SIEMENS

SIMOTICS Low-Voltage Motors

Type series 1LE1, 1MB1 and 1PC1
Frame sizes 80 to 315
Power range 0.3 to 250 kW

Motors

Catalog D 81.1
Edition 2013

Answers for industry.

Related catalogs

MOTOX Geared Motors D 87.1

E86060-K5287-A111-A4-7600

Motion Control Drives D 31
SINAMICS and Motors
for Single-Axis Drives

E86060-K5531-A101-A1-7600

SINAMICS Drives D 11
SINAMICS G130 Drive Converter Chassis Units
SINAMICS G150 Drive Converter Cabinet Units

E86060-K5511-A101-A5-7600

Industrial Communication IK PI
SIMATIC NET

E86060-K6710-A101-B7-7600

AC NEMA & IEC Motors D 81.2
Further details available on the Internet at: U.S./Canada

Only PDF
http://www.sea.siemens.com/motors

Products for Automation and Drives CA 01
Interactive Catalog, DVD

E86060-D4001-A510-D2-7600

Industry Mall
Information and Ordering Platform
in the Internet:

www.siemens.com/industrymall

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/motors/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

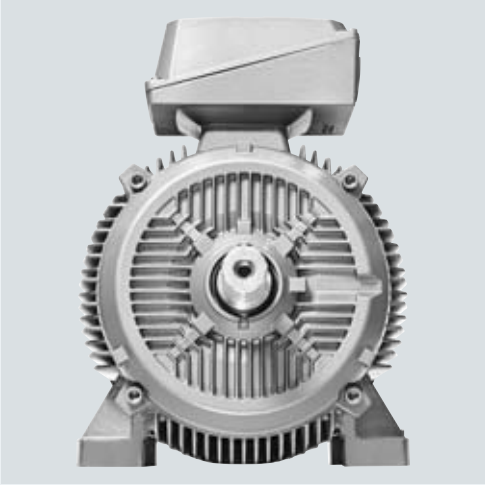
The CA01 Catalog can be directly installed on the hard disk or in the network from the DVD as a partial or full version.

Copper surcharges

The metal factors that are applicable for the copper surcharges are specified in the header of Price List D 81.1 P, October 2012. 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 · 2013



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:
All information on 1LE1 motors given in Catalog D 81.1 · January 2012 Part 0.1 and Part 1 "SIMOTICS GP/SD 1LE1/1PC1 Standard Motors", Catalog D 81.1 · 2008 Part 0 "Introduction 1LE1, 1PC1 motors"

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-D2-7600

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Introduction 1
General information regarding efficiency in accordance with International Efficiency, Guide to selecting and ordering the motors, General technical specifications

SIMOTICS GP/SD 1LE1/1PC1 Standard Motors 2

SIMOTICS XP 1MB1 Explosion-Proof Motors 3

Appendix 4
NEMA motors, Service & Support, Partners, Online Services, Tools and engineering, Indexes, Metal surcharges, Conditions of sale and delivery, Export regulations

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.

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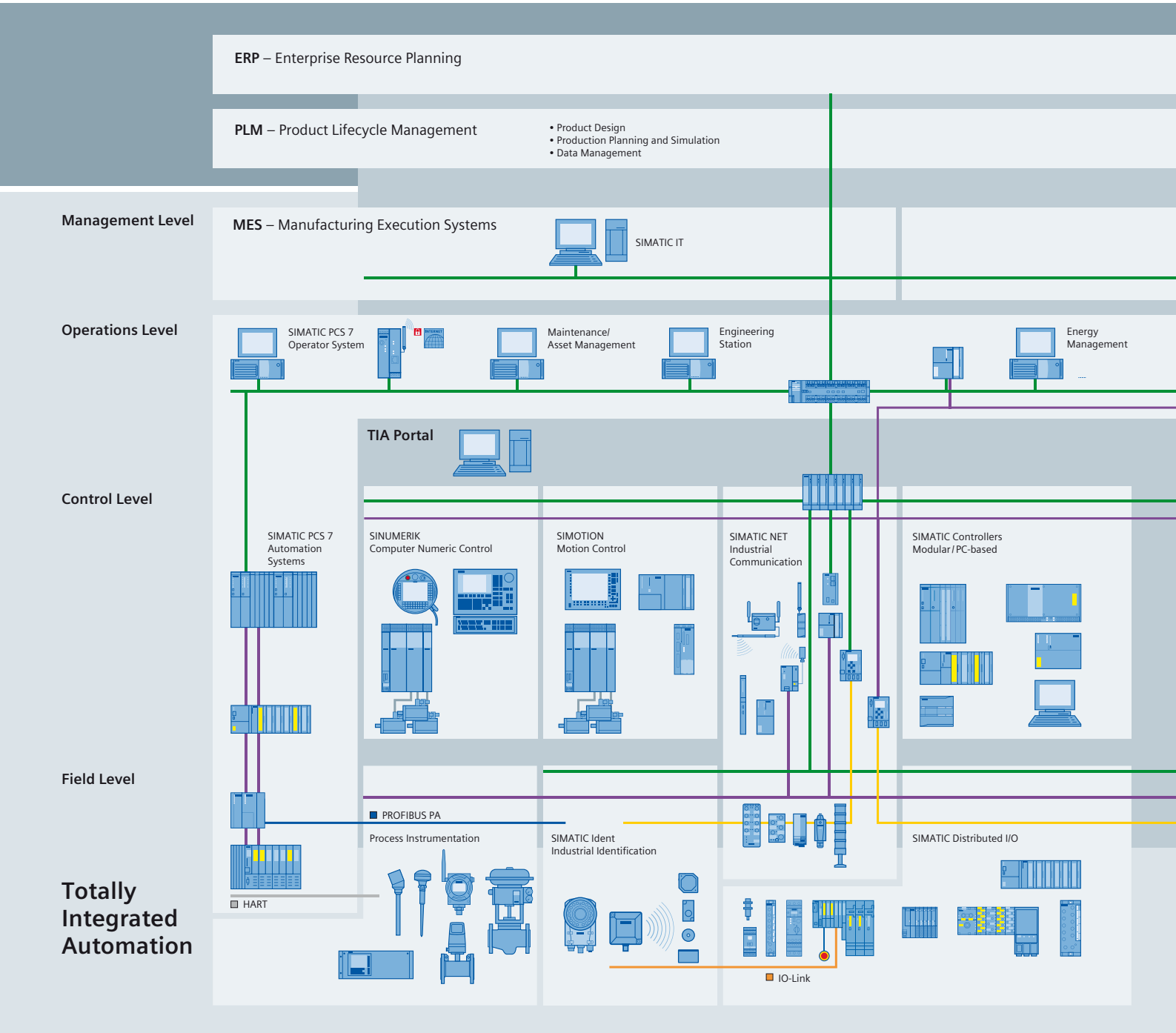
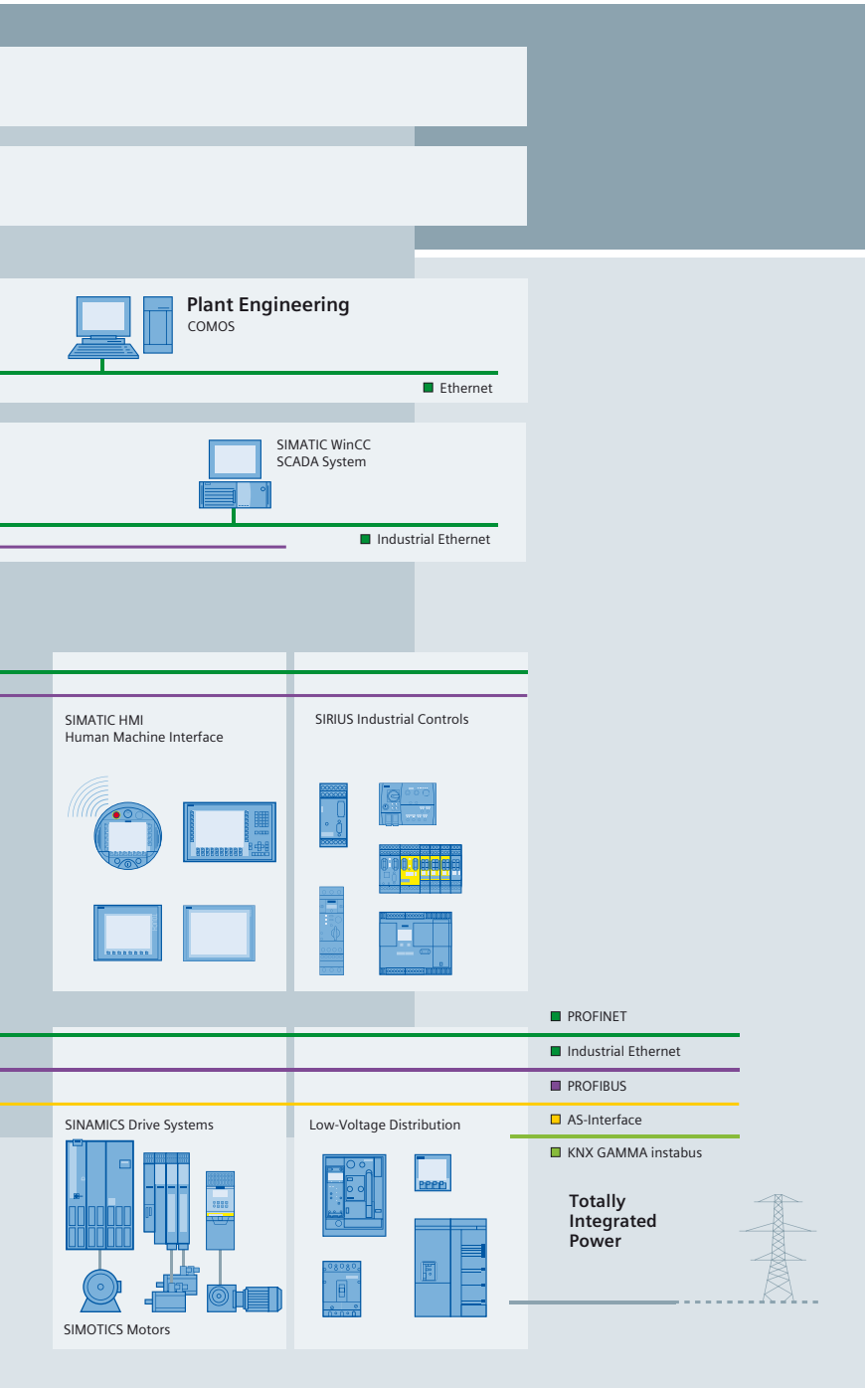


Setting standards in productivity and competitiveness.

Totally Integrated Automation.



TIA is characterized by its unique continuity.

It provides maximum transparency at all levels with reduced interfacing requirements – covering the field level, production control level, up to the corporate management level. With TIA you also profit throughout the complete life cycle of your plant – starting with the initial planning steps through operation up to modernization, where we offer a high measure of investment security resulting from continuity in the further development of our products and from reducing the number of interfaces to a minimum.

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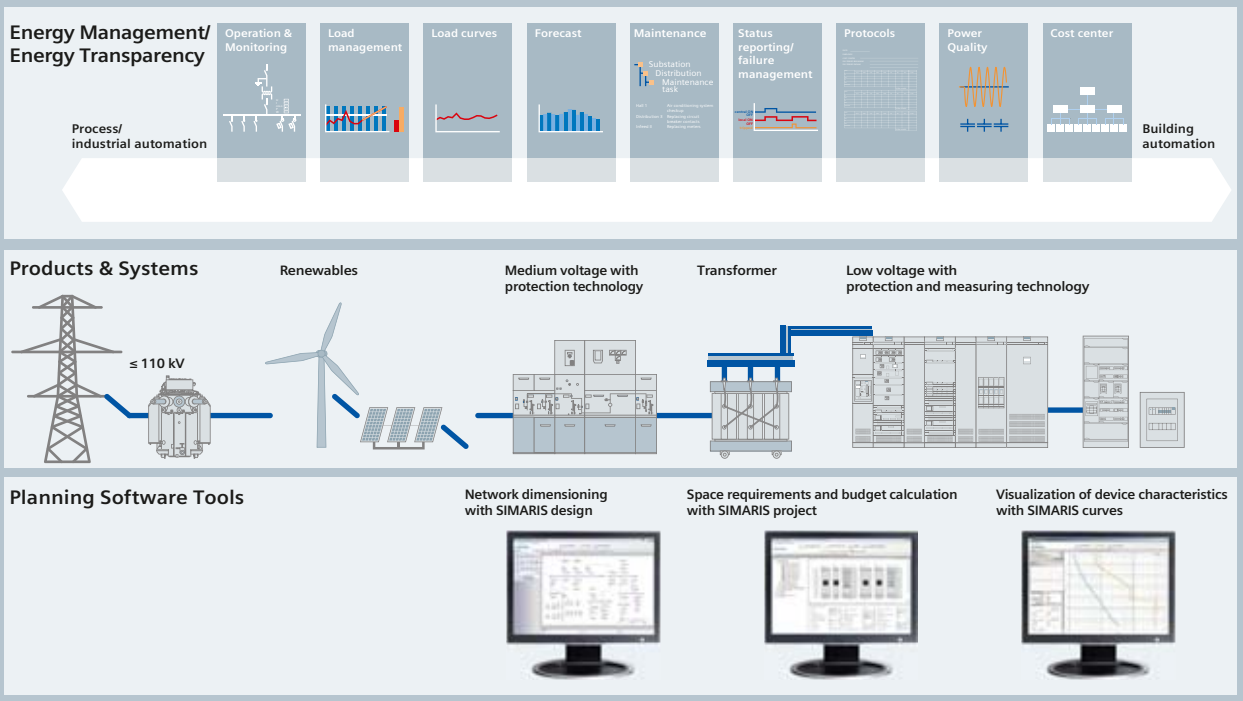
Thanks to Totally Integrated Automation, Siemens provides an integrated basis for the implementation of customized automation solutions – in all industries from inbound to outbound.

Totally Integrated Power: Future-proof power supply from one source.

Software tools, products, systems and support for integrated electrical power distribution



The power supply system acts like a "vital artery", forming the basis for the reliable and efficient functioning of all electrically operated building installations. Electrical power distribution therefore requires integrated solutions. Our answer: Totally Integrated Power (TIP).

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Get more information:

www.siemens.com/tip
www.siemens.com/simaris
www.siemens.com/specifications

Introduction

1/2 General information regarding efficiency in accordance with International Efficiency

1/2 Efficiency classes and efficiencies according to IEC 60034-30:2008, extension of the liability for defects

1/4 Guide to selecting and ordering the motors

1/4 Catalog orientation and drive selection

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1/21 Outputs

1/22 Rating plate and extra rating plates

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1/24 Windings and insulation

1/26 Heating and ventilation

1/28 Types of construction

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General information regarding efficiency in accordance with International Efficiency

Efficiency classes and efficiencies according to IEC 60034-30:2008, extension of the liability for defects

Overview

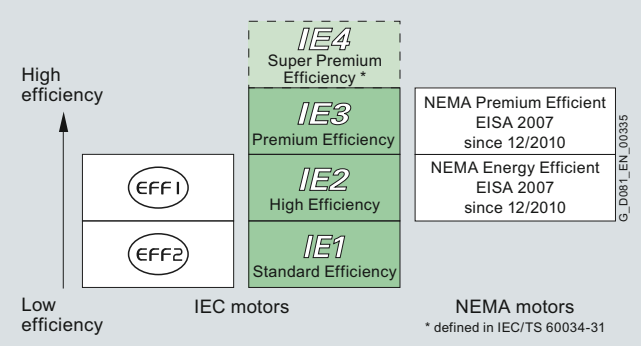
Harmonization of the efficiency classes

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)



IE efficiency classes in accordance with the output

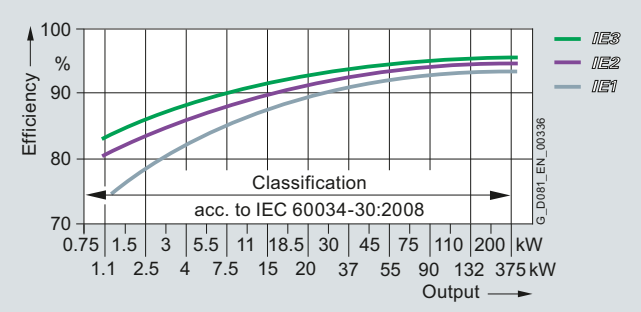
Note:
All efficiency classes are stated with reference to 50 Hz data (unless specified otherwise).

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

With the measuring method, the supplementary losses are no longer applied as a percentage, but instead they are determined with measurements (IEC 60034-2-1: 2007). The nominal efficiencies are therefore reduced from EFF1 to IE2 and from EFF2 to IE1, even though there have been no technical or physical changes to the motors.

Previously: P_{LL} = 0.5 % of P_1 added
Now: P_{LL} = Individual measurement

P_{LL} = Load-dependent supplementary losses



IE1 to IE3 efficiencies 4-pole 50 Hz

Minimum efficiencies according to IEC 60034-30:2008

Rated output	Efficiency η in % IEC IE class								
	IE1			**IE 2**			**IE3**		
$P_{rated, 50\ Hz}$	Standard Efficiency			High Efficiency			Premium Efficiency		
kW	2-pole	4-pole	6-pole	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	80.7	82.5	78.9
1.1	75.0	75.0	72.9	79.6	81.4	78.1	82.7	84.1	81.0
1.5	77.2	77.2	75.2	81.3	82.8	79.8	84.2	85.3	82.5
2.2	79.7	79.7	77.7	83.2	84.3	81.8	85.9	86.7	84.3
3	81.5	81.5	79.7	84.6	85.5	83.3	87.1	87.7	85.6
4	83.1	83.1	81.4	85.8	86.6	84.6	88.1	88.6	86.8
5.5	84.7	84.7	83.1	87.0	87.7	86.0	89.2	89.6	88.0
7.5	86.0	86.0	84.7	88.1	88.7	87.2	90.1	90.4	89.1
11	87.6	87.6	86.4	89.4	89.8	88.7	91.2	91.4	90.3
15	88.7	88.7	87.7	90.3	90.6	89.7	91.9	92.1	91.2
18.5	89.3	89.3	88.6	90.9	91.2	90.4	92.4	92.6	91.7
22	89.9	89.9	89.2	91.3	91.6	90.9	92.7	93.0	92.2
30	90.7	90.7	90.2	92.0	92.3	91.7	93.3	93.6	92.9
37	91.2	91.2	90.8	92.5	92.7	92.2	93.7	93.9	93.3
45	91.7	91.7	91.4	92.9	93.1	92.7	94.0	94.2	93.7
55	92.1	92.1	91.9	93.2	93.5	93.1	94.3	94.6	94.1
75	92.7	92.7	92.6	93.8	94.0	93.7	94.7	95.0	94.6
90	93.0	93.0	92.9	94.1	94.2	94.0	95.0	95.2	94.9
110	93.3	93.3	93.3	94.3	94.5	94.3	95.2	95.4	95.1
132	93.5	93.5	93.5	94.6	94.7	94.6	95.4	95.6	95.4
160	93.8	93.8	93.8	94.8	94.9	94.8	95.6	95.8	95.6
200 … 375	94.0	94.0	94.0	95.0	95.1	95.0	95.8	96.0	95.8

Background information

Comprehensive laws have been introduced in the European Union with the objective of reducing energy consumption and therefore CO_2 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

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 1000 meters above sea level;
  - At ambient temperatures above 40 °C;
  - At maximum operating temperatures above 400 °C;
  - At ambient temperatures below -15 °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:

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 (EPAct) was superseded in December 2010 by the Energy Independence Security Act (EISA).

With effect from December 2010, EISA has extended the legal minimum efficiency requirements and the following motors must fulfill the NEMA Premium Efficient Level:

- 1 to 200 hp
- 2-pole, 4-pole 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

Extension of the liability for defects for SIMOTICS 1LE1 and 1PC1 low-voltage motors

For SIMOTICS 1LE1 and 1PC1 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 motors 1LE1, 1PC1	
Additional 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

Catalog orientation and drive selection

1

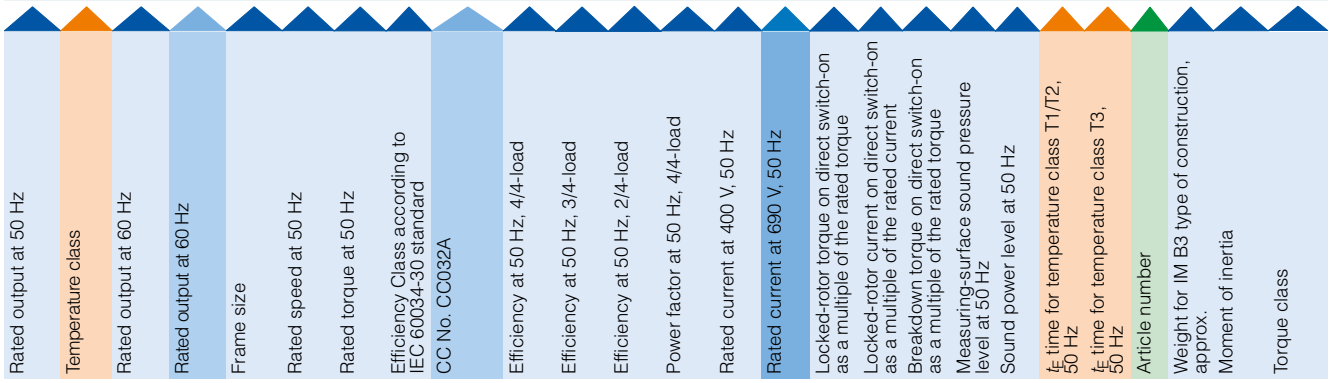
Overview

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 = ... rpm	
	Rated output	P =..... kW	
	Rated torque	$M = P \cdot 9550/n$ = ... 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 1/57)
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	Temperature 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	cos-φ_{rated}, 50 Hz, 4/4	I_{rated}, 50 Hz, 400 V	I_{rated}, 50 Hz, 690 V	T_{LR}/T_{rated}	I_{LR}/I_{rated}	T_B/T_{rated}	L_{pfA}, 50 Hz	L_{WA}, 50 Hz	t_E, 50 Hz, T1/T2	t_E, 50 Hz, T3	Article 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



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.

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	3
	Orientation	
Step 3	Motors for Zone 21/22 or 2 in type of protection Ex t or Ex n	
Step 4	Supplements to article numbers and special versions	
Step 5	Dimensions	
Step 2	SIMOTICS DP Application-Specific Motors	
	Section is in preparation	

Catalog orientation and drive selection

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)										
			63	71	80	90	100	112	132	160	180	200	225
2	**SIMOTICS GP 1LE1/1PC1 Standard Motors**												
	IE2 High Efficiency	1LE1001			1LE1001				0.55 … 22 kW				
		1PC1001					1PC1001		0.37 … 9 kW				
	IE3 Premium Efficiency	1LE1003			1LE1003				0.37 … 18.5 kW				
	IE1 Standard Efficiency	1LE1002					1LE1002		0.75 … 22 kW				
		1PC1002					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					1LE1011		0.55 … 16 kW				
		1LE1012					1LE1012		0.6 … 16 kW				
3	**SIMOTICS XP 1MB1 Explosion-Proof Motors**												
	Ex t (Zone 21/22) Ex n (Zone 2) IE1 Standard Efficiency	1MB1					1MB1012/1MB1022/1MB1032		0.75 … 18.5 kW				
	Ex t (Zone 21/22) Ex n (Zone 2) IE2 High Efficiency	1MB1					1MB1011/1MB1021/1MB1031		0.75 … 18.5 kW				
	Ex t (Zone 21/22) Ex n (Zone 2) IE3 Premium Efficiency	1MB1					1MB1013/1MB1023/1MB1033		2.2 … 18.5 kW				
	SIMOTICS DP Application-Specific Motors (available soon)												

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 S/M/L
2	**SIMOTICS SD 1LE1 Standard Motors**														
	IE2 High Efficiency	1LE1501	1LE1501 Basic Line												0.75 … 200 kW
		1LE1601	1LE1601 Performance Line												0.75 … 200 kW
	IE3 Premium Efficiency	1LE1503	1LE1503 Basic Line												1.5 … 200 kW
		1LE1603	1LE1603 Performance Line												1.5 … 200 kW
	NEMA Energy Efficient	1LE1521	1LE1521 Eagle Line Basic												1.5 … 200 kW 2 … 250 hp
		1LE1621	1LE1621 Eagle Line Performance												1.5 … 200 kW 2 … 250 hp
	NEMA Premium Efficient	1LE1523	1LE1523 Eagle Line Basic												2.2 … 200 kW 3 … 250 hp
		1LE1623	1LE1623 Eagle Line Performance												2.2 … 200 kW 3 … 250 hp

Overview

The Article No. consists of a combination of digits and letters and is divided into three hyphenated blocks to provide a better overview, e.g.:
1LE1001-1DB22-2CB5-Z
H00

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 **9** 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	
SIMOTICS Low-Voltage Motors, surface-cooled																				
Positions 1 to 4: Digit, letter, letter, digit	• Self-ventilated by fan mounted on and driven by rotor • Forced-air cooled by air flow from the fan to be driven with option extension **F90**	**1**	**L**	**E**	**1**															
	• Explosion-proof – Self-ventilated by fan mounted on and driven by rotor	**1**	**M**	**B**	**1**															
	• Naturally cooled without external fan and fan cover	**1**	**P**	**C**	**1**															
Position 5 : Digit	Aluminum housing					**0**														
	Cast-iron housing Basic Line					**5**														
	Cast-iron housing Performance Line					**6**														
Positions 6 to 7: 2 digits	Motors with IE2 High Efficiency						**0**	**1**												
	Motors with IE1 Standard Efficiency						**0**	**2**												
	Motors with IE3 Premium Efficiency						**0**	**3**												
	Pole-changing motors with one winding connected in Dahlander circuit						**1**	**1**												
	Pole-changing motors with two windings						**1**	**2**												
	NEMA Energy Efficient MG1 motors, Table 12-11 – Eagle Line						**2**	**1**												
	NEMA Premium Efficient MG1 motors, Table 12-12 – Eagle Line						**2**	**3**												
Positions 8, 9 and 11: Digit, letter, digit	**Motor frame size** (frame size comprising shaft height and construction 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, J: 4/2-pole const. load torque, L: 8/4-pole const. load torque, P: 4/2-pole square-law load torque, Q: 6/4-pole square-law load torque, R: 8/4-pole square-law load torque											**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** ... **8**				
Position 14: Letter	**Type of construction** (encoded with A ... V)																**A** ... **V**			
Position 15: Letter	**Motor protection** (encoded with A ... Z; Z requires order code Q.. (e. g. Q2A))																	**A** ... **Z**		
Position 16: Digit	**Connection box position** 4: Connection box top, 5: Connection box right, 6: Connection box left, 7: Connection 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 1LE1	Standard motor with High Efficiency IE2, IP55 degree of protection, aluminum housing	**1LE1001-■■■■■-■■■■**
Motor frame size/No. of poles/Speed	160 M/4-pole/1500 rpm	**1LE1001-1DB2■-■■■■**
Rated output	11 kW	
Voltage and frequency	230 VΔ/400 VY, 50 Hz	**1LE1001-1DB22-2■■■**
Type of construction with special version	IM V5 with protective cover [1]	**1LE1001-1DB22-2C■■-Z** **H00**
Motor protection	Motor protection with PTC thermistors with 3 embedded temperature sensors for tripping [2]	**1LE1001-1DB22-2CB■-Z** **H00**
Connection box position	Connection box right (viewed from DE)	**1LE1001-1DB22-2CB5-Z** **H00**

[1] Standard without protective cover – the protective cover is defined with Option **H00** and must be ordered in addition with this option.

[2] No additional option needs to be specified in the order.

Special versions

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 alphanumerical listing of all special versions can be found in the Appendix in the Index of order codes.

Special versions	Additional identification code -Z with order code and plain text if required	Catalog section – Page		
		2 Standard motors		3 Ex motors
		Aluminum series	Cast-iron series	Aluminum series
Motor protection (bearing protection)				
Prepared for mounting a SIPLUS CMS 1000 vibration sensor	**Q05**		2/56	
2 × 3 temperature detectors for alarm and tripping	**Q32**		2/56	
Installation of 1 PT100 resistance thermometer in stator winding, two-wire circuit	**Q62**		2/56	
Installation of 3 PT100 resistance thermometers in stator winding, three-wire circuit	**Q63**		2/56	
Installation of 6 PT100 resistance thermometers in stator winding, three-wire circuit	**Q64**		2/56	
Installation of 2 PT100 screw-in resistance thermometers in basic circuit for rolling-contact bearings	**Q72**		2/56	
Installation of 2 PT100 screw-in resistance thermometers in 3-wire circuit for rolling-contact bearings	**Q78**		2/56	
Installation of 2 PT100 double screw-in resistance thermometers in 3-wire circuit for rolling-contact bearings	**Q79**		2/56	
Motor connection and connection box				
External grounding	**H04**	2/53	2/57	
Connection box on NDE	**H08**	2/51	2/57	
Rotation of the connection box through 90°, entry from DE	**R10**	2/51	2/56	3/17
Rotation of the connection box through 90°, entry from NDE	**R11**	2/51	2/56	3/17
Rotation of the connection box through 180°	**R12**	2/51	2/56	3/17
One EMC cable gland	**R14**		2/56	
One metal cable gland	**R15**	2/51	2/56	
EMC cable gland, maximum configuration	**R16**		2/56	
Stud terminal for cable connection, accessories pack (3 units)	**R17**		2/57	
Cable gland, maximum configuration	**R18**		2/56	3/17
Saddle terminal for connection without cable lug, accessories pack	**R19**		2/56	
3 cables protruding, 0.5 m long	**R20**	2/51		
3 cables protruding, 1.5 m long	**R21**	2/51	2/56	
6 cables protruding, 0.5 m long	**R22**	2/51		
6 cables protruding, 1.5 m long	**R23**	2/51	2/56	
6 cables protruding, 3 m long	**R24**	2/51	2/56	
Reduction piece for M cable gland in accordance with British Standard, both cable entries mounted	**R30**	2/51		
Larger connection box	**R50**	2/51	2/56	3/17
Terminal box without cable entry opening	**R51**		2/56	
Drilled removable entry plate	**R52**		2/56	
Undrilled removable entry plate	**R53**		2/56	
Cast-iron auxiliary terminal box (small)	**R62**		2/57	
Motor connector Han-Drive 10e for 230 VΔ/400 VY	**R70**	2/51		
Motor connector EMC Han-Drive 10e for 230 VΔ/400 VY	**R71**	2/51		
Small motor connector CQ12 with EMC	**R72**	2/51		
Small motor connector CQ12 without EMC	**R73**	2/51		
Silicon-free version	**R74**		2/57	
Non-standard threaded through hole (NPT or G thread) [1)]	**Y61**		2/57	

For footnotes, see Page 1/11.

Overview (continued)

Special versions	Additional identification code -Z with order code and plain text if required	Catalog section – Page		
		2 Standard motors		3 Ex motors
		Aluminum series	Cast-iron series	Aluminum series
Windings and insulation				
Temperature class 155 (F), utilized acc. to 155 (F), with service factor (SF)	**N01**	2/51	2/57	
Temperature class 155 (F), utilized acc. to 155 (F), with increased output	**N02**	2/51	2/57	
Temperature class 155 (F), utilized acc. to 155 (F), with increased coolant temperature	**N03**	2/51	2/57	
Temperature class 155 (F), utilized according to 130 (B), coolant temperature 45 °C, derating 4 %	**N05**	2/51	2/57	3/17
Temperature class 155 (F), utilized according to 130 (B), coolant temperature 50 °C, derating 8 %	**N06**	2/51	2/57	3/17
Temperature class 155 (F), utilized according to 130 (B), coolant temperature 55 °C, derating 13 %	**N07**	2/51	2/57	3/17
Temperature class 155 (F), utilized according to 130 (B), coolant temperature 60 °C, derating 18 %	**N08**	2/51	2/57	3/17
Temperature class 180 (H) at rated output and max. CT 60 °C	**N11**	2/51	2/57	
Increased air humidity/temperature with 30 to 60 g water per m^3 of air	**N20**	2/51	2/57	3/17
Increased air humidity/temperature with 60 to 100 g water per m^3 of air	**N21**	2/51	2/57	3/17
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	2/52	2/57	3/17
Temperature class 155 (F), utilized according to 155 (F), other requirements	**Y52** • and specified output, CT .. °C or SA .... m above sea level	2/52	2/57	
Temperature class 180 (H), utilized according to 155 (F)	**Y75** • and specified output, CT .. °C or SA .... m above sea level		2/57	
Colors and paint finish				
Unpainted (only cast-iron parts primed)	**S00**	2/52	2/58	3/17
Unpainted, only primed	**S01**	2/52	2/58	3/17
Special finish sea air resistant	**S03**	2/52	2/58	3/17
Special paint for use offshore	**S04**	2/52	2/58	
Internal coatings (metal parts; rotor and stator)	**S05**		2/58	
Special finish in RAL 7030 stone gray	**S10**		2/58	
Special finish in special RAL colors	**Y51** • and special finish RAL	2/52	2/58	3/17
Standard finish in other standard RAL colors	**Y53** • and standard finish RAL		2/58	
Special finish in other standard RAL colors	**Y54** • and special finish RAL	2/52	2/58	3/17
Modular technology – Basic versions				
Mounting of brake	**F01**	2/52	2/58	
Mounting of brake for higher switching frequency	**F02**	2/52		
Backstop, counter-clockwise motion blocked, clockwise direction of rotation	**F40**		2/58	
Backstop, clockwise motion blocked, counter-clockwise direction of rotation	**F41**		2/58	
Mounting of separately driven fan	**F70**	2/53	2/58	
Mounting of 1XP8 012-10 (HTL) rotary pulse encoder	**G01**	2/52	2/58	
Mounting of 1XP8 012-20 (TTL) rotary pulse encoder	**G02**	2/52	2/58	
Modular technology – Additional versions				
Brake supply voltage 24 V DC	**F10**	2/52	2/58	
Brake supply voltage, 230 V AC, 50/60 Hz	**F11**	2/52	2/58	
Brake supply voltage, 400 V AC, 50/60 Hz	**F12**	2/52	2/58	
Mechanical manual brake release with lever (no locking)	**F50**	2/52	2/58	

For footnotes, see Page 1/11.

Special versions

Overview (continued)

Special versions	Additional identification code -Z with order code and plain text if required	Catalog section – Page		
		2 Standard motors		3 Ex motors
		Aluminum series	Cast-iron series	Aluminum series
Special technology				
Mounting of LL 861 900 220 rotary pulse encoder	**G04**	2/52	2/59	
Mounting of HOG 9 D 1024 I rotary pulse encoder	**G05**	2/52	2/59	
Mounting of HOG 10 D 1024 I rotary pulse encoder	**G06**	2/52	2/59	
Mounting of POG10D rotary pulse encoder	**G07**		2/59	
Mounting of POG9 rotary pulse encoder	**G08**		2/59	
Second external grounding	**H70**		2/59	
Mounting of a special type of rotary pulse encoder	**Y70** • and encoder designation		2/59	
Mechanical design and degrees of protection				
Low-noise version for 2-pole motors with clockwise direction of rotation	**F77**	2/53	2/59	3/18
Low-noise version for 2-pole motors with counter-clockwise direction of rotation	**F78**	2/53	2/59	3/18
Prepared for mountings, center hole only	**G40**	2/52	2/59	
Prepared for mountings with D12 shaft	**G41**	2/52	2/59	
Prepared for mountings with D16 shaft	**G42**	2/52	2/59	
Protective cover for encoder (supplied loose – only for mountings with order codes G40, G41 and G42)	**G43**	2/53	2/59	
Protective cover	**H00**	2/53	2/59	
Screwed-on (instead of cast) feet	**H01**	2/53	2/59	
Vibration-proof version	**H02**	2/53	2/59	3/18
Condensation drainage holes sealed	**H03**	2/53	2/59	3/18
Rust-resistant screws (externally)	**H07**	2/53	2/59	3/18
Housing with screw mounting	**H10**	2/54		
IP65 degree of protection	**H20**	2/53	2/59	3/18
IP54 degree of protection	**H21**		2/59	
IP56 degree of protection	**H22**	2/53	2/59	3/18
Drive-end seal for flange-mounting motors, oil-tight to 0.1 bar	**H23**	2/53	2/59	3/18
Grounding brush for converter-fed operation (for frame sizes 280 to 315)	**L52**		2/59	
Next larger standard flange	**P01**	2/53	2/59	
Next smaller standard flange	**P02**	2/53	2/69	
Cast-iron bearing plate on DE	**P10**	2/53		
Coolant temperature				
Coolant temperature –50 to +40 °C	**D02**		2/59	
Coolant temperature –40 to +40 °C	**D03**	2/53	2/59	3/18
Coolant temperature –30 to +40 °C	**D04**	2/53	2/59	
Designs in accordance with standards and specifications				
VIK version	**C02**	2/53		
CCC China Compulsory Certification	**D01**	2/53		
IE1 motor without CE marking for export outside EEA (see EU Directive 640/2009)	**D22**	2/53		
Electrical according to NEMA MG1-12	**D30**	2/53	2/60	3/18
Design according to UL with "Recognition Mark"	**D31**	2/53	2/60	
China Energy Efficiency Label	**D34**	2/53	2/60	
Canadian regulations (CSA)	**D40**		2/60	
Train-compatible version	**L82**	2/53		
Design for Zones according to ATEX				
Design (IP55) for Zone 2 and 22, for non-conductive dust, for mains-fed operation	**B30**			3/17
Design for Zone 2 in Ex nA IIB T3 Gc	**B31**			3/17
VIK design marked with Ex nA II on rating plate	**C02**			3/17
Bearings and lubrication				
Located bearing DE	**L20**	2/53	2/60	3/18
Located bearing NDE	**L21**	2/53	2/60	3/18
Bearing design for increased cantilever forces	**L22**	2/53	2/60	3/18
Regreasing device	**L23**	2/53	2/60	3/18
Hot bearing grease	**L24**		2/60	
Special bearing for DE and NDE, bearing size 63	**L25**	2/53	2/60	
Bearing for DE and NDE of type 63XX	**L28**		2/60	
Bearing insulation DE	**L50**		2/60	
Bearing insulation NDE	**L51**		2/60	
Measuring nipple for SPM shock pulse measurement for bearing inspection	**Q01**	2/53	2/60	3/18

For footnotes, see Page 1/11.

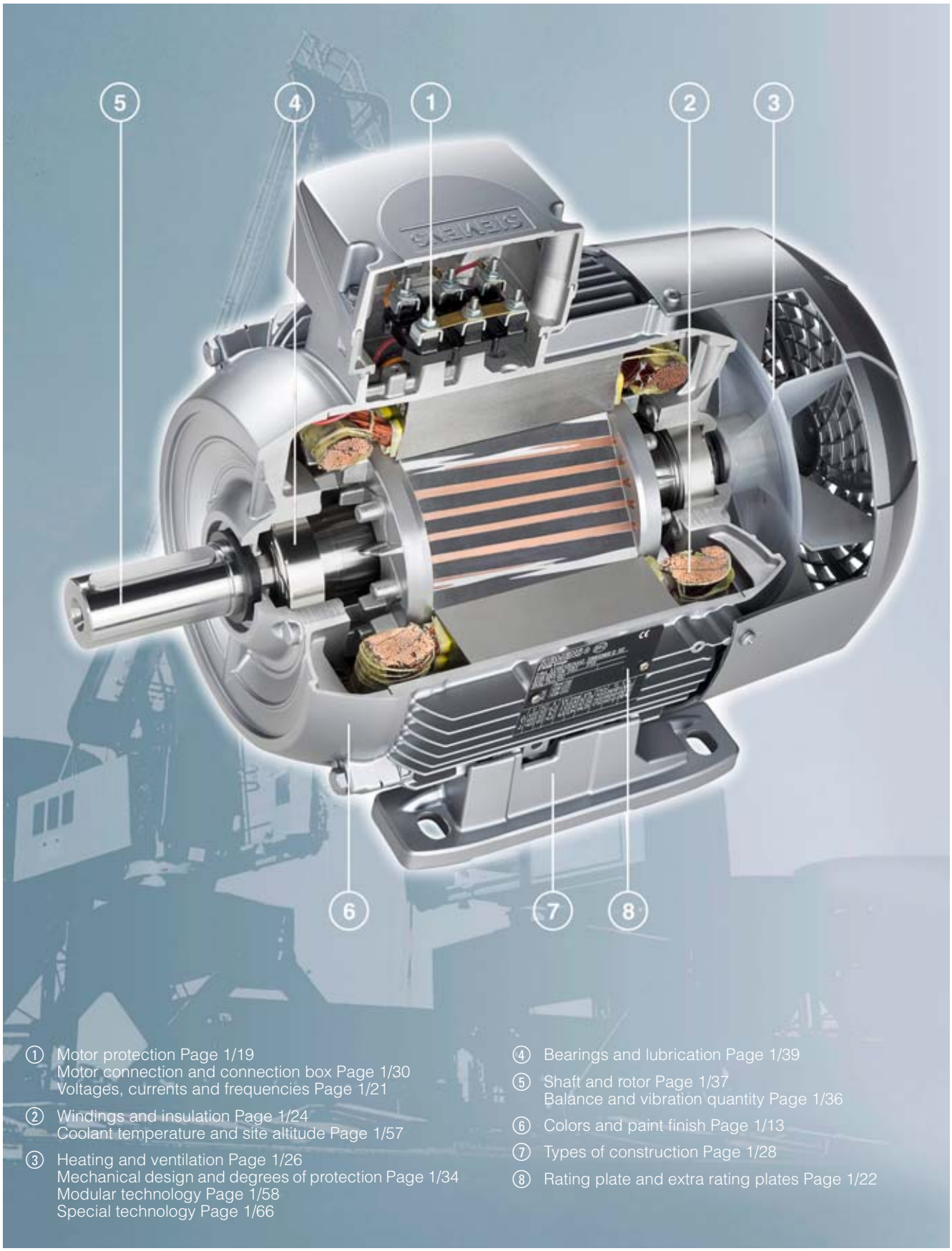
Overview (continued)

Special versions	Additional identification code -Z with order code and plain text if required	Catalog section – Page		
		2 Standard motors		3 Ex motors
		Aluminum series	Cast-iron series	Aluminum series
Balance and vibration quantity				
Vibration quantity level B	**L00**	2/54	2/60	3/18
Full-key balancing	**L02**	2/54	2/60	3/18
Balancing without feather key, feather key is supplied	**L01**	2/54	2/60	3/18
Shaft and rotor				
Shaft extension with standard dimensions, without feather keyway	**L04**	2/54	2/60	3/18
Second standard shaft extension	**L05**	2/54	2/60	3/18
Standard shaft made of stainless steel	**L06**	2/54	2/60	3/18
Concentricity of shaft extension in accordance with DIN 42955 Tolerance R, see section "Shaft and rotor"	**L07**	2/54	2/60	3/18
Concentricity of shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors, see section "Shaft and rotor"	**L08**	2/54	2/60	3/18
Non-standard cylindrical shaft extension, DE	**Y58** • and identification code	2/54	2/60	3/18
Non-standard cylindrical shaft extension, NDE	**Y59** • and identification code	2/54	2/60	3/18
Special shaft steel	**Y60** • and identification code		2/60	
Heating and ventilation				
Sheet metal fan cover	**F74**	2/53	2/61	
Fan cover for textile industry	**F75**	2/53		
Metal external fan	**F76**	2/53	2/61	3/18
Without external fan and without fan cover	**F90**	2/53		
Anti-condensation heating for 230 V	**Q02**	2/54	2/61	3/18
Anti-condensation heating for 115 V	**Q03**	2/54	2/61	3/18
Separately driven fan with non-standard voltage and/or frequency	**Y81** • and identification code		2/61	
Rating plate and extra rating plates				
Second lubrication plate, supplied loose	**B06**			3/18
Extra rating plate for voltage tolerance	**B07**	2/54	2/61	
Second rating plate, supplied loose	**M10**	2/54	2/61	3/18
Rating plate, stainless steel	**M11**	2/54	2/61	3/18
Extra rating plate or rating plate with deviating rating plate data (rated data only, e.g. voltage, output, speed)	**Y80** • and identification code	2/54	2/61	3/18
Extra rating plate with identification codes	**Y82** • and identification code	2/54	2/61	3/18
Additional information on rating plate and on package label (max. 20 characters)	**Y84** • and identification code	2/54	2/61	3/18
Adhesive label, supplied loose (printed with: Article No., serial number; 2 lines of text)	**Y85** • and identification code	2/54	2/61	
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**		2/61	
Extension of the liability for defects by 24 months to a total of 36 months (3 years) from delivery	**Q82**		2/61	
Packaging, safety notes, documentation and test certificates				
Printed German/English Operating Instructions (compact) enclosed in each wire-lattice pallet	**B01**	2/54		
Acceptance test certificate 3.1 in accordance with EN 10204	**B02**	2/54	2/61	3/19
Printed German/English operating instructions enclosed	**B04**	2/54	2/61	3/19
Document – Electrical data sheet	**B60**	2/54	2/61	
Document – Order dimensional drawing	**B61**	2/54	2/61	
Standard test (routine test) with acceptance	**B65**		2/61	
Type test with heat run for horizontal motors, with acceptance	**B83**	2/54	2/61	3/19
Wire-lattice pallet packaging	**B99**	2/54		3/19
Connected in star for dispatch	**M01**	2/51	2/61	3/19
Connected in delta for dispatch	**M02**	2/51	2/61	3/19
Printed Operating Instructions (compact) for explosion-proof motors enclosed in other official EU languages	**Y98** • and identification code			3/19

[1] G thread = Parallel Whitworth threaded pipe DIN ISO 228 (DIN 259) BSP (British Standard Pipe Parallel) Threaded pipe for connections not sealed in the thread (cylindrical), external = G.

