version
- ✓ With additional charge
- Not possible

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¹⁾ For the Performance Line, motor protection by means of PTC thermistors with 3 built-in temperature sensors for tripping (motor protection code B) is already included in the basic price. For the Performance Line, the option "without motor protection" (motor protection code A) is not possible.

²⁾ Evaluation with appropriate tripping unit (see Catalog IC 10) is recommended.

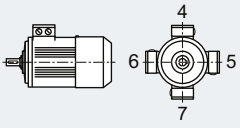
³⁾ Order codes **Q02** and **Q03** are not possible for frame sizes 100 to 160 in combination with 15th position of Article No. **"H"**. It can only be supplied with a star or delta winding for direct switch-on (3 terminals).

SIMOTICS XP 1MB1 Explosion-Proof Motors

Supplements to article numbers and special versions

Terminal box
Aluminum series 1MB10

Selection and ordering data

Terminal box position	Terminal box position identification code 16th position of the Article No.	Additional identification code with order code and plain text if required	Motor category								
			Motor version	Motor type (alum.)	Motor type – Frame size						
					80	90	100	112	132	160	
			Ex t (Zone 21/22) Ex n (Zone 2) IE1 Standard Efficiency	1MB10.2	1MB10.2						
			Ex t (Zone 21/22) Ex n (Zone 2) IE2 High Efficiency	1MB10.1	1MB10.1						
			Ex t (Zone 21/22) Ex n (Zone 2) IE3 Premium Efficiency	1MB10.3	1MB10.3						
1MB10 ■			Order code	Motor version	Motor type	Frame size					
Terminal box position						80	90	100	112	132	160
Terminal box at top ¹⁾	4	–	All	All	□	□	□	□	□	□	□
Terminal box on RHS ²⁾	5	–	All	All	✓	✓	✓	✓	✓	✓	✓
Terminal box on LHS ²⁾	6	–	All	All	✓	✓	✓	✓	✓	✓	✓
Terminal box at bottom ²⁾³⁾	7	–	All	All	–	–	✓	✓	✓	✓	✓

- Standard version
✓ With additional charge

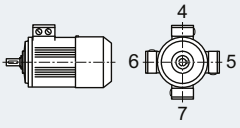
1) For types of construction with feet, cast feet are standard.
2) For types of construction with feet, screwed-on feet are standard.
3) Not generally possible for motors with feet.

SIMOTICS XP 1MB1 Explosion-Proof Motors

Supplements to article numbers and special versions

Terminal box
Cast-iron series 1MB15 Basic Line, 1MB16 Performance Line

Selection and ordering data

Terminal box position	Terminal box position identification code 16th position of the Article No.	Additional identification code with order code and plain text if required	Motor category											
			Motor version	Motor type (cast-iron)	Motor type – Frame size									
					100	112	132	160	180	200	225	250	280	315
			Ex t (Zone 21/22)	1MB15.1	1MB15.1 Basic Line									
			Ex n (Zone 2) IE2 High Efficiency	1MB16.1	1MB16.1 Performance Line									
			Ex t (Zone 21/22)	1MB15.3	1MB15.3 Basic Line									
			Ex n (Zone 2) IE3 Premium Efficiency	1MB16.3	1MB16.3 Performance Line									
1MB15			Motor version	Motor type	Frame size									
1MB16		Order code			100	112	132	160	180	200	225	250	280	315
Terminal box position														
Terminal box at top ¹⁾	4	–	All	All	□	□	□	□	□	□	□	□	□	□
Terminal box on RHS ²⁾	5	–	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Terminal box on LHS ²⁾	6	–	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Terminal box at bottom ^{2) 3)}	7	–	All	All	✓	✓	✓	✓	–	–	–	–	–	–
□	Standard version													
✓	With additional charge													
–	Not possible													

1) For types of construction with feet, cast feet are standard.

2) For types of construction with feet, screwed-on feet are standard.

3) Not generally possible for motors with feet.

SIMOTICS XP 1MB1 Explosion-Proof Motors

Supplements to article numbers and special versions

Options
Aluminum series 1MB10

Selection and ordering data

Special versions	Additional identification code -Z with order code and plain text if required	Motor category								
		Motor version	Motor type (alum.)	Motor type – Frame size						
				80	90	100	112	132	160	
		Ex t (Zone 21/22) Ex n (Zone 2) IE1 Standard Efficiency	1MB10.2	1MB10.2						
		Ex t (Zone 21/22) Ex n (Zone 2) IE2 High Efficiency	1MB10.1	1MB10.1						
		Ex t (Zone 21/22) Ex n (Zone 2) IE3 Premium Efficiency	1MB10.3	1MB10.3						
1MB10 -Z		Order code	Motor version	Motor type	Frame size					
					80	90	100	112	132	160
Design for Zones according to ATEX										
Version (IP55) for Zones 2 and 22, for non-conductive dust ¹⁾	B30	Zone 2 Ex n	1MB103	✓	✓	✓	✓	✓	✓	✓
Version for Zone 2 in Ex nA IIB T3 Gc	B31	Zone 2 Ex n	1MB103	○	○	○	○	○	○	○
VIK version	C02	Zone 2 Ex n IE2 High Efficiency IE3 Premium Efficiency	1MB1031 1MB1033	✓	✓	✓	✓	✓	✓	✓
Motor connection and terminal box										
External grounding		All	All	□	□	□	□	□	□	□
Rotation of the terminal box through 90°, entry from DE	R10	All	All	○	○	○	○	○	○	○
Rotation of the terminal box through 90°, entry from NDE	R11	All	All	○	○	○	○	○	○	○
Rotation of the terminal box through 180°	R12	All	All	○	○	○	○	○	○	○
Cable gland, maximum configuration, certified according to ATEX	R18	All	All	✓	✓	✓	✓	✓	✓	✓
Larger terminal box	R50	All	All	□	□	–	–	–	–	–
Windings and insulation										
Temperature class 155 (F), utilized acc. to 130 (B), coolant temperature 45 °C, derating approx. 4 % ²⁾	N05	All	All	✓	✓	✓	✓	✓	✓	✓
Temperature class 155 (F), utilized acc. to 130 (B), coolant temperature 50 °C, derating approx. 8 % ²⁾	N06	All	All	✓	✓	✓	✓	✓	✓	✓
Temperature class 155 (F), utilized acc. to 130 (B), coolant temperature 55 °C, derating approx. 13 % ²⁾	N07	All	All	✓	✓	✓	✓	✓	✓	✓
Temperature class 155 (F), utilized acc. to 130 (B), coolant temperature 60 °C, derating approx. 18 %	N08	All	All	✓	✓	✓	✓	✓	✓	✓
Increased air humidity/temperature with 30 to 60 g water per m ³ of air	N20	All	All	✓	✓	✓	✓	✓	✓	✓
Increased air humidity/temperature with 60 to 100 g water per m ³ of air	N21	All	All	✓	✓	✓	✓	✓	✓	✓
Temperature class 155 (F), utilized acc. to 130 (B), with higher coolant temperature and/or site altitude	Y50 • and specified output, CT ... °C or SA ... m above sea level	All	All	✓	✓	✓	✓	✓	✓	✓
Colors and paint finish										
Special finish in RAL 7030 stone gray		All	All	○	○	□	□	□	□	□
Unpainted (only cast-iron parts primed)	S00	All	All	○	○	○	○	○	○	○
Unpainted, only primed	S01	All	All	✓	✓	✓	✓	✓	✓	✓
Special finish sea air resistant	S03	All	All	✓	✓	✓	✓	✓	✓	✓
Special finish in special RAL colors: For RAL colors, see "Special finish in special RAL colors" (see Catalog Section 1 "Introduction")	Y51 • and special finish RAL	All	All	✓	✓	✓	✓	✓	✓	✓
Special finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005 (see Catalog Section 1 "Introduction")	Y54 • and special finish RAL	All	All	✓	✓	✓	✓	✓	✓	✓

For legends and footnotes, see Page 4/33.

SIMOTICS XP 1MB1 Explosion-Proof Motors

Supplements to article numbers and special versions

Options Aluminum series 1MB10

Special versions	Additional identification code -Z with order code and plain text if required	Motor category							
		Motor version	Motor type (alum.)	Motor type – Frame size					
				80	90	100	112	132	160
		Ex t (Zone 21/22) Ex n (Zone 2) IE1 Standard Efficiency	1MB10.2	1MB10.2					
		Ex t (Zone 21/22) Ex n (Zone 2) IE2 High Efficiency	1MB10.1	1MB10.1					
		Ex t (Zone 21/22) Ex n (Zone 2) IE3 Premium Efficiency	1MB10.3	1MB10.3					
1MB10 -Z Order code		Motor version	Motor type	Frame size					
				80	90	100	112	132	160
Mechanical design and degrees of protection									
Low-noise version for 2-pole motors with clockwise direction of rotation	F77	All	All	–	–	–	–	✓	✓
Low-noise version for 2-pole motors with counter-clockwise direction of rotation	F78	All	All	–	–	–	–	✓	✓
Protective cover	H00 <i>New!</i>	All	All	✓	✓	✓	✓	✓	✓
Vibration-proof version	H02	All	All	✓	✓	✓	✓	✓	✓
Condensation drainage holes sealed ⁶⁾	H03	All	All	✓	✓	✓	✓	✓	✓
Rust-resistant screws (externally)	H07	All	All	✓	✓	✓	✓	✓	✓
IP65 degree of protection ⁴⁾	H20	Ex n (Zone 2)	1MB103	✓	✓	✓	✓	✓	✓
IP56 degree of protection ⁵⁾	H22	Ex n (Zone 2)	1MB103	✓	✓	✓	✓	✓	✓
Drive-end seal for flange-mounting motors, oil-tight to 0.1 bar ³⁾	H23	All	All	✓	✓	✓	✓	✓	✓
Next larger standard flange	P01 <i>New!</i>	All	All	✓	✓	✓	✓	✓	–
Coolant temperature and site altitude									
Coolant temperature –40 °C to +40 °C	D03	All	All	✓	✓	✓	✓	✓	✓
Designs in accordance with standards and specifications									
IECEx certification	D37 <i>New!</i>	All	All	✓	✓	–	–	–	–
Bearings and lubrication									
Located bearing DE	L20	All	All	✓	✓	✓	✓	✓	✓
Located bearing NDE	L21	All	All	✓	✓	✓	✓	✓	□
Bearing design for increased cantilever forces	L22	All	All	–	–	✓	✓	✓	✓
Regreasing device	L23	All	All	–	–	✓	✓	✓	✓
Special bearing for DE and NDE, bearing size 63	L25 <i>New!</i>	All	All	–	–	✓	✓	✓	✓
Measuring nipple for SPM shock pulse measurement for bearing inspection	Q01	All	All	–	–	✓	✓	✓	✓
Balance and vibration quantity									
Vibration severity grade A		All	All	□	□	□	□	□	□
Vibration quantity level B	L00	All	All	✓	✓	✓	✓	✓	✓
Half-key balancing		All	All	□	□	□	□	□	□
Balancing without key	L01	All	All	✓	✓	✓	✓	✓	✓
Full-key balancing	L02	All	All	✓	✓	✓	✓	✓	✓
Shaft and rotor									
Shaft extension with standard dimensions, without feather keyway	L04	All	All	–	–	✓	✓	✓	✓
Second standard shaft extension	L05	All	All	✓	✓	✓	✓	✓	✓
Standard shaft made of stainless steel	L06	All	All	✓	✓	✓	✓	✓	✓
Concentricity of shaft extension in accordance with DIN 42955 Tolerance R	L07	All	All	✓	✓	✓	✓	✓	✓
Concentricity of shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors	L08	All	All	✓	✓	✓	✓	✓	✓
Non-standard cylindrical shaft extension DE ⁷⁾	Y58 • and identification code	All	All	✓	✓	✓	✓	✓	✓
Non-standard cylindrical shaft extension NDE ⁷⁾	Y59 • and identification code	All	All	✓	✓	✓	✓	✓	✓
Heating and ventilation									
Metal external fan ⁸⁾	F76	Ex n (Zone 2)	1MB103	□	□	✓	✓	✓	✓
Anti-condensation heating for 230 V ⁹⁾	Q02	All	All	✓	✓	✓	✓	✓	✓
Anti-condensation heating for 115 V ⁹⁾	Q03	All	All	✓	✓	✓	✓	✓	✓

For legends and footnotes, see Page 4/33.

SIMOTICS XP 1MB1 Explosion-Proof Motors

Supplements to article numbers and special versions

Options
Aluminum series 1MB10

Special versions	Additional identification code -Z with order code and plain text if required	Motor category							
		Motor version	Motor type (alum.)	Motor type – Frame size					
				80	90	100	112	132	160
		Ex t (Zone 21/22) Ex n (Zone 2) IE1 Standard Efficiency	1MB10.2	1MB10.2					
		Ex t (Zone 21/22) Ex n (Zone 2) IE2 High Efficiency	1MB10.1	1MB10.1					
		Ex t (Zone 21/22) Ex n (Zone 2) IE3 Premium Efficiency	1MB10.3	1MB10.3					
1MB10 -Z Order code		Motor version	Motor type	Frame size					
				80	90	100	112	132	160
Rating plate and extra rating plates									
Second rating plate, loose	M10	All	All	✓	✓	✓	✓	✓	✓
Rating plate, stainless steel	M11	All	All	✓	✓	✓	✓	✓	✓
Extra rating plate or rating plate with deviating rating plate data	Y80 • and identification code	All	All	✓	✓	✓	✓	✓	✓
Extra rating plate with identification codes	Y82 • and identification code	All	All	✓	✓	✓	✓	✓	✓
Additional information on rating plate and on package label (max. 20 characters)	Y84 • and identification code	All	All	✓	✓	✓	✓	✓	✓
Packaging, safety notes, documentation and test certificates									
Printed Operating Instructions (Compact) for explosion-proof motors enclosed in English and German ¹¹⁾		All	All	□	□	□	□	□	□
Acceptance test certificate 3.1 according to EN 10204 10)	B02	All	All	✓	✓	✓	✓	✓	✓
Printed German/English operating instructions enclosed	B04	All	All	✓	✓	✓	✓	✓	✓
Type test with heat run for horizontal motors, with acceptance	B83	All	All	✓	✓	✓	✓	✓	✓
Wire-lattice pallet packaging	B99	All	All	○	○	○	○	○	○
Connected in star for dispatch	M01	All	All	–	–	✓	✓	✓	✓
Connected in delta for dispatch	M02	All	All	–	–	✓	✓	✓	✓
Printed Operating Instructions (Compact) for explosion-proof motors enclosed in other official EU languages ¹¹⁾	Y98 • and identification code	All	All	✓	✓	✓	✓	✓	✓

- Standard version
- Without additional charge
- This order code only determines the price of the version – Additional plain text is required.
- ✓ With additional charge
- Not possible

- 1) Please inquire regarding combination with order codes **D03** and **C02**. Not possible in combination with order codes **H20** and **H22**.
- 2) There is no derating in combination with order codes **M2A**, **M2B**, **M2C**, **M2D**, **M2E**, **M2F**, **M2G**, **M2H**.
- 3) Not possible for type of construction IM V3.
- 4) For Zone 21, IP65 degree of protection is standard. Not possible for Zone 22, because only IP55 degree of protection is required.
- 5) Not admissible for Zone 21 (IP65 degree of protection) and Zone 22 (IP55 degree of protection).
- 6) Supplied with the condensation drainage holes sealed at the drive end DE and non-drive end NDE (IP55, IP56, IP65). If the condensation drainage holes are required for motors of the IM B6, IM B7 or IM B8 type of construction (feet on side or top), the motors must be ordered in the respective type of construction and with order code **H03**, so that the condensation drainage holes will be placed in the correct position.

- 7) When motors are ordered that have a longer or shorter shaft extension than normal, the required position and length of the feather keyway must be specified in a sketch. It must be ensured that only feather keys in accordance with DIN 6885, Form A are permitted to be used. The feather keyway is positioned centrally on the shaft extension. The length is defined by the manufacturer normatively. Not valid for: Conical shafts, non-standard threaded journals, non-standard shaft tolerances, friction welded journals, extremely "thin" shafts, special geometry dimensions (e.g. square journals), hollow shafts. Valid for non-standard shaft extensions DE or NDE. The feather keys are supplied in every case. For order codes **Y58**, **Y59** and **L05**:
 - Dimensions D and DA ≤ Inner diameter of roller bearing (see dimension tables under "Dimensions")
 - Dimensions E and EA ≤ 2 × Length E (normal) of the shaft extension
 For explanation of the order codes, see Section 1 "Introduction".
- 8) The metal external fan is not possible in combination with the low-noise version – order code **F77** or **F78**.
- 9) Order codes **Q02** and **Q03** are not possible for frame sizes 100 to 160 in combination with 15th position of Article No. "H". It can only be supplied with a star or delta winding for direct switch-on (3 terminals).
- 10) The delivery time for the acceptance test certificate may differ from the delivery time for the motor.
- 11) The Operating Instructions (Compact) are available in PDF format for all official EU languages at <http://support.automation.siemens.com/WWW/view/en/10803948/133300>

SIMOTICS XP 1MB1 Explosion-Proof Motors

Supplements to article numbers and special versions

Options
Cast-iron series 1MB15 Basic Line, 1MB16 Performance Line

Selection and ordering data

Special versions	Additional identification code -Z with order code and plain text if required	Motor category											
		Motor version	Motor type (cast-iron)	Motor type – Frame size									
				100	112	132	160	180	200	225	250	280	315
		Ex t (Zone 21/22)	1MB15.1	1MB15.1 Basic Line									
		Ex n (Zone 2) IE2 High Efficiency	1MB16.1	1MB16.1 Performance Line									
		Ex t (Zone 21/22)	1MB15.3	1MB15.3 Basic Line									
		Ex n (Zone 2) IE3 Premium Efficiency	1MB16.3	1MB16.3 Performance Line									
1MB15 -Z		Motor version	Motor type	Frame size									
1MB16 -Z	Order code			100	112	132	160	180	200	225	250	280	315
Design for Zones according to ATEX													
Version (IP55) for Zones 2 and 22, for non-conductive dust ¹⁾	B30	Zone 2 Ex n	1MB1.3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Version for Zone 2 in Ex nA IIB T3 Gc	B31	Zone 2 Ex n	1MB1.3	○	○	○	○	○	○	○	○	○	○
VIK version	C02 (1MB153 and 1MB163 with Ex n marking)	Zone 2 Ex n	1MB1.3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Motor protection (bearing protection)													
Installation of 2 Pt100 screw-in resistance thermometers in basic circuit for rolling-contact bearings ^{2) 3)}	Q72	All	All	-	-	-	-	✓	✓	✓	✓	✓	✓
Installation of 2 Pt100 screw-in resistance thermometers in 3-wire circuit for rolling-contact bearings. ^{2) 3)}	Q78	All	All	-	-	-	-	✓	✓	✓	✓	✓	✓
Installation of 2 Pt100 double screw-in resistance thermometers in 3-wire circuit for rolling-contact bearings. ^{2) 3)}	Q79	All	All	-	-	-	-	-	-	-	-	✓	✓
Motor connection and terminal box													
External grounding		All	All	□	□	□	□	□	□	□	□	□	□
Rotation of the terminal box through 90°, entry from DE	R10	All	All	○	○	○	○	✓	✓	✓	✓	✓	✓
Rotation of the terminal box through 90°, entry from NDE	R11	All	All	○	○	○	○	✓	✓	✓	✓	✓	✓
Rotation of the terminal box through 180°	R12	All	All	○	○	○	○	✓	✓	✓	✓	✓	✓
Stud terminals for cable connection, accessories pack (3 items)	R17	Zone 21 Ex tb Zone 22 Ex tc	1MB1.1 1MB1.2	-	-	-	-	-	-	-	✓	✓	✓
Cable gland, maximum configuration, certified according to ATEX	R18	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Saddle terminals for connection without cable lug, accessories pack (6 items)	R19	Zone 21 Ex tb Zone 22 Ex tc	1MB1.1 1MB1.2	-	-	-	-	-	-	-	✓	✓	✓
		Zone 2 Ex n	1MB1.3	□	□	□	□	□	□	□	□	□	□
Larger terminal box	R50	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Cast-iron auxiliary terminal box (small)	R62	All	All	-	-	-	-	✓	✓	✓	✓	✓	✓
Windings and insulation													
Temperature class 155 (F), utilized acc. to 130 (B), coolant temperature 45 °C, derating approx. 4 % ⁴⁾	N05	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Temperature class 155 (F), utilized acc. to 130 (B), coolant temperature 50 °C, derating approx. 8 % ⁴⁾	N06	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Temperature class 155 (F), utilized acc. to 130 (B), coolant temperature 55 °C, derating approx. 13 % ⁴⁾	N07	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Temperature class 155 (F), utilized acc. to 130 (B), coolant temperature 60 °C, derating approx. 18 %	N08	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Increased air humidity/temperature with 30 to 60 g water per m ³ of air	N20	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Increased air humidity/temperature with 60 to 100 g water per m ³ of air	N21	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Temperature class 155 (F), utilized acc. to 130 (B), with higher coolant temperature and/or site altitude	Y50 • and specified output, CT ... °C or SA ... m above sea level	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

For legends and footnotes, see Page 4/37.

SIMOTICS XP 1MB1 Explosion-Proof Motors

Supplements to article numbers and special versions

Options
Cast-iron series 1MB15 Basic Line, 1MB16 Performance Line

Special versions	Additional identification code -Z with order code and plain text if required	Motor category												
		Motor version	Motor type (cast-iron)	Motor type – Frame size										
				100	112	132	160	180	200	225	250	280	315	
		Ex t (Zone 21/22)	1MB15.1	1MB15.1 Basic Line										
		Ex n (Zone 2) IE2 High Efficiency	1MB16.1	1MB16.1 Performance Line										
		Ex t (Zone 21/22)	1MB15.3	1MB15.3 Basic Line										
		Ex n (Zone 2) IE3 Premium Efficiency	1MB16.3	1MB16.3 Performance Line										
1MB15 -Z		Order code	Motor version	Motor type	Frame size									
1MB16 -Z			100	112	132	160	180	200	225	250	280	315		
Colors and paint finish														
Standard finish in RAL 7030 stone gray		All	1MB15	□	□	□	□	□	□	□	□	□		
Unpainted (only cast-iron parts primed)	S00	All	All	○	○	○	○	○	○	○	○	○		
Unpainted, only primed	S01	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Special finish sea air resistant	S03	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Special paint for use offshore	S04	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Special finish in RAL 7030 stone gray	S10	All	1MB15	✓	✓	✓	✓	✓	✓	✓	✓	✓		
		All	1MB16	□	□	□	□	□	□	□	□	□		
Special finish in special RAL colors: For RAL colors, see "Special finish in special RAL colors" (see Catalog Section 1 "Introduction")	Y51 • and special finish RAL	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Standard finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005 (see Catalog Section 1 "Introduction")	Y53 • and standard finish RAL	All	1MB15	–	–	–	–	✓	✓	✓	✓	✓		
Special finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005 (see Catalog Section 1 "Introduction")	Y54 • and special finish RAL	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Mechanical design and degrees of protection														
Low-noise version for 2-pole motors with clockwise direction of rotation	F77	All	All	–	–	✓	✓	✓	✓	✓	✓	✓		
Low-noise version for 2-pole motors with counter-clockwise direction of rotation	F78	All	All	–	–	✓	✓	✓	✓	✓	✓	✓		
Protective cover	H00	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Vibration resistant version (continuous vibration resistance Class 3M4 acc. to IEC721-3-3:1994)	H02	All	All	✓	✓	✓	✓	✓	✓	✓	□	□		
Condensation drainage holes ⁷⁾		All	All	□	□	□	□	□	□	□	□	□		
Rust-resistant screws (externally)	H07	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓		
IP65 degree of protection ⁵⁾	H20	Ex n (Zone 2)	1MB1.3	✓	✓	✓	✓	✓	✓	✓	✓	✓		
IP56 degree of protection ⁶⁾	H22	Ex n (Zone 2)	1MB1.3	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Drive-end seal for flange-mounting motors, oil-tight to 0.1 bar Not possible for type of construction IM V3	H23	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Next larger standard flange	P01	All	All	✓	✓	✓	–	–	–	–	–	–		
Coolant temperature and site altitude														
Coolant temperature –40 °C to +40 °C	D03	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Designs in accordance with standards and specifications														
IECEx certification	D37	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Bearings and lubrication														
Located bearing DE	L20	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Located bearing NDE	L21	All	All	✓	✓	✓	□	□	□	□	□	□		
Bearing design for increased cantilever forces	L22	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Regreasing device	L23	All	1MB15	✓	✓	✓	✓	✓	✓	✓	□	□		
		All	1MB16	✓	✓	✓	□	□	□	□	□	□		
Special bearing for DE and NDE, bearing size 63	L25	All	1MB15	✓	✓	✓	✓	✓	✓	✓	□	□		
		All	1MB16	□	□	□	□	□	□	□	□	□		
Measuring nipple for SPM shock pulse measurement for bearing inspection	Q01	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓		

SIMOTICS XP 1MB1 Explosion-Proof Motors

Supplements to article numbers and special versions

Options Cast-iron series 1MB15 Basic Line, 1MB16 Performance Line

Special versions	Additional identification code -Z with order code and plain text if required	Motor category		Motor type – Frame size									
		Motor version	Motor type (cast-iron)	100	112	132	160	180	200	225	250	280	315
		Ex t (Zone 21/22)	1MB15.1	1MB15.1 Basic Line									
		Ex n (Zone 2) IE2 High Efficiency	1MB16.1	1MB16.1 Performance Line									
		Ex t (Zone 21/22)	1MB15.3	1MB15.3 Basic Line									
		Ex n (Zone 2) IE3 Premium Efficiency	1MB16.3	1MB16.3 Performance Line									
1MB15 -Z		Motor version	Motor type	Frame size									
1MB16 -Z	Order code			100	112	132	160	180	200	225	250	280	315
Balance and vibration quantity													
Vibration severity grade A		All	All	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Vibration quantity level B	L00	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Half-key balancing		All	All	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Balancing without feather key, feather key is supplied	L01	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Full-key balancing	L02	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Shaft and rotor													
Shaft extension with standard dimensions, without feather keyway	L04	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Second standard shaft extension	L05	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Standard shaft made of stainless steel	L06	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Concentricity of shaft extension in accordance with DIN 42955 Tolerance R	L07	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Concentricity of shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors	L08	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Non-standard cylindrical shaft extension DE ⁸⁾	Y58 • and identification code	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Non-standard cylindrical shaft extension NDE ⁸⁾	Y59 • and identification code	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Heating and ventilation													
Metal external fan ⁹⁾	F76	Ex n (Zone 2)	1MB1.3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Anti-condensation heating for 230 V ³⁾	Q02	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Anti-condensation heating for 115 V ³⁾	Q03	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Rating plate and extra rating plates													
Second rating plate, loose	M10	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Rating plate, stainless steel	M11	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Extra rating plate or rating plate with deviating rating plate data	Y80 • and identification code	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Extra rating plate with identification codes	Y82 • and identification code	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Additional information on rating plate and on package label (max. 20 characters)	Y84 • and identification code	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Packaging, safety notes, documentation and test certificates													
Printed Operating Instructions (Compact) for explosion-proof motors enclosed in English and German ¹¹⁾		All	All	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Acceptance test certificate 3.1 according to EN 10204 ¹⁰⁾	B02	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Printed German/English operating instructions enclosed	B04	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Type test with heat run for horizontal motors, with acceptance	B83	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Wire-lattice pallet packaging	B99	All	All	○	○	○	○	–	–	–	–	–	–
Connected in star for dispatch	M01	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Connected in delta for dispatch	M02	All	All	✓	✓	✓	✓	✓	☐	☐	☐	☐	☐
Printed Operating Instructions (Compact) for explosion-proof motors enclosed in other official EU languages ¹¹⁾	Y98 • and identification code	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

For legends and footnotes, see Page 4/37.

SIMOTICS XP 1MB1 Explosion-Proof Motors

Supplements to article numbers and special versions

Options

Cast-iron series 1MB15 Basic Line, 1MB16 Performance Line

- Standard version
- Without additional charge
- This order code only determines the price of the version – Additional plain text is required.
- ✓ With additional charge
- Not possible
- Av. soon Available soon

4

- 1) Please inquire regarding combination with order codes D03 and C02. Not possible in combination with order codes **H20** and **H22**.
- 2) Evaluation with appropriate tripping unit (see Catalog IC 10) is recommended. A certified tripping unit is necessary for use in hazardous areas.
- 3) Order codes **Q02** and **Q03** are not possible for frame sizes 100 to 160 in combination with 15th position of Article No. "H". It can only be supplied with a star or delta winding for direct switch-on (3 terminals).
- 4) There is no derating in combination with order codes **M2A, M2B, M2C, M2D, M2E, M2F, M2G, M2H**.
- 5) Order code **H20** (IP65 degree of protection) can only be ordered for Zone 2. For Zone 21, IP65 degree of protection is standard. Not possible for Zone 22, because only IP55 degree of protection is required.
- 6) Order code **H22** IP56 degree of protection is only possible for Zone 2. Degree of protection IP56 is not permissible for Zone 21 (IP65 degree of protection) and Zone 22 (IP55 degree of protection).
- 7) Supplied with the condensation drainage holes sealed at the drive end DE and non-drive end NDE (IP55, IP56, IP65). If the condensation drainage holes are required for motors of the IM B6, IM B7 or IM B8 type of construction (feet on side or top), the motors must be ordered in the respective type of construction and with order code **H03**, so that the condensation drainage holes will be placed in the correct position.
- 8) When motors are ordered that have a longer or shorter shaft extension than normal, the required position and length of the feather keyway must be specified in a sketch. It must be ensured that only feather keys in accordance with DIN 6885, Form A are permitted to be used. The feather keyway is positioned centrally on the shaft extension. The length is defined by the manufacturer normatively. Not valid for: Conical shafts, non-standard threaded journals, non-standard shaft tolerances, friction welded journals, extremely "thin" shafts, special geometry dimensions (e.g. square journals), hollow shafts. Valid for non-standard shaft extensions DE or NDE. The feather keys are supplied in every case. For order codes **Y58, Y59** and **L05**:
 - Dimensions D and DA \leq Inner diameter of roller bearing (see dimension tables under "Dimensions")
 - Dimensions E and EA $\leq 2 \times$ Length E (normal) of the shaft extension
 For explanation of the order codes, see Section 1 "Introduction".
- 9) The metal external fan is not possible in combination with the low-noise version – order code **F77** or **F78**.
- 10) The delivery time for the factory test certificate may differ from the delivery time for the motor.
- 11) The Operating Instructions (Compact) are available in PDF format for all official EU languages at <http://support.automation.siemens.com/WWW/view/en/10803948/133300>

SIMOTICS XP 1MB1 Explosion-Proof Motors

Supplements to article numbers and special versions

Accessories

Overview

Slide rails with fixing bolts and tensioning screws according to DIN 42923

Slide rails are used to tension the belt of a machine easily and conveniently when a belt tightener is not available. They are fixed to the base using stone bolts or foundation blocks.

The assignment of slide rails to motor size can be found in DIN 42923. For motors of frame sizes 355 to 450, there are no standardized slide rails (please inquire).

Available from:

Lütgert & Co. GmbH
Postfach 42 51
33276 Gütersloh, Germany
Tel. +49 (5241) 7407-0
Fax +49 (5241) 7407-90

www.luetgert-antriebe.de
E-mail: info@luetgert-antriebe.de

Foundation block according to DIN 799

The foundation blocks are inserted into the stone foundation and embedded in concrete. They are used for fixing machines of medium size, slide rails, pedestal bearings, baseframes, etc. After the fixing bolts have been unscrewed, the machine can be dragged without it having to be lifted.

When the machine is initially installed, the foundation block that is bolted to the machine (without washers) and fitted with taper pins is not embedded with concrete until the machine has been fully aligned. In this case, the machine is positioned 2 to 3 mm lower. The difference in shaft height is compensated by inserting shims on final installation. The taper pins safeguard the exact position of the machine when it is repeatedly removed and replaced without the need for realignment.

Available from:

Lütgert & Co. GmbH
Postfach 42 51
33276 Gütersloh, Germany
Tel. +49 (5241) 7407-0
Fax +49 (5241) 7407-90

www.luetgert-antriebe.de
E-mail: info@luetgert-antriebe.de

Taper pins to DIN 258 with threaded ends and constant taper lengths

Taper pins are used for components that are repeatedly removed. The drilled hole is ground conical using a conical reamer until the pin can be pushed in by hand until the cone shoulder lies approx. 3 to 4 mm above the rim of the hole.

It can then be driven in using a hammer until it is correctly seated. The pin is removed from the drilled hole by screwing on the nut and tightening it.

Standardized taper pins are available from general engineering suppliers.

Available from:

Otto Roth GmbH & Co. KG
Rutesheimer Straße 22
70499 Stuttgart, Germany
Tel. +49 (711) 1388-0
Fax. +49 (711) 1388-233

www.ottoroth.de
E-mail: info@ottoroth.de

Couplings for use in hazardous areas

The motor from Siemens is connected to the machine or gear unit through a coupling. Siemens is an important coupling manufacturer with a wide range of products.

For standard applications, Siemens recommends that elastic couplings of types N-EUPEX and RUPEX or torsionally rigid couplings of types ARPEX and ZAPEX are used. For special applications, FLUDEX and ELPEX-S couplings are recommended. These coupling types are suitable for use in areas subject to explosion hazards and are offered with declaration of conformity and type test certificate according to Directive 94/9/EC.

Available from:

Siemens contact partner - ordering from catalog
Siemens MD 10.1 "FLENDER Standard Couplings"

or

SIEMENS AG
Kupplungswerk Mussum
Industriepark Bocholt
Schlavenhorst 100
46395 Bocholt, Germany
Tel. +49 (2871) 922185
Fax +49 (2871) 922579

www.siemens.com
E-mail: flendercouplings@siemens.com

SIMOTICS XP 1MB1 Explosion-Proof Motors

Supplements to article numbers and special versions

More information

Spare motors and repair parts

- Supply commitment for spare motors and repair parts following delivery of the motor:
 - For up to 5 years, in the event of total motor failure, Siemens will supply a comparable motor with regard to the mounting dimensions and functions (the type series may vary).
 - Spare parts will be available for up to five years.
 - Within the time period of up to five years, Siemens will provide information about spare parts and will supply documents when required.
 - Replacement motors delivered after the active production of the machine series are also identified with "Spare motor" on the rating plate. Spare parts are offered only on request for these motors.
- When repair parts are ordered, the following details must be provided:
 - Designation and part number
 - Article No. and factory number of the motor.
- For bearing types, see Catalog Section 1 "Introduction".
- Repair parts are available for 1MB1 motors on request.
- For standard components, a supply commitment does not apply.
- Support – Hotline
In Germany
Tel.: +49 (180) 5050448

You will find telephone numbers for other countries on our Internet site:

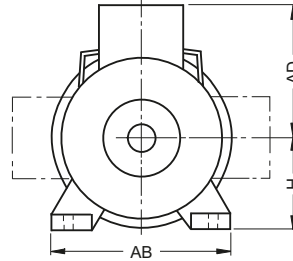
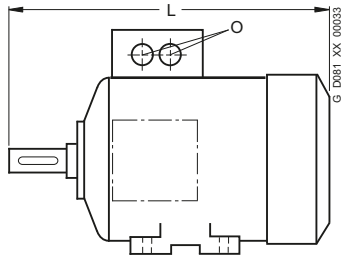
www.siemens.com/automation/service&support

SIMOTICS XP 1MB1 Explosion-Proof Motors

Dimensions

Overall dimensions

Overview



Frame size	Type	Dimension					
		L	AD	H	AB	O	
80 M	Aluminum series, self-ventilated						
	1MB101, 1MB102	292	149	80	150	1 x M16 x 1.5	
	1MB103					1 x M25 x 1.5	
90 S/L	Aluminum series, self-ventilated						
	1MB101, 1MB102,	347	154	90	165	1 x M16 x 1.5	
	1MB103					1 x M25 x 1.5	
100 L	Aluminum series, self-ventilated						
	1MB1011, 1MB1012,	395.5 ¹⁾	166	100	196	2 x M32 x 1.5	
	1MB1021, 1MB1022,						
	1MB1031, 1MB1032						
	1MB1013, 1MB1023,	430.5 ¹⁾					
	1MB1033						
	Cast-iron series, self-ventilated						
	1MB15.., 1MB16..	389	193	100	196	2 x M32 x 1.5	
	112 M	Aluminum series, self-ventilated					
		1MB1011, 1MB1012,	389 ¹⁾	177	112	226	2 x M32 x 1.5
1MB1021, 1MB1022,							
1MB1031, 1MB1032							
1MB1013, 1MB1023,		414 ¹⁾					
1MB1033							
Cast-iron series, self-ventilated							
1MB15.., 1MB16..		382	195	112	226	2 x M32 x 1.5	
132 S/M		Aluminum series, self-ventilated					
		1MB1011, 1MB1012,	465 ¹⁾	202	132	256	2 x M32 x 1.5
	1MB1021, 1MB1022,						
	1MB1031, 1MB1032						
	1MB1013-, 1MB1023-,						
	1MB1033-						
	1CA0, 1CC0, 1CC2	465 ¹⁾					
	1CA1, 1CB0, 1CB2,	515 ¹⁾					
	1CC3						
	Cast-iron series, self-ventilated						
1MB15.., 1MB16..	457	215	132	256	2 x M32 x 1.5		
160 M/L	Aluminum series, self-ventilated						
	1MB1011, 1MB1012,	604 ¹⁾	236.5	160	300	2 x M40 x 1.5	
	1MB1021, 1MB1022,						
	1MB1031, 1MB1032						
	1MB1013, 1MB1023,						
	1MB1033						
	Cast-iron series, self-ventilated						
	1MB15.., 1MB16..	594	265	160	300	2 x M40 x 1.5	
	180 M	Cast-iron series, self-ventilated					
		1MB15.1-, 1MB16.1-					
1EA2, 1EB2		668	180	339	2 x M40 x 1.5		
1EA6		698					
1MB15.3-, 1MB16.3-							
1EB2		668	180	339	2 x M40 x 1.5		
1EA2		698					
180 L		Cast-iron series, self-ventilated					
		1MB15.1-, 1MB16.1-					
		1EB4, 1EC4, 1EC6	668	180	339	2 x M40 x 1.5	
	1EB6	698					
	1MB15.3-, 1MB16.3-						
	1EC4	668	180	339	2 x M40 x 1.5		
1EB4	698						
200 L	Cast-iron series, self-ventilated						
	1MB15.1-, 1MB16.1-						
	2AA4, 2AA5, 2AB5,	721	315	200	378	2 x M50 x 1.5	
	2AC4, 2AC5						
	2AA6	746					
	1MB15.3-, 1MB16.3-						
	2AA44, 2AC4	721	315	200	378	2 x M50 x 1.5	
	2AA5, 2AB5, 2AC5	746					

¹⁾ The length is specified as far as the tip of the fan cover.