Cut-away diagram of a low-voltage motor

Overview



① Motor protection Page 1/19
Motor connection and connection box Page 1/30
Voltages, currents and frequencies Page 1/21

② Windings and insulation Page 1/24
Coolant temperature and site altitude Page 1/57

③ Heating and ventilation Page 1/26
Mechanical design and degrees of protection Page 1/34
Modular technology Page 1/58
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④ Bearings and lubrication Page 1/39

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⑥ Colors and paint finish Page 1/13

⑦ Types of construction Page 1/28

⑧ Rating plate and extra rating plates Page 1/22

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 S10	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
• Recommended for indoor installations or outdoor installations exposed to direct weather conditions • Industrial climate with moderate SO_2 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	• 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
• Recommended for outdoor installations exposed to direct weather conditions • Industrial climate with moderate SO_2 exposure and offshore maritime climate, e.g. for crane drives • Complies with the test requirements of DIN EN ISO 12944-2 Corrosion Category C5	• 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**.

Colors and paint finish

1

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
1000	Green beige	3014	Antique pink	6006	Gray olive	7038	Agate gray
1001	Beige	3015	Light pink	6007	Bottle green	7039	Quartz gray
1003	Signal yellow	3016	Coral red	6008	Brown green	7040	Window gray
1004	Golden yellow	3017	Rose	6009	Fir green	7042	Traffic gray A
1005	Honey yellow	3018	Strawberry red	6010	Grass green	7043	Traffic gray B
1006	Maize yellow	3020	Traffic red	6012	Black green	7044	Silk gray
1007	Daffodil yellow	3022	Salmon pink	6013	Reed green	7045	Tele gray 1
1011	Brown beige	3027	Raspberry red	6014	Yellow olive	7046	Tele gray 2
1012	Lemon yellow	3031	Orient red	6015	Black olive	7047	Tele gray 4
1014	Dark ivory	4001	Red lilac	6016	Turquoise green	8000	Green brown
1016	Sulfur yellow	4002	Red violet	6017	May green	8001	Ocher brown
1017	Saffron yellow	4003	Heather violet	6018	Yellow green	8002	Signal brown
1018	Zinc yellow	4004	Claret violet	6020	Chrome green	8003	Clay brown
1020	Olive yellow	4005	Blue lilac	6022	Olive drab	8004	Copper brown
1021	Rape yellow	4006	Traffic purple	6024	Traffic green	8007	Fawn brown
1023	Traffic yellow	4007	Purple violet	6025	Fern green	8008	Olive brown
1024	Ochre yellow	4008	Signal violet	6026	Opal green	8011	Nut brown
1027	Curry	4009	Pastel violet	6027	Light green	8012	Red brown
1028	Melon yellow	4010	Tele magenta	6028	Pine green	8014	Sepia brown
1032	Broom yellow	5000	Violet blue	6029	Mint green	8015	Chestnut
1033	Dahlia yellow	5001	Green blue	6032	Signal green	8016	Mahogany
1034	Pastel yellow	5002	Ultramarine	6033	Mint turquoise	8017	Chocolate
1037	Sun yellow	5003	Saphire blue	6034	Pastel turquoise	8019	Gray-brown
2000	Yellow orange	5004	Black blue	7002	Olive gray	8022	Black brown
2001	Red orange	5005	Signal blue	7003	Moss gray	8023	Orange brown
2002	Vermilion	5008	Gray blue	7005	Mouse gray	8024	Beige brown
2008	Bright red orange	5011	Steel blue	7006	Beige gray	8025	Pale brown
2009	Traffic orange	5013	Cobalt blue	7008	Khaki gray	8028	Terra brown
2010	Signal orange	5014	Pigeon blue	7009	Green gray	9003	Signal white
2011	Deep orange	5020	Ocean blue	7010	Tarpaulin gray	9004	Signal black
2012	Salmon orange	5021	Water blue	7012	Basalt gray	9006	White aluminium
3001	Signal red	5022	Night blue	7013	Brown gray	9007	Gray aluminium
3002	Carmine red	5023	Distant blue	7015	Slate gray	9010	Pure white
3003	Ruby red	5024	Pastel blue	7021	Black gray	9011	Graphite black
3004	Purple red	6000	Patina green	7023	Concrete gray	9016	Traffic white
3005	Wine red	6001	Emerald green	7024	Graphite gray	9017	Traffic black
3009	Oxide red	6002	Leaf green	7026	Granite gray	9018	Papyrus white
3011	Brown red	6003	Olive green	7034	Yellow gray		
3012	Beige red	6004	Blue green	7036	Platinum gray		
3013	Tomato red	6005	Moss green	7037	Dusty gray		

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

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		For land transport							
Frame size	Type	Type of construction IM B3				Types of construction IM B5, IM V1			
	1LE1 ... - 1PC1 ... - 1MB1 ... -	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).

Designs in accordance with standards and specifications

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 ±5 % / frequency tolerance of ±2 % (Design A).
If utilized, the admissible limit temperature of the temperature class may be exceeded by 10 K.

Efficiency η at
P_{rated} ≤150 kW: $-0.15 \cdot (1-\eta)$
P_{rated} >150 kW: $-0.1 \cdot (1-\eta)$

With η being a decimal number.

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

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

Slip ±20 % (for motors < 1 kW ±30 % is admissible)
Locked-rotor current +20 %
Locked-rotor torque –15% to +25 %
Breakdown torque –10%
Moment of inertia ±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.

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 ≤ 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.

Overview (continued)

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 ≤ 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 ≥ 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.

NEMA Premium

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).

CC032A

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

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".

Energy-saving motors for South Korea: KEMCO legislation

In 2012, the KEMCO requirements were changed as follows:

- Line voltage ≤ 600 V
- Line frequency 60 Hz
- Output range 0.75 kW to 200 kW
- Number of poles: 2, 4, 6, 8-pole
- Uninterrupted duty S1

Motor series 1LE1.41 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 for 2013.

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

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).

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.

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 protection devices

Temperature detectors installed in the motor winding are suitable protection devices in the case of slowly rising motor temperature.

When a limit temperature is reached, these **bimetal switches** (NC contacts) can deactivate an auxiliary circuit. The circuit can only be reclosed following a considerable fall in temperature. 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

The most comprehensive protection against thermal overloading of the motor is provided by **PTC thermistors (thermistor motor protection)** installed in the motor winding. The temperature of the winding can be accurately monitored thanks to its low heating capacity and the excellent heat contact with the winding. When a limit temperature is reached (rated tripping temperature), the PTC thermistors undergo a step change in resistance. This is evaluated by a tripping unit and can be used to open auxiliary circuits. The PTC thermistors themselves cannot 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. Motors with this type of protection are 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 connection box, 2 auxiliary terminals are required.
15th position of Article No. letter **B**

Two sets of three temperature sensors 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.

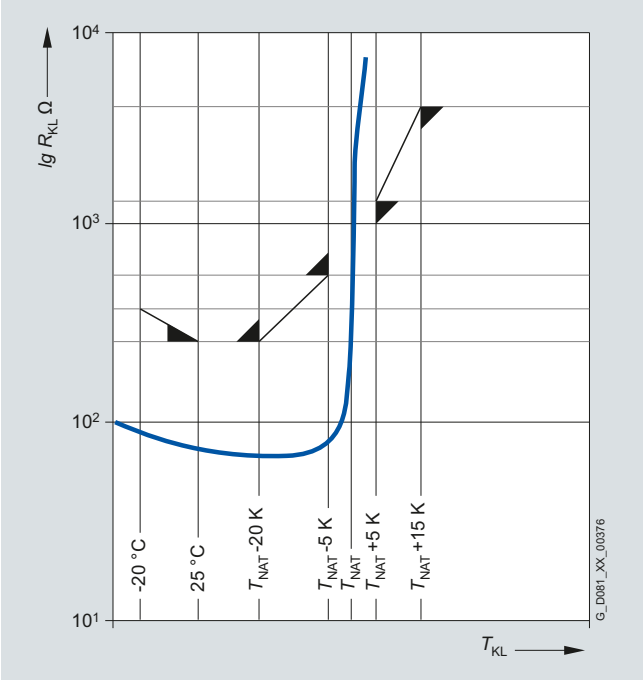
Motor protection with PTC thermistor for alarm and tripping. In the connection box, 4 auxiliary terminals are required.
15th position of Article No. letter **C**

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.

Motor temperature detection with converter-fed operation

Temperature sensor

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



PTC sensor characteristic

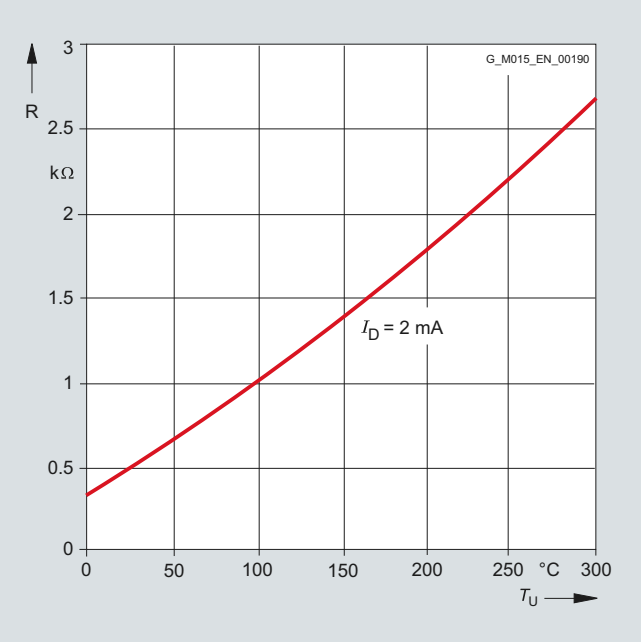
Motor protection

1

Overview (continued)

KTY 84-130 temperature sensor

This sensor is a semiconductor that changes its resistance depending on temperature in accordance with a defined curve.



KTY 84-130 temperature sensor characteristic

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.

Motor temperature detection with embedded KTY 84-130 temperature sensor. Two auxiliary terminals are required in the connection box.
15th position of Article No. letter **F**

The temperature sensor is embedded in the winding overhang of the motor in the same way as a PTC thermistor. Evaluation is performed, for example, in the converter.
For mains-fed operation, the temperature monitoring device 3RS10 that is part of the protection equipment can be ordered separately. For further details, see Catalog IC 10, Article No.: E86060-K1010-A101-A2-7600.

With NTC thermistors (mainly in the case of special machines), the tripping temperature can also be adjusted later on the tripping unit. NTC thermistors for tripping
15th position of Article No. letter **Z** and order code **Q2A**

PT100 resistance thermometer:
The temperature sensor in the resistance thermometer is a platinum wire winding (measuring resistor), the resistance of which changes with the temperature according to a series of specific, 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 Ω ± 0 Ω at 0 °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.

Overview

Voltages, currents and frequencies

Standard voltages

EN 60034-1 differentiates between Category A (sum of voltage deviation and frequency deviation ±5 %) and Category B (sum of voltage deviation and frequency deviation ±10 %) 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	Sector	Sector
60034-1	A	B
Voltage deviation Frequency deviation	±5 % ±2 %	±10 % +3 %/–5 %
Rating plate data stamped with rated voltage a (e.g. 230 V)	a ±5 % (e.g. 230 V ±5 %)	a ±10 % (e.g. 230 ±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.

According to the standard, longer operation is not recommended for Category B. 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 ±10 % for line voltages of 230 V, 400 V and 690 V.

Line voltages	Voltage code
1LE1 motors	
230 VΔ/400 VY, 50 Hz	22
400 VΔ/690 VY, 50 Hz	34
500 VY, 50 Hz	27
500 VΔ, 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 in V for	
		Delta	Star
1LE1, 1MB1	100 … 160	200/690	250/690

Order codes for other rated voltages are listed under "Article 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

kW · 1.341 = HP
HP · 0.746 = 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		

1

Rating plate and extra rating plates

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 lubrication plate can be supplied loose with all motors of frame sizes 100 to 315, order code **B06**.

An "extra rating plate for voltage tolerance" can also 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.

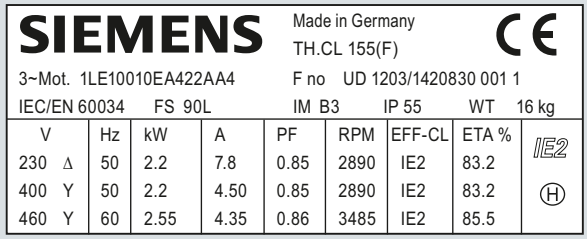
Overview of the languages on the rating plate

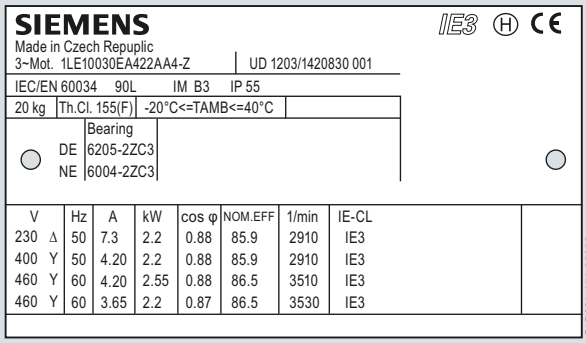
Motor type	Frame size	Rating plate	
		International/ German (de)	English (en)
1LE1	80 …160	◘	○
1LE15/6	180 … 315	◘	○
1MB1	100 … 160	◘	○
1PC1	100 … 160	◘	○

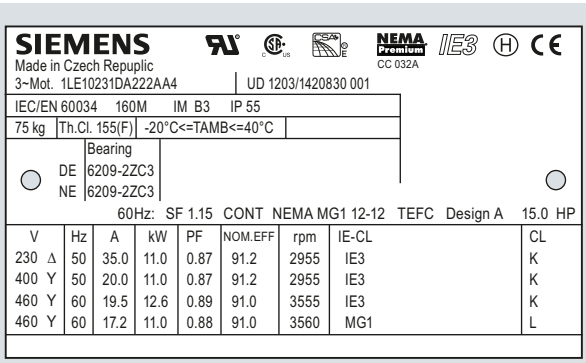
◘ Standard version
○ Without additional charge

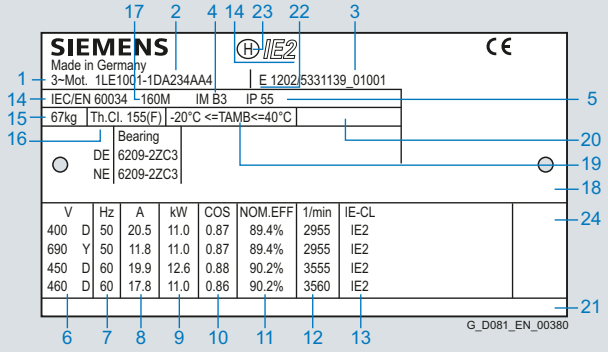
Other languages on request

Examples of rating plates









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 φ for each rated output are listed in the selection tables in the individual sections of this catalog.

The part-load values in the tables are average values.

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

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

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.

Windings and insulation

Overview

DURIGNIT IR 2000 insulation

The DURIGNIT IR 2000 insulation system comprises high-grade enameled wires and insulating sheet materials combined with solvent-free 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 m^3 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)

For all 1LE1/1PC1 motors for mains-fed operation for the rated output given in the selection table and rated voltage, a service factor of 1.1 can be specified for IE1 motors (except for NPE and NEE motors SF = 1.15) also for motors with increased output.
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 as specified in the selection and ordering data can be increased by 10 % for IE1 (15 % for IE2 and IE3) even in the case of motors with increased output.
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 130 (B) 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, 1MB1 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 m^3 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 m^3 of air, depending on the temperature, as shown in the table below. This version has condensation drainage holes.
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 m^3 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 m^3 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							
	20 °C	30 °C	40 °C	50 °C	60 °C	70 °C	80 °C	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 m^3 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 m^3 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 m^3 of air).

Please contact your local Siemens office regarding requirements exceeding 100 g water per m^3 of air.

Heating and ventilation

Overview

Anti-condensation heaters

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

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

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, can be equipped with anti-condensation heaters.
An additional M16 x 1.5 cable entry is provided for the connecting cable in the connection box.
Anti-condensation heaters must not be switched on during operation.

Motor series	Frame size	Heater output of anti-condensation heaters in Watt (W) Supply voltage at	
		230 V	115 V (110 V)
		Order code	Order code
		Q02	**Q03**
1LE1/1PC1	80 … 90	25	25
1LE1/1PC1/1MB1	90 … 112	50	50
1LE1/1PC1/1MB1	132 … 160	100	100
1LE1/1PC1	225 …250	92	92
1LE1/1PC1	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 160, see also "Separately driven fans" on Page 1/58.

Supply voltage of separately driven fan for 1LE1 motors:
The supply voltage tolerance of the separately driven fan is +5 %. For voltage ranges, see Page 1/58.

When the motor is mounted and the air intake is restricted, it must be ensured that a minimum clearance is maintained between the fan cover and the wall. This clearance is calculated from the difference between the protective cover and the fan cover (differential dimension LM – L) or is specified in the detailed dimensional drawing (see also Dimensional drawings from Page 2/68 onwards.

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
1LE1	80 … 315	Plastic	Plastic [1]
1MB103	100 … 160	Plastic	Metal
1MB101/2	100 … 160	Metal	Metal
1LE16	100 ... 315	Plastic	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").
For motor series 1LE1, the metal external fan can also be used with converter-fed operation.
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 by 64 mm for frame size 100/112 and by 71 mm for frame size 132/160 when the fan cover for the textile industry is mounted.
Order code **F75**

With fame sizes 180 to 315, the fan cover is supplied in the design for the textile industry as standard.

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 fan to be driven which 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	
	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
80	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
	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
225	21.5	25.5	18.5		22.5		15	15.5	11	13
250	30	35	20		25		20	20	15	15
280	26.5	30.5	32		38		24	29	18	22
315	40	48	40		48.5		30	35.5	24	28.5
	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
225	15	17.5	12		14.5		12		–	–
250	18.5	22	12		14.5		16	20	–	–
280	25.5	29.5	28		33		21	25.5	–	–
315	30	36	30		37		25	30.5	–	–

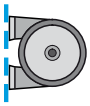
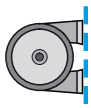
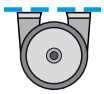
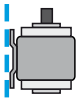
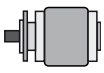
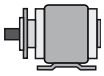
[1] Value: IE2/IE1

1

Types of construction

Overview

Standard types of construction and special types of construction

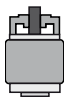
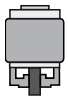
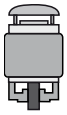
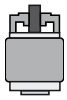
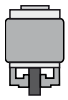
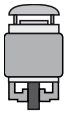
Type of construction acc. to DIN EN 60034-7	Frame size	Letter 14th position of the Article No.	Additional identification code **–Z** with order code
Without flange			
IM B3 	80 to 315	**A**	**–**
IM B6/IM 1051 	80 to 315	**T**	**–**
IM B7/IM 1061 	80 to 315	**U**	**–**
IM B8/IM 1071 	80 to 315	**V**	**–**
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] Ⓔx 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.	Additional 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 V19/IM 3631 	80 to 315	**L**	**+ 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 B34/IM 2101 	80 to 315	**N**	**+ 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.

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 1/35.

Frame design

Motors in the types of construction with feet have, in some case, two fixing holes at the non-drive end (NDE), see dimension tables on Pages 2/68 to 2/92.

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**.

[1] Ⓔx 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.

Motor connection and connection box

Overview

Connection, circuit and connection box

Location of the connection box

The order variants for motor connection are coded with digits in the 16th position of the article number.

The connection box of the motor can be mounted in four different locations or positions. The position of the connection box must always be viewed from the drive end (DE).

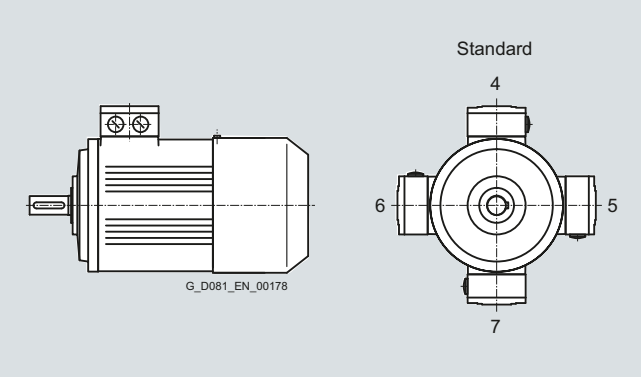
The standard position of the connection box for all motors is on top 16th position of Article No. digit **4**.

For all motors with feet (apart from motors with increased output), cast feet are standard. If rotation of the connection box in the future has to be provided for, it is recommended that the option "Screwed-on feet (instead of cast feet), order code **H01** is ordered. In accordance with the type of construction, spare holes that are not used for mounting the feet can be used by the customer. The customer takes responsibility for calculating the tightening required for fixing the customer mountings. For this purpose, it is recommended that order code **H10** "Motor with housing for screwed-on feet" is ordered.
For motors with increased output (non-standard output) the feet are screwed on as standard for types of construction with feet. The connection box can be rotated later.

Connection box on RHS
16th position of Article No. digit **5**.

Connection box on LHS
16th position of Article No. digit **6**.

Connection box bottom
16th position of Article No. digit **7**.



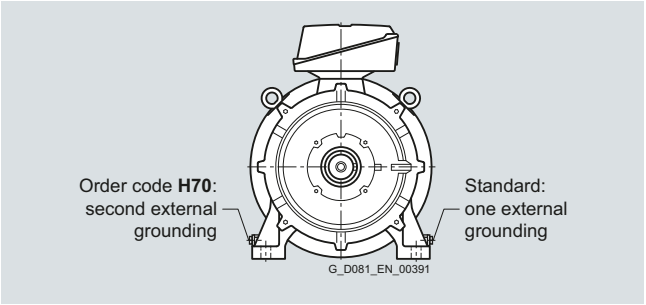
Location of the connection box with the corresponding digits in the 16th position of the article number.

The number of winding ends depends on the winding design. Three-phase motors are connected to the three phase conductors L1, L2 and L3 of a three-phase system. The rated voltage of the motor in the running connection must match the phase conductor voltages of the network.

When the three phases are operating in a time sequence and are connected to the terminals of the motor in alphabetical order U1, V1 and W1, clockwise rotation is established as viewed from the motor shaft. The direction of rotation of the motor can be reversed if two connecting leads are interchanged.

Labeled terminals are provided to connect the protective conductor.
A PE terminal is provided in the connection box for grounding.
A grounding terminal is provided on the outside of the motor frame – special version for 1LE1/1PC1 motors.
Order code **H04**

A second external grounding connection can also be ordered.
Order code **H70**



If a brake control system or thermal protection is installed, the connections will also be in the connection box. The motors are suitable for direct connection to the line supply.

Design of the connection box

The number of terminals and the size of the connection box are designed for standard requirements.

For special requirements, or on customer request, a larger connection box can be supplied.
Order code **R50**

FS 80/90:

When the connection box is located on the left or right-hand sides, the customer must not align the cable entry towards the housing feet, because this can cause collisions between the motor connection cables and the foundations.

If the necessary installation angle of the motor would cause machine components to collide with the connection box, the connection box can be moved from the drive end (DE) to the non-drive end (NDE). Only use according to temperature class 155 (F). When the connection box 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 by EN 50347. Please request a dimensional drawing!
Order code **H08**

Overview (continued)

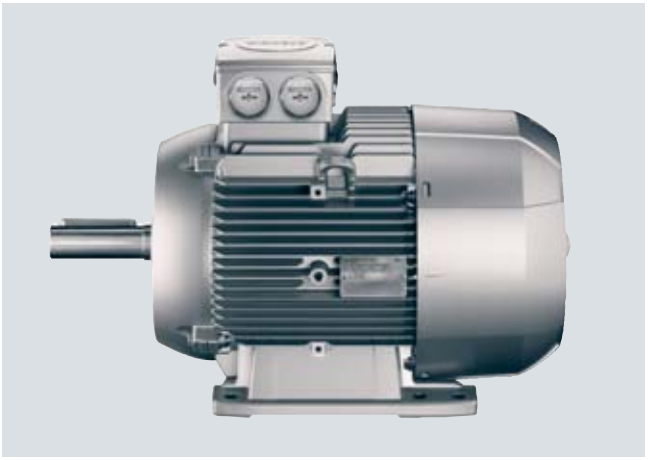
Motor connection

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 x 1.5 cable entry with sealing plug is additionally provided.
For further details, see the data sheet function in the DT Configurator.

The connection box is located on the housing and bolted in place. The connection box can be turned 4 x 90° on the terminal base of the machine's housing in the case of a terminal board with 6 terminal studs (standard design).
There are 2 entry holes at the standard position complete with sealing plugs and locknuts (see figure). For further information see the operating instructions.



Connection box in standard position

Cable entry on connection box

Unless stated otherwise, the cable entry is located in the standard position as shown in the illustration.

The connection box can also be rotated such that the cable entry is located

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

The dimensions of the connection box are listed in the section "Dimensions" on Pages 2/68 to 2/92 in accordance with the frame size and the "Dimensional drawings".
If the position of the connection box (connection box RHS, LHS or top) is changed, the position of the cable entry must be checked and, if necessary, it can be ordered with the corresponding order codes (**R10**, **R11** and **R12**).

Ordering example:

Connection box on RHS (16th position of Article No. digit 5).

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

With additional order code **R10**:

Cable entry from the drive end (DE)

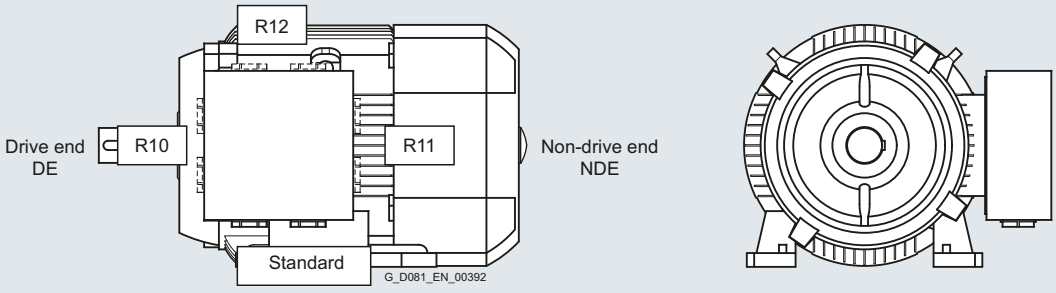
Connection box in standard position, detailed view

For cable entry to a standard connection box, a metal cable gland can be ordered for motor connection.
One cable gland, metal
Order code **R15**

Motor connection and connection box

1

Overview (continued)



Location of the cable entries with corresponding order codes

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 x M32	2 x M20
112/132	2 x M32	2 x M25
160	2 x M40	2 x M32

Protruding cable ends

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

The following lengths of protruding cables can already be ordered using order codes on request:

- 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)

Standard connection box type TB1 F00, TB1 H00, TB1 J00

Larger connection box type TB1F10, TB1H10, TB1J10

Standard connection boxes/larger connection box for 1LE1, 1MB1 and 1PC1 motors – basic data

Motors	Frame size	Number of cable entries	Connection box material	Feeder connection
1LE1/1MB1/1PC1	100 … 160	2 entries complete with sealing plugs and locknuts Connection box is mounted and bolted in place.	Aluminum alloy	Without cable lug

Possible positions of the standard connection boxes/larger connection box for 1LE1, 1MB1 and 1PC1 motors

Motors	Frame size	Connection box position			Rotation of connection box		
		Above	Side, right or left	Retrofitting possible	90°	180°	Retrofitting possible
1LE1/1MB1/1PC1	100 … 160	O	O	– [1]	O	O	Yes

O Available version

Standard connection boxes/larger connection box for 1LE1, 1MB1 and 1PC1 motors in standard version

Frame size	Connection box Standard / larger	Number of terminals	Contact screw thread	Max. connectable cross-section mm²	Outer cable diameter (sealing range) mm	Cable entry [2]	Cable entry for CSA version, order code D40 [3] mm
1LE1/1MB1/1PC1							
80 and 90 [4]	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	TB1 F00/TB1F10	6	M4	4	11 … 21	2 x M32 x 1.5	NPT 3/4"
112							
132	TB1 H00/TB1H10	6	M4	6	11 … 21	2 x M32 x 1.5	NPT 3/4"
160	TB1 J00/TB1J10	6	M5	16	19 … 28	2 x M40 x 1.5	NPT 1"
1LE15/1LE16							
100	TB1 F01/TB1 J01	6	M4	4	11 … 21	2 × M32 × 1.5	M50 × 1.5 [5]
112							M63 × 1.5 [5]
132	TB1 H01/TB1 J01	6	M4	6	11 … 21	2 × M32 × 1.5	M63 × 1.5 [5]
160	TB1 J00/TB1 K01	6	M5	16	19 … 28/ 27 … 35	2 × M40 × 1.5 2 × M50 × 1.5	
180	TB1 J00/TB1 K01	6	M5/M6	16/25	19 … 28/ 27 … 35	M40 × 1.5/ M50 × 1.5	M63 × 1.5 [5]
200	TB1 L01/TB1 L01	6	M6/M8	25/35	27 … 35/ 27 … 35	2 × M50 × 1.5/ 2 × M50 × 1.5	M50 × 1.5 [5]
225	TB1 L01/TB1 N01	6	M8/M10	35/120	27 … 35/ 34 … 42	2 × M50 × 1.5/ 2 × M63 × 1.5	M63 × 1.5 [5]
250	TB1 N01/TB1 Q01	6	M10/M12	120/240	34 … 42/ 38 … 45	2 × M63 × 1.5/ 2 × M63 × 1.5	M63 × 1.5 [5]
280							
315	TB1 Q01/TB1 R01	6	M12/M16	240/400	38 … 45/ 44 … 54	2 × M63 × 1.5/ 2 × M63 × 1.5	M63 × 1.5 [5]

– 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] For screwed-on feet (16th position of Article No. digits **5**, **6**, **7** and **4** with order code **H01**) retrofittable.
[2] Designed for cable glands with O-ring
[3] Not possible for motors in Zone 22
[4] Only applicable to motors from Bad Neustadt.
[5] NPT threads can be ordered with order code **Y61**

Mechanical design and degrees of protection

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

1LE1/1PC1 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.

Housing material

Type series	Frame size	Housing material	Frame feet
1LE1/1PC1	80 … 160	Aluminum alloy	Cast[1)]
1MB1	100 … 160	Aluminum alloy	Cast[1)]
1LE15/6	180 … 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 ΔI 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 ΔI 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.

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

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**
In DIN EN 60034-5, the code 6 for protection against the ingress of foreign bodies and touch hazard protection for electrical machines is not listed – 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**

A metal fan cover is used as standard for horizontal types of construction and types of construction with shaft facing 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 mounting/dismounting.

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

Type 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	180	68	79
	200	70	81
	225	68	81
	250	70	83
	280	72	85
	315	74	87

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

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, on request, by specifying code **L02** (additional charge).

Balancing without feather key (N) is possible, on request, 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 FS 280, 315 are to be suspended rigidly, cast feet are necessary in order to comply with the vibration requirements of IEC60034-14.

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	Thread
mm	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 x 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		
			Stan-dard	Up to max.	min.	Stan-dard	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	180	2 ... 8	110	220	On request	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		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**

This is possible for all 1LE1 motors (with the exception of 1LE1 with order code **F90** – version "Forced-air cooled motors without external fan and fan cover").

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 x 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		
			Stan-dard	Up to max.	min.	Stan-dard	Up to max. [1]
1LE1	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	180	2 ... 8	110	220	On request	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		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.

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	Concentricity tolerance	
d	N (normal)	R (reduced)
mm	mm	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	Coaxiality tolerance and linear movement tolerance	
b_1	N (normal)	R (reduced)
mm	mm	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).

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 1/44).

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 1/44).
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 1/44).
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 1/41) – for the maximum axial load, see Page 1/50 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.
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.

It is possible to regrease motors of frame sizes 100 to 315.
A lubricating nipple is optionally provided.
Order code **L23**

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 the brake, 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}".

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}	f_{max}	n_{max}	f_{max}	n_{max}	f_{max}	n_{max}	f_{max}
	1LE1...-	rpm	Hz	rpm	Hz	rpm	Hz	rpm	Hz
1LE1, 1PC1 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
	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 and 1LE16 Performance Line – deep-groove bearings reinforced at both ends – order code L25 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 codes for the respective mounting parts must be taken into account.

Grease lifetime and regreasing intervals for horizontal installation

Type series	Frame size	No. of poles	
Permanent lubrication [1]			
			Grease lifetime up to CT40 °C [2]
1LE1/1MB1/1PC1	80 … 160	2 to 8	20000 h or 40000 h [3]
Regreasing (basic version) [1]			
			Regreasing interval up to CT40 °C [2]
1LE1/1MB1/1PC1	80 … 160	2 to 8	8000 h
1LE15 1LE16	100	2 to 8	8000 h
	112	2 to 8	8000 h
	132	2 to 8	8000 h
	160	2 to 8	8000 h
	180	2	4000 h
		4 to 8	8000 h
	200	2	4000 h
		4 to 8	8000 h
	225	2	4000 h
		4 to 8	8000 h
	250	2	4000 h
		4 to 8	8000 h
	280	2	4000 h
		4 to 8	8000 h
	315	2	3000 h
		4 to 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 1/44.

Frame size	No. of poles	Drive end (DE) bearing		Non-drive end (NDE) bearing		Figure No. on Page 1/44
		Horizontal type of construction	Vertical type of construction	Horizontal type of construction	Vertical type of construction	
1LE10						
80	2 to 8	6004 2ZC3	6004 2ZC3	6004 2ZC3	6004 2ZC3	**Fig. 1**
90	2 to 8	6205 2ZC3	6205 2ZC3	6004 2ZC3	6004 2ZC3	**Fig. 1**
1LE10/1MB10/1PC10						
100 L	2 to 8	6206 2ZC3	6206 2ZC3	6206 2ZC3	6206 2ZC3	**Fig. 1**
112 M	2 to 8	6206 2ZC3	6206 2ZC3	6206 2ZC3	6206 2ZC3	**Fig. 1**
132 S/M	2 to 8	6208 2ZC3 [1]	6208 2ZC3 [1]	6208 2ZC3 [1]	6208 2ZC3 [1]	**Fig. 1**
160 M/L	2 to 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		Figure No. on Page 1/44
		Horizontal type of construction	Vertical type of construction	Horizontal type of construction	Vertical type of construction	
1LE10						
80/90	2 to 8	Available soon	Available soon	Available soon	Available soon	Available soon
1LE10/1MB10/1PC10						
100 L	2 to 8	6306 2ZC3 [1]	6306 2ZC3 [1]	6206 2ZC3 [1]	6206 2ZC3 [1]	**Fig. 1**
112 M	2 to 8	6306 2ZC3 [1]	6306 2ZC3 [1]	6206 2ZC3 [1]	6206 2ZC3 [1]	
132 S/M	2 to 8	6308 2ZC3 [1]	6308 2ZC3 [1]	6208 2ZC3 [1]	6208 2ZC3 [1]	
160 M/L	2 to 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		Figure No. on Page 1/44
		Horizontal type of construction	Vertical type of construction	Horizontal type of construction	Vertical type of construction	
1LE10						
80/90	2 to 8	Available soon	Available soon	Available soon	Available soon	Available soon
1LE10/1MB10/1PC10						
100 L	2 to 8	6306 2ZC3 [1]	6306 2ZC3 [1]	6306 2ZC3 [1]	6306 2ZC3 [1]	**Fig. 1**
112 M	2 to 8	6306 2ZC3 [1]	6306 2ZC3 [1]	6306 2ZC3 [1]	6306 2ZC3 [1]	
132 S/M	2 to 8	6308 2ZC3 [1]	6308 2ZC3 [1]	6308 2ZC3 [1]	6308 2ZC3 [1]	
160 M/L	2 to 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**).

Bearings and lubrication

Overview (continued)

Bearing selection table for 1LE15 and 1LE16 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	Figure No. on Page 1/44
1LE15 – Basic Line				
100 L	2 to 8	6206 2ZC3 [1]	6206 2ZC3 [1]	
112 M	2 to 8	6206 2ZC3 [1]	6206 2ZC3 [1]	
132 S/M	2 to 8	6208 2ZC3 [1]	6208 2ZC3 [1]	
160 M/L	2 to 8	6209 2ZC3 [1]	6209 2ZC3 [1]	
180 M/L	2 to 8	6210 ZC3 [2]	6210 ZC3 [2]	
200 L	2 to 8	6212 ZC3 [2]	6212 ZC3 [2]	
225 S/M	2 to 8	6213 ZC3 [2]	6213 ZC3 [2]	**Fig. 1**
250 M	2 to 8	6215 ZC3 [2]	6215 ZC3 [2]	
280 S/M	2	6315 C3	6315 C3	**Fig. 2**
	4 to 8	6317 C3	6317 C3	
315 S/M/L	2	6316 C3	6316 C3	
	4 to 8	6319 C3	6319 C3	
1LE16 – Performance Line				
100 L	2 to 8	6306 2ZC3	6306 2ZC3	
112 M	2 to 8	6306 2ZC3	6306 2ZC3	
132 S/M	2 to 8	6308 2ZC3	6308 2ZC3	
160 M/L	2 to 8	6309 ZC3	6309 ZC3	
180 M/L	2 to 8	6310 C3	6310 C3	
200 L	2 to 8	6312 C3	6312 C3	
225 S/M	2 to 8	6313 C3	6313 C3	**Fig. 3**
250 M	2 to 8	6315 C3	6315 C3	
280 S/M	2	6315 C3	6315 C3	
	4 to 8	6317 C3	6317 C3	
315 S/M/L	2	6316 C3	6316 C3	
	4 to 8	6319 C3	6319 C3	

Bearing selection table for 1LE15 and 1LE16 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	Figure No. on Page 1/44
1LE15 – Basic Line				
100 L	2 to 8	6306 2ZC3	6206 2ZC3	
112 M	2 to 8	6306 2ZC3	6206 2ZC3	
132 S/M	2 to 8	6308 2ZC3	6208 2ZC3	
160 M/L	2 to 8	6309 2ZC3	6209 2ZC3	
180 M/L	2 to 8	NU 210	6210 C3	
200 L	2 to 8	NU 212	6212 C3	
225 S/M	2 to 8	NU 213	6213 C3	**Fig. 4**
250 M	2 to 8	NU 215	6215 C3	
280 S/M	2	NU315	6315 C3	**Fig. 5**
	4 to 8	NU317	6317 C3	
315 S/M/L	2	NU316	6316 C3	
	4 to 8	NU319	6319 C3	
1LE16 – Performance Line				
100 L	2 to 8	[3]		
112 M	2 to 8	[3]		
132 S/M	2 to 8	[3]		
160 M/L	2 to 8	[3]		
180 M/L	2 to 8	NU 310	6310	
200 L	2 to 8	NU 312	6312	
225 S/M	2 to 8	NU 313	6313	**Fig. 6**
250 M	2 to 8	NU 315	6315	
280 S/M	2	NU315	6315 [4]	
	4 to 8	NU317	6317 [4]	
315 S/M/L	2	NU316	6316 [4]	
	4 to 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 and 1LE16 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		Figure No. on Page 1/44
		Horizontal type of construction	Vertical type of construction	Horizontal type of construction	Vertical type of construction	
1LE15 – Basic Line						
100 L	2 to 8	6306 2ZC3 [3]	6306 2ZC3 [3]	6306 2ZC3 [3]	6306 2ZC3 [3]	
112 M	2 to 8	6306 2ZC3 [3]	6306 2ZC3 [3]	6306 2ZC3 [3]	6306 2ZC3 [3]	
132 S/M	2 to 8	6308 2ZC3 [3]	6308 2ZC3 [3]	6308 2ZC3 [3]	6308 2ZC3 [3]	
160 M/L	2 to 8	6309 2ZC3 [3]	6309 2ZC3 [3]	6309 2ZC3 [3]	6309 2ZC3 [3]	
180 M/L	2 to 8	6310 ZC3 [1]	6310 ZC3 [1]	6310 ZC3 [1]	6310 ZC3 [1]	
200 L	2 to 8	6312 ZC3 [1]	6312 ZC3 [1]	6312 ZC3 [1]	6312 ZC3 [1]	
225 S/M	2 to 8	6313 ZC3 [1]	6313 ZC3 [1]	6313 ZC3 [1]	6313 ZC3 [1]	**Fig. 4**
250 M	2 to 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 to 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 to 8	6319 C3 [2]	6319 C3 [2]	6319 C3 [2]	6319 C3 [2]	
1LE16 – 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**).

Overview (continued)

Diagrams of bearings

Fig. 1 Drive-end bearing Non-drive end bearing

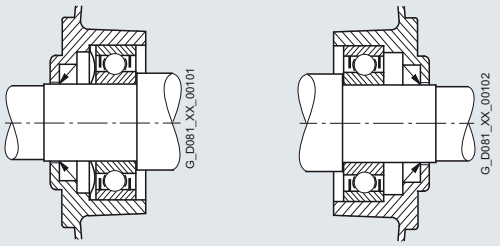


Fig. 2 Drive-end bearing Non-drive end bearing
Located bearings for 1LE1 frame size 160

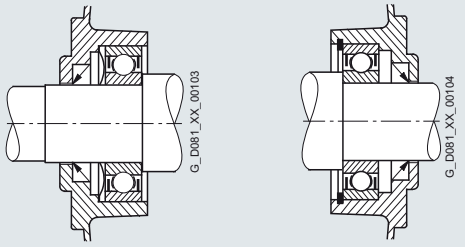


Fig. 3 Drive-end bearing Non-drive end bearing

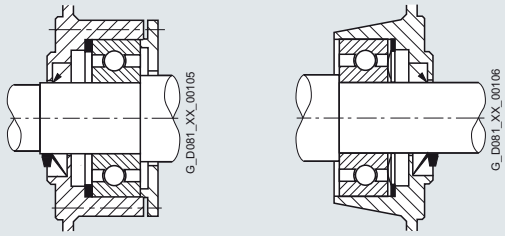


Fig. 4 Drive-end bearing Non-drive end bearing

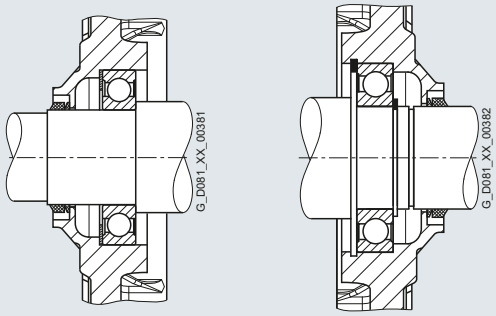


Fig. 5 Drive-end bearing Non-drive end bearing

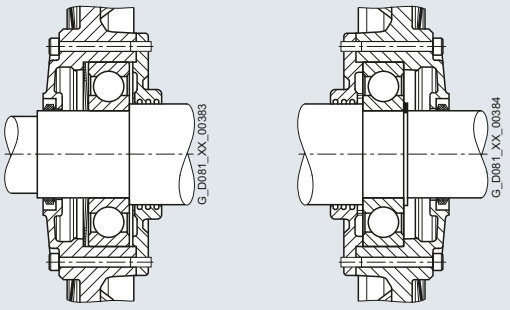
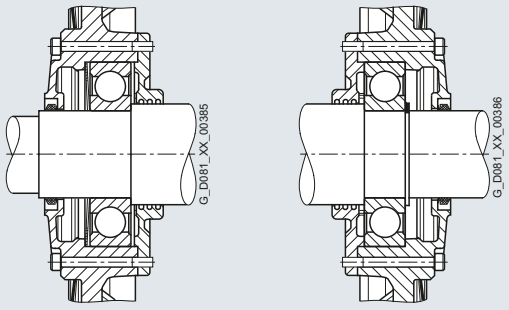
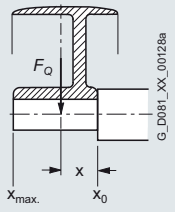


Fig. 6 Drive-end bearing Non-drive end bearing



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.

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

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.

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)

For motors			Admissible cantilever force F_Q	
			at x_0	at $x_{max.}$
Frame size	Type	No. of poles	N	N
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] **1PC1 motors – standard values for IE2 motors** [1]				
80	**1LE1001-1AA** **1PC1001-1AA**	2	485	400
	1LE1001-1AB **1PC1001-1AB**	4	625	515
	1LE1001-1AC **1PC1001-1AC**	6	735	605
	1LE1001-1AD **1PC1001-1AD**	8	815	675
90	**1LE1001-1AA** **1PC1001-1AA**	2	725	605
	1LE1001-1AB **1PC1001-1AB**	4	920	775
	1LE1001-1AC **1PC1001-1AC**	6	1090	910
	1LE1001-1AD **1PC1001-1AD**	8	1230	1030

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)

For motors			Admissible cantilever force F_Q	
			at x_0	at $x_{max.}$
Frame size	Type	No. of poles	N	N
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** **1MB1011-1AA** **1PC1001-1AA**	2	1020	815
	1LE1001-1AB **1MB1011-1AB** **1PC1001-1AB**	4	1250	1000
	1LE1001-1AC **1MB1011-1AC** **1PC1001-1AC**	6	1450	1155
	1LE1001-1AD **1MB1011-1AD** **1PC1001-1AD**	8	1615	1290
112	**1LE1001-1BA** **1MB1011-1BA** **1PC1001-1BA**	2	1000	790
	1LE1001-1BB **1MB1011-1BB** **1PC1001-1BB**	4	1250	990
	1LE1001-1BC **1MB1011-1BC** **1PC1001-1BC**	6	1450	1150
	1LE1001-1BD **1MB1011-1BD** **1PC1001-1BD**	8	1610	1275
132	**1LE1001-1CA** **1MB1011-1CA** **1PC1001-1CA**	2	1505	1170
	1LE1001-1CB **1MB1011-1CB** **1PC1001-1CB**	4	1880	1460
	1LE1001-1CC **1MB1011-1CC** **1PC1001-1CC**	6	2170	1680
	1LE1001-1CD **1MB1011-1CD** **1PC1001-1CD**	8	2420	1880
160	**1LE1001-1DA** **1MB1011-1DA** **1PC1001-1DA**	2	1560	1240
	1LE1001-1DB **1MB1011-1DB** **1PC1001-1DB**	4	2040	1590
	1LE1001-1DC **1MB1011-1DC** **1PC1001-1DC**	6	2350	1820
	1LE1001-1DD **1MB1011-1DD** **1PC1001-1DD**	8	2610	2030

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 %.

Bearings and lubrication

Overview (continued)

1LE15 motors at 50 Hz

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

For motors		Admissible cantilever force	
		at x_0	at x_{max}
Frame size	No. of poles	N	N
1LE1501/03/21/23 – Basic Line			
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 motors at 50 Hz

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

For motors		Admissible cantilever force	
		at x_0	at x_{max}
Frame size	No. of poles	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
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	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 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)

For motors			Admissible cantilever force F_Q	
			at x_0	at x_{max}
Frame size	Type	No. of poles	N	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]				
100	**1LE1001-1AA** **1MB1011-1AA** **1PC1001-1AA**	2	1590	1270
	1LE1001-1AB **1MB1011-1AB** **1PC1001-1AB**	4	1970	1575
	1LE1001-1AC **1MB1011-1AC** **1PC1001-1AC**	6	2270	1815
	1LE1001-1AD **1MB1011-1AD** **1PC1001-1AD**	8	2520	2015
112	**1LE1001-1BA** **1MB1011-1BA** **1PC1001-1BA**	2	1565	1240
	1LE1001-1BB **1MB1011-1BB** **1PC1001-1BB**	4	1965	1555
	1LE1001-1BC **1MB1011-1BC** **1PC1001-1BC**	6	2270	1800
	1LE1001-1BD **1MB1011-1BD** **1PC1001-1BD**	8	2510	1990
132	**1LE1001-1CA** **1MB1011-1CA** **1PC1001-1CA**	2	2310	1795
	1LE1001-1CB **1MB1011-1CB** **1PC1001-1CB**	4	2900	2250
	1LE1001-1CC **1MB1011-1CC** **1PC1001-1CC**	6	3330	2580
	1LE1001-1CD **1MB1011-1CD** **1PC1001-1CD**	8	3700	2870
160	**1LE1001-1DA** **1MB1011-1DA** **1PC1001-1DA**	2	2810	2170
	1LE1001-1DB **1MB1011-1DB** **1PC1001-1DB**	4	3540	2750
	1LE1001-1DC **1MB1011-1DC** **1PC1001-1DC**	6	4070	3160
	1LE1001-1DD **1MB1011-1DD** **1PC1001-1DD**	8	4510	3500

1LE15 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)

For motors		Admissible cantilever force	
		at x_0	at x_{max}
Frame size	No. of poles	N	N
1LE1501/03/21/23 – 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
200	2	6840	5610
	4	8440	6000
	6	9480	6000
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.

Bearings and lubrication

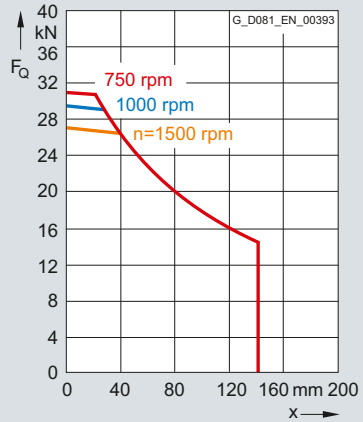
1

Overview (continued)

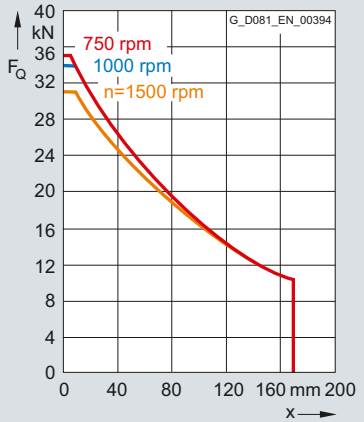
1LE16 motors at 50 Hz with reinforced cylindrical roller bearings (DE)
Valid are: x_0 values for x = 0 and $x_{max.}$ values for x = l (l = shaft extension)

For motors		Admissible cantilever force	
		at x_0	at x_{max}
Frame size	No. of poles	N	N
1LE1601/03/21/23 – 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 [1]	2	16500	9800
315 S, M [1]	2	18400	7600
315 L [1]	2	18400	7600

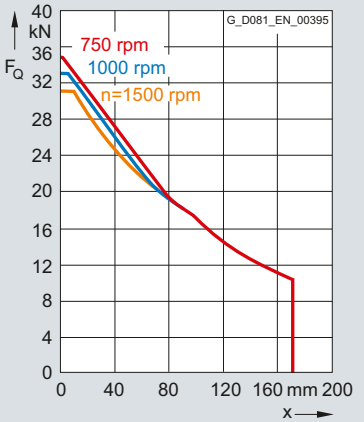
Frame size 280, 4-pole to 8-pole



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 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 = l (l = shaft extension)

For motors		Admissible cantilever force at x_0	at x_{max}
Frame size	No. of poles	N	N
1LE1501/03/21/23 – 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	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 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 = l (l = shaft extension)

For motors		Admissible cantilever force at x_0	at x_{max}
Frame size	No. of poles	N	N
1LE1501/03/21/23 – 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	–	–

Bearings and lubrication

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															
	downwards		**upwards**		**downwards**		**upwards**		**downwards**		**upwards**		**downwards**		**upwards**	
	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 2/63.
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)			Tensile load	Thrust load (N)			Tensile load	Thrust load (N)			Tensile load	Thrust load (N)		
		with radial load at		without radial load		with radial load at		without radial load		with radial load at		without radial load		with radial load at		without radial load
		x_0	$x_{max.}$			x_0	$x_{max.}$			x_0	$x_{max.}$			x_0	$x_{max.}$	
	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 2/63.
Please inquire if the load direction alternates.

Overview (continued)

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

Frame size	Type	3000 rpm				1500 rpm				1000 rpm				750 rpm			
		Shaft extension pointing															
		down-wards		up-wards		down-wards		up-wards		down-wards		up-wards		down-wards		up-wards	
		Load		Load		Load		Load		Load		Load		Load		Load	
		down N	up N	down N	up N	down N	up N	down N	up N	down N	up N	down N	up N	down N	up N	down N	up N
1LE15 – Basic Line																	
180	**1LE15..-1EA2**	1290	1220	530	1980	–	–	–	–	–	–	–	–	–	–	–	–
	1LE15..-1EA6	1260	1230	500	1990	–	–	–	–	–	–	–	–	–	–	–	–
	1LE15..-1EB2	–	–	–	–	1680	1750	920	2500	–	–	–	–	–	–	–	–
	1LE15..-1EB4	–	–	–	–	1610	1760	850	2520	–	–	–	–	–	–	–	–
	1LE15..-1EB6	–	–	–	–	1600	1770	840	2530	–	–	–	–	–	–	–	–
	1LE15..-1EC4	–	–	–	–	–	–	–	–	1920	2120	1160	2880	–	–	–	–
	1LE15..-1EC6	–	–	–	–	–	–	–	–	1920	2150	1160	2900	–	–	–	–
	1LE15..-1ED4	–	–	–	–	–	–	–	–	–	–	–	–	2270	2440	1510	3200
	1LE15..-1ED6	–	–	–	–	–	–	–	–	–	–	–	–	2050	2500	1290	3260
200	**1LE15..-2AA4**	1920	1680	760	2830	–	–	–	–	–	–	–	–	–	–	–	–
	1LE15..-2AA5	1810	1700	660	2860	–	–	–	–	–	–	–	–	–	–	–	–
	1LE15..-2AA6	1810	1720	660	2870	–	–	–	–	–	–	–	–	–	–	–	–
	1LE15..-2AB5	–	–	–	–	2410	2450	1260	3600	–	–	–	–				
	1LE15..-2AB6	–	–	–	–	2410	2480	1260	3630	–	–	–	–				
	1LE15..-2AC4	–	–	–	–	–	–	–	–	2880	2970	1720	4120	–	–	–	–
	1LE15..-2AC5	–	–	–	–	–	–	–	–	2770	3010	1620	4160	–	–	–	–
	1LE15..-2AC6	–	–	–	–	–	–	–	–	2700	3050	1550	4200	–	–	–	–
	1LE15..-2AD5	–	–	–	–	–	–	–	–	–	–	–	–	3240	3450	2090	4600
	1LE15..-2AD6	–	–	–	–	–	–	–	–	–	–	–	–	3060	3510	1910	4660
225	**1LE15..-2BA2**	1720	2000	630	3020	–	–	–	–	–	–	–	–	–	–	–	–
	1LE15..-2BA6	1720	2000	630	3020	–	–	–	–	–	–	–	–	–	–	–	–
	1LE15..-2BB0	–	–	–	–	2200	2800	1180	3830	–	–	–	–	–	–	–	–
	1LE15..-2BB2	–	–	–	–	2100	2850	1070	3900	–	–	–	–	–	–	–	–
	1LE15..-2BB6	–	–	–	–	2100	2850	1070	3900	–	–	–	–	–	–	–	–
	1LE15..-2BC2	–	–	–	–	–	–	–	–	2340	3470	1300	4480	–	–	–	–
	1LE15..-2BC6	–	–	–	–	–	–	–	–	2300	3500	1280	4480	–	–	–	–
	1LE15..-2BD0	–	–	–	–	–	–	–	–	–	–	–	–	3200	3750	2180	4770
	1LE15..-2BD2	–	–	–	–	–	–	–	–	–	–	–	–	3090	3800	2070	4820
	1LE15..-2BD6	–	–	–	–	–	–	–	–	–	–	–	–	2780	3950	1770	4970
250	**1LE15..-2CA2**	1630	2600	830	3400	–	–	–	–	–	–	–	–	–	–	–	–
	1LE15..-2CA6	1630	2650	830	3450	–	–	–	–	–	–	–	–	–	–	–	–
	1LE15..-2CB2	–	–	–	–	1980	3580	1180	4390	–	–	–	–	–	–	–	–
	1LE15..-2CB6	–	–	–	–	1940	3740	1140	4530	–	–	–	–	–	–	–	–
	1LE15..-2CC2	–	–	–	–	–	–	–	–	2440	4210	1650	5020	–	–	–	–
	1LE15..-2CC6	–	–	–	–	–	–	–	–	2440	4320	1640	5120	–	–	–	–
	1LE15..-2CD2	–	–	–	–	–	–	–	–	–	–	–	–	3180	4760	2380	5560
	1LE15..-2CD6	–	–	–	–	–	–	–	–	–	–	–	–	2950	4850	2150	5650
280	**1LE15..-2DA0**	3540	4280	1950	5850	–	–	–	–	–	–	–	–	–	–	–	–
	1LE15..-2DA2	3250	4390	1650	5950	–	–	–	–	–	–	–	–	–	–	–	–
	1LE15..-2DA6	3180	4540	1580	6100	–	–	–	–	–	–	–	–	–	–	–	–
	1LE15..-2DB0	–	–	–	–	5320	6930	3640	8500	–	–	–	–	–	–	–	–
	1LE15..-2DB2	–	–	–	–	4790	6990	3170	8580	–	–	–	–	–	–	–	–
	1LE15..-2DB6	–	–	–	–	4770	7170	3150	8750	–	–	–	–	–	–	–	–
	1LE15..-2DC0	–	–	–	–	–	–	–	–	6630	7990	5000	9570	–	–	–	–
	1LE15..-2DC2	–	–	–	–	–	–	–	–	6350	8150	4700	9700	–	–	–	–
	1LE15..-2DC6	–	–	–	–	–	–	–	–	6230	8400	4600	9900	–	–	–	–
	1LE15..-2DD0	–	–	–	–	–	–	–	–	–	–	–	–	7930	9030	6200	10500
	1LE15..-2DD2	–	–	–	–	–	–	–	–	–	–	–	–	7690	9180	6000	10600
	1LE15..-2DD6	–	–	–	–	–	–	–	–	–	–	–	–	7370	9300	5700	10700
315	**1LE15..-3AA0**	3580	4710	1450	6850	–	–	–	–	–	–	–	–	–	–	–	–
	1LE15..-3AA2	3180	4960	1050	7100	–	–	–	–	–	–	–	–	–	–	–	–
	1LE15..-3AA4	2890	5080	770	7200	–	–	–	–	–	–	–	–	–	–	–	–
	1LE15..-3AA5	2240	5480	100	7600	–	–	–	–	–	–	–	–	–	–	–	–
	1LE15..-3AB0	–	–	–	–	5640	7790	3600	9850	–	–	–	–	–	–	–	–
	1LE15..-3AB2	–	–	–	–	4780	7920	2700	9900	–	–	–	–	–	–	–	–
	1LE15..-3AB4	–	–	–	–	4820	7580	2750	9600	–	–	–	–	–	–	–	–
	1LE15..-3AB5	–	–	–	–	3720	7620	1650	9650	–	–	–	–	–	–	–	–
	1LE15..-3AC0	–	–	–	–	–	–	–	–	6800	9100	4700	11100	–	–	–	–
	1LE15..-3AC2	–	–	–	–	–	–	–	–	6080	9300	4000	11300	–	–	–	–
	1LE15..-3AC4	–	–	–	–	–	–	–	–	5400	9750	3350	11700	–	–	–	–
	1LE15..-3AC5	–	–	–	–	–	–	–	–	4800	10150	2750	11800	–	–	–	–
	1LE15..-3AC6	–	–	–	–	–	–	–	–	4550	10000	2500	11800	–	–	–	–
	1LE15..-3AD0	–	–	–	–	–	–	–	–	–	–	–	–	8500	10150	6450	11800
	1LE15..-3AD2	–	–	–	–	–	–	–	–	–	–	–	–	8150	10400	6100	11900
	1LE15..-3AD4	–	–	–	–	–	–	–	–	–	–	–	–	7250	10650	5200	12000
	1LE15..-3AD5	–	–	–	–	–	–	–	–	–	–	–	–	6500	10900	4450	12300
	1LE15..-3AD6	–	–	–	–	–	–	–	–	–	–	–	–	5900	11000	3900	12500

Bearings and lubrication

Overview (continued)

Frame size	Type	3000 rpm				1500 rpm				1000 rpm				750 rpm			
		Shaft extension pointing															
		down-wards		**up-wards**		**down-wards**		**up-wards**		**down-wards**		**up-wards**		**down-wards**		**up-wards**	
		Load		Load		Load		Load		Load		Load		Load		Load	
		down N	up N	down N	up N	down N	up N	down N	up N	down N	up N	down N	up N	down N	up N	down N	up N
1LE16 – Performance Line																	
180	**1LE16..-1EA2**	2510	2050	1360	3200	–	–	–	–	–	–	–	–	–	–	–	–
	1LE16..-1EA6	2490	2060	1330	3220	–	–	–	–	–		–	–	–	–	–	–
	1LE16..-1EB2	–	–	–	–	3240	2920	2090	4070	–	–	–	–	–	–	–	–
	1LE16..-1EB4	–	–	–	–	3180	2930	2020	4090	–	–	–	–	–	–	–	–
	1LE16..-1EB6	–	–	–	–	3160	2950	2010	4100	–	–	–	–	–	–	–	–
	1LE16..-1EC4	–	–	–	–	–	–	–	–	3740	3560	2580	4710	–	–	–	–
	1LE16..-1EC6	–	–	–	–	–	–	–	–	3740	3570	2580	4730	–	–	–	–
	1LE16..-1ED4	–	–	–	–	–	–	–	–	–	–	–	–	4300	4090	3150	5240
	1LE16..-1ED6	–	–	–	–	–	–	–	–	–	–	–	–	4090	4140	2940	5290
200	**1LE16..-2AA4**	2920	3030	2110	3840	–	–	–	–	–	–	–	–	–	–	–	–
	1LE16..-2AA5	2810	3060	2000	3870	–	–	–	–	–	–	–	–	–	–	–	–
	1LE16..-2AA6	2810	3060	2000	3870	–	–	–	–	–	–	–	–	–	–	–	–
	1LE16..-2AB5	–	–	–	–	3820	4210	3010	5020	–	–	–	–	–	–	–	–
	1LE16..-2AB6	–	–	–	–	3820	4230	3010	5040	–	–	–	–	–	–	–	–
	1LE16..-2AC4	–	–	–	–	–	–	–	–	4570	5010	3760	5820	–	–	–	–
	1LE16..-2AC5	–	–	–	–	–	–	–	–	4470	5060	3660	5870	–	–	–	–
	1LE16..-2AC6	–	–	–	–	–	–	–	–	4400	5090	3590	5900	–	–	–	–
	1LE16..-2AD5	–	–	–	–	–	–	–	–	–	–	–	–	5200	5750	4390	6560
	1LE16..-2AD6	–	–	–	–	–	–	–	–	–	–	–	–	5010	5800	4200	6610
225	**1LE16..-2BA2**	3100	3400	2050	4450	–	–	–	–	–	–	–	–	–	–	–	–
	1LE16..-2BA6	3100	3400	2050	4450	–	–	–	–	–	–	–	–	–	–	–	–
	1LE16..-2BB0	–	–	–	–	4200	4750	3150	5800	–	–	–	–	–	–	–	–
	1LE16..-2BB2	–	–	–	–	4100	4850	3000	5850	–	–	–	–	–	–	–	–
	1LE16..-2BB6	–	–	–	–	4100	4850	3000	5850	–	–	–	–	–	–	–	–
	1LE16..-2BC2	–	–	–	–	–	–	–	–	4700	5800	3650	6850	–	–	–	–
	1LE16..-2BC2	–	–	–	–	–	–	–	–	4650	5850	3600	6900	–	–	–	–
	1LE16..-2BD0	–	–	–	–	–	–	–	–	–	–	–	–	5900	6400	4850	7650
	1LE16..-2BD2	–	–	–	–	–	–	–	–	–	–	–	–	5800	6450	4700	7500
	1LE16..-2BD6	–	–	–	–	–	–	–	–	–	–	–	–	5500	6600	4400	7650
250	**1LE16..-2CA2**	3850	4100	2250	5600	–	–	–	–	–	–	–	–	–	–	–	–
	1LE16..-2CA6	3850	4100	2250	5600	–	–	–	–	–	–	–	–	–	–	–	–
	1LE16..-2CB2	–	–	–	–	4850	5650	3250	7250	–	–	–	–	–	–	–	–
	1LE16..-2CB6	–	–	–	–	4800	5750	3200	7400	–	–	–	–	–	–	–	–
	1LE16..-2CC2	–	–	–	–	–	–	–	–	5750	6750	4200	8350	–	–	–	–
	1LE16..-2CC6	–	–	–	–	–	–	–	–	5750	6750	4200	8450	–	–	–	–
	1LE16..-2CD2	–	–	–	–	–	–	–	–	–	–	–	–	6900	7700	5300	9200
	1LE16..-2CD6	–	–	–	–	–	–	–	–	–	–	–	–	6700	7800	5000	9300
280	**1LE16..-2DA0**	3540	4280	1950	5850	–	–	–	–	–	–	–	–	–	–	–	–
	1LE16..-2DA2	3250	4390	1650	5950	–	–	–	–	–	–	–	–	–	–	–	–
	1LE16..-2DA6	3180	4540	1580	6100	–	–	–	–	–	–	–	–	–	–	–	–
	1LE16..-2DB0	–	–	–	–	5320	6930	3640	8500	–	–	–	–	–	–	–	–
	1LE16..-2DB2	–	–	–	–	4790	6990	3170	8580	–	–	–	–	–	–	–	–
	1LE16..-2DB6	–	–	–	–	4770	7170	3150	8750	–	–	–	–	–	–	–	–
	1LE16..-2DC0	–	–	–	–	–	–	–	–	6630	7990	5000	9570	–	–	–	–
	1LE16..-2DC2	–	–	–	–	–	–	–	–	6350	8150	4700	9700	–	–	–	–
	1LE16..-2DC6	–	–	–	–	–	–	–	–	6230	8400	4600	9900	–	–	–	–
	1LE16..-2DD0	–	–	–	–	–	–	–	–	–	–	–	–	7930	9030	6200	10500
	1LE16..-2DD2	–	–	–	–	–	–	–	–	–	–	–	–	7690	9180	6000	10600
	1LE16..-2DD6	–	–	–	–	–	–	–	–	–	–	–	–	7370	9300	5700	10700
315	**1LE16..-3AA0**	3580	4710	1450	6850	–	–	–	–	–	–	–	–	–	–	–	–
	1LE16..-3AA2	3180	4960	1050	7100	–	–	–	–	–	–	–	–	–	–	–	–
	1LE16..-3AA4	2890	5080	770	7200	–	–	–	–	–	–	–	–	–	–	–	–
	1LE16..-3AA5	2240	5480	100	7600	–	–	–	–	–	–	–	–	–	–	–	–
	1LE16..-3AB0	–	–	–	–	5640	7790	3600	9850	–	–	–	–	–	–	–	–
	1LE16..-3AB2	–	–	–	–	4780	7920	2700	9900	–	–	–	–	–	–	–	–
	1LE16..-3AB4	–	–	–	–	4820	7580	2750	9600	–	–	–	–	–	–	–	–
	1LE16..-3AB5	–	–	–	–	3720	7620	1650	9650	–	–	–	–	–	–	–	–
	1LE16..-3AC0	–	–	–	–	–	–	–	–	6800	9100	4700	11100	–	–	–	–
	1LE16..-3AC2	–	–	–	–	–	–	–	–	6080	9300	4000	11300	–	–	–	–
	1LE16..-3AC4	–	–	–	–	–	–	–	–	5400	9750	3350	11700	–	–	–	–
	1LE16..-3AC5	–	–	–	–	–	–	–	–	4800	10150	2750	11800	–	–	–	–
	1LE16..-3AC6	–	–	–	–	–	–	–	–	4550	10000	2500	11800	–	–	–	–
	1LE16..-3AD0	–	–	–	–	–	–	–	–	–	–	–	–	8500	10150	6450	11800
	1LE16..-3AD2	–	–	–	–	–	–	–	–	–	–	–	–	8150	10400	6100	11900
	1LE16..-3AD4	–	–	–	–	–	–	–	–	–	–	–	–	7250	10650	5200	12000
	1LE16..-3AD5	–	–	–	–	–	–	–	–	–	–	–	–	6500	10900	4450	12300
	1LE16..-3AD6	–	–	–	–	–	–	–	–	–	–	–	–	5900	11000	3900	12500

Overview (continued)

1LE15 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-wards		**up-wards**		**down-wards**		**up-wards**		**down-wards**		**up-wards**		**down-wards**		**up-wards**	
		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
1LE15 – Basic Line																	
180	**1LE15..-1EA2**	2510	2050	1360	3200	–	–	–	–	–	–	–	–	–	–	–	–
	1LE15..-1EA6	2490	2060	1330	3220	–	–	–	–	–	–	–	–	–	–	–	–
	1LE15..-1EB2	–	–	–	–	3240	2920	2090	4070	–	–	–	–	–	–	–	–
	1LE15..-1EB4	–	–	–	–	3180	2930	2020	4090	–	–	–	–	–	–	–	–
	1LE15..-1EB6	–	–	–	–	3160	2950	2010	4100	–	–	–	–	–	–	–	–
	1LE15..-1EC4	–	–	–	–	–	–	–	–	3740	3560	2580	4710	–	–	–	–
	1LE15..-1EC6	–	–	–	–	–	–	–	–	3740	3570	2580	4730	–	–	–	–
	1LE15..-1ED4	–	–	–	–	–	–	–	–	–	–	–	–	4300	4090	3150	5240
	1LE15..-1ED6	–	–	–	–	–	–	–	–	–	–	–	–	4090	4140	2940	5290
200	**1LE15..-2AA4**	2920	3030	2110	3840	–	–	–	–	–	–	–	–	–	–	–	–
	1LE15..-2AA5	2810	3060	2000	3870	–	–	–	–	–	–	–	–	–	–	–	–
	1LE15..-2AA6	2810	3060	2000	3870	–	–	–	–	–	–	–	–	–	–	–	–
	1LE15..-2AB5	–	–	–	–	3820	4210	3010	5020	–	–	–	–	–	–	–	–
	1LE15..-2AB6	–	–	–	–	3820	4230	3010	5040	–	–	–	–	–	–	–	–
	1LE15..-2AC4	–	–	–	–	–	–	–	–	4570	5010	3760	5820	–	–	–	–
	1LE15..-2AC5	–	–	–	–	–	–	–	–	4470	5060	3660	5870	–	–	–	–
	1LE15..-2AC6	–	–	–	–	–	–	–	–	4400	5090	3590	5900	–	–	–	–
	1LE15..-2AD5	–	–	–	–	–	–	–	–	–	–	–	–	5200	5750	4390	6560
	1LE15..-2AD6	–	–	–	–	–	–	–	–	–	–	–	–	5010	5800	4200	6610
225	**1LE15..-2BA2**	3100	3400	2050	4450	–	–	–	–	–	–	–	–	–	–	–	–
	1LE15..-2BA6	3100	3400	2050	4450	–	–	–	–	–	–	–	–	–	–	–	–
	1LE15..-2BB0	–	–	–	–	4200	4750	3150	5800	–	–	–	–	–	–	–	–
	1LE15..-2BB2	–	–	–	–	4100	4850	3000	5850	–	–	–	–	–	–	–	–
	1LE15..-2BB6	–	–	–	–	4100	4850	3000	5850	–	–	–	–	–	–	–	–
	1LE15..-2BC2	–	–	–	–	–	–	–	–	4700	5800	3650	6850	–	–	–	–
	1LE15..-2BC6	–	–	–	–	–	–	–	–	4650	5850	3600	6900	–	–	–	–
	1LE15..-2BD0	–	–	–	–	–	–	–	–	–	–	–	–	5900	6400	4850	7650
	1LE15..-2BD2	–	–	–	–	–	–	–	–	–	–	–	–	5800	6450	4700	7500
	1LE15..-2BD6	–	–	–	–	–	–	–	–	–	–	–	–	5500	6600	4400	7650
250	**1LE15..-2CA2**	3850	4100	2250	5600	–	–	–	–	–	–	–	–	–	–	–	–
	1LE15..-2CA6	3850	4100	2250	5600	–	–	–	–	–	–	–	–	–	–	–	–
	1LE15..-2CB2	–	–	–	–	4850	5650	3250	7250	–	–	–	–	–	–	–	–
	1LE15..-2CB6	–	–	–	–	4800	5750	3200	7400	–	–	–	–	–	–	–	–
	1LE15..-2CC2	–	–	–	–	–	–	–	–	5750	6750	4200	8350	–	–	–	–
	1LE15..-2CC6	–	–	–	–	–	–	–	–	5750	6750	4200	8450	–	–	–	–
	1LE15..-2CD2	–	–	–	–	–	–	–	–	–	–	–	–	6900	7700	5300	9200
	1LE15..-2CD6	–	–	–	–	–	–	–	–	–	–	–	–	6700	7800	5000	9300

Values are not available for frame sizes > 250.

Overview (continued)

1LE15 and 1LE16 motors in horizontal type of construction – Basic version

Frame size	Type	3000 rpm Load Tension N	3000 rpm Load Thrust N	1500 rpm Load Tension N	1500 rpm Load Thrust N	1000 rpm Load Tension N	1000 rpm Load Thrust N	750 rpm Load Tension N	750 rpm Load Thrust N
1LE15 – Basic Line									
100	**1LE15.1-1AA4**	1120	400	–	–	–	–	–	–
	1LE15.1-1AA6	1000	380	–	–	–	–	–	–
	1LE15.3-1AA4	1000	380	–	–	–	–	–	–
	1LE15.1-1AB4	–	–	1370	650	–	–	–	–
	1LE15.1-1AB5	–	–	1350	630	–	–	–	–
	1LE15.1-1AB6	–	–	1330	610	–	–	–	–
	1LE15.3-1AB4	–	–	1330	610	–	–	–	–
	1LE15.3-1AB5	–	–	1330	610	–	–	–	–
	1LE15.1-1AC4	–	–	–	–	1560	840	–	–
	1LE15.1-1AC6	–	–	–	–	1530	810	–	–
	1LE15.1-1AD4	–	–	–	–	–	–	1740	1020
	1LE15.1-1AD5	–	–	–	–	–	–	1730	1010
112	**1LE15.1-1BA2**	1110	390	–	–	–	–	–	–
	1LE15.1-1BA6	1090	370	–	–	–	–	–	–
	1LE15.3-1BA2	1090	370	–	–	–	–	–	–
	1LE15.1-1BB2	–	–	1360	640	–	–	–	–
	1LE15.1-1BB6	–	–	1340	620	–	–	–	–
	1LE15.3-1BB2	–	–	1340	620	–	–	–	–
	1LE15.1-1BC2	–	–	–	–	1560	840	–	–
	1LE15.1-1BC6	–	–	–	–	1540	820	–	–
	1LE15.3-1BC2	–	–	–	–	1540	820	–	–
	1LE15.1-1BD2	–	–	–	–	–	–	1730	1010
132	**1LE15.1-1CA0**	1750	490	–	–	–	–	–	–
	1LE15.1-1CA1	1740	480	–	–	–	–	–	–
	1LE15.3-1CA0	1740	480	–	–	–	–	–	–
	1LE15.1-1CA6	1700	440	–	–	–	–	–	–
	1LE15.3-1CA1	1700	440	–	–	–	–	–	–
	1LE15.1-1CB0	–	–	2130	870	–	–	–	–
	1LE15.1-1CB2	–	–	2100	840	–	–	–	–
	1LE15.1-1CB6	–	–	2060	800	–	–	–	–
	1LE15.3-1CB0	–	–	2060	800	–	–	–	–
	1LE15.3-1CB2	–	–	2060	800	–	–	–	–
	1LE15.1-1CC0	–	–	–	–	2440	1180	–	–
	1LE15.1-1CC2	–	–	–	–	2420	1160	–	–
	1LE15.1-1CC3	–	–	–	–	2390	1130	–	–
	1LE15.3-1CC0	–	–	–	–	2390	1130	–	–
	1LE15.3-1CC2	–	–	–	–	2390	1130	–	–
	1LE15.1-1CC6	–	–	–	–	2350	1090	–	–
	1LE15.3-1CC3	–	–	–	–	2350	1090	–	–
	1LE15.1-1CD0	–	–	–	–	–	–	2690	1430
	1LE15.1-1CD2	–	–	–	–	–	–	2660	1400
160	**1LE15.1-1DA2**	1760	700	–	–	–	–	–	–
	1LE15.1-1DA3	1740	680	–	–	–	–	–	–
	1LE15.3-1DA2	1740	680	–	–	–	–	–	–
	1LE15.1-1DA4	1720	660	–	–	–	–	–	–
	1LE15.3-1DA3	1720	660	–	–	–	–	–	–
	1LE15.1-1DA6	1670	610	–	–	–	–	–	–
	1LE15.3-1DA4	1670	610	–	–	–	–	–	–
	1LE15.1-1DB2	–	–	2170	1110	–	–	–	–
	1LE15.1-1DB4	–	–	2130	1070	–	–	–	–
	1LE15.3-1DB2	–	–	2130	1070	–	–	–	–
	1LE15.1-1DB6	–	–	2100	1040	–	–	–	–
	1LE15.3-1DB4	–	–	2100	1040	–	–	–	–
	1LE15.1-1DB7	–	–	2050	990	–	–	–	–
	1LE15.1-1DC2	–	–	–	–	2480	1420	–	–
	1LE15.1-1DC4	–	–	–	–	2420	1360	–	–
	1LE15.3-1DC2	–	–	–	–	2420	1360	–	–
	1LE15.1-1DC6	–	–	–	–	2360	1300	–	–
	1LE15.3-1DC4	–	–	–	–	2360	1300	–	–
	1LE15.1-1DD2	–	–	–	–	–	–	2800	1740
	1LE15.1-1DD3	–	–	–	–	–	–	2740	1680
	1LE15.1-1DD4	–	–	–	–	–	–	2710	1650

Type	3000 rpm Load Tension N	3000 rpm Load Thrust N	1500 rpm Load Tension N	1500 rpm Load Thrust N	1000 rpm Load Tension N	1000 rpm Load Thrust N	750 rpm Load Tension N	750 rpm Load Thrust N
1LE16 – Performance Line								
1LE16.1-1AA4	1440	880	–	–	–	–	–	–
1LE16.1-1AA6	1430	870	–	–	–	–	–	–
1LE16.3-1AA4	1430	870	–	–	–	–	–	–
1LE16.1-1AB4	–	–	1820	1260	–	–	–	–
1LE16.1-1AB5	–	–	1800	1240	–	–	–	–
1LE16.1-1AB6	–	–	1780	1220	–	–	–	–
1LE16.3-1AB4	–	–	1780	1220	–	–	–	–
1LE16.3-1AB5	–	–	1780	1220	–	–	–	–
1LE16.1-1AC4	–	–	–	–	2110	1550	–	–
1LE16.1-1AC6	–	–	–	–	2090	1530	–	–
1LE16.1-1AD4	–	–	–	–	–	–	2380	1820
1LE16.1-1AD5	–	–	–	–	–	–	2370	1810
1LE16.1-1BA2	1430	870	–	–	–	–	–	–
1LE16.1-1BA6	1410	850	–	–	–	–	–	–
1LE16.3-1BA2	1410	850	–	–	–	–	–	–
1LE16.1-1BB2	–	–	1810	1250	–	–	–	–
1LE16.1-1BB6	–	–	1790	1230	–	–	–	–
1LE16.3-1BB2	–	–	1790	1230	–	–	–	–
1LE16.1-1BC2	–	–	–	–	2110	1550	–	–
1LE16.1-1BC6	–	–	–	–	2090	1530	–	–
1LE16.3-1BC2	–	–	–	–	2090	1530	–	–
1LE16.1-1BD2	–	–	–	–	–	–	2370	1810
1LE16.1-1CA0	2330	1010	–	–	–	–	–	–
1LE16.1-1CA1	2320	1000	–	–	–	–	–	–
1LE16.3-1CA0	2320	1000	–	–	–	–	–	–
1LE16.1-1CA6	2280	960	–	–	–	–	–	–
1LE16.3-1CA1	2280	960	–	–	–	–	–	–
1LE16.1-1CB0	–	–	2890	1570	–	–	–	–
1LE16.1-1CB2	–	–	2870	1550	–	–	–	–
1LE16.1-1CB6	–	–	2820	1500	–	–	–	–
1LE16.3-1CB0	–	–	2820	1500	–	–	–	–
1LE16.3-1CB2	–	–	2820	1500	–	–	–	–
1LE16.1-1CC0	–	–	–	–	3340	2020	–	–
1LE16.1-1CC2	–	–	–	–	3320	2000	–	–
1LE16.1-1CC3	–	–	–	–	3290	1970	–	–
1LE16.3-1CC0	–	–	–	–	3290	1970	–	–
1LE16.3-1CC2	–	–	–	–	3290	1970	–	–
1LE16.1-1CC6	–	–	–	–	3250	1930	–	–
1LE16.3-1CC3	–	–	–	–	3250	1930	–	–
1LE16.1-1CD0	–	–	–	–	–	–	3710	2390
1LE16.1-1CD2	–	–	–	–	–	–	3680	2360
1LE16.1-1DA2	2400	1680	–	–	–	–	–	–
1LE16.1-1DA3	2380	1660	–	–	–	–	–	–
1LE16.3-1DA2	2380	1660	–	–	–	–	–	–
1LE16.1-1DA4	2370	1650	–	–	–	–	–	–
1LE16.3-1DA3	2370	1650	–	–	–	–	–	–
1LE16.1-1DA6	2320	1600	–	–	–	–	–	–
1LE16.3-1DA4	2320	1600	–	–	–	–	–	–
1LE16.1-1DB2	–	–	3100	2380	–	–	–	–
1LE16.1-1DB4	–	–	3050	2330	–	–	–	–
1LE16.3-1DB2	–	–	3050	2330	–	–	–	–
1LE16.1-1DB6	–	–	3020	2300	–	–	–	–
1LE16.3-1DB4	–	–	3020	2300	–	–	–	–
1LE16.1-1DB7	–	–	2980	2260	–	–	–	–
1LE16.1-1DC2	–	–	–	–	3610	2890	–	–
1LE16.1-1DC4	–	–	–	–	3550	2830	–	–
1LE16.3-1DC2	–	–	–	–	3550	2830	–	–
1LE16.1-1DC6	–	–	–	–	3480	2760	–	–
1LE16.3-1DC4	–	–	–	–	3480	2760	–	–
1LE16.1-1DD2	–	–	–	–	–	–	4090	3370
1LE16.1-1DD3	–	–	–	–	–	–	4040	3320
1LE16.1-1DD4	–	–	–	–	–	–	4010	3290

Overview (continued)

Frame size	Type	3000 rpm Load		1500 rpm Load		1000 rpm Load		750 rpm Load		Type	3000 rpm Load		1500 rpm Load		1000 rpm Load		750 rpm 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 – Basic Line										**1LE16 – Performance Line**								
180	**1LE15..-1EA2**	1640	880	–	–	–	–	–	–	**1LE16..-1EA2**	2860	1710	–	–	–	–	–	–
	1LE15..-1EA6	1630	870	–	–	–	–	–	–	**1LE16..-1EA6**	2850	1700	–	–	–	–	–	–
	1LE15..-1EB2	–	–	2100	1340	–	–			**1LE16..-1EB2**	–	–	3660	2510	–	–	–	–
	1LE15..-1EB4	–	–	2070	1310	–	–			**1LE16..-1EB4**	–	–	3630	2480	–	–	–	–
	1LE15..-1EB6	–	–	2070	1310	–	–			**1LE16..-1EB6**	–	–	3630	2480	–	–	–	–
	1LE15..-1EC4	–	–	–	–	2420	1660	–	–	**1LE16..-1EC4**	–	–	–	–	4230	3080	–	–
	1LE15..-1EC6	–	–	–	–	2420	1660	–	–	**1LE16..-1EC6**	–	–	–	–	4230	3080	–	–
200	**1LE15..-2AA4**	2380	1230	–	–	–	–	–	–	**1LE16..-2AA4**	3390	2580	–	–	–	–	–	–
	1LE15..-2AA5	2340	1190	–	–	–	–	–	–	**1LE16..-2AA5**	3340	2530	–	–	–	–	–	–
	1LE15..-2AA6	2340	1190	–	–	–	–	–	–	**1LE16..-2AA6**	3340	2530	–	–	–	–	–	–
	1LE15..-2AB5	–	–	3020	1870	–	–			**1LE16..-2AB5**	–	–	4430	3620	–	–	–	–
	1LE15..-2AB6	–	–	3020	1870	–	–			**1LE16..-2AB6**	–	–	4430	3620	–	–	–	–
	–	–	–	–	–	–	–	–	–	**1LE16..-2AC4**	–	–	–	–	5210	4400	–	–
	–	–	–	–	–	–	–	–	–	**1LE16..-2AC5**	–	–	–	–	5170	4360	–	–
	–	–	–	–	–	–	–	–	–	**1LE16..-2AC6**	–	–	–	–	5150	4340	–	–
225	**1LE15..-2BA2**	2350	1300	–	–	–	–	–	–	**1LE16..-2BA2**	3800	2750	–	–	–	–	–	–
	1LE15..-2BA6	2350	1300	–	–	–	–	–	–	**1LE16..-2BA6**	3800	2750	–	–	–	–	–	–
	1LE15..-2BB0	–	–	3020	1980	–	–	–	–	**1LE16..-2BB0**	–	–	4950	3900	–	–	–	–
	1LE15..-2BB2	–	–	3020	1980	–	–	–	–	**1LE16..-2BB2**	–	–	4950	3900	–	–	–	–
	1LE15..-2BB6	–	–	3020	1980	–	–	–	–	**1LE16..-2BB6**	–	–	4900	3850	–	–	–	–
	1LE15..-2BC2	–	–	–	–	3400	2400	–	–	**1LE16..-2BC2**	–	–	–	–	5750	4700	–	–
	1LE15..-2BC6	–	–	–	–	3400	2400	–	–	**1LE16..-2BC6**	–	–	–	–	5700	4650	–	–
	1LE15..-2BD0	–	–	–	–	–	–	3950	2950	**1LE16..-2BD0**	–	–	–	–	–	–	6600	5550
	1LE15..-2BD2	–	–	–	–	–	–	3900	2900	**–**	–	–	–	–	–	–	–	–
	1LE15..-2BD6	–	–	–	–	–	–	3800	2800	**–**	–	–	–	–	–	–	–	–
250	**1LE15..-2CA2**	2600	1750	–	–	–	–	–	–	**1LE16..-2CA2**	4750	3150	–	–	–	–	–	–
	1LE15..-2CA6	2550	1700	–	–	–	–	–	–	**1LE16..-2CA6**	4750	3150	–	–	–	–	–	–
	1LE15..-2CB2	–	–	3200	2400	–	–	–	–	**1LE16..-2CB2**	–	–	6050	4450	–	–	–	–
	1LE15..-2CB6	–	–	3200	2400	–	–	–	–	**1LE16..-2CB6**	–	–	6050	4450	–	–	–	–
	1LE15..-2CC2	–	–	–	–	3750	3000	–	–	**1LE16..-2CC2**	–	–	–	–	7100	5500	–	–
	1LE15..-2CC6	–	–	–	–	3750	3000	–	–	**1LE16..-2CC6**	–	–	–	–	7100	5500	–	–
	1LE15..-2CD2	–	–	–	–	–	–	4350	3550	**1LE16..-2CD2**	–	–	–	–	–	–	8100	6500
	1LE15..-2CD6	–	–	–	–	–	–	4300	3500	**1LE16..-2CD6**	–	–	–	–	–	–	8000	6400
280	**1LE15..-2DA0**	4500	2900	–	–	–	–	–	–	**1LE16..-2DA0**	4500	2900	–	–	–	–	–	–
	1LE15..-2DA2	4450	2850	–	–	–	–	–	–	**1LE16..-2DA2**	4450	2850	–	–	–	–	–	–
	1LE15..-2DA6	4450	2850	–	–	–	–	–	–	**1LE16..-2DA6**	4450	2850	–	–	–	–	–	–
	1LE15..-2DB0	–	–	6700	5100	–	–	–	–	**1LE16..-2DB0**	–	–	6700	5100	–	–	–	–
	1LE15..-2DB2	–	–	6600	5000	–	–	–	–	**1LE16..-2DB2**	–	–	6600	5000	–	–	–	–
	1LE15..-2DB6	–	–	6600	5000	–	–	–	–	**1LE16..-2DB6**	–	–	6600	5000	–	–	–	–
	1LE15..-2DC0	–	–	–	–	7900	6350	–	–	**1LE16..-2DC0**	–	–	–	–	7900	6350	–	–
	1LE15..-2DC2	–	–	–	–	7850	6300	–	–	**1LE16..-2DC2**	–	–	–	–	7850	6300	–	–
	1LE15..-2DC6	–	–	–	–	7850	6300	–	–	**1LE16..-2DC6**	–	–	–	–	7850	6300	–	–
	1LE15..-2DD0	–	–	–	–	–	–	8800	7200	**1LE16..-2DD0**	–	–	–	–	–	–	8800	7200
	1LE15..-2DD2	–	–	–	–	–	–	8800	7200	**1LE16..-2DD2**	–	–	–	–	–	–	8800	7200
	1LE15..-2DD6	–	–	–	–	–	–	8800	7200	**1LE16..-2DD6**	–	–	–	–	–	–	8800	7200
315	**1LE15..-3AA0**	5000	2900	–	–	–	–	–	–	**1LE16..-3AA0**	5000	2900	–	–	–	–	–	–
	1LE15..-3AA2	4800	2700	–	–	–	–	–	–	**1LE16..-3AA2**	4800	2700	–	–	–	–	–	–
	1LE15..-3AA4	4750	2650	–	–	–	–	–	–	**1LE16..-3AA4**	4750	2650	–	–	–	–	–	–
	1LE15..-3AA5	4700	2600	–	–	–	–	–	–	**1LE16..-3AA5**	4700	2600	–	–	–	–	–	–
	1LE15..-3AB0	–	–	7550	5500	–	–	–	–	**1LE16..-3AB0**	–	–	7550	5500	–	–	–	–
	1LE15..-3AB2	–	–	7300	5250	–	–	–	–	**1LE16..-3AB2**	–	–	7300	5250	–	–	–	–
	1LE15..-3AB4	–	–	7300	5250	–	–	–	–	**1LE16..-3AB4**	–	–	7300	5250	–	–	–	–
	1LE15..-3AB5	–	–	7050	5000	–	–	–	–	**1LE16..-3AB5**	–	–	7050	5000	–	–	–	–
	1LE15..-3AC0	–	–	–	–	8900	6850	–	–	**1LE16..-3AC0**	–	–	–	–	8900	6850	–	–
	1LE15..-3AC2	–	–	–	–	8900	6850	–	–	**1LE16..-3AC2**	–	–	–	–	8900	6850	–	–
	1LE15..-3AC4	–	–	–	–	8550	6500	–	–	**1LE16..-3AC4**	–	–	–	–	8550	6500	–	–
	1LE15..-3AC5	–	–	–	–	8250	6200	–	–	**1LE16..-3AC5**	–	–	–	–	8250	6200	–	–
	1LE15..-3AC6	–	–	–	–	8250	6200	–	–	**1LE16..-3AC6**	–	–	–	–	8250	6200	–	–
	1LE15..-3AD0	–	–	–	–	–	–	9800	7800	**1LE16..-3AD0**	–	–	–	–	–	–	9800	7800
	1LE15..-3AD2	–	–	–	–	–	–	9800	7800	**1LE16..-3AD2**	–	–	–	–	–	–	9800	7800
	1LE15..-3AD4	–	–	–	–	–	–	9500	7500	**1LE16..-3AD4**	–	–	–	–	–	–	9500	7500
	1LE15..-3AD5	–	–	–	–	–	–	9300	7300	**1LE16..-3AD5**	–	–	–	–	–	–	9300	7300
	1LE15..-3AD6	–	–	–	–	–	–	9100	7100	**1LE16..-3AD6**	–	–	–	–	–	–	9100	7100