Frame size	Type	Dimension					
		L	AD	H	AB	O	
225 S	Cast-iron series, self-ventilated						
	1MB15.1-, 1MB16.1-	788	338	225	436	2 x M50 x 1.5	
	2BB0, 2BD0						
225 M	Cast-iron series, self-ventilated						
	1MB15.3-, 1MB16.3-	788	338	225	436	2 x M50 x 1.5	
	2BB0						
225 M	Cast-iron series, self-ventilated						
	1MB15.1-, 1MB16.1-						
	2BA2, 2BA6	818	338	225	436	2 x M50 x 1.5	
	2BB2, 2BB6, 2BC2,	848					
	2BC6, 2BD6						
	1MB15.3-, 1MB16.3-						
	2BA2	818	338	225	436	2 x M50 x 1.5	
	2BB2, 2BC2	848					
	250 M	Cast-iron series, self-ventilated					
		1MB15.1-, 1MB16.1-					
2CA2, 2CA6, 2CB2,		887	410	250	490	2 x M63 x 1.5	
2CC2, 2CC6, 2CD2,							
2CD6							
2CB6		957					
1MB15.3-, 1MB16.3-							
2CA2, 2CB2, 2CC2		887	410	250	490	2 x M63 x 1.5	
280 S		Cast-iron series, self-ventilated					
		1MB15.1-, 1MB16.1-					
	2DA0, 2DB0, 2DC0,	960	433	280	540	2 x M63 x 1.5	
	2DD0						
	1MB15.3-, 1MB16.3-						
	2DA0, 2DB0, 2DC0	960	433	280	540	2 x M63 x 1.5	
	280 M	Cast-iron series, self-ventilated					
		1MB15.1-, 1MB16.1-					
		2DA2, 2DB2, 2DC2,	960	433	280	540	2 x M63 x 1.5
		2DC6, 2DD2, 2DD6					
2DA6, 2DB6		1070					
1MB15.3-, 1MB16.3-							
2DC2		960	433	280	540	2 x M63 x 1.5	
2DA2, 2DB2		1070					
315 S		Cast-iron series, self-ventilated					
		1MB15.1-, 1MB16.1-					
	3AA0	1052	515	315	610	2 x M63 x 1.5	
	3AB0, 3AC0, 3AD0	1082					
	1MB15.3-, 1MB16.3-						
	3AA0	1052	515	315	610	2 x M63 x 1.5	
	3AB0, 3AC0	1082					
	315 M	Cast-iron series, self-ventilated					
		1MB15.1-, 1MB16.1-					
		3AC2, 3AD2	1082	515	315	610	2 x M63 x 1.5
3AA2		1217					
3AB2		1247					
1MB15.3-, 1MB16.3-							
3AA2		1217	515	315	610	2 x M63 x 1.5	
3AB2, 3AC2		1247					
315 L		Cast-iron series, self-ventilated					
		1MB15.1-, 1MB16.1-					
	3AA4	1217	515	315	610	2 x M63 x 1.5	
	3AB4, 3AC4, 3AC5,	1247					
	3AD4, 3AD5, 3AD6						
	3AA5, 3AA6	1372					
	3AB5, 3AB6, 3AC6	1402					
	1MB15.3-, 1MB16.3-						
	3AA4	1217	515	315	610	2 x M63 x 1.5	
	3AB4, 3AC4	1247					
3AA5	1372						
3AB5, 3AC5, 3AC6	1402						

Overview (continued)**Notes on the dimensions**

- Dimensional drawings according to DIN EN 50347 and IEC 60072.
 - Fits
The shaft extensions specified in the dimension tables (DIN 748) and centering spigot diameters (DIN EN 50347) are machined with the following fits:
Dimension designation ISO fit DIN ISO 286-2
- | | | |
|-------|---------------|-----|
| D, DA | to 30 | j6 |
| | over 30 to 50 | k6 |
| | over 50 | m6 |
| N | to 250 | j6 |
| | over 250 | h6 |
| F, FA | | h9 |
| K | | H17 |
| S | flange (FF) | H17 |
- The drilled holes of couplings and belt pulleys should have an ISO fit of at least H7.

- Dimension tolerances
For the following dimension designations, the admissible deviations are given below:

Dimension designation	Dimension	Admissible deviation
H	to 250	- 0.5
	over 250	- 1.0

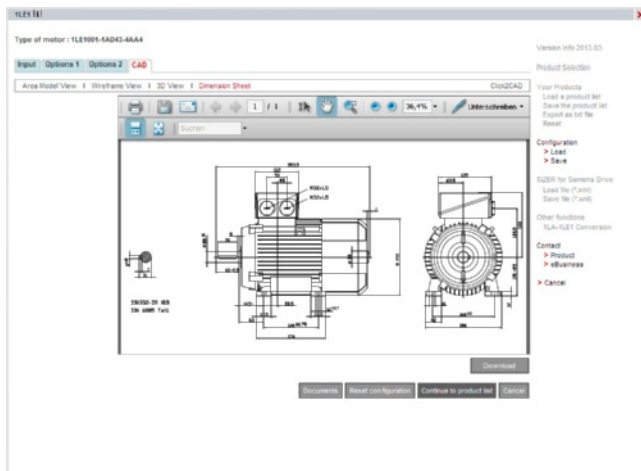
E, EA - 0.5

Keyways and feather keyways (dimensions GA, GC, F and FA) are made in compliance with DIN 6885 Part 1.

- All dimensions are specified in mm.

Dimension sheet generator
(part of the DT Configurator)

A dimensional drawing can be created in the DT Configurator for every configurable motor. A dimensional drawing can be requested for every other motor.



When a complete Article No. is entered with or without order codes, a dimensional drawing can be called up under the "Documentation" tab.

These dimensional drawings can be presented in different views and sections and printed. The corresponding dimension sheets can be exported, saved and processed further in DXF format (interchange/import format for CAD systems) or as bitmap graphics.

Online access in the Siemens Industry Mall

The DT Configurator is integrated into the Siemens Industry Mall and can be used on the Internet without installation.
German: www.siemens.de/dt-konfigurator
English: www.siemens.com/dt-configurator

Offline access in the Interactive Catalog CA 01

The DT Configurator is also part of the Interactive Catalog CA 01 on DVD – the offline version of Siemens Industry Mall. CA 01 can be ordered from the relevant Siemens sales office or via the Internet: www.siemens.com/automation/CA01

SIMOTICS XP 1MB1 Explosion-Proof Motors

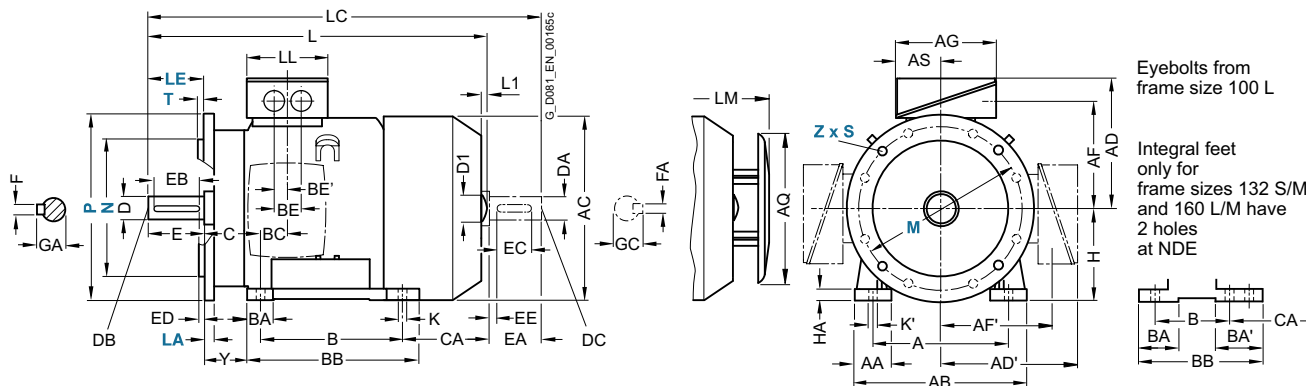
Dimensions

Aluminum series 1MB1011, 1MB1012, 1MB1021, 1MB1022, 1MB1031, 1MB1032 – self-ventilated, frame sizes 80 M to 160 L

Dimensional drawings (continued)

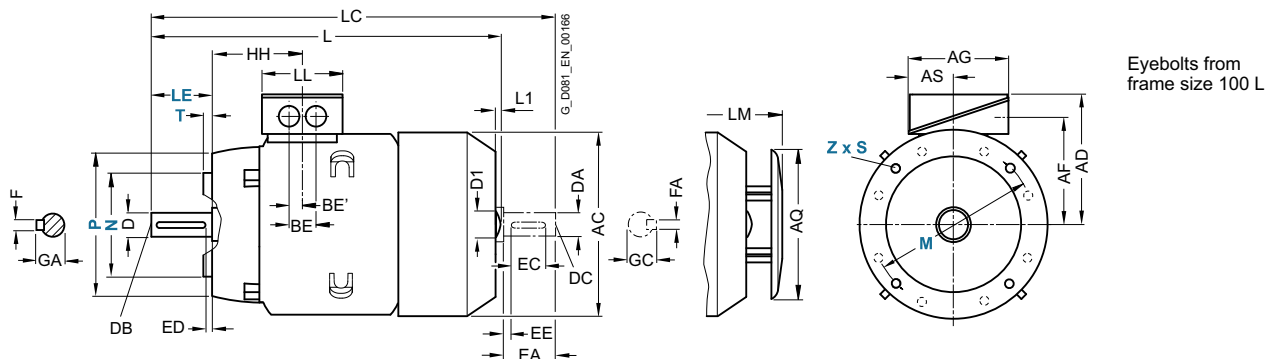
Type of construction IM B35

For flange dimensions, see Page 4/56 (Z = the number of retaining holes)



Type of construction IM B14

For flange dimensions, see Page 4/56 (Z = the number of retaining holes)



For motor			Dimension designation acc. to IEC										DE shaft extension					NDE shaft extension							
Frame size	Motor type	No. of poles	HH	K	K'	L	L1	D1	LC	LL	LM	D	DB	E	EB	ED	F	GA	DA	DC	EA	EC	EE	FA	GC
80 M	1MB10.1	2, 4, 6	73	9.5	13.5	292	-	-	-	123	328	19	M6	40	32	4	6	21.5	19	M6	40	32	4	6	21.5
90 S/L	1MB10.1	2, 4, 6	78.5	10	14	347	-	-	-	123	383	24	M8	50	40	5	8	27	19	M6	40	32	4	6	21.5
90 L	1MB10.1	2, 4, 6	78.5	10	14	347	-	-	-	123	383	24	M8	50	40	5	8	27	19	M6	40	32	4	6	21.5
100 L	All	2, 4, 6, 8	96.5	12	16	395.5 ¹⁾	7	32	454	112	428.5	28	M10	60	50	5	8	31	24	M8	50	40	5	8	27
112 M	All	2, 4, 6, 8	96	12	16	389 ¹⁾	7	32	450	112	422	28	M10	60	50	5	8	31	24	M8	50	40	5	8	27
132 S	All	2, 4, 6, 8	115.5	12	16	465 ¹⁾	8.5	39	535.5	130	516.5	38	M12	80	70	5	10	41	28	M10	60	50	5	8	31
132 M	All	2, 4, 6, 8	115.5	12	16	465	8.5	39	535.5	130	516.5	38	M12	80	70	5	10	41	28	M10	60	50	5	8	31
160 M	All	2, 4, 6, 8	155	15	19	604 ¹⁾	10	45	730	145	654	42	M16	110	90	10	12	45	42	M16	110	90	10	12	45
160 L	All	2, 4, 6, 8	155	15	19	604 ¹⁾	10	45	730	145	654	42	M16	110	90	10	12	45	42	M16	110	90	10	12	45

¹⁾ The length is specified as far as the tip of the fan cover.

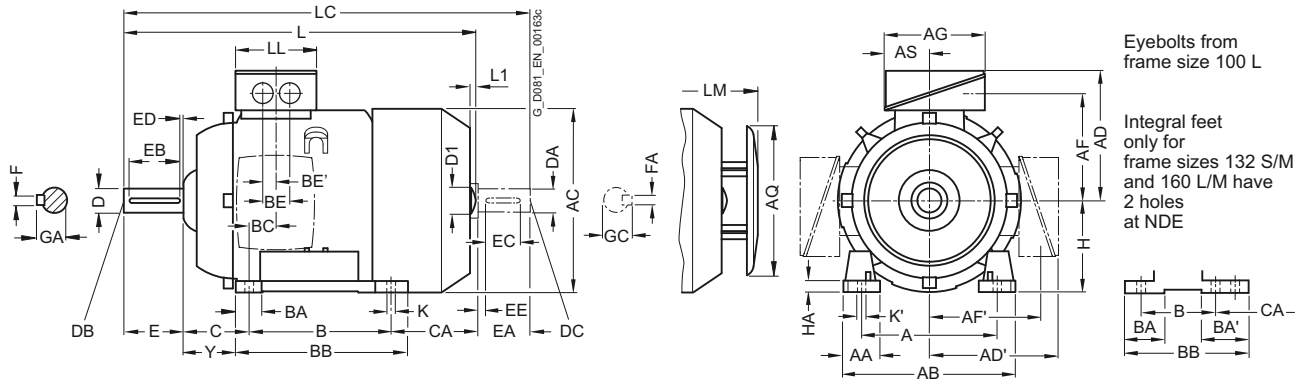
SIMOTICS XP 1MB1 Explosion-Proof Motors

Dimensions

Aluminum series 1MB1013, 1MB1023, 1MB1033
self-ventilated, frame sizes 80 L to 160 L

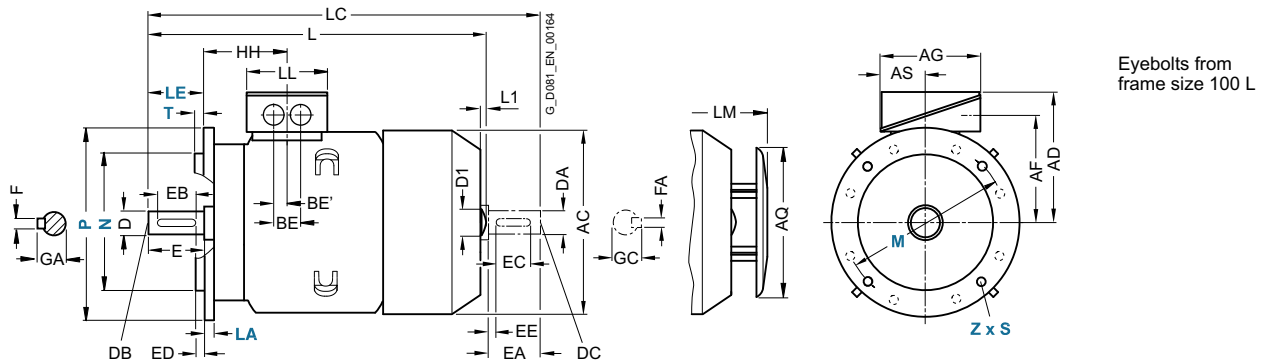
Dimensional drawings

Type of construction IM B3



Types of construction IM B5 and IM V1

For flange dimensions, see Page 4/56 (Z = the number of retaining holes)



For motor			Dimension designation acc. to IEC																						
Frame size	Motor type	No. of poles	A	AA	AB	AC	AD	AD'	AF	AF'	AG	AQ	AS	B*	BA	BA'	BB	BC	BE	BE'	C	CA*	H	HA	Y
80 M	All	2, 4, 6	125	30.5	150	159	121	149	96.5	112	119.5	-	61.5	100	32	-	118	23	-	18	50	-	80	8	41
90 S	All	2, 4, 6	140	30.5	165	178	126	154	101.5	117	119.5	-	62.5	100	33	-	143	22.5	-	18	56	-	90	10	47
90 L	All	2, 4, 6	140	30.5	165	178	126	154	101.5	117	119.5	-	62.5	100	33	-	143	22.5	-	18	56	-	90	10	47
100 L	All	2, 4	160	42	196	198	193	193	147	147	163	-	80.5	140	40	-	176	37.5	48	24	63	176	100	12	45
112 M	All	2, 4	190	46	226	222	195	195	150	150	163	-	80.5	140	40	-	176	30	48	24	70	155	112	12	52
132 S	1CA0, 1CC0	2, 6	216	53	256	262	214.5	214.5	169	169	163	-	80.5	140	44	81 ¹⁾	218 ²⁾	26.5	48	24	89	128.5	132	15	69
	1CA1, 1CB0	2, 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	178.5	-	-	-	
132 M	1CC2	6	216	53	256	262	214.5	214.5	169	169	163	-	80.5	178	44	81 ¹⁾	218	26.5	48	24	89	128.5	132	15	69
	1CB2, 1CC3	4, 6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	178.5	-	-	-	
160 M	All	2, 4, 6	254	60	300	314	261	261	213	213	190	-	92	210	51	95 ³⁾	300 ⁴⁾	37	60	30	108	148	160	18	85
160 L	All	2, 4, 6	254	60	300	314	261	261	213	213	190	-	92	254	51	95 ³⁾	300	37	60	30	108	208	160	18	85

* This dimension is assigned in DIN EN 50347 to the frame size listed.

1) With screwed-on feet, dimension BA' is 43 mm.

2) With screwed-on feet, dimension BB is 180 mm.

3) With screwed-on feet, dimension BA' is 51 mm.

4) With screwed-on feet, dimension BB is 256 mm.

SIMOTICS XP 1MB1 Explosion-Proof Motors

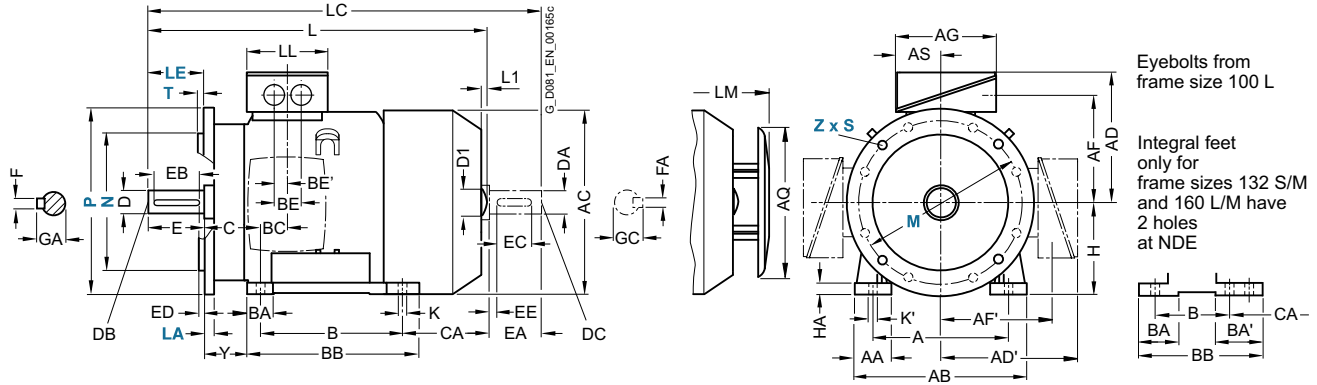
Dimensions

Aluminum series 1MB1013, 1MB1023, 1MB1033 self-ventilated, frame sizes 80 L to 160 L

Dimensional drawings (continued)

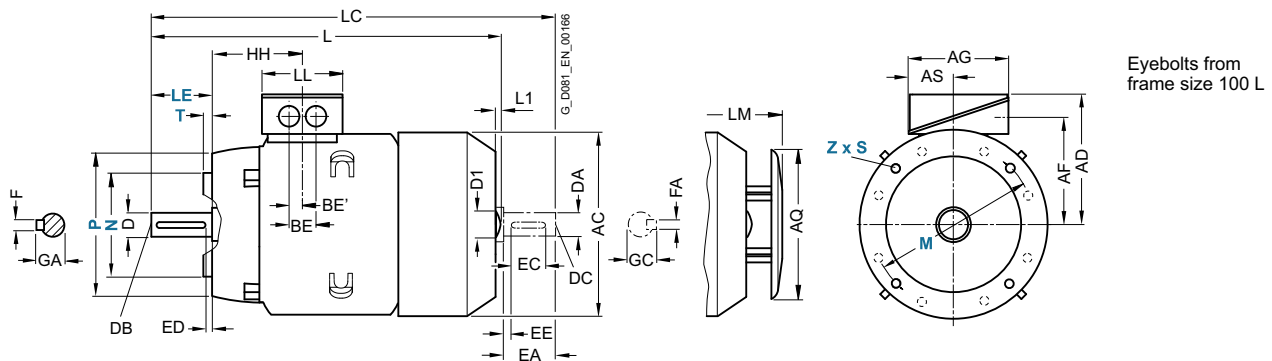
Type of construction IM B35

For flange dimensions, see Page 4/56 (Z = the number of retaining holes)



Type of construction IM B14

For flange dimensions, see Page 4/56 (Z = the number of retaining holes)



For motor			Dimension designation acc. to IEC							DE shaft extension					NDE shaft extension										
Frame size	Motor type	No. of poles	HH	K	K'	L ¹⁾	L1	D1	LC	LL	LM	D	DB	E	EB	ED	F	GA	DA	DC	EA	EC	EE	FA	GC
80 M	All	2, 4, 6	73	9.5	13.5	292	-	-	-	123	-	19	M6	40	32	4	6	21.5	19	M6	40	32	4	6	21.5
90 S	All	2, 4, 6	78.5	10	14	347	-	-	-	123	-	24	M8	50	40	5	8	27	19	M6	40	32	4	6	21.5
90 L	All	2, 4, 6	78.5	10	14	387	-	-	-	123	-	24	M8	50	40	5	8	27	19	M6	40	32	4	6	21.5
100 L	All	2, 4	100.5	12	16	425	7	32	489	134	463.5	28	M10	60	50	5	8	31	24	M8	50	40	5	8	27
112 M	All	2, 4	100.5	12	16	408.5	7	32	475	134	447	28	M10	60	50	5	8	31	24	M8	50	40	5	8	27
132 S	1CA0, 1CC0	2, 6	115.5	12	16	458	8.5	39	535.5	134	516.5	38	M12	80	70	5	10	41	28	M10	60	50	5	8	31
	1CA1, 1CB0	2, 4				508			585.5		550.5														
132 M	1CC2	6	115.5	12	16	458	8.5	39	535.5	134	516.5	38	M12	80	70	5	10	41	28	M10	60	50	5	8	31
	1CB2, 1CC3	4, 6				508			585.5		550.5														
160 M	All	2, 4, 6	145	15	19	596	10	45	730	165	654	42	M16	110	90	10	12	45	42	M16	110	90	10	12	45
160 L	All	2, 4, 6	145	15	19	656	10	45	790	165	714	42	M16	110	90	10	12	45	42	M16	110	90	10	12	45

¹⁾ The length is specified as far as the tip of the fan cover.

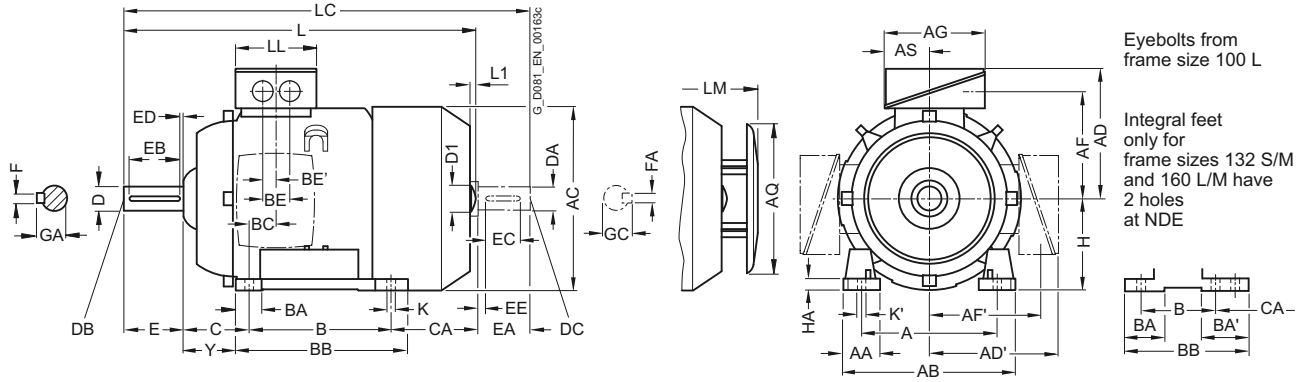
SIMOTICS XP 1MB1 Explosion-Proof Motors

Dimensions

Cast-iron series 1MB1511, 1MB1521, 1MB1531, 1MB1611, 1MB1621, 1MB1631 self-ventilated, frame sizes 100 L to 160 L

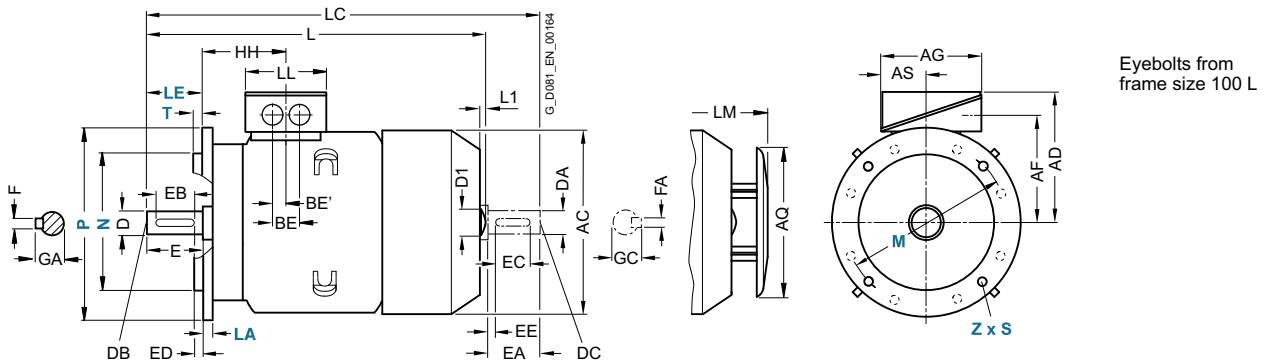
Dimensional drawings (continued)

Type of construction IM B3



Types of construction IM B5 and IM V1

For flange dimensions, see Page 4/56 (Z = the number of retaining holes)



4

For motor			Dimension designation acc. to IEC																					
Frame size	Motor type	No. of poles	A	AA	AB	AC	AD	AD'	AF	AF'	AG	AS	B*	BA	BA'	BB	BC	BE	BE'	C	CA*	H	HA	Y
100 L	All	2, 4, 6, 8	160	42	196	198	193	193	147	147	163	80.5	140	40	-	176	37.5	48	24	63	141	100	12	45
112 M	All	2, 4, 6, 8	190	46	226	222	195	195	150	150	163	80.5	140	40	-	176	30	48	24	70	129.7	112	12	52
132 S	All	2, 4, 6, 8	216	53	256	262	214.5	214.5	169	169	163	80.5	140	44	81 ¹⁾	218 ³⁾	26.5	48	24	89	-	132	15	69
132 M	All	2, 4, 6, 8	216	53	256	262	214.5	214.5	169	169	163	80.5	178	44	81 ¹⁾	218	26.5	48	24	89	-	132	15	69
160 M	All	2, 4, 6, 8	254	60	300	314	265	265	213	213	190	92	210	51	95 ²⁾	300 ⁴⁾	37	60	30	108	-	160	18	85
160 L	All	2, 4, 6, 8	254	60	300	314	265	265	213	213	190	92	254	51	95 ²⁾	300	37	60	30	108	-	160	18	85

* This dimension is assigned in DIN EN 50347 to the frame size listed.

1) With screwed-on feet, dimension BA' is 43 mm.

2) With screwed-on feet, dimension BA' is 51 mm.

3) With screwed-on feet, dimension BB is 180 mm.

4) With screwed-on feet, dimension BB is 256 mm

SIMOTICS XP 1MB1 Explosion-Proof Motors

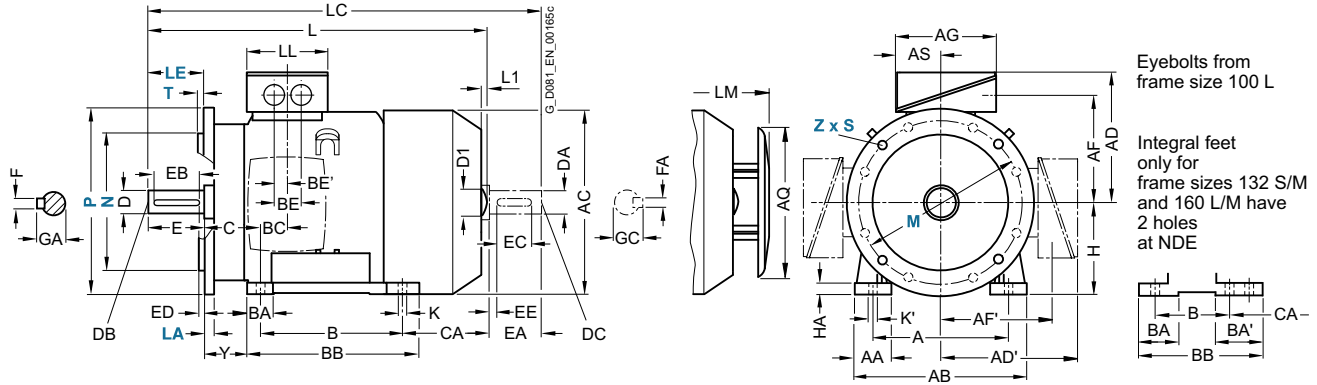
Dimensions

Cast-iron series 1MB1511, 1MB1521, 1MB1531, 1MB1611, 1MB1621, 1MB1631 self-ventilated, frame sizes 100 L to 160 L

Dimensional drawings (continued)

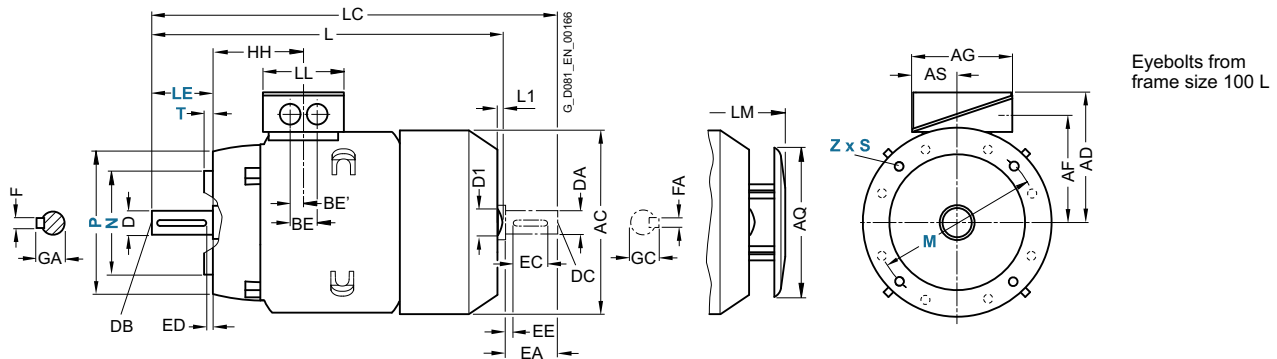
Type of construction IM B35

For flange dimensions, see Page 4/56 (**Z** = the number of retaining holes)



Type of construction IM B14

For flange dimensions, see Page 4/56 (**Z** = the number of retaining holes)



For motor			Dimension designation acc. to IEC							DE shaft extension					NDE shaft extension									
Frame size	Motor type	No. of poles	HH	K	K'	L ¹⁾	L ¹⁾²⁾	D1	LC	LL	D	DB	E	EB	ED	F	GA	DA	DC	EA	EC	EE	FA	GC
100 L	All	2, 4, 6, 8	100.5	12	16	389	7	32	454	134	28	M10	60	50	5	8	31	24	M8	50	40	5	8	27
112 M	All	2, 4, 6, 8	100.5	12	16	382	7	32	450	134	28	M10	60	50	5	8	31	24	M8	50	40	5	8	27
132 S	All	2, 4, 6, 8	115.5	12	16	457	8.5	39	536	134	38	M12	80	70	5	10	41	28	M10	60	50	5	8	31
132 M	All	2, 4, 6, 8	115.5	12	16	457	8.5	39	536	134	38	M12	80	70	5	10	41	28	M10	60	50	5	8	31
160 M	All	2, 4, 6, 8	145	15	19	594	10	45	730	165	42	M16	110	90	10	12	45	42	M16	110	90	10	12	45
160 L	All	2, 4, 6, 8	145	15	19	594	10	45	730	165	42	M16	110	90	10	12	45	42	M16	110	90	10	12	45

1) For 1MB15 motors, plus dimension L1.

2) Only for 1MB15 motors.

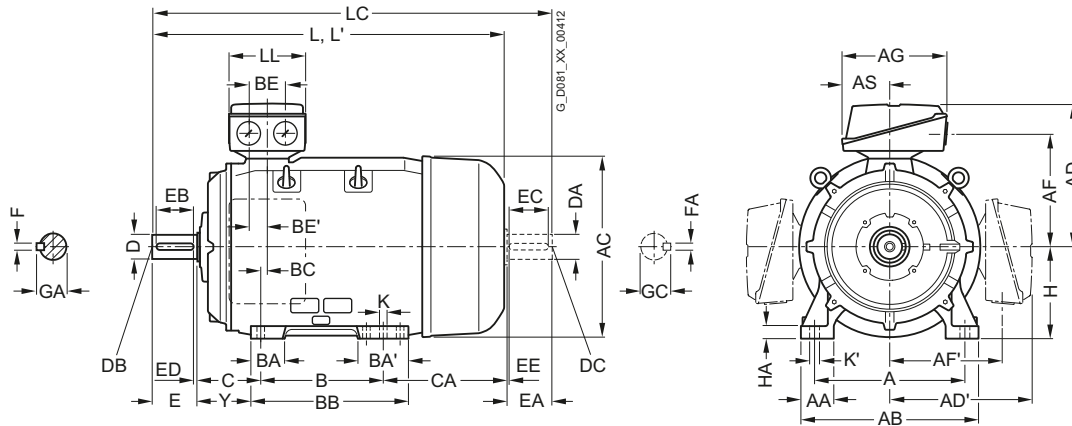
SIMOTICS XP 1MB1 Explosion-Proof Motors

Dimensions

Cast-iron series 1MB1511, 1MB1521, 1MB1531, 1MB1611, 1MB1621, 1MB1631 self-ventilated, frame sizes 180 M to 250 M

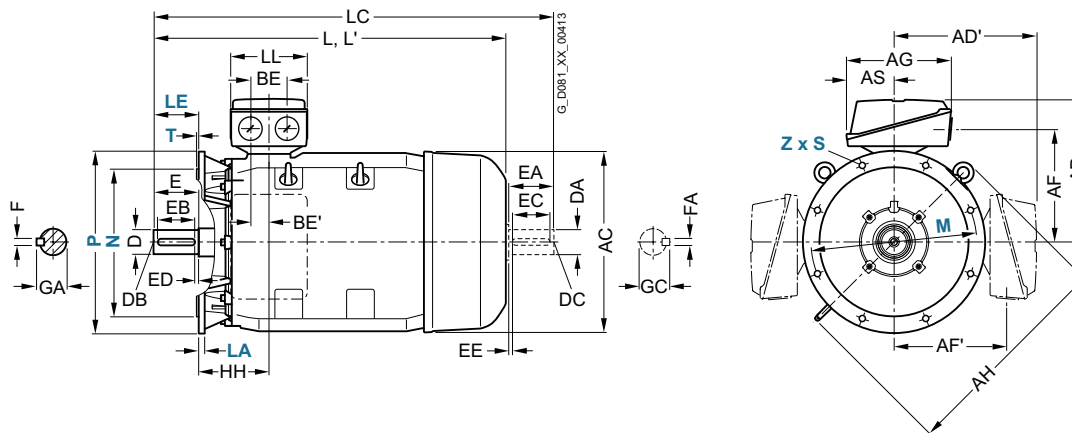
Dimensional drawings (continued)

Type of construction IM B3



Types of construction IM B5 and IM V1

For flange dimensions, see Page 4/56 (Z = the number of retaining holes)



4

For motor Frame size	Motor type	No. of poles	Dimension designation acc. to IEC																			
			A	AA	AB	AC	AD	AD'	AF	AF'	AG	AH	AS	B*	BA	BA'	BB	BC	BE	BE'	C	CA*
180 M/ 180 L	1EA2, 1EB2, 1ED4	2, 4, 8	279	65	339	356	286	286	234	234	190	468	92	241	85	120	328	34	60	30	121	202
	1EB4, 1EC4	4, 6																				
200 L	All	2, 4, 6, 8	318	60	378	396	315	315	259	259	266	533	112	305	104	104	355	31	85	42.5	133	177
225 S/ 225 M	2BB0, 2BD0,	4, 8	356	80	436	449	338	338	282	282	266	556	112	311	92	117	361	15	85	42.5	149	253
	2BB2, 2BC2, 2BD2	4, 6, 8																				
	2BA2	2																				
250 M	2CA2	2	406	100	490	497	410	410	322	322	319	620	145	349	102	102	409	24	110	55	168	230
	2CB2, 2CC2, 2CD2	4, 6, 8																				

* This dimension is assigned in DIN EN 50347 to the frame size listed.

SIMOTICS XP 1MB1 Explosion-Proof Motors

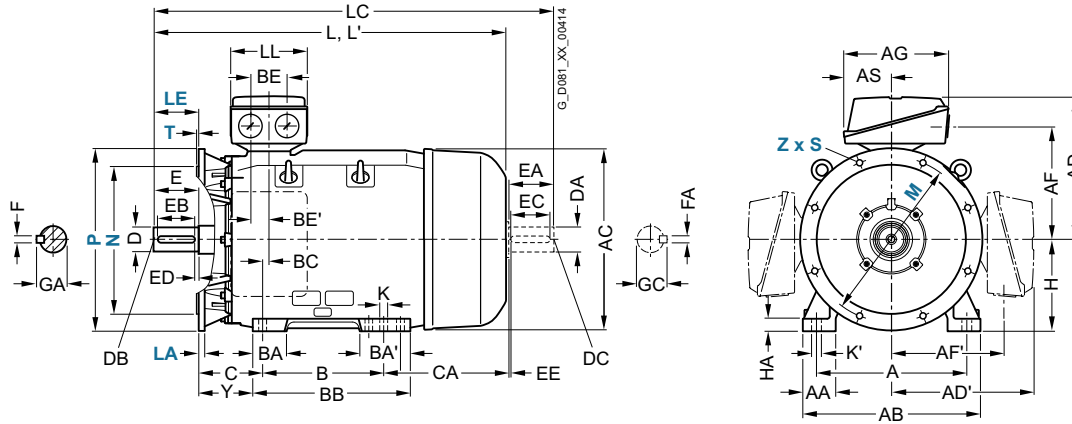
Dimensions

Cast-iron series 1MB1511, 1MB1521, 1MB1531, 1MB1611, 1MB1621, 1MB1631 self-ventilated, frame sizes 280 S to 315 L

Dimensional drawings (continued)

Type of construction IM B35

For flange dimensions, see Page 4/56 (Z = the number of retaining holes)



For motor Frame size	Motor type 1MB15.1-, 1MB16.1-	No. of poles	Dimension designation acc. to IEC										DE shaft extension					NDE shaft extension								
			H	HA	Y	HH	K	K'	L	L' ¹⁾	LC ²⁾	LL	D	DB	E	EB	ED	F	GA	DA	DC	EA	EC	EE	FA	GC
280 S	2DA0	2	280	40	160	210	24	30	960	998	1105	233	65	M20	140	125	10	18	69	60	M20	140	125	10	18	64
	2DB0, 2DC0, 2DD0	4, 6, 8													75					20	79.5	65			69	
280 M	2DA2	2	280	40	160	210	24	30	960	998	1105	233	65	M20	140	125	10	18	69	60	M20	140	125	10	18	64
	2DB2, 2DC2, 2DD2	4, 6, 8													75				20	79.5	65			69		
315 S	3AA0	2	315	50	181	238	28	35	1052	1122	1197	299	65	M20	140	125	10	18	69	60	M20	140	125	10	18	64
	3AB0, 3AC0, 3AD0	4, 6, 8							1082	-	1227		80	170	140	25	22	85	70						20	74.5
315 M	3AA2	2	315	50	181	238	28	35	1217	1287	1362	299	65	M20	140	125	10	18	69	60	M20	140	125	10	18	64
	3AB2	4							1247	-	1392		80	170	140	25	22	85	70						20	74.5
	3AC2, 3AD2	6, 8							1082		1227															
315 L	3AA4	2	315	50	181	238	28	35	1217	1287	1362	299	65	M20	140	125	10	18	69	60	M20	140	125	10	18	64
	3AB4, 3AC4, 3AD4, 3AC5, 3AD5, 3AD6	4, 6, 8							1247	-	1392		80	170	140	25	22	85	70						20	74.5
	3AA5	2			146				1372	1442	1517		65	140	125	10	18	69	60						18	64
	3AB5, 3AC6	4, 6							1402	-	1547		80	170	140	25	22	85	70						20	74.5

¹⁾ For version with low-noise fan for 2-pole motors.