Overview (continued)

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

Frame size	Type	3000 rpm Load		1500 rpm Load		1000 rpm Load		750 rpm Load	
		Tension	Thrust	Tension	Thrust	Tension	Thrust	Tension	Thrust
		N	N	N	N	N	N	N	N
1LE15 – Basic Line									
100	**1LE15.1-1AA4**	1440	880	–	–	–	–	–	–
	1LE15.1-1AA6	1430	870	–	–	–	–	–	–
	1LE15.3-1AA4	1430	870	–	–	–	–	–	–
	1LE15.1-1AB4	–	–	1820	1260	–	–	–	–
	1LE15.1-1AB5	–	–	1800	1240	–	–	–	–
	1LE15.1-1AB6	–	–	1780	1220	–	–	–	–
	1LE15.3-1AB4	–	–	1780	1220	–	–	–	–
	1LE15.3-1AB5	–	–	1780	1220	–	–	–	–
	1LE15.1-1AC4	–	–	–	–	2110	1550	–	–
	1LE15.1-1AC6	–	–	–	–	2090	1530	–	–
	1LE15.1-1AD4	–	–	–	–	–	–	2380	1820
	1LE15.1-1AD5	–	–	–	–	–	–	2370	1810
112	**1LE15.1-1BA2**	1430	870	–	–	–	–	–	–
	1LE15.1-1BA6	1410	850	–	–	–	–	–	–
	1LE15.3-1BA2	1410	850	–	–	–	–	–	–
	1LE15.1-1BB2	–	–	1810	1250	–	–	–	–
	1LE15.1-1BB6	–	–	1790	1230	–	–	–	–
	1LE15.3-1BB2	–	–	1790	1230	–	–	–	–
	1LE15.1-1BC2	–	–	–	–	2110	1550	–	–
	1LE15.1-1BC6	–	–	–	–	2090	1530	–	–
	1LE15.3-1BC2	–	–	–	–	2090	1530	–	–
	1LE15.1-1BD2	–	–	–	–	–	–	2370	1810
132	**1LE15.1-1CA0**	2330	1010	–	–	–	–	–	–
	1LE15.1-1CA1	2320	1000	–	–	–	–	–	–
	1LE15.3-1CA0	2320	1000	–	–	–	–	–	–
	1LE15.1-1CA6	2280	960	–	–	–	–	–	–
	1LE15.3-1CA1	2280	960	–	–	–	–	–	–
	1LE15.1-1CB0	–	–	2890	1570	–	–	–	–
	1LE15.1-1CB2	–	–	2870	1550	–	–	–	–
	1LE15.1-1CB6	–	–	2820	1500	–	–	–	–
	1LE15.3-1CB0	–	–	2820	1500	–	–	–	–
	1LE15.3-1CB2	–	–	2820	1500	–	–	–	–
	1LE15.1-1CC0	–	–	–	–	3340	2020	–	–
	1LE15.1-1CC2	–	–	–	–	3320	2000	–	–
	1LE15.1-1CC3	–	–	–	–	3290	1970	–	–
	1LE15.3-1CC0	–	–	–	–	3290	1970	–	–
	1LE15.3-1CC2	–	–	–	–	3290	1970	–	–
	1LE15.1-1CC6	–	–	–	–	3250	1930	–	–
	1LE15.3-1CC3	–	–	–	–	3250	1930	–	–
	1LE15.1-1CD0	–	–	–	–	–	–	3710	2390
	1LE15.1-1CD2	–	–	–	–	–	–	3680	2360

Frame size	Type	3000 rpm Load		1500 rpm Load		1000 rpm Load		750 rpm Load	
		Tension	Thrust	Tension	Thrust	Tension	Thrust	Tension	Thrust
		N	N	N	N	N	N	N	N
1LE15 – Basic Line									
160	**1LE15.1-1DA2**	2400	1680	–	–	–	–	–	–
	1LE15.1-1DA3	2380	1660	–	–	–	–	–	–
	1LE15.3-1DA2	2380	1660	–	–	–	–	–	–
	1LE15.1-1DA4	2370	1650	–	–	–	–	–	–
	1LE15.3-1DA3	2370	1650	–	–	–	–	–	–
	1LE15.1-1DA6	2320	1600	–	–	–	–	–	–
	1LE15.3-1DA4	2320	1600	–	–	–	–	–	–
	1LE15.1-1DB2	–	–	3100	2380	–	–	–	–
	1LE15.1-1DB4	–	–	3050	2330	–	–	–	–
	1LE15.3-1DB2	–	–	3050	2330	–	–	–	–
	1LE15.1-1DB6	–	–	3020	2300	–	–	–	–
	1LE15.3-1DB4	–	–	3020	2300	–	–	–	–
	1LE15.1-1DB7	–	–	2980	2260	–	–	–	–
	1LE15.1-1DC2	–	–	–	–	3610	2890	–	–
	1LE15.1-1DC4	–	–	–	–	3550	2830	–	–
	1LE15.3-1DC2	–	–	–	–	3550	2830	–	–
	1LE15.1-1DC6	–	–	–	–	3480	2760	–	–
	1LE15.3-1DC4	–	–	–	–	3480	2760	–	–
	1LE15.1-1DD2	–	–	–	–	–	–	4090	3370
	1LE15.1-1DD3	–	–	–	–	–	–	4040	3320
	1LE15.1-1DD4	–	–	–	–	–	–	4010	3290
180	**1LE15..-1EA2**	2860	1710	–	–	–	–		
	1LE15..-1EA6	2850	1700	–	–	–	–		
	1LE15..-1EB2	–	–	3660	2510	–	–		
	1LE15..-1EB4	–	–	3630	2480	–	–		
	1LE15..-1EB6	–	–	3630	2480	–	–		
	1LE15..-1EC4	–	–	–	–	4230	3080		
	1LE15..-1EC6	–	–	–	–	4230	3080		
	1LE15..-1EA2	2860	1710	–	–	–	–		
200	**1LE15..-2AA4**	3390	2580	–	–	–	–		
	1LE15..-2AA5	3340	2530	–	–	–	–		
	1LE15..-2AA6	3340	2530	–	–	–	–		
	1LE15..-2AB5	–	–	4430	3620	–	–		
	1LE15..-2AB6	–	–	4430	3620	–	–		
	1LE15..-2AC4	–	–	–	–	5210	4400		
	1LE15..-2AC5	–	–	–	–	5170	4360		
	1LE15..-2AC6	–	–	–	–	5150	4340		
225	**1LE15..-2BA2**	3800	2750	–	–	–	–	–	–
	1LE15..-2BA6	3800	2750	–	–	–	–	–	–
	1LE15..-2BB0	–	–	4950	3900	–	–	–	–
	1LE15..-2BB2	–	–	4950	3900	–	–	–	–
	1LE15..-2BB6	–	–	4900	3850	–	–	–	–
	1LE15..-2BC2	–	–	–	–	5750	4700	–	–
	1LE15..-2BC6	–	–	–	–	5700	4650	–	–
	1LE15..-2BD0	–	–	–	–	–	–	6600	5550
	1LE15..-2BD2	–	–	–	–	–	–	6550	5500
	1LE15..-2BD6	–	–	–	–	–	–	6500	5450
250	**1LE15..-2CA2**	4750	3150	–	–	–	–	–	–
	1LE15..-2CA6	4750	3150	–	–	–	–	–	–
	1LE15..-2CB2	–	–	6050	4450	–	–	–	–
	1LE15..-2CB6	–	–	6050	4450	–	–	–	–
	1LE15..-2CC2	–	–	–	–	7100	5500	–	–
	1LE15..-2CC6	–	–	–	–	7100	5500	–	–

Values are not available for frame sizes > 250.

Overview

The rated output specified in the selection tables 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 connection box. Mountings such as brake, connection 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**	Site altitude above sea level Coolant temperature					
m	< 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 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 Page1/24.

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).

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
- 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.

Modular technology

1

Overview

Separately driven fan

The use of a separely 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 °C, CT_{max} +65 °C [1], lower/higher coolant temperatures are available on request. When the separately driven fan is mounted, the length of the motor increases by ΔI. For an explanation of the additional dimensions and weights, see "Technology", "Dimensions and weights" from Page 1/69 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 500 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 b 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 °C.

Overview (continued)

Brakes

Spring-operated disk brakes are used for the brakes with order code **F01**. 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 1/58.

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 1/63.

When a brake is mounted, the length of the motor increases by ΔI. For an explanation of the additional dimensions and weights, see "Technology", "Dimensions and weights" from Page 1/69 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* 1/34*).*

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.

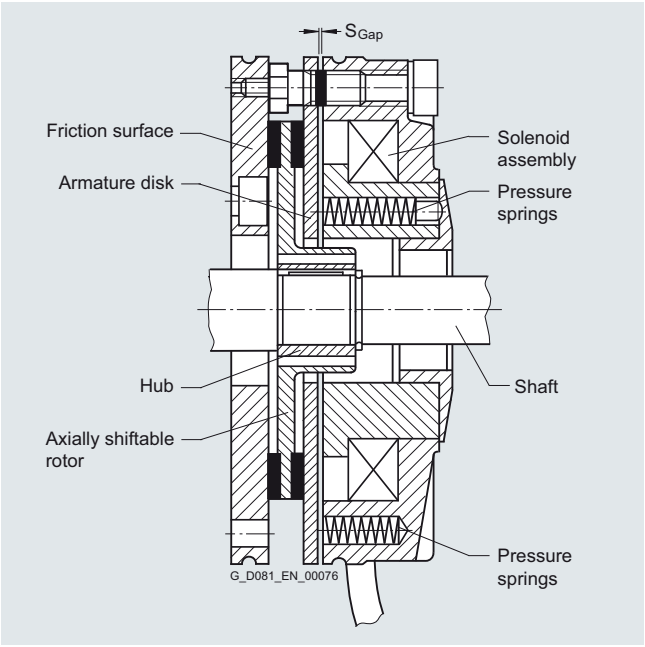
Brake 2LM8 can be operated at ambient temperatures from -20 °C to 40 °C.

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

Modular technology

1

Overview (continued)

Operating values for spring-operated brakes with standard excitation

For motor frame size	Brake type	Rated braking torque at 100 rpm	Rated braking torque at 100 rpm in % at the following speeds			Supply voltage	Current/ power input [1]		Brake application time t_2 [2]	Brake release time	Brake moment of inertia	Noise level L_p with rated air gap	**Service capability of the brake** Lifetime of brake lining L	Air gap adjustment required after braking energy L_N
			1500 rpm	3000 rpm	Max. speed									
		Nm	%	%	%	V	A	W	ms	ms	kgm^2	dB(A)	Nm · 10^6	Nm · 10^6
80	**2LM8 010-3NA10**	10	85	78	65	AC 230	0.12	25	26	70	0.000045	75	270	29
	2LM8 010-3NA60					AC 400	0.14							
	2LM8 010-3NA80					DC 24	1.04							
90	**2LM8 020-4NA10**	20	83	76	66	AC 230	0.15	32	37	90	0.00016	75	740	79
	2LM8 020-4NA60					AC 400	0.17							
	2LM8 020-4NA80					DC 24	1.25							
100	**2LM8 040-5NA10**	40	81	74	66	AC 230	0.2	40	43	140	0.00036	80	1350	115
	2LM8 040-5NA60					AC 400	0.22							
	2LM8 040-5NA80					DC 24	1.67							
112	**2LM8 060-6NA10**	60	80	73	65	AC 230	0.25	53	60	210	0.00063	77	1600	215
	2LM8 060-6NA60					AC 400	0.28							
	2LM8 060-6NA80					DC 24	2.1							
132	**2LM8 100-7NA10**	100	79	72	65	AC 230	0.27	55	50	270	0.0015	77	2450	325
	2LM8 100-7NA60					AC 400	0.31							
	2LM8 100-7NA80					DC 24	2.3							
160	**2LM8 260-8NA10**	260	75	68	65	AC 230	0.5	100	165	340	0.0073	79	7300	935
	2LM8 260-8NA60					AC 400	0.47							
	2LM8 260-8NA80					DC 24	4.2							
180	**2LM8 315-0NA10**	315	75	68	65	AC 230	0.5	100	152	410	0.0073	79	5500	470
	2LM8 315-0NA60					AC 400	0.56							
	2LM8 315-0NA80					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
	2LM8 400-0NA60					AC 400	0.61							
	2LM8 400-0NA80					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 cm^3/kWh.

Maximum admissible speeds

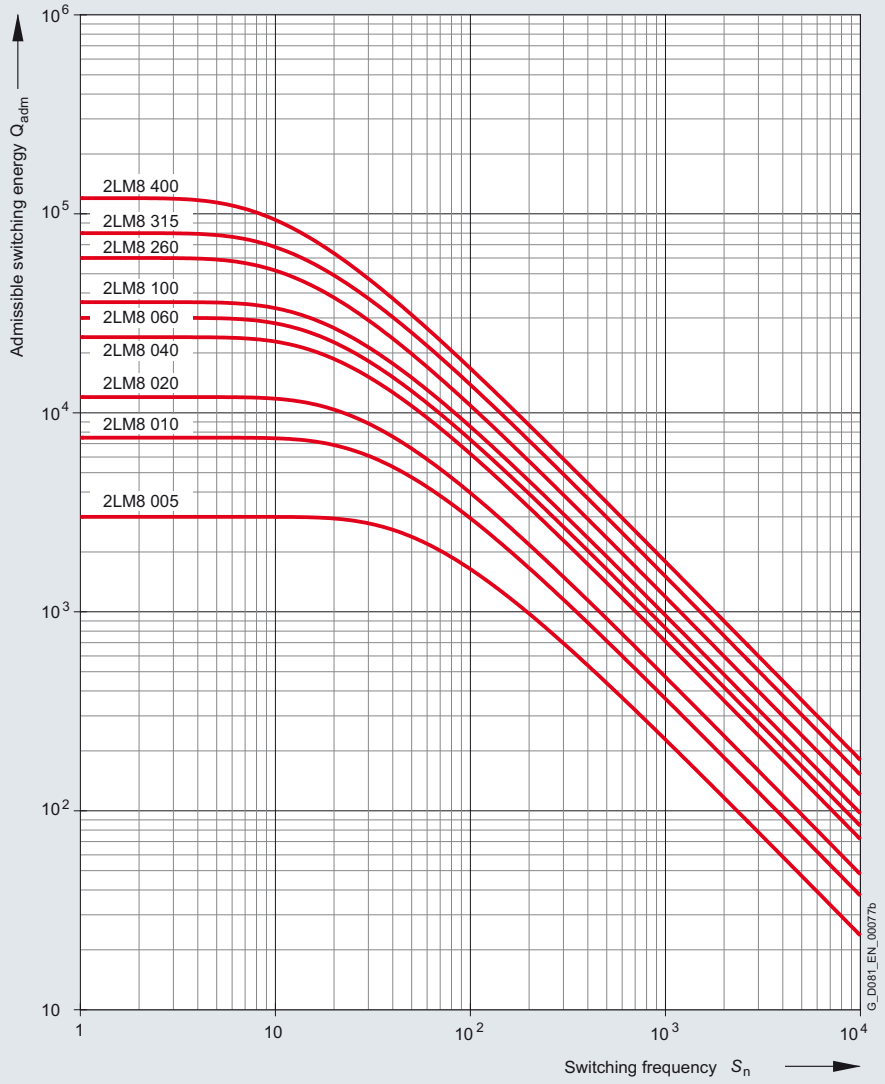
The maximum admissible speeds from which emergency stops can be made are listed in the next table. These speeds should be considered as recommended values and must be checked under actual operating conditions.

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.

Overview (continued)



For motor frame size	Brake type	Maximum admissible speeds: 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	Changing the braking torque: Reduction per notch	Dim. "O1"	Min. braking torque	Readjusting the air gap: Rated air gap $S_{Gap\ rated}$	Maximum air gap $S_{Gap\ max.}$	Min. rotor thickness $h_{min.}$
		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

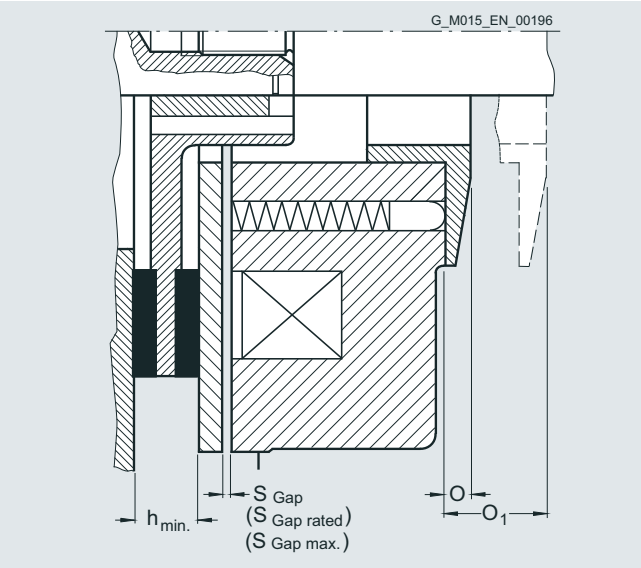
Overview (continued)

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

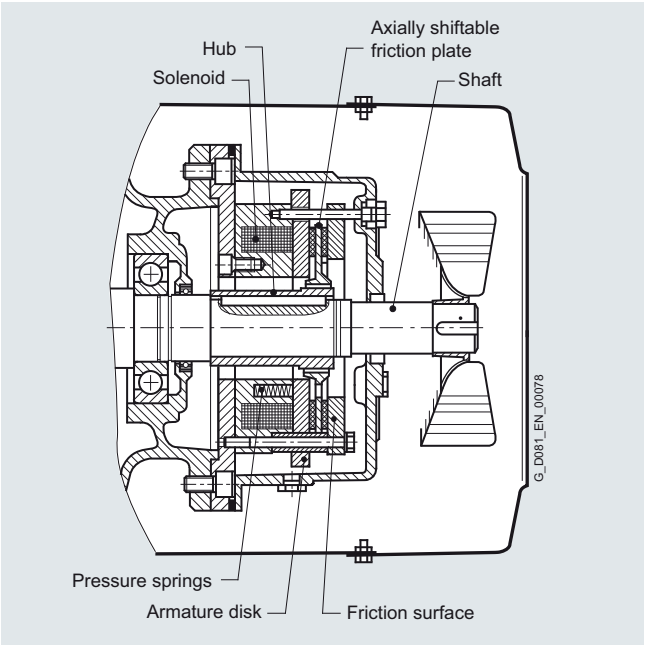
This brake is the standard brake for 1LE motors in frame sizes 250 to 315. For frame sizes 180 to 225, apart from the standard brake 2LM8, KFB brakes can also be supplied. Special brake selections are available on request.

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.



The motors have a rating plate that indicates the brake data on the opposite side to the motor rating plate.

Other characteristics of the KFB brake

- High IP65 degree of protection
- 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.

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
Output 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
Current 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	9.62	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:

a.) The application time of the brake t_2

b.) 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 kgm^2
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.

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

a.) 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 m^2

b.) The braking energy in Nm against a load torque

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

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

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}, 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_{adm}:

$$N = \frac{L_{rated}}{Q_{adm}}$$

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

[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 (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 connection 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

The motors are equipped with an additional connection box on the side of the main connection box that is used specifically for connection of 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

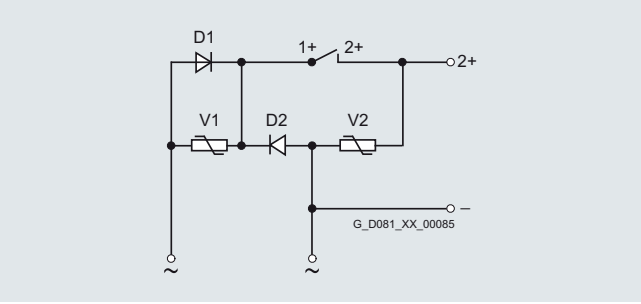
The brake can be released manually with screws as standard. Mechanical manual release with a lever can be ordered with order code **F50**.

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.

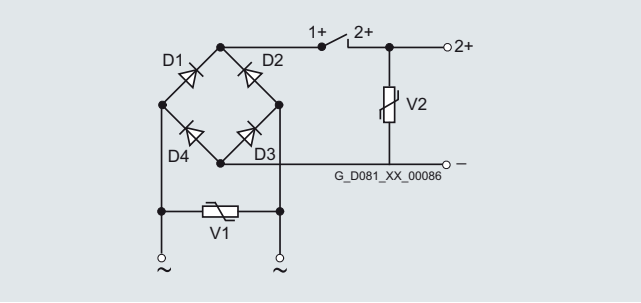
Overview (continued)

Bridge rectifier / half-wave rectifier

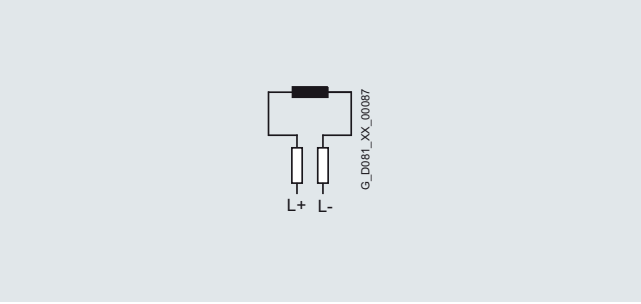
Brakes are connected through a standard bridge or half-wave rectifier or directly to the 2LM8 brake. See the circuit diagrams below.



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 ΔI. For an explanation of the additional dimensions and weights, see "Technology", "Dimensions and weights" from Page 1/69 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 1/34).

When the rotary pulse encoder is mounted, the length of the motor increases by ΔI. For an explanation of the additional dimensions and weights, see "Technology", "Dimensions and weights" from Page 1/69 onwards. 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 °C available on request.

Technical specifications of the rotary pulse encoder Supply voltage U_B	**1XP8 012-10** (HTL version) +10 V to +30 V	**1XP8 012-20** (TTL version) 5 V ±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	$U_{High} = U_B - 2.5$ V $U_{Low} = 1.6$ V	$U_{High} > 2.5$ V $U_{Low} < 0.5$ V
Edge interval	≥ 0.43 µs	≥ 0.43 µs
Sampling rate	≤ 300 kHz	≤ 300 kHz
Maximum speed	6000 rpm	6000 rpm
Transport/storage temperature range	–30 to +80 °C	–30 to +80 °C
Operating temperature range flange socket or fixed cable	–40 to +100 °C	–40 to +100 °C
Operating temperature range flexible cable	–10 to +100 °C	–10 to +100 °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	CSA, UL
Weight	0.3 kg	0.3 kg

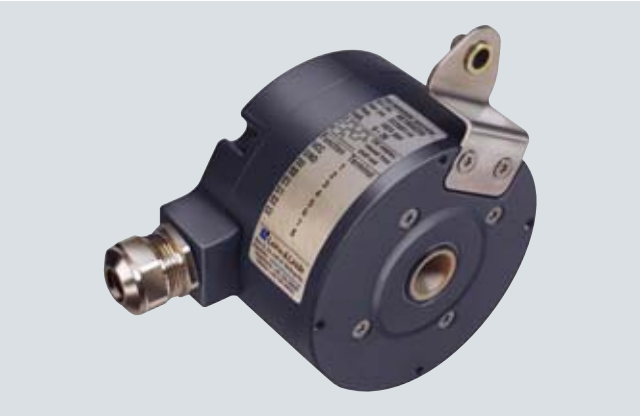
Special technology

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 orders codes **F70** (mounting of separately driven fan), **F01** (mounting of brake) 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 ΔI 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 1/69 onwards.

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.

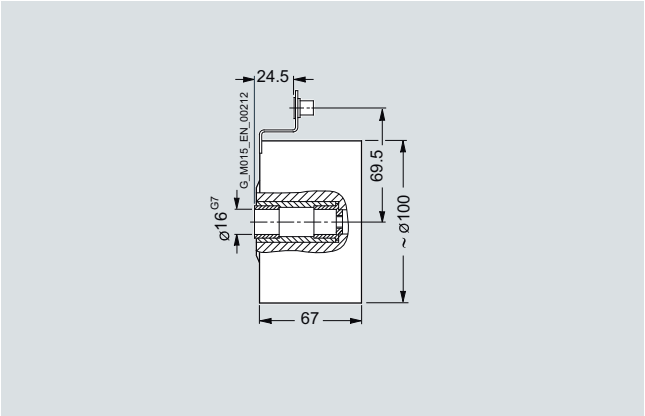
The LL 861 900 220 rotary pulse encoder can be supplied already mounted.
Order code **G04**

*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 1/34). 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 (0) 73 61-78093-0
Fax +49 (0) 73 61-78093-11

http://www.leinelinde.com
e-mail: info@leinelinde.se



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 °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° ±25° el.
Output amplitude	U_{High} > 20 V U_{Low} < 2.5 V
Mark space ratio	1:1 ±10 %
Edge steepness	50 V/µs (without load)
Maximum frequency	100 kHz for 350 m cable
Maximum speed	4000 rpm
Temperature range	–20 to +80 °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 x 1.5 radial
Weight	Approx. 1.3 kg

Overview (continued)

HOG9 D 1024 I rotary pulse encoder

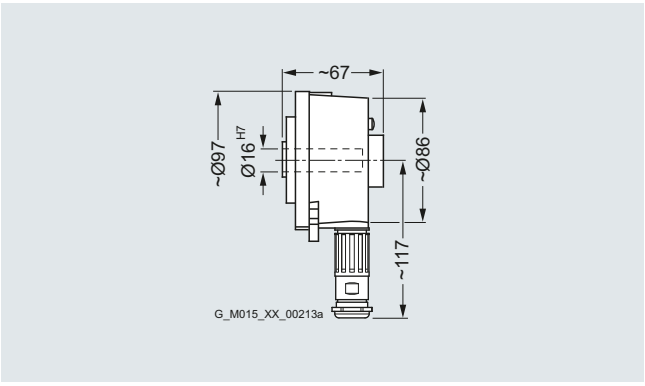
The encoder is fitted with insulated bearings.

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 1/34). The rotary pulse encoder is not part of the scope of supply in this case.*

Manufacturer:
Baumer Hübner GmbH
Planufer 92b
10967 Berlin
Tel. +49 (0)30-6 90 03-0
Fax +49 (0)30-6 90 03-1 04

http://www.baumerhuebner.com
e-mail: info@baumerhuebner.com



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 °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° ±20 %
Output amplitude	$U_{High} \geq U_B - 3.5$ V $U_{Low} \leq 1.5$ V
Mark space ratio	1:1 ±20 %
Edge steepness	10 V/µs
Maximum frequency	120 kHz
Maximum speed	7000 rpm
Temperature range	–30 to +100 °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

Special technology

1

Overview (continued)

HOG10 D 1024 I rotary pulse encoder

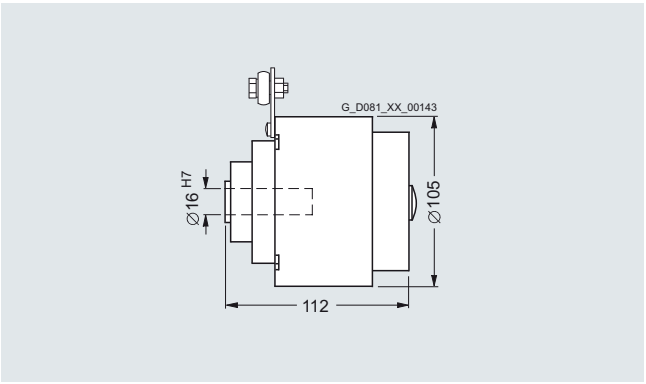
This encoder is extremely rugged and is therefore suitable for difficult operating conditions. It is fitted with insulated bearings.

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 1/34). The rotary pulse encoder is not part of the scope of supply in this case.*

Manufacturer:
Baumer Hübner GmbH
Planufer 92b
10967 Berlin
Tel. +49 (0)30-6 90 03-0
Fax +49 (0)30-6 90 03-1 04

http://www.baumerhuebner.com
e-mail: info@baumerhuebner.com



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 °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° ±20 %
Output amplitude	$U_{High} \geq U_B - 3.5$ V $U_{Low} \leq 1.5$ V
Mark space ratio	1:1 ±20 %
Edge steepness	10V/µs
Maximum frequency	120 kHz
Maximum speed	7000 rpm
Temperature range	–40 to +100 °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**]

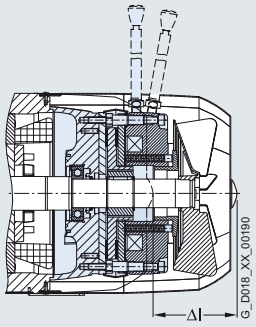


Fig. 2 Rotary pulse encoder (on cover)
Order code **G01/G02/G04/G05/G06**
[protective cover as standard]

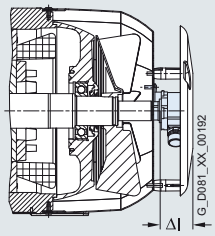


Fig. 3 Brake and rotary pulse encoder (on cover)
Order code **F01**
+ G01/G02/G04/G05/G06
[optionally with manual release,
order code **F50**;
protective cover as standard]

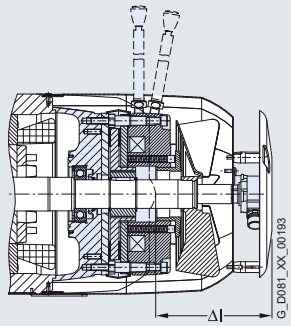


Fig. 4 Separately driven fan
Order code **F70**

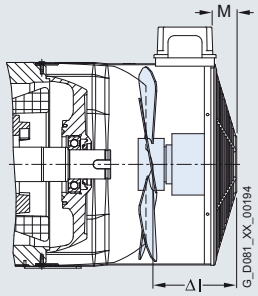


Fig. 5 Brake and separately driven fan
Order code **F01 + F70**
[optionally with manual release,
order code **F50**]

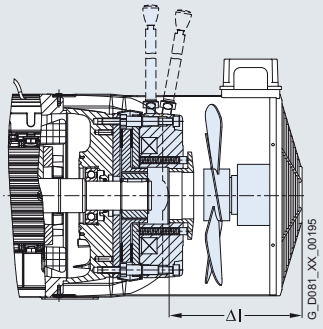
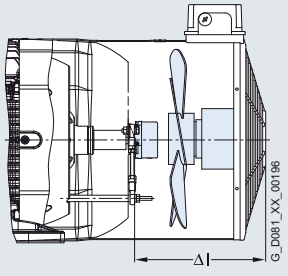


Fig. 6 Rotary pulse encoder (under cover) and separately driven fan
Order code **F70**
+ G01/G02/G04/G05/G06



Dimensions ΔI and weights, see from Page 1/71.

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**]

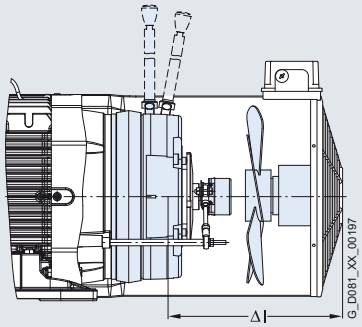


Fig. 8 Standard protective cover for separately driven fan
Order code **H00**

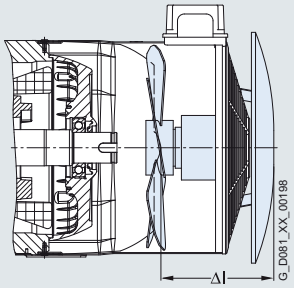


Fig. 9 Prepared for mountings, center hole only (for brake order code **F01** and/or encoder order code **G01/G02/G04/G05/G06**)
Order code **G40**

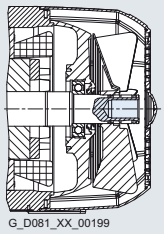
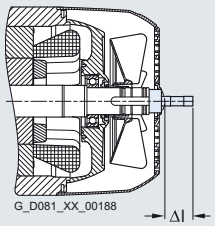


Fig. 10 Prepared for mountings with shaft D12/D16
Order code **G41**/**G42**



Dimensions ΔI and weights, see from Page 1/71.

Overview (continued)

	Assignment									
	Fig. 1		**Fig. 2**							
Frame size	Brake		Rotary pulse encoder including protective cover							
			1XP8 012		**LL 861 900 220**		**HOG9 D 1024 I**		**HOG10 D 1024 I**	
	Order code		Order codes		Order code		Order code		Order code	
	F01		**G01, G02**		**G04**		**G05**		**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										
100	81	5.9	49	0.9	76	1.9	76	1.5	119	2.2
112	88	7.8	49	0.8	76	1.9	76	1.5	119	2.2
132	114	11.9	51.5	1.3	78.5	2.4	78.5	2	121.5	2.7
160	130	30.7	50	1.5	77	2.7	77	2.3	120	3
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

	Assignment										
	Fig. 3								**Fig. 4**		
Frame size	Brake and rotary pulse encoder (on cover)								Separately driven fan		
	1XP8 012		**LL 861 900 220**		**HOG9 D 1024 I**		**HOG10 D 1024 I**				
	Order codes		Order codes		Order codes		Order codes		Order code		
	F01		**F01**		**F01**		**F01**		**F70**		
	+ G01/G02		**+ G04**		**+ G05**		**+ G06**				
	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	mm	kg
1LE1											
100	130	6.8	157	7.8	157	7.4	200	8.1	86.5	30	2.4
112	137	8.6	164	9.7	164	9.3	207	10	81.5	30	2.6
132	165.5	13.2	192.5	14.3	192.5	13.9	235.5	14.6	116	40	3.8
160	180	32.2	207	33.4	207	33	250	33.7	135.5	40	6.5
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

	Assignment									
	Fig. 5		**Fig. 6**							
Frame size	Brake and separately driven fan		Separately driven fan and rotary pulse encoder (under cover)							
	Order codes		Order codes		Order codes		Order codes		Order codes	
	F01 + F70		**F70**		**F70**		**F70**		**F70**	
			+ G01/G02		**+ G04**		**+ G05**		**+ 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										
100	161.5	8.3	161.5	3.3	161.5	4.3	161.5	3.9	196.5	4.6
112	156.5	10.4	156.5	3.4	156.5	4.5	156.5	4.1	191.5	4.8
132	186	15.7	186	5.1	186	6.2	186	5.8	241	6.5
160	205.5	37.2	205.5	8	205.5	9.2	205.5	8.8	270.5	9.5
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

Special technology

Overview (continued)

Frame size	Assignment Fig. 7 Brake, separately driven fan and rotary pulse encoder (under cover) Order codes **F01 + F70** **+ G01/G02**		Order codes **F01 + F70** **+ G04**		Order codes **F01 + F70** **+ G05**		Order codes **F01 + F70** **+ G06**		Fig. 8 Protective cover for separately driven fan Order code **H00**		
	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
1LE1											
100	196.5	9.2	196.5	10.2	196.5	9.8	246.5	10.5	30	1.4	210
112	191.5	11.2	191.5	12.3	191.5	11.9	241.5	12.6	33	1.8	249
132	241	17	241	18.1	241	17.7	291	18.4	24	2.4	300
160	270.5	38.7	270.5	39.9	270.5	39.5	320.5	40.2	31	3	338
225	393	85.3	196.5	10.2	196.5	9.8	246.5	10.5	30	1.4	210
250	410	108.3	191.5	12.3	191.5	11.9	241.5	12.6	33	1.8	249
280	371	146.3	241	18.1	241	17.7	291	18.4	24	2.4	300
315	370	291.3	270.5	39.9	270.5	39.5	320.5	40.2	31	3	338

Frame size	Assignment Fig. 9 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**		Fig. 10 Prepared for mountings with shaft D12/D16 order code **G41**/**G42** Order code **G41**		Order code **G42**	
	Δl	Weight approx.	Δl	Weight approx.	Δl	Weight approx.
	mm	kg	mm	kg	mm	kg
1LE1						
100	0	0	11.3	0.15	47.3	0.2
112	0	0	7.5	0.15	47.3	0.2
132	0	0.1	10.3	0.3	50.3	0.4
160	0	0.2	5.6	0.4	45.6	0.7

SIMOTICS GP/SD 1LE1/1PC1 Standard Motors

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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 (High Efficiency) 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. 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 connection 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:	0.55 ... 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:	• 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:	0.75 ... 200 kW for all commonly used voltages
Frame sizes and types of construction:	100 ... 315 in all common types of construction
Rated speed:	750 ... 3600 rpm
Number of poles:	2, 4, 6, 8
Efficiency classes:	• 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)

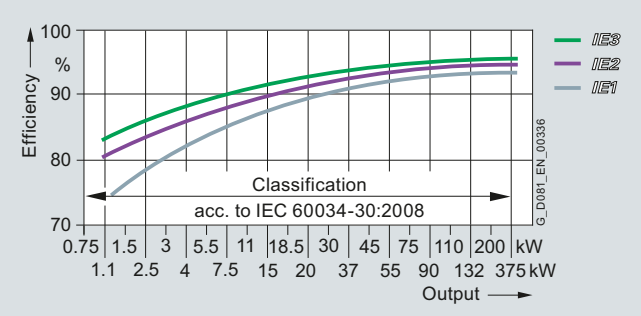
High efficiency energy-saving motors for a positive energy balance

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).

Minimum efficiency according to EU Directive 640/2009:

The EU Directive defines the minimum efficiency for 2, 4 and 6-pole motors in the output range from 0.75 to 375 kW. The efficiency levels are grouped into three efficiency classes (IE = International Efficiency):

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



IE1 to IE3 efficiencies, 4-pole 50 Hz

At a glance: EU Directive No. 640/2009 based on IEC 60034-30

- The EU Directive is in force in all countries of the European Union. Losses are determined and therefore the efficiency is determined in accordance with IEC 60034-2-1:2007
- The following are specified: 2, 4, 6-pole motors and 50/60 Hz squirrel-cage motors from 0.75 to 375 kW, for all voltages below 1000 V

For further information, see:

www.siemens.com/international-efficiency

Efficiency requirements according to EISA

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

With effect from December 2010, EISA has extended the legal minimum efficiency requirements and 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.

Exception/expansion: motors with the following parameters must comply with the NEMA Energy Efficient Level (NEMA MG Table 12-11):

- Footless motors (IM B5 and other flange types)
- 201 to 500 hp
- All voltages < 600 V except 230 V and 460 V
- 8-pole
- NEMA design C (increased starting torque)

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

The EISA act lays down that the nominal efficiency at full load and a "CC" number (Compliance Certification) must be included on the rating plate. The "CC" number is issued by the US Department of Energy (DOE). The following information is stamped on the rating plate of EISA motors which must be marked by law:

- Nominal efficiency
- Design letter
- Code letter
- CONT
- CC No. CC 032A (Siemens) and NEMA MG1-12

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 shaft height. These compact motors are also optimized for efficiency. They are offered in IE1 and IE2 and therefore reduce the 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 · October 2012 "0.2 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 connection boxes, integral eyebolts, screw-on feet and reinforced bearing plates ensure this.

Greater output

For the same shaft height, 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. Connection 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.

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

Particularly user friendly

The terminal box introduced for frame sizes 100 to 160 has proved its worth and will be consistently implemented throughout the 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

Benefits (continued)

SIMOTICS SD for severe duty applications: Motors with cast-iron housing

The right motor for various challenges

The following lines are available for severe duty applications:

- 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
- "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 shaft height 280 upwards)	63
Relubrication	Optional (standard from shaft height 280 upwards)	Standard from shaft height 160 upwards (optional for shaft height 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 You can establish the connection type used from the Article No. supplements for the required motor.
Number of poles	2, 4, 6, 8
Frame sizes	80 M ... 315 L
Rated output	0.55 ... 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: • 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: • IE1 (Standard Efficiency) • IE2 (High Efficiency) Forced-air cooled 1LE1 motors without external fan and fan cover with: • IE1 (Standard Efficiency) • IE2 (High Efficiency) Naturally cooled 1PC1 motors without external fan and fan cover with: • 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	9.9 ... 1546 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)	• 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)	• 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	• Cast housing feet, screwed-on feet available as an option and retrofittable • Connection box obliquely partitioned and rotatable through 4 × 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.

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 $U_{rated} \leq 500$ V in motor mode. Compliance with the following limit values is essential (voltage values are peak values): $U_{phase\text{-}to\text{-}phase} \leq 1500$ V, $U_{phase\text{-}to\text{-}ground} \leq 1100$ V, voltage rise times of $t_s > 0.1$ µs. When operating 1LE1 motors at higher line voltages, on converters with a controlled input (e.g. AFE, ALM) or for converter-fed operation with the option of generator mode, the motors must have increased 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

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 insulation system consists of high-quality enamel wires and insulating sheeting in conjunction with solvent-free resin impregnation.

The motors specially developed for operation on a frequency converter with special insulation are converter-compatible at 500 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.

Motor protection

A motor protection function can be implemented using the I^2t 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 the 1LE motors is designed such that converter-fed operation is possible in motor mode at voltages up to 500 V +10 %. This also applies for operation with a pulse-controlled AC converter with voltage rise times $t_s > 0.1$ µs at the motor terminals.

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

IE2

Selection and ordering data

P_{rated}, 50 Hz	P_{rated}, 60 Hz [1]	Frame size	Operating values at rated output: 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}/T_{rated}, 50 Hz	I_{LR}/I_{rated}, 50 Hz	T_B/T_{rated}, 50 Hz	L_{pfA}, 50 Hz	L_{WA}, 50 Hz	Aluminum series 1LE1001 – *IE2 version in accordance with IEC 60034-30* Article No.	$m_{IM\ B3}$	J	Torque class
kW	kW	FS	rpm	Nm		%	%	%		A				dB(A)	dB(A)		kg	kgm²	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 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	0.00080	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 L [2]												
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	B	–
50 Hz	400 VΔ/690 VY	60 Hz [1]	460 VΔ		2, 4	80 M ... 90 L	1LE1001-0D ... -0E	**Standard**	3	4	B	–
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 × 90° rotatable connection 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	2, 4	100 L ... 160 L	1LE1001-1A ... -1D	Without add. charge	2	7		–
50 Hz	500 VΔ			Any	2, 4	100 L ... 160 L	1LE1001-1A ... -1D	Without add. charge	4	0		–
Further voltages [1]				For additional charges, 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]		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 additional charges, 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 × 90° rotatable connection box							
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 additional charges, code letters and descriptions, see from Page 2/47					■	. . .