²⁾ In the low-noise version, a second shaft extension and/or mounted encoder is not possible

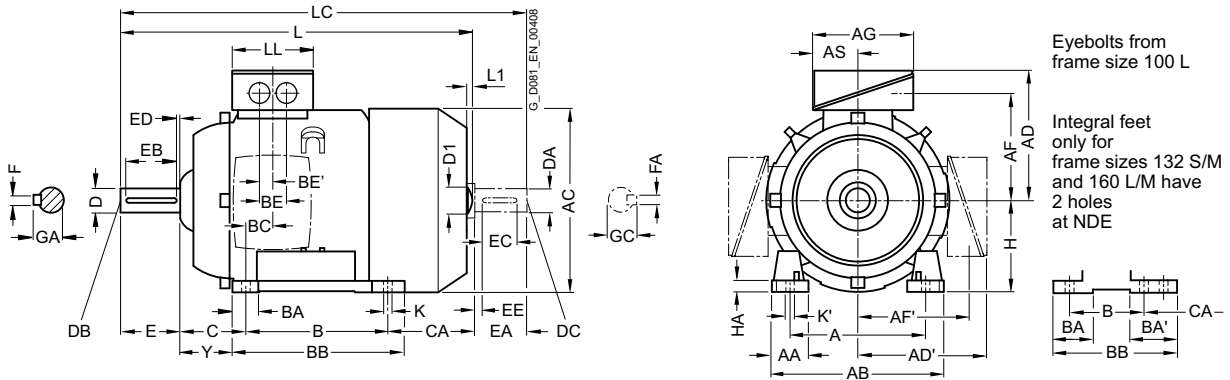
SIMOTICS XP 1MB1 Explosion-Proof Motors

Dimensions

Cast-iron series 1MB1513, 1MB1523, 1MB1533, 1MB1613, 1MB1623, 1MB1633 self-ventilated, frame sizes 100 L to 160 L

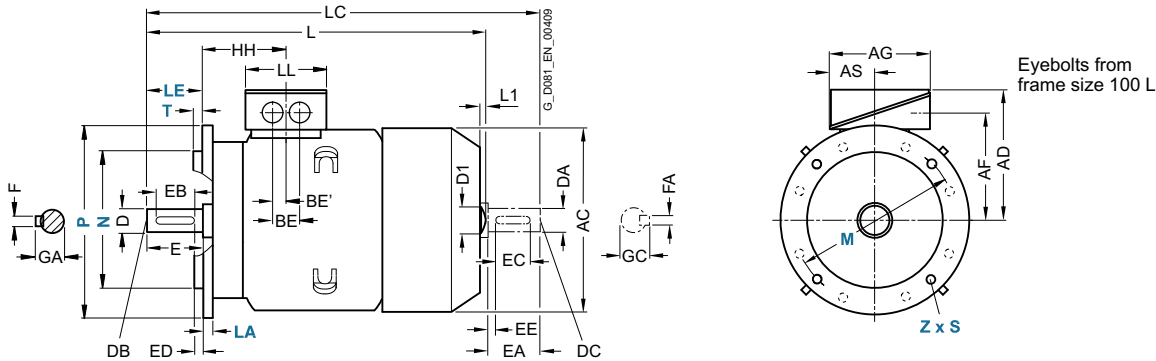
Dimensional drawings (continued)

Type of construction IM B3



Types of construction IM B5 and IM V1

For flange dimensions, see Page 4/56 (Z = the number of retaining holes)



4

For motor		No. of poles	Dimension designation acc. to IEC																					
Frame size	Motor type		A	AA	AB	AC	AD	AD'	AF	AF'	AG	AS	B*	BA	BA'	BB	BC	BE	BE'	C	CA*	H	HA	Y
100 L	All	2, 4, 6	160	42	196	198	193	193	147	147	163	80.5	140	40	-	176	37.5	48	24	63	176	100	12	45
112 M	All	2, 4, 6	190	46	226	222	195	195	150	150	163	80.5	140	40	-	176	30	48	24	70	155	112	12	52
132 S	1CA0, 1CC0	2, 6	216	53	256	262	214.5	214.5	169	169	163	80.5	140	44	81 ¹⁾	218 ²⁾	26.5	48	24	89	128.5	132	15	69
	1CA1, 1CB0	2, 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	178.5	-	-	-
132 M	1CC2	6	216	53	256	262	214.5	214.5	169	169	163	80.5	178	44	81 ¹⁾	218	26.5	48	24	89	128.5	132	15	69
	1CB2, 1CC3	4, 6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	178.5	-	-	-
160 M	All	2, 4, 6	254	60	300	314	261	261	213	213	190	92	210	51	95 ³⁾	300 ⁴⁾	37	60	30	108	148	160	18	85
160 L	All	2, 4, 6	254	60	300	314	261	261	213	213	190	92	254	51	95 ³⁾	300	37	60	30	108	208	160	18	85

* This dimension is assigned in DIN EN 50347 to the frame size listed.

1) With screwed-on feet, dimension BA' is 43 mm.

2) With screwed-on feet, dimension BB is 180 mm.

3) With screwed-on feet, dimension BA' is 51 mm.

4) With screwed-on feet, dimension BB is 256 mm.

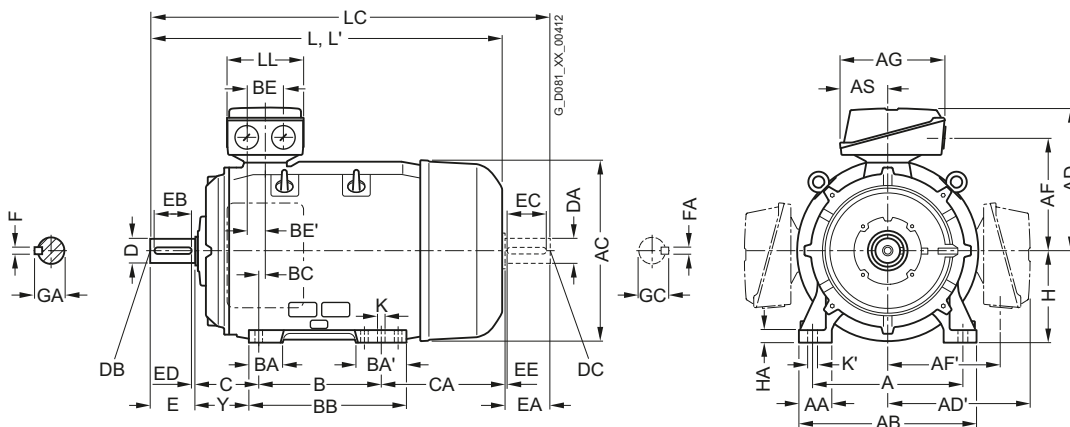
SIMOTICS XP 1MB1 Explosion-Proof Motors

Dimensions

Cast-iron series 1MB1513, 1MB1523, 1MB1533, 1MB1613, 1MB1623, 1MB1633 self-ventilated, frame sizes 180 M to 315 L

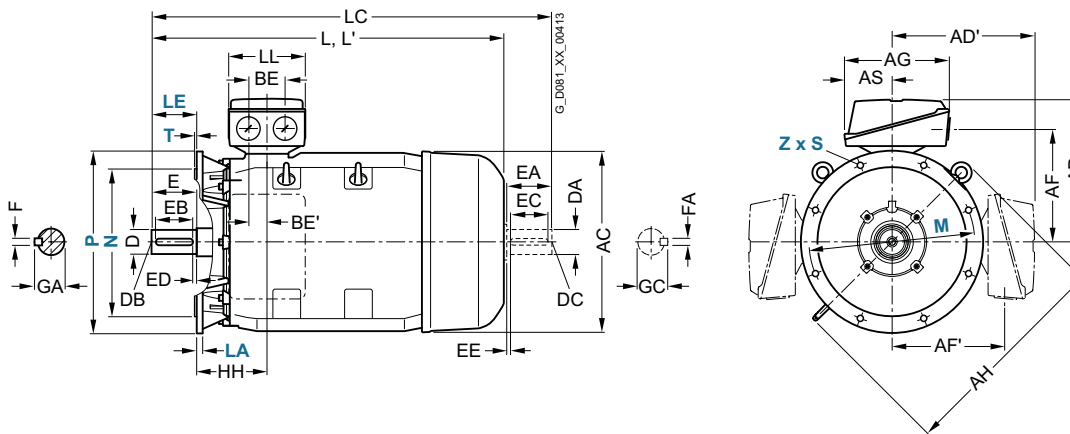
Dimensional drawings (continued)

Type of construction IM B3



Types of construction IM B5 and IM V1

For flange dimensions, see Page 4/56 (Z = the number of retaining holes)



4

For motor			Dimension designation acc. to IEC																			
Frame size	Motor type	No. of poles	A	AA	AB	AC	AD	AD'	AF	AF'	AG	AH	AS	B*	BA	BA'	BB	BC	BE	BE'	C	CA*
180 M/ 180 L	1EA2, 1EB4	2, 4	279	65	339	356	286	286	234	234	190	468	92	241	85	120	328	34	60	30	121	202
	1EB2, 1EC4	4, 6																				
200 L	2AA4, 2AC4	2, 6	318	60	378	396	315	315	259	259	266	533	112	305	104	104	355	31	85	42.5	133	177
	2AA5, 2AB5, 2AC5	2, 4, 6																				
225 S	2BB0	4	356	80	436	449	338	338	282	282	266	556	112	286	92	117	361	15	85	42.5	149	218
225 M	2BA2	2	356	80	436	449	338	338	282	282	266	556	112	311	92	117	361	15	85	42.5	149	253
	2BB2, 2BC2	4, 6																				
250 M	2CA2	2	406	100	490	497	410	410	322	322	319	620	145	349	102	102	409	24	110	55	168	230
	2CB2, 2CC2	4, 6																				
280 S	2DA0	2	457	100	540	551	433	433	345	345	319	672	145	368	101	152	479	20	110	55	190	267
	2DB0, 2DC0	4, 6																				
280 M	2DA2	2	457	100	540	551	433	433	345	345	319	672	145	419	101	152	479	20	110	55	190	326
	2DB2	4																				
	2DC2	6																				216
315 S	3AA0	2	508	120	610	616	515	515	404	404	374	780	164	406	113	170	527	22	110	55	216	295
	3AB0, 3AC0	4, 6																				
315 M	3AA2	2	508	120	610	616	515	515	404	404	374	780	164	457	113	170	578	22	110	55	216	409
	3AB2, 3AC2	4, 6																				
315 L	3AA4	2	508	120	610	616	515	515	404	404	374	780	164	508	113	170	578	22	110	55	216	358
	3AB4, 3AC4	4, 6																				
	3AA5	2													176	227	648					513
	3AB5, 3AC5, 3AC6	4, 6																				

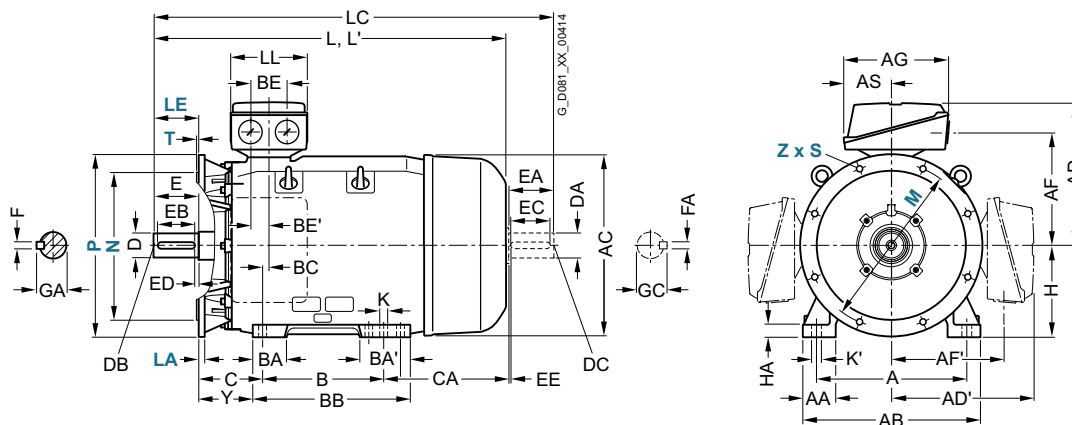
* This dimension is assigned in DIN EN 50347 to the frame size listed.

Cast-iron series 1MB1513, 1MB1523, 1MB1533, 1MB1613, 1MB1623, 1MB1633 self-ventilated, frame sizes 180 M to 315 L

Dimensional drawings (continued)

Type of construction IM B35

For flange dimensions, see Page 4/56 (Z = the number of retaining holes)



For motor Frame size	Motor type 1MB15.3-, 1MB16.3-	Dimension designation acc. to IEC										DE shaft extension					NDE shaft extension									
		No. of poles	H	HA	Y	HH	K	K'	L	L' ¹⁾	LC ²⁾	LL	D	DB	E	EB	ED	F	GA	DA	DC	EA	EC	EE	FA	GC
180 M/ 180 L	1EA2, 1EB4 1EB2, 1EC4	2, 4 4, 6	180	20	95	155	15	19	698	698	814	165	48	M16	110	100	5	14	52	48	M16	110	100	5	14	51.5
200 L	2AA4, 2AC4 2AA5, 2AB5, 2AC5	2, 6 2, 4, 6	200	25	108	164	19	25	721	755	835	197	55	M20	110	100	5	16	59	55	M20	110	100	5	16	59
225 S	2BB0	4	225	34	124	164	19	25	788	-	903	197	60	M20	140	125	10	18	64	55	M20	110	100	5	16	59
225 M	2BA2 2BB2, 2BC2	2 4, 6	225	34	124	164	19	25	818	852	933	197	55	M20	110	100	5	16	59	48	M16	110	100	5	14	51.5
250 M	2CA2 2CB2, 2CC2	2 4, 6	250	40	138	192	24	30	887	924	1002	233	60	M20	140	125	10	18	64	55	M20	110	100	5	16	59
280 S	2DA0 2DB0, 2DC0	2 4, 6	280	40	160	210	24	30	960	998	1105	233	65	M20	140	125	10	18	69	60	M20	140	125	10	18	64
280 M	2DA2 2DB2 2DC2	2 4 6	280	40	160	210	24	30	1070	1108	1105	233	65	M20	140	125	10	18	69	60	M20	140	125	10	18	64
315 S	3AA0 3AB0, 3AC0	2 4, 6	315	50	181	238	28	35	1052	1122	1197	299	65	M20	140	125	10	18	69	60	M20	140	125	10	18	64
315 M	3AA2 3AB2, 3AC2	2 4, 6	315	50	181	238	28	35	1217	1287	1362	299	65	M20	140	125	10	18	69	60	M20	140	125	10	18	64
315 L	3AA4 3AB4, 3AC4 3AA5 3AB5, 3AC5, 3AC6	2 4, 6 2 4, 6	315	50	181	238	28	35	1217	1287	1362	299	65	M20	140	125	10	18	69	60	M20	140	125	10	18	64
									1247	-	1392	80			170	140	25	22	85	70					20	74.5
									1372	1442	1517	65			140	125	10	18	69	60					18	64
					146				1402	-	1547	80			170	140	25	22	85	70					20	74.5

¹⁾ For version with low-noise fan for 2-pole motors.

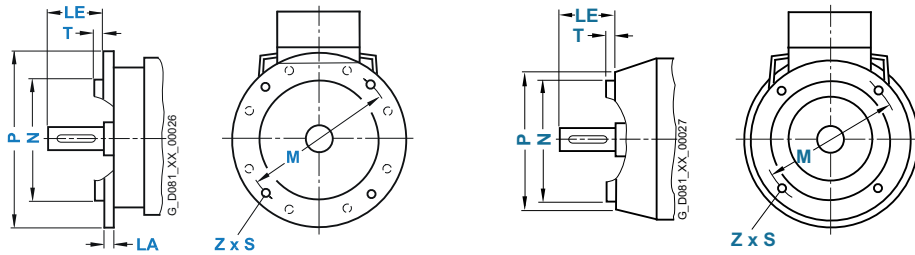
²⁾ In the low-noise version, a second shaft extension and/or mounted encoder is not possible.

SIMOTICS XP 1MB1 Explosion-Proof Motors

Dimensions

Flange dimensions

Dimensional drawings



In DIN EN 50347, the frame sizes are allocated flange FF with through holes and flange FT with tapped holes.

The designation of flange A and C according to DIN 42948 (invalid since September 2003) are also listed for information purposes. See the table below. (Z = the number of retaining holes)

Frame size	Type of construction	Flange type	Flange with		Dimension designation acc. to IEC								
			through holes (FF/A)	tapped holes (FT/C)	LA	LE	M	N	P	S	T	Z	
80 M	IM B5, IM B35, IM V1, IM V3	Standard flange	FF165	A 200	10	40	165	130	200	12	3.5	4	
	IM B14, IM B34, IM V18, IM V19	Standard flange	FT100	C 120	–	40	100	80	120	M6	3	4	
90 S/L	IM B5, IM B35, IM V1, IM V3	Standard flange	FF165	A 200	10	50	165	130	200	12	3.5	4	
	IM B14, IM B34, IM V18, IM V19	Standard flange	FT115	C 140	–	50	115	95	140	M8	3	4	
100 L	IM B5, IM B35, IM V1, IM V3	Standard flange	FF215	A250	11	60	215	180	250	14.5	4	4	
	IM B5, IM B35, IM V1, IM V3	Next larger standard flange – Order code P01	FF265	A300	12	60	60	20	300	14.5	4	4	
	IM B5, IM B35, IM V1, IM V3	Next smaller standard flange – Order code P02	FF165	A200	11	60	165	130	200	12	3.5	4	
	IM B14, IM B34, IM V18, IM V19	Standard flange	FT130	C160	–	60	130	110	160	M8	3.5	4	
112 M	IM B5, IM B35, IM V1, IM V3	Standard flange	FF215	A250	11	60	215	180	250	14.5	4	4	
	IM B5, IM B35, IM V1, IM V3	Next larger standard flange – Order code P01	FF265	A300	12	60	265	230	300	14.5	4	4	
	IM B5, IM B35, IM V1, IM V3	Next smaller standard flange – Order code P02	FF165	A200	11	60	165	130	200	12	3.5	4	
	IM B14, IM B34, IM V18, IM V19	Standard flange	FT130	C160	–	60	130	110	160	M8	3.5	4	
132 S, 120 M	IM B5, IM B35, IM V1, IM V3	Standard flange	FF265	A300	12	80	265	230	300	14.5	4	4	
	IM B5, IM B35, IM V1, IM V3	Next larger standard flange – Order code P01	FF300	A350	13	80	300	250	350	1805	5	4	
	IM B5, IM B35, IM V1, IM V3	Next smaller standard flange – Order code P02	FF215	A250	11	80	215	180	250	14.5	4	4	
	IM B14, IM B34, IM V18, IM V19	Standard flange	FT165	C200	–	80	165	130	200	M10	3.5	4	
160 M, 160 L	IM B5, IM B35, IM V1, IM V3	Standard flange	FF300	A350	13	110	300	250	350	18.5	5	4	
	IM B5, IM B35, IM V1, IM V3	Next smaller standard flange – Order code P02	FF265	A300	12	110	265	230	300	14.5	4	4	
	IM B14, IM B34, IM V18, IM V19	Standard flange	FT215	C250	–	110	215	180	250	M12	4	4	
	IM B14, IM B34, IM V18, IM V19	Next smaller standard flange – Order code P02	FT265	C300	–	110	265	230	300	M12	4	4	
180 M, 180 L	IM B5, IM B35, IM V1, IM V3	Standard flange	FF300	A50	13	110	300	250	350	18.5	5	4	
	IM B5, IM B35, IM V1, IM V3	Next smaller standard flange – Order code P02	FF265	A300	12	110	265	230	300	14.5	4	4	
200 L	IM B5, IM B35, IM V1, IM V3	Standard flange	FF350	A400	15	110	350	300	400	18.5	5	4	
	IM B5, IM B35, IM V1, IM V3	Next smaller standard flange – Order code P02	FF300	A350	13	110	300	250	350	18.5	5	4	
225 S, 225 M	2-pole 4-pole to 8-pole	IM B5, IM B35, IM V1, IM V3	Standard flange	FF400	A450	16	110	400	350	450	18.5	5	8
250 M	IM B5, IM B35, IM V1, IM V3	Standard flange	FF500	A550	18	140	500	450	550	18.5	5	8	
280 S, 280 M	IM B5, IM B35, IM V1, IM V3	Standard flange	FF500	A550	18	140	500	450	550	18.5	5	8	
315 S, 315 M, 315 L	2-pole 4-pole to 8-pole	IM B5, IM B35, IM V1, IM V3	Standard flange	FF600	A660	22	140	600	550	660	24	6	8

SIMOTICS DP 1PC1 Smoke-Extraction Motors

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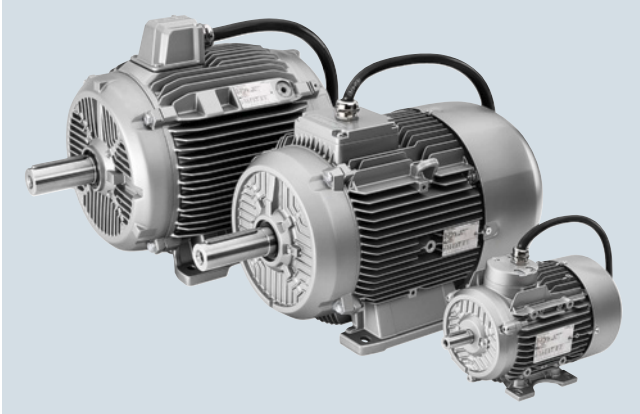


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SIMOTICS DP 1PC1 Smoke-Extraction Motors

Orientation

Overview



The low-voltage motors with squirrel-cage rotors in efficiency class IE2 for implementation in automatic smoke and heat extraction units to EN 12101-3 are mainly designed for driving smoke-extraction fans. For this reason, they are known as smoke-extraction motors. They are mainly used in buildings or structures in which smoke control is necessary due to their shape and arrangement.

Temperature/time classification according to EN 12101-3

- F200 corresponds to 200 °C for 120 min
- F300 corresponds to 300 °C for 60 min

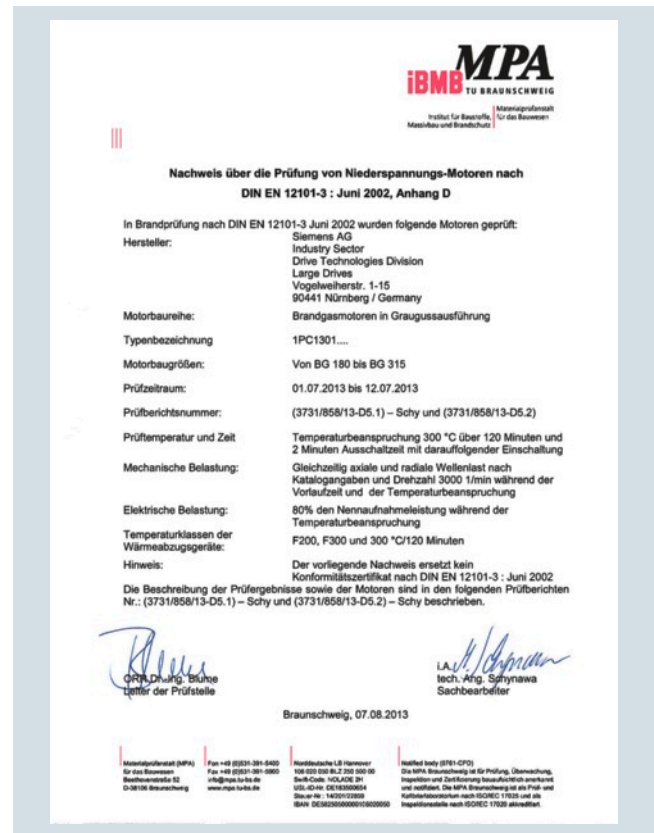
Testing and test certificates

The smoke-extraction motors have been tested in accordance with EN 12101-3 by the Materialprüfanstalt Braunschweig (Material Test Institute, Brunswick, Germany) in the "Institute for Building materials, concrete construction and fire protection".

Test conditions for F200/F300:

- Temperature **300 °C**
- Time **120 min**

The test certificates are available.



The motors are manufactured with aluminum or cast-iron housings depending on their frame sizes. The smoke-extraction motors are based on the standard motors and comprise the following motor types:

Temperature/time classes F200 and F300

- **Self-ventilated motors** - Aluminum series 1PC1300 and cast-iron series 1PC1301 - Version with integrated fan (metal)
- **Forced-air cooled motors** – Aluminum series 1PC1300 and cast-iron series 1PC1301 (in each case Article No. with **-Z** and order code **F90**) – Version without integrated fan; located in the air flow of the driven fan

The resonance of mountings and reactions from driven machines can cause high levels of vibration in the overall equipment unit. This has a significant effect on the expected service life of the bearing.

These vibrations are evaluated during continuous operation in accordance with Zones A and B according to ISO 10816.

To ensure safe operation of fans under standardized test conditions of 300 °C for a duration of 2 hours, the following limit values for radial vibrations on the bearing plate must be maintained even under these conditions.

Maximum admissible vibration values under standardized test conditions at 300 °C for a duration of 2 h in the test laboratory.

Frame size	Vibration velocity mm/s
80 ... 112	15
132 ... 200	20
225 ... 315	25

Benefits

The smoke-extraction motors operate as so-called "Dual-function motors":

- Normal operation (no instance of fire): Incoming/outgoing air flow
- Fault operation (in case of fire):
 - Removal of smoke from escape and access routes
 - Supporting fire fighting by creating a smoke-free zone
 - Protecting devices and equipment
 - Reducing the heat stress of components during a fire
 - Reducing secondary damage due to thermal byproducts and hot gases.

Admissible normal operating temperature:

-20 °C ... 40 °C as standard

The smoke-extraction motors offer the user a number of advantages:

- The assignment of standard outputs is unchanged - this means that a larger construction size is not required for smoke-extraction motors
- IE2 efficiency grades comply with the European EUP Directive
- Smoke-extraction motors are generally equipped with located bearings at the drive-end (DE) of the motor
- A fire event plate is screwed onto the motor
- Freely protruding cables are included in the scope of supply
- Radial-flow and axial-flow fan drive are possible
 - Self-ventilated 1PC1300 and 1PC1301 series motors with a metal fan impeller can be used as radial-flow fan drives
 - Forced-air cooled 1PC1300 and 1PC1301 series motors can be implemented as axial flow fan drives (in each case Article No. with **-Z** and order code **F90**) taking into account the required volumetric flow for motor cooling. In this case the driven fan performs the ventilation.

Application

The smoke-extraction motors are designed for use in automatic smoke and heat extraction units to EN 12101-3. Typical application examples include:

- Tunnels
- Single and multi-storey shopping centres
- Industrial buildings and warehouses
- Building complexes and atriums
- Theaters
- Indoor car parks
- Staircases

Technical specifications

Standards and regulations

In addition to the relevant standards and regulations, EN 12101-3 applies for non-portable fire-fighting systems:

Systems for controlling smoke and heat flows, part 3, specifications for smoke and heat extraction units.

Voltage and frequency

Rated voltages according to IEC60038

- 230 VΔ 50 Hz
- 400 V
- Δ 50 Hz and 400 VY 50 Hz
- 500VΔ 50 Hz and 500 VY 50 Hz
- 690 VY 50 Hz

Non-standard voltages (voltage codes **9** in position 12 of Article No., **0** in position 13 of Article No. and order code **M1Y**) as well as 60 Hz on request for 4 to 6-pole machines. Converter-fed operation is admissible up to a line voltage $U_N \leq 460$ V (see the "Insulation system" section).

Reduction factor k_{HT} for different site altitudes and/or coolant temperatures

Reduction factor k_{HT}						
Site altitude above sea level m	Ambient temperature in °C					
	< 30 °C	30 ... 40 °C	45 °C	50 °C	55 °C	60 °C
1000	1.07	1.00	0.96	0.92	0.87	0.82
1500	1.04	0.97	0.93	0.89	0.84	0.79
2000	1.00	0.94	0.9	0.86	0.82	0.77
2500	0.96	0.90	0.86	0.83	0.78	0.74
3000	0.92	0.86	0.82	0.79	0.75	0.70
3500	0.88	0.82	0.79	0.75	0.71	0.67
4000	0.82	0.77	0.74	0.71	0.67	0.63

Coolant temperature and site altitude are rounded to 5 °C and 500 m respectively

The following rating plates are available for the smoke-extraction motors:

- Rating plate
For the listed rated voltages with 50 Hz output data including information on bearing types and optional regreasing data
- Fire event plate
Complete with number and year of issue of the European standard, temperature/time class and minimum duration of function.

All plates are resistant to corrosion. A second set of plates is included with the motor, loose.

Rated output, duty type, number of poles

The rated output applies for continuous duty (normal duty) according to IEC 60034-1, for a frequency of 50 Hz, ambient temperatures up to 40 °C and site altitudes up to 1000 m above sea level.

Derating is necessary at higher ambient temperatures and site altitudes (reduction factor k_{HT}), see table below.

SIMOTICS DP 1PC1 Smoke-Extraction Motors

Orientation

Technical specifications (continued)

Operation in the event of a fire

In addition to normal duty, operation in the event of a fire as specified in EN 12101-3 is available.

At the end of the fire incident, the motor may be unfit for normal duty. **For this reason, regulations stipulate that the motor be replaced as a matter of course.**

In the event of a fire, any "thermal motor protection" must be deactivated.

Standard number of poles

2, 4 and 6

For more poles, please inquire.

Insulation system

The special insulation systems are adapted to the respective temperature/time classes.

The insulation of the smoke-extraction motors is designed such that converter-fed operation is permissible for line voltages ≤ 460 V.

In all operating states, the following limit values (voltage values are peak values) must be maintained:

$\hat{U}_{\text{phase-to-phase}} \leq 1500$ V, $\hat{U}_{\text{phase-to-ground}} \leq 1100$ V, voltage rise times of $t_s > 0.1$ μs .

In the event of a fire, the motors must be switched over from converter-fed operation to mains-fed operation. If converter-fed operation is also required in the event of a fire, this must be ensured through system testing and full acceptance testing by the fan manufacturer.

Drainage holes

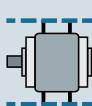
Generally available; but closed if ordered according to IP55 degree of protection.

Bearing plates

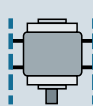
All bearing plates of types of construction IM B3, IM B5 and IM B14 are cast-iron.

For smoke-extraction motors it is also possible to order the special types of construction IM B30 (horizontal type of construction) as well as IM V30 and IM V31 (both vertical types of construction) in accordance with EN 60034-7. (clamp mounting, pad mounting, shaft fan mounting)

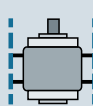
IM B30



IM V30



IM V31



On the motor side, either 3 or 4 radial mounting threads can be provided on the housing or the IM B3 bearing plates at DE and NDE. These can be used to fix the motor centrally inside a pipe or a fan unit.

Connection system

Protruding cable with casing, without terminal box with cover plate or "nozzle cap". The cable length, core ends and diameter depend on the frame size.

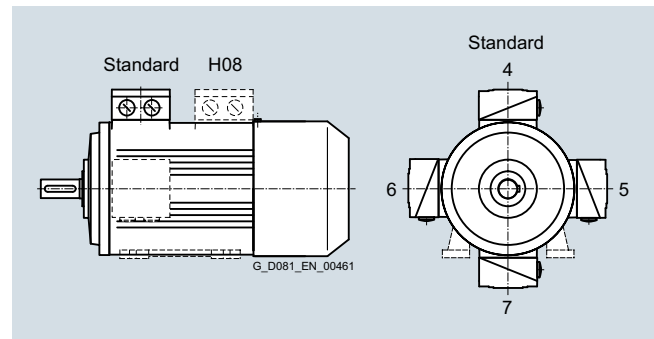
Frame size	Rated output kW	Number of cores	Cross- section mm ²	Length m	Cable diameter ± 1 mm mm
80 ... 112	0.37 ... 4	7	1.5	1	12
132	3 ... 7.5	7	1.5	1.5	12
160	7.5 ... 18	7	4	1.5	16
180 ... 200	15 ... 37	7	10	1.5	25
225 ... 280	30 ... 55	7	10	2.5	25
280 ... 315	75 ... 90	2 x 4	16	2.5	24
315	110 ... 132	2 x 4	3 x 35 + 25	2.5	33
315	160 ... 200	2 x 4	3 x 50 + 25	2.5	38

Special versions of connecting cables are available on request.

Location of the terminal box base

Frame sizes 80 to 315:

- Top and at drive end (DE) as standard
16th position of Article No. digit 4.
- Terminal box base on RHS
16th position of Article No. digit 5.
- Terminal box base on LHS
16th position of Article No. digit 6.
- Terminal box base below (not possible for IM B3)
16th position of Article No. digit 7.



Location of terminal box base with corresponding digits in the 16th position of Article No. 0° position of cable outlet

Optional: Terminal box base at NDE

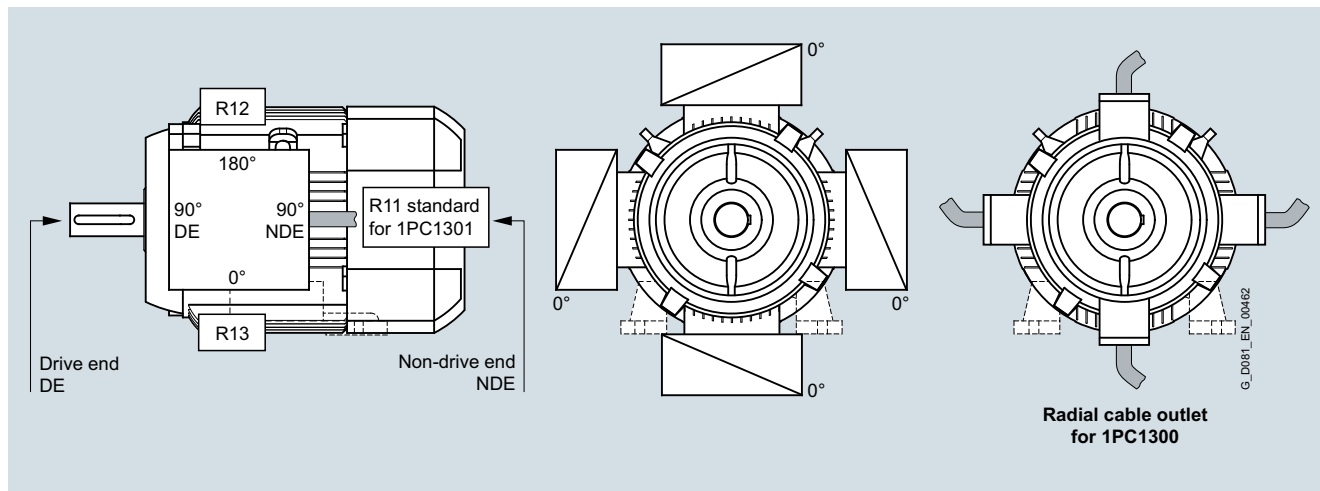
– Order code **H08**

When the terminal box base is rotated to the non-drive end of the motor, it is important to note that dimensions "C" and "CA" will not comply with the values specified in EN 50347. Please request a dimension drawing.

Direction of cable outlet

- Frame sizes 80 to 160 (1PC1300):
Further routing of the connecting cable only in radial direction with respect to the position of the terminal box base.
- Frame sizes 180 to 315 (1PC1301):
Further routing of the connecting cable towards NDE
Option **R11** with respect to the position of the terminal box base. Other options are also possible after **R12** or **R13**.
R13 = Cable entry in 0° position as shown in diagram.

Technical specifications (continued)



Location of the cable entries with corresponding order codes. The equipment is grounded with a protruding cable.

Bearings, grease

Special bearing systems are used.

Deep-groove bearings of series 60, 62 or 63 without play are used depending on the fire classes F200/F300 and the individual frame sizes.

The located bearing is generally at the drive-end (DE).

The nominal bearing lifetime L_{10h} (fan drive) is at least 20,000 hours at full rated load.

The motors of frame sizes 80 to 250 generally have bearings that are greased for life.

Paint finish

The motors have a two-component finish (worldwide) as standard in the color RAL 7030.

Required minimum cooling air flow in standard duty

Required cooling air flow for 1PC1300 motors			
Frame size	No. of poles		
	2	4	6
	m ³ /min	m ³ /min	m ³ /min
80	1.36	0.66	0.42
90	2.66	1.34	0.87
100	3.8	2.1	1.5
112	5.0	2.9	1.9
132	6.3	4.6	3.1
160	10.9	6.7	5

Required cooling air flow for 1PC1301 motors			
Frame size	No. of poles		
	2	4	6
	m ³ /min	m ³ /min	m ³ /min
180	12.4	7.8	5.2
200	14.3	10.6	7.9
225	21.5	18.5	15
250	30	20	20
280	26.5	32	24
315	40	40	30

In the motor version without an integrated fan (with order code F90), the motor is located in the airflow of the driven fan that must drive the minimum cooling airflow over the motor housing. The operating temperature of the motor can be reduced at higher air flow rates. The decisive factor for the effectiveness of the increased cooling airflow is the actual increase in the winding temperature during rated operation.