Connection box position	No. of poles	Frame size	Motor type	Version			Order code(s)
Connection box at top	2, 4	80 M ... 160 L	1LE1001-0D ... -1D	**Standard**		4	–
Further connection box positions	For additional charges, code numbers and descriptions, see from Page 2/49						

Special versions	No. of poles	Frame size	Motor type				Order code(s)
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 additional charges, order codes and descriptions, see from Page 2/51			1LE1001-. . . . ■-■■■■		-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.

IE2

Self-ventilated or forced-air cooled motors
Aluminum series 1LE1001

Selection and ordering data (continued)

P_{rated}, 50 Hz	P_{rated}, 60 Hz 1)	Frame size	Operating values at rated output: 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}/T_{rated}, 50 Hz	I_{LR}/I_{rated}, 50 Hz	T_B/T_{rated}, 50 Hz	L_{pfA}, 50 Hz	L_{WA}, 50 Hz	Aluminum series 1LE1001 – *IE2 version in accordance with IEC 60034-30* Article No.	$m_{IM\ B3}$	J	Torque class
kW	kW	FS	rpm	Nm		%	%	%		A				dB(A)	dB(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: 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)																			
0.37	**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	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	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	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	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	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	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	87.2	87.7	86.9	0.77	16.1	1.8	6.3	2.8	67	79	**1LE1001-1DC2■-■■■■**	77	0.075	16
11	**12.6**	**160 L**	975	108	IE2	88.7	89.5	89.4	0.80	22.5	1.7	6.2	2.7	67	79	**1LE1001-1DC4■-■■■■**	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	**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	–	86.2	86.9	86.0	0.69	9.7	1.8	4.3	2.0	63	75	**1LE1001-1DD2■-■■■■**	69	0.065	13
5.5	**6.3**	**160 M**	730	72	–	86.7	87.5	86.5	0.69	13.3	2.1	4.4	2.1	63	75	**1LE1001-1DD3■-■■■■**	82	0.083	13
7.5	**8.6**	**160 L**	730	98	–	86.9	88.2	88.1	0.72	17.3	1.9	4.5	2.1	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 L 2)												
50 Hz	230 VΔ/400 VY	60 Hz 1)	460 VY	PTC thermistor with 1 temp. sensor	6	80 M ... 90 L	1LE1001-0D ... -0E	**Standard**	**2**	**2**	**B**	–
50 Hz	400 VΔ/690 VY	60 Hz 1)	460 VΔ		6	80 M ... 90 L	1LE1001-0D ... -0E	**Standard**	**3**	**4**	**B**	–
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 × 90° rotatable connection 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 additional charges, 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, 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 additional charges, 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 × 90° rotatable connection 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 additional charges, code letters and descriptions, see from Page 2/47					■	. . .

Connection box position		No. of poles	Frame size	Motor type	Version		Order code(s)
Connection box at top		6, 8	80 M ... 160 L	1LE1001-0D ... -1D	**Standard**	**4**	–
Further connection box positions	For additional charges, code numbers and descriptions, see from Page 2/49						

Special versions		No. of poles	Frame size	Motor type		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 additional charges, order codes and descriptions, see from Page 2/51				**1LE1001-. . . . ■-■■■■-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.

Self-ventilated motors
Aluminum series 1LE1001 with increased output

IE2

2

Selection and ordering data

P_{rated}, 50 Hz	P_{rated}, 60 Hz 1)	Frame size	Operating values at rated output: 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}/T_{rated}, 50 Hz	I_{LR}/I_{rated}, 50 Hz	T_B/T_{rated}, 50 Hz	L_{pfA}, 50 Hz	L_{WA}, 50 Hz	**Aluminum series 1LE1001** – *IE2 version in accordance with IEC 60034-30 with increased output* Article No.	$m_{IM\ B3}$	J	Torque class
kW	kW	FS	rpm	Nm		%	%	%		A				dB(A)	dB(A)		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)																			
4	**4.55**	**100 L**	2905	13	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	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	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	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	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	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	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	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	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	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	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	89.7	90.6	90.5	0.81	30	1.9	6.5	2.9	67	79	**1LE1001-1DC6■-■■■■**	115	0.12	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	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 voltages 1)			For additional charges, 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	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 additional charges, 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 additional charges, code letters and descriptions, see from Page 2/47							**■**	. . .
Connection box position				No. of poles	Frame size	Motor type	Version				Order code(s)
Connection box at top				2, 4, 6	100 L ... 160 L	1LE1001-1A ... -1D	**Standard**				–
Further connection box positions			For additional charges, code numbers and descriptions, see from Page 2/49							**4**	
Special versions				No. of poles	Frame size	Motor type					Order code(s)
Options			For additional charges, order codes and descriptions, see from Page 2/51				**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.

IE2

Naturally cooled motors without external fan
Aluminum series 1PC1001

Selection and ordering data

P_{rated}, 50 Hz	P_{rated}, 60 Hz [1]	Frame size	Operating values at rated output: 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}/T_{rated}, 50 Hz	I_{LR}/I_{rated}, 50 Hz	T_B/T_{rated}, 50 Hz	L_{pfA}, 50 Hz	L_{WA}, 50 Hz	Aluminum series 1PC1001 – *IE2 version in accordance with IEC 60034-30* Article No.	$m_{IM\ B3}$	J	Torque class
kW	kW	FS	rpm	Nm		%	%	%		A				dB(A)	dB(A)		kg	kgm^2	CL
• 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.	–	–	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.	–	–	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.	–	–	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.	–	–	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.	–	–	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.	–	–	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.	–	–	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.	–	–	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.	–	–	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.	–	–	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.	–	–	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.	–	–	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.	–	–	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.	–	–	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.	–	–	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.	–	–	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.	–	–	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.	–	–	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.	–	–	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.	–	–	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.	–	–	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.	–	–	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.	–	–	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.	–	–	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.	–	–	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.	–	–	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.	–	–	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.	–	–	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.	–	–	1PC1001-1DD4 ■-■■■■	94	0.098	10

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	1PC1001-1A ... -1D	**Standard**	2	2		–
50 Hz	400 VΔ/690 VY	60 Hz [1]	460 VΔ	2, 4, 6, 8	100 L ... 160 L	1PC1001-1A ... -1D	**Standard**	3	4		–
50 Hz	500 VY			2, 4, 6, 8	100 L ... 160 L	1PC1001-1A ... -1D	Without add. charge	2	7		–
50 Hz	500 VΔ			2, 4, 6, 8	100 L ... 160 L	1PC1001-1A ... -1D	Without add. charge	4	0		–
Further voltages [1]			For additional charges, 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	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 additional charges, 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 additional charges, code letters and descriptions, see from Page 2/47								■ . . .
Connection box position				No. of poles	Frame size	Motor type	Version				Order code(s)
Connection box at top				2, 4, 6, 8	100 L ... 160 L	1PC1001-1A ... -1D	**Standard**				4 –
Further connection box positions			For additional charges, code numbers and descriptions, see from Page 2/49								
Special versions				No. of poles	Frame size	Motor type					Order code(s)
Options			For additional charges, order codes and descriptions, see from Page 2/51				**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

IE2

Selection and ordering data

P_{rated}, 50 Hz	P_{rated}, 60 Hz 1)	Frame size	Operating values at rated output: 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}/T_{rated}, 50 Hz	I_{LR}/I_{rated}, 50 Hz	T_B/T_{rated}, 50 Hz	L_{pfA}, 50 Hz	L_{WA}, 50 Hz	Cast-iron series 1LE1501 – *Basic Line* 1LE1601 – *Performance Line* *IE2 version in accordance with IEC 60034-30* Article No.	$m_{IM\ B3}$	J	Torque class
kW	kW	FS	rpm	Nm		%	%	%		A				dB(A)	dB(A)		kg	kgm²	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)																			
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	77	84	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	78	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	78	85	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	250 M	2970	177	IE2	93.2	93.3	92.4	0.89	96	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	0.87	133	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	2.4	7.1	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					
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			No. of poles	Frame size	Motor type	Version					Order code(s)
50 Hz	230 VΔ/400 VY	60 Hz 1)	2	100 L ... 315 L	1LE1■01-1A ... -3A	**Standard**	2	2			–
50 Hz	400 VΔ/690 VY	60 Hz 1)	2	100 L ... 315 L	1LE1■01-1A ... -3A	**Standard**	3	4			–
50 Hz	500 VY		2	100 L ... 315 L	1LE1■01-1A ... -3A	Without add. charge	2	7			–
50 Hz	500 VΔ		2	100 L ... 315 L	1LE1■01-1A ... -3A	Without add. charge	4	0			–
Further voltages 1)	For additional charges, 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	100 L ... 315 L	1LE1■01-1A ... -3A	**Standard**			A		–
With flange	IM B5 2)	2	100 L ... 315 M	1LE1■01-1A ... -3A	With additional charge			F		–
With standard flange	IM B14 2)	2	100 L ... 160 L	1LE1■01-1A ... -1D	With additional charge			K		–
Further types of construction	For additional charges, code letters and descriptions, see from Page 2/44							■		...

Motor protection	Line	No. of poles	Frame size	Motor type	Version					Order code(s)
Without	Only possible for **Basic Line**	2	100 L ... 315 L	1LE1501-1A ... -3A	**Standard**				A	–
PTC thermistor with 3 temperature sensors	**Basic Line**	2	100 L ... 315 L	1LE1501-1A ... -3A	With additional charge				B	–
	Performance Line	2	100 L ... 315 L	1LE1601-1A ... -3A	**Standard**				B	–
Further motor protection	For additional charges, code letters and descriptions, see from Page 2/48								■	...

Connection box position		No. of poles	Frame size	Motor type	Version					Order code(s)
Connection box at top		2	100 L ... 315 L	1LE1■01-1A ... -3A	**Standard**				4	–
Further connection box positions	For additional charges, code numbers and descriptions, see from Page 2/50									

Special Versions		No. of poles	Frame size	Motor type		Order code(s)
Options	For additional charges, order codes and descriptions, see from Page 2/56			1LE1■01-.... ■-■■■■	-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 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.

IE2

Self-ventilated motors
Cast-iron series 1LE1501/1LE1601 Basic/Performance Line

Selection and ordering data (continued)

P_{rated}, 50 Hz	P_{rated}, 60 Hz 1)	Frame size	Operating values at rated output: 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}/T_{rated}, 50 Hz	I_{LR}/I_{rated}, 50 Hz	T_B/T_{rated}, 50 Hz	L_{pfA}, 50 Hz	L_{WA}, 50 Hz	Cast-iron series 1LE1501 – Basic Line 1LE1601 – Performance Line IE2 version in accordance with IEC 60034-30 Article No.	$m_{IM\ B3}$	J	Torque class
kW	kW	FS	rpm	Nm		%	%	%		A				dB(A)	dB(A)		kg	kgm²	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)																			
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	1LE1 ■ 01-1AB4 ■-■■■■	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	1LE1 ■ 01-1AB5 ■-■■■■	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	1LE1 ■ 01-1BB2 ■-■■■■	46	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	1LE1 ■ 01-1CB0 ■-■■■■	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	1LE1 ■ 01-1CB2 ■-■■■■	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	1LE1 ■ 01-1DB2 ■-■■■■	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	1LE1 ■ 01-1DB4 ■-■■■■	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	61	74	1LE1 ■ 01-1EB2 ■-■■■■	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	69	76	1LE1 ■ 01-1EB4 ■-■■■■	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	70	77	1LE1 ■ 01-2AB5 ■-■■■■	230	0.20	16
37	42.5	225 S	1470	240	IE2	92.7	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	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	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	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	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	0.86	195	2.7	7.4	3.0	72	86	1LE1 ■ 01-3AB0 ■-■■■■	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	75	89	1LE1 ■ 01-3AB2 ■-■■■■	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	76	91	1LE1 ■ 01-3AB4 ■-■■■■	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	77	92	1LE1 ■ 01-3AB5 ■-■■■■	1140	3.5	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			No. of poles	Frame size	Motor type	Version			Order code(s)
50 Hz	230 VΔ/400 VY	60 Hz 1)	4	100 L ... 315 L	1LE1■01-1A ... -3A	**Standard**	2	2	–
50 Hz	400 VΔ/690 VY	60 Hz 1)	4	100 L ... 315 L	1LE1■01-1A ... -3A	**Standard**	3	4	–
50 Hz	500 VY		4	100 L ... 315 L	1LE1■01-1A ... -3A	Without add. charge	2	7	–
50 Hz	500 VΔ		4	100 L ... 315 L	1LE1■01-1A ... -3A	Without add. charge	4	0	–
Further voltages 1)		For additional charges, 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	100 L ... 315 L	1LE1■01-1A ... -3A	**Standard**	A	–
With flange	IM B5 2)		4	100 L ... 315 M	1LE1■01-1A ... -3A	With additional charge	F	–
With standard flange	IM B14 2)		4	100 L ... 160 L	1LE1■01-1A ... -1D	With additional charge	K	–
Further types of construction		For additional charges, code letters and descriptions, see from Page 2/44					■	. . .

Motor protection	Line	No. of poles	Frame size	Motor type	Version		Order code(s)
Without	Only possible for **Basic Line**	4	100 L ... 315 L	1LE1501-1A ... -3A	**Standard**	A	–
PTC thermistor with 3 temperature sensors	**Basic Line**	4	100 L ... 315 L	1LE1501-1A ... -3A	With additional charge	B	–
	Performance Line	4	100 L ... 315 L	1LE1601-1A ... -3A	**Standard**	B	–
Further motor protection	For additional charges, code letters and descriptions, see from Page 2/48					■	. . .

Connection box position	No. of poles	Frame size	Motor type	Version		Order code(s)
Connection box at top	4	100 L ... 315 L	1LE1■01-1A ... -3A	**Standard**	4	–
Further connection box positions	For additional charges, code numbers and descriptions, see from Page 2/50					

Special versions	No. of poles	Frame size	Motor type		Order code(s)
Options	For additional charges, order codes and descriptions, see from Page 2/56		1LE1■01-. . . . ■-■■■■	-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 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

IE2

Selection and ordering data (continued)

Operating values at rated output																Cast-iron series **1LE1501** – *Basic Line* **1LE1601** – *Performance Line* *IE2 version in accordance with IEC 60034-30* Article No.	$m_{IM\ B3}$	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	cos-φ_{rated}, 50 Hz, 4/4	I_{rated}, 50 Hz, 400 V	T_{LR}/T_{rated}, 50 Hz	I_{LR}/I_{rated}, 50 Hz	T_B/T_{rated}, 50 Hz	L_{pfA}, 50 Hz	L_{WA}, 50 Hz				
kW	kW	FS	rpm	Nm		%	%	%		A				dB(A)	dB(A)		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)**																			
6-pole: 1000 rpm at 50 Hz, 1200 rpm at 60 Hz 1)																			
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	87.7	86.9	0.77	16.1	1.8	6.3	2.8	67	79	**1LE1 ■ 01-1DC2 ■-■■■■**	106	0.075	16
11	**12.6**	**160 L**	975	108	IE2	88.7	89.5	89.4	0.80	22.5	1.7	6.2	2.7	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	63	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	66	73	**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	65	72	**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	6.1	2.8	65	78	**1LE1 ■ 01-2BC2 ■-■■■■**	285	0.58	16
37	**44.5**	**250 M**	982	360	IE2	92.2	93.1	93.1	0.83	70	2.8	6.0	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 ■-■■■■**	920	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			No. of poles	Frame size	Motor type	Version			Order code(s)
50 Hz	230 VΔ/400 VY	60 Hz 1)	6	100 L ... 315 L	1LE1■01-1A ... -3A	**Standard**	**2**	**2**	–
50 Hz	400 VΔ/690 VY	60 Hz 1)	6	100 L ... 315 L	1LE1■01-1A ... -3A	**Standard**	**3**	**4**	–
50 Hz	500 VY		6	100 L ... 315 L	1LE1■01-1A ... -3A	Without add. charge	**2**	**7**	–
50 Hz	500 VΔ		6	100 L ... 315 L	1LE1■01-1A ... -3A	Without add. charge	**4**	**0**	–
Further voltages 1)	For additional charges, 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)	6	100 L ... 315 L	1LE1■01-1A ... -3A	**Standard**	**A**	–
With flange	IM B5 2)	6	100 L ... 315 M	1LE1■01-1A ... -3A	With additional charge	**F**	–
With standard flange	IM B14 2)	6	100 L ... 160 L	1LE1■01-1A ... -1D	With additional charge	**K**	–
Further types of construction	For additional charges, code letters and descriptions, see from Page 2/44					■	...

Motor protection	Line	No. of poles	Frame size	Motor type	Version		Order code(s)
Without	Only possible for **Basic Line**	6	100 L ... 315 L	1LE1501-1A ... -3A	**Standard**	**A**	–
PTC thermistor with 3 temperature sensors	**Basic Line**	6	100 L ... 315 L	1LE1501-1A ... -3A	With additional charge	**B**	–
	Performance Line	6	100 L ... 315 L	1LE1601-1A ... -3A	**Standard**	**B**	–
Further motor protection	For additional charges, code letters and descriptions, see from Page 2/48					■	...

Connection box position		No. of poles	Frame size	Motor type	Version		Order code(s)
Connection box at top		6	100 L ... 315 L	1LE1■01-1A ... -3A	**Standard**	**4**	–
Further connection box positions	For additional charges, code numbers and descriptions, see from Page 2/50						

Special versions		No. of poles	Frame size	Motor type		Order code(s)
Options	For additional charges, order codes and descriptions, see from Page 2/56			**1LE1■01-....■-■■■■-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 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.

IE2

Self-ventilated motors
Cast-iron series 1LE1501/1LE1601 Basic/Performance Line

Selection and ordering data (continued)

P_{rated}, 50 Hz	P_{rated}, 60 Hz 1)	Frame size	Operating values at rated output: 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}/T_{rated}, 50 Hz	I_{LR}/I_{rated}, 50 Hz	T_B/T_{rated}, 50 Hz	L_{pfA}, 50 Hz	L_{WA}, 50 Hz	Cast-iron series 1LE1501 – Basic Line, 1LE1601 – Performance Line, IE2 version in accordance with IEC 60034-30, Article No.	$m_{IM\ B3}$	J	Torque class
kW	kW	FS	rpm	Nm		%	%	%		A				dB(A)	dB(A)	▲ New	kg	kgm²	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)																			
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	–	86.2	86.9	86.0	0.69	9.7	1.8	4.3	2.0	63	75	1LE1 ■ 01-1DD2 ■-■■■■	98	0.065	13
5.5	6.3	160 M	730	72	–	86.7	87.5	86.5	0.69	13.3	2.1	4.4	2.1	63	75	1LE1 ■ 01-1DD3 ■-■■■■	111	0.083	13
7.5	8.6	160 L	730	98	–	86.9	88.2	88.1	0.72	17.3	1.9	4.5	2.1	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	72	80	▲ 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	58	65	▲ 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	2.2	5.8	2.6	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	1420	–	94.2	95.0	95.1	0.82	205	2.4	6.4	2.8	74	88	▲ 1LE1 ■ 01-3AD5 ■-■■■■	980	3.90	13
132	158	315 L	740	1703	–	94.4	94.8	94.4	0.81	250	2.7	7.1	3.1	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			No. of poles	Frame size	Motor type	Version			Order code(s)
50 Hz	230 VΔ/400 VY	60 Hz 1)	8	100 L ... 315 L	1LE1■01-1A ... -3A	**Standard**	2	2	–
50 Hz	400 VΔ/690 VY	60 Hz 1)	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)	For additional charges, 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)	8	100 L ... 315 L	1LE1■01-1A ... -3A	**Standard**	A	–
With flange	IM B5 2)	8	100 L ... 315 M	1LE1■01-1A ... -3A	With additional charge	F	–
With standard flange	IM B14 2)	8	100 L ... 160 L	1LE1■01-1A ... -1D	With additional charge	K	–
Further types of construction	For additional charges, code letters and descriptions, see from Page 2/44					■	. . .

Motor protection	Line	No. of poles	Frame size	Motor type	Version		Order code(s)
Without	Only possible for **Basic Line**	8	100 L ... 315 L	1LE1501-1A ... -3A	**Standard**	A	–
PTC thermistor with 3 temperature sensors	**Basic Line**	8	100 L ... 315 L	1LE1501-1A ... -3A	With additional charge	B	–
	Performance Line	8	100 L ... 315 L	1LE1601-1A ... -3A	**Standard**	B	–
Further motor protection	For additional charges, code letters and descriptions, see from Page 2/48					■	. . .

Connection box position	No. of poles	Frame size	Motor type	Version		Order code(s)
Connection box at top	8	100 L ... 315 L	1LE1■01-1A ... -3A	**Standard**	4	–
Further connection box positions	For additional charges, code numbers and descriptions, see from Page 2/50					

Special versions	No. of poles	Frame size	Motor type	Order code(s)
Options	For additional charges, order codes and descriptions, see from Page 2/56		1LE1■01-. . . . ■-■■■■-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 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

IE2

Selection and ordering data

P_{rated}, 50 Hz	P_{rated}, 60 Hz 1)	Frame size	Operating values at rated output: 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}/T_{rated}, 50 Hz	I_{LR}/I_{rated}, 50 Hz	T_B/T_{rated}, 50 Hz	L_{pfA}, 50 Hz	L_{WA}, 50 Hz	Cast-iron series 1LE1501 – Basic Line 1LE1601 – Performance Line IE2 version in accordance with IEC 60034-30 with increased output Article No.	$m_{IM\ B3}$	J	Torque class
kW	kW	FS	rpm	Nm		%	%	%		A				dB(A)	dB(A)	▲ New	kg	kgm²	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)																			
4	4.55	100 L	2905	13	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	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	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	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	92.0	92.5	92.2	0.89	53	2.3	7.8	3.4	76	83	▲ 1LE1■01-1EA6■-■■■■	180	0.09	16
45	51	200 L	2950	146	IE2	92.9	93.4	93.1	0.87	81	2.5	7.1	3.2	77	84	▲ 1LE1■01-2AA6■-■■■■	245	0.18	16
55	62	225 M	2960	177	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	93.8	93.6	92.6	0.85	136	2.2	7.0	3.3	75	89	▲ 1LE1■01-2CA6■-■■■■	390	0.46	13
110	123	280 M	2975	353	IE2	94.3	94.5	94.1	0.90	187	2.5	7.4	3.1	80	91	▲ 1LE1■01-2DA6■-■■■■	620	1.20	16
4-pole: 1500 rpm at 50 Hz, 1800 rpm at 60 Hz 1)																			
4	4.55	100 L	1460	26	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	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	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	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	92.3	93.0	92.9	0.81	58	2.5	7.3	3.3	70	77	▲ 1LE1■01-1EB6■-■■■■	185	0.16	16
37	42.5	200 L	1470	240	IE2	92.7	93.6	93.8	0.84	69	2.4	7.0	3.0	68	75	▲ 1LE1■01-2AB6■-■■■■	240	0.25	16
55	63	225 M	1475	356	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	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	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	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			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 ... -1D	**Standard**	2	2		–
50 Hz	400 VΔ/690 VY	60 Hz 1) 460 VΔ	2, 4	100 L ... 280 M	1LE1■01-1A ... -1D	**Standard**	3	4		–
50 Hz	500 VY		2, 4	100 L ... 280 M	1LE1■01-1A ... -1D	Without add. charge	2	7		–
50 Hz	500 VΔ		2, 4	100 L ... 280 M	1LE1■01-1A ... -1D	Without add. charge	4	0		–
Further voltages 1)		For additional charges, 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, 4	100 L ... 280 M	1LE1■01-1A ... -1D	**Standard**		A	–
With flange	IM B5 2)		2, 4	100 L ... 280 M	1LE1■01-1A ... -1D	With additional charge		F	–
With standard flange	IM B14 2)		2, 4	100 L ... 280 M	1LE1■01-1A ... -1D	With additional charge		K	–
Further types of construction		For additional charges, code letters and descriptions, see from Page 2/44						■	. . .

Motor protection	Line		No. of poles	Frame size	Motor type	Version			Order code(s)
Without	Only possible for **Basic Line**		2, 4	100 L ... 280 M	1LE1501-1A ... -1D	**Standard**		A	–
PTC thermistor with 3 temperature sensors	**Basic Line**		2, 4	100 L ... 280 M	1LE1501-1A ... -1D	With additional charge		B	–
	Performance Line		2, 4	100 L ... 280 M	1LE1601-1A ... -1D	**Standard**		B	–
Further motor protection		For additional charges, code letters and descriptions, see from Page 2/48						■	. . .

Connection box position			No. of poles	Frame size	Motor type	Version			Order code(s)
Connection box at top			2, 4	100 L ... 280 M	1LE1■01-1A ... -1D	**Standard**		4	–
Further connection box positions		For additional charges, code numbers and descriptions, see from Page 2/50							

Special versions			No. of poles	Frame size	Motor type		Order code(s)
Forced-air cooled motors without ext. fan/fan cover (IC 416)			2, 4	100 L ... 280 M	1LE1■01-1A ... -1D	1LE1■01-. . . . ■-■■■■-Z	F90 +. . .+. . .+. . .
Options		For additional charges, order codes and descriptions, see from Page 2/56				1LE1■01-. . . . ■-■■■■-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 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.

IE2

Self-ventilated motors
Cast-iron series 1LE1501/1LE1601 with increased output

Selection and ordering data

P_{rated}, 50 Hz	P_{rated}, 60 Hz 1)	Frame size	Operating values at rated output: 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}/T_{rated}, 50 Hz	I_{LR}/I_{rated}, 50 Hz	T_B/T_{rated}, 50 Hz	L_{pfA}, 50 Hz	L_{WA}, 50 Hz	Cast-iron series 1LE1501 – Basic Line 1LE1601 – Performance Line IE2 version in accordance with IEC 60034-30 with increased output Article No.	$m_{IM\ B3}$	J	Torque class
kW	kW	FS	rpm	Nm		%	%	%		A				dB(A)	dB(A)	▲ New	kg	kgm²	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)																			
6-pole: 1000 rpm at 50 Hz, 1200 rpm at 60 Hz 1)																			
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	90.6	90.5	0.81	30	1.9	6.5	2.9	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	73	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	68	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	2.9	6.9	3.0	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: 1000 rpm at 50 Hz, 1200 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	0.77	62	2.8	6.1	3.2	62	76	▲ 1LE1■01-2BD6■-■■■■	325	0.67	13
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	735	715	IE2	92.9	93.4	93.0	0.81	105	2.3	5.4	2.3	70	81	▲ 1LE1■01-2DD6■-■■■■	550	1.60	13

	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			No. of poles	Frame size	Motor type	Version				Order code(s)
50 Hz	230 VΔ/400 VY	60 Hz 1)	6, 8	100 L ... 280 M	1LE1■01-1A ... -1D	**Standard**	2	2		–
50 Hz	400 VΔ/690 VY	60 Hz 1)	6, 8	100 L ... 280 M	1LE1■01-1A ... -1D	**Standard**	3	4		–
50 Hz	500 VY		6, 8	100 L ... 280 M	1LE1■01-1A ... -1D	Without add. charge	2	7		–
50 Hz	500 VΔ		6, 8	100 L ... 280 M	1LE1■01-1A ... -1D	Without add. charge	4	0		–
Further voltages 1)		For additional charges, 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)	6, 8	100 L ... 280 M	1LE1■01-1A ... -1D	**Standard**	A		–
With flange	IM B5 2)	6, 8	100 L ... 280 M	1LE1■01-1A ... -1D	With additional charge	F		–
With standard flange	IM B14 2)	6, 8	100 L ... 280 M	1LE1■01-1A ... -1D	With additional charge	K		–
Further types of construction	For additional charges, code letters and descriptions, see from Page 2/44					■		...

Motor protection	Line	No. of poles	Frame size	Motor type	Version			Order code(s)
Without	Only possible for **Basic Line**	6, 8	100 L ... 280 M	1LE1501-1A ... -1D	**Standard**	A		–
PTC thermistor with 3 temperature sensors	**Basic Line**	6, 8	100 L ... 280 M	1LE1501-1A ... -1D	With additional charge	B		–
	Performance Line	6, 8	100 L ... 280 M	1LE1601-1A ... -1D	**Standard**	B		–
Further motor protection	For additional charges, code letters and descriptions, see from Page 2/48					■		...

Connection box position		No. of poles	Frame size	Motor type	Version			Order code(s)
Connection box at top		6, 8	100 L ... 280 M	1LE1■01-1A ... -1D	**Standard**	4		–
Further connection box positions	For additional charges, code numbers and descriptions, see from Page 2/50							

Special versions		No. of poles	Frame size	Motor type		Order code(s)
Forced-air cooled motors without ext. fan/fan cover (IC 416)		6, 8	100 L ... 280 M	1LE1■01-1A ... -1D	1LE1■01-....■-■■■■-Z	F90 +...+...+...
Options	For additional charges, order codes and descriptions, see from Page 2/56				1LE1■01-....■-■■■■-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 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

IE3

Selection and ordering data

P_{rated}, 50 Hz	P_{rated}, 60 Hz 1)	Frame size	Operating values at rated output: 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}/T_{rated}, 50 Hz	I_{LR}/I_{rated}, 50 Hz	T_B/T_{rated}, 50 Hz	L_{pfA}, 50 Hz	L_{WA}, 50 Hz	Aluminum series 1LE1003 – IE3 version in accordance with IEC 60034-30 Article No.	$m_{IM\ B3}$	J	Torque class
kW	kW	FS	rpm	Nm		%	%	%		A				dB(A)	dB(A)	▲ New	kg	kgm²	CL
• 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)																			
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	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	1LE1003-0EA4■-■■■■	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, 3600 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	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	18	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 connection box for 2 and 4-pole motors 2)												
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	B	–
50 Hz	400 VΔ/690 VY	60 Hz 1)	460 VΔ		6	80 M ... 90 L	1LE1003-0D ... -0E	**Standard**	3	4	B	–
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 × 90° rotatable connection box												
50 Hz	230 VΔ/400 VY	60 Hz 1)	460 VY	Any	6	100 L ... 160 L	1LE1003-0D ... -0E	**Standard**	2	2		–
50 Hz	400 VΔ/690 VY	60 Hz 1)	460 VΔ	Any	6	100 L ... 160 L	1LE1003-0D ... -0E	**Standard**	3	4		–
50 Hz	500 VY			Any	6	100 L ... 160 L	1LE1003-0D ... -0E	Without add. charge	2	7		–
50 Hz	500 VΔ			Any	6	100 L ... 160 L	1LE1003-0D ... -0E	Without add. charge	4	0		–
Further voltages 1)				For additional charges, 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 ... -0E	**Standard**	A	–
With flange	IM B5 3)		6	80 M ... 160 L	1LE1003-0D ... -0E	With additional charge	F	–
With standard flange	IM B14 3)		6	80 M ... 160 L	1LE1003-0D ... -0E	With additional charge	K	–
Further types of construction		For additional charges, 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 × 90° rotatable connection box						
Without	6	80 L ... 160 L	1LE1003-0D ... -0E	**Standard**	A	–
PTC thermistor with 3 temperature sensors	6	80 L ... 160 L	1LE1003-0D ... -0E	With additional charge	B	–
Further motor protection	For additional charges, code letters and descriptions, see from Page 2/47				■	. . .

Connection box position	No. of poles	Frame size	Motor type	Version		Order code(s)
Connection box at top	6	80 M ... 160 L	1LE1003-0D ... -0E	**Standard**	4	–
Further connection box positions	For additional charges, code numbers and descriptions, see from Page 2/49					

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	1LE1003-0D ... -0E	1LE1003- . . . . ■-■■■■	-Z	F90 +. . .+. . .+. . .
Options	For additional charges, order codes and descriptions, see from Page 2/51			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.

Selection and ordering data (continued)

P_{rated}, 50 Hz	P_{rated}, 60 Hz 1)	Frame size	Operating values at rated output: 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}/T_{rated}, 50 Hz	I_{LR}/I_{rated}, 50 Hz	T_B/T_{rated}, 50 Hz	L_{pfA}, 50 Hz	L_{WA}, 50 Hz	Aluminum series 1LE1003 – IE3 version in accordance with IEC 60034-30 Article No.	$m_{IM\ B3}$	J	Torque class
kW	kW	FS	rpm	Nm		%	%	%		A				dB(A)	dB(A)	▲ New	kg	kgm²	CL
• 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	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	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	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	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	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	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	89.1	89.1	88.1	0.78	15.6	1.7	6.3	3.1	67	79	▲ 1LE1003-1DC2■-■■■■	93	0.098	13
11	12.6	160 L	975	108.0	IE3	90.3	90.3	89.3	0.80	22.0	1.8	6.1	3.0	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 connection box for 2 and 4-pole motors 2)												
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	B	–
50 Hz	400 VΔ/690 VY	60 Hz 1)	460 VΔ		2, 4	80 M ... 90 L	1LE1003-0D ... -0E	**Standard**	3	4	B	–
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 × 90° rotatable connection box												
50 Hz	230 VΔ/400 VY	60 Hz 1)	460 VY	Any	2, 4	100 L ... 160 L	1LE1003-0D ... -0E	**Standard**	2	2		–
50 Hz	400 VΔ/690 VY	60 Hz 1)	460 VΔ	Any	2, 4	100 L ... 160 L	1LE1003-0D ... -0E	**Standard**	3	4		–
50 Hz	500 VY			Any	2, 4	100 L ... 160 L	1LE1003-0D ... -0E	Without add. charge	2	7		–
50 Hz	500 VΔ			Any	2, 4	100 L ... 160 L	1LE1003-0D ... -0E	Without add. charge	4	0		–
Further voltages 1)				For additional charges, 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)		2, 4	80 M ... 160 L	1LE1003-0D ... -0E	**Standard**	A		–
With flange	IM B5 3)		2, 4	80 M ... 160 L	1LE1003-0D ... -0E	With additional charge	F		–
With standard flange	IM B14 3)		2, 4	80 M ... 160 L	1LE1003-0D ... -0E	With additional charge	K		–
Further types of construction		For additional charges, 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 × 90° rotatable connection box							
Without	2, 4	80 L ... 160 L	1LE1003-0D ... -0E	**Standard**	A		–
PTC thermistor with 3 temperature sensors	2, 4	80 L ... 160 L	1LE1003-0D ... -0E	With additional charge	B		–
Further motor protection	For additional charges, code letters and descriptions, see from Page 2/47				■		. . .

Connection box position	No. of poles	Frame size	Motor type	Version			Order code(s)
Connection box at top	2, 4	80 M ... 160 L	1LE1003-0D ... -0E	**Standard**		4	–
Further connection box positions	For additional charges, code numbers and descriptions, see from Page 2/49						

Special versions	No. of poles	Frame size	Motor type				Order code(s)
Forced-air cooled motors without ext. fan/fan cover (IC 416)	2, 4	80 M ... 160 L	1LE1003-0D ... -0E	1LE1003- . . . . ■-■■■■	-Z	F90 +. . .+. . .+. . .	
Options	For additional charges, order codes and descriptions, see from Page 2/51			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.

SIMOTICS SD 1LE1 Standard Motors

Motors with Premium Efficiency IE3

Self-ventilated motors
Cast-iron series 1LE1503/1LE1603 Basic/Performance Line

IE3

Selection and ordering data

P_{rated}, 50 Hz	P_{rated}, 60 Hz 1)	Frame size	Operating values at rated output: 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}/T_{rated}, 50 Hz	I_{LR}/I_{rated}, 50 Hz	T_B/T_{rated}, 50 Hz	L_{pfA}, 50 Hz	L_{WA}, 50 Hz	Cast-iron series: 1LE1503 – *Basic Line*; 1LE1603 – *Performance Line*; *IE3 version in accordance with IEC 60034-30*; Article No.	$m_{IM\ B3}$	J	Torque class
kW	kW	FS	rpm	Nm		%	%	%		A				dB(A)	dB(A)	▲ New	kg	kgm²	CL
• 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)																			
2-pole: 3000 rpm at 50 Hz, 3600 rpm at 60 Hz 1)																			
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	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			No. of poles	Frame size	Motor type	Version					Order code(s)
50 Hz	230 VΔ/400 VY	60 Hz 1)	2	100 L ... 315 L	1LE1■03-1E ... -3A	**Standard**	2	2			–
50 Hz	400 VΔ/690 VY	60 Hz 1)	2	100 L ... 315 L	1LE1■03-1E ... -3A	**Standard**	3	4			–
50 Hz	500 VY		2	100 L ... 315 L	1LE1■03-1E ... -3A	Without add. charge	2	7			–
50 Hz	500 VΔ		2	100 L ... 315 L	1LE1■03-1E ... -3A	Without add. charge	4	0			–
Further voltages 1)		For additional charges, 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	100 L ... 315 L	1LE1■03-1E ... -3A	**Standard**	A			–
With flange	IM B5 2)	2	100 L ... 315 M	1LE1■03-1E ... -3A	With additional charge	F			–
Further types of construction	For additional charges, code letters and descriptions, see from Page 2/44					■			. . .

Motor protection	Line	No. of poles	Frame size	Motor type	Version				Order code(s)
Without	Only possible for **Basic Line**	2	100 L ... 315 L	1LE1503-1E ... -3A	**Standard**	A			–
PTC thermistor with 3 temperature sensors	**Basic Line**	2	100 L ... 315 L	1LE1503-1E ... -3A	With additional charge	B			–
	Performance Line	2	100 L ... 315 L	1LE1603-1E ... -3A	**Standard**	B			–
Further motor protection	For additional charges, code letters and descriptions, see from Page 2/48					■			. . .

Connection box position		No. of poles	Frame size	Motor type	Version				Order code(s)
Connection box at top		2	100 L ... 315 L	1LE1■03-1E ... -3A	**Standard**	4			–
Further connection box positions	For additional charges, code numbers and descriptions, see from Page 2/50								

Special versions		No. of poles	Frame size	Motor type					Order code(s)
Options	For additional charges, order codes and descriptions, see from Page 2/56				1LE1■03-	■-■■■■	-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 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.

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: 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}/T_{rated}, 50 Hz	I_{LR}/I_{rated}, 50 Hz	T_B/T_{rated}, 50 Hz	L_{pfA}, 50 Hz	L_{WA}, 50 Hz	Cast-iron series 1LE1503 – Basic Line 1LE1603 – Performance Line IE3 version in accordance with IEC 60034-30 Article No.	$m_{IM\ B3}$	J	Torque class
kW	kW	FS	rpm	Nm		%	%	%		A				dB(A)	dB(A)	▲ New	kg	kgm²	CL
• 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)																			
4-pole: 1500 rpm at 50 Hz, 1800 rpm at 60 Hz 1)																			
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	1490	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	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			No. of poles	Frame size	Motor type	Version			Order code(s)
50 Hz	230 VΔ/400 VY	60 Hz 1) 460 VY	4	100 L ... 315 L	1LE1■03-1E … -3A	**Standard**	2	2	–
50 Hz	400 VΔ/690 VY	60 Hz 1) 460 VΔ	4	100 L ... 315 L	1LE1■03-1E … -3A	**Standard**	3	4	–
50 Hz	500 VY		4	100 L ... 315 L	1LE1■03-1E … -3A	Without add. charge	2	7	–
50 Hz	500 VΔ		4	100 L ... 315 L	1LE1■03-1E … -3A	Without add. charge	4	0	–
Further voltages 1)	For additional charges, 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	100 L ... 315 L	1LE1■03-1E … -3A	**Standard**	A	–
With flange	IM B5 2)	4	100 L ... 315 M	1LE1■03-1E … -3A	With additional charge	F	–
Further types of construction	For additional charges, code letters and descriptions, see from Page 2/44					■	. . .

Motor protection	Line	No. of poles	Frame size	Motor type	Version		Order code(s)
Without	Only possible for **Basic Line**	4	100 L ... 315 L	1LE1503-1E … -3A	**Standard**	A	–
PTC thermistor with 3 temperature sensors	**Basic Line**	4	100 L ... 315 L	1LE1503-1E … -3A	With additional charge	B	–
	Performance Line	4	100 L ... 315 L	1LE1603-1E … -3A	**Standard**	B	–
Further motor protection	For additional charges, code letters and descriptions, see from Page 2/48					■	. . .

Connection box position		No. of poles	Frame size	Motor type	Version		Order code(s)
Connection box at top		4	100 L ... 315 L	1LE1■03-1E … -3A	**Standard**	4	–
Further connection box positions	For additional charges, code numbers and descriptions, see from Page 2/50						

Special versions		No. of poles	Frame size	Motor type			Order code(s)
Options	For additional charges, order codes and descriptions, see from Page 2/56				1LE1■03-	■-■■■■-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 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.

Selection and ordering data (continued)

2

P_{rated}, 50 Hz	P_{rated}, 60 Hz 1)	Frame size	Operating values at rated output: 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}/T_{rated}, 50 Hz	I_{LR}/I_{rated}, 50 Hz	T_B/T_{rated}, 50 Hz	L_{pfA}, 50 Hz	L_{WA}, 50 Hz	Cast-iron series 1LE1503 – Basic Line 1LE1603 – Performance Line IE3 version in accordance with IEC 60034-30 Article No.	$m_{IM\ B3}$	J	Torque class
kW	kW	FS	rpm	Nm		%	%	%		A				dB(A)	dB(A)	▲ New	kg	kgm²	CL
• 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)																			
1.5	1.75	100 L	970	15	IE3	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	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	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	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	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	89.1	89.1	88.1	0.78	15.6	1.7	6.3	3.1	67	79	▲ 1LE1■03-1DC2■-■■■■	120	0.098	13
11	12.6	160 L	975	108	IE3	90.3	90.3	89.3	0.80	22	1.8	6.1	3.0	67	79	▲ 1LE1■03-1DC4■-■■■■	149	0.122	13
15	18	180 L	975	147	IE3	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	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	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	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	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	93.7	94.3	94.2	0.85	82	3.0	6.8	2.8	59	73	1LE1■03-2DC0■-■■■■	510	1.4	16
55	66	280 M	988	532	IE3	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	94.6	94.7	94.1	0.84	136	2.6	7.3	3.1	63	78	1LE1■03-3AC0■-■■■■	750	2.6	16
90	108	315 M	991	867	IE3	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	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	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	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	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			No. of poles	Frame size	Motor type	Version			Order code(s)
50 Hz	230 VΔ/400 VY	60 Hz 1) 460 VY	6	100 L ... 315 L	1LE1■03-1E … -3A	**Standard**	2	2	–
50 Hz	400 VΔ/690 VY	60 Hz 1) 460 VΔ	6	100 L ... 315 L	1LE1■03-1E … -3A	**Standard**	3	4	–
50 Hz	500 VY		6	100 L ... 315 L	1LE1■03-1E … -3A	Without add. charge	2	7	–
50 Hz	500 VΔ		6	100 L ... 315 L	1LE1■03-1E … -3A	Without add. charge	4	0	–
Further voltages 1)	For additional charges, 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)	6	100 L ... 315 L	1LE1■03-1E … -3A	**Standard**	A	–
With flange	IM B5 2)	6	100 L ... 315 M	1LE1■03-1E … -3A	With additional charge	F	–
Further types of construction	For additional charges, code letters and descriptions, see from Page 2/44					■	. . .

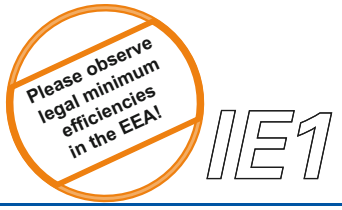
Motor protection	Line	No. of poles	Frame size	Motor type	Version		Order code(s)
Without	Only possible for **Basic Line**	6	100 L ... 315 L	1LE1503-1E … -3A	**Standard**	A	–
PTC thermistor with 3 temperature sensors	**Basic Line**	6	100 L ... 315 L	1LE1503-1E … -3A	With additional charge	B	–
	Performance Line	6	100 L ... 315 L	1LE1603-1E … -3A	**Standard**	B	–
Further motor protection	For additional charges, code letters and descriptions, see from Page 2/48					■	. . .

Connection box position		No. of poles	Frame size	Motor type	Version		Order code(s)
Connection box at top		6	100 L ... 315 L	1LE1■03-1E … -3A	**Standard**	4	–
Further connection box positions	For additional charges, code numbers and descriptions, see from Page 2/50						

Special versions		No. of poles	Frame size	Motor type		Order code(s)
Options	For additional charges, order codes and descriptions, see from Page 2/56				1LE1■03-. . . . ■-■■■■ -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 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.



Selection and ordering data

P_{rated}, 50 Hz	P_{rated}, 60 Hz 1)	Frame size	Operating values at rated output: 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}/T_{rated}, 50 Hz	I_{LR}/I_{rated}, 50 Hz	T_B/T_{rated}, 50 Hz	L_{pfA}, 50 Hz	L_{WA}, 50 Hz	Aluminum series 1LE1002 – *IE1 version in accordance with IEC 60034-30* Article No.	$m_{IM\ B3}$	J	Torque class
kW	kW	FS	rpm	Nm		%	%	%		A				dB(A)	dB(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	**1LE1002-1DD2■-■■■■**	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	**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 additional charges, 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 additional charges, 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 additional charges, code letters and descriptions, see from Page 2/47								**■**	. . .
Connection box position				No. of poles	Frame size	Motor type	Version					Order code(s)
Connection box at top				2, 4, 6, 8	100 L ... 160 L	1LE1002-1A ... -1D	**Standard**					**4** –
Further connection box positions			For additional charges, code numbers and descriptions, see from Page 2/49									
Special versions				No. of poles	Frame size	Motor type						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 additional charges, order codes and descriptions, see from Page 2/51				**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 1LE1 Standard Motors

Motors with Standard Efficiency IE1

Self-ventilated motors
Aluminum series 1LE1002 with increased output

IE1 Please observe legal minimum efficiencies in the EEA!

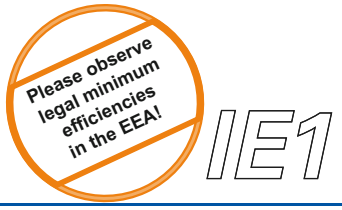
Selection and ordering data

P_{rated}, 50 Hz	P_{rated}, 60 Hz 1)	Frame size	Operating values at rated output: 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}/T_{rated}, 50 Hz	I_{LR}/I_{rated}, 50 Hz	T_B/T_{rated}, 50 Hz	L_{pfA}, 50 Hz	L_{WA}, 50 Hz	Aluminum series 1LE1002 – *IE1 version in accordance with IEC 60034-30 with increased output* Article No.	$m_{IM\ B3}$	J	Torque class
kW	kW	FS	rpm	Nm		%	%	%		A				dB(A)	dB(A)		kg	kgm^2	CL
• 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

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	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 voltages 1)			For additional charges, 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 additional charges, 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 additional charges, code letters and descriptions, see from Page 2/47							**■**	. . .
Connection box position				No. of poles	Frame size	Motor type	Version				Order code(s)
Connection box at top				2, 4, 6	100 L ... 160 L	1LE1002-1A ... -1D	**Standard**			**4**	–
Further connection box positions			For additional charges, code numbers and descriptions, see from Page 2/49								
Special versions				No. of poles	Frame size	Motor type					Order code(s)
Options			For additional charges, order codes and descriptions, see from Page 2/51				**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

Selection and ordering data

P_{rated}, 50 Hz	P_{rated}, 60 Hz 1)	Frame size	Operating values at rated output: 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}/T_{rated}, 50 Hz	I_{LR}/I_{rated}, 50 Hz	T_B/T_{rated}, 50 Hz	L_{pfA}, 50 Hz	L_{WA}, 50 Hz	Aluminum series 1PC1002 – *IE1 version in accordance with IEC 60034-30* Article No.	$m_{IM\ B3}$	J	Torque class
kW	kW	FS	rpm	Nm		%	%	%		A				dB(A)	dB(A)		kg	kgm²	CL
• 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.	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.	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.	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.	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.	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.	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.	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.	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.	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.	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.	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.	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.	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.	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.	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.	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.	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.	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.	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.	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.	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.	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.	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.	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.	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.	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.	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.	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.	O. R.	–	–	**1PC1002-1DD4 ■-■■■■**	91	0.077	10

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	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 additional charges, 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	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 additional charges, 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 additional charges, code letters and descriptions, see from Page 2/47							■	. . .
Connection box position				No. of poles	Frame size	Motor type	Version				Order code(s)
Connection box at top				2, 4, 6, 8	100 L ... 160 L	1PC1002-1A ... -1D	**Standard**				**4** –
Further connection box positions			For additional charges, code numbers and descriptions, see from Page 2/49								
Special versions				No. of poles	Frame size	Motor type					Order code(s)
Options			For additional charges, order codes and descriptions, see from Page 2/51				**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.

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

IE2

Selection and ordering data

P_{rated}, 50 Hz	P_{rated}, 60 Hz	Frame size	Operating values at rated output: 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}, 60 Hz, 4/4	I_{rated}, 60 Hz, 460 V	T_{LR}/T_{rated}, 60 Hz	I_{LR}/I_{rated}, 60 Hz	T_B/T_{rated}, 60 Hz	L_{pfA}, 60 Hz	L_{WA}, 60 Hz	Aluminum series 1LE1021 – *NEMA Energy Efficient version* Article No.	$m_{IM\ B3}$	J	Torque class
kW	hp	FS	rpm	Nm		%	%	%		A				dB(A)	dB(A)		kg	kgm²	CL
• Cooling: self-ventilated (IC 411) or with order code F90 forced-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)																			
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]				No. of poles	Frame size	Motor type	Version				Order code(s)
50 Hz	230 VΔ/400 VY	60 Hz	460 VY	2, 4	80 M ... 160 L	1LE1021-1A ... -1D	**Standard**	**2**	**2**		–
50 Hz	400 VΔ	60 Hz	460 VΔ	2, 4	80 M ... 160 L	1LE1021-1A ... -1D	**Standard**	**3**	**4**		–
50 Hz	500 VY			2, 4	80 M ... 160 L	1LE1021-1A ... -1D	Without add. charge	**2**	**7**		–
50 Hz	500 VΔ			2, 4	80 M ... 160 L	1LE1021-1A ... -1D	Without add. charge	**4**	**0**		–
Further voltages			For additional charges, code numbers, order codes and descriptions, see from Page 2/38					**9**	**0**		. . .
Types of construction [2]				No. of poles	Frame size	Motor type	Version				Order code(s)
With flange		IM B5 [3]		2, 4	80 M ... 160 L	1LE1021-1A ... -1D	With additional charge			**F**	–
With standard flange		IM B14 [3]		2, 4	80 M ... 160 L	1LE1021-1A ... -1D	With additional charge			**K**	–
Further types of construction			For additional charges, 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	80 M ... 160 L	1LE1021-1A ... -1D	**Standard**			**A**	–
PTC thermistor with 3 temperature sensors				2, 4	80 M ... 160 L	1LE1021-1A ... -1D	With additional charge			**B**	–
Further motor protection			For additional charges, code letters and descriptions, see from Page 2/47							■	. . .
Connection box position				No. of poles	Frame size	Motor type	Version				Order code(s)
Connection box at top				2, 4	80 M ... 160 L	1LE1021-1A ... -1D	**Standard**			**4**	–
Further connection box positions			For additional charges, code numbers and descriptions, see from Page 2/49								
Special versions				No. of poles	Frame size	Motor type					Order code(s)
Forced-air cooled motors without ext. fan/fan cover (IC 416)				2, 4	80 M ... 160 L	1LE1021-1A ... -1D	**1LE1021-. . . . ■-■■■■-Z**				**F90 +. . .+. . .+. . .**
Options			For additional charges, order codes and descriptions, see from Page 2/51				**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.

Selection and ordering data (continued)

P_{rated}, 50 Hz	P_{rated}, 60 Hz	Frame size	Operating values at rated output: 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}, 60 Hz, 4/4	I_{rated}, 60 Hz, 460 V	T_{LR}/T_{rated}, 60 Hz	I_{LR}/I_{rated}, 60 Hz	T_B/T_{rated}, 60 Hz	L_{pfA}, 60 Hz	L_{WA}, 60 Hz	**Aluminum series 1LE1021** – *NEMA Energy Efficient version* Article No.	$m_{IM\ B3}$	J	Torque class
kW	hp	FS	rpm	Nm		%	%	%		A				dB(A)	dB(A)		kg	kgm²	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	90.0	89.0	0.74	14.2	2.0	7.1	3.2	70	82	**1LE1021-1DC2■-■■■■**	77	0.075	16
11	**15**	**160 L**	1180	89	✓	90.2	90.0	89.1	0.78	19.6	1.8	6.8	3.0	70	82	**1LE1021-1DC4■-■■■■**	93	0.098	16

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	80 M ... 160 L	1LE1021-1A ... -1D	**Standard**	**2**	**2**		–
50 Hz	400 VΔ	60 Hz	460 VΔ	6	80 M ... 160 L	1LE1021-1A ... -1D	**Standard**	**3**	**4**		–
50 Hz	500 VY			6	80 M ... 160 L	1LE1021-1A ... -1D	Without add. charge	**2**	**7**		–
50 Hz	500 VΔ			6	80 M ... 160 L	1LE1021-1A ... -1D	Without add. charge	**4**	**0**		–
Further voltages			For additional charges, code numbers, order codes and descriptions, see from Page 2/38					**9**	**0**		. . .
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	1LE1021-1A ... -1D	With additional charge			**F**	–
With standard flange		IM B14[3]		6	80 M ... 160 L	1LE1021-1A ... -1D	With additional charge			**K**	–
Further types of construction			For additional charges, 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	1LE1021-1A ... -1D	**Standard**			**A**	–
PTC thermistor with 3 temperature sensors				6	80 M ... 160 L	1LE1021-1A ... -1D	With additional charge			**B**	–
Further motor protection			For additional charges, code letters and descriptions, see from Page 2/47							■	. . .
Connection box position				No. of poles	Frame size	Motor type	Version				Order code(s)
Connection box at top				6	80 M ... 160 L	1LE1021-1A ... -1D	**Standard**			**4**	–
Further connection box positions			For additional charges, code numbers and descriptions, see from Page 2/49								
Special versions				No. of poles	Frame size	Motor type					Order code(s)
Forced-air cooled motors without ext. fan/fan cover (IC 416)				6	100 L ... 160 L	1LE1021-1A ... -1D	**1LE1021-. . . . ■-■■■■-Z**				**F90** +. . .+. . .+. . .
Options			For additional charges, order codes and descriptions, see from Page 2/51				**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 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

IE2

Selection and ordering data

P_{rated}, 50 Hz	P_{rated}, 60 Hz	Frame size	Operating values at rated output: 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}, 60 Hz, 4/4	I_{rated}, 60 Hz, 460 V	T_{LR}/T_{rated}, 60 Hz	I_{LR}/I_{rated}, 60 Hz	T_B/T_{rated}, 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
kW	hp	FS	rpm	Nm		%	%	%		A				dB(A)	dB(A)		kg	kgm^2	CL
• 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)																			
2-pole: 3000 rpm at 50 Hz, 3600 rpm at 60 Hz																			
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	81	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	82	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	82	89	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 ■-■■■■	355	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	7.6	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	7.7	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
160	200	315 L	3585	397	✓	95.0	94.6	93.3	0.92	215	2.6	8.2	3.6	84	99	1LE1 ■ 21-3AA4 ■-■■■■	930	1.8	13
200	250	315 L	3585	497	✓	95.4	95.2	94.2	0.91	270	3.5	8.9	3.4	84	99	1LE1 ■ 21-3AA5 ■-■■■■	1130	2.2	13

	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 (≤ 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	100 L ... 315 L	1LE1■21-1A ... -3A	**Standard**	2	2	–
50 Hz	400 VΔ	60 Hz	460 VΔ	2	100 L ... 315 L	1LE1■21-1A ... -3A	**Standard**	3	4	–
50 Hz	500 VY			2	100 L ... 315 L	1LE1■21-1A ... -3A	Without add. charge	2	7	–
50 Hz	500 VΔ			2	100 L ... 315 L	1LE1■21-1A ... -3A	Without add. charge	4	0	–
Further voltages		For additional charges, 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	100 L ... 315 M	1LE1■21-1A ... -3A	With additional charge	F	–
With standard flange	IM B14[3]		2	100 L ... 160 L	1LE1■21-1A ... -1D	With additional charge	K	–
Further types of construction		For additional charges, code letters and descriptions, see from Page 2/44					■	...

Motor protection	Line	No. of poles	Frame size	Motor type	Version		Order code(s)
Without	Only possible for **Basic Line**	2	100 L ... 315 L	1LE1521-1A ... -3A	**Standard**	A	–
PTC thermistor with 3 temperature sensors	**Basic Line**	2	100 L ... 315 L	1LE1521-1A ... -3A	With additional charge	B	–
	Performance Line	2	100 L ... 315 L	1LE1621-1A ... -3A	**Standard**	B	–
Further motor protection	For additional charges, code letters and descriptions, see from Page 2/48					■	...

Connection box position	No. of poles	Frame size	Motor type	Version		Order code(s)
Connection box at top	2	100 L ... 315 L	1LE1■21-1A ... -3A	**Standard**	4	–
Further connection box positions	For additional charges, code numbers and descriptions, see from Page 2/50					

Special versions	No. of poles	Frame size	Motor type	Order code(s)
Options	For additional charges, order codes and descriptions, see from Page 2/56		1LE1■21-.... ■-■■■■ -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 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.

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: 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}, 60 Hz, 4/4	I_{rated}, 60 Hz, 460 V	T_{LR}/T_{rated}, 60 Hz	I_{LR}/I_{rated}, 60 Hz	T_B/T_{rated}, 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
kW	hp	FS	rpm	Nm		%	%	%		A				dB(A)	dB(A)		kg	kgm^2	CL
• 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)																			
4-pole: 1500 rpm at 50 Hz, 1800 rpm at 60 Hz																			
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	72	79	**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	72	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	2.8	7.8	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	7.6	3.2	79	93	**1LE1 ■ 21-3AB0 ■-■■■■**	740	2.0	16
132	**175**	**315 M**	1790	697	–	95.0	94.8	94.0	0.86	200	3.1	7.8	3.2	79	93	**1LE1 ■ 21-3AB2 ■-■■■■**	870	2.3	16
160	**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
200	**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		
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	4	100 L ... 315 L	1LE1■21-1A ... -3A	**Standard**	**2**	**2**	–
50 Hz	400 VΔ	60 Hz 460 VΔ	4	100 L ... 315 L	1LE1■21-1A ... -3A	**Standard**	**3**	**4**	–
50 Hz	500 VY		4	100 L ... 315 L	1LE1■21-1A ... -3A	Without add. charge	**2**	**7**	–
50 Hz	500 VΔ		4	100 L ... 315 L	1LE1■21-1A ... -3A	Without add. charge	**4**	**0**	–
Further voltages		For additional charges, 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	100 L ... 315 M	1LE1■21-1A ... -3A	With additional charge	**F**	–
With standard flange	IM B14[3]		4	100 L ... 160 L	1LE1■21-1A ... -1D	With additional charge	**K**	–
Further types of construction		For additional charges, code letters and descriptions, see from Page 2/44					**Z**	. . .

Motor protection	Line	No. of poles	Frame size	Motor type	Version		Order code(s)
Without	Only possible for **Basic Line**	4	100 L ... 315 L	1LE1521-1A ... -3A	**Standard**	**A**	–
PTC thermistor with 3 temperature sensors	**Basic Line**	4	100 L ... 315 L	1LE1521-1A ... -3A	With additional charge	**B**	–
	Performance Line	4	100 L ... 315 L	1LE1621-1A ... -3A	**Standard**	**B**	–
Further motor protection	For additional charges, code letters and descriptions, see from Page 2/48					**Z**	. . .

Connection box position	No. of poles	Frame size	Motor type	Version		Order code(s)
Connection box at top	4	100 L ... 315 L	1LE1■21-1A ... -3A	**Standard**	**4**	–
Further connection box positions	For additional charges, code numbers and descriptions, see from Page 2/50					

Special versions	No. of poles	Frame size	Motor type		Order code(s)
Options	For additional charges, order codes and descriptions, see from Page 2/56			**1LE1■21-. . . . ■-■■■■-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 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

IE2

Selection and ordering data (continued)

P_{rated}, 50 Hz	P_{rated}, 60 Hz	Frame size	Operating values at rated output: 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}, 60 Hz, 4/4	I_{rated}, 60 Hz, 460 V	T_{LR}/T_{rated}, 60 Hz	I_{LR}/I_{rated}, 60 Hz	T_B/T_{rated}, 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
kW	hp	FS	rpm	Nm		%	%	%		A				dB(A)	dB(A)		kg	kgm²	CL
• 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)																			
6-pole: 1000 rpm at 50 Hz, 1200 rpm at 60 Hz																			
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	90.0	89.0	0.74	14.2	2.0	7.1	3.2	70	82	1LE1 ■ 21-1DC2 ■-■■■■	106	0.075	16
11	15	160 L	1180	89	✓	90.2	90.0	89.1	0.78	19.6	1.8	6.8	3.0	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	64	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	68	76	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	68	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 ■-■■■■	285	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	0.84	118	2.8	7.5	3.0	68	83	1LE1 ■ 21-3AC0 ■-■■■■	660	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 ■ 21-3AC2 ■-■■■■	730	2.5	16
110	150	315 L	1190	898	✓	95.0	95.0	94.6	0.85	174	3.0	7.6	3.1	69	84	1LE1 ■ 21-3AC4 ■-■■■■	920	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
160	200	315 L	1192	1195	✓	95.0	94.9	94.2	0.84	235	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		
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	6	100 L ... 315 L	1LE1■21-1A ... -3A	**Standard**	2	2	–
50 Hz	400 VΔ	60 Hz	460 VΔ	6	100 L ... 315 L	1LE1■21-1A ... -3A	**Standard**	3	4	–
50 Hz	500 VY			6	100 L ... 315 L	1LE1■21-1A ... -3A	Without add. charge	2	7	–
50 Hz	500 VΔ			6	100 L ... 315 L	1LE1■21-1A ... -3A	Without add. charge	4	0	–
Further voltages		For additional charges, 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	100 L ... 315 M	1LE1■21-1A ... -3A	With additional charge	F	–
With standard flange	IM B14[3]		6	100 L ... 160 L	1LE1■21-1A ... -1D	With additional charge	K	–
Further types of construction		For additional charges, code letters and descriptions, see from Page 2/44					Z	. . .

Motor protection	Line		No. of poles	Frame size	Motor type	Version		Order code(s)
Without	Only possible for **Basic Line**		6	100 L ... 315 L	1LE1521-1A ... -3A	**Standard**	A	–
PTC thermistor with 3 temperature sensors	**Basic Line**		6	100 L ... 315 L	1LE1521-1A ... -3A	With additional charge	B	–
	Performance Line		6	100 L ... 315 L	1LE1621-1A ... -3A	**Standard**	B	–
Further motor protection		For additional charges, code letters and descriptions, see from Page 2/48					Z	. . .

Connection box position		No. of poles	Frame size	Motor type	Version		Order code(s)
Connection box at top		6	100 L ... 315 L	1LE1■21-1A ... -3A	**Standard**	4	–
Further connection box positions	For additional charges, code numbers and descriptions, see from Page 2/50						

Special versions		No. of poles	Frame size	Motor type		Order code(s)
Options	For additional charges, order codes and descriptions, see from Page 2/56				1LE1■21-. . . . ■-■■■■ -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 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.

Selection and ordering data (continued)

P_{rated}, 50 Hz	P_{rated}, 60 Hz	Frame size	Operating values at rated output: 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}, 60 Hz, 4/4	I_{rated}, 60 Hz, 460 V	T_{LR}/T_{rated}, 60 Hz	I_{LR}/I_{rated}, 60 Hz	T_B/T_{rated}, 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
kW	hp	FS	rpm	Nm		%	%	%		A				dB(A)	dB(A)	▲ New	kg	kgm²	CL
• 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	78	85	▲ 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	61	68	▲ 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	13
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	13
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	6.5	3.0	73	87	▲ 1LE1 ■ 21-3AD2 ■-■■■■	710	2.50	13
90	120	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	890	1201	✓	93.6	93.9	93.6	0.80	188	2.5	7.1	3.1	72	86	▲ 1LE1 ■ 21-3AD5 ■-■■■■	980	3.90	13
132	175	315 L	890	1401	–	94.1	94.2	93.7	0.80	220	3.1	7.9	3.8	78	93	▲ 1LE1 ■ 21-3AD6 ■-■■■■	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 (≤ 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■21-1A … -3A	**Standard**	2	2			–
50 Hz	400 VΔ	60 Hz	460 VΔ	6	180 L ... 315 L	1LE1■21-1A … -3A	**Standard**	3	4			–
50 Hz	500 VY			6	180 L ... 315 L	1LE1■21-1A … -3A	Without add. charge	2	7			–
50 Hz	500 VΔ			6	180 L ... 315 L	1LE1■21-1A … -3A	Without add. charge	4	0			–
Further voltages		For additional charges, 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■21-1A … -3A	With additional charge			F		–
With standard flange	IM B14[3]			6	180 L ... 160 L	1LE1■21-1A … -1D	With additional charge			K		–
Further types of construction		For additional charges, code letters and descriptions, see from Page 2/44								Z		. . .
Motor protection	Line			No. of poles	Frame size	Motor type	Version					Order code(s)
Without	Only possible for **Basic Line**			6	180 L ... 315 L	1LE1521-1A … -3A	**Standard**				A	–
PTC thermistor with 3 temperature sensors	**Basic Line**			6	180 L ... 315 L	1LE1521-1A … -3A	With additional charge				B	–
	Performance Line			6	180 L ... 315 L	1LE1621-1A … -3A	**Standard**				B	–
Further motor protection		For additional charges, code letters and descriptions, see from Page 2/48									Z	. . .
Connection box position				No. of poles	Frame size	Motor type	Version					Order code(s)
Connection box at top				6	180 L ... 315 L	1LE1■21-1A … -3A	**Standard**				4	–
Further connection box positions		For additional charges, code numbers and descriptions, see from Page 2/50										
Special versions				No. of poles	Frame size	Motor type						Order code(s)
Options		For additional charges, order codes and descriptions, see from Page 2/56					**1LE1■21-. . . .**	■-■■■■			-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 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}, 50 Hz	P_{rated}, 60 Hz	Frame size	Operating values at rated output: 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}, 60 Hz, 4/4	I_{rated}, 60 Hz, 460 V	T_{LR}/T_{rated}, 60 Hz	I_{LR}/I_{rated}, 60 Hz	T_B/T_{rated}, 60 Hz	L_{pfA}, 60 Hz	L_{WA}, 60 Hz	Aluminum series 1LE1023 – *NEMA Premium Efficient version* Article No.	$m_{IM\ B3}$	J	Torque class
kW	hp	FS	rpm	Nm		%	%	%		A				dB(A)	dB(A)	❒ New	kg	kgm²	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	90.0	0.79	13.1	1.8	7.1	3.2	70	82	**1LE1023-1DC2■-■■■■**	93	0.098	13
11	**15**	**160 L**	1180	89	✓	91.7	91.7	90.7	0.79	19.1	1.9	7.4	3.4	70	82	**1LE1023-1DC4■-■■■■**	115	0.12	13

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, 4, 6	80 M ... 160 L	1LE1023-1A ... -1D	**Standard**	**2**	**2**	–
50 Hz	400 VΔ	60 Hz	460 VΔ	2, 4, 6	80 M ... 160 L	1LE1023-1A ... -1D	**Standard**	**3**	**4**	–
50 Hz	500 VY			2, 4, 6	80 M ... 160 L	1LE1023-1A ... -1D	Without add. charge	**2**	**7**	–
50 Hz	500 VΔ			2, 4, 6	80 M ... 160 L	1LE1023-1A ... -1D	Without add. charge	**4**	**0**	–
Further voltages				For 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	80 M ... 160 L	1LE1023-1A ... -1D	**Standard**	**A**	–
With flange	IM B5[2]	2, 4, 6	80 M ... 160 L	1LE1023-1A ... -1D	With additional charge	**F**	–
With standard flange	IM B14[2]	2, 4, 6	80 M ... 160 L	1LE1023-1A ... -1D	With additional charge	**K**	–
Further types of construction		For 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	1LE1023-1A ... -1D	**Standard**	**A**	–
PTC thermistor with 3 temperature sensors	2, 4, 6	80 M ... 160 L	1LE1023-1A ... -1D	With additional charge	**B**	–
Further motor protection	For code letters and descriptions, see from Page 2/47				■	. . .

Connection box position	No. of poles	Frame size	Motor type	Version		Order code(s)
Connection box at top	2, 4, 6	80 M ... 160 L	1LE1023-1A ... -1D	**Standard**	**4**	–
Further connection box positions	For code numbers and descriptions, see from Page 2/49					

Special versions	No. of poles	Frame size	Motor type		Order code(s)
Forced-air cooled motors without ext. fan/fan cover (IC 416)	2, 4, 6	80 M ... 160 L	1LE1023-1A ... -1D	**1LE1023-. . . . ■–■■■■ -Z**	**F90 +. . .+. . .+. . .**
Options	For order codes and descriptions, see from Page 2/51			**1LE1023-. . . . ■–■■■■ -Z**	**. . .+. . .+. . .+. . .**

– 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: 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}, 60 Hz, 4/4	I_{rated}, 60 Hz, 460 V	T_{LR}/T_{rated}, 60 Hz	I_{LR}/I_{rated}, 60 Hz	T_B/T_{rated}, 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	rpm	Nm		%	%	%		A				dB(A)	dB(A)		kg	kgm²	CL
• Cooling: self-ventilated (IC 411) • 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																			
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 ■ 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 ■ 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 ■ 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 ■ 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 ■ 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 ■ 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 ■ 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 ■ 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 ■ 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 ■ 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 ■ 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 ■ 23-2CA2 ■-■■■■	385	0.46	13
75	100	280 S	3578	199	–	94.1	93.9	92.7	0.89	112	2.7	7.4	3.2	78	92	1LE1 ■ 23-2DA0 ■-■■■■	510	0.77	13
90	125	280 M	3578	249	✓	95.0	94.8	93.8	0.90	137	2.7	7.8	3.3	78	92	1LE1 ■ 23-2DA2 ■-■■■■	590	0.94	13
110	150	315 S	3585	298	✓	95.0	94.8	93.8	0.91	162	2.7	7.8	3.4	79	93	1LE1 ■ 23-3AA0 ■-■■■■	750	1.4	13
132	175	315 M	3585	348	–	95.4	95.1	94.0	0.91	189	3.0	8.0	3.4	79	93	1LE1 ■ 23-3AA2 ■-■■■■	880	1.6	13
160	200	315 L	3588	397	✓	95.4	95.1	93.9	0.91	215	3.3	9.1	3.7	82	96	1LE1 ■ 23-3AA4 ■-■■■■	980	1.9	13
200	250	315 L	3586	497	–	95.8	95.7	94.8	0.92	265	3.5	8.5	3.5	82	96	1LE1 ■ 23-3AA5 ■-■■■■	1150	2.3	13

	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 (≤ 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	100 L ... 315 L	1LE1■23-1A ... -3A	**Standard**	2	2			–
50 Hz	400 VΔ	60 Hz	460 VΔ	2	100 L ... 315 L	1LE1■23-1A ... -3A	**Standard**	3	4			–
50 Hz	500 VY			2	100 L ... 315 L	1LE1■23-1A ... -3A	Without add. charge	2	7			–
50 Hz	500 VΔ			2	100 L ... 315 L	1LE1■23-1A ... -3A	Without add. charge	4	0			–
Further voltages		For additional charges, 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	100 L ... 315 L	1LE1■23-1A ... -3A	**Standard**			A		–
With flange	IM B5[2]			2	100 L ... 315 M	1LE1■23-1A ... -3A	With additional charge			F		–
With standard flange	IM B14[2]			2	100 L ... 160 L	1LE1■23-1A ... -1D	With additional charge			K		–
Further types of construction		For additional charges, code letters and descriptions, see from Page 2/44								■		. . .
Motor protection	Line			No. of poles	Frame size	Motor type	Version					Order code(s)
Without	Only possible for **Basic Line**			2	100 L ... 315 L	1LE1523-1A ... -3A	**Standard**				A	–
PTC thermistor with 3 temperature sensors	**Basic Line**			2	100 L ... 315 L	1LE1523-1A ... -3A	With additional charge				B	–
	Performance Line			2	100 L ... 315 L	1LE1623-1A ... -3A	**Standard**				B	–
Further motor protection		For additional charges, code letters and descriptions, see from Page 2/48									■	. . .
Connection box position				No. of poles	Frame size	Motor type	Version					Order code(s)
Connection box at top				2	100 L ... 315 L	1LE1■23-1A ... -3A	**Standard**					–
Further connection box positions		For additional charges, code numbers and descriptions, see from Page 2/50									4	
Special versions				No. of poles	Frame size	Motor type						Order code(s)
Options		For additional charges, order codes and descriptions, see from Page 2/56					1LE1■23-. . . . ■-■■■■				-Z	. . .+. . .+. . .+. . .

– 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 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: 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}, 60 Hz, 4/4	I_{rated}, 60 Hz, 460 V	T_{LR}/T_{rated}, 60 Hz	I_{LR}/I_{rated}, 60 Hz	T_B/T_{rated}, 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	rpm	Nm		%	%	%		A				dB(A)	dB(A)		kg	kgm²	CL
• Cooling: self-ventilated (IC 411) • 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)																			
4-pole: 1500 rpm at 50 Hz, 1800 rpm at 60 Hz																			
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	0.85	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	3.4	8.2	3.3	76	90	1LE1 ■ 23-3AB2 ■-■■■■	960	2.9	16
160	200	315 L	1791	796	✓	96.2	96.2	95.7	0.87	225	3.5	8.5	3.6	76	90	1LE1 ■ 23-3AB4 ■-■■■■	990	3.1	16
200	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		
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	4	100 L ... 315 L	1LE1■23-1A ... -3A	**Standard**	2	2	–
50 Hz	400 VΔ	60 Hz	460 VΔ	4	100 L ... 315 L	1LE1■23-1A ... -3A	**Standard**	3	4	–
50 Hz	500 VY			4	100 L ... 315 L	1LE1■23-1A ... -3A	Without add. charge	2	7	–
50 Hz	500 VΔ			4	100 L ... 315 L	1LE1■23-1A ... -3A	Without add. charge	4	0	–
Further voltages		For additional charges, 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	100 L ... 315 L	1LE1■23-1A ... -3A	**Standard**	A	–
With flange	IM B5[2]		4	100 L ... 315 M	1LE1■23-1A ... -3A	With additional charge	F	–
With standard flange	IM B14[2]		4	100 L ... 160 L	1LE1■23-1A ... -1D	With additional charge	K	–
Further types of construction		For additional charges, code letters and descriptions, see from Page 2/44					■	. . .

Motor protection	Line	No. of poles	Frame size	Motor type	Version		Order code(s)
Without	Only possible for **Basic Line**	4	100 L ... 315 L	1LE1523-1A ... -3A	**Standard**	A	–
PTC thermistor with 3 temperature sensors	**Basic Line**	4	100 L ... 315 L	1LE1523-1A ... -3A	With additional charge	B	–
	Performance Line	4	100 L ... 315 L	1LE1623-1A ... -3A	**Standard**	B	–
Further motor protection	For additional charges, code letters and descriptions, see from Page 2/48					■	. . .

Connection box position	No. of poles	Frame size	Motor type	Version		Order code(s)
Connection box at top	4	100 L ... 315 L	1LE1■23-1A ... -3A	**Standard**	4	–
Further connection box positions	For additional charges, code numbers and descriptions, see from Page 2/50					

Special versions	No. of poles	Frame size	Motor type		Order code(s)
Options	For additional charges, order codes and descriptions, see from Page 2/56			1LE1■23-. . . . ■-■■■■ -Z	. . .+. . .+. . .+. . .

– 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 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.

Selection and ordering data (continued)

P_{rated}, 50 Hz	P_{rated}, 60 Hz	Frame size	Operating values at rated output: 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}, 60 Hz, 4/4	I_{rated}, 60 Hz, 460 V	T_{LR}/T_{rated}, 60 Hz	I_{LR}/I_{rated}, 60 Hz	T_B/T_{rated}, 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	rpm	Nm		%	%	%		A				dB(A)	dB(A)		kg	kgm²	CL
• Cooling: self-ventilated (IC 411) • 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)																			
6-pole: 1000 rpm at 50 Hz, 1200 rpm at 60 Hz																			
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	90.0	0.79	13.1	1.8	7.1	3.2	70	82	1LE1 ■ 23-1DC2 ■-■■■■	128	0.098	13
11	15	160 L	1180	89	✓	91.7	91.7	90.7	0.79	19.1	1.9	7.4	3.4	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	7.4	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	7.8	3.2	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	599	✓	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	8.1	3.3	65	80	1LE1 ■ 23-3AC5 ■-■■■■	1110	4.4	16
160	200	315 L	1192	1195	✓	95.8	95.7	95.0	0.82	240	3.6	9.4	4.2	69	83	1LE1 ■ 23-3AC6 ■-■■■■	1160	4.6	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 (≤ 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	132 S ... 315 L	1LE1■23-1A ... -3A	**Standard**	2	2			–
50 Hz	400 VΔ	60 Hz	460 VΔ	6	132 S ... 315 L	1LE1■23-1A ... -3A	**Standard**	3	4			–
50 Hz	500 VY			6	132 S ... 315 L	1LE1■23-1A ... -3A	Without add. charge	2	7			–
50 Hz	500 VΔ			6	132 S ... 315 L	1LE1■23-1A ... -3A	Without add. charge	4	0			–
Further voltages		For additional charges, 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]		6	132 S ... 315 L	1LE1■23-1A ... -3A	**Standard**				A	–
With flange	IM B5 [2]		6	132 S ... 315 M	1LE1■23-1A ... -3A	With additional charge				F	–
With standard flange	IM B14 [2]		6	132 S ... 160 L	1LE1■23-1A ... -1D	With additional charge				K	–
Further types of construction		For additional charges, code letters and descriptions, see from Page 2/44								■	. . .

Motor protection	Line	No. of poles	Frame size	Motor type	Version					Order code(s)
Without	Only possible for **Basic Line**	6	132 S ... 315 L	1LE1523-1A ... -3A	**Standard**				A	–
PTC thermistor with 3 temperature sensors	**Basic Line**	6	132 S ... 315 L	1LE1523-1A ... -3A	With additional charge				B	–
	Performance Line	6	132 S ... 315 L	1LE1623-1A ... -3A	**Standard**				B	–
Further motor protection	For additional charges, code letters and descriptions, see from Page 2/48								■	. . .

Connection box position		No. of poles	Frame size	Motor type	Version					Order code(s)
Connection box at top		6	132 S ... 315 L	1LE1■23-1A ... -3A	**Standard**				4	–
Further connection box positions	For additional charges, code numbers and descriptions, see from Page 2/50									

Special versions		No. of poles	Frame size	Motor type		Order code(s)
Options	For additional charges, order codes and descriptions, see from Page 2/56				1LE1■23-. . . . ■-■■■■ -Z	. . .+. . .+. . .+. . .

– 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 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.

Pole-changing motors

Self-ventilated motors
Aluminum series 1LE1011 for constant load torque

Selection and ordering data

P_{rated1}, 50 Hz	P_{rated2}, 50 Hz	Frame size	Operating values at rated output for N1: n_{rated1}, 50 Hz	T_{rated1}, 50 Hz	η_{rated1}, 50 Hz, 4/4	cos-φ_{rated1}, 50 Hz, 4/4	I_{rated1}, 50 Hz, 400 V	T_{LR}/T_{rated1}, 50 Hz	I_{LR}/I_{rated1}, 50 Hz	T_{LR}/T_{rated1}, 50 Hz	Operating values at rated output for N2: n_{rated2}, 50 Hz	T_{rated2}, 50 Hz	η_{rated2}, 50 Hz, 4/4	cos-φ_{rated2}, 50 Hz, 4/4	I_{rated2}, 50 Hz, 400 V	T_{LR}/T_{rated2}, 50 Hz	I_{LR}/I_{rated2}, 50 Hz	T_{LR}/T_{rated2}, 50 Hz	Aluminum series 1LE1011 – *One winding pole-changing for constant load torque* Article No.	m IM B3	J	Torque class
kW	kW	FS	rpm	Nm	%		A				rpm	Nm	%		A					kg	kgm²	CL
• 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]		For additional charges, code numbers, order codes and descriptions, see from Page 2/39					**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		For additional charges, code letters and descriptions, see from Page 2/41							■	. . .
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		For additional charges, code letters and descriptions, see from Page 2/47							■	. . .
Connection box position			No. of poles	Frame size	Motor type	Version				Order code(s)
Connection box at top			4/2, 8/4	100 L ... 160 L	1LE1011-1A ... -1D	**Standard**			**4**	–
Further connection box positions		For additional charges, code numbers and descriptions, see from Page 2/49								
Special versions										Order code(s)
Options		For additional charges, order codes and descriptions, see from Page 2/51				**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.

Selection and ordering data

P_{rated1}, 50 Hz	P_{rated2}, 50 Hz	Frame size	Operating values at rated output for N1: n_{rated1}, 50 Hz	T_{rated1}, 50 Hz	η_{rated1}, 50 Hz, 4/4	cos-φ_{rated1}, 50 Hz, 4/4	I_{rated1}, 50 Hz, 400 V	T_{LR}/T_{rated1}, 50 Hz	I_{LR}/I_{rated1}, 50 Hz	T_{LR}/T_{rated1}, 50 Hz	Operating values at rated output for N2: n_{rated2}, 50 Hz	T_{rated2}, 50 Hz	η_{rated2}, 50 Hz, 4/4	cos-φ_{rated2}, 50 Hz, 4/4	I_{rated2}, 50 Hz, 400 V	T_{LR}/T_{rated2}, 50 Hz	I_{LR}/I_{rated2}, 50 Hz	T_{LR}/T_{rated2}, 50 Hz	**Aluminum series** 1LE1011 – *One winding* 1LE1012 – *Two windings pole-changing for square-law load torque* Article No.	m IM B3	J	Torque class
kW	kW	FS	rpm	Nm	%		A				rpm	Nm	%		A					kg	kgm²	CL
• Cooling: self-ventilated (IC 411) • Line operation: double pole-changing for square-law load torque, e.g. for driving fans • 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*											
0.65	**2.4**	**100 L**	1415	4.4	75.0	0.86	1.45	1.6	4.1	1.8	2800	8.2	70.0	0.88	5.6	1.8	4.2	1.8	**1LE1011-1AP4■-■■■■**	18	0.0059	13
0.8	**3.1**	**100 L**	1435	5.3	79.0	0.85	1.72	1.9	5.2	2.8	2840	10.0	77.3	0.90	6.4	2.1	5.2	2.9	**1LE1011-1AP5■-■■■■**	22	0.0078	13
1.1	**4.4**	**112 M**	1455	7.2	83.4	0.85	2.25	2.2	6.1	2.5	2885	15.0	80.8	0.92	8.5	2.1	6.4	2.6	**1LE1011-1BP2■-■■■■**	27	0.010	13
1.45	**5.9**	**132 S**	1460	9.5	84.0	0.84	2.95	1.6	5.8	2.8	2875	20.0	80.0	0.89	12.0	1.8	5.6	2.8	**1LE1011-1CP0■-■■■■**	38	0.019	13
2.0	**8.0**	**132 M**	1455	13	85.0	0.85	4.00	1.8	5.6	2.8	2880	27.0	82.0	0.92	15.3	1.8	6.3	2.8	**1LE1011-1CP2■-■■■■**	44	0.024	13
2.9	**11.5**	**160 M**	1465	19	86.5	0.86	5.6	1.8	5.9	2.9	2870	38.0	82.0	0.92	22.0	1.8	6.0	2.9	**1LE1011-1DP2■-■■■■**	62	0.044	13
4.3	**16**	**160 L**	1455	28	87.0	0.85	8.4	1.6	6.0	2.3	2920	52.0	86.0	0.94	28.5	1.9	7.1	2.8	**1LE1011-1DP6■-■■■■**	85	0.068	13
6/4-pole: 1000/1500 rpm at 50 Hz with two windings																						
1000 rpm	*1500 rpm*		*1000 rpm*								*1500 rpm*											
0.6	**1.7**	**100 L**	970	5.9	55.5	0.62	2.50	1.7	3.4	2.7	1435	11.0	76.2	0.83	3.90	1.8	4.6	2.2	**1LE1012-1AQ4■-■■■■**	18	0.0059	10
0.8	**2.1**	**100 L**	955	8	64.2	0.77	2.35	1.2	3.4	2.0	1435	14.0	78.4	0.84	4.60	2.0	5.4	2.3	**1LE1012-1AQ5■-■■■■**	22	0.0078	10
0.9	**3.0**	**112 M**	975	8.8	64.7	0.66	3.05	1.6	3.9	2.5	1455	20.0	81.4	0.78	6.8	2.1	6.1	3.0	**1LE1012-1BQ2■-■■■■**	27	0.010	13
1.2	**3.9**	**132 S**	980	12	72.3	0.70	3.40	1.4	4.6	2.5	1455	26.0	83.1	0.83	8.2	1.5	5.7	2.4	**1LE1012-1CQ0■-■■■■**	38	0.019	10
1.7	**5.4**	**132 M**	980	17	74.1	0.71	4.65	1.7	5.0	2.5	1465	35.0	85.9	0.82	11.1	2.0	6.9	2.8	**1LE1012-1CQ2■-■■■■**	44	0.024	10
2.5	**7.2**	**160 M**	985	24	77.7	0.71	6.5	1.5	4.7	2.6	1470	47.0	86.9	0.85	14.1	1.8	6.3	2.7	**1LE1012-1DQ2■-■■■■**	62	0.044	10
3.7	**12.0**	**160 L**	985	36	82.4	0.69	9.4	2.3	6.2	3.5	1475	78.0	87.9	0.8	24.5	2.1	7.5	3.5	**1LE1012-1DQ4■-■■■■**	73	0.059	10
8/4-pole: 750/1500 rpm at 50 Hz with one winding connected in Dahlander circuit																						
750 rpm	*1500 rpm*		*750 rpm*								*1500 rpm*											
0.5	**2.0**	**100 L**	720	6.6	52.0	0.50	2.80	1.3	3.3	3.4	1440	13.0	82.0	0.79	4.45	3.0	7.5	4.0	**1LE1011-1AR4■-■■■■**	22	0.0078	7
0.65	**2.5**	**100 L**	715	8.7	56.0	0.58	2.90	1.0	3.2	2.6	1425	17.0	81.0	0.84	5.3	2.3	6.3	3.2	**1LE1011-1AR5■-■■■■**	22	0.0078	7
0.9	**3.6**	**112 M**	715	12	56.0	0.57	4.05	1.0	2.8	2.1	1430	24.0	82.0	0.84	7.5	1.9	5.6	2.4	**1LE1011-1BR2■-■■■■**	27	0.010	7
1.1	**4.7**	**132 S**	730	14	62.0	0.54	4.75	1.0	3.2	2.2	1430	31.0	82.0	0.86	9.6	1.7	5.2	2.2	**1LE1011-1CR0■-■■■■**	38	0.019	7
1.4	**6.4**	**132 M**	730	18	67.5	0.52	5.8	1.1	3.5	2.3	1440	42.0	84.5	0.87	12.6	1.9	5.7	2.3	**1LE1011-1CR2■-■■■■**	44	0.024	7
2.2	**9.5**	**160 M**	730	29	80.6	0.63	6.3	1.5	4.0	2.5	1465	62.0	86.1	0.84	19.0	2.0	6.3	2.7	**1LE1011-1DR2■-■■■■**	62	0.044	10
3.3	**14**	**160 L**	735	43	81.4	0.56	10.4	2.5	4.8	3.3	1475	91.0	85.8	0.73	32.5	2.5	7.2	3.8	**1LE1011-1DR4■-■■■■**	73	0.056	16

Voltages		No. of poles	Frame size	Motor type	Version			Order code(s)
50 Hz	230 V	4/2, 6/4, 8/4	100 L ... 160 L	1LE101■-1A ... -1D	**Standard**	**2**	**2**	–
50 Hz	400 V	4/2, 6/4, 8/4	100 L ... 160 L	1LE101■-1A ... -1D	**Standard**	**3**	**4**	–
50 Hz	500 V	4/2, 6/4, 8/4	100 L ... 160 L	1LE101■-1A ... -1D	Without add. charge	**4**	**0**	–
50 Hz	690 V	4/2, 6/4, 8/4	100 L ... 160 L	1LE101■-1A ... -1D	Without add. charge	**4**	**7**	–
Further voltages [1]		For additional charges, code numbers, order codes and descriptions, see from Page 2/39				**9**	**0**	. . .
Types of construction		No. of poles	Frame size	Motor type	Version			Order code(s)
Without flange	IM B3[2]	4/2, 6/4, 8/4	100 L ... 160 L	1LE101■-1A ... -1D	**Standard**		**A**	–
With flange	IM B5[2]	4/2, 6/4, 8/4	100 L ... 160 L	1LE101■-1A ... -1D	With additional charge		**F**	–
With standard flange	IM B14[2]	4/2, 6/4, 8/4	100 L ... 160 L	1LE101■-1A ... -1D	With additional charge		**K**	–
Further types of construction		For additional charges, code letters and descriptions, see from Page 2/41					■	. . .
Motor protection		No. of poles	Frame size	Motor type	Version			Order code(s)
Without		4/2, 6/4, 8/4	100 L ... 160 L	1LE101■-1A ... -1D	**Standard**			**A** –
PTC thermistor with 3 temperature sensors		4/2, 6/4, 8/4	100 L ... 160 L	1LE101■-1A ... -1D	With additional charge			**B** –
Further motor protection		For additional charges, code letters and descriptions, see from Page 2/47						■ . . .
Connection box position		No. of poles	Frame size	Motor type	Version			Order code(s)
Connection box at top		4/2, 6/4, 8/4	100 L ... 160 L	1LE101■-1A ... -1D	**Standard**			**4** –
Further connection box positions		For additional charges, code numbers and descriptions, see from Page 2/49						
Special versions								Order code(s)
Options		For additional charges, order codes and descriptions, see from Page 2/51				**1LE101■-. . . . ■-■■■■-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.