Permissible loading on the shaft extension

The values specified in the table "Admissible loading on shaft extension" are the tested and approved maximum values (test duration two hours, temperature in case of fire 300 °C).

In standard duty at coolant temperatures up to 40 °C, a bearing lifetime $L_{10h} > 20,000$ hours was achieved.

The values apply to all horizontal mounting positions and to all vertical mounting positions with shaft pointing downwards.

Please inquire in the case of :

- Higher force pairings
- Motors with more poles
- Vertical arrangement, depending on the rotor mass and mounting location (shaft pointing downwards or shaft pointing upwards) of the smoke-extraction motor. If necessary, higher forces can be approved.

SIMOTICS DP 1PC1 Smoke-Extraction Motors

Orientation

Technical specifications (continued)

Permissible loading on the shaft extension in the event of fire

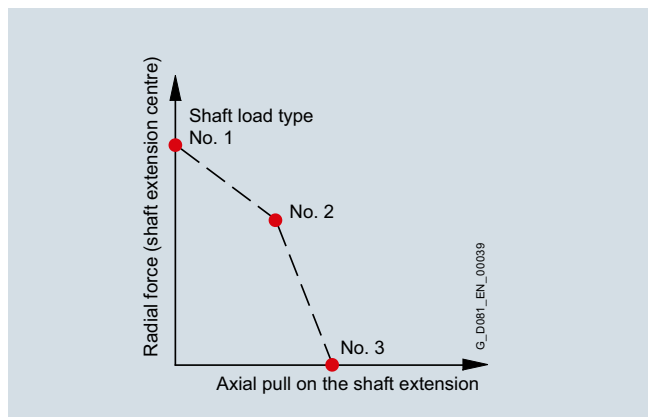
Frame size	Bearings DE	Type of loading on shaft No.	Horizontal shaft						Shaft pointing vertically downwards					
			2-pole		4-pole		6-pole		2-pole		4-pole		6-pole	
			F_R N	$F_{A\ tens}$ N	F_R N	$F_{A\ tens}$ N	F_R N	$F_{A\ tens}$ N	F_R N	$F_{A\ tens}$ N	F_R N	$F_{A\ tens}$ N	F_R N	$F_{A\ tens}$ N
80	6204	1 Radial force	400	0	490	0	540	0	360	0	450	0	540	0
		2 Radial force + axial tensile force	150	130	170	170	190	200	40	172	40	225	40	275
		3 Axial tensile force	0	215	0	265	0	320	0	197	0	250	0	300
90	6205	1 Radial force	650	0	730	0	795	0	590	0	730	0	795	0
		2 Radial force + axial tensile force	250	205	280	260	310	305	100	259	100	330	100	390
		3 Axial tensile force	0	343	0	415	0	480	0	310	0	384	0	450
100	6206	1 Radial force	890	0	1000	0	1080	0	820	0	1000	0	1080	0
		2 Radial force + axial tensile force	400	265	500	325	600	345	300	265	300	385	300	455
		3 Axial tensile force	0	490	0	600	0	675	0	432	0	540	0	625
112	6206	1 Radial force	870	0	980	0	1055	0	760	0	970	0	1055	0
		2 Radial force + axial tensile force	400	252	500	310	600	330	250	260	250	380	250	450
		3 Axial tensile force	0	478	0	595	0	675	0	403	0	510	0	590
132	6208	1 Radial force	1070	0	1415	0	1530	0	810	0	1060	0	1220	0
		2 Radial force + axial tensile force	450	315	550	450	650	480	250	300	250	520	250	585
		3 Axial tensile force	0	580	0	775	0	850	0	450	0	640	0	820
160	6209	1 Radial force	1440	0	1630	0	1760	0	1210	0	1580	0	1780	0
		2 Radial force + axial tensile force	700	450	800	570	900	650	500	335	500	525	500	665
		3 Axial tensile force	0	824	0	1015	0	1140	0	620	0	790	0	920
180	6210	1 Radial force	1540	0	1750	0	1900	0	1020	0	1400	0	1670	0
		2 Radial force + axial tensile force	770	430	900	545	1000	630	550	218	550	420	550	575
		3 Axial tensile force	0	815	0	1040	0	1183	0	453	0	733	0	875
200	6212	1 Radial force	2050	0	2380	0	2620	0	1450	0	1700	0	2090	0
		2 Radial force + axial tensile force	1200	770	1350	970	1500	1075	500	460	500	750	500	1600
		3 Axial tensile force	0	1350	0	1650	0	1875	0	720	0	1040	0	1905
225	6213	1 Radial force	2460	0	2720	0	2970	0	1910	0	2450	0	2900	0
		2 Radial force + axial tensile force	1370	900	1500	1095	1700	1200	500	660	500	1000	500	1250
		3 Axial tensile force	0	1560	0	1910	0	2170	0	920	0	1290	0	1520
250	6215	1 Radial force	2770	0	3230	0	3500	0	1490	0	2230	0	2700	0
		2 Radial force + axial tensile force	1400	840	1600	1095	1800	1340	500	460	500	815	500	1080
		3 Axial tensile force	0	1500	0	1865	0	2130	0	710	0	1090	0	1375
280	6315 (2-pole), 6317 (4, 6-pole)	1 Radial force	3180	0	5000	0	5500	0	3000	0	5600	0	6100	0
		2 Radial force + axial tensile force	1700	1820	2000	2000	2300	2200	600	1085	600	2300	600	2750
		3 Axial tensile force	0	2630	0	3050	0	3500	0	1380	0	2600	0	3100
315	6316 (2-pole), 6319 (4, 6-pole)	1 Radial force	3470	0	5300	0	5900	0	1000	0	3600	0	3850	0
		2 Radial force + axial tensile force	1750	2200	2000	2170	2300	2530	200	363	1000	1150	1000	1610
		3 Axial tensile force	0	3000	0	3080	0	3560	0	463	0	1690	0	2100

Note:

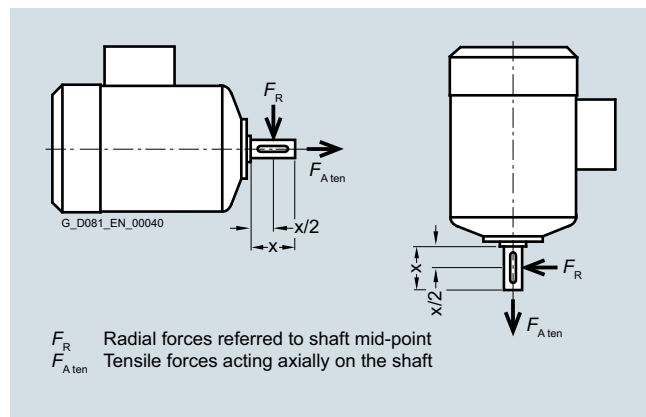
In the event of a fault (fire), the reduced loads given above must be observed and ensured by appropriate measures in the ventilation system.

Under normal operating conditions (CT 40 °C), the admissible loads specified in part 1 of the catalog under "Bearings and lubrication" must be complied with.

5



Load types



Forces on shaft extension

Selection and ordering data

The article number consists of a combination of digits and letters and is divided into three hyphenated blocks to provide a better overview, e.g.:

**1PC1301-1EB22-2FB4-Z
L22**

The first block (positions 1 to 7) identifies the motor type; the second block (positions 8 to 12) defines the motor frame size and length, the number of poles and in some cases the frequency/output; and in the third block (positions 13 to 16), the frequency/output, type of construction and other design features are encoded.

For deviations in the second and third block from the catalog codes, either **-Z** or **90** should be used as appropriate.

Ordering data:

- Complete Article No. and order code(s) or plain text
- If a quotation has been requested, please specify the quotation number in addition to the Article No.
- When ordering a complete motor as a spare part, please specify the works serial No. for the previously supplied motor as well as the Article No.

Structure of the Article No.:		Position:	1	2	3	4	5	6	7	-	8	9	10	11	12	-	13	14	15	16
Positions 1 to 5: Digit, letter, letter, digit, digit	Self-ventilated smoke-extraction motors with High Efficiency IE2 (For forced-air cooled version specify Article No. with -Z and order code F90)		1	P	C	1	3													
Positions 6 to 7: 2 digits	Aluminum housing, IE2, single-speed Cast-iron housing, IE2, single-speed							0	0											
Positions 8, 9 and 11: Digit, letter, digit	Motor frame size (frame size as a combination of shaft height and overall length, encoded)										0	A			0					
Position 10: Letter	No. of poles A: 2-pole, B: 4-pole, C: 6-pole												A							
Positions 12 and 13: 2 digits	Voltage, circuit and frequency (encoded with two digits, 9-0 requires order code M.. (e. g. M1Y))															0		0		
Position 14: Letter	Type of construction (encoded with A ... Z; Z requires order code P.. (e. g. P3A))																	A		
Position 15: Letter	Motor protection (encoded with A ... D)																		A	
Position 16: Digit	Terminal box position 4: Terminal box top, 5: Terminal box right, 6: Terminal box left, 7: Terminal box below																			4
	Special order versions: encoded – additional order code required not encoded – additional plain text required																			...
																				7
																				-
																				Z

Ordering example

Selection criteria	Requirement	Structure of the Article No.
Motor type 1PC1301	Self-ventilated smoke-extraction motor, cast-iron version, with High Efficiency IE2, IP55 degree of protection	1PC1301-■■■■■-■■■■■
Motor frame size/No. of poles/Speed	180 M/4-pole/1500 rpm	1PC1301-1EB2■-■■■■■
Rated output	18.5 kW	
Voltage and frequency	230 VΔ/400 VY, 50 Hz	1PC1301-1EB22-2■■■■■
Type of construction with special version	IM B5	1PC1301-1EB22-2F■■■
Motor protection	Motor protection with PTC thermistor with 3 embedded temperature sensors for tripping	1PC1301-1EB22-2FB■
Terminal box position	Terminal box at top	1PC1301-1EB22-2FB4
Special version	Bearing design for increased cantilever forces	1PC1301-1EB22-2FB4-Z L22

SIMOTICS DP 1PC1 Smoke-Extraction Motors

Motors with High Efficiency IE2

Self-ventilated or forced-air cooled motors
Aluminum series 1PC1300



Selection and ordering data

Operating values at rated output															Aluminum series		m _{IM B3} J		Torque class
P _{rated} , 50 Hz	P _{rated} , 60 Hz	Frame size	n _{rated} , 50 Hz	n _{rated} , 60 Hz	IE class	η _{rated} , 50 Hz, 4/4	η _{rated} , 50 Hz, 3/4	η _{rated} , 50 Hz, 2/4	cos φ _{rated} , 50 Hz, 4/4	I _{rated} , 50 Hz, 400 V	T _{LR} /I _{rated}	I _{LR} /I _{rated}	T _B /I _{rated}	L _p fA, 50 Hz	L _{WA} , 50 Hz	1PC1300 – IE2 version according to IEC 60034-30 Article No.	kg	kgm ²	CL
kW	kW	FS	rpm	Nm	%	%	%	%	A					dB(A)	dB(A)	▲ New			
<ul style="list-style-type: none"> • Cooling: self-ventilated (IC 411) or with order code F90 forced-air cooled without external fan and fan cover (IC 416) • Efficiency: High Efficiency IE2, service factor (SF) 1.15 • Insulation: thermal class 180 (temperature class H), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B) 																			
2-pole: 3000 rpm at 50 Hz																			
0.75	–	80 M	2805	2.6	IE2	77.4	79.5	78.8	0.84	1.67	1.9	4.9	2.3	60	71	▲ 1PC1300-0DA2	9	0.0080	16
1.1	–	80 M	2835	3.7	IE2	79.6	81.3	80.8	0.83	2.40	2.7	6.0	3.1	60	71	▲ 1PC1300-0DA3	11	0.0111	16
1.5	–	90 S	2885	5.0	IE2	81.3	82.3	80.8	0.84	3.15	2.7	6.9	3.6	65	77	▲ 1PC1300-0EA0	13	0.017	16
2.2	–	90 L	2890	7.3	IE2	83.2	83.9	82.3	0.85	4.5	2.5	7.1	3.7	65	77	▲ 1PC1300-0EA4	15	0.021	16
3	–	100 L	2905	9.9	IE2	84.6	85.2	84.7	0.84	6.1	2.3	7.0	3.3	67	79	▲ 1PC1300-1AA4	21	0.044	16
4	–	112 M	2950	13	IE2	85.8	86.7	86.1	0.86	7.8	2.4	7.4	3.3	69	81	▲ 1PC1300-1BA2	27	0.092	16
5.5	–	132 S	2950	18	IE2	87.0	88.0	87.4	0.87	10.5	1.8	6.6	2.9	68	80	▲ 1PC1300-1CA0	39	0.20	16
7.5	–	132 S	2950	24	IE2	88.1	88.7	88.6	0.87	14.1	2.2	7.5	3.1	68	80	▲ 1PC1300-1CA1	43	0.24	16
11	–	160 M	2955	36	IE2	89.4	90.0	89.1	0.87	20.5	2.1	7.4	3.2	70	82	▲ 1PC1300-1DA2	67	0.045	16
15	–	160 M	2955	48	IE2	90.3	90.9	90.3	0.88	27	2.4	7.6	3.4	70	82	▲ 1PC1300-1DA3	75	0.053	16
18.5	–	160 L	2955	60	IE2	90.9	91.2	90.4	0.88	33.5	2.9	7.9	3.6	70	82	▲ 1PC1300-1DA4	84	0.061	16
4-pole: 1500 rpm at 50 Hz																			
0.55	–	80 M	1440	3.7	IE2	77.1	76.8	73.7	0.74	1.39	2.2	5.3	3.1	53	64	▲ 1PC1300-0DB2	10	0.017	16
0.75	–	80 M	1440	5.0	IE2	79.6	80.2	78.0	0.76	1.79	2.2	5.6	3.1	53	64	▲ 1PC1300-0DB3	11	0.021	16
1.1	–	90 S	1425	7.4	IE2	81.4	81.7	79.9	0.78	2.5	2.3	5.6	2.9	56	68	▲ 1PC1300-0EB0	13	0.028	16
1.5	–	90 L	1435	10	IE2	82.8	83.5	82.0	0.79	3.3	2.6	6.4	3.4	56	68	▲ 1PC1300-0EB4	16	0.036	16
2.2	–	100 L	1455	14	IE2	84.3	85.1	84.3	0.81	4.65	2.1	6.9	3.3	60	72	▲ 1PC1300-1AB4	21	0.086	16
3	–	100 L	1455	20	IE2	85.5	86.7	86.0	0.82	6.2	2.0	6.9	3.1	60	72	▲ 1PC1300-1AB5	25	0.11	16
4	–	112 M	1460	26	IE2	86.6	87.3	86.5	0.81	8.2	2.5	7.1	3.2	58	70	▲ 1PC1300-1BB2	29	0.14	16
5.5	–	132 S	1465	36	IE2	87.7	89.0	87.7	0.80	11.3	2.3	6.9	2.9	64	76	▲ 1PC1300-1CB0	42	0.27	16
7.5	–	132 M	1465	49	IE2	88.7	90.3	88.8	0.83	14.7	2.3	6.9	2.9	64	76	▲ 1PC1300-1CB2	49	0.034	16
11	–	160 M	1470	71	IE2	89.8	90.9	90.8	0.85	21	2.1	6.7	2.8	65	77	▲ 1PC1300-1DB2	71	0.065	16
15	–	160 L	1475	97	IE2	90.6	91.3	91.0	0.85	28	2.3	7.3	3.0	65	77	▲ 1PC1300-1DB4	83	0.083	16
Voltages																			
50 Hz		230 VΔ/400 VY		Any		2, 4		80 M ... 160 L		1PC1300-0D ... -1D		Standard		2 2		–			
50 Hz		400 VΔ/690 VY		Any		2, 4		80 M ... 160 L		1PC1300-0D ... -1D		Standard		3 4		–			
50 Hz		500 VY		Any		2, 4		80 M ... 160 L		1PC1300-0D ... -1D		Without add. charge		2 7		–			
50 Hz		500 VΔ		Any		2, 4		100 L ... 160 L		1PC1300-1A ... -1D		Without add. charge		4 0		–			
Further voltages ¹⁾				For price information, code numbers, order codes and descriptions, see from Page 5/13										9 0		...			
Types of construction																			
Without flange		IM B3 ²⁾		2, 4		80 M ... 160 L		1PC1300-0D ... -1D		Standard				A		–			
With flange		IM B5 ²⁾		2, 4		80 M ... 160 L		1PC1300-0D ... -1D		With additional charge				F		–			
With standard flange		IM B14 ²⁾		2, 4		80 M ... 160 L		1PC1300-0D ... -1D		With additional charge				K		–			
Further types of construction		For price information, code letters and descriptions, see from Page 5/14																	
Motor protection																			
Without				2, 4		80 M ... 160 L		1PC1300-0D ... -1D		Standard				A		–			
PTC thermistor with 1 or 3 temperature sensors				2, 4		80 M ... 160 L		1PC1300-0D ... -1D		With additional charge				B		–			
Further motor protection		For price information, code letters and descriptions, see from Page 5/17																	
Terminal box position																			
Terminal box at top				2, 4		80 M ... 160 L		1PC1300-0D ... -1D		Standard				4		–			
Further terminal box positions		For price information, code numbers and descriptions, see from Page 5/18																	
Special versions																			
Forced-air cooled motors without ext. fan/fan cover (IC 416)				2, 4		80 M ... 160 L		1PC1300-0D ... -1D								1PC1300-....-Z		F90 +...+...+...	
Options		For price information, order codes and descriptions, see from Page 5/19														1PC1300-....-Z		...+...+...+...	

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¹⁾ Operating values at rated output for 60 Hz possible on request for 4-pole and 6-pole.

²⁾ Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirements exist for condensation drainage holes (H03) and stamping of the type on the rating plate. The basic type IM B3, IM B5 or IM B14 is stamped as standard on the rating plate. When ordering with condensation drainage holes (H03), the type must be specified.

SIMOTICS DP 1PC1 Smoke-Extraction Motors

Motors with High Efficiency IE2

IE2

Self-ventilated or forced-air cooled motors
Aluminum series 1PC1300

Selection and ordering data (continued)

P _{rated} , 50 Hz	P _{rated} , 60 Hz	Frame size	Operating values at rated output											Aluminum series 1PC1300 – IE2 version according to IEC 60034-30 Article No.	m _{IM B3} J	Torque class			
			n _{rated} , 50 Hz	T _{rated} , 50 Hz	IE class	η _{rated} , 50 Hz, 4/4	η _{rated} , 50 Hz, 3/4	η _{rated} , 50 Hz, 2/4	cos φ _{rated} , 50 Hz, 4/4	I _r , 50 Hz, 400 V	T _{L/R} , I _r , I _r	T _B , I _r	L _p , 50 Hz				L _{WA} , 50 Hz		
kW	kW	FS	rpm	Nm	%	%	%	%	A							kg	kgm ²	CL	
<ul style="list-style-type: none"> Cooling: self-ventilated (IC 411) or with order code F90 forced-air cooled without external fan and fan cover (IC 416) Efficiency: High Efficiency IE2, service factor (SF) 1.15 Insulation: thermal class 180 (temperature class H), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B) 																			
6-pole: 1000 rpm at 50 Hz																			
0.37	–	80 M	925	3.85	IE2	67.6	67.9	64.4	0.69	1.14	2.1	4.0	2.4	42	53	▲ 1PC1300-0DC2	9	0.0017	16
0.55	–	80 M	935	5.6	IE2	73.1	73.0	69.6	0.66	1.65	2.5	4.4	2.9	42	53	▲ 1PC1300-0DC3	12	0.0025	16
0.75	–	90 S	925	7.7	IE2	75.9	76.0	73.0	0.70	2.05	2.0	4.1	2.5	43	55	▲ 1PC1300-0EC0	13	0.0030	16
1.1	–	90 L	935	11.2	IE2	78.1	78.5	75.0	0.70	2.90	2.2	4.4	2.6	43	55	▲ 1PC1300-0EC4	16	0.0040	16
1.5	–	100 L	970	15	IE2	79.8	80.2	79.0	0.73	3.7	2.0	6.2	2.9	59	71	▲ 1PC1300-1AC4	25	0.011	16
2.2	–	112 M	965	22	IE2	81.8	82.5	81.3	0.75	5.2	2.1	6.0	3.1	57	69	▲ 1PC1300-1BC2	29	0.014	16
3	–	132 S	970	30	IE2	83.3	84.0	82.8	0.74	7.0	1.6	5.6	2.6	63	75	▲ 1PC1300-1CC0	38	0.024	13
4	–	132 M	970	39	IE2	84.6	85.8	85.0	0.78	8.7	1.6	5.6	2.5	63	75	▲ 1PC1300-1CC2	43	0.029	13
5.5	–	132 M	970	54	IE2	86.0	87.4	87.0	0.77	12	1.9	6.1	2.8	63	75	▲ 1PC1300-1CC3	52	0.037	16
7.5	–	160 M	975	73	IE2	87.2	87.7	86.9	0.77	16.1	1.8	6.3	2.8	67	79	▲ 1PC1300-1DC2	77	0.075	16
11	–	160 L	975	108	IE2	88.7	89.5	89.4	0.80	22.5	1.7	6.2	2.7	67	79	▲ 1PC1300-1DC4	93	0.098	16
Voltagess			No. of poles	Frame size	Motor type	Version												Order code(s)	
Frame sizes 80 M to 160 L: Cover plate rotatable 4 x 90°																			
50 Hz	230 VΔ/400 VY		6	80 M ... 160 L	1PC1300-0D ... -1D	Standard	2	2											–
50 Hz	400 VΔ/690 VY		6	80 M ... 160 L	1PC1300-0D ... -1D	Standard	3	4											–
50 Hz	500 VY		6	80 M ... 160 L	1PC1300-0D ... -1D	Without add. charge	2	7											–
50 Hz	500 VΔ		6	100 L ... 160 L	1PC1300-1A ... -1D	Without add. charge	4	0											–
Further voltages ¹⁾							9	0											...
For price information, code numbers, order codes and descriptions, see from Page 5/13																			
Types of construction			No. of poles	Frame size	Motor type	Version												Order code(s)	
Without flange			6	80 M ... 160 L	1PC1300-0D ... -1D	Standard	A											–	
With flange			6	80 M ... 160 L	1PC1300-0D ... -1D	With additional charge	F											–	
With standard flange			6	80 M ... 160 L	1PC1300-0D ... -1D	With additional charge	K											–	
Further types of construction			For price information, code letters and descriptions, see from Page 5/14																
...																			
Motor protection			No. of poles	Frame size	Motor type	Version												Order code(s)	
Without			6	80 M ... 160 L	1PC1300-0D ... -1D	Standard	A											–	
PTC thermistor with 1 or 3 temperature sensors			6	80 M ... 160 L	1PC1300-0D ... -1D	With additional charge	B											–	
Further motor protection			For price information, code letters and descriptions, see from Page 5/17																
...																			
Terminal box position			No. of poles	Frame size	Motor type	Version												Order code(s)	
Terminal box at top			6	80 M ... 160 L	1PC1300-0D ... -1D	Standard	4											–	
Further terminal box positions			For price information, code numbers and descriptions, see from Page 5/18																
Special versions			No. of poles	Frame size	Motor type												Order code(s)		
Forced-air cooled motors without ext. fan/fan cover (IC 416)			6	80 M ... 160 L	1PC1300-0D ... -1D	1PC1300-....-Z F90 +...+...+...													
Options			For price information, order codes and descriptions, see from Page 5/19																
1PC1300-....-Z ...+...+...+...																			

1) Operating values at rated output for 60 Hz possible on request for 4-pole and 6-pole.

2) Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5), from IM B5 (IM V3 and IM V1) and from IM B14 (IM V19 and IM V18) are possible, provided that no requirements exist for condensation drainage holes (H03) and stamping of the type on the rating plate. The basic type IM B3, IM B5 or IM B14 is stamped as standard on the rating plate. When ordering with condensation drainage holes (H03), the type must be specified.

SIMOTICS DP 1PC1 Smoke-Extraction Motors

Motors with High Efficiency IE2

Self-ventilated or forced-air cooled motors
Cast-iron series 1PC1301



Selection and ordering data

P _{rated} , 50 Hz	P _{rated} , 60 Hz	Frame size	Operating values at rated output											Cast-iron series 1PC1301 – IE2 version according to IEC 60034-30 Article No.	m _{IM B3} J	Torque class				
			n _{rated} , 50 Hz	T _{rated} , 50 Hz	IE class	η _{rated} , 50 Hz, 4/4	η _{rated} , 50 Hz, 3/4	η _{rated} , 50 Hz, 2/4	COSφ rated, 50 Hz, 4/4	I _{rated} , 50 Hz, 400 V	T _{L/R} / I _{rated}	L _R / I _{rated}	T _p / I _{rated}				L _{pfA} , 50 Hz	L _{WA} , 50 Hz		
kW	kW	FS	rpm	Nm	%	%	%	A					dB(A)	dB(A)	▲ New	kg	kgm ²	CL		
• Cooling: self-ventilated (IC 411) or with order code F90 forced-air cooled without external fan and fan cover (IC 416) • Efficiency: High Efficiency IE2, service factor (SF) 1.15 • Insulation: thermal class 180 (temperature class H), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B)																				
2-pole: 3000 rpm at 50 Hz																				
22	–	180 M	2940	71	IE2	91.3	91.8	91.4	0.87	40.5	2.7	7.4	3.6	68	81	▲ 1PC1301-1EA2	145	0.069	16	
30	–	200 L	2955	97	IE2	92.0	92.3	91.7	0.87	54	2.5	6.9	3.3	71	84	▲ 1PC1301-2AA4	200	0.13	16	
37	–	200 L	2960	119	IE2	92.5	92.8	92.3	0.88	66	2.7	7.4	3.5	71	84	▲ 1PC1301-2AA5	225	0.15	16	
45	–	225 M	2965	145	IE2	92.9	93.1	92.5	0.88	79	2.7	7.8	3.7	71	84	▲ 1PC1301-2BA2	295	0.23	16	
55	–	250 M	2970	177	IE2	93.2	93.3	92.4	0.89	96	2.3	6.8	3.1	74	88	▲ 1PC1301-2CA2	360	0.40	13	
75	–	280 S	2978	240	IE2	93.8	93.6	92.4	0.87	133	2.5	7.2	3.2	74	88	▲ 1PC1301-2DA0	490	0.71	13	
90	–	280 M	2975	289	IE2	94.1	94.2	93.5	0.88	157	2.5	7.1	3.1	74	88	▲ 1PC1301-2DA2	530	0.83	13	
110	–	315 S	2982	352	IE2	94.3	94.2	93.3	0.90	187	2.4	7.3	3.0	76	90	▲ 1PC1301-3AA0	720	1.3	13	
132	–	315 M	2982	423	IE2	94.6	94.7	94.1	0.91	220	2.4	7.2	3.1	76	90	▲ 1PC1301-3AA2	880	1.6	13	
160	–	315 L	2982	512	IE2	94.8	94.9	94.3	0.92	265	2.3	7.0	3.1	78	93	▲ 1PC1301-3AA4	930	1.8	13	
200	–	315 L	2982	640	IE2	95.0	95.2	94.8	0.92	330	2.4	7.1	3.0	78	93	▲ 1PC1301-3AA5	1130	2.2	13	
Voltagess			No. of poles	Frame size	Motor type	Version												Order code(s)		
Cover plate rotatable 4 x 90°																				
50 Hz	230 VΔ/400 VY	2	180 M ... 315 L	1PC1301-1E ... -3A	Standard	2 2												–		
50 Hz	400 VΔ/690 VY	2	180 M ... 315 L	1PC1301-1E ... -3A	Standard	3 4												–		
50 Hz	500 VY	2	180 M ... 315 L	1PC1301-1E ... -3A	Without add. charge	2 7												–		
50 Hz	500 VΔ	2	180 M ... 315 L	1PC1301-1E ... -3A	Without add. charge	4 0												–		
Further voltages			For price information, code numbers, order codes and descriptions, see from Page 5/13													9 0	...			
Types of construction			No. of poles	Frame size	Motor type	Version												Order code(s)		
Without flange			IM B3 ¹⁾	2	180 M ... 315 L	1PC1301-1E ... -3A	Standard	A												–
With flange			IM B5 ¹⁾	2	180 M ... 315 M	1PC1301-1E ... -3A	With additional charge	F												–
Further types of construction			For price information, code letters and descriptions, see from Page 5/16													...				
Motor protection			No. of poles	Frame size	Motor type	Version												Order code(s)		
Cover plate rotatable 4 x 90°																				
Without			2	180 M ... 315 L	1PC1301-1E ... -3A	Standard	A												–	
PTC thermistor with 3 temperature sensors			2	180 M ... 315 L	1PC1301-1E ... -3A	With additional charge	B												–	
Further motor protection			For price information, code letters and descriptions, see from Page 5/17													...				
Terminal box position			No. of poles	Frame size	Motor type	Version												Order code(s)		
Terminal box at top			2	180 M ... 315 L	1PC1301-1E ... -3A	Standard	4												–	
Further terminal box positions			For price information, code numbers and descriptions, see from Page 5/18													...				
Special versions			No. of poles	Frame size	Motor type												Order code(s)			
Forced-air cooled motors without ext. fan/fan cover (IC 416)			2	180 L ... 315 L	1PC1301-1E ... -3A	1PC1301-....-Z	F90 +...+...+...													
Options			For price information, order codes and descriptions, see from Page 5/21													1PC1301-....-Z ...+...+...+...				

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¹⁾ Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5 and from IM B5 (IM V3 and IM V1) are possible, provided that no requirement exists for stamping of the type on the rating plate. The basic type IM B3 or IM B5 is stamped as standard on the rating plate. If mounted in a different position, the position must be specified to ensure that the condensation drainage holes are positioned correctly.

SIMOTICS DP 1PC1 Smoke-Extraction Motors

Motors with High Efficiency IE2

IE2

Self-ventilated or forced-air cooled motors
Cast-iron series 1PC1301

Selection and ordering data (continued)

P _{rated} , 50 Hz	P _{rated} , 60 Hz	Frame size	Operating values at rated output										Cast-iron series 1PC1301 – IE2 version according to IEC 60034-30 Article No.	m _{IM B3}	J	Torque class			
			n _{rated} , 50 Hz	T _{rated} , 50 Hz	IE class	η _{rated} , 50 Hz, 4/4	η _{rated} , 50 Hz, 3/4	η _{rated} , 50 Hz, 2/4	cosφ _{rated} , 50 Hz, 4/4	I _{rated} , 50 Hz, 400 V	T _{LR} / I _{rated}	L _{LR} / I _{rated}					T _B / I _{rated}	L _p /A, 50 Hz	L _{WA} , 50 Hz
kW	kW	FS	rpm	Nm	%	%	%	%	A							kg	kgm ²	CL	
<ul style="list-style-type: none"> Cooling: self-ventilated (IC 411) or with order code F90 forced-air cooled without external fan and fan cover (IC 416) Efficiency: High Efficiency IE2, service factor (SF) 1.15 Insulation: thermal class 180 (temperature class H), IP55 degree of protection, utilization in accordance with thermal class 130 (temperature class B) 																			
4-pole: 1500 rpm at 50 Hz																			
18.5	–	180 M	1465	121	IE2	91.2	92.0	91.9	0.84	35	2.5	7.2	3.4	58	71	▲ 1PC1301-1EB2	160	0.12	16
22	–	180 L	1465	143	IE2	91.6	92.2	91.9	0.84	41.5	2.6	7.3	3.5	58	71	▲ 1PC1301-1EB4	170	0.13	16
30	–	200 L	1470	195	IE2	92.3	92.8	92.6	0.84	56	2.5	6.7	3.3	62	75	▲ 1PC1301-2AB5	230	0.20	16
37	–	225 S	1470	240	IE2	92.7	93.5	93.5	0.88	65	2.3	6.6	2.9	62	75	▲ 1PC1301-2BB0	280	0.42	16
45	–	225 M	1475	291	IE2	93.1	93.8	93.7	0.87	80	2.5	6.9	3.1	63	76	▲ 1PC1301-2BB2	305	0.46	16
55	–	250 M	1480	355	IE2	93.5	93.9	93.5	0.85	100	2.7	6.8	3.0	62	75	▲ 1PC1301-2CB2	385	0.75	16
75	–	280 S	1485	482	IE2	94.0	94.2	93.8	0.87	132	2.5	6.8	3.0	69	83	▲ 1PC1301-2DB0	550	1.3	16
90	–	280 M	1486	578	IE2	94.2	94.3	93.6	0.87	159	2.6	7.3	3.1	68	82	▲ 1PC1301-2DB2	570	1.4	16
110	–	315 S	1490	705	IE2	94.5	94.6	94.0	0.86	195	2.7	7.4	3.0	69	83	▲ 1PC1301-3AB0	740	2.0	16
132	–	315 M	1490	847	IE2	94.7	94.9	94.6	0.87	230	2.7	7.1	2.9	68	83	▲ 1PC1301-3AB2	870	2.3	16
160	–	315 L	1490	1025	IE2	94.9	95.0	94.5	0.87	280	2.8	7.2	3.1	72	86	▲ 1PC1301-3AB4	940	2.8	16
200	–	315 L	1490	1282	IE2	95.1	95.3	94.7	0.87	350	3.1	7.5	3.2	72	87	▲ 1PC1301-3AB5	1140	3.5	16
Voltages			No. of poles	Frame size	Motor type	Version												Order code(s)	
Cover plate rotatable 4 x 90°																			
50 Hz	230 VΔ/400 VY		4	180 M ... 315 L	1PC1301-1E ... -3A	Standard	2	2											–
50 Hz	400 VΔ/690 VY		4	180 M ... 315 L	1PC1301-1E ... -3A	Standard	3	4											–
50 Hz	500 VY		4	180 M ... 315 L	1PC1301-1E ... -3A	Without add. charge	2	7											–
50 Hz	500 VΔ		4	180 M ... 315 L	1PC1301-1E ... -3A	Without add. charge	4	0											–
Further voltages ¹⁾							9	0											...
For price information, code numbers, order codes and descriptions, see from Page 5/13																			
Types of construction			No. of poles	Frame size	Motor type	Version												Order code(s)	
Without flange			4	180 M ... 315 L	1PC1301-1E ... -3A	Standard	A												–
With flange			4	180 M ... 315 M	1PC1301-1E ... -3A	With additional charge	F												–
Further types of construction For price information, code letters and descriptions, see from Page 5/16																			
...																			
Motor protection			No. of poles	Frame size	Motor type	Version												Order code(s)	
Cover plate rotatable 4 x 90°																			
Without			4	180 M ... 315 L	1PC1301-1E ... -3A	Standard	A												–
PTC thermistor with 3 temperature sensors			4	180 M ... 315 L	1PC1301-1E ... -3A	With additional charge	B												–
Further motor protection For price information, code letters and descriptions, see from Page 5/17																			
...																			
Terminal box position			No. of poles	Frame size	Motor type	Version												Order code(s)	
Terminal box at top			4	180 M ... 315 L	1PC1301-1A ... -3A	Standard	4												–
Further terminal box positions For price information, code numbers and descriptions, see from Page 5/18																			
Special versions			No. of poles	Frame size	Motor type												Order code(s)		
Forced-air cooled motors without ext. fan/fan cover (IC 416)			4	180 L ... 315 L	1PC1301-1E ... -3A	1PC1301 - -Z F90 + . . . + . . .													
Options			For price information, order codes and descriptions, see from Page 5/21											1PC1301 - -Z . . . + . . . + . . .					

¹⁾ Operating values at rated output for 60 Hz are available on request.

²⁾ Types derived from IM B3 (IM B6/7/8, IM V6 and IM V5) and from IM B5 (IM V3 and IM V1) are possible, provided that no requirement exists for stamping of the type on the rating plate. The basic type IM B3 or IM B5 is stamped as standard on the rating plate. If mounted in a different position, the position must be specified to ensure that the condensation drainage holes are positioned correctly.



SIMOTICS DP 1PC1 Smoke-Extraction Motors

Supplements to article numbers and special versions

Voltages
Aluminum series 1PC1300

Selection and ordering data

Voltages	Voltage code 12th and 13th position of the Article No.	Additional identification code with order code and plain text if required	Motor category								
			Motor version	Motor type (alum.)	Motor type – Frame size						
					80	90	100	112	132	160	
			High Efficiency IE2	1PC1300	1PC1300						
			Motor version	Motor type	Frame size						
					80	90	100	112	132	160	
1PC1300 - ■ - ■ Order code											
Voltage at 50 Hz or 60 Hz											
50 Hz 230 VΔ/400 VY	2	2	–	All	All	□	□	□	□	□	□
50 Hz 400 VΔ/690 VY	3	4	–	All	All	□	□	□	□	□	□
50 Hz 400 VY	0	2	–	All	All	□	□	□	□	□	□
50 Hz 500 VY	2	7	–	All	All	○	○	○	○	○	○
50 Hz 500 VΔ	4	0	–	All	All	–	–	○	○	○	○
Non-standard voltage and/or frequencies											
Non-standard winding ¹⁾	9	0	M1Y • and identification code	All	All	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.

- Standard version
- Without additional charge
- This order code only determines the price of the version – Additional plain text is required.
- Not possible
- O. R. Possible on request

Voltages
Cast-iron series 1PC1301

Selection and ordering data

Voltages	Voltage code 12th and 13th position of the Article No.	Additional identification code with order code and plain text if required	Motor category									
			Motor version	Motor type (cast-iron)	Motor type – Frame size							
					180	200	225	250	280	315 S/M	315 L 2-pole	315 L 4-pole, 6-pole
			High Efficiency IE2	1PC1301	1PC1301							
			Motor version	Motor type	Frame size							
					180	200	225	250	280	315 S/M	315 L 2-pole	315 L 4-pole, 6-pole
1PC1301 - ■ - ■ Order code												
Voltage at 50 Hz or 60 Hz												
50 Hz 230 VΔ/400 VY	2	2	–	All	All	□	□	□	□	□	□	□
50 Hz 400 VΔ/690 VY	3	4	–	All	All	□	□	□	□	□	□	□
50 Hz 500 VY	2	7	–	All	All	○	○	○	○	○	○	○
50 Hz 500 VΔ	4	0	–	All	All	○	○	○	○	○	○	○
Non-standard voltage and/or frequencies												
Non-standard winding ¹⁾	9	0	M1Y • and identification code	All	All	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.

- Standard version
- Without additional charge
- This order code only determines the price of the version – Additional plain text is required.
- Not possible
- O. R. Possible on request


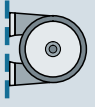
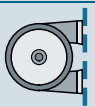

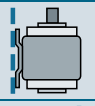
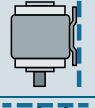
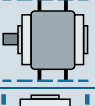
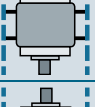
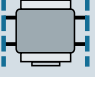
¹⁾ Special voltages or 60 Hz on request.