Voltages
Aluminum series 1LE10, 1PC10

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**									
						63	71	80	90	100	112	132	160	180	200	225
				IE2 High Efficiency	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								
1LE1. . . - . . . . ■ - ■ . . .				Motor version	Motor type	Frame size										
1PC1. . . - . . . . ■ - ■ . . .						63	71	80	90	100	112	132	160	180	200	225
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 [1] [2]	**3**	**4**	–	All except ⑥ and ⑦				□	□	□	□	□	□			
50 Hz 400 VΔ, 60 Hz 460 VΔ [1] [2]				Only applicable for ⑥ and ⑦				□	□	□	□	□	□			
50 Hz 400 VY, 60 Hz 460 VY [1] [3] [4]	**0**	**2**	–	All	All			□	□	–	–	–	–			
50 Hz 500 VY [1]	**2**	**7**	–	All	All			○	○	○	○	○	○			
50 Hz 500 VΔ	**4**	**0**	–	All	All			–	–	○	○	○	○			
50 Hz 220 VΔ/380 VY, 60 Hz 440 VΔ [1]	**2**	**1**	–	All	All			✓	✓	✓	✓	✓	✓			
50 Hz 380 VΔ/660 VY, 60 Hz 440 VΔ [1] [2]	**3**	**3**	–	All except ⑥ and ⑦				✓	✓	✓	✓	✓	✓			
50 Hz 380 VΔ [2]				Only applicable for ⑥ and ⑦				–	–	✓	✓	✓	✓			
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 [1]	**9**	**0**	**M2A**	All	All			✓	✓	✓	✓	✓	✓			
220 VΔ/380 VY; 60 Hz output [1] [5]	**9**	**0**	**M1A**	All except ⑥ and ⑦				✓	✓	✓	✓	✓	✓			
380 VΔ/660 VY; 50 Hz output [2]	**9**	**0**	**M2B**	All except ⑥ and ⑦				–	–	✓	✓	✓	✓			
380 VΔ; 50 Hz output [2]				Only applicable for ⑥ and ⑦				–	–	✓	✓	✓	✓			
380 VΔ/660 VY; 60 Hz output [2] [5]	**9**	**0**	**M1B**	All except ⑥ and ⑦				–	–	✓	✓	✓	✓			
440 VY; 50 Hz output	**9**	**0**	**M2C**	All	All			–	–	✓	✓	✓	✓			
440 VY; 60 Hz output [5]	**9**	**0**	**M1C**	All except ⑥ and ⑦				–	–	✓	✓	✓	✓			
440 VΔ; 50 Hz output	**9**	**0**	**M2D**	All	All			–	–	✓	✓	✓	✓			
440 VΔ; 60 Hz output [5]	**9**	**0**	**M1D**	All except ⑥ and ⑦				–	–	✓	✓	✓	✓			
460 VY; 50 Hz output	**9**	**0**	**M2E**	All	All			–	–	✓	✓	✓	✓			
460 VY; 60 Hz output [5]	**9**	**0**	**M1E**	All except ⑥ and ⑦				–	–	○	○	○	○			
460 VΔ; 50 Hz output	**9**	**0**	**M2F**	All	All			–	–	✓	✓	✓	✓			
460 VΔ; 60 Hz output [5]	**9**	**0**	**M1F**	All except ⑥ and ⑦				–	–	○	○	○	○			
575 VY; 50 Hz output	**9**	**0**	**M2G**	All	All			–	–	✓	✓	✓	✓			
575 VY; 60 Hz output [5]	**9**	**0**	**M1G**	All except ⑥ and ⑦				–	–	✓	✓	✓	✓			
575 VΔ; 50 Hz output	**9**	**0**	**M2H**	All	All			–	–	✓	✓	✓	✓			
575 VΔ; 60 Hz output [5]	**9**	**0**	**M1H**	All except ⑥ and ⑦				–	–	✓	✓	✓	✓			
Voltage at 87 Hz and 87 Hz output																
400 VΔ [6]	**9**	**0**	**M3A**	All	All			✓	✓	✓	✓	✓	✓			
Non-standard voltage and/or frequencies																
Non-standard winding [7]	**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) Depending on the selected voltage, shaft heights 80 and 90 are only available with motor protection (motor protection code B, C, F, G; see Motor protection on Page 2/47).

2) For North America export versions Eagle Line 1LE1021 NEMA Energy Efficient and 1LE1023 NEMA Premium Efficient, voltages above 600 V will not be stamped.

3) Shaft heights 80 and 90 are only available without motor protection (motor protection code A).

4) Delta connection is not possible.

5) Not admissible for North America export versions Eagle Line 1LE1021 NEMA Energy Efficient and 1LE1023 NEMA Premium Efficient.

6) 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.

7) 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.

Selection and ordering data (continued)

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**									
						63	**71**	**80**	**90**	**100**	**112**	**132**	**160**	**180**	**200**	**225**
				Pole-changing	1LE1011					**1LE1011**						
					1LE1012					**1LE1012**						
				Motor version	Motor type	Frame size										
1LE1. . . - . . . . ■ - ■ . . .						63	71	80	90	100	112	132	160	180	200	225
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 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] 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.

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 version	**Motor type (cast-iron)**	**Motor type – Frame size**								
						100	**112**	**132**	**160**	**180**	**200**	**225**	**250**	**280**	**315**
				IE2 High Efficiency	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									
1LE1. . . - . . . . ■ - ■ . . .				Motor version	Motor type	Frame size									
						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	**2**	**2**	–	All	All	□	□	□	□	□	□	□	□	□	□
50 Hz 400 VΔ/690 VY, 60 Hz 460 VΔ [1]	**3**	**4**	–	All except ⑤, ⑥, ⑦ and ⑧		□	□	□	□	□	□	□	□	□	□
50 Hz 400 VΔ, 60 Hz 460 VΔ [1]				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 VΔ	**2**	**1**	–	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
50 Hz 380 VΔ/660 VY [1], 60 Hz 440 VΔ	**3**	**3**	–	All except ⑤, ⑥, ⑦ and ⑧		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
50 Hz 380 VΔ [1]				Only applicable for ⑤, ⑥, ⑦ and ⑧		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
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															
220 VΔ/380 VY; 50 Hz output	**9**	**0**	**M2A**	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
220 VΔ/380 VY; 60 Hz output [2]	**9**	**0**	**M1A**	All except ⑤, ⑥, ⑦ and ⑧		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
380 VΔ/660 VY; 50 Hz output [1]	**9**	**0**	**M2B**	All except ⑤, ⑥, ⑦ and ⑧		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
380 VΔ; 50 Hz output [1]				Only applicable for ⑤, ⑥, ⑦ and ⑧		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
380 VΔ/660 VY; 60 Hz output [1] [2]	**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 [2]	**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 [2]	**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 [2]	**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 [2]	**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 [2]	**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 [2]	**9**	**0**	**M1H**	All except ⑤, ⑥, ⑦ and ⑧		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Voltage at 87 Hz and 87 Hz output															
400 VΔ [3]	**9**	**0**	**M3A**	All	All	✓	✓	✓	✓	O. R.	O. R.	O. R.	O. R.	O. R.	O. R.
Non-standard voltage and/or frequencies															
Non-standard winding [4]	**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
O. R. Possible on request

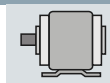
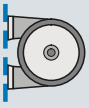
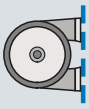
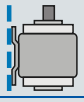
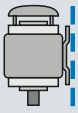
1) For North America export versions Eagle Line 1LE1521/1LE1621 NEMA Energy Efficient and 1LE1523/1LE1623 NEMA Premium Efficient, voltages above 600 V will not be stamped.

2) Not admissible for North America export versions Eagle Line 1LE1521/1LE1621 NEMA Energy Efficient and 1LE1523/1LE1623 NEMA Premium Efficient.

3) 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.

4) 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.

Selection and ordering data

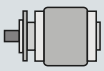
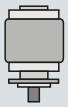
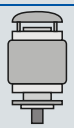
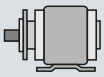
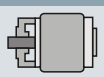
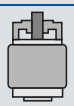
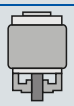
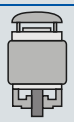
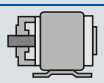
Types of construction		Type of construc. code 14th pos. of the Article No.	Additional identification code **-Z** with order code and plain text if required	Motor category											
				Motor version	**Motor type (alum.)**	**Motor type – Frame size**									
						63	**71**	**80**	**90**	**100**	**112**	**132**	**160**	**180**	**200**	**225**
				IE2 High Efficiency	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						
1LE1. . . - . . . . . - . ■ . .				Motor version	Motor type	Frame size										
1PC1. . . - . . . . . - . ■ . .						63	71	80	90	100	112	132	160	180	200	225
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**	**-Z H00**	All except ②, ⑤, ⑥ and in combination with order code F90				✓	✓	✓	✓	✓	✓			

For legends, notes and footnotes, see Page 2/43.

SIMOTICS GP 1LE1/1PC1 Standard Motors

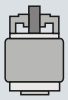
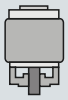
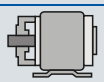
Supplements to article numbers and special versions

Types of construction
Aluminum series 1LE10, 1PC10

Types of construction		Type of construc. code 14th pos. of the Article No.	Additional identification code **-Z** with order code and plain text if required	Motor category **Motor version**	**Motor type (alum.)**	**Motor type – Frame size** 63	71	80	90	100	112	132	160	180	200	225
				IE2 High Efficiency	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						
1LE1. . . - . . . . . - . ■ . .				Motor version	Motor type	Frame size 63	71	80	90	100	112	132	160	180	200	225
1PC1. . . - . . . . . - . ■ . .																
With flange		**acc. to DIN EN 50347 acc. to DIN 42948**						**FF165 A 200**	**FF165 A 200**	**FF215 A 250**	**FF215 A 250**	**FF265 A 300**	**FF300 A 350**			
IM B5 [2) 7)]		**F**	**–**	All	All			✓	✓	✓	✓	✓	✓			
IM V1 without protective cover [2)]		**G**	**–**	All	All			✓	✓	✓	✓	✓	✓			
IM V1 with protective cover [2) 4) 5) 6)]		**G**	**-Z H00**	All except ②, ⑤ and in combination with order code F90				✓	✓	✓	✓	✓	✓			
IM V3 [4)]		**H**	**–**	All	All			✓	✓	✓	✓	✓	✓			
IM B35 [3)]		**J**	**–**	All except ⑥				✓	✓	✓	✓	✓	✓			
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	All			✓	✓	✓	✓	✓	✓			
IM V19 [2)]		**L**	**–**	All	All			✓	✓	✓	✓	✓	✓			
IM V18 without protective cover [2)]		**M**	**–**	All	All			✓	✓	✓	✓	✓	✓			
IM V18 with protective cover [2) 4) 5) 6)]		**M**	**-Z H00**	All except ②, ⑤ and in combination with order code F90				✓	✓	✓	✓	✓	✓			
IM B34 [3)]		**N**	**–**	All except ⑥				✓	✓	✓	✓	✓	✓			

For legends, notes and footnotes, see Page 2/43.

Types of construction
Aluminum series 1LE10, 1PC10

Types of construction		Type of construc. code 14th pos. of the Article No.	Additional identification code **-Z** with order code and plain text if required	Motor category: Motor version	Motor type (alum.)	Motor type – Frame size 63	71	80	90	100	112	132	160	180	200	225
				IE2 High Efficiency	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						
1LE1. . . - . . . . . - . ■ . .				Motor version	Motor type	Frame size 63	71	80	90	100	112	132	160	180	200	225
1PC1. . . - . . . . . - . ■ . .																
With special flange		**acc. to EN 50347 acc. to DIN 42948**						**FT130 C 160**	**FT130 C 160**	**FT165 C 200**	**FT165 C 200**	**FT215 C 250**	**FT265 C 300**			
IM B14 [2) 8)]		**K**	**-Z P01**	All	All			✓	✓	✓	✓	✓	–			
IM V19 [2)]		**L**	**-Z P01**	All	All			–	–	✓	✓	✓	–			
IM V18 without protective cover [2)]		**M**	**-Z P01**	All	All			–	–	✓	✓	✓	–			
IM V18 with protective cover [2) 4) 5)6)]		**M**	**-Z P01+H00**	All except ②, ⑤ and in combination with order code F90				–	–	✓	✓	✓	–			
IM B34 [3)]		**N**	**-Z P01**	All except ⑥				–	–	✓	✓	✓	–			

□ Standard version
• This order code only determines the price of the version – Additional plain text is required.
✓ With additional charge
– Not possible

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 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).

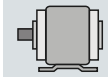
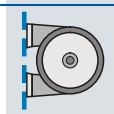
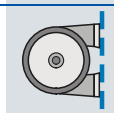
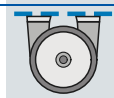
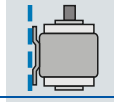
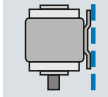
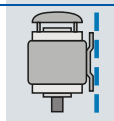
6) Not possible for 1PC1 naturally cooled motors and 1LE1 forced-air cooled motors with order code **F90** without external fan and fan cover.

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.

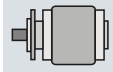
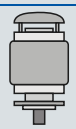
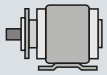
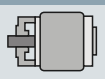
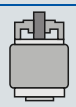
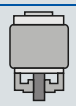
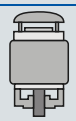
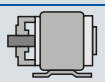
Types of construction
Cast-iron series 1LE15 Basic Line, 1LE16 Performance Line

Selection and ordering data

Types of construction	Type of construc. code 14th pos. of the Article No.	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 S/M	315 L 2-pole	315 L 4-pole, 6-pole, 8-pole
				IE2 High Efficiency	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 100	112	132	160	180	200	225	250	280	315 S/M	315 L 2-pole	315 L 4-pole, 6-pole, 8-pole
1LE1. . . - . . . . . - . ■ . .																	
Without flange																	
IM B3 1) 2) 3)		**A**	–	All except ⑤/⑥ ≤ 200 hp		□	□	□	□	□	□	□	□	□	□	□	□
IM B6 2) 3)		**T**	–	All except ⑤/⑥ ≤ 200 hp		□	□	□	□	□	□	□	□	□	□	□	□
IM B7 2) 3)		**U**	–	All except ⑤/⑥ ≤ 200 hp		□	□	□	□	□	□	□	□	□	□	□	□
IM B8 2) 3)		**V**	–	All except ⑤/⑥ ≤ 200 hp		□	□	□	□	□	□	□	□	□	□	□	□
IM V6 2) 3)		**D**	–	All except ⑤/⑥ ≤ 200 hp		□	□	□	□	□	□	□	□	□	□	✓	□
IM V5 without protective cover 2) 3)		**C**	–	All except ⑤/⑥ ≤ 200 hp		□	□	□	□	□	□	□	□	□	□	✓	□
IM V5 with protective cover 2) 3) 4) 5)		**C**	**-Z H00**	All except ⑤/⑥ ≤ 200 hp		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

For legends, notes and footnotes, see Page 2/46.

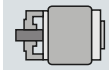
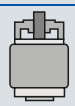
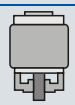
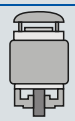
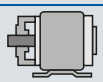
2

Types of construction		Type of construc. code 14th pos. of the Article No.	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 S/M	315 L 2-pole	315 L 4-pole, 6-pole, 8-pole
				IE2 High Efficiency	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: 100	112	132	160	180	200	225	250	280	315 S/M	315 L 2-pole	315 L 4-pole, 6-pole, 8-pole
1LE1. . . - . . . . . - . ■ . .																	
With flange		acc. to DIN EN 50347 acc. to DIN 42948				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	– 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**	**-Z H00**	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
IM V3 5)		**H**	–	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	–	–
IM B35 3)		**J**	–	All except ⑤/⑥ ≤ 200 hp		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
With standard flange		acc. to DIN EN 50347 acc. to DIN 42948				FT130 C 160	FT130 C 160	FT165 C 200	FT215 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**	**-Z H00**	All	All	✓	✓	✓	✓	–	–	–	–	–	–	–	–
IM B34 3)		**N**	–	All except ⑤/⑥ ≤ 200 hp		✓	✓	✓	✓	–	–	–	–	–	–	–	–

For legends, notes and footnotes, see Page 2/46.

Supplements to article numbers and special versions

Types of construction
Cast-iron series 1LE15 Basic Line, 1LE16 Performance Line

Types of construction	Type of construc. code 14th pos. of the Article No.	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 S/M	315 L 2-pole	315 L 4-pole, 6-pole, 8-pole
			IE2 High Efficiency	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: 100	112	132	160	180	200	225	250	280	315 S/M	315 L 2-pole	315 L 4-pole, 6-pole, 8-pole
1LE1. . . -. . . . . -. ■ . .																
With special flange		**acc. to DIN EN 50347 acc. to DIN 42948**			**FT165 C 200**	**FT165 C 200**	**FT215 C 250**	**FT265 C 300**								
IM B14 2) 7)		**K**	**-Z P01**	All	All	✓	✓	✓	–	–	–	–	–	–	–	–
IM V19 2)		**L**	**-Z P01**	All	All	✓	✓	✓	–	–	–	–	–	–	–	–
IM V18 without protective cover 2)		**M**	**-Z P01**	All	All	✓	✓	✓	–	–	–	–	–	–	–	–
IM V18 with protective cover 2) 4) 5)		**M**	**-Z P01 + H00**	All	All	✓	✓	✓	–	–	–	–	–	–	–	–
IM B34 3)		**N**	**-Z P01**	All except ⑤/⑥ ≤ 200 hp		✓	✓	✓	–	–	–	–	–	–	–	–

□ Standard version
• This order code only determines the price of the version – Additional plain text is required.
✓ With additional charge
– Not possible

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 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).

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.

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 (alum.)	Motor type – Frame size: 63	71	80	90	100	112	132	160	180	200	225
			IE2 High Efficiency	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						
1LE1. . . -. . . . . -. . ■ .			Motor version	Motor type	Frame size: 63	71	80	90	100	112	132	160	180	200	225
1PC1. . . -. . . . . -. . ■ .															
Motor protection (winding protection)															
Without motor protection [1] [2]	**A**	–	All	All			□	□	□	□	□	□			
Motor protection with PTC thermistors with 1 or 3 embedded temperature sensors for tripping [2] [3]	**B**	–	All	All			✓	✓	✓	✓	✓	✓			
Motor protection with PTC thermistors with 6 embedded temperature sensors for alarm and tripping [3]	**C**	–	All	All			✓	✓	✓	✓	✓	✓			
Motor temperature detection with embedded temperature sensor KTY 84-130 [3]	**F**	–	All	All			✓	✓	✓	✓	✓	✓			
Motor temperature detection with embedded temperature sensor 2 × KTY 84-130 [3]	**G**	–	All	All			✓	✓	✓	✓	✓	✓			
Installation of 3 PT100 resistance thermometers [3]	**H**	–	All	All			–	–	✓	✓	✓	✓			
NTC thermistors for tripping	**Z**	**Q2A**	All	All			–	–	✓	✓	✓	✓			
Temperature detectors for tripping [3]	**Z**	**Q3A**	All	All			✓	✓	✓	✓	✓	✓			

□ Standard version
✓ With additional charge
– Not possible

[1] Depending on the selected voltage, shaft heights 80 and 90 are only available without motor protection (motor protection code A).

[2] Depending on the selected voltage, shaft heights 80 and 90 are only available with motor protection (motor protection code B, C, F, G).

[3] Evaluation with appropriate tripping unit (see Catalog IC 10) is recommended. For pole-changing motors with separate windings, double the number of temperature sensors or temperature detectors is required and will be installed at the factory. This also results in a double additional charge.

Motor protection
Cast-iron series 1LE15 Basic Line, 1LE16 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
			IE2 High Efficiency	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									
1LE1. . . - . . . . . - . . . ■ .			Motor version	Motor type	Frame size: 100	112	132	160	180	200	225	250	280	315
Motor protection (winding protection)														
Without motor protection [1]	**A**	**–**	All except Performance Line ②, ④, ⑥ and ⑧		□	□	□	□	□	□	□	□	□	□
Motor protection with PTC thermistors with 3 embedded temperature sensors for tripping [1] [2]	**B**	**–**	Standard version for Performance Line ②, ④, ⑥ and ⑧		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
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	**H**	**–**	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Installation of 6 PT100 resistance thermometers [2]	**J**		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

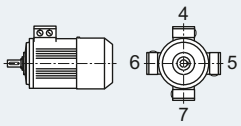
Note:

Options are available specifically for bearing protection –
For order codes and descriptions, see from Page 2/56.

[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.

Selection and ordering data

Connection box position	Connection box 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 63	71	80	90	100	112	132	160	180	200	225
			IE2 High Efficiency	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						
1LE1. . . -. . . . . -. . . ■			Motor version	Motor type	Frame size 63	71	80	90	100	112	132	160	180	200	225
1PC1. . . -. . . . . -. . . ■															
Connection box position															
Connection box top [1]	**4**	–	All	All			□	□	□	□	□	□			
Connection box on RHS [2]	**5**	–	All	All			✓	✓	✓	✓	✓	✓			
Connection box on LHS [2]	**6**	–	All	All			✓	✓	✓	✓	✓	✓			
Connection box bottom [2] [3]	**7**	–	All	All			–	–	✓	✓	✓	✓			

□ Standard version
✓ With additional charge
– Not possible

[1] For types of construction with feet, cast feet are standard. Screwed-on feet are available with order code **H01**.

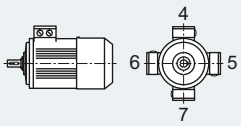
[2] For types of construction with feet, screwed-on feet are standard.

[3] Not generally possible for motors with feet.

Connection box position
Cast-iron series 1LE15 Basic Line, 1LE16 Performance Line

Selection and ordering data

Connection box position	Connection box 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
			IE2 High Efficiency	1LE1501	1LE1501 Basic Line									
				1LE1601	1LE1601 Performance Line									
			IE3 Premium Efficiency	1LE1503	1LE1503 Basic Line									
				1LE1603	1LE1603 Performance Line									
			NEMA Energy Efficient	1LE1521	1LE1521 Eagle Line Basic									
				1LE1621	1LE1621 Eagle Line Performance									
			NEMA Premium Efficient	1LE1523	1LE1523 Eagle Line Basic									
				1LE1623	1LE1623 Eagle Line Performance									
1LE1. . . - . . . . . - . . . ■			Motor version	Motor type	Frame size: 100	112	132	160	180	200	225	250	280	315
Connection box position														
Connection box top [1]	**4**	–	All	All	□	□	□	□	□	□	□	□	□	□
Connection box on RHS [2]	**5**	–	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Connection box on LHS [2]	**6**	–	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Connection box bottom [3]	**7**	–	All	All	✓	✓	✓	✓	–	–	–	–	–	–



□ Standard version
✓ With additional charge
– Not possible

[1] For types of construction with feet, cast feet are standard. Screwed-on feet are available with order code **H01**.

[2] For types of construction with feet, screwed-on feet are standard.

[3] Not generally possible for motors with feet.

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**									
				63	71	80	90	100	112	132	160	180	200	225
		IE2 High Efficiency	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						
1LE1. . . -. . . . . -. . . . -Z **1PC1. . . -. . . . . -. . . . -Z**		Motor version	Motor type	Frame size										
				63	71	80	90	100	112	132	160	180	200	225
Connection box motor connection														
One metal cable gland	**R15**	All	All			✓	✓	✓	✓	✓	✓			
Rotation of the connection box through 90°, entry from DE [1]	**R10**	All	All			○	○	○	○	○	○			
Rotation of the connection box through 90°, entry from NDE	**R11**	All	All			○	○	○	○	○	○			
Rotation of the connection box through 180°	**R12**	All	All			○	○	○	○	○	○			
Larger connection box	**R50**	All	All			✓	✓	✓	✓	✓	✓			
Reduction piece for M cable gland in accordance with British Standard, both cable entries mounted [2]	**R30**	All	All			–	–	✓	✓	✓	✓			
External grounding	**H04**	All	All			✓	✓	✓	✓	✓	✓			
Connection box on NDE [3]	**H08**	All	All			–	–	✓	✓	✓	✓			
3 cables protruding, 0.5 m long [4] [5]	**R20**	All	All			✓	✓	✓	✓	✓	✓			
3 cables protruding, 1.5 m long [4] [5]	**R21**	All	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			✓	✓	✓	✓	✓	✓			
Motor connector Han-Drive 10e for 230 VΔ/400 VY	**R70**	All	All			✓	✓	O. R.	O. R.	O. R.	O. R.			
Motor connector Han-Drive 10e with EMC for 230 VΔ/400 VY	**R71**	All	All			✓	✓	O. R.	O. R.	O. R.	O. R.			
Small motor connector CQ12 with EMC	**R72**	All	All			O. R.	O. R.	–	–	–	–			
Small motor connector CQ12 without EMC	**R73**	All	All			O. R.	O. R.	–	–	–	–			
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 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			–	–	✓	✓	✓	✓			
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			–	–	✓	✓	✓	✓			
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, notes and footnotes, see Page 2/55.

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**									
				63	71	80	90	100	112	132	160	180	200	225
		IE2 High Efficiency	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						
1LE1. . . -. . . . . -. . . . -Z **1PC1. . . -. . . . . -. . . . -Z**		Motor version	Motor type	Frame size									
				63	71	80	90	100	112	132	160	180	200	225
Windings and insulation (continued)														
Temperature class 155 (F), utilized according to 155 (F), other requirements	**Y52** • 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			◘	◘	◘	◘	◘	◘			
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			✓	✓	✓	✓	✓	✓			
Special finish in special RAL colors: For RAL colors, see "Special finish in special RAL colors" (Catalog Section 1 "Introduction")	**Y51** • and special finish RAL….	All	All			✓	✓	✓	✓	✓	✓			
Special paint for use offshore	**S04**	All	All			–	–	O. R.	O. R.	O. R.	O. R.			
Special finish sea air resistant	**S03**	All	All			–	–	✓	✓	✓	✓			
Unpainted (only cast-iron parts primed)	**S00**	All	All			O	O	O	O	O	O			
Unpainted, only primed	**S01**	All	All			✓	✓	✓	✓	✓	✓			
Modular technology – Basic versions [7]														
Mounting of separately driven fan	**F70**	All except ②, ⑤ and in combination with order code F90				✓	✓	✓	✓	✓	✓			
Mounting of brake [8]	**F01**	All except ②, ⑤ and in combination with order code F90				✓	✓	✓	✓	✓	✓			
Mounting of brake for higher switching frequency [8]	**F02**	All	All			O. R.	O. R.	O. R.	O. R.	O. R.	O. R.			
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				✓	✓	O	O	O	O			
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 [7]														
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														
Protective cover [9] [11]	**H00**	All; except ②, ⑥ and in combination with order code F90				✓	✓	✓	✓	✓	✓			
Next larger standard flange	**P01**	All	All			–	–	✓	✓	✓	–			
Next smaller standard flange	**P02**	All	All			–	–	✓	✓	✓	✓			
Cast-iron bearing plate on DE	**P10**	All	All			✓	✓	–	–	–	–			
Screwed-on (instead of cast) feet	**H01**	All	All			✓	✓	✓	✓	✓	✓			
Enclosure with screw mounting	**H10**	Only possible for ③, ⑥ and ⑦				✓	✓	–	–	–	–			

For legends, notes and footnotes, see Page 2/55.

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**									
				63	71	80	90	100	112	132	160	180	200	225
		IE2 High Efficiency	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						
1LE1. . . -. . . . . -. . . . -Z **1PC1. . . -. . . . . -. . . . -Z**		Motor version	Motor type	Frame size										
				63	71	80	90	100	112	132	160	180	200	225
Mechanical design and degrees of protection (continued)														
Drive-end seal for flange-mounting motors, oil-tight to 0.1 bar [12]	**H23**	All	All			✓	✓	✓	✓	✓	✓			
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				–	–	–	–	✓	✓			
IP65 degree of protection [13]	**H20**	All	All			✓	✓	✓	✓	✓	✓			
IP56 degree of protection [12]	**H22**	All	All			✓	✓	✓	✓	✓	✓			
Vibration-proof version	**H02**	All	All			–	–	✓	✓	✓	✓			
Condensation drainage holes sealed [14]	**H03**	All	All			✓	✓	✓	✓	✓	✓			
Rust-resistant screws (externally)	**H07**	All	All			–	–	✓	✓	✓	✓			
Prepared for mountings, center hole only [10]	**G40**	All except ②, ⑤ and in combination with order code F90				✓	✓	✓	✓	✓	✓			
Prepared for mountings with shaft D12 [15]	**G41**	All except ②, ⑤ and in combination with order code F90				✓	✓	✓	✓	✓	✓			
Prepared for mountings with shaft D16 [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)	**G43**	All except ②, ⑤ and in combination with order code F90				✓	✓	✓	✓	✓	✓			
Coolant temperature														
Coolant temperature –40 to +40 °C [16]	**D03**	All	All			✓	✓	✓	✓	✓	✓			
Coolant temperature –30 to +40 °C [16]	**D04**	All	All			✓	✓	✓	✓	✓	✓			
Designs in accordance with standards and specifications														
CCC China Compulsory Certification [17]	**D01**	All	All			–	–	✓	✓	–	–			
IE1 motor without CE marking for export outside EEA (see EU Directive 640/2009)	**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				✓	✓	✓	✓	✓	✓			
VIK version	**C02**	All	All			–	–	✓	✓	✓	✓			
China Energy Efficiency Label	**D34**	Only possible for ①, ②, ⑥ and ⑦				–	–	○	○	○	○			
Train-compatible version	**L82**	All except ② and ⑤				✓	✓	✓	✓	✓	✓			
Bearings and lubrication														
Measuring nipple for SPM shock pulse measurement for bearing inspection [20]	**Q01**	All	All			–	–	✓	✓	✓	✓			
Bearing design for increased cantilever forces	**L22**	All	All			–	–	✓	✓	✓	✓			
Special bearing for DE and NDE, bearing size 63	**L25**	All	All			–	–	✓	✓	✓	✓			
Regreasing device [20]	**L23**	All	All			–	–	✓	✓	✓	✓			
Located bearing DE	**L20**	All	All			✓	✓	✓	✓	✓	✓			
Located bearing NDE	**L21**	All	All			✓	✓	✓	✓	✓	◘			
Balance and vibration quantity														
Vibration quantity level A		All	All			◘	◘	◘	◘	◘	◘			
Vibration quantity level B	**L00**	All	All			✓	✓	✓	✓	✓	✓			
Half-key balancing (standard)		All	All			◘	◘	◘	◘	◘	◘			
Full-key balancing	**L02**	All	All			✓	✓	✓	✓	✓	✓			
Balancing without feather key, feather key is supplied	**L01**	All	All			✓	✓	✓	✓	✓	✓			
Shaft and rotor														
Concentricity of shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors	**L08**	All	All			✓	✓	✓	✓	✓	✓			

For legends, notes and footnotes, see Page 2/55.

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**									
				63	**71**	**80**	**90**	**100**	**112**	**132**	**160**	**180**	**200**	**225**
		IE2 High Efficiency	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						
1LE1. . . -. . . . . -. . . . -Z **1PC1. . . -. . . . . -. . . . -Z**		Motor version	Motor type	Frame size 63	71	80	90	100	112	132	160	180	200	225
Shaft and rotor (continued)														
Second standard shaft extension	**L05**	All except ②, ⑤ and in combination with order code F90				✓	✓	✓	✓	✓	✓			
Shaft extension with standard dimensions, without feather keyway	**L04**	All	All			–	–	✓	✓	✓	✓			
Concentricity of shaft extension in accordance with DIN 42955 Tolerance R	**L07**	All	All			✓	✓	✓	✓	✓	✓			
Standard shaft made of stainless steel	**L06**	All	All			✓	✓	✓	✓	✓	✓			
Non-standard cylindrical shaft extension, DE [21]	**Y58** • and identification code	All	All			✓	✓	✓	✓	✓	✓			
Non-standard cylindrical shaft extension, NDE [21]	**Y59** • and identification code	All	All			✓	✓	✓	✓	✓	✓			
Heating and ventilation														
Fan cover for textile industry [22]	**F75**	All except ②, ⑤ and in combination with order code F90				✓	✓	✓	✓	✓	✓			
Metal external fan [23]	**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			–	–	✓	✓	✓	✓			
Sheet metal fan cover	**F74**	All except ②, ⑤ and in combination with order code F90				✓	✓	✓	✓	✓	✓			
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 (rated data only, e.g. voltage, output, speed)	**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 number; 2 lines of text)	**Y85** • and identification code	All	All			–	–	✓	✓	✓	✓			
Packaging, safety notes, documentation and test certificates														
Printed German/English Operating Instructions (compact) enclosed in each wire-lattice pallet	**B01**	All	All			○	○	○	○	○	○			
Acceptance test certificate 3.1 according to EN 10204 [26]	**B02**	All	All			✓	✓	✓	✓	✓	✓			
Printed German/English Operating Instructions (compact) enclosed [27]		All	All			◘	◘	◘	◘	◘	◘			
Printed German/English operating instructions enclosed	**B04**	All	All			–	–	✓	✓	✓	✓			
Document – Electrical data sheet	**B60**	All	All			–	–	✓	✓	✓	✓			
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			–	–	✓	✓	✓	✓			

For legends, notes and footnotes, see Page 2/55.

- ◘ 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

1) With 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 differ from EN 50347! See dimension sheet generator

4) In combination with motor protection (15th position of the Article No.) or anti-condensation heating option, please inquire before ordering.

5) Not possible for pole-changing motors and/or 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.

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 1XP8032-10 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 rotary pulse encoder HOG 9 D 1024I (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 code **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 dimension 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".

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 for pole-changing motors, naturally cooled 1PC1 motors, 8-pole motors and 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/WW/view/en/40761976.

Options
Cast-iron series 1LE15 Basic Line, 1LE16 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**
			IE2 High Efficiency	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									
1LE1. . . - . . . . . - . . . . -Z			Motor version	Motor type	Frame size 100	112	132	160	180	200	225	250	280	315
Motor protection (bearing protection)														
Prepared for mounting a SIPLUS CMS 1000 vibration sensor	**Q05**	*New!*	All	All					✓	✓	✓	✓	✓	✓
Installation of 2 PT100 screw-in resistance thermometers in basic circuit for rolling-contact bearings [2]	**Q72**		All	All	–	–	–	–	✓	✓	✓	✓	✓	✓
2 × 3 temperature detectors for alarm and tripping	**Q32**	*New!*	All	All					✓	✓	✓	✓	✓	✓
Installation of 1 PT100 resistance thermometer in stator winding, two-wire circuit	**Q62**	*New!*	All	All					✓	✓	✓	✓	✓	✓
Installation of 3 PT100 resistance thermometers in stator winding, three-wire circuit	**Q63**	*New!*	All	All					✓	✓	✓	✓	✓	✓
Installation of 6 PT100 resistance thermometers in stator winding, three-wire circuit	**Q64**	*New!*	All	All					✓	✓	✓	✓	✓	✓
Installation of 2 PT100 screw-in resistance thermometers in 3-wire circuit for rolling-contact bearings	**Q78**	*New!*	All	All					✓	✓	✓	✓	✓	✓
Installation of 2 PT100 double screw-in resistance thermometers in 3-wire circuit for rolling-contact bearings	**Q79**	*New!*	All	All					✓	✓	✓	✓	✓	✓
Motor connection and connection box														
One EMC cable gland	**R14**	*New!*	All	All					✓	✓	✓	✓	✓	✓
One metal cable gland	**R15**		All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EMC cable gland, maximum configuration	**R16**	*New!*	All	All					✓	✓	✓	✓	✓	✓
Cable gland, maximum configuration	**R18**		All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Saddle terminal for connection without cable lugs, accessories pack	**R19**	*New!*	All	All	–	–	–	–	–	–	–	✓	✓	✓
Rotation of the connection box through 90°, entry from DE	**R10**		All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Rotation of the connection box through 90°, entry from NDE	**R11**		All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Rotation of the connection box through 180°	**R12**		All	All	○	○	○	○	✓	✓	✓	✓	✓	✓
3 cables protruding, 1.5 m long	**R21**	*New!*	All	All					O. R.	O. R.	O. R.	O. R.	O. R.	O. R.
6 cables protruding, 1.5 m long	**R23**	*New!*	All	All					O. R.	O. R.	O. R.	O. R.	O. R.	O. R.
6 cables protruding, 3 m long	**R24**	*New!*	All	All					O. R.	O. R.	O. R.	O. R.	O. R.	O. R.
Larger connection box	**R50**		All	All	O. R.	O. R.	O. R.	–	✓	✓	✓	✓	✓	✓
Terminal box without cable entry opening	**R51**	*New!*	All	All					○	○	○	○	○	○
Drilled removable entry plate	**R52**	*New!*	All	All					✓	✓	✓	✓	✓	✓
Undrilled removable entry plate	**R53**	*New!*	All	All					✓	✓	✓	✓	✓	✓

For legends and notes, see Page 2/61, for footnotes, see Page 2/62.

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**
		IE2 High Efficiency	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									
1LE1. . . - . . . . . - . . . . -Z		Motor version	Motor type	Frame size									
				100	112	132	160	180	200	225	250	280	315
Motor connection and connection boxes (continued)													
Cast-iron auxiliary terminal box (small)	**R62** *New!*	All	All					✓	✓	✓	✓	✓	✓
External grounding	**H04**	All	All	✓	✓	✓	✓	◘	◘	◘	◘	◘	◘
Connection box on NDE	**H08** *New!*	All	All					✓	✓	✓	✓	✓	✓
Stud terminal for cable connection, accessories pack (3 items)	**R17**	All	All	–	–	–	–	–	–	–	✓	✓	✓
Silicon-free version	**R74**	All	All	◘	◘	◘	◘	◘	◘	◘	✓	✓	✓
Non-standard threaded through hole (NPT or G thread) [3]	**Y61** • *New!* and identification code	All	All					✓	✓	✓	✓	✓	✓
Windings and insulation													
Temperature class 155 (F), utilized acc. to 155 (F), with service factor (SF)	**N01** *New!*	All	All					✓	✓	✓	✓	✓	✓
Temperature class 155 (F), utilized acc. to 155 (F), with increased output	**N02** *New!*	All	All					✓	✓	✓	✓	✓	✓
Temperature class 155 (F), utilized acc. to 155 (F), with increased coolant temperature	**N03**	All	All	O. R.	O. R.	O. R.	O. R.	✓	✓	✓	✓	✓	✓
Temperature class 180 (H) at rated output and max. CT 60 °C [4] [5]	**N11**	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Temperature class 155 (F), utilized acc. to 130 (B), coolant temperature 45 °C, derating approx. 4 %	**N05** *New!*	All	All					✓	✓	✓	✓	✓	✓
Temperature class 155 (F), utilized acc. to 130 (B), coolant temperature 50 °C, derating approx. 8 %	**N06**	All	All	O. R.	O. R.	O. R.	O. R.	✓	✓	✓	✓	✓	✓
Temperature class 155 (F), utilized acc. to 130 (B), coolant temperature 55 °C, derating approx. 13 %	**N07** *New!*	All	All					✓	✓	✓	✓	✓	✓
Temperature class 155 (F), utilized acc. to 130 (B), coolant temperature 60 °C, derating approx. 18 %	**N08** *New!*	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** • *New!* and specified output, CT .. °C or SA .... m above sea level	All	All					✓	✓	✓	✓	✓	✓
Temperature class 155 (F), utilized acc. to 155 (F), other requirements [5]	**Y52** • *New!* and specified output, CT .. °C or SA .... m above sea level	All	All					✓	✓	✓	✓	✓	✓
Temperature class 180 (H), utilized according to 155 (F)	**Y75** • *New!* and specified output, CT .. °C or SA .... m above sea level	All	All					✓	✓	✓	✓	✓	✓

For legends and notes, see Page 2/61, for footnotes, see Page 2/62.

Options
Cast-iron series 1LE15 Basic Line, 1LE16 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**
		IE2 High Efficiency	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									
1LE1. . . - . . . . . - . . . . -Z		Motor version	Motor type	Frame size									
				100	112	132	160	180	200	225	250	280	315
Colors and paint finish													
Standard finish in RAL 7030 stone gray		Only possible for Basic Line ①, ③, ⑤ and ⑦		◘	◘	◘	◘	◘	◘	◘	◘	◘	◘
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....	Only possible for Basic Line ①, ③, ⑤ and ⑦		–	–	–	–	✓	✓	✓	✓	✓	✓
Special finish sea air resistant	**S03** *New!*	All	All					✓	✓	✓	✓	✓	✓
Special paint for use offshore	**S04** *New!*	All	All					✓	✓	✓	✓	✓	✓
Internal coatings (metal parts; rotor and stator)	**S05** *New!*	All	All					✓	✓	✓	✓	✓	✓
Special finish in RAL 7030 stone gray	**S10**	All; standard version for Performance Line ②, ④, ⑥ and ⑧		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
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	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Special finish in special RAL colors: For RAL colors, see "Special finish in special RAL colors" (Catalog Section 1 "Introduction")	**Y51 •** and special finish RAL....	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Unpainted (only cast-iron parts primed)	**S00**	All	All	○	○	○	○	○	○	○	○	○	○
Unpainted, only primed	**S01**	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Modular technology – Basic versions [6]													
Mounting of separately driven fan	**F70**	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mounting of brake [7]	**F01**	All; standard version for Performance Line from FS 180 ②, ④, ⑥ and ⑧, < FS 180 O. R.		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Backstop, counter-clockwise motion blocked, clockwise direction	**F40** *New!*	All	All					✓	✓	✓	✓	✓	✓
Backstop, clockwise motion blocked, counter-clockwise direction	**F41** *New!*	All	All					✓	✓	✓	✓	✓	✓
Mounting of 1XP8012-10 (HTL) rotary pulse encoder [8] [9]	**G01**	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mounting of 1XP8012-20 (TTL) rotary pulse encoder [8] [9]	**G02**	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Modular technology – Additional versions													
Brake supply voltage 24 V DC	**F10**	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Brake supply voltage 230 V AC, 50/60 Hz	**F11**	All	All	○	○	○	○	○	○	○	○	○	○
Brake supply voltage 400 V AC, 50/60 Hz	**F12**	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mechanical manual brake release with lever (no locking)	**F50**	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

For legends and notes, see Page 2/61, for footnotes, see Page 2/62.

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**
		IE2 High Efficiency	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									
1LE1. . . - . . . . . - . . . . -Z		Motor version	Motor type	Frame size									
				100	112	132	160	180	200	225	250	280	315
Special technology [5]													
Mounting of LL 861 900 220 rotary pulse encoder [10]	**G04**	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mounting of HOG 9 D 1024 I rotary pulse encoder [10]	**G05**	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mounting of HOG 10 D 1024 I rotary pulse encoder [10]	**G06**	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mounting of POG10D rotary pulse encoder [11]	**G07** *New!*	All	All					✓	✓	✓	✓	✓	✓
Mounting of POG9 rotary pulse encoder [11]	**G08** *New!*	All	All					✓	✓	✓	✓	✓	✓
Second external grounding	**H70** *New!*	All	All					✓	✓	✓	✓	✓	✓
Mounting of a special type of rotary pulse encoder	**Y70** • and identification code *New!*	All	All					O. R.	O. R.	O. R.	O. R.	O. R.	O. R.
Mechanical design and degrees of protection													
Prepared for mountings, center hole only	**G40** *New!*	All	All					◘	◘	◘	◘	◘	◘
Prepared for mountings with D12 shaft	**G41** *New!*	All	All					✓	✓	✓	✓	✓	✓
Prepared for mountings with D16 shaft	**G42** *New!*	All	All					✓	✓	✓	✓	✓	✓
Protective cover for encoder supplied loose – only for mountings with order codes G40, G41 and G42	**G43** *New!*	All	All					✓	✓	✓	✓	✓	✓
Protective cover [8) 10) 12)]	**H00**	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Next larger standard flange	**P01**	All	All	✓	✓	✓	–	–	–	–	–	–	–
Next smaller standard flange	**P02**	All	All	✓	✓	✓	✓	✓	✓	–	–	–	–
Screwed-on feet (instead of cast)	**H01**	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Drive-end seal for flange-mounting motors, oil-tight to 0.1 bar [13]	**H23**	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Low-noise version for 2-pole motors with clockwise direction of rotation	**F77** *New!*	All	All					✓	✓	✓	✓	✓	✓
Low-noise version for 2-pole motors with counter-clockwise direction of rotation	**F78** *New!*	All	All					✓	✓	✓	✓	✓	✓
IP65 degree of protection [14]	**H20**	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
IP54 degree of protection	**H21** *New!*	All	All					✓	✓	✓	✓	✓	✓
Vibration resistant version (continuous vibration resistance Class 3M4 acc. to IEC721-3-3:1994)	**H02** *New!*	All	All					✓	✓	✓	✓	◘	◘
IP56 degree of protection [15]	**H22**	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Condensation drainage holes sealed	**H03**	All	All	◘	◘	◘	◘	◘	◘	◘	◘	◘	◘
Rust-resistant screws (externally)	**H07**	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Grounding brush for converter-fed operation	**L52** *New!*	All	All									✓	✓
Coolant temperature													
Coolant temperature –50 to +40 °C	**D02** *New!*	All	All					✓	✓	✓	✓	✓	✓
Coolant temperature –40 to +40 °C [16]	**D03**	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Coolant temperature –30 to +40 °C [17]	**D04** *New!*	All	All					✓	✓	✓	✓	✓	✓

For legends and notes, see Page 2/61, for footnotes, see Page 2/62.