SIMOTICS DP 1PC1 Smoke-Extraction Motors

Supplements to article numbers and special versions

Types of construction
Aluminum series 1PC1300


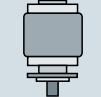

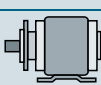
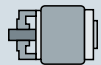
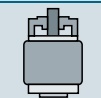
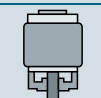
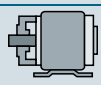
Selection and ordering data

Types of construction	Type of construc. code 14th position of the Article No.	Additional identification code with order code and plain text if required	Motor category								
			Motor version	Motor type (alum.)	Motor type – Frame size						
			High Efficiency IE2 1PC1300	1PC1300	80	90	100	112	132	160	
1PC1300 - - ■ .. (-Z) Order code			Motor version	Motor type	Frame size						
					80	90	100	112	132	160	
Without flange											
IM B3		A	–	All	All	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
IM B6		T	–	All	All	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
IM B7		U	–	All	All	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
IM B8		V	–	All	All	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
IM V6		D	–	All	All	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
IM V5 without protective cover		C	–	All	All	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
IM B30		Z	P3A	All	All	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.
IM V30		Z	P3C	All	All	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.
IM V31		Z	P3D	All	All	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.

SIMOTICS DP 1PC1 Smoke-Extraction Motors

Supplements to article numbers and special versions

Types of construction
Aluminum series 1PC1300

Types of construction	Type of construc. code 14th position of the Article No.	Additional identification code with order code and plain text if required	Motor category									
			Motor version	Motor type (alum.)	Motor type – Frame size							
1PC1300 - - (-Z) Order code			Motor version	Motor type	Frame size							
With flange			acc. to DIN EN 50347 acc. to DIN 42 948		80	90	100	112	132	160		
					High Efficiency IE2	1PC1300	1PC1300					
					FF165 A 200	FF165 A 200	FF215 A 250	FT215 A 250	FF265 A 300	FF300 A 350		
IM B5		F	-	All	All	✓	✓	✓	✓	✓		
IM V1 without canopy		G	-	All	All	✓	✓	✓	✓	✓		
IM V3		H	-	All	All	✓	✓	✓	✓	✓		
IM B35		J	-	All	All	✓	✓	✓	✓	✓		
						FT100 C 120	FT115 C 140	FT130 C 160	FT130 C 160	FT165 C 200	FT215 C 250	
						FT100 C 120	FT115 C 140	FT130 C 160	FT130 C 160	FT165 C 200	FT215 C 250	
IM B14		K	-	All	All	✓	✓	✓	✓	✓		
IM V19		L	-	All	All	✓	✓	✓	✓	✓		
IM V18 without canopy		M	-	All	All	✓	✓	✓	✓	✓		
IM B34		N	-	All	All	✓	✓	✓	✓	✓		

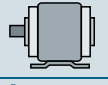
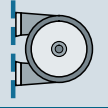
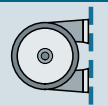

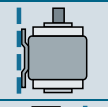
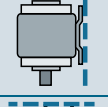
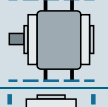
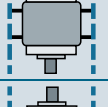

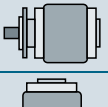
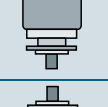
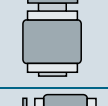

- Standard version
- ✓ With additional charge
- O. R. Possible on request

SIMOTICS DP 1PC1 Smoke-Extraction Motors

Supplements to article numbers and special versions

Types of construction
Cast-iron series 1PC1301

Selection and ordering data

Types of construction	Type of construction letter 14th position of the Article No.	Additional identification code with order code and plain text if required	Motor category											
			Motor version	Motor type (cast-iron)	Motor type – Frame size								315 L 2-pole	315 L 4-pole, 6-pole
			High Efficiency IE2	1PC1301	1PC1301									
			Motor version	Motor type	Frame size									
					180	200	225	250	280	315 S/M	315 L 2-pole	315 L 4-pole, 6-pole		
1PC1301 - - . . (-Z)			Order code											
Without flange														
IM B3		A	-	All	All	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
IM B6		T	-	All	All	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
IM B7		U	-	All	All	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
IM B8		V	-	All	All	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
IM V6		D	-	All	All	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
IM V5 without protective cover		C	-	All	All	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
IM B30		Z	P3A	All	All	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	
IM V30		Z	P3C	All	All	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	
IM V31		Z	P3D	All	All	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	
With flange						FF300 A 350	FF350 A 400	FF400 A 450	FF500 A 550	FF500 A 550	FF600 A 660	FF600 A 660	FF600 A 660	
IM B5		F	-	All	All	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	-	-	
IM V1 without canopy		G	-	All	All	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
IM V3		H	-	All	All	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	-	-	
IM B35		J	-	All	All	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

- Standard version
- With additional charge
- Not possible
- O. R. Possible on request

SIMOTICS DP 1PC1 Smoke-Extraction Motors

Supplements to article numbers and special versions

Motor protection
Aluminum series 1PC1300

Selection and ordering data

Motor protection	Motor protection code 15th position of the Article No.	Additional identification code with order code and plain text if required	Motor category								
			Motor version	Motor type (Al)	Motor type – Frame size						
			High Efficiency IE2	1PC1300	80	90	100	112	132	160	
1PC1300 - ■ .			Order code	Motor version	Motor type	Frame size					
						80	90	100	112	132	160
Motor protection (winding protection)											
Without motor protection	A	–	All	All	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Motor protection with PTC thermistor with 3 embedded temperature sensors for tripping	B	–	All	All	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Motor protection with PTC thermistor with 6 embedded temperature sensors for tripping and alarm	C	–	All	All	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Motor temperature detection with embedded temperature sensor KTY 84-130	F	–	All	All	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

- Standard version
 With additional charge

Motor protection
Cast-iron series 1PC1301

Selection and ordering data

Motor protection	Motor protection code 15th position of the Article No.	Additional identification code with order code and plain text if required	Motor category								
			Motor version	Motor type (cast-iron)	Motor type – Frame size						
			High Efficiency IE2	1PC1301	180	200	225	250	280	315	
1PC1301 - ■ .			Order code	Motor version	Motor type	Frame size					
						180	200	225	250	280	315
Motor protection (winding protection)											
Without motor protection	A	–	All	All	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Motor protection with PTC thermistor with 3 embedded temperature sensors for tripping	B	–	All	All	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Motor protection with PTC thermistor with 6 embedded temperature sensors for tripping and alarm	C	–	All	All	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Motor temperature detection with embedded temperature sensor KTY 84-130	F	–	All	All	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

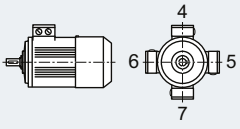
- Standard version
 With additional charge

SIMOTICS DP 1PC1 Smoke-Extraction Motors

Supplements to article numbers and special versions

Terminal box position Aluminum series 1PC1300

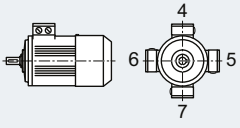
Selection and ordering data

Terminal box position	Terminal box position identification code	Additional identification code with order code and plain text if required	Motor category								
			Motor version	Motor type (alum.)	Motor type – Frame size						
	16th position of the Article No.		High Efficiency IE2	1PC1300	80	90	100	112	132	160	
			1PC1300								
1PC1300 - ■			Order code	Motor version	Motor type	Frame size					
Terminal box position ¹⁾						80	90	100	112	132	160
Terminal box at top	4	–	All	All	□	□	□	□	□	□	□
Terminal box on RHS	5	–	All	All	✓	✓	✓	✓	✓	✓	✓
Terminal box on LHS	6	–	All	All	✓	✓	✓	✓	✓	✓	✓
Terminal box at bottom ²⁾	7	–	All	All	–	–	✓	✓	✓	✓	✓

Standard version
 With additional charge
 – Not possible

Terminal box position Cast-iron series 1PC1301

Selection and ordering data

Terminal box position	Terminal box position identification code	Additional identification code with order code and plain text if required	Motor category								
			Motor version	Motor type (cast-iron)	Motor type – Frame size						
	16th position of the Article No.		High Efficiency IE2	1PC1301	180	200	225	250	280	315	
			1PC1301								
1PC1301 - ■			Order code	Motor version	Motor type	Frame size					
Terminal box position ¹⁾						180	200	225	250	280	315
Terminal box at top	4	–	All	All	□	□	□	□	□	□	□
Terminal box on RHS	5	–	All	All	✓	✓	✓	✓	✓	✓	✓
Terminal box on LHS	6	–	All	All	✓	✓	✓	✓	✓	✓	✓
Terminal box at bottom ²⁾	7	–	All	All	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.

Standard version
 With additional charge
 O. R. Possible on request

¹⁾ This refers to the position of the terminal box base on the housing.

²⁾ For motors without feet.

SIMOTICS DP 1PC1 Smoke-Extraction Motors

Supplements to article numbers and special versions

Options
Aluminum series 1PC1300

Selection and ordering data

Special versions	Additional identification code -Z with order code and plain text if required	Motor category							
		Motor version	Motor type (alum.)	Motor type – Frame size					
				80	90	100	112	132	160
		High Efficiency IE2	1PC1300	1PC1300					
1PC1300 - - -Z Order code		Motor version	Motor type	Frame size					
				80	90	100	112	132	160
Motor protection (bearing protection)									
Measuring nipple for SPM shock pulse measurement for bearing inspection	Q01	All	All	–	–	✓	✓	✓	✓
Prepared for mounting a SIPLUS CMS 1000 vibration sensor	Q05	All	All	–	–	✓	✓	✓	✓
Motor connection and terminal box									
External grounding	H04	All	All	✓	✓	✓	✓	✓	✓
Terminal box on NDE ¹⁾	H08	All	All	✓	✓	✓	✓	✓	✓
Terminal box in position 180°; connection from right	R12	All	All	○	○	○	○	○	○
Terminal box in position 0°; connection from right	R13	All	All	○	○	○	○	○	○
One metal cable gland		All	All	□	□	□	□	□	□
Windings and insulation									
Increased air humidity/temperature with 30 to 60 g water per m ³ of air	N20	All	All	–	–	✓	✓	✓	✓
Colors and paint finish									
Standard finish in RAL 7030 stone gray		All	All	□	□	□	□	□	□
Unpainted (only cast-iron parts primed)	S00	All	All	○	○	○	○	○	○
Unpainted, only primed	S01	All	All	✓	✓	✓	✓	✓	✓
Special finish sea air resistant	S03	All	All	O. R.	O. R.	✓	✓	✓	✓
Special finish in special RAL colors: For RAL colors, see "Special finish in special RAL colors" (see Catalog Section 1 "Introduction")	Y51 • and special finish RAL.....	All	All	✓	✓	✓	✓	✓	✓
Special finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005 (see Catalog Section 1 "Introduction")	Y54 • and special finish RAL.....	All	All	✓	✓	✓	✓	✓	✓
Mechanical design and degrees of protection									
Protective cover ²⁾	H00	All	All	✓	✓	✓	✓	✓	✓
Screwed-on (instead of cast) feet	H01	All	All	✓	✓	✓	✓	✓	✓
Condensation drainage holes		All	All	□	□	□	□	□	□
Rust-resistant screws (externally)	H07	All	All	–	–	✓	✓	✓	✓
IP65 degree of protection	H20	All	All	✓	✓	✓	✓	✓	✓
IP56 degree of protection	H22	All	All	✓	✓	✓	✓	✓	✓
Drive-end seal for flange-mounting motors, oil-tight to 0.1 bar	H23	All	All	✓	✓	✓	✓	✓	✓
Next larger standard flange	P01	All	All	–	–	O. R.	O. R.	O. R.	–
Coolant temperature and site altitude									
Coolant temperature –30 to +40 °C	D04	All	All	✓	✓	✓	✓	✓	✓
Bearings and lubrication									
Bearing design for increased cantilever forces	L22	All	All	–	–	✓	✓	✓	✓
Regreasing device	L23	All	All	–	–	✓	✓	✓	✓
Bearing insulation DE		All	All	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.
Bearing insulation NDE		All	All	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.
Balance and vibration quantity									
Vibration severity grade A		All	All	□	□	□	□	□	□
Vibration quantity level B	L00	All	All	✓	✓	✓	✓	✓	✓
Half-key balancing (standard)		All	All	□	□	□	□	□	□
Balancing without feather key, feather key is supplied	L01	All	All	✓	✓	✓	✓	✓	✓
Full-key balancing	L02	All	All	✓	✓	✓	✓	✓	✓

For legends and footnotes, see Page 5/20.

SIMOTICS DP 1PC1 Smoke-Extraction Motors

Supplements to article numbers and special versions

Options Aluminum series 1PC1300

Special versions	Additional identification code -Z with order code and plain text if required	Motor category								
		Motor version	Motor type (alum.)	Motor type – Frame size						
				80	90	100	112	132	160	
		High Efficiency IE2	1PC1300	1PC1300						
		Motor version	Motor type	Frame size						
				80	90	100	112	132	160	
1PC1300 - - -Z Order code										
Shaft and rotor										
Shaft extension with standard dimensions, without feather keyway	L04	All	All	–	–	✓	✓	✓	✓	
Second standard shaft extension	L05	All	All	✓	✓	✓	✓	✓	✓	
Concentricity of shaft extension in accordance with DIN 42955 Tolerance R	L07	All	All	✓	✓	✓	✓	✓	✓	
Concentricity of shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors	L08	All	All	✓	✓	✓	✓	✓	✓	
Non-standard shaft extension, DE ³⁾	Y58 • and identification code	All	All	✓	✓	✓	✓	✓	✓	
Non-standard shaft extension, NDE ³⁾	Y59 • and identification code	All	All	✓	✓	✓	✓	✓	✓	
Special shaft steel		All	All	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.	
Heating and ventilation										
Without external fan and without fan cover	F90	All	All	○	○	○	○	○	○	
Rating plate and extra rating plates										
Extra rating plate for voltage tolerance ⁴⁾	B07	All	All	✓	✓	✓	✓	✓	✓	
Second rating plate, loose	M10	All	All	✓	✓	✓	✓	✓	✓	
Extra rating plate or rating plate with plate data	Y80 • and identification code	All	All	✓	✓	✓	✓	✓	✓	
Extra rating plate with identification codes	Y82 • and identification code	All	All	✓	✓	✓	✓	✓	✓	
Additional information on rating plate and on package label (max. 20 characters)	Y84 • and identification code	All	All	✓	✓	✓	✓	✓	✓	
Packaging, safety notes, documentation and test certificates										
Acceptance test certificate 3.1 according to EN 10204 ⁵⁾	B02	All	All	✓	✓	✓	✓	✓	✓	
Printed German/English Operating Instructions enclosed ⁶⁾	B04	All	All	✓	✓	✓	✓	✓	✓	
Standard test (routine test) with acceptance	B65	All	All	✓	✓	✓	✓	✓	✓	
Type test with heat run for horizontal motors, with acceptance	B83	All	All	✓	✓	✓	✓	✓	✓	

- Standard version
- Without additional charge
- This order code only determines the price of the version – Additional plain text is required.
- ✓ With additional charge
- Not possible
- O. R. Possible on request

1) Important: Dimensions "C" and "CA" deviate from the EN 50347 standard. Note dimensions according to dimensions sheet generator!

2) Order code **H00** provides mechanical protection.

3) When motors are ordered that have a longer or shorter shaft extension than normal, the required position and length of the feather keyway must be specified in a sketch. It must be ensured that only feather keys in accordance with DIN 6885, Form A are permitted to be used. Valid for non-standard shaft extensions DE or NDE. The feather keys are supplied in every case. For order codes **Y58**, **Y59** and **L05**:
 – Dimensions D and DA ≤ Inner diameter of roller bearing (see tables under "Dimensions")
 – Dimensions E and EA ≤ 2 × length E (normal) of the shaft extension.
 For an explanation of the order codes, see Catalog Section 1 "Introduction".

4) Can be ordered for 230 VΔ/400 VY or 400 VΔ/690 VY (voltage code "22" or "34").

5) The delivery time for the factory test certificate may differ from the delivery time for the motor.

6) The Operating Instructions (Compact) are available in PDF format for all official EU languages at <http://support.automation.siemens.com/WWW/view/en/10803948/133300>.

SIMOTICS DP 1PC1 Smoke-Extraction Motors

Supplements to article numbers and special versions

Options
Cast-iron series 1PC1301

Selection and ordering data

Special versions	Additional identification code -Z with order code and plain text if required	Motor category							
		Motor version	Motor type (cast-iron)	Motor type – Frame size					
				180	200	225	250	280	315
		High Efficiency IE2	1PC1301	1PC1301					
		Motor version	Motor type	Frame size					
				180	200	225	250	280	315
1PC1301 - - -Z Order code									
Motor protection (bearing protection)									
Measuring nipple for SPM shock pulse measurement for bearing inspection	Q01	All	All	✓	✓	✓	✓	✓	✓
Prepared for mounting a SIPLUS CMS 1000 vibration sensor	Q05	All	All	✓	✓	✓	✓	✓	✓
Motor connection and terminal box									
External grounding		All	All	□	□	□	□	□	□
Terminal box on NDE ¹⁾	H08	All	All	✓	✓	✓	✓	✓	✓
Terminal box in position 180°; connection from right	R12	All	All	○	○	○	○	○	○
Terminal box in position 0°; connection from right	R13	All	All	○	○	○	○	○	○
One metal cable gland		All	All	□	□	□	□	□	□
Windings and insulation									
Increased air humidity/temperature with 30 to 60 g water per m ³ of air	N20	All	All	✓	✓	✓	✓	✓	✓
Colors and paint finish									
Standard finish in RAL 7030 stone gray		All	All	□	□	□	□	□	□
Unpainted (only cast-iron parts primed)	S00	All	All	○	○	○	○	○	○
Unpainted, only primed	S01	All	All	✓	✓	✓	✓	✓	✓
Special finish sea air resistant	S03	All	All	✓	✓	✓	✓	✓	✓
Internal coating	S05	All	All	✓	✓	✓	✓	✓	✓
Special finish in RAL 7030 stone gray	S10	All	All	✓	✓	✓	✓	✓	✓
Special finish in special RAL colors: For RAL colors, see "Special finish in special RAL colors" (see Catalog Section 1 "Introduction")	Y51 • and special finish RAL....	All	All	✓	✓	✓	✓	✓	✓
Standard finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005 (see Catalog Section 1 "Introduction")	Y53 • and standard finish RAL....	All	All	✓	✓	✓	✓	✓	✓
Special finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005 (see Catalog Section 1 "Introduction")	Y54 • and special finish RAL....	All	All	✓	✓	✓	✓	✓	✓
Mechanical design and degrees of protection									
Screwed-on (instead of cast) feet	H01	All	All	✓	✓	✓	✓	✓	✓
Condensation drainage holes		All	All	□	□	□	□	□	□
Rust-resistant screws (externally)	H07	All	All	✓	✓	✓	✓	✓	✓
IP65 degree of protection	H20	All	All	✓	✓	✓	✓	✓	✓
IP56 degree of protection	H22	All	All	✓	✓	✓	✓	✓	✓
Drive-end seal for flange-mounting motors, oil-tight to 0.1 bar	H23	All	All	✓	✓	✓	✓	✓	✓
Coolant temperature and site altitude									
Coolant temperature -30 to +40 °C	D04	All	All	✓	✓	✓	✓	✓	✓
Bearings and lubrication									
Bearing design for increased cantilever forces	L22	All	All	✓	✓	✓	✓	✓	✓
Regreasing device	L23	All	All	✓	✓	✓	✓	□	□
Bearing insulation DE		All	All	-	-	O. R.	O. R.	O. R.	O. R.
Bearing insulation NDE		All	All	-	-	O. R.	O. R.	O. R.	O. R.

For legends and footnotes, see Page 5/22.

SIMOTICS DP 1PC1 Smoke-Extraction Motors

Supplements to article numbers and special versions

Options Cast-iron series 1PC1301

Special versions	Additional identification code -Z with order code and plain text if required	Motor category							
		Motor version	Motor type (cast-iron)	Motor type – Frame size					
		High Efficiency IE2	1PC1301	180	200	225	250	280	315
		Motor version	Motor type	Frame size					
				180	200	225	250	280	315
Balance and vibration quantity									
Vibration severity grade A		All	All	☐	☐	☐	☐	☐	☐
Vibration quantity level B ²⁾	L00	All	All	✓	✓	✓	✓	✓	✓
Half-key balancing (standard)		All	All	☐	☐	☐	☐	☐	☐
Balancing without feather key, feather key is supplied	L01	All	All	✓	✓	✓	✓	✓	✓
Full-key balancing	L02	All	All	✓	✓	✓	✓	✓	✓
Shaft and rotor									
Shaft extension with standard dimensions, without feather keyway	L04	All	All	✓	✓	✓	✓	✓	✓
Second standard shaft extension	L05	All	All	✓	✓	✓	✓	✓	✓
Concentricity of shaft extension in accordance with DIN 42955 Tolerance R	L07	All	All	✓	✓	✓	✓	✓	✓
Concentricity of shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors	L08	All	All	✓	✓	✓	✓	✓	✓
Non-standard cylindrical shaft extension, DE ³⁾	Y58 • and identification code	All	All	✓	✓	✓	✓	✓	✓
Non-standard cylindrical shaft extension, NDE ³⁾	Y59 • and identification code	All	All	✓	✓	✓	✓	✓	✓
Special shaft steel		All	All	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.
Heating and ventilation									
Without external fan and without fan cover	F90	All	All	○	○	○	○	○	○
Rating plate and extra rating plates									
Extra rating plate for voltage tolerance ⁴⁾	B07	All	All	✓	✓	✓	✓	✓	✓
Extra rating plate or rating plate with plate data	Y80 • and identification code	All	All	✓	✓	✓	✓	✓	✓
Extra rating plate with identification codes	Y82 • and identification code	All	All	✓	✓	✓	✓	✓	✓
Additional information on rating plate and on package label (max. 20 characters)	Y84 • and identification code	All	All	✓	✓	✓	✓	✓	✓
Packaging, safety notes, documentation and test certificates									
Acceptance test certificate 3.1 according to EN 10204 ⁵⁾	B02	All	All	✓	✓	✓	✓	✓	✓
Printed German/English Operating Instructions enclosed ⁶⁾	B04	All	All	✓	✓	✓	✓	✓	✓
Standard test (routine test) with acceptance	B65	All	All	✓	✓	✓	✓	✓	✓
Type test with heat run for horizontal motors, with acceptance	B83	All	All	✓	✓	✓	✓	✓	✓

- ☐ Standard version
- Without additional charge
- This order code only determines the price of the version – Additional plain text is required.
- ✓ With additional charge
- Not possible
- O. R. Possible on request

1) Important: Dimensions "C" and "CA" deviate from the EN 50347 standard. Note dimensions according to dimensions sheet generator!

2) On request for 2-pole motors (concerns frame sizes 225 to 315).

3) When motors are ordered that have a longer or shorter shaft extension than normal, the required position and length of the feather keyway must be specified in a sketch. It must be ensured that only feather keys in accordance with DIN 6885, Form A are permitted to be used. The feather keyway is positioned centrally on the shaft extension. The length is defined by the manufacturer normatively. Valid for non-standard shaft extensions DE or NDE. The feather keys are supplied in every case.
For order codes **Y58**, **Y59** and **L05**:
– Dimensions D and DA ≤ Inner diameter of roller bearing (see dimension tables under "Dimensions")
– Dimensions E and EA ≤ 2 x Length E (normal) of the shaft extension
For explanation of the order codes, see Catalog Section 1 "Introduction".

4) Can be ordered for 230 VΔ/400 VY or 400 VΔ/690 VY (voltage code "22" or "34").

5) The delivery time for the factory test certificate may differ from the delivery time for the motor.

6) The Operating Instructions (Compact) are available in PDF format for all official EU languages at <http://support.automation.siemens.com/WWW/view/en/10803948/133300>.

SIMOTICS DP 1PC1 Smoke-Extraction Motors

Supplements to article numbers and special versions

Accessories

Overview

Slide rails with fixing bolts and tensioning screws according to DIN 42923

Slide rails are used to tension the belt of a machine easily and conveniently when a belt tightener is not available. They are fixed to the base using stone bolts or foundation blocks.

The assignment of slide rails to motor size can be found in DIN 42923. For motors of frame sizes 355 to 450, there are no standardized slide rails (please inquire).

Available from:

Lütgert & Co. GmbH
Postfach 42 51
33276 Gütersloh, Germany
Tel. +49 (5241) 7407-0
Fax +49 (5241) 7407-90

<http://www.luetgert-antriebe.de>
E-mail: info@luetgert-antriebe.de

Foundation block acc. to DIN 799

The foundation blocks are inserted into the stone foundation and embedded in concrete. They are used for fixing machines of medium size, slide rails, pedestal bearings, baseframes, etc. After the fixing bolts have been unscrewed, the machine can be dragged without it having to be lifted.

When the machine is initially installed, the foundation block that is bolted to the machine (without washers) and fitted with taper pins is not embedded with concrete until the machine has been fully aligned. In this case, the machine is positioned 2 to 3 mm lower. The difference in shaft height is compensated by inserting shims on final installation. The taper pins safeguard the exact position of the machine when it is repeatedly removed and replaced without the need for realignment.

Available from:

Lütgert & Co. GmbH
Postfach 42 51
33276 Gütersloh, Germany
Tel. +49 (5241) 7407-0
Fax +49 (5241) 7407-90

<http://www.luetgert-antriebe.de>
E-mail: info@luetgert-antriebe.de

Taper pins to DIN 258 with threaded ends and constant taper lengths

Taper pins are used for components that are repeatedly removed. The drilled hole is ground conically using a conical reamer until the pin can be pushed in by hand until the cone shoulder lies 3 to 4 mm above the rim of the hole.

It can then be driven in using a hammer until it is correctly seated. The pin is removed from the drilled hole by screwing on the nut and tightening it.

Standardized taper pins are available from general engineering suppliers.

Available from:

Otto Roth GmbH & Co. KG
Rutesheimer Straße 22
70499 Stuttgart, Germany
Tel. +49 (711) 1388-0
Fax. +49 (711) 1388-233

<http://www.ottoroth.de>
E-mail: info@ottoroth.de

Couplings

The motor from Siemens is connected to the machine or gear unit through a coupling. Flender is an important coupling manufacturer with a wide range of products. For standard applications, Siemens recommends that elastic couplings of Flender types N-Eupex and Rupex or torsionally rigid couplings of types Arpex and Zapex are used. For special applications, Fludex and Elpex couplings are recommended.

Available from:

Siemens contact partner - ordering from catalog
Siemens MD 10.1 "FLENDER Standard Couplings"

or

A. Friedr. Flender AG
Kupplungswerk Mussum
Industriepark Bocholt
Schlavenhorst 100
46395 Bocholt, Germany
Tel. +49 (2871) 922185
Fax +49 (2871) 0922579

<http://www.flender.com>
E-mail: couplings@flender.com

More information

Spare motors and repair parts

- Supply commitment for spare motors and repair parts following delivery of the motor
 - For up to 5 years, in the event of total motor failure, Siemens will supply a comparable motor with regard to the mounting dimensions and functions (the type series may vary).
 - Repair parts will be supplied for up to 5 years.
 - For up to 10 years, Siemens will provide information and will, if necessary, supply documentation for repair parts.
- When repair parts are ordered, the following details must be provided:
 - Designation and part number
 - Article No. and factory number of the motor

- For bearing types, see the "Introduction".
- For standard components, a supply commitment does not apply.
- Support – Hotline
In Germany
Tel.: +49 (180) 5050448

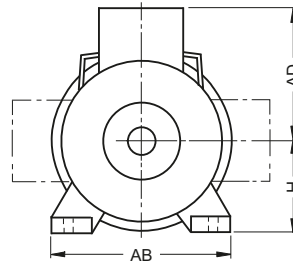
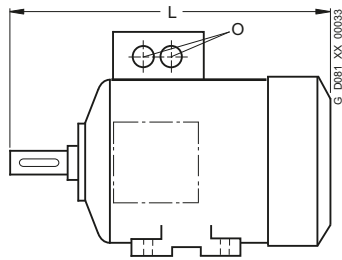
National telephone numbers can be found on the Internet page:
<http://www.siemens.com/automation/service&support>

SIMOTICS DP 1PC1 Smoke-Extraction Motors

Dimensions

Overall dimensions

Overview



Frame size	Type	Dimensions					
		L	AD	H	AB	O	
80 M	Aluminum series, self-ventilated or forced-air cooled 1PC1300	292	98.5	80	150	-	
90 S/ 90 L	Aluminum series, self-ventilated or forced-air cooled 1PC1300	347	103.5	90	165	-	
100 L	Aluminum series, self-ventilated or forced-air cooled 1PC1300	395.5	118	100	196	-	
112 M	Aluminum series, self-ventilated or forced-air cooled 1PC1300	389	129	112	226	-	
132 S/ 132 M	Aluminum series, self-ventilated or forced-air cooled 1PC1300	465 ¹⁾	149	132	256	-	
160 M/ 160 L	Aluminum series, self-ventilated or forced-air cooled 1PC1300	604	175.5	160	300	-	
180 M/ 180 L	Cast-iron series, forced-air cooled						
	1PC1301- 1EA2, 1EB2, 1EC4	668	244	180	339	-	
	1EB4	698					
	Cast-iron series, self-ventilated						
	1PC1301- 1EA2, 1EB2, 1EC4	668	244	180	339	-	
	1EB4	698					
200 L	Cast-iron series, forced-air cooled						
	1PC1301- 2AA4, 2AA5, 2AB5, 2AC4, 2AC5	721	307	200	378	-	
	Cast-iron series, self-ventilated						
	1PC1301- 2AA4, 2AA5, 2AB5, 2AC4, 2AC5	617	307	200	378	-	
	225 S/ 225 M	Cast-iron series, forced-air cooled					
	1PC1301- 2BB0	788	328	225	436	-	
	2BA2	818					
	2BB2, 2BC2	848					
250 M	Cast-iron series, forced-air cooled						
	1PC1301- 2CA2, 2CB2, 2CC2	887	375	250	490	-	
	Cast-iron series, self-ventilated						
	1PC1301- 2CA2, 2CB2, 2CC2	764	375	250	490	-	

Frame size	Type	Dimensions					
		L	AD	H	AB	O	
280 S/ 280 M	Cast-iron series, forced-air cooled						
	1PC1301- 2DA0, 2DB0, 2DC0, 2DA2, 2DB2, 2DC2	960	398	280	540	-	
	Cast-iron series, self-ventilated						
	1PC1301- 2DA0, 2DB0, 2DC0, 2DA2, 2DB2, 2DC2	830	398	280	540	-	
	315 S	Cast-iron series, forced-air cooled					
	1PC1301- 3AA0	1052	455	315	610	-	
	3AB0, 3AC0	1082					
	Cast-iron series, self-ventilated						
	1PC1301- 3AA0	905	455	315	610	-	
	3AB0, 3AC0	935					
315 M	Cast-iron series, forced-air cooled						
	1PC1301- 3AA2	1217	455	315	610	-	
	3AB2	1247					
	3AC2	1082					
	Cast-iron series, self-ventilated						
	1PC1301- 3AA2	1070	455	315	610	-	
	3AB2	1100					
	3AC2	935					
315 L	Cast-iron series, forced-air cooled						
	1PC1301- 3AA4	1217	455	315	610	-	
	3AB4, 3AC4	1247					
	3AA5	1372					
	3AB5	1402					
	3AC5	1247					
	3AC6	1402					
	Cast-iron series, self-ventilated						
	1PC1301- 3AA4	1070	455	315	610	-	
	3AB4, 3AC4	1100					
	3AA5	1225					
	3AB5	1255					
	3AC5	1100					
	3AC6	1255					

Overview (continued)**Notes on the dimensions**

- Dimensional drawings according to DIN EN 50347 and IEC 60072.

- Fits

The shaft extensions specified in the dimension tables (DIN 748) and centering spigot diameters (DIN EN 50347) are machined with the following fits:

Dimension designation ISO fit DIN ISO 286-2

D, DA	to 30	j6
	over 30 to 50	k6
	over 50	m6
N	to 250	j6
	over 250	h6
F, FA		h9
K		H17
S	flange (FF)	H17

The drilled holes of couplings and belt pulleys should have an ISO fit of at least H7.

- Dimension tolerances

For the following dimension designations, the admissible deviations are given below:

Dimension designation	Dimension	Admissible deviation
H	to 250	- 0.5
	over 250	- 1.0
E, EA		- 0.5

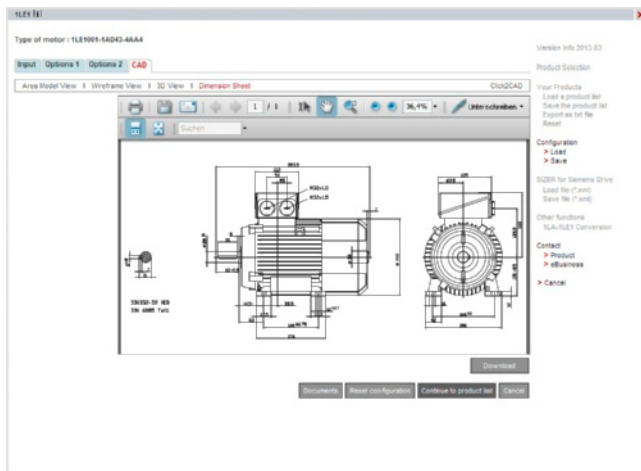
Keyways and feather keyways (dimensions GA, GC, F and FA) are made in compliance with DIN 6885 Part 1.

- All dimensions are specified in mm.

Dimension sheet generator

(part of the DT Configurator)

A dimensional drawing can be created in the DT Configurator for every configurable motor. A dimensional drawing can be requested for every other motor.



When a complete Article No. is entered with or without order codes, a dimensional drawing can be called up under the "Documentation" tab. These dimensional drawings can be presented in different views and sections and printed. The corresponding dimension sheets can be exported, saved and processed further in DXF format (interchange/import format for CAD systems) or as bitmap graphics.

Online access in the Siemens Industry Mall

The DT Configurator is integrated in the Siemens Industry Mall and can be used on the Internet without installation.

German: www.siemens.de/dt-konfigurator

English: www.siemens.com/dt-configurator

Offline access in the Interactive Catalog CA 01

The DT Configurator is also part of the Interactive Catalog CA 01 on DVD – the offline version of Siemens Industry Mall. CA 01 can be ordered from the relevant Siemens sales office or via the Internet: www.siemens.com/automation/CA01

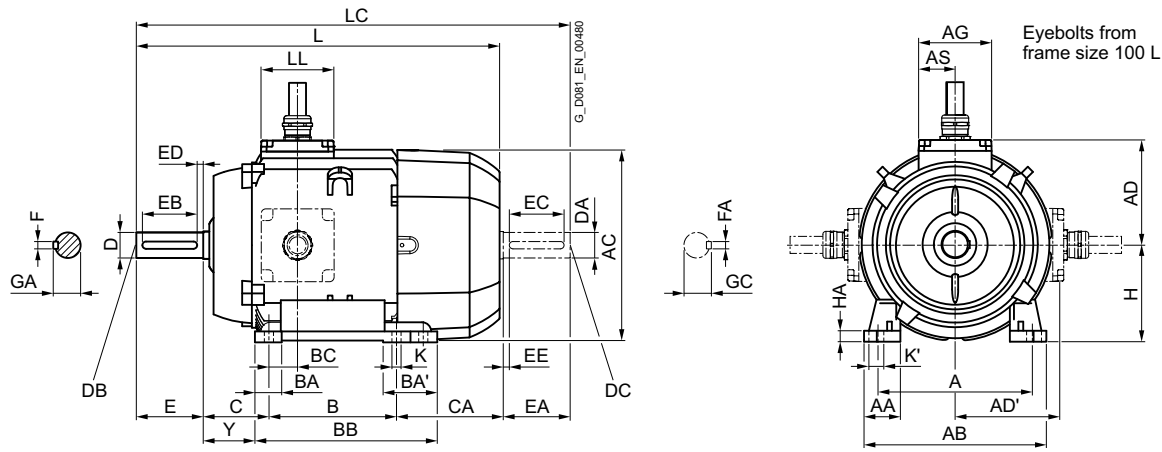
SIMOTICS DP 1PC1 Smoke-Extraction Motors

Dimensions

Aluminum series 1PC1300
Self-ventilated, frame sizes 80 M to 160 L

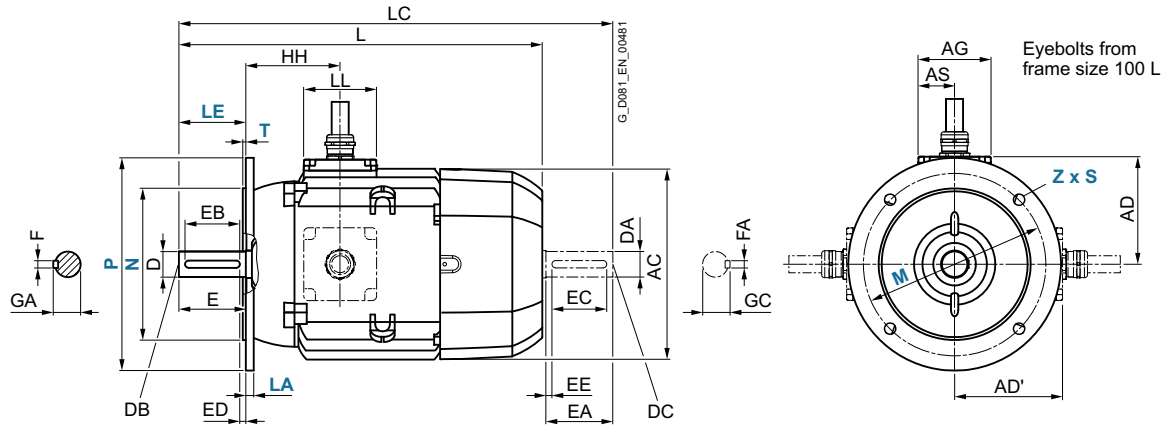
Dimensional drawings

Type of construction IM B3



Type of construction IM B5

For flange dimensions, see Page 5/34 (Z = the number of retaining holes)



5

For motor			Dimension designation acc. to IEC																	
Frame size	Motor type 1PC1300	No. of poles	A	AA	AB	AC	AD	AD'	AG	AS	B*	BA	BA'	BB	BC	C	CA*	H	HA	Y
80 M	All	2, 4, 6	125	30.5	150	159	98.5	98.5	75	37.5	100	32	32	118	23	50	113	80	8	41
90 S	All	2, 4, 6	140	30.5	165	178	103.5	103.5	75	37.5	100	33	54	143	22.5	56	159	90	10	47
90 L	All	2, 4, 6									125						134			
100 L	All	2, 4, 6	160	42	196	198	118	118	95	47.5	140	37.5	37.5	176	33.5	63	141	100	12	45
112 M	All	2, 4, 6	190	46	226	222	129	129	95	47.5	140	37.5	37.5	176	26	70	130	112	12	52
132 S	All	2, 4, 6	216	53	256	262	149	149	110	55	140	38	76	218	26.5	89	167	132	15	69
132 M	All	2, 4, 6									178						129			
160 M	All	2, 4, 6	254	60	300	314	175.5	175.5	120	60	210	44	89	300	47	108	192	160	18	85
160 L	All	2, 4, 6									254						148			

* This dimension is assigned in DIN EN 50347 to the frame size listed.

SIMOTICS DP 1PC1 Smoke-Extraction Motors

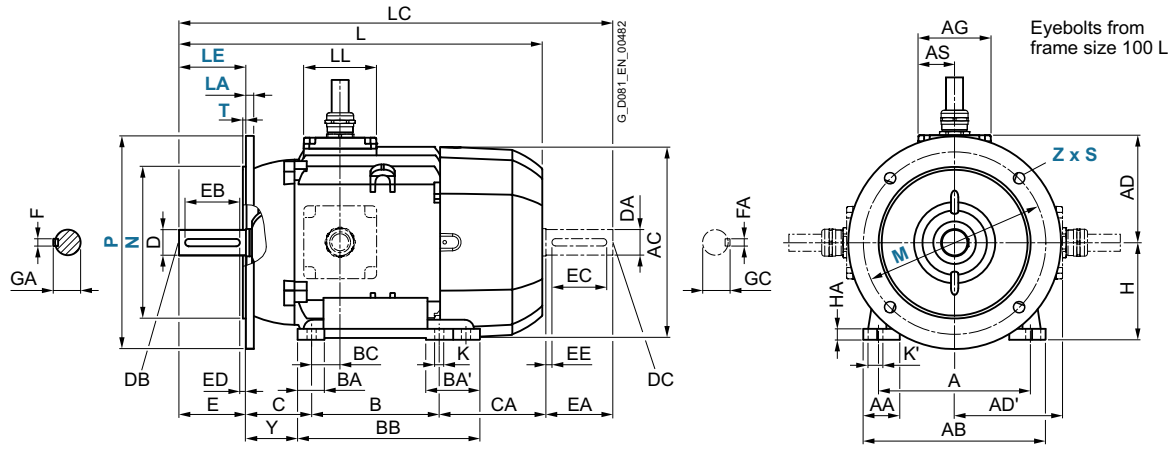
Dimensions

Aluminum series 1PC1300
Self-ventilated, frame sizes 80 M to 160 L

Dimensional drawings (continued)

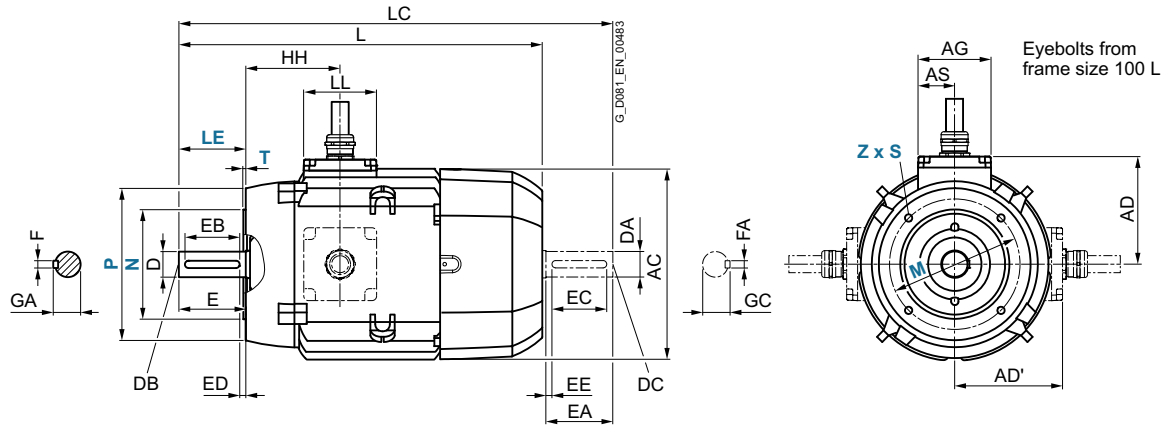
Type of construction IM B35

For flange dimensions, see Page 5/34 (Z = the number of retaining holes)



Type of construction IM B14

For flange dimensions, see Page 5/34 (Z = the number of retaining holes)



For motor			Dimension designation acc. to IEC							DE shaft extension					NDE shaft extension							
Frame size	Motor type 1PC1300	No. of poles	HH	K	K'	L	LC	LL	D	DB	E	EB	ED	F	GA	DA	DC	EA	EC	EE	FA	GC
80 M	All	2, 4, 6	73	9.5	13.5	292	343	75	19	M6	40	32	4	6	21.5	19	M6	40	32	4	6	21.5
90 S	All	2, 4, 6	78.5	10	14	347	405	75	24	M8	50	40	5	8	27	19	M6	40	32	4	6	21.5
90 L	All	2, 4, 6																				
100 L	All	2, 4, 6	96.5	12	16	395.5	454	95	28	M10	60	50	5	8	31	24	M8	50	40	5	8	27
112 M	All	2, 4, 6	96	12	16	389	450	95	28	M10	60	50	5	8	31	24	M8	50	40	5	8	27
132 S	All	2, 4, 6	115.5	12	16	465	535.5	110	38	M12	80	70	5	10	41	28	M10	60	50	5	8	31
132 M	All	2, 4, 6																				
160 M	All	2, 4, 6	155	15	19	604	730	120	42	M16	110	90	10	12	45	42	M16	110	90	10	12	45
160 L	All	2, 4, 6																				

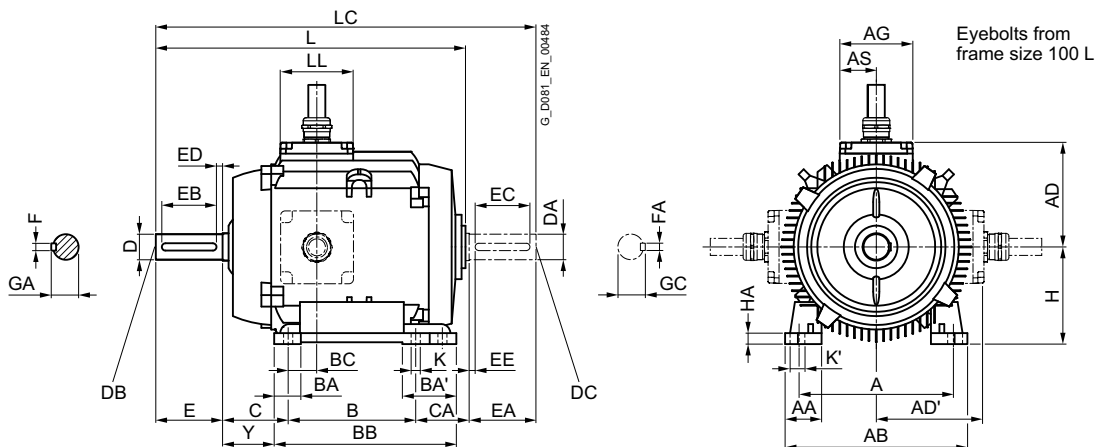
SIMOTICS DP 1PC1 Smoke-Extraction Motors

Dimensions

Aluminum series 1PC1300
Forced-air cooled, frame sizes 80 M to 160 L

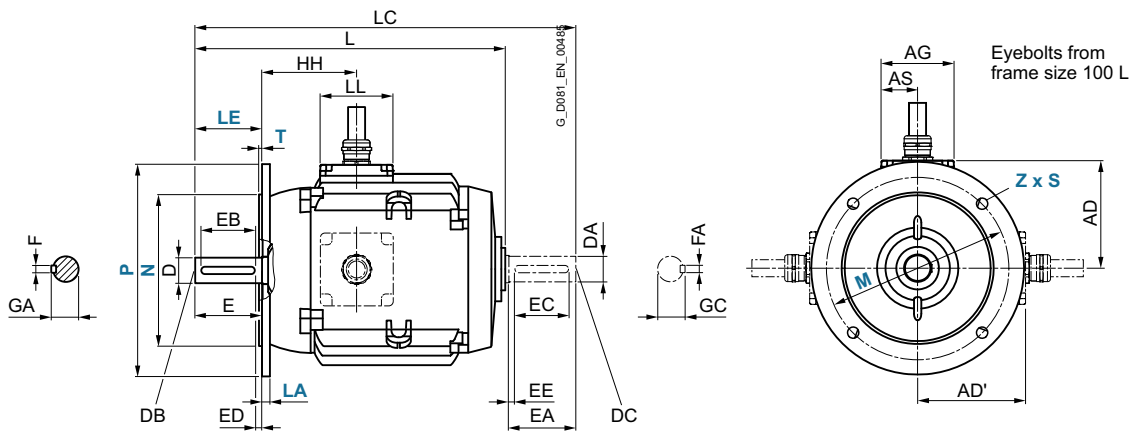
Dimensional drawings

Type of construction IM B3



Type of construction IM B5

For flange dimensions, see Page 5/34 (Z = the number of retaining holes)



5

For motor			Dimension designation acc. to IEC																
Frame size	Motor type 1PC1300	No. of poles	A	AA	AB	AD	AD'	AG	AS	B*	BA	BA'	BB	BC	C	CA*	H	HA	Y
80 M	All	2, 4, 6	125	30.5	150	98.5	98.5	75	37.5	100	32	32	118	23	50	70	80	8	41
90 S	All	2, 4, 6	140	30.5	165	103.5	103.5	75	37.5	100	33	54	143	22.5	56	103	90	10	47
90 L	All	2, 4, 6								125						78			
100 L	All	2, 4, 6	160	42	196	118	118	95	47.5	140	37.5	37.5	176	33.5	63	63	100	12	45
112 M	All	2, 4, 6	190	46	226	129	129	95	47.5	140	37.5	37.5	176	26	70	45	112	12	52
132 S	All	2, 4, 6	216	53	256	149	149	110	55	140	38	76	218	26.5	89	77	132	15	69
132 M	All	2, 4, 6								178						39			
160 M	All	2, 4, 6	254	60	300	175.5	175.5	120	60	210	44	89	300	47	108	92	160	18	85
160 L	All	2, 4, 6								254						48			

* This dimension is assigned in DIN EN 50347 to the frame size listed.

SIMOTICS DP 1PC1 Smoke-Extraction Motors

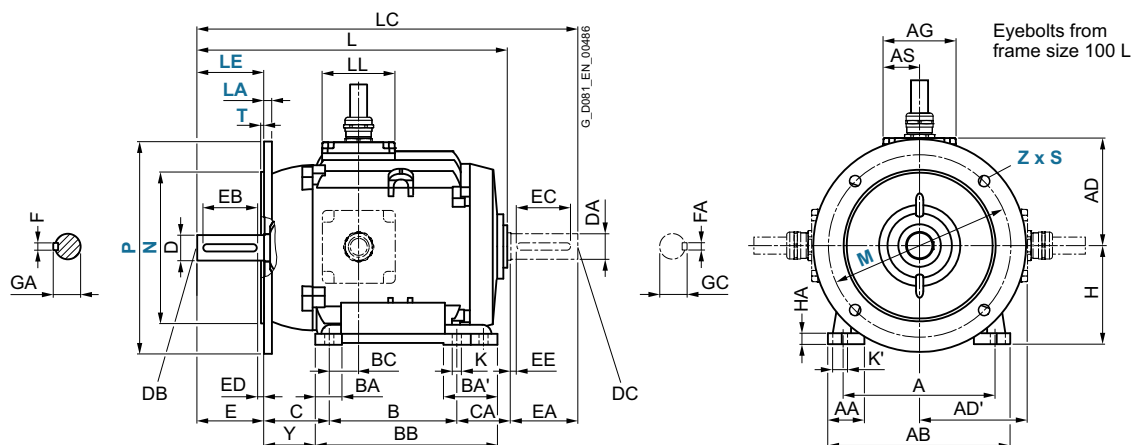
Dimensions

Aluminum series 1PC1300
Forced-air cooled, frame sizes 80 M to 160 L

Dimensional drawings (continued)

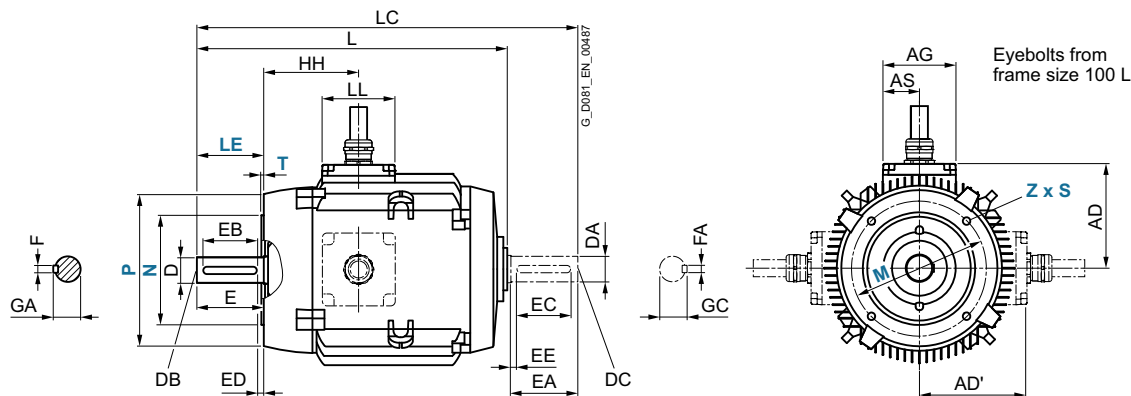
Type of construction IM B35

For flange dimensions, see Page 5/34 (**Z** = the number of retaining holes)



Type of construction IM B14

For flange dimensions, see Page 5/34 (**Z** = the number of retaining holes)



For motor	Motor type	No. of poles	Dimension designation acc. to IEC					DE shaft extension					NDE shaft extension									
			HH	K	K'	L	LC	LL	D	DB	E	EB	ED	F	GA	DA	DC	EA	EC	EE	FA	GC
80 M	All	2, 4, 6	73	9.5	13.5	253	300	75	19	M6	40	32	4	6	21.5	19	M6	40	32	4	6	21.5
90 S	All	2, 4, 6	78.5	10	14	295	349	75	24	M8	50	40	5	8	27	19	M6	40	32	4	6	21.5
90 L	All	2, 4, 6																				
100 L	All	2, 4, 6	96.5	12	16	321.5	376	95	28	M10	60	50	5	8	31	24	M8	50	40	5	8	27
112 M	All	2, 4, 6	96	12	16	311	365	95	28	M10	60	50	5	8	31	24	M8	50	40	5	8	27
132 S	All	2, 4, 6	115.5	12	16	380.5	446	110	38	M12	80	70	5	10	41	28	M10	60	50	5	8	31
132 M	All	2, 4, 6																				
160 M	All	2, 4, 6	155	15	19	510	630	120	42	M16	110	90	10	12	45	42	M16	110	90	10	12	45
160 L	All	2, 4, 6																				

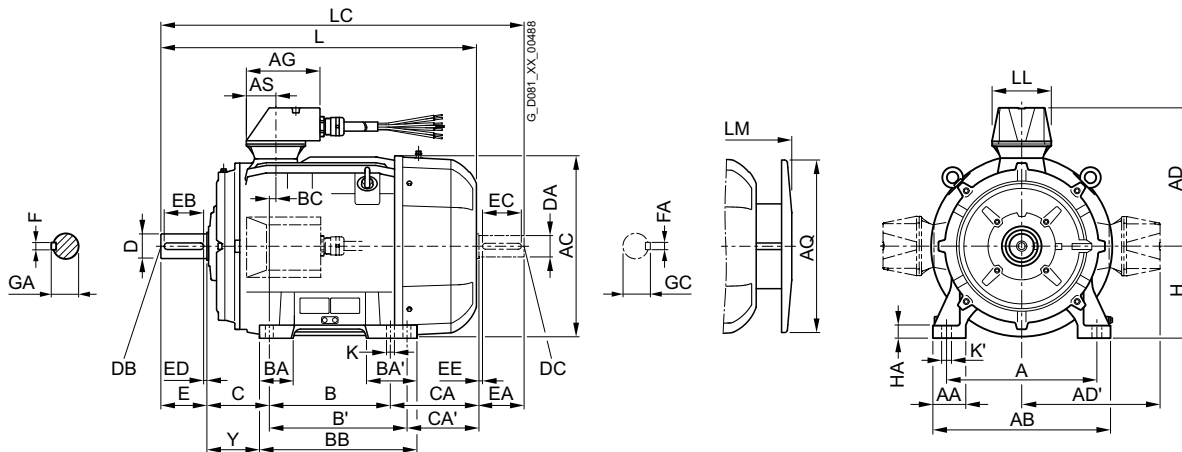
SIMOTICS DP 1PC1 Smoke-Extraction Motors

Dimensions

Cast-iron series 1PC1301
Self-ventilated, frame sizes 180 M to 315 L

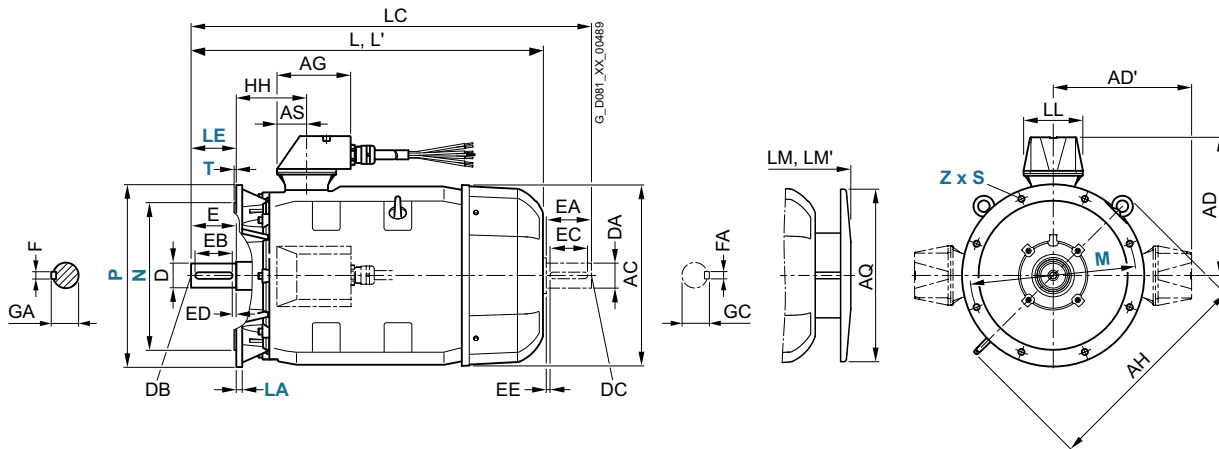
Dimensional drawings

Type of construction IM B3



Type of construction IM B5

For flange dimensions, see Page 5/34 (Z = the number of retaining holes)



For motor		No. of poles	Dimension designation acc. to IEC																					
Frame size	Motor type 1PC1301-		A	AA	AB	AC	AD	AD'	AG	AH	AQ'	AS	B*	B'	BA	BA'	BB	BC	C	CA*	CA'	H	HA	Y
180 M	1EA2, 1EB2	2, 4	279	65	339	356	244	244	100	468	340	50	241*	279	85	120	328	34	121	202	164	180	20	95
180 L	1EC4 1EB4	6 4	279	65	239	356	244	244	100	468	340	50	241*	279	85	120	328	34	121	202	164	180	20	95
200 L	2AA4, 2AA5 2AB5, 2AC4, 2AC5	2 4, 6	318	70	378	396	307	307	175	533	340	65	305*	-	104	104	355	31	133	177	-	200	25	108
225 S	2BB0	4	356	80	436	449	328	328	175	556	425	65	286*	311	92	117	361	15	149	218	193	225	34	124
225 M	2BA2 2BB2, 2BC2	2 4, 6	356	80	436	449	328	328	175	556	425	65	286*	311	92	117	361	15	149	218	193	225	34	124
250 M	2CA2 2CB2, 2CC2	2 4, 6	406	100	490	497	375	375	180	620	470	90	349	-	102	102	409	24	168	230	-	250	40	138
280 S	2DA0 2DB0, 2DC0	2 4, 6	457	100	540	551	398	398	180	672	525	90	368*	419	101	152	479	20	190	267	216	280	40	160
280 M	2DA2 2DB2, 2DC2	2 4, 6	457	100	540	551	398	398	180	672	525	90	368	419*	101	152	479	20	190	267	216	280	40	160
315 S	3AA0 3AB0, 3AC0	2 4, 6	508	120	610	616	455	455	242	780	590	121	406*	457	113	170	527	22	216	295	244	315	50	181
315 M	3AA2 3AB2 3AC2	2 4 6	508	120	610	616	455	455	242	780	590	121	457*	508	113	170	578	22	216	409	358	315	50	181
315 L	3AA4 3AB4, 3AC4 3AA5 3AB5 3AC5 3AC6	2 4, 6 2 4 6 6	508	120	610	616	455	455	242	780	590	121	457	508*	113	170	578	22	216	409	358	315	50	181
															176	227	648		564	513				146
															113	170	578		409	358				181
															176	227	648		564	513				146

* This dimension is assigned in DIN EN 50347 to the frame size listed.

SIMOTICS DP 1PC1 Smoke-Extraction Motors

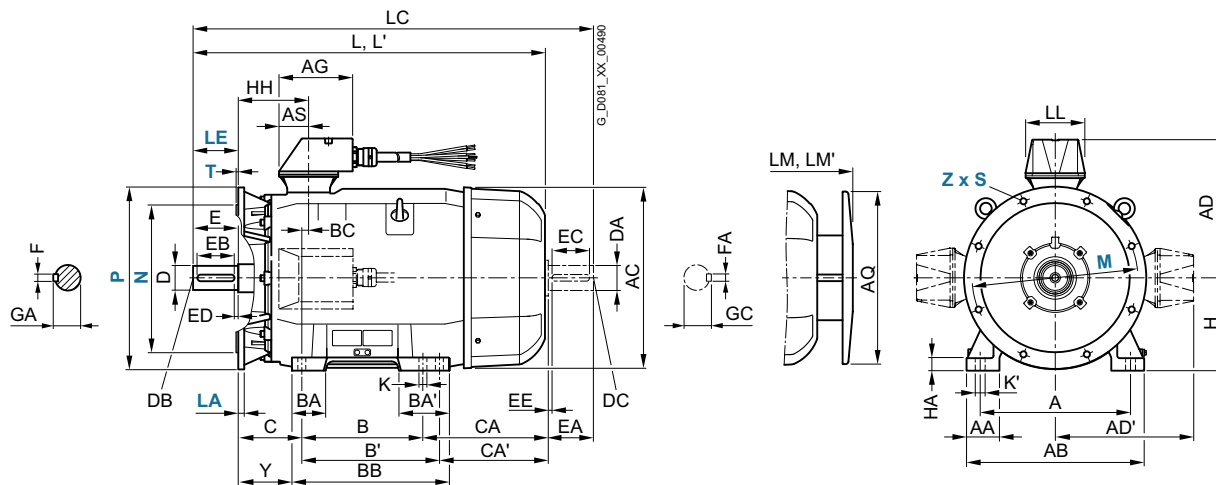
Dimensions

Cast-iron series 1PC1301
Self-ventilated, frame sizes 180 M to 315 L

Dimensional drawings (continued)

Type of construction IM B35

For flange dimensions, see Page 5/34 (Z = the number of retaining holes)



For motor		No. of poles	Dimension designation acc. to IEC							DE shaft extension					NDE shaft extension								
Frame size	Motor type		HH	K	K'	L	LC	LL	LM	D	DB	E	EB	ED	F	GA	DA	DC	EA	EC	EE	FA	GC
180 M	1EA2, 1EB2	2, 4	155	15	19	668	784	100	758	48	M16	110	100	5	14	51.5	48	M16	110	100	5	14	51.5
180 L	1EC4 1EB4	6 4	155	15	19	668 698	784 814	100	758 788	48	M16	110	100	5	14	51.5	48	M16	110	100	5	14	51.5
200 L	2AA4, 2AA5 2AB5, 2ACC4, 2AC5	2 4, 6	164	19	25	721	835	130	811	55	M20	110	100	5	16	59	55	M20	110	100	5	16	59
225 S	2BB0	4	164	19	25	788	903	130	888	60	M20	140	125	10	18	64	55	M20	110	100	5	16	59
225 M	2BA2 2BB2, 2BC2	2 4, 6	164	19	25	818 848	933 963	130	918 948	55 60	M20	110 140	100 125	5 10	18 64	59 55	48	M16 M20	110 110	100 100	5 5	14 16	51.5 59
250 M	2CA2 2CB2, 2CC2	2 4, 6	192	24	30	887	1002 1032	180	987	60 65	M20	140	125	10	18	64 69	55 60	M20	110	100	5	16	59 64
280 S	2DA0 2DB0, 2DC0	2 4, 6	210	24	30	960	1105	180	1070	65 75	M20	140	125	10	18	69 79.5	60 65	M20	140	125	10	18	64 69
280 M	2DA2 2DB2, 2DC2	2 4, 6	210	24	30	960	1105	180	1070	65 75	M20	140	125	10	18	69 79.5	60 65	M20	140	125	10	18	64 69
315 S	3AA0 3AB0, 3AC0	2 4, 6	238	28	35	1052	1197	242	1162	65 80	M20	140	125	10	18	69 85	60 70	M20	140	125	10	18	64 74.5
315 M	3AA2 3AB2 3AC2	2 4 6	238	28	35	1217 1247 1082	1362 1392 1227	242	1327 1357 1192	65 80	M20	140	125	10	18	69 85	60	M20	140	125	10	18	64 74.5
315 L	3AA4 3AB4, 3AC4 3AA5 3AB5 3AC5 3AC6	2 4, 6 2 4 6 6	238	28	35	1217 1247 1372 1402 1247 1402	1362 1392 1517 1547 1392 1547	242	1327 1357 1482 1512 1357 1512	65 80 65 80	M20	140	125	10	18	69 85 60 60 58	60 70	M20	140	125	10	18	64 74.5 64 64 74.5

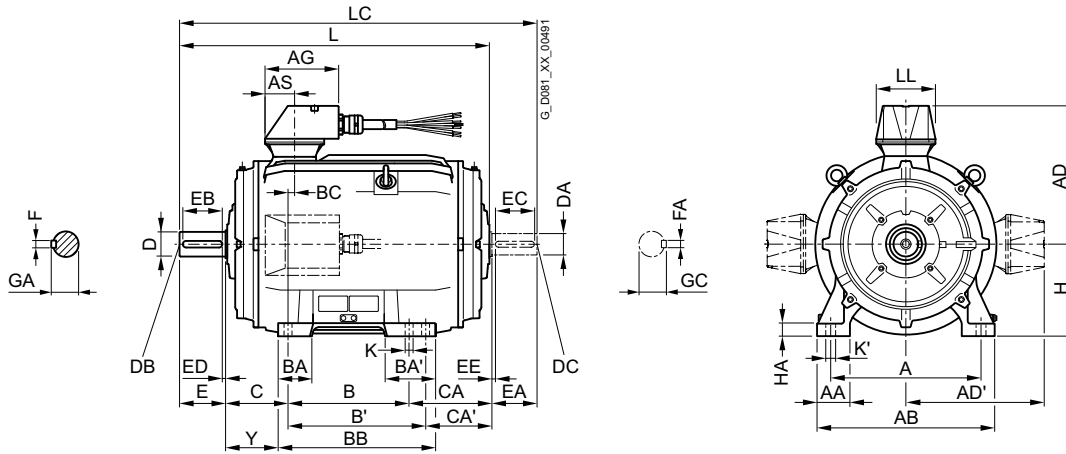
SIMOTICS DP 1PC1 Smoke-Extraction Motors

Dimensions

Cast-iron series 1PC1301
Forced-air cooled, frame sizes 180 M to 315 L

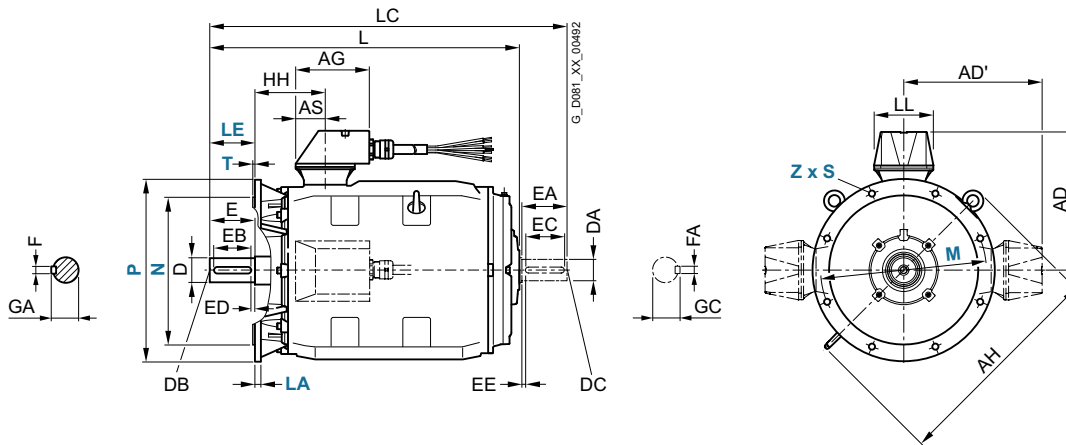
Dimensional drawings

Type of construction IM B3



Types of construction IM B5 and IM V1

For flange dimensions, see Page 5/34 (Z = the number of retaining holes)



For motor		Dimension designation acc. to IEC																				
Frame size	Motor type 1PC1301-	No. of poles	A	AA	AB	AD	AD'	AG	AH	AS	B*	B'	BA	BA'	BB	BC	C	CA*	CA*	H	HA	Y
180 M	1EA2, 1EB2	2, 4	279	65	339	244	244	100	468	50	241*	279	85	120	328	34	121	94	56	180	20	95
180 L	1EC4 1EB4	6 4	279	65	339	244	244	100	468	50	241*	279	85	120	328	34	121	94	56	180	20	95
200 L	2AA4, 2AA5 2AB5, 2AC4, 2AC5	2 4, 6	318	70	378	307	307	175	533	65	305*	-	104	104	355	31	133	76	-	200	25	108
225 S	2BB0	4	356	80	436	328	328	175	556	65	286*	311	92	117	361	15	149	99	74	225	34	124
225 M	2BA2 2BB2, 2BC2	4 4, 6	356	80	436	328	328	175	556	65	286	311*	92	117	361	15	149	159	134	225	34	124
250 M	2CA2 2CB2, 2CC2	2 4, 6	406	100	490	375	375	180	620	90	349	-	102	102	409	24	168	111	-	250	40	138
280 S	2DA0 2DB0, 2DC0	2 4, 6	457	100	540	398	398	180	672	90	368*	419	101	152	479	20	190	137	86	280	40	160
280 M	2DA2 2DB2, 2DC2	2 4, 6	457	100	540	398	398	180	672	90	368	419*	101	152	479	20	190	137	86	280	40	160
315 S	3AA0 3AB0, 3AC0	2 4, 6	508	120	610	455	455	242	780	121	406*	457	113	170	527	22	216	148	97	315	50	181
315 M	3AA2 3AB2 3AC2	2 4 6	508	120	610	455	455	242	780	121	457*	508	113	170	578	22	216	262	211	315	50	181
315 L	3AA4 3AB4, 3AC4 3AA5 3AB5 3AC5 3AC6	2 4, 6 2 4 6 6	508	120	610	455	455	242	780	121	457	508*	113	170	578	22	216	262	211	315	50	181
													176	227	648			417	366			146
														113	170	578			262	211		181
														176	227	648			417	366		146

* This dimension is assigned in DIN EN 50347 to the frame size listed.

SIMOTICS DP 1PC1 Smoke-Extraction Motors

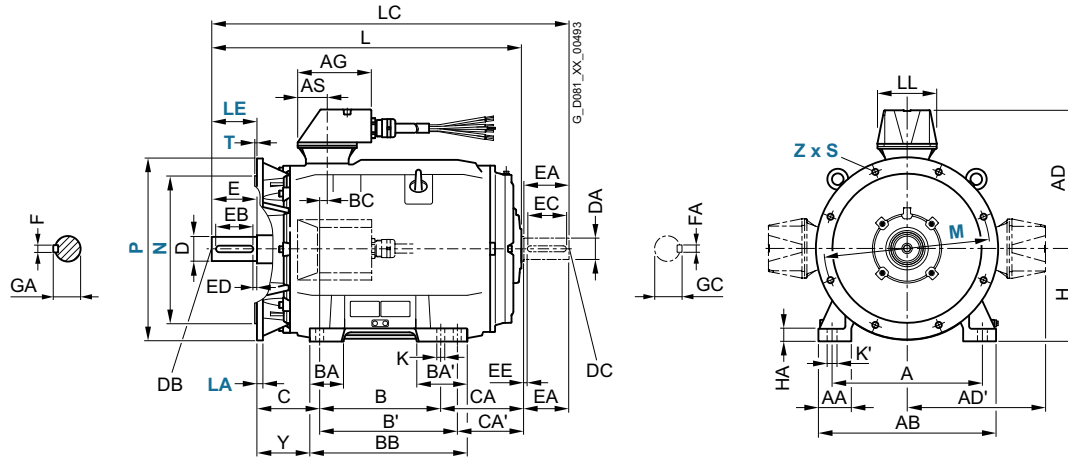
Dimensions

Cast-iron series 1PC1301
Forced-air cooled, frame sizes 180 M to 315 L

Dimensional drawings (continued)

Type of construction IM B35

For flange dimensions, see Page 5/34 (Z = the number of retaining holes)



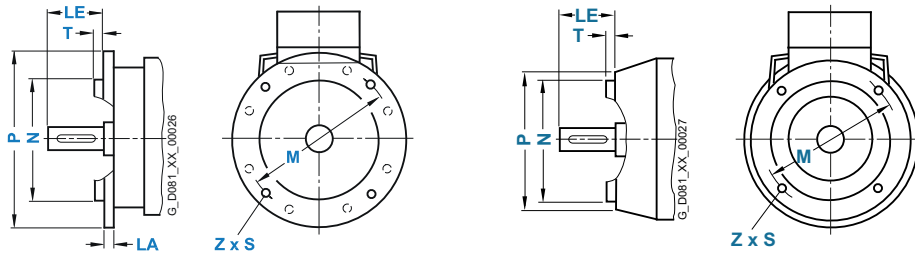
For motor		No. of poles	Dimension designation acc. to IEC											NDE shaft extension								
Frame size	Motor type 1PC1301-		HH	K	K'	L	LC	LL	D	DB	E	EB	ED	F	GA	DA	DC	EA	EC	EE	FA	GC
180 M	1EA2, 1EB2	2, 4	155	15	19	668	784	100	48	M16	110	100	5	14	51.5	48	M16	110	100	5	14	51.5
180 L	1EC4 1EB4	6 4	155	15	19	668 698	784 814	100	48	M16	110	100	5	14	51.5	48	M16	110	100	5	14	51.5
200 L	2AA4, 2AA5 2AB5, 2ACC4, 2AC5	2 4, 6	164	19	25	617	734	130	55	M20	110	100	5	16	59	55	M20	110	100	5	16	59
225 S	2BB0	4	164	19	25	610	724	130	60	M20	140	125	10	18	64	55	M20	110	100	5	16	59
225 M	2BA2 2BB2, 2BC2	2 4, 6	164	19	25	700 730	814 844	130	55 60	M20	110 140	100 125	5 10	16 18	59 64	48 55	M16 M20	110	100	5	14 16	51.5 59
250 M	2CA2 2CB2, 2CC2	2 4, 6	192	24	30	764	878 908	180	60 65	M20	140	125	10	18	64 69	55 60	M20	110 140	100 125	5 10	16 18	59 64
280 S	2DA0 2DB0, 2DC0	2 4, 6	210	24	30	830	975	180	65 75	M20	140	125	10	18	69 79.5	60 65	M20	140	125	10	18	64 69
280 M	2DA2 2DB2, 2DC2	2 4, 6	210	24	30	830	975	180	65 75	M20	140	125	10	18	69 79.5	60 65	M20	140	125	10	18	64 69
315 S	3AA0 3AB0, 3AC0	2 4, 6	238	28	35	905 935	1050 1100	242	65 80	M20	140 170	125 140	10 25	18 22	69 85	60 70	M20	140	125	10	18	64 74.5
315 M	3AA2 3AB2 3AC2	2 4 6	238	28	35	1070 1100 935	1215 1245 1100	242	65 80	M20	140 170	125 140	10 25	18 22	69 85	60 70	M20	140	125	10	18	64 74.5
315 L	3AA4 3AB4, 3AC4 3AA5 3AB5 3AC5 3AC6	2 4, 6 2 4 6 6	238	28	35	1070 1100 1225 1255 1100	1215 1245 1370 1400 1245	242	65 80 65 80	M20	140 170	125 140	10 25	18 22	69 85 60 58	60 70	M20	140	125	10	18	64 74.5 64 64 74.5

SIMOTICS DP 1PC1 Smoke-Extraction Motors

Dimensions

Flange dimensions

Dimensional drawings



In DIN EN 50347, the frame sizes are allocated flange FF with through holes and flange FT with tapped holes.

The designation of flange A and C according to DIN 42948 (invalid since September 2003) are also listed for information purposes. See the table below. (**Z** = the number of retaining holes)

Frame size	Type of construction	Flange type	Flange with through holes B5 (FF/A) tapped holes B14(FT/C)		Dimension designation acc. to IEC							
			acc. to DIN EN 50347	acc. to DIN 42948	LA	LE	M	N	P	S	T	Z
80	IM B5, IM B35, IM V1, IM V3	Standard flange	FF165	A200	10	40	165	130	200	12	3.5	4
	IM B14, IM B34, IM V18	Standard flange	FT100	C120	–	40	100	80	120	M6	3	4
90	IM B5, IM B35, IM V1, IM V3	Standard flange	FF165	A200	10	50	165	130	200	12	3.5	4
	IM B14, IM B34, IM V18	Standard flange	FT115	C140	–	50	115	95	140	M8	3	4
100	IM B5, IM B35, IM V1, IM V3	Standard flange	FF215	A250	11	60	215	180	250	14.5	4	4
	IM B14, IM B34, IM V18	Standard flange	FT130	C160	–	60	130	110	160	M8	3.5	4
112	IM B5, IM B35, IM V1, IM V3	Standard flange	FF215	A250	11	60	215	180	250	14.5	4	4
	IM B14, IM B34, IM V18	Standard flange	FT130	C160	–	60	130	110	160	M8	3.5	4
132	IM B5, IM B35, IM V1, IM V3	Standard flange	FF265	A300	12	80	265	230	300	14.5	4	4
	IM B14, IM B34, IM V18	Standard flange	FT165	C200	–	80	165	130	200	M10	3.5	4
160	IM B5, IM B35, IM V1, IM V3	Standard flange	FF300	A350	13	110	300	250	350	18.5	5	4
	IM B14, IM B34, IM V18	Standard flange	FT165	C200	–	80	165	130	200	M10	3.5	4
180	IM B5, IM B35, IM V1, IM V3	Standard flange	FF300	A350	13	110	300	250	350	18.5	5	4
	IM B5, IM B35, IM V1, IM V3	Standard flange	FF350	A400	15	110	350	300	400	18.5	5	4
225 2-pole 4 to 6-pole	IM B5, IM B35, IM V1, IM V3	Standard flange	FF400	A450	16	110	400	350	450	18.5	5	8
						140						
250	IM B5, IM B35, IM V1, IM V3	Standard flange	FF500	A550	18	140	500	450	550	18.5	5	8
280	IM B5, IM B35, IM V1, IM V3	Standard flange	FF500	A550	18	140	500	450	550	18.5	5	8
315 2-pole 4 to 6 pole	IM B5, IM B35, IM V1, IM V3	Standard flange	FF600	A660	22	140	600	550	660	24	6	8
						170						

Appendix



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Appendix

NEMA motors

Motors according to NEMA standard



NEMA motors (National Electrical Manufacturers Association) for the North American market distinguish themselves as a result of their new design – and especially as a result of their efficiency. Siemens offers a complete line of General Purpose motors (aluminum and cast-iron design), Severe Duty motors, IEEE 841 and XP motors with NEMA Premium or higher efficiencies. Energy-saving motors with NEMA Premium efficiency class comply with the US EISA legislation (Energy Independence and Security Act) for minimum efficiencies. Our NEMA Premium + efficiency class exceeds the efficiencies specified in the EISA standards. The motors are mechanically and electrically compliant with NEMA MG1. In addition to the minimum efficiencies specified in the US, these motors also fulfill the minimum efficiency requirements for Canada (CSA) and Mexico (NOM).

General technical specifications

Voltage and power range	208 ... 230/460 V, 575 V, 60 Hz 1 ... 400 hp (0.75 ... 300 kW)
Frame sizes and types	NEMA frame sizes 140 ... 440
Pole number and frequencies	2, 4, 6 and 8-pole, 60 Hz
Ambient conditions	Surface-cooled with degree of protection IP54/IP55

Customer benefits

Copper die-cast rotors optimize the efficiency

Copper die-cast rotors reduce the power loss and slightly reduce the motor length. This version reduces the motor life cycle costs as a result of the lower energy consumption.

Can be easily modified for high versatility

Unmounted feet (aluminum housing) or 8-hole foot mounting (cast-iron housing) make it easier to modify the motors, ensure a high degree of versatility and reduce inventory costs – for the OEM as well as for servicing and maintenance.

A design that fulfills each and every requirement

We offer motors suitable for any application in a lightweight aluminum design or with a rugged cast-iron housing. Both variants are available with NEMA Premium or NEMA Premium + efficiency. The perfect fit for any operating period.

Typical applications

NEMA motors are suitable throughout the industrial and commercial field, in the automobile, textile, printing and chemical industries as well as in cross-industry applications – for example in conveyor technology. The HVAC sector (Heating, Ventilating & Air Conditioning), for instance, which requires extremely light motors, provides typical applications for our so-called General Purpose motors – either with cast-iron or aluminum housings. Severe Duty motors in a fully cast-iron design are suitable for use under harsh environmental conditions – for instance in the pulp and paper industry. The Severe Duty SD100 IEEE 841 motor version even exceeds the stringent IEEE 841 Standards applicable in the crude oil and chemical industries.

More information

The full range of products with all ordering data and technical information can be found in Catalog D 81.2, US/Canada www.sea.siemens.com/motors.




General Purpose



GP100A

Output range	1 ... 20 hp (0.75 ... 15 kW)	FS 140 ... 250
Frame size (FS)	140 ... 250	
Degree of protection NEMA MG1	TEFC (totally enclosed fan cooled)	
Housing material	Die-cast aluminum	8-hole foot mounting
Efficiency	NEMA Premium NEMA Premium +	FS 140 ... 250 FS 140 ... 250
Power supply	3-phase, 60 Hz	
Voltage	208 ... 230/460 V 575 V	FS 140 ... 250 FS 140 ... 250
Service factor	1.15	Sinusoidal
Electrical design	NEMA design B	
Hazard classification	Not specified	
Insulation	Class F	NEMA MG1 Part 31
Utilization	Class B at 1.0 SF, Class F at 1.15 SF	Sinusoidal
Terminal box (oversized)	Die-cast aluminum	FS 140 ... 250
Fan cover	Plastic	FS 140 ... 250
Fan	Bi-directional - Polypropylene	
Seal	O-ring	FS 140 ... 250
Rotor material	Die-cast aluminum Die-cast copper	FS 140 ... 250 FS 140 ... 250
Stator winding	Copper – random wound	
Shaft material	High-strength carbon steel	C1045
Shaft seal/ Slinger	V-ring slinger meets IP54	(DE only)
Bearing housing	Cast aluminum	FS 140 ... 250
Bearing type	Double-shielded	FS 140 ... 250
Bearing inner cap	No	
Lubrication	Polyurea	Base grease
Oil filling nozzle	Not specified	
Oil drain valve	Not specified	
Vibrations	0.15 IPS	
Rating plate	Aluminum	Engraved
Condensation drainage hole	Condensation drainage holes – lowest point (2)	
Mountings	Rust-resistant	
Eyebolt	Cast	
Paint	ALKYED modified	RAL7030
Warranty	18 months	
Converter-fed operation	VT 20:1 CT 4:1 CT 10:1	FS 140 ... 250 FS 140 ... 250 FS 140 ... 250 (Cu)
Catalog	D 81.2, US/Canada	




Motors according to NEMA standard

		Severe Duty			
					
GP100		SD100		SD100 IEEE 841	
1 ... 200 hp (0.75 ... 132 kW)	FS 140 ... 440	1 ... 400 hp (0.75 ... 300 kW)	FS 140 ... S440	1 ... 400 hp (0.75 ... 300 kW)	FS 140 ... S440
140 ... 440		140 ... S449		140 ... S449	
TEFC (totally enclosed fan cooled)		TEFC (totally enclosed fan cooled)		TEFC (totally enclosed fan cooled)	
Cast iron	8-hole foot	Cast iron	8-hole foot	Cast iron	8-hole foot
NEMA Premium NEMA Premium +	FS 140 ... 440 FS 140 ... 250	NEMA Premium NEMA Premium +	FS 140 ... S440 FS 140 ... 250	NEMA Premium NEMA Premium +	FS 140 ... S440 FS 140 ... 250
3-phase, 60 Hz		3-phase, 60 Hz		3-phase, 60 Hz	
208 ... 230/460 V 230/460 V 460 V 575 V	FS 140 ... 250 FS 280 ... 360 100 ... 200 hp 1 ... 200 hp	208 ... 230/460 V 460 V 575 V	1 ... 20 hp 25 ... 400 hp 1 ... 400 hp	460 V 575 V	FS 140 ... S440 FS 140 ... S440
1.15	Sinusoidal	1.15	Sinusoidal	1.15	Sinusoidal
NEMA design B		NEMA design B		NEMA design B	
Not specified		CL I Gr, C&D Div. 2	Optional	CL I Gr, C&D Div. 2	Optional
Class F	NEMA MG1 Part 31	Class F	NEMA MG1 Part 31	Class F	NEMA MG1 Part 31
Class B at 1.0 SF, Class F at 1.15 SF	Sinusoidal	Class B at 1.0 SF, Class F at 1.15 SF	Sinusoidal	Class B at 1.0 SF, Class F at 1.15 SF	Sinusoidal
Die-cast aluminum Steel Cast iron	FS 140 ... 250 FS 280 ... 400 FS 440	Cast iron		Cast iron	
Plastic Cast iron	FS 140 ... 250 FS 280 ... 440	Cast iron	FS 140 ... S440	Cast iron	FS 140 ... S440
Bi-directional - Polypropylene		Bi-directional - Polypropylene - Bronze Counter-clockwise	FS 140 ... 440 FS S440 300 ... 400 hp 2P/4P	Bi-directional - Polypropylene - Bronze Counter-clockwise	FS 140 ... 440 FS S440 300 ... 400 hp 2P/4P
O-ring Neoprene	FS 140 ... 250 FS 280 ... 440	Neoprene		Neoprene	
Die-cast aluminum Die-cast copper	FS 140 ... 440 FS 140 ... 250	Die-cast aluminum Die-cast copper	FS 140 ... S440 FS 140 ... 250	Die-cast aluminum Die-cast copper	FS 140 ... S440 FS 140 ... 250
Copper – random wound		Copper – random wound		Copper – random wound	
High-strength carbon steel	C1045	High-strength carbon steel	C1045	High-strength carbon steel	C1045
V-ring slinger meets IP54	(DE only)	V-ring slinger meets IP54	(DE, NDE)	Inpro/seal bearing insulation meets IP55	(DE, NDE)
Cast iron	FS 140 ... 440	Cast iron	FS 140 ... S440	Cast iron	FS 140 ... S440
Double-shielded Regreasable inlet and outlet	(FS 440 only)	Double-shielded Single-shielded Regreasable inlet and outlet	FS 140 ... 250 FS 280 ... S440	Double-shielded Single-shielded Regreasable inlet and outlet	FS 140 ... 250 FS 280 ... S440
No		Cast iron		Cast iron	
Polyurea	Base grease	Polyurea	Base grease	Polyurea	Base grease
Alemite	FS 440 only	Alemite		Alemite	
Plug	FS 440 only	Plug		Pressure relief (automatic)	
0.15 IPS		0.08 IPS		0.06 IPS	
Aluminum	Engraved	Stainless steel	Engraved	Stainless steel	Embossed
Condensation drainage holes – lowest point (2)		T discharges – lowest point (2)		T discharges – lowest point (2)	
Rust-resistant		Rust-resistant		Rust-resistant	
Included	> 75 Lb (> 34.0 kg)	Included	> 75 Lb (> 34.0 kg)	Included	
ALKYED modified	RAL7030	ALKYED modified	RAL7030	ALKYED modified	RAL7030
18 months		36 months		60 months	
VT 20:1 CT 4:1 CT 10:1	FS 140 ... 440 FS 140 ... 440 FS 140 ... 250 (Cu)	CT 20:1 CT 4:1 CT 10:1	FS 143 ... 365 FS 140 ... 440 FS 140 ... 250 (Cu)	CT 20:1 CT 4:1 CT 10:1	FS 143 ... 365 FS 140 ... 440 FS 140 ... 250 (Cu)
D 81.2, US/Canada		D 81.2, US/Canada		D 81.2, US/Canada	

Appendix

NEMA motors

Motors according to NEMA standard

	Explosion Proof				Definite Purpose	
						
	XP100		XP100 ID1		SD10 MS	
Output range	1 ... 300 hp (0.75 ... 200 kW)	FS 140 ... 440	1 ... 300 hp (0.75 ... 200 kW)	FS 140 ... 440	1 ... 200 hp (0.75 ... 160 kW)	4/8-pole – 1W VT
Frame size (FS)	140 ... 440		140 ... 440		140 ... 440	
Degree of protection NEMA MG1	TEFC (totally enclosed fan cooled)		TEFC (totally enclosed fan cooled)		TEFC (totally enclosed fan cooled)	
Housing material	Cast iron	8-hole foot	Cast iron	8-hole foot	Cast iron	8-hole foot
Efficiency	NEMA Premium	FS 140 ... 440	NEMA Premium	FS 140 ... 440	Standard	FS 140 ... 440
Power supply	3-phase, 60 Hz		3-phase, 60 Hz		3-phase, 60 Hz	
Voltage	208 ... 230/460 V 230/460 V 460 V 575 V	1 ... 20 hp 25 ... 100 hp 125 ... 300 hp 1 ... 300 hp	208 ... 230/460 V 230/460 V 460 V 575 V	1 ... 20 hp FS 280 ... 100 hp 125 ... 300 hp 1 ... 300 hp	460 V 575 V	FS 140 ... 440 FS 140 ... 440
Service factor	1.0	Sinusoidal	1.0	Sinusoidal	1.0	Sinusoidal
Electrical design	NEMA design B		NEMA design B		Not specified	
Hazard classification	CL I Gr. C&D, CL II F&G Div 1	Max. code T3C	CL I Gr. D, Div 1	Max. code T2A	Not specified	
Insulation	Class F	NEMA MG1 Part 31	Class F	NEMA MG1 Part 31	Class F	NEMA MG1 Part 31
Utilization	Class B at 1.0 SF, Class F at 1.15 SF	Sinusoidal	Class B at 1.0 SF, Class F at 1.15 SF	Sinusoidal not with 300, 250 hp, 4-pole	Class B at 1.0 SF, Class F at 1.15 SF	Sinusoidal not with 300, 250 hp, 4-pole
Terminal box (oversized)	Cast iron		Cast iron	FS 140 ... 440	Cast iron	FS 140 ... 440
Fan cover	Cast iron	FS 140 ... 440	Cast iron	FS 140 ... 440	Cast iron	FS 140 ... 440
Fan	Bi-directional - Polypropylene	FS 140 ... 440	Bi-directional - Polypropylene	FS 140 ... 440	Bi-directional - Polypropylene	FS 140 ... 440
Seal	Neoprene		Not specified (lead seal)		Neoprene	
Rotor material	Die-cast aluminum		Die-cast aluminum		Die-cast aluminum	
Stator winding	Copper – random wound NC protective device	FS 140 – 440 Included	Copper – random wound NC protective device	FS 140 – 440 Not specified	Copper – random wound	FS 140 ... 440
Shaft material	High-strength carbon steel	C1045	High-strength carbon steel	C1045	High-strength carbon steel	C1045
Shaft seal/ slinger	V-ring slinger meets IP54	(DE, NDE)	V-ring slinger meets IP54	(DE, NDE)	V-ring slinger meets IP54	(DE, NDE)
Bearing housing	Cast iron		Cast iron		Cast iron	
Bearing type	Double-shielded Regreasable inlet and outlet	FS 140 ... 440	Double-shielded Regreasable inlet and outlet	FS 140 ... 440	Double-shielded Single-shielded Regreasable inlet and outlet	FS 140 ... 250 FS 280 ... S440
Bearing inner cap	Cast iron		Cast iron		Cast iron	
Lubrication	Polyurea	Base grease	Polyurea	Base grease	Polyurea	Base grease
Oil filling nozzle	Alemite		Alemite		Alemite	
Oil drain valve	Plug		Plug		Plug	
Vibrations	0.08 IPS		0.08 IPS		0.08 IPS	
Rating plate	Stainless steel	Engraved	Stainless steel	Engraved	Stainless steel	Engraved
Condensation drainage hole	UL certification	FS 280 ... 440	UL certification	FS 280 ... 440	T discharges – lowest point (2)	
Mountings	Rust-resistant		Rust-resistant		Rust-resistant	
Eyebolt	included	> 75 Lb (> 34.0 kg)	included	> 75 Lb (> 34.0 kg)	Included	> 75 Lb (> 34.0 kg)
Paint	ALKYED modified	RAL7030	ALKYED modified	RAL7030	ALKYED modified	RAL7030
Warranty	36 months		36 months		36 months	
Converter-fed operation	VT 20:1 CT 4:1	FS 140 ... 440 FS 140 ... 320	VT 20:1 CT 4:1	FS 140 ... 440 FS 140 ... 440	Not specified	
Catalog	D 81.2, US/Canada		D 81.2, US/Canada		D 81.2, US/Canada	

Appendix Industry Services

**Your machines and plant can do more
– with Industry Services.**

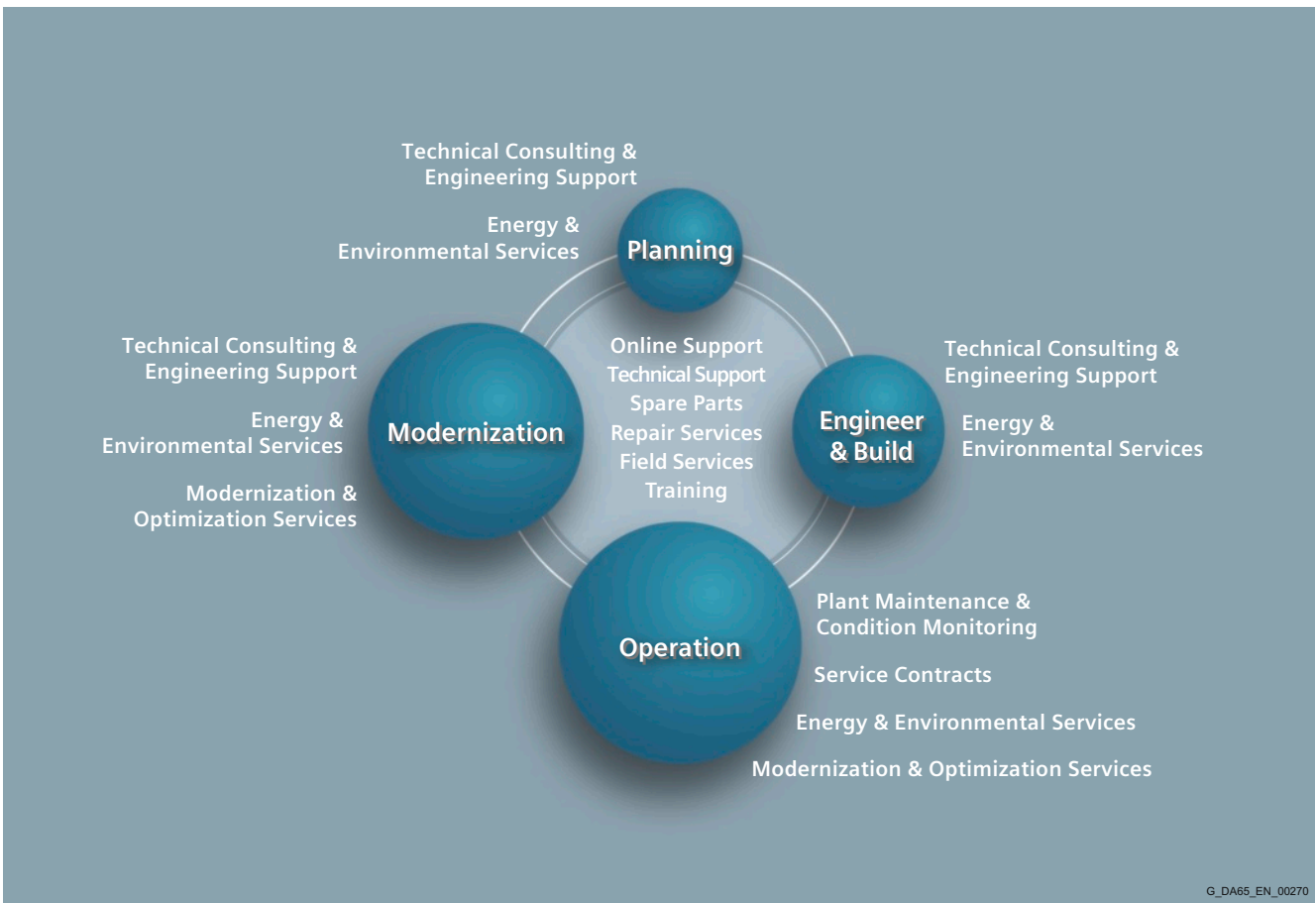


Whether it is production or process industry - in view of rising cost pressure, growing energy costs, and increasingly stringent environmental regulations, services for industry are a crucial competitive factor in manufacturing as well as in process industries.

All over the world Siemens supports its customers with product, system, and application-related services throughout the entire life cycle of a plant. Right from the earliest stages of planning, engineering, and building, all the way to operation and modernization. These services enable customers to benefit from the Siemens experts' unique technological and product knowledge and industry expertise.

Thus downtimes are reduced and the utilization of resources is optimized. The bottom line: increased plant productivity, flexibility, and efficiency, plus reduced overall costs.

Discover all advantages of our service portfolio:
www.siemens.com/industry-services



Siemens supports its clients with technology based Services across a plant's entire life cycle.

Appendix

Industry Services

Industry Services for the entire life cycle

Online Support

Online support is a comprehensive information system for all questions relating to products, systems, and solutions that Siemens has developed for industry over time. With more than 300,000 documents, examples and tools, it offers users of automation and drive technology a way to quickly find up-to-date information. The 24-hour service enables direct, central access to detailed product information as well as numerous solution examples for programming, configuration and application.

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Just scan the product code printed on the product directly using the camera of your mobile device to immediately see all technical information available on this product at a glance. The graphical CAx information (3D model, circuit diagrams or EPLAN macros) is also displayed. You can forward this information to your workplace using the e-mail function.

The search function retrieves product information and articles and supports you with a personalized suggestion list. You can find your favorite pages – articles you need frequently – under

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Scan the QR code
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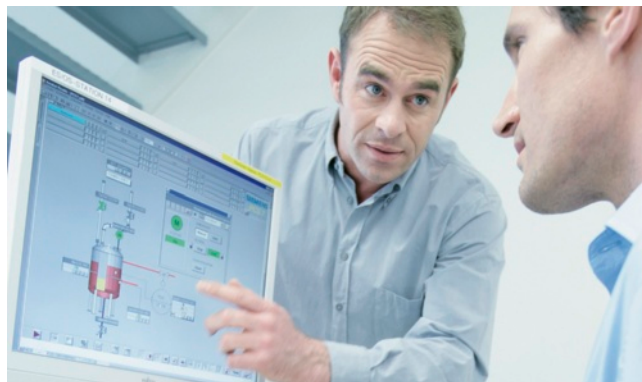


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www.siemens.com/industry/onlinesupportapp

Technical Support

The ability to quickly analyze system and error messages and take appropriate action are key factors in ensuring that plants run safely and efficiently. Questions can arise at any time and in any industry, whether it's an individual product or a complete automation solution. Siemens technical support offers individual technical assistance in matters related to functionality, how to operate, applications, and fault clearance in industrial products and systems – at any time and globally, over the phone, by e-mail, or via remote access. Experienced experts from Siemens answer incoming questions promptly. Depending on the requirements, they first consult specialists in the areas of development, on-site services, and sales. Technical support is also available for discontinued products that are no longer available. Using the support request number, any inquiry can be clearly identified and systematically tracked.



<http://support.automation.siemens.com/WWW/view/en/16605032>

Spare Parts

Drive and automation systems must be available at all times. Even a single missing spare part can bring the entire plant to a standstill – and result in substantial financial losses for the operator. The spare parts services from Siemens protects against such losses – with the aid of quickly available, original spare parts that ensure smooth interaction with all other system components. Spare parts are kept on hand for up to ten years; defective parts can be returned. For many products and solutions, individual spare parts packages ensure a preventive stock of spare parts on-site. The spare parts services is available around the world and around the clock. Optimum supply chain logistics ensure that replacement components reach their destination as quickly as possible. Siemens' logistics experts take care of planning and management as well as procurement, transportation, customs handling, warehousing, and complete order management for spare parts.



<http://support.automation.siemens.com/WW/view/en/43502238>

Repair Services

Reliable electrical and electronic equipment is crucial for operating continuous processes. That is why it is essential that motors and converters always undergo highly specialized repair and maintenance. Siemens offers complete customer and repair services – on site and in repair centers – as well as technical emergency services worldwide. The repair services include all measures necessary to quickly restore the functionality of defective units. In addition, services such as spare parts logistics, spare parts storage and rapid manufacturing are available to plant operators in all verticals. With a global network of certified repair shops operated by Siemens as well as third parties, Siemens handles the maintenance and overhaul of motors, converters, and other devices as an authorized service partner.



<http://support.automation.siemens.com/WW/view/en/43512848>

Field Services

It's a top priority in all industries: the availability of plants and equipment. Siemens offers specialized maintenance services such as inspection and upkeep as well as rapid fault clearance in industrial plants – worldwide, continuously, and even with emergency services as needed. The services include startup as well as maintenance and fault clearance during operation. The startup service includes checking the installation, function tests, parameterization, integration tests for machines and plants, trial operation, final acceptance, and employee training. All services, including remote maintenance of drives, are also available as elements of customized service contracts.



<http://support.automation.siemens.com/WW/view/en/66012486>

Appendix

Industry Services

Industry Services for the entire life cycle

Training

Increasingly, up-to-date knowledge is becoming a determining factor in success. One of the key resources of any company is well-trained staff that can make the right decision at the right moment and take full advantage of the potential. With SITRAIN – Training for Industry, Siemens offers comprehensive advanced training programs. The technical training courses convey expertise and practical knowledge directly from the manufacturer. SITRAIN covers Siemens' entire product and system portfolio in the field of automation and drives. Together with the customer, Siemens determines the company's individual training needs and then develops an advanced training program tailored to the desired requirements. Additional services guarantee that the knowledge of all Siemens partners and their employees is always up-to-date.



<http://support.automation.siemens.com/WW/view/en/43514324>

Technical Consulting & Engineering Support

The efficiency of plants and processes leads to sustainable economic success. Individual services from Siemens help save substantial time and money while also guaranteeing maximum safety. Technical consulting covers the selection of products and systems for efficient industrial plants. The services include planning, consulting, and conceptual design as well as product training, application support, and configuration verification – in all phases of a plant's lifecycle and in all questions related to product safety. Engineering support offers competent assistance throughout the entire project, from developing a precise structure for startup to product-specific preparation for implementation as well as support services in areas such as prototype development, testing and acceptance.



<http://support.automation.siemens.com/WW/view/en/16605680>

Energy & Environmental Services

Efficient energy use and resource conservation – these top sustainability concerns pay off – both for the environment and for companies. Siemens offers integrated solutions that unlock all technical and organizational potential for successful environmental management. Customized consulting services are aimed at sustainably lowering the cost of energy and environmental protection and thus increasing plant efficiency and availability. The experts provide support in the conceptual design and implementation of systematic solutions in energy and environmental management, enabling maximum energy efficiency and optimized water consumption throughout the entire company. Improved data transparency makes it possible to identify savings potential, reduce emissions, optimize production processes, and thereby noticeably cut costs.



<http://support.automation.siemens.com/WW/view/en/42350774>

Modernization & Optimization Services

High machine availability, expanded functionality and selective energy savings – in all industries, these are decisive factors for increasing productivity and lowering costs. Whether a company wants to modernize individual machines, optimize drive systems, or upgrade entire plants, Siemens' experts support the projects from planning to commissioning.

Expert consulting and project management with solution responsibility lead to security and make it possible to specifically identify savings potential in production. This secures investments over the long term and increases economic efficiency in operation.



<http://support.automation.siemens.com/WW/view/en/66005532>

Plant Maintenance & Condition Monitoring

Modern industrial plants are complex and highly automated. They must operate efficiently in order to ensure the company's competitive strength. In addition, the steadily increasing networking of machines and plants require consistent security concepts. Maintenance and status monitoring as well as the implementation of integrated security concepts by Siemens' experts support optimum plant use and avoid downtime. The services include maintenance management as well as consulting on maintenance concepts, including the complete handling and execution of the necessary measures. Complete solutions also cover remote services, including analysis, remote diagnosis, and remote monitoring. These are based on the Siemens Remote Services platform with certified IT security.



<http://support.automation.siemens.com/WW/view/en/59456862>

Service Contracts

Making maintenance costs calculable, reducing interfaces, speeding up response times, and unburdening the company's resources – the reduced downtimes that these measures achieve increase the productivity of a plant. Service contracts from Siemens make maintenance and repairs more cost-effective and efficient. The service packages include local and remote maintenance for a system or product group in automation and drive technology. Whether you need extended service periods, defined response times, or special maintenance intervals, the services are compiled individually and according to need. They can be adjusted flexibly at any time and used independently of each other. The expertise of Siemens' specialists and the capabilities of remote maintenance thus ensure reliable and fast maintenance processes throughout a plant's entire lifecycle.



<http://support.automation.siemens.com/WW/view/en/65961857>

Appendix

Partner at Industry



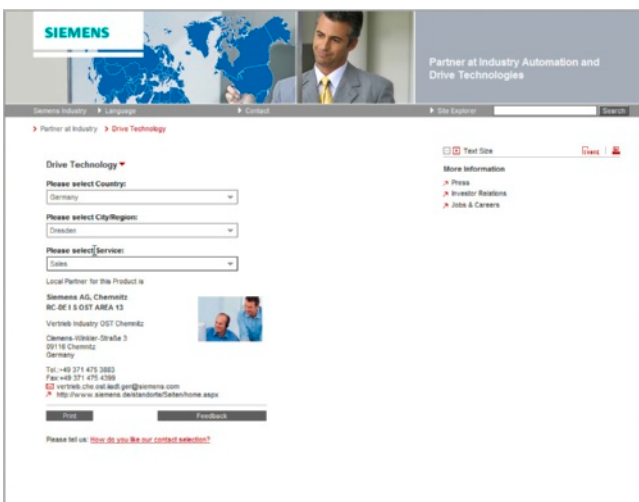
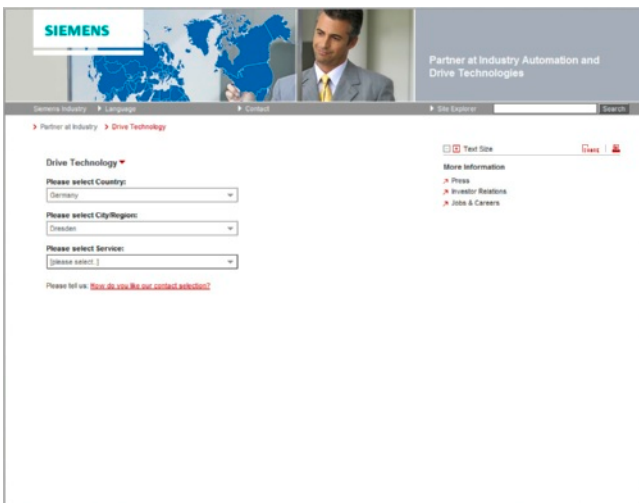
At Siemens Industry we are resolutely pursuing the same goal: long-term improvement of your competitive ability. We are committed to this goal. Thanks to our commitment, we continue to set new standards in automation and drive technology. In all industries – worldwide.

At your service locally, around the globe for consulting, sales, training, service, support, spare parts ... on the entire Industry Automation and Drive Technologies range.

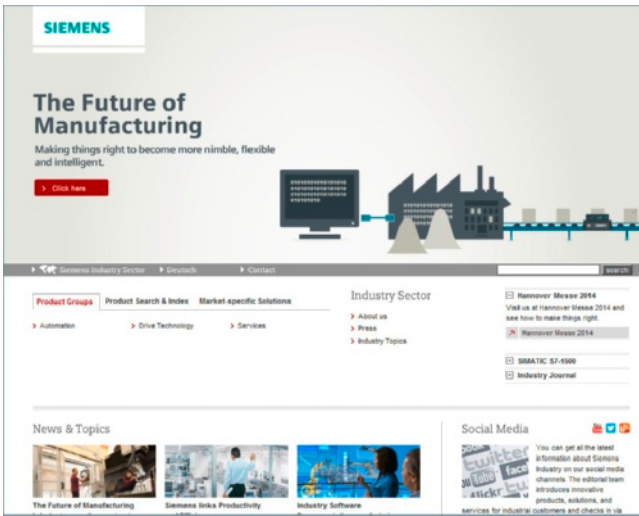
Your personal contact can be found in our Contacts Database at: www.siemens.com/automation/partner

You start by selecting a

- Product group,
- Country,
- City,
- Service.



Siemens Industry Automation and Drive Technologies in the WWW



A detailed knowledge of the range of products and services available is essential when planning and configuring automation systems. It goes without saying that this information must always be fully up-to-date.

Siemens Industry Automation and Drive Technologies has therefore built up a comprehensive range of information in the World Wide Web, which offers quick and easy access to all data required.

Under the address

www.siemens.com/industry

you will find everything you need to know about products, systems and services.

Product Selection Using the Interactive Catalog CA 01 of Industry



Detailed information together with convenient interactive functions:

The interactive catalog CA 01 covers more than 80 000 products and thus provides a full summary of the Siemens Industry Automation and Drive Technologies product base.

Here you will find everything that you need to solve tasks in the fields of automation, switchgear, installation and drives. All information is linked into a user interface which is easy to work with and intuitive.

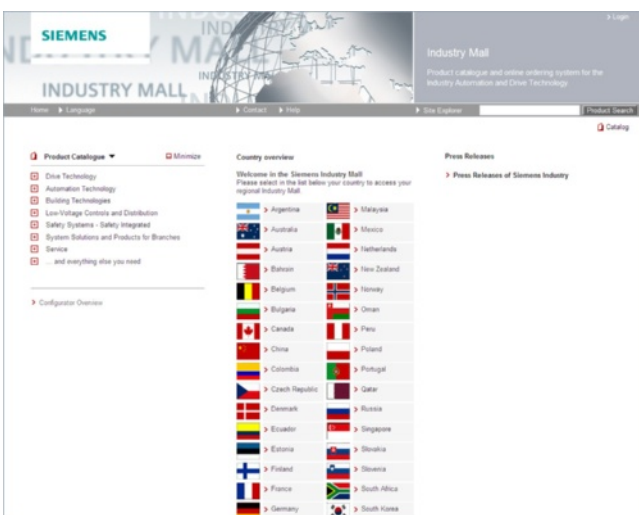
After selecting the product of your choice you can order at the press of a button, by fax or by online link.

Information on the interactive catalog CA 01 can be found in the Internet under

www.siemens.com/automation/ca01

or on DVD.

Easy Shopping with the Industry Mall



The Industry Mall is the electronic ordering platform of Siemens AG on the Internet. Here you have online access to a huge range of products presented in an informative and attractive way.

Data transfer via EDIFACT allows the whole procedure from selection through ordering to tracking and tracing of the order to be carried out. Availability checks, customer-specific discounts and preparation of quotes are also possible.

Numerous additional functions are available to support you.

For example, powerful search functions make it easy to select the required products. Configurators enable you to configure complex product and system components quickly and easily. CAx data types are also provided here.

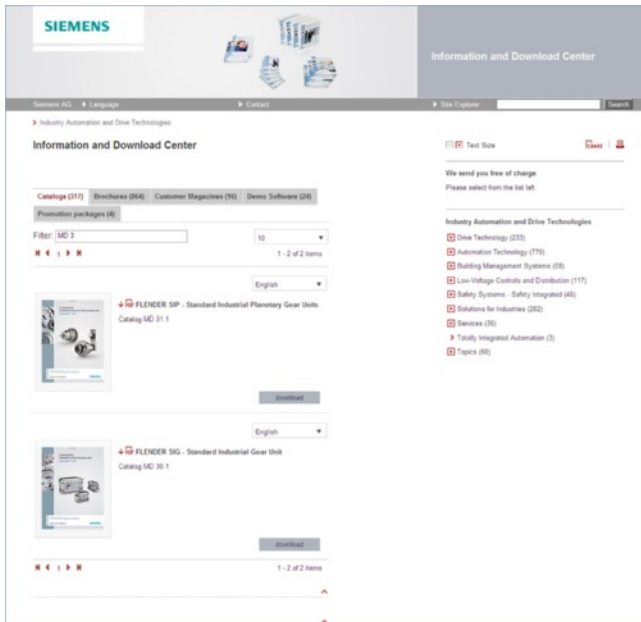
Please visit the Industry Mall on the Internet under:

www.siemens.com/industrymall

Appendix Online Services

Information and Download Center Social Media, Mobile Media

Downloading Catalogs



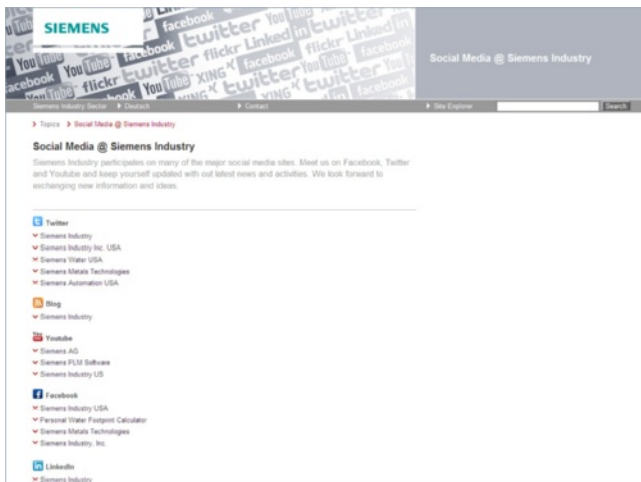
In addition to numerous other useful documents, you can also find the catalogs listed on the back inside cover of this catalog in the Information and Download Center. Without having to register, you can download these catalogs in PDF format or increasingly as digital page-turning e-books.

The filter dialog box above the first catalog displayed makes it possible to carry out targeted searches. If you enter “MD 3” for example, you will find both the MD 30.1 and MD 31.1 catalogs. If you enter “ST 70” both the ST 70 catalog and the associated news or add-ons are displayed.

Visit us on the web at:

www.siemens.com/industry/infocenter

Social Media



Connect with Siemens through social media: visit our social networking sites for a wealth of useful information, demos on products and services, the opportunity to provide feedback, to exchange information and ideas with customers and other Siemens employees, and much, much more. Stay in the know and follow us on the ever-expanding global network of social media.

Connect with Siemens Industry at our central access point:

www.siemens.com/industry/socialmedia

Or via our product pages at:

www.siemens.com/automation

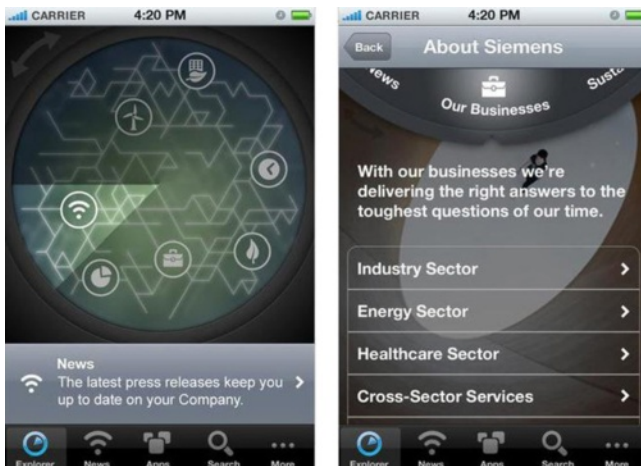
or

www.siemens.com/drives

To find out more about Siemens' current social media activities visit us at:

www.siemens.com/socialmedia

Mobile Media



Discover the world of Siemens.

We are also constantly expanding our offering of cross-platform apps for smartphones and tablets. You will find the current Siemens apps at the app store (iOS) or at Google Play (Android).

The Siemens app, for example, tells you all about the history, latest developments and future plans of the company – with informative pictures, fascinating reports and the most recent press releases.

SIZER WEB ENGINEERING

Overview

Drive engineering - flexible, tailored and user-friendly

You can quickly find a solution for your drive task with the web-based tool: menu-prompted workflows navigate you through the technical selection and dimensioning of products and drive systems, including the accessories.

Based on an integrated inquiry functionality, SIZER WEB ENGINEERING also offers you special customized solutions for applications which cannot be addressed using "Standard Products", i.e. the focus is on flexibility and customized solutions.

The following product groups are presently supported:

- High-voltage motors
- Low-voltage motors
- Medium-voltage converters
- Low-voltage converters
- DC converters

The tool can also be used to design the following drive systems:

- Medium-voltage systems
- Low-voltage systems
 - Basic single-axis applications for pumps, fans, and compressors
 - More complex applications (on condition that SIZER for Siemens Drives is installed)

Comprehensive documentation, such as data sheets, startup calculations, dimensional drawings, offer documentation and a lot more are integrated in the tool.

The result: customized solutions for your drive tasks.



Example of startup calculation

An Internet access as well as a standard browser (e.g. Internet Explorer from V7.0, Firefox from V3.0) are required. After successful registration and release, SIZER WEB ENGINEERING is available 24/7.

More information

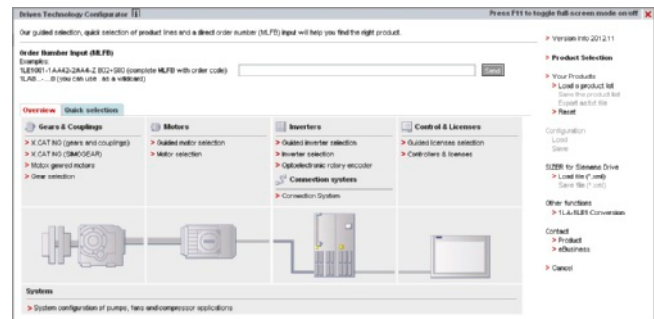
You will find further information about the SIZER WEB ENGINEERING engineering tool at: www.siemens.com/sizer-web

Drive Technology Configurator selection tool

Overview

Configuration of drive technology products

The Drive Technology Configurator (DT Configurator) helps you to select the optimum products for your application – starting with gear units, motors, converters and the associated options and components and ending with controllers, software licenses and connection technology. With or without detailed knowledge of products: preselected product groups, deliberate navigation through selection menus and direct product selection through entry of the product number support quick, efficient and convenient configuration.



Also, comprehensive documentation comprising technical data sheets, operating instructions, certificates and 2D/3D dimensional drawings can be selected in the DT Configurator. Immediate ordering is possible by simply transferring a parts list to the shopping cart of the Industry Mall.

DT Configurator - efficient drive configuration:

- Quick and easy configuration of drive components
- Configuration of drive systems for pumps, fans and compressor applications from 1 kW to 2.6 MW
- Selection from a wide range of products
- Comprehensive documentation
- Support with retrofitting
- Direct ordering via the Industry Mall

System requirements:

- Internet access as well as a standard browser (e.g. Internet Explorer V8.0 and higher, Firefox V5.0 and higher).
- Documentation (data sheets, dimensional drawings, etc.) is output in PDF or RTF format.
- The Drive Technology Configurator can be used without the need for registration.

Selection and ordering data

Description	Article No.
Interactive Catalog CA 01	E86060-D4001-A510-D4-7600
DVD-ROM including DT Configurator selection guide, English	

More information

Online access to Drive Technology Configurator

For more information about the Drive Technology Configurator selection tool, visit:

www.siemens.com/dtconfigurator

Offline access to the Drive Technology Configurator in the Interactive Catalog CA 01

The Drive Technology Configurator is also integrated on the DVD of Interactive Catalog CA 01 – the offline version of Siemens Industry Mall.

CA 01 can be ordered from the relevant Siemens sales office or via the Internet:

www.siemens.com/automation/CA01

Appendix

Tools and engineering

SinaSave energy efficiency tool

Overview

Amortization calculator for energy-efficient drive systems



SinaSave determines energy saving potential and amortization times based on your individual conditions of use and therefore offers you practical assistance in making decisions about investments in energy-efficient technologies.

In SinaSave Version 6.0, the drive systems to be compared (IDS) and the relevant drive component parameters are displayed graphically. An additional expansion is the numerous comparison possibilities for different control types and comprehensive product combinations for IDS solutions for pump and fan applications.

The portfolio has also been complemented with expansions for SINAMICS converters and the addition of SIMOTICS motors and SIRIUS switching devices.

More information

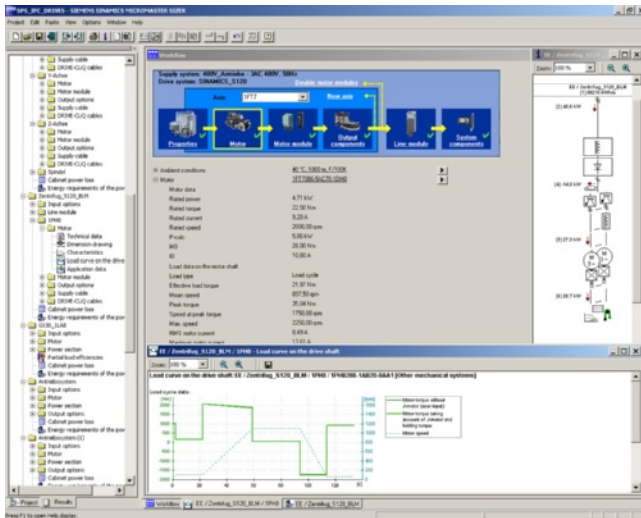
SinaSave is available free on the Internet at:

www.siemens.com/sinasave

More information about services for energy saving is available on the Internet at:

www.siemens.com/energysaving

Overview



The following drives and controls can be engineered in a user-friendly way using the SIZER for Siemens Drives configuration tool:

- SINAMICS Low Voltage and MICROMASTER 4 drive systems
- Motor starters
- SINUMERIK CNC system
- SIMOTION Motion Control System
- SIMATIC Technology

It provides support when setting up the technologies involved in the hardware and firmware components required for a drive task. SIZER for Siemens Drives covers the full range of operations required to configure a complete drive system, from basic single drives to complex multi-axis applications.

SIZER for Siemens Drives supports all of the engineering steps in a workflow:

- Configuring the power supply
- Designing the motor and gearbox, including calculation of mechanical transmission elements
- Configuring the drive components
- Selecting the required accessories
- Selecting the line-side and motor-side power options, e.g. cables, filters, and reactors

When SIZER for Siemens Drives was being designed, particular importance was placed on a high degree of usability and a universal, function-based approach to the drive application. The extensive user guidance makes using the tool easy. Status information keeps you continually informed about the progress of the configuration process.

The SIZER for Siemens Drives user interface is available in English, French, German and Italian.

The drive configuration is saved in a project. In the project, the components and functions used are displayed in a hierarchical tree structure.

The project view permits the configuration of drive systems and the copying/inserting/modifying of drives already configured.

The configuration process produces the following results:

- A parts list of the required components (export to Excel, use of the Excel data sheet for import to SAP)
- Technical specifications of the system
- Characteristic curves
- Comments on system reactions
- Mounting arrangement of drive and control components and dimensional drawings of motors
- Energy requirements of the configured application

These results are displayed in a results tree and can be reused for documentation purposes.

Support is provided by the technological online help menu:

- Detailed technical specifications
- Information about the drive systems and their components
- Decision-making criteria for the selection of components
- Online help in English, French, German, Italian, Chinese and Japanese

System requirements

- PG or PC with Pentium III min. 800 MHz (recommended > 1 GHz)
- 512 MB RAM (1 GB RAM recommended)
- At least 4.1 GB of free hard disk space
- An additional 100 MB of free hard disk space on the Windows system drive
- Screen resolution 1024 × 768 pixels (1280 × 1024 pixels recommended)
- Operating system:
 - Windows XP Home Edition SP2
 - Windows XP Professional 32 bit SP2
 - Windows XP Professional 64 bit SP2
 - Windows Vista Business
 - Windows 7 Ultimate 32 bit
 - Windows 7 Professional 32 bit
- Microsoft Internet Explorer V5.5 SP2

Selection and ordering data

SIZER for Siemens Drives configuration tool

DVD-ROM

German, English, French, Italian

Article No.

6SL3070-0AA00-0AG0

More information

The SIZER for Siemens Drives configuration tool is available free on the Internet at:

www.siemens.com/sizer

Appendix

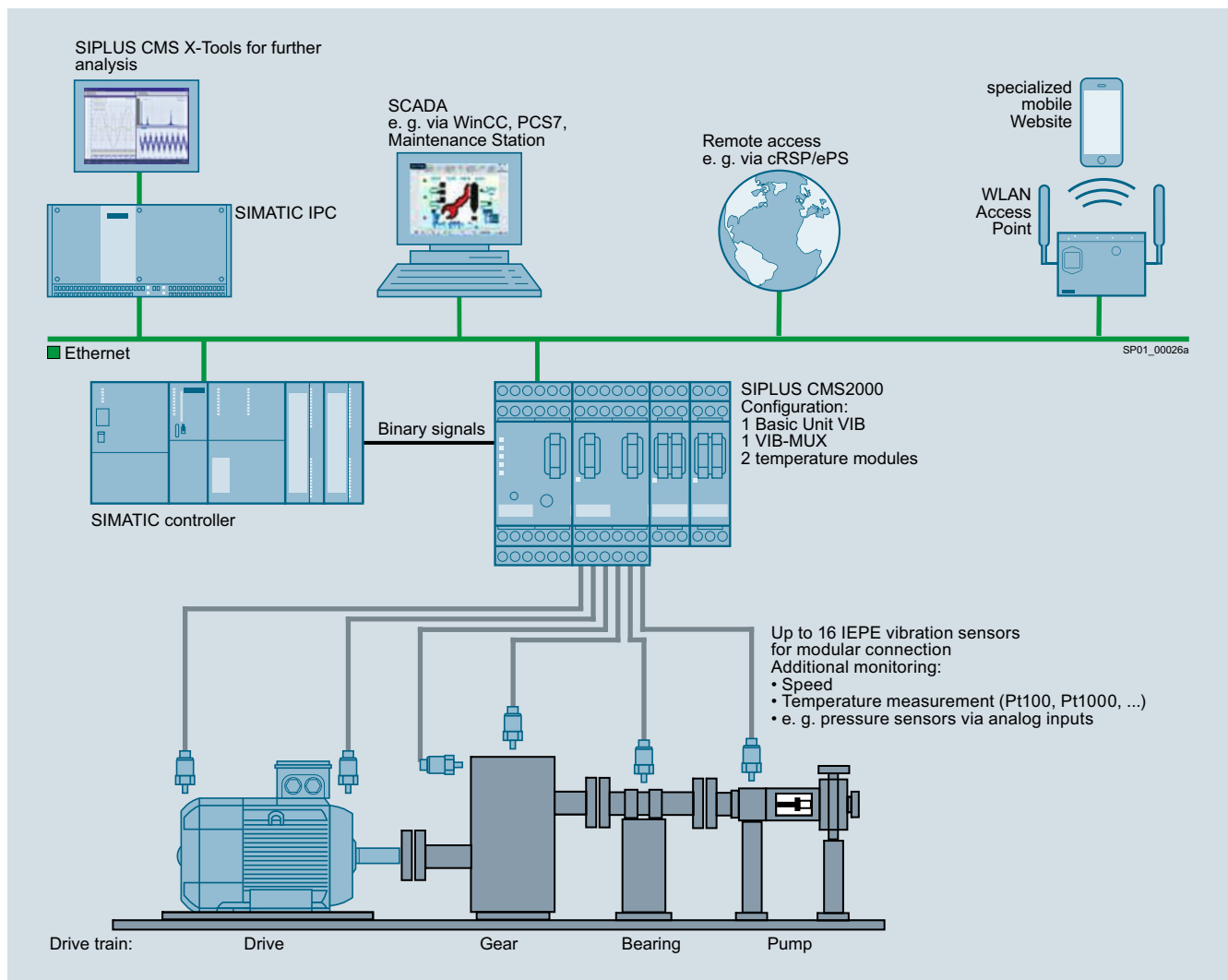
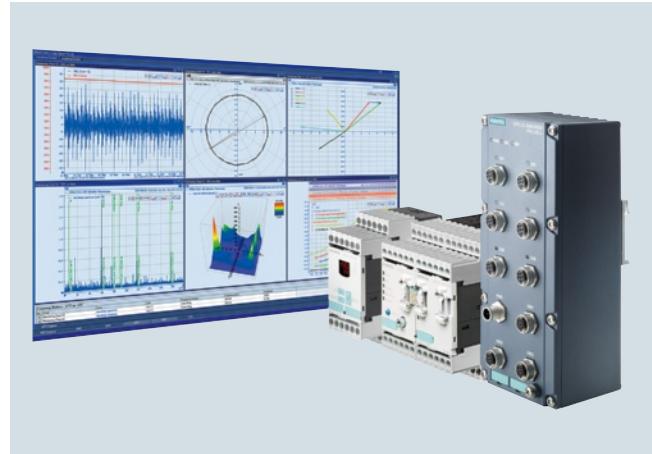
Tools and engineering

SIPLUS CMS condition monitoring systems for the continuous condition monitoring of motors

Overview

The SIPLUS CMS condition monitoring systems continuously monitor the condition of wear-prone drive systems components such as motors. Depending on the system, individual motors can be monitored as well as complete drive trains, or even the entire plant. IEPE sensors are used for acquisition of the motor vibrations for analysis, visualization and archiving by SIPLUS CMS. Information is supplied regularly and event-driven – even under remote operation. SIPLUS CMS can also be retrofitted.

More information on SIPLUS CMS is available on the Internet at: www.siemens.com/siplus-cms



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Order codes for 1LE, 1MB1, 1PC motors

All options are listed alphanumerically according to order codes in the following table.

A list of all the options available arranged according to category can be found in Catalog Section 1 "Introduction", "Guide to selecting and ordering the motors".

Order code	Special versions	Category	For further information, see Page
B01	Printed German/English Operating Instructions (Compact) enclosed in each wire-lattice pallet	Packaging, safety notes, documentation and test certificates	2/56
B02	Acceptance test certificate 3.1 in accordance with EN 10204		2/56, 2/63, 4/33, 4/36, 5/20, 5/22
B04	Printed German/English operating instructions enclosed		2/56, 2/63, 4/33, 4/36, 5/20, 5/22
B07	Extra rating plate for voltage tolerance	Rating plate and extra rating plates	2/56, 2/62, 5/20, 5/22
B30	Design (IP55) for Zone 2 in Ex nA II C and 22 in Ex tc IIIB, for non-conductive dust	Design for Zones according to ATEX	4/31, 4/34
B31	Design for Zone 2 in Ex nA IIB T3 Gc		4/31, 4/34
B60	Document - Electrical data sheet	Packaging, safety notes, documentation and test certificates	2/56, 2/63
B61	Document - Order dimensional drawing		2/57, 2/63
B65	Standard test (routine test) with acceptance		2/63, 5/20, 5/22
B82	Type test with heat run for horizontal motors, without acceptance		2/63
B83	Type test with heat run for horizontal motors, with acceptance		2/57, 2/63, 4/33, 4/36, 5/22, 5/22
B99	Wire-lattice pallet packaging		2/57, 4/33, 4/36
C02	VIK design marked with Ex nA II on rating plate	Design for Zones according to ATEX	4/31, 4/34
C02	VIK version	Designs in accordance with standards and specifications	2/55, 2/61
D02	Coolant temperature -50 to +40 °C	Coolant temperature and site altitude	2/61
D03	Coolant temperature -40 to +40 °C		2/55, 2/61, 4/32, 4/35
D04	Coolant temperature -30 to +40 °C		2/55, 2/61, 5/19, 5/21
D22	IE1 motor without CE marking for export outside EEA (see EU Directive 640/2009)	Designs in accordance with standards and specifications	2/55, 2/61
D30	Electrical according to NEMA MG1-12		2/55, 2/61
D31	Design according to UL with "Recognition Mark"		2/55, 2/61
D34	China Energy Efficiency Label		2/55, 2/61
D37	IEC Ex certification		4/32, 4/35
D40	Canadian regulations (CSA)		2/55, 2/61
F01	Mounting of holding brake (standard assignment)	Modular technology - Basic versions	2/54, 2/60
F02	Mounting of brake for higher switching frequency (operating brake)		2/54
F10	Brake supply voltage 24 V DC	Modular technology - Additional versions	2/54, 2/60
F11	Brake supply voltage 230 V AC, 50/60 Hz		2/54, 2/60
F12	Brake supply voltage 400 V AC, 50/60 Hz		2/54, 2/60
F40	Backstop, counter-clockwise motion blocked, clockwise direction of rotation	Modular technology - Basic versions	2/60
F41	Backstop, clockwise motion blocked, counter-clockwise direction of rotation		2/60
F50	Mechanical manual brake release with lever (no locking)	Modular technology - Additional versions	2/54, 2/60
F70	Mounting of separately driven fan	Modular technology - Basic versions	2/54, 2/60
F74	Sheet metal fan cover	Heating and ventilation	2/56, 2/62
F75	Fan cover for textile industry		2/56
F76	Metal external fan		2/56, 2/62, 4/32, 4/36
F77	Low-noise version for 2-pole motors with clockwise direction of rotation	Mechanical design and degrees of protection	2/54, 2/61, 4/32, 4/35
F78	Low-noise version for 2-pole motors with counter-clockwise direction of rotation		2/54, 2/61, 4/32, 4/35
F90	Without external fan and without fan cover	Heating and ventilation	2/56, 2/62, 5/20, 5/22
G01	Mounting of 1XP8012-10 (HTL) rotary pulse encoder	Modular technology - Basic versions	2/54, 2/60
G02	Mounting of 1XP8012-20 (TTL) rotary pulse encoder		2/54, 2/60

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G04	Mounting of LL 861 900 220 rotary pulse encoder	Special technology	2/54, 2/60
G05	Mounting of HOG 9 D 1024 I rotary pulse encoder		2/54, 2/60
G06	Mounting of HOG 10 D 1024 I rotary pulse encoder		2/54, 2/60
G07	Mounting of POG10D rotary pulse encoder (only in combination with separately driven fan or brake)		2/60
G08	Mounting of POG9 rotary pulse encoder (only in combination with separately driven fan or brake)		2/60
G15	Mounting of rotary pulse encoder HOG 10 DN 1024 I, terminal box moisture protection		2/60
G16	Mounting of rotary pulse encoder HOG 10 DN 1024 I, terminal box dust protection		2/60
G40	Prepared for mountings, center hole only	Mechanical design and degrees of protection	2/54, 2/61
G41	Prepared for mountings with D12 shaft		2/55, 2/61
G42	Prepared for mountings with D16 shaft		2/55, 2/61
G43	Protective cover for encoder (supplied loose – only for mountings with order codes G40 , G41 and G42)		2/55, 2/61
H00	Protective cover		2/55, 2/61, 4/32, 4/35, 5/19
H01	Screwed-on (instead of cast) feet		2/55, 2/61, 5/19, 5/21
H02	Vibration-proof version		2/55, 2/61, 4/32, 4/35
H03	Condensation drainage holes		2/55, 2/61, 4/32
H04	External grounding	Motor connection and terminal box	2/53, 2/58, 5/19
H07	Rust-resistant screws (externally)	Mechanical design and degrees of protection	2/55, 2/61, 4/32, 4/35, 5/19, 5/21
H08	Terminal box on NDE	Motor connection and terminal box	2/53, 2/58, 5/19, 5/21
H10	Housing with screw mounting	Mechanical design and degrees of protection	2/55
H20	IP65 degree of protection		2/55, 2/61, 4/32, 4/35, 5/19, 5/21
H21	IP54 degree of protection		2/61
H22	IP56 degree of protection		2/55, 2/61, 4/32, 4/35, 5/19, 5/21
H23	Drive-end seal for flange-mounting motors, oil-tight to 0.1 bar		2/55, 2/61, 4/32, 4/35, 5/19, 5/21
H70	Second external grounding	Motor connection and terminal box	2/60
L00	Vibration quantity level B	Balance and vibration quantity	2/55, 2/62, 4/32, 4/36, 5/19, 5/22
L01	Balancing without feather key, feather key is supplied		2/55, 2/62, 4/32, 4/36, 5/19, 5/22
L02	Full-key balancing		2/55, 2/62, 4/32, 4/36, 5/19, 5/22
L04	Shaft extension with standard dimensions, without feather keyway		Shaft and rotor	2/56, 2/62, 4/32, 4/36, 5/20, 5/22
L05	Second standard shaft extension	2/56, 2/62, 4/32, 4/36, 5/20, 5/22	
L06	Standard shaft made of stainless steel	2/56, 2/62, 4/32, 4/36	
L07	Concentricity of shaft extension in accordance with DIN 42955 Tolerance R	2/56, 2/62, 4/32, 4/36, 5/20, 5/22	
L08	Concentricity of shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors	2/56, 2/62, 4/32, 4/36, 5/20, 5/22	

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L20	Located bearing DE		2/55, 2/61, 4/32, 4/35
L21	Located bearing NDE		2/55, 2/61, 4/32, 4/35
L22	Bearing design for increased cantilever forces		2/55, 2/61, 4/32, 4/35, 5/19, 5/21
L23	Regreasing device		2/55, 2/62, 4/32, 4/35, 5/19, 5/21
L24	Hot bearing grease		2/62
L25	Special bearing for DE and NDE, bearing size 63		2/55, 2/62, 4/35
L28	Reinforced bearings at both DE and NDE, DE bearing for increased cantilever forces		2/62
L37	Increased max. speed		2/62
L50	Bearing insulation DE		2/62
L51	Bearing insulation NDE		2/62
L52	Grounding brush for converter-fed operation	Mechanical design and degrees of protection	2/61
L82	Train-compatible version	Designs in accordance with standards and specifications	2/55
M01	Connected in star for dispatch	Packaging, safety notes, documentation and test certificates	2/57, 2/63, 4/33, 4/36
M02	Connected in delta for dispatch		2/57, 2/63, 4/33, 4/36
M10	Second rating plate, loose	Rating plate and extra rating plates	2/56, 2/62, 4/33, 4/36, 5/20
M11	Rating plate, stainless steel		2/56, 2/62, 4/33, 4/36
N01	Temperature class 155 (F), utilized acc. to 155 (F), with service factor (SF)	Windings and insulation	2/53, 2/59
N02	Temperature class 155 (F), utilized acc. to 155 (F), with increased output		2/53, 2/59
N03	Temperature class 155 (F), utilized acc. to 155 (F), with increased coolant temperature		2/53, 2/59
N05	Temperature class 155 (F), utilized acc. to 130 (B), coolant temperature 45 °C, derating approx. 4 %		2/53, 2/59, 4/31, 4/34
N06	Temperature class 155 (F), utilized acc. to 130 (B), coolant temperature 50 °C, derating approx. 8 %		2/53, 2/59, 4/31, 4/34
N07	Temperature class 155 (F), utilized acc. to 130 (B), coolant temperature 55 °C, derating approx. 13 %		2/53, 2/59, 4/31, 4/34
N08	Temperature class 155 (F), utilized acc. to 130 (B), coolant temperature 60 °C, derating approx. 18 %		2/53, 2/59, 4/31, 4/34
N10	Temperature class H		2/53, 2/59
N11	Temperature class 180 (H) at rated output and max. CT 60 °C		2/53, 2/59
N20	Increased air humidity/temperature with 30 to 60 g water per m ³ of air		2/53, 2/59, 4/31, 4/34, 5/19, 5/21
N21	Increased air humidity/temperature with 60 to 100 g water per m ³ of air		2/53, 2/59, 4/31, 4/34
P01	Next larger standard flange	Mechanical design and degrees of protection	2/55, 2/61, 4/32, 4/35, 5/19
P02	Next smaller standard flange		2/55, 2/61
Q01	Measuring nipple for SPM shock pulse measurement for bearing inspection	Motor protection (bearing protection)	5/19, 5/21
Q01	Measuring nipple for SPM shock pulse measurement for bearing inspection	Bearings and lubrication	2/55, 2/62, 4/32, 4/35
Q02	Anti-condensation heating for 230 V	Heating and ventilation	2/55, 2/62, 4/32, 4/36
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Q32	2 × 3 temperature detectors for alarm and tripping		2/58
Q62	Installation of 1 Pt100 resistance thermometer in stator winding, two-wire circuit		2/58
Q63	Installation of 3 Pt100 resistance thermometers in stator winding, three-wire circuit		2/58
Q64	Installation of 6 Pt100 resistance thermometers in stator winding, three-wire circuit		2/58
Q72	Installation of 2 Pt100 screw-in resistance thermometers in basic circuit for rolling-contact bearings		2/58, 4/34
Q78	Installation of 2 Pt100 screw-in resistance thermometers in 3-wire circuit for rolling-contact bearings		2/58, 4/34
Q79	Installation of 2 Pt100 double screw-in resistance thermometers in 3-wire circuit for rolling-contact bearings		2/58, 4/34
Q80	Extension of the liability for defects by 12 months to a total of 24 months (2 years) from delivery	Extension of the liability for defects	2/63
Q82	Extension of the liability for defects by 24 months to a total of 36 months (3 years) from delivery		2/63
R10	Rotation of the terminal box through 90°, entry from DE	Motor connection and terminal box	2/53, 2/58, 4/31, 4/34
R11	Rotation of the terminal box through 90°, entry from NDE		2/53, 2/58, 4/31, 4/34
R12	Rotation of the terminal box through 180°		2/53, 2/58, 4/31, 4/34, 5/19, 5/21
R13	Terminal box in position 0°; connection from right		5/19, 5/21
R14	One EMC cable gland		2/58
R15	One metal cable gland		2/53, 2/58
R16	EMC cable gland, maximum configuration		2/58
R17	Stud terminal for cable connection, accessories pack (3 items)		2/58, 4/34
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R19	Saddle terminal for connection without cable lug, accessories pack		2/58, 4/34
R20	3 cables protruding, 0.5 m long		2/53, 2/58
R21	3 cables protruding, 1.5 m long		2/53, 2/58
R22	6 cables protruding, 0.5 m long		2/53, 2/58
R23	6 cables protruding, 1.5 m long		2/53, 2/58
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R51	Terminal box without cable entry opening		2/58
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R62	Cast-iron auxiliary terminal box (small)		2/59, 4/34
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R72	Small motor connector CQ12 with EMC		2/53
R73	Small motor connector CQ12 without EMC	2/53	
R74	Silicon-free version	2/59	
S00	Unpainted (only cast-iron parts primed)	Colors and paint finish	2/54, 2/59, 4/31, 4/35, 5/19, 5/21
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S04	Special paint for use offshore		2/59, 4/35
S05	Internal coating		2/59, 5/21
S10	Special finish in RAL 7030 stone gray		2/59, 4/35, 5/21
Y50	Temperature class 155 (F), utilized acc. to 130 (B), with higher coolant temperature and/or site altitude		Windings and insulation	2/54, 2/59, 4/31, 4/34
Y51	Special finish in special RAL colors: For RAL colors, see "Special finish in special RAL colors" (see Catalog Section 1 "Introduction")	Colors and paint finish	

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Y52	Temperature class 155 (F), utilized according to 155 (F), other requirements	Windings and insulation	2/54, 2/59
Y53	Standard finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005 (see Catalog Section 1 "Introduction")	Colors and paint finish	2/60, 4/35, 5/21
Y54	Special finish in other standard RAL colors: RAL 1002, 1013, 1015, 1019, 2003, 2004, 3000, 3007, 5007, 5009, 5010, 5012, 5015, 5017, 5018, 5019, 6011, 6019, 6021, 7000, 7001, 7004, 7011, 7016, 7022, 7031, 7032, 7033, 7035, 9001, 9002, 9005 (see Catalog Section 1 "Introduction")		2/54, 2/60, 4/31, 4/35, 5/19, 5/21
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Y59	Non-standard shaft extension, NDE		2/56, 2/62, 4/32, 4/36, 5/20, 5/22
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Indexes

Notes

Explanation of the raw material/metal surcharges¹⁾

Surcharge calculation

To compensate for variations in the price of the raw materials silver, copper, aluminum, lead, gold, dysprosium²⁾ and/or neodym²⁾, surcharges are calculated on a daily basis using the so-called metal factor for products containing these raw materials. A surcharge for the respective raw material is calculated as a supplement to the price of a product if the basic official price of the raw material in question is exceeded.

The surcharges are calculated in accordance with the following criteria:

- Basic official price of the raw material
Basic official price from the day prior to receipt of the order or prior to release order (daily price) for³⁾
 - Silver (sales price, processed)
 - Gold (sales price, processed)
 and for⁴⁾
 - Copper (lower DEL notation + 1 %)
 - Aluminum (aluminum in cables)
 - Lead (lead in cables)
- Metal factor of the products
Certain products are displayed with a metal factor. The metal factor determines the official price (for those raw materials concerned) as of which the metal surcharges are applied and the calculation method used (weight or percentage method). An exact explanation is given below.

Structure of the metal factor

The metal factor consists of several digits; the first digit indicates whether the percentage method of calculation refers to the list price or a possible discounted price (customer net price) (L = list price / N = customer net price).

The remaining digits indicate the method of calculation used for the respective raw material. If no surcharge is added for a raw material, a "-" is used.

1st digit	List or customer net price using the percentage method
2nd digit	for silver (AG)
3rd digit	for copper (CU)
4th digit	for aluminum (AL)
5th digit	for lead (PB)
6th digit	for gold (AU)
7th digit	for dysprosium (Dy) ²⁾
8th digit	for neodym (Nd) ²⁾

Weight method

The weight method uses the basic official price, the daily price and the raw material weight. In order to calculate the surcharge, the basic official price must be subtracted from the daily price. The difference is then multiplied by the raw material weight.

The basic official price can be found in the table below using the number (1 to 9) of the respective digit of the metal factor. The raw material weight can be found in the respective product descriptions.

Percentage method

Use of the percentage method is indicated by the letters A-Z at the respective digit of the metal factor.

The surcharge is increased - dependent on the deviation of the daily price compared with the basic official price - using the percentage method in "steps" and consequently offers surcharges that remain constant within the framework of this "step range". A higher percentage rate is charged for each new step. The respective percentage level can be found in the table below.

Metal factor examples

L E A - - - - -	Basis for % surcharge: List price Silver Basis 150 €, Step 50 €, 0.5 % Copper Basis 150 €, Step 50 €, 0.1 % No surcharge for aluminum No surcharge for lead No surcharge for gold No surcharge for dysprosium No surcharge for neodym
N - A 6 - - - - -	Basis for % surcharge: Customer net price No surcharge for silver Copper Basis 150 €, Step 50 €, 0.1 % Aluminum acc. to weight, basic offic. price 225 € No surcharge for lead No surcharge for gold No surcharge for dysprosium No surcharge for neodym
- - - 3 - - - - -	No basis necessary No surcharge for silver Copper acc. to weight, basic official price 150 € No surcharge for aluminum No surcharge for lead No surcharge for gold No surcharge for dysprosium No surcharge for neodym

¹⁾ Refer to the separate explanation on the next page regarding the raw materials dysprosium and neodym (= rare earths).

²⁾ For a different method of calculation, refer to the separate explanation for these raw materials on the next page.

³⁾ Source: Umicore, Hanau (www.metalsmanagement.umicore.com).

⁴⁾ Source: German Trade Association for Cables and Conductors (www.kabelverband.org).

Appendix

Metal surcharges

Explanation of the raw material/metal surcharges for dysprosium and neodym (rare earths)

Surcharge calculation

To compensate for variations in the price of the raw materials silver¹⁾, copper¹⁾, aluminum¹⁾, lead¹⁾, gold¹⁾, dysprosium and/or neodym, surcharges are calculated on a daily basis using the so-called metal factor for products containing these raw materials. The surcharge for dysprosium and neodym is calculated as a supplement to the price of a product if the basic official price of the raw material in question is exceeded.

The surcharge is calculated in accordance with the following criteria:

- Basic official price of the raw material²⁾
Three-month basic average price (see below) in the period before the quarter in which the order was received or the release order took place (= average official price) for
 - dysprosium (Dy metal, 99 % min. FOB China; USD/kg)
 - neodym (Nd metal, 99 % min. FOB China; USD/kg)
- Metal factor of the products
Certain products are displayed with a metal factor. The metal factor indicates (for those raw materials concerned) the basic official price as of which the surcharges for dysprosium and neodym are calculated using the weight method. An exact explanation of the metal factor is given below.

Three-month average price

The prices of rare earths vary according to the foreign currency, and there is no freely accessible stock exchange listing. This makes it more difficult for all parties involved to monitor changes in price. In order to avoid continuous adjustment of the surcharges, but to still ensure fair, transparent pricing, an average price is calculated over a three-month period using the average monthly foreign exchange rate from USD to EUR (source: European Central Bank). Since not all facts are immediately available at the start of each month, a one-month buffer is allowed before the new average price applies.

Examples of calculation of the average official price:

Period for calculation of the average price:	Period during which the order/release order is effected and the average price applies:
Sep 2012 - Nov 2012	Q1 in 2013 (Jan - Mar)
Dec 2012 - Feb 2013	Q2 in 2013 (Apr - Jun)
Mar 2013 - May 2013	Q3 in 2013 (Jul - Sep)
Jun 2013 - Aug 2013	Q4 in 2013 (Oct - Dec)

Structure of the metal factor

The metal factor consists of several digits; the first digit is not relevant to the calculation of dysprosium and neodym.

The remaining digits indicate the method of calculation used for the respective raw material. If no surcharge is added for a raw material, a "-" is used.

1st digit	List or customer net price using the percentage method
2nd digit	for silver (AG) ¹⁾
3rd digit	for copper (CU) ¹⁾
4th digit	for aluminum (AL) ¹⁾
5th digit	for lead (PB) ¹⁾
6th digit	for gold (AU) ¹⁾
7th digit	for dysprosium (Dy)
8th digit	for neodym (Nd)

Weight method

The weight method uses the basic official price, the average price and the raw material weight. In order to calculate the surcharge, the basic official price must be subtracted from the average price. The difference is then multiplied by the raw material weight.

The basic official price can be found in the table below using the number (1 to 9) of the respective digit of the metal factor. Your Sales contact can inform you of the raw material weight.

Metal factor examples

-----71	
↑	No basis necessary
↑	No surcharge for silver
↑	No surcharge for copper
↑	No surcharge for aluminum
↑	No surcharge for lead
↑	No surcharge for gold
↑	Dysprosium acc. to weight, basic official price 300 €
↑	Neodym acc. to weight, basic official price 50 €

¹⁾ For a different method of calculation, refer to the separate explanation for these raw materials on the previous page.

²⁾ Source: Asian Metal Ltd (www.asianmetal.com)

Values of the metal factor

Percentage method	Basic official price in €	Step range in €	% surcharge 1st step	% surcharge 2nd step	% surcharge 3rd step	% surcharge 4th step	% surcharge per additional step	
			Price in € 150.01 - 200.00	Price in € 200.01 - 250.00	Price in € 250.01 - 300.00	Price in € 300.01 - 350.00		
A	150	50	0.1	0.2	0.3	0.4	0.1	
B	150	50	0.2	0.4	0.6	0.8	0.2	
C	150	50	0.3	0.6	0.9	1.2	0.3	
D	150	50	0.4	0.8	1.2	1.6	0.4	
E	150	50	0.5	1.0	1.5	2.0	0.5	
F	150	50	0.6	1.2	1.8	2.4	0.6	
G	150	50	1.0	2.0	3.0	4.0	1.0	
H	150	50	1.2	2.4	3.6	4.8	1.2	
I	150	50	1.6	3.2	4.8	6.4	1.6	
J	150	50	1.8	3.6	5.4	7.2	1.8	
			175.01 - 225.00	225.01 - 275.00	275.01 - 325.00	325.01 - 375.00		
O	175	50	0.1	0.2	0.3	0.4	0.1	
P	175	50	0.2	0.4	0.6	0.8	0.2	
R	175	50	0.5	1.0	1.5	2.0	0.5	
			225.01 - 275.00	275.01 - 325.00	325.01 - 375.00	375.01 - 425.00		
S	225	50	0.2	0.4	0.6	0.8	0.2	
U	225	50	1.0	2.0	3.0	4.0	1.0	
V	225	50	1.0	1.5	2.0	3.0	1.0	
W	225	50	1.2	2.5	3.5	4.5	1.0	
			150.01 - 175.00	175.01 - 200.00	200.01 - 225.00	225.01 - 250.00		
Y	150	25	0.3	0.6	0.9	1.2	0.3	
			400.01 - 425.00	425.01 - 450.00	450.01 - 475.00	475.01 - 500.00		
Z	400	25	0.1	0.2	0.3	0.4	0.1	
Price basis (1st digit)								
L	Calculation based on the list price							
N	Calculation based on the customer net price (discounted list price)							
Weight method	Basic official price in €							
1	50	Calculation based on raw material weight						
2	100							
3	150							
4	175							
5	200							
6	225							
7	300							
8	400							
9	555							
Miscellaneous								
-	No metal surcharge							

Appendix

Conditions of sale and delivery, Export regulations

1. General Provisions

By using this catalog you can acquire hardware and software products described therein from Siemens AG subject to the following Terms and Conditions of Sale and Delivery (hereinafter referred to as "T&C"). Please note that the scope, the quality and the conditions for supplies and services, including software products, by any Siemens entity having a registered office outside Germany, shall be subject exclusively to the General Terms and Conditions of the respective Siemens entity. The following T&C apply exclusively for orders placed with Siemens Aktiengesellschaft, Germany.

1.1 For customers with a seat or registered office in Germany

For customers with a seat or registered office in Germany, the following applies subordinate to the T&C:

- the "General Terms of Payment"¹⁾ and,
- for software products, the "General License Conditions for Software Products for Automation and Drives for Customers with a Seat or Registered Office in Germany"¹⁾ and,
- for other supplies and services, the "General Conditions for the Supply of Products and Services of the Electrical and Electronics Industry"¹⁾.

1.2 For customers with a seat or registered office outside Germany

For customers with a seat or registered office outside Germany, the following applies subordinate to the T&C:

- the "General Terms of Payment"¹⁾ and,
- for software products, the "General License Conditions for Software Products for Automation and Drives for Customers with a Seat or Registered Office outside of Germany"¹⁾ and
- for other supplies and/or services, the "General Conditions for Supplies of Siemens Industry for Customers with a Seat or Registered Office outside of Germany"¹⁾.

2. Prices

The prices are in € (Euro) ex point of delivery, exclusive of packaging.

The sales tax (value added tax) is not included in the prices. It shall be charged separately at the respective rate according to the applicable statutory legal regulations.

Prices are subject to change without prior notice. We will charge the prices valid at the time of delivery.

To compensate for variations in the price of raw materials (e.g. silver, copper, aluminum, lead, gold, dysprosium and neodym), surcharges are calculated on a daily basis using the so-called metal factor for products containing these raw materials. A surcharge for the respective raw material is calculated as a supplement to the price of a product if the basic official price of the raw material in question is exceeded.

The metal factor of a product indicates the basic official price (for those raw materials concerned) as of which the surcharges on the price of the product are applied, and with what method of calculation.

You will find a detailed explanation of the metal factor on the page headed "Metal surcharges".

To calculate the surcharge (except in the cases of dysprosium and neodym), the official price from the day prior to that on which the order was received or the release order was effected is used.

To calculate the surcharge applicable to dysprosium and neodym ("rare earths"), the corresponding three-month basic average price in the quarter prior to that in which the order was received or the release order was effected is used with a one-month buffer (details on the calculation can be found in the explanation of the metal factor).

3. Additional Terms and Conditions

The dimensions are in mm. In Germany, according to the German law on units in measuring technology, data in inches apply only to devices for export.

Illustrations are not binding.

Insofar as there are no remarks on the individual pages of this catalog - especially with regard to data, dimensions and weights given - these are subject to change without prior notice.

4. Export regulations

We shall not be obligated to fulfill any agreement if such fulfillment is prevented by any impediments arising out of national or international foreign trade or customs requirements or any embargoes and/or other sanctions.

Export of goods listed in this catalog may be subject to licensing requirements. We will indicate in the delivery details whether licenses are required under German, European and US export lists. Goods labeled with "AL" not equal to "N" are subject to European or German export authorization when being exported out of the EU. Goods labeled with "ECCN" not equal to "N" are subject to US re-export authorization.

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The products listed in this catalog may be subject to European/German and/or US export regulations. Any export requiring approval is therefore subject to authorization by the relevant authorities.

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¹⁾ The text of the Terms and Conditions of Siemens AG can be downloaded at www.siemens.com/automation/salesmaterial-as/catalog/en/terms_of_trade_en.pdf

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