Supplements to article numbers and special versions

Options
Cast-iron series 1LE15 Basic Line, 1LE16 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**
		IE2 High Efficiency	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**									
1LE1. . . - . . . . . - . . . . -Z		Motor version	Motor type	Frame size 100	112	132	160	180	200	225	250	280	315
Designs in accordance with standards and specifications													
Electrical according to NEMA MG1-12 [18]	**D30**	All; for Eagle Line ⑤, ⑥, ⑦ and ⑧ standard version		–	–	–	–	✓	✓	✓	✓	✓	✓
Design according to UL with "Recognition Mark" [18]	**D31**	All; for Eagle Line ⑤, ⑥, ⑦ and ⑧ standard version		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
China Energy Efficiency Label	**D34**	All	All					○	○	○	○	○	○
Canadian regulations (CSA) [17]	**D40** *New!*	All; for Eagle Line ⑤, ⑥, ⑦ and ⑧ standard version		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Bearings and lubrication													
Measuring nipple for SPM shock pulse measurement for bearing inspection [1]	**Q01**	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Located bearing NDE	**L21** *New!*	All	All					◘	◘	◘	◘	◘	◘
Bearing design for increased cantilever forces	**L22**	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Hot bearing grease	**L24** *New!*	All	All					O. R.	O. R.	O. R.	O. R.	O. R.	O. R.
Special bearing for DE and NDE, bearing size 63 [19]	**L25**	All; standard version for Performance Line ②, ④, ⑥ and ⑧		✓	✓	✓	✓	✓	✓	✓	✓	◘	◘
Regreasing device [1]	**L23**	All; standard version for Performance Line from FS 160 ②, ④, ⑥ and ⑧		✓	✓	✓	✓	✓	✓	✓	✓	◘	◘
Bearing for DE and NDE of type 63XX	**L28** *New!*	All	All					✓	✓	✓	✓	✓	✓
Located bearing DE	**L20**	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Bearing insulation DE	**L50**	All	All	–	–	–	–	–	–	✓	✓	✓	✓
Bearing insulation NDE	**L51**	All	All	–	–	–	–	–	–	✓	✓	✓	✓
Balance and vibration quantity													
Vibration quantity level A		All	All	◘	◘	◘	◘	◘	◘	◘	◘	◘	◘
Vibration quantity level B [20]	**L00**	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Balancing without feather key, feather key is supplied	**L01** *New!*	All	All					✓	✓	✓	✓	✓	✓
Full-key balancing	**L02** *New!*	All	All					✓	✓	✓	✓	✓	✓
Half-key balancing (standard)		All	All	◘	◘	◘	◘	◘	◘	◘	◘	◘	◘
Shaft and rotor													
Shaft extension with standard dimensions, without feather keyway	**L04** *New!*	All	All					✓	✓	✓	✓	✓	✓
Concentricity of shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors	**L08**	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Second standard shaft extension	**L05**	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Concentricity of shaft extension in accordance with DIN 42955 Tolerance R	**L07**	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Standard shaft made of stainless steel	**L06**	All	All					✓	✓	✓	✓	✓	✓
Non-standard cylindrical shaft extension, DE [21]	**Y58** • and identification code *New!*	All	All					✓	✓	✓	✓	✓	✓
Non-standard cylindrical shaft extension, NDE [21]	**Y59** • and identification code *New!*	All	All					✓	✓	✓	✓	✓	✓
Special shaft steel	**Y60** • and identification code *New!*	All	All					✓	✓	✓	✓	✓	✓

For legends and notes, see Page 2/61, for footnotes, see Page 2/62.

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**
		IE2 High Efficiency	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									
1LE1. . . - . . . . . - . . . . -Z		Motor version	Motor type	Frame size 100	112	132	160	180	200	225	250	280	315
Heating and ventilation													
Metal external fan [22]	**F76**	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Anti-condensation heating for 230 V	**Q02**	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Anti-condensation heating for 115 V	**Q03**	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Sheet metal fan cover	**F74**	All; standard version for Performance Line ②, ④, ⑥ and ⑧		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Separately driven fan with non-standard voltage and/or frequency	**Y81** • *New!* and identification code	All	All					–	–	✓	✓	✓	✓
Rating plate and extra rating plates													
Extra rating plate for voltage tolerance [23]	**B07**	All, with the exception of 8-pole motors		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
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 (rated data only, e.g. voltage, output, speed)	**Y80** • and identification code	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Adhesive label, supplied loose (printed with: Article No., serial number; 2 lines of text)	**Y85** • *New!* 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	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
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**	All	All					✓	✓	✓	✓	✓	✓
Extension of the liability for defects by 24 months to a total of 36 months (3 years) from delivery	**Q82**	All	All					✓	✓	✓	✓	✓	✓
Packaging, safety notes, documentation and test certificates													
Acceptance test certificate 3.1 according to EN 10204 [24]	**B02**	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Printed German/English Operating Instructions enclosed [25]	**B04** *New!*	All	All					✓	✓	✓	✓	✓	✓
Document – Electrical data sheet	**B60**	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Document – Order dimensional drawing	**B61**	All	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Standard test (routine test) with acceptance	**B65** *New!*	All	All					✓	✓	✓	✓	✓	✓
Type test with heat run for horizontal motors, with acceptance	**B83** *New!*	All	All					✓	✓	✓	✓	✓	✓
Connected in star for dispatch	**M01** *New!*	All	All					✓	✓	✓	✓	✓	✓
Connected in delta for dispatch	**M02** *New!*	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 2/62.

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 1XP8032-10 rotary pulse encoder is used instead of 1XP8012-10 or 1XP8032-20 is used instead of 1XP8012-20.

10) The 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 1024 I 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 SA 225-315).

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 dimension tables under "Dimensions")
– Dimensions E and EA ≤2 × Length E (normal) of the shaft extension
For explanation of the order codes, see Catalog Section 1 "Introduction".

22) Converter-fed operation is permitted for 1LE1 motors with metal external fans.

23) Can be ordered for 230VΔ/400VY or 400VΔ/690VY (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**.

24) The delivery time for the factory test certificate may differ from the delivery time for the motor and it will be dispatched by email.

25) The Operating Instructions (compact) are available in PDF format for all official EU languages at http://support.automation.siemens.com/WW/view/en/10803948/133300.

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).

Source of supply:

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Fax +49 (0)5241-74 07-90

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 tapered pins is not embedded with concrete until the machine has been fully aligned. The machine is set 2 to 3 mm deeper in this case. The difference in shaft height is compensated by inserting shims on final installation. The tapered pins safeguard the exact position of the machine when it is repeatedly removed and replaced without the need for realignment.

Source of supply:

Lütgert & Co. GmbH
Postfach 42 51
33276 Gütersloh, Germany
Tel. +49 (0)5241-74 07-0
Fax +49 (0)5241-74 07-90

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.

Source of supply, for example:

Otto Roth GmbH & Co. KG
Rutesheimer Straße 22
70499 Stuttgart
Tel. +49 (0)711-13 88-0
Fax. +49 (0)711-13 88-233

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.

Source of supply:

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 (0)2871-92 21 85
Fax +49 (0)2871-92 25 79

www.siemens.com
E-mail: flendercouplings@siemens.com

Accessories

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:

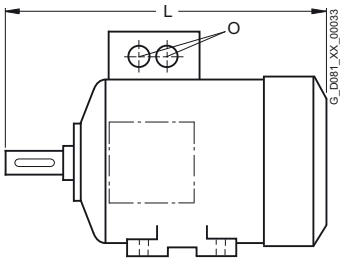
  Fan cover No. 7.40,
  1LE1002-1BB23-4AA4-Z, factory No. E1001/5236197_01_001

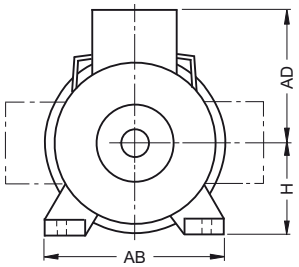
- For bearing types, see Catalog section 1 "Introduction".
- Repair parts for 1MJ6, 1MJ7, 1MJ8, 1MJ1, 1ME8, 1ML8 are available on request.
- For standard components, a supply commitment does not apply.
- Support Hotline
  In Germany
  Tel. +49 (0)1 80/5 05 04 48

You will find telephone numbers for other countries on our Internet site:
www.siemens.com/automation/service&support

Overview

Overall dimensions





Frame size	Type	Dimension L	AD	H	AB	O
80 M	Aluminum series 1LE1001					
	Self-ventilated	292	121	80	150	1 × M25 × 1.5
	Forced-air cooled or naturally cooled	253	121	80	150	1 × M25 × 1.5
90 S/ 90 L	Aluminum series 1LE1001					
	Self-ventilated	347	126	90	165	1 × M25 × 1.5
	Forced-air cooled or naturally cooled	295	126	90	165	1 × M25 × 1.5
100 L	Aluminum series 1LE1001, 1LE1002, 1LE1011, 1LE1012, 1LE1021, self-ventilated	396[1)]	166	100	196	2 × M32 × 1.5
	Aluminum series 1LE1001, 1LE1002, self-ventilated, with increased output	431[1)]	166	100	196	2 × M32 × 1.5
	Aluminum series 1LE1001, 1PC1001, 1LE1002, 1PC1002, 1LE1021, forced-air cooled or naturally cooled	322	166	100	196	2 × M32 × 1.5
	Aluminum series 1LE1003, 1LE1023					
	Self-ventilated	431	166	100	196	2 × M32 × 1.5
	Forced-air cooled	357	166	100	196	2 × M32 × 1.5
	Cast-iron series 1LE15.., 1LE16..	389	193	100	196	2 × M32 × 1.5
	Cast-iron series 1LE1523, 1LE1623 self-ventilated	425	193	100	196	2 × M32 × 1.5
112 M	Aluminum series 1LE1001, 1LE1002, 1LE1011, 1LE1012, 1LE1021 self-ventilated	389[1)]	177	112	226	2 × M32 × 1.5
	Aluminum series 1LE1001, 1LE1002, self-ventilated, with increased output	414[1)]	177	112	226	2 × M32 × 1.5
	Aluminum series 1LE1001, 1PC1001, 1LE1002, 1PC1002, 1LE1021, forced-air cooled or naturally cooled	311	177	112	226	2 × M32 × 1.5
	Aluminum series 1LE1003, 1LE1023					
	Self-ventilated	414	177	112	226	2 × M32 × 1.5
	Forced-air cooled	336	177	112	226	2 × M32 × 1.5
	Cast-iron series 1LE15.., 1LE16..	382	195	112	226	2 × M32 × 1.5
	Cast-iron series 1LE1523, 1LE1623 self-ventilated	409	195	112	226	2 × M32 × 1.5
132 S/ 132 M	Aluminum series 1LE1001, 1LE1002, 1LE1011, 1LE1012, 1LE1021, self-ventilated	465[1)]	202	132	256	2 × M32 × 1.5
	Aluminum series 1LE1001, 1LE1002, self-ventilated, with increased output	515[1)]	202	132	256	2 × M32 × 1.5
	Aluminum series 1LE1001, 1PC1001, 1LE1002, 1PC1002, 1LE1021, forced-air cooled or naturally cooled	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 self-ventilated 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 1LE15.., 1LE16..	457	215	132	256	2 × M32 × 1.5
	Cast-iron series self-ventilated 1LE1523-, LE1623-					
	1CA0, 1CC0, 1CC2	458	215	132	256	2 × M32 × 1.5
	1CA1, 1CB0, 1CB2, 1CC3	508	215	132	256	2 × M32 × 1.5
160 M/ 160 L	Aluminum series 1LE1001, 1LE1002, 1LE1011, 1LE1012, 1LE1021 self-ventilated	604[1)2)]	237	160	300	2 × M40 × 1.5
	Aluminum series 1LE1001, 1LE1002, self-ventilated, with increased output	664[1)]	237	160	300	2 × M40 × 1.5
	Aluminum series 1LE1001, 1PC1001, 1LE1002, 1PC1002, 1LE1021, forced-air cooled or naturally cooled	510	237	160	300	2 × M40 × 1.5
	Cast-iron series 1LE15.., 1LE16..	594	265	160	300	2 × M40 × 1.5
160 M	Aluminum series 1LE1003, 1LE1023					
	Self-ventilated	604	237	160	300	2 × M40 × 1.5
	Forced-air cooled	510	237	160	300	2 × M40 × 1.5
	Cast-iron series 1LE1523, 1LE1623, self-ventilated	596	261	160	300	2 × M40 × 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.

Dimensions

Overall dimensions
Notes on the dimensions

Overview (continued)

Frame size	Type	Dimension L	AD	H	AB	O
160 L	Aluminum series 1LE1023					
	Self-ventilated	664	237	160	300	2 × M40 × 1.5
	Forced-air cooled	570	237	160	300	2 × M40 × 1.5
	Cast-iron series 1LE1523, 1LE1623, self-ventilated	656	261	160	300	2 × M40 × 1.5
180 M	Cast-iron series 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 1LE15.1-, 1LE16.1- 1EB4, 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 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 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 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 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 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 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 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 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 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				

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 dimensions, the admissible deviations are given below:

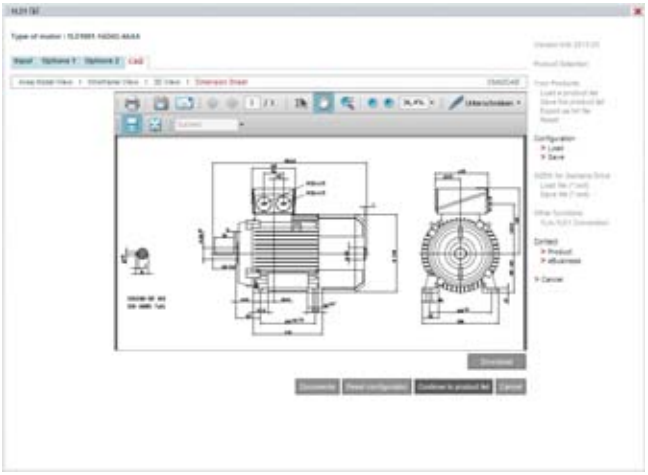
Dimension designation	Dimension	Admissible deviation
H	to 250	– 0.5
	over 250	– 1.0
E, EA		– 0.5

  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)

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 CA01

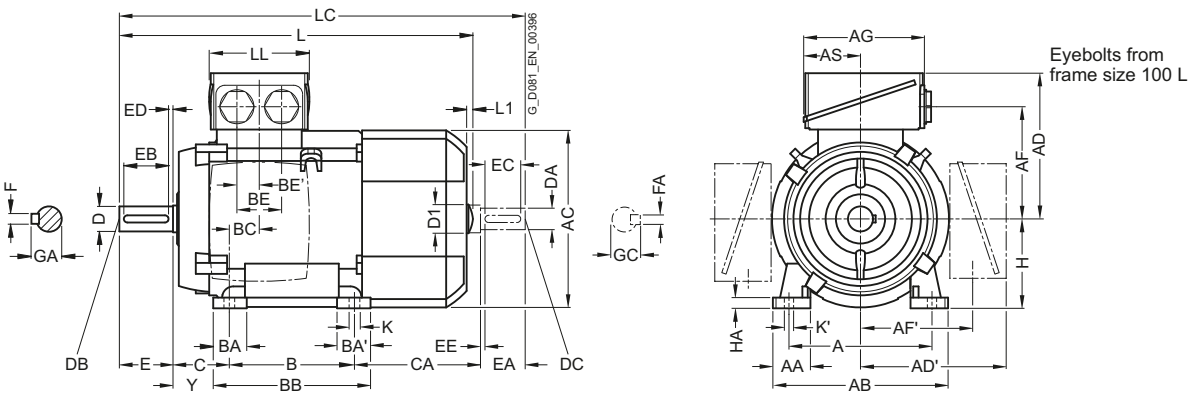
The DT Configurator is also part of the Interactive Catalog CA01 on DVD – the offline version of Siemens Industry Mall. CA 01 can be ordered from the relevant Siemens sales office or via the Internet: www.siemens.com/automation/CA01

Dimensions

Aluminum series 1LE1001, 1LE1002, 1LE1011, 1LE1012, 1LE1021
Self-ventilated, frame sizes 100 L (80 M) to 160 L

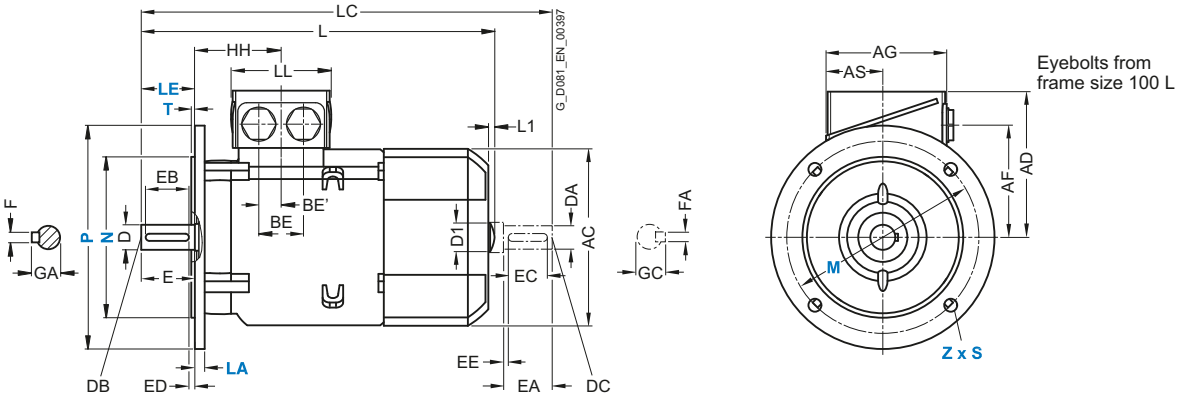
Dimensional drawings

Type of construction IM B3



Types of construction IM B5, IM V1

For flange dimensions, see Page 2/92 (Z = the number of retaining holes)



For motor			Dimension designation acc. to **IEC**																					
Frame size	No. of poles	Motor type	A	AA	AB	AC	AD	AD'	AF	AF'	AG	AS	B*	BA	BA'	BB	BC	BE	BE'	C[1]	CA*	H	HA	Y[1]
80 M	2, 4, 6		125	30.5	150	159	121	–	96.5	–	93	43	100	32	–	118	23	–	18[2]	50	–	80	8	41
90 S	2, 4, 6	1LE1001	140	30.5	165	178	126	–	101.5	–	93	43	100	33	–	143	22.5	–	18[2]	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[2]	56	–	90	10	47
100 L	2, 4, 6, 8	All	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	2, 4, 6, 8	All	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	2, 4, 6, 8	All	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	2, 4, 6, 8	All	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	2, 4, 6, 8	All	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	2, 4, 6, 8	All	254	60	300	314	236.5	236.5	190	190	175	77.5	254	44	89	300	47	57	28.5	108	148[3]	160	18	85

* This dimension is assigned in DIN EN 50347 to the frame size listed.

1) Additional information – not a standard dimension according to DIN EN 50347.

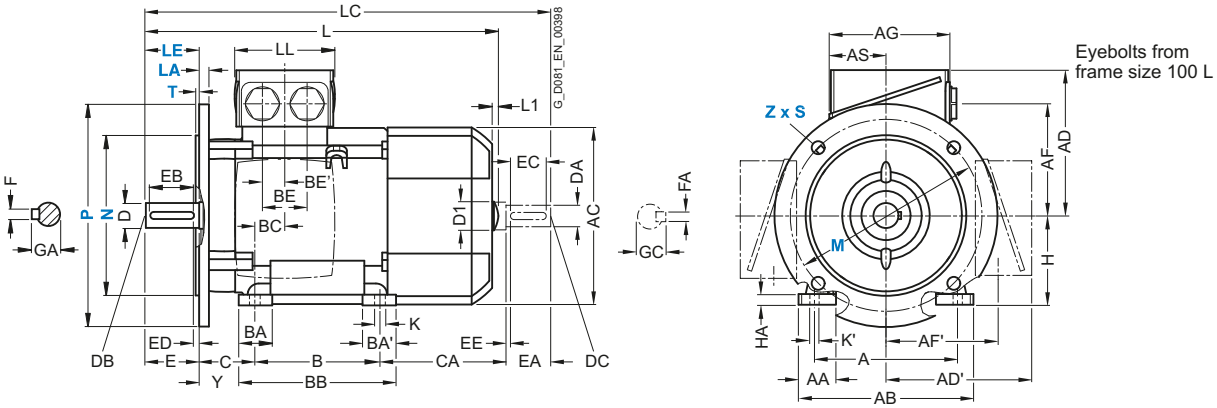
2) Connecting hole for terminal box is on the side at the rear of the terminal box.

3) Only for pole-changing types 1LE1011-1DP6 and 1LE1012-1DQ6 the dimension CA* is 208 mm.

Dimensional drawings (continued)

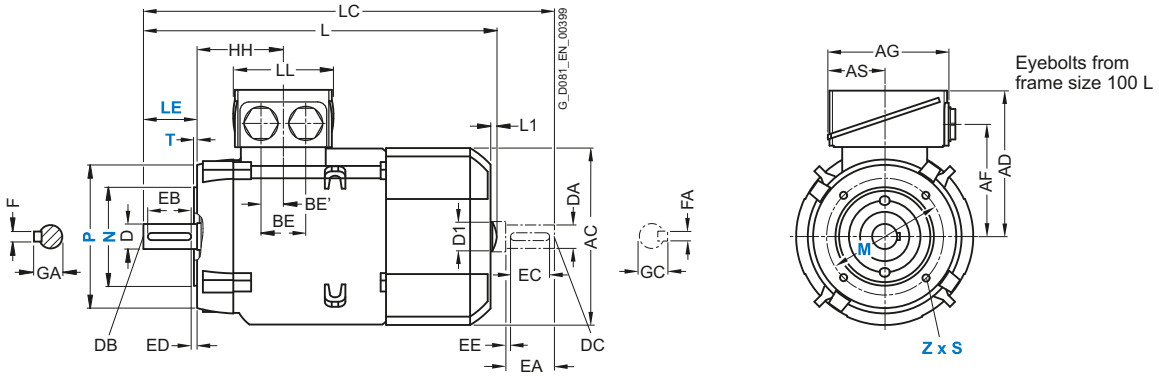
Type of construction IM B35

For flange dimensions, see Page 2/92 (Z = the number of retaining holes)



Type of construction IM B14

For flange dimensions, see Page 2/92 (Z = the number of retaining holes)



For motor			Dimension designation acc. to **IEC**								DE shaft extension							NDE shaft extension						
Frame size	No. of poles	Motor type	HH	K	K'	L	L1	D1	LC	LL	D	DB	E	EB	ED	F	GA	DA	DC	EA	EC	EE	FA	GC
80 M	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	1LE1001	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	2, 4, 6, 8	All	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	2, 4, 6, 8	All	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	2, 4, 6, 8	All	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	2, 4, 6, 8	All	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	2, 4, 6, 8	All	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	2, 4, 6, 8	All	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.

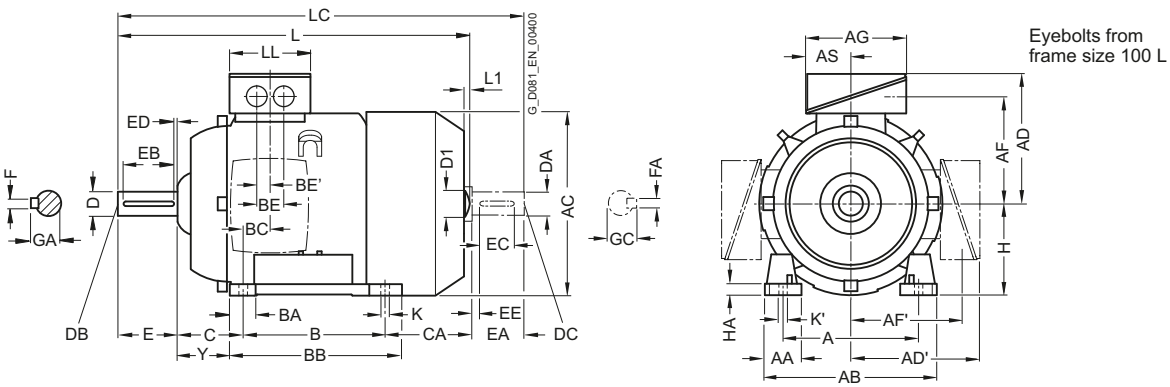
[3)] Only for pole-changing types 1LE1011-1DP6 and 1LE1012-1DQ6 the dimension LC is 790 mm.

Dimensions

Aluminum series 1LE1001, 1LE1002
Self-ventilated, with increased output, frame sizes 100 L to 160 L

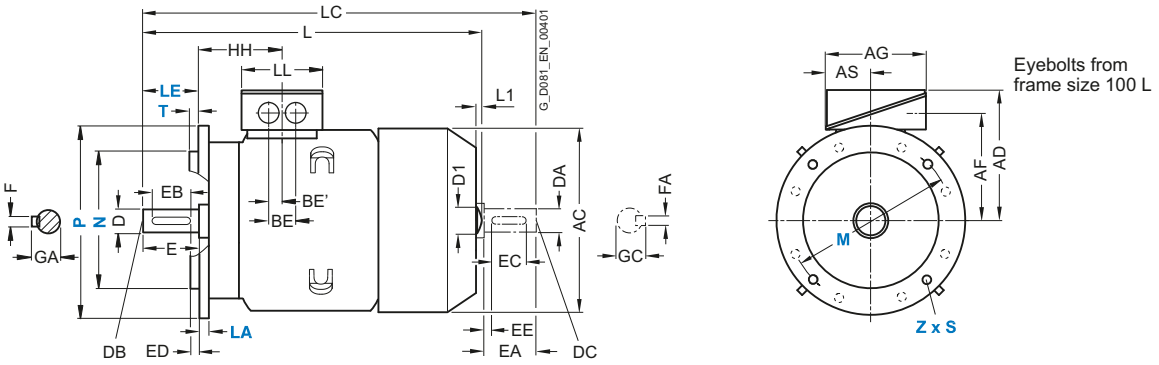
Dimensional drawings

Type of construction IM B3



Types of construction IM B5, IM V1

For flange dimensions, see Page 2/92 (Z = the number of retaining holes)



For motor		Dimension designation acc. to **IEC**																				
Frame size	No. of poles	A	AA	AB	AC	AD	AD'	AF	AF'	AG	AS	B*	BA	BA'	BB	BC	BE	BE'	C[1)]	CA*	H	HA	Y[1)]
100 L	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	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	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	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

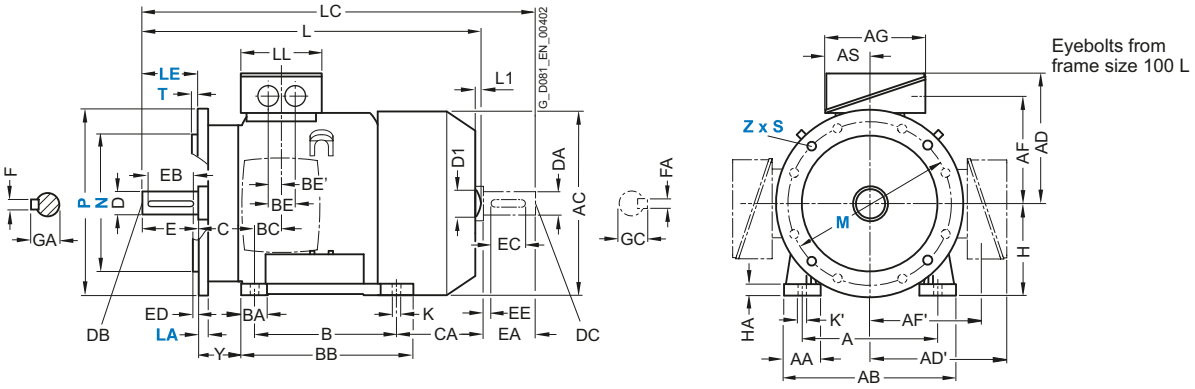
* This dimension is assigned in DIN EN 50347 to the frame size listed.

1) Additional information – not a standard dimension according to DIN EN 50347.

Dimensional drawings (continued)

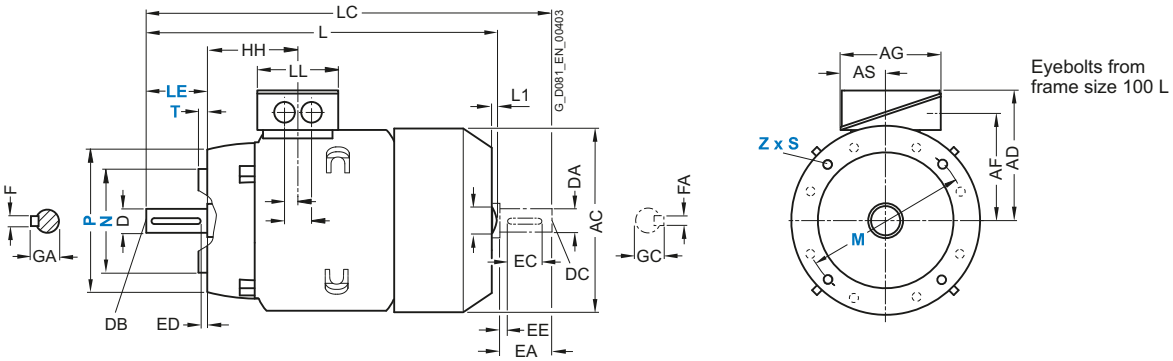
Type of construction IM B35

For flange dimensions, see Page 2/92 (Z = the number of retaining holes)



Type of construction IM B14

For flange dimensions, see Page 2/92 (Z = the number of retaining holes)



For motor		Dimension designation acc. to **IEC**								DE shaft extension							NDE shaft extension						
Frame size	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	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	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	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	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

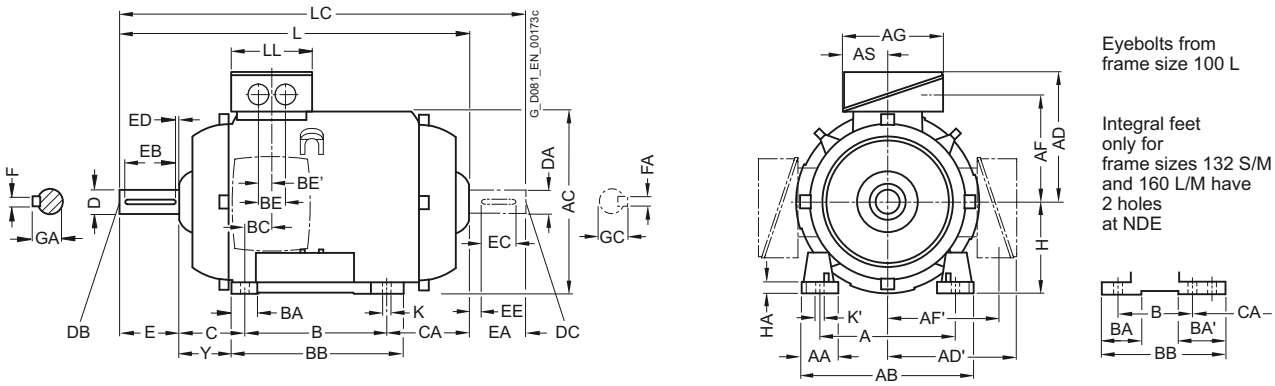
[1] The length is specified as far as the tip of the fan cover.

Dimensions

Aluminum series 1LE1001, 1PC1001, 1LE1002, 1PC1002, 1LE1021
Forced-air cooled or naturally cooled, frame sizes 80 M to 160 L

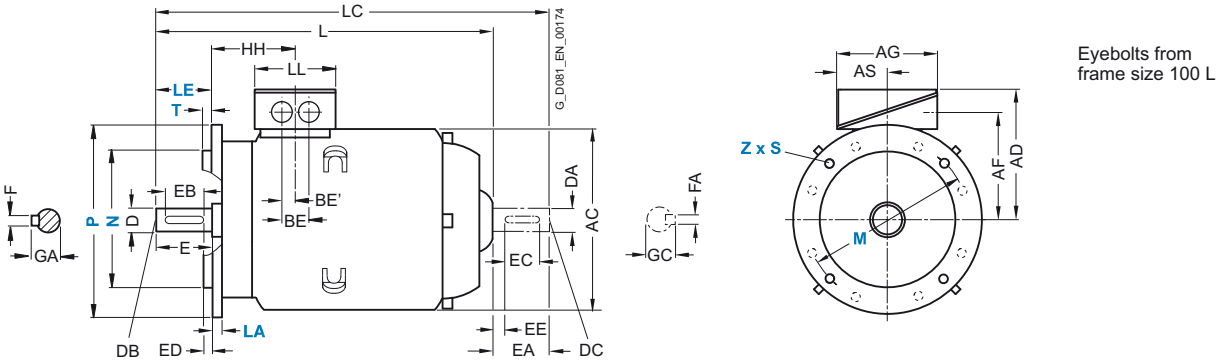
Dimensional drawings

Type of construction IM B3



Types of construction IM B5, IM V1

For flange dimensions, see Page 2/92 (Z = the number of retaining holes)



For motor			Dimension designation acc. to **IEC**																				
Frame size	No. of poles	Motor type	A	AA	AB	AC	AD	AD'	AF	AF'	AG	AS	B*	BA	BA'	BB	BC	BE	BE'	C[1]	CA*	H	HA	Y[1]
80 M	2, 4, 6	1LE1001	125	30.5	150	159	121	–	96.5	–	93	43	100	32	–	118	23	–	18	50	–	80	8	41
	2, 4, 6	1LE1021					149		112		119.5	61.5												
90 S	2, 4, 6	1LE1001	140	30.5	165	178	126	–	101.5	–	93	43	100	33	–	143	22.5	–	18	56	–	90	10	47
	2, 4, 6	1LE1021					154		117		119.5	61.5												
90 L	2, 4, 6	1LE1001	140	30.5	165	178	126	–	101.5	–	93	43	125	33	–	143	22.5	–	18	56	–	90	10	47
	2, 4, 6	1LE1021					154		117		119.5	61.5												
100 L	2, 4, 6, 8	All	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	2, 4, 6, 8	All	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	2, 4, 6, 8	All	216	53	256	261	202	202	159.5	159.5	155	70.5	140	38	76[2]	218[3]	26.5	48	24	89	–	132	15	69
132 M	2, 4, 6, 8	All	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	2, 4, 6, 8	All	254	60	300	314	236.5	236.5	190	190	175	77.5	210	44	89[4]	300[5]	47	57	28.5	108	–	160	18	85
160 L	2, 4, 6, 8	All	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) Additional information – not a standard dimension according to DIN EN 50347.

2) With screwed-on feet, dimension BA' is 38 mm.

3) With screwed-on feet, dimension BB is 180 mm.

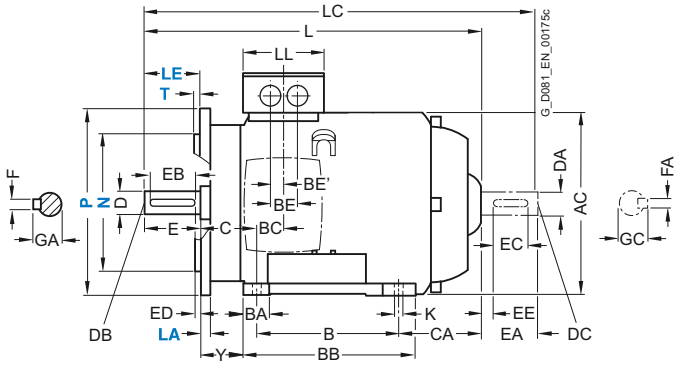
4) With screwed-on feet, dimension BA' is 44 mm.

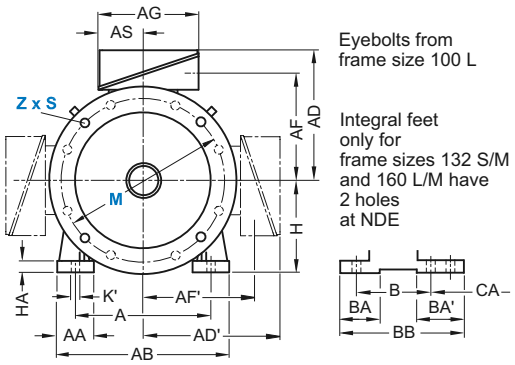
5) With screwed-on feet, dimension BB is 256 mm.

Dimensional drawings (continued)

Type of construction IM B35

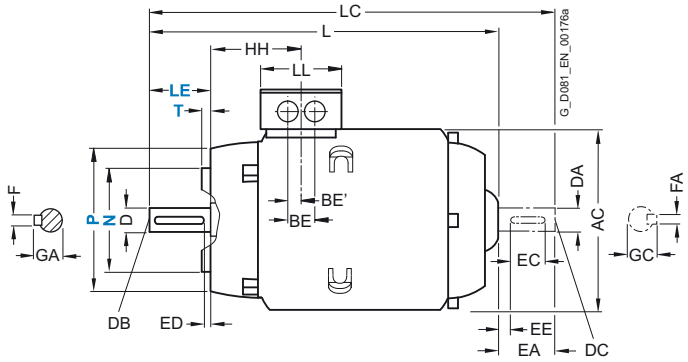
For flange dimensions, see Page 2/92 (Z = the number of retaining holes)

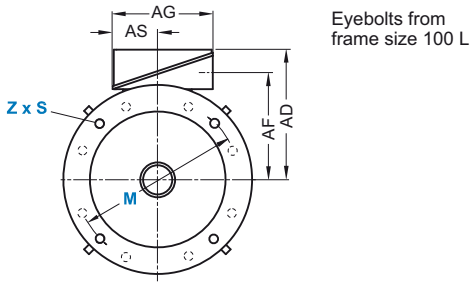




Type of construction IM B14

For flange dimensions, see Page 2/92 (Z = the number of retaining holes)





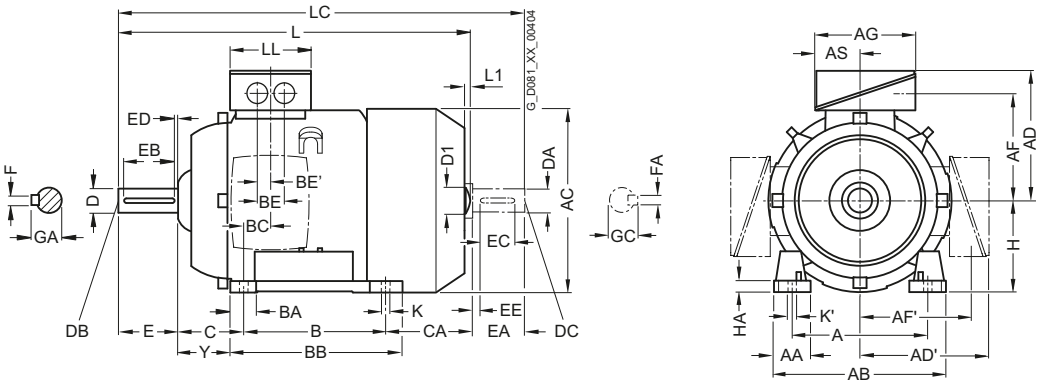
For motor			Dimension designation acc. to **IEC**						DE shaft extension							NDE shaft extension							
Frame size	No. of poles	Motor type	HH	K	K'	L	LC	LL	D	DB	E	EB	ED	F	GA	DA	DC	EA	EC	EE	FA	GC
80 M	2, 4, 6	1LE1001	73	9.5	13.5	253	–	79	19	M6	40	32	4	6	21.5	–	–	–	–	–	–	–
	2, 4, 6	1LE1021						123														
90 S	2, 4, 6	1LE1021	78.5	10	14	295	–	79	24	M8	50	40	5	8	27	–	–	–	–	–	–	–
	2, 4, 6	1LE1021						123														
90 L	2, 4, 6	1LE1021	78.5	10	14	295	–	123	24	M8	50	40	5	8	27	–	–	–	–	–	–	–
	2, 4, 6	1LE1021						123														
100 L	2, 4, 6, 8	All	96.5	12	16	321.5	–	112	28	M10	60	50	5	8	31	–	–	–	–	–	–	–
112 M	2, 4, 6, 8	All	96	12	16	311	–	112	28	M10	60	50	5	8	31	–	–	–	–	–	–	–
132 S	2, 4, 6, 8	All	115.5	12	16	380.5	–	130	38	M12	80	70	5	10	41	–	–	–	–	–	–	–
132 M	2, 4, 6, 8	All	115.5	12	16	380.5	–	130	38	M12	80	70	5	10	41	–	–	–	–	–	–	–
160 M	2, 4, 6, 8	All	155	15	19	510	–	145	42	M16	110	90	10	12	45	–	–	–	–	–	–	–
160 L	2, 4, 6, 8	All	155	15	19	510	–	145	42	M16	110	90	10	12	45	–	–	–	–	–	–	–

Dimensions

Aluminum series 1LE1003, 1LE1023
Self-ventilated, frame sizes 80 M to 90 L

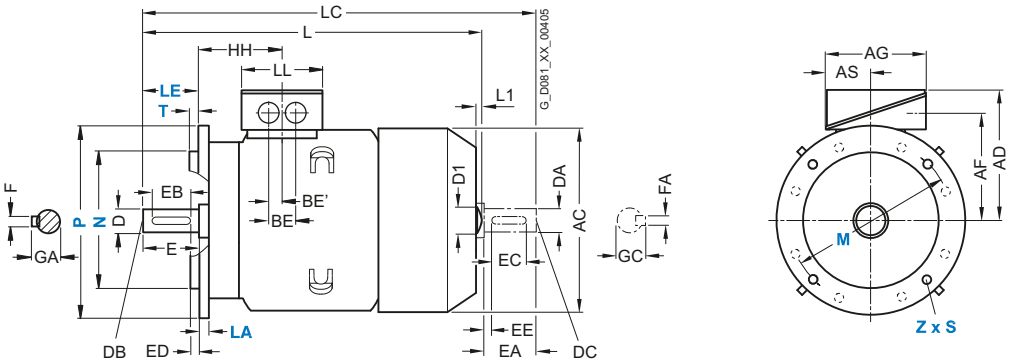
Dimensional drawings

Type of construction IM B3



Types of construction IM B5, IM V1

For flange dimensions, see Page 2/92 (Z = the number of retaining holes)



For motor			Dimension designation acc. to **IEC**																				
Frame size	No. of poles	Motor type	A	AA	AB	AC	AD	AD'	AF	AF'	AG	AS	B*	BA	BB	BC	BE	BE'	C[1]	CA*	H	HA	Y[1]
80 M	2, 4, 6	1LE1003-0DA2, -0DB2, -0DC2 -0DA3, -0DB3, -0DC3	125	30.5	150	159	121	–	96.5	–	93	43	100	32	118	23	–	18	50	–	80	8	41
	2, 4, 6	1LE1023-0DA2, -0DB2, -0DC2 -0DA3, -0DB3, -0DC3					149		112		119.5	61.5											
90 S	2, 4, 6	1LE1003-0EA0, -0EB0, -0EC0	140	30.5	165	178	126	–	101.5	–	93	43	100	33	143	22.5	–	18	56	–	90	10	47
	2, 4, 6	1LE1023-0EA0, -0EB0, -0EC0					154		117		119.5	61.5											
90 L	2, 4, 6	1LE1003-0EA4, -0EB4, -0EC4	140	30.5	165	178	126	–	101.5	–	93	43	100	33	143	22.5	–	18	56	–	90	10	47
	2, 4, 6	1LE1023-0EA4, -0EB4, -0EC4					154		117		119.5	61.5											

* This dimension is assigned in DIN EN 50347 to the frame size listed.

[1] Additional information – not a standard dimension according to DIN EN 50347.

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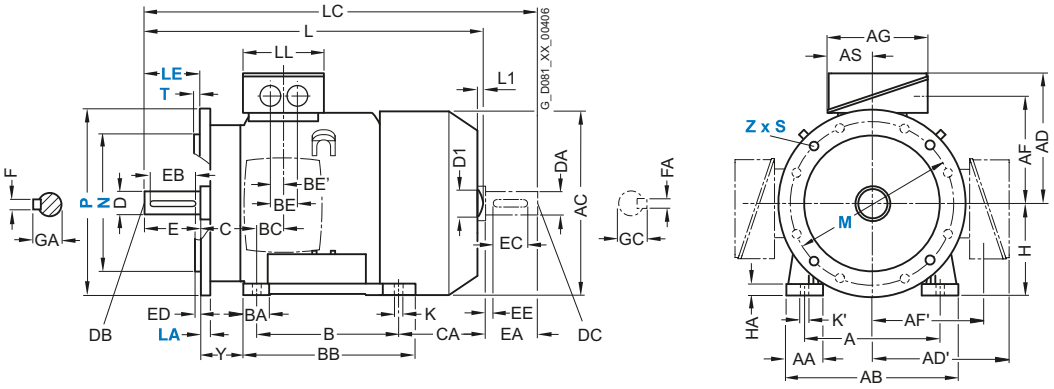
Dimensional drawings (continued)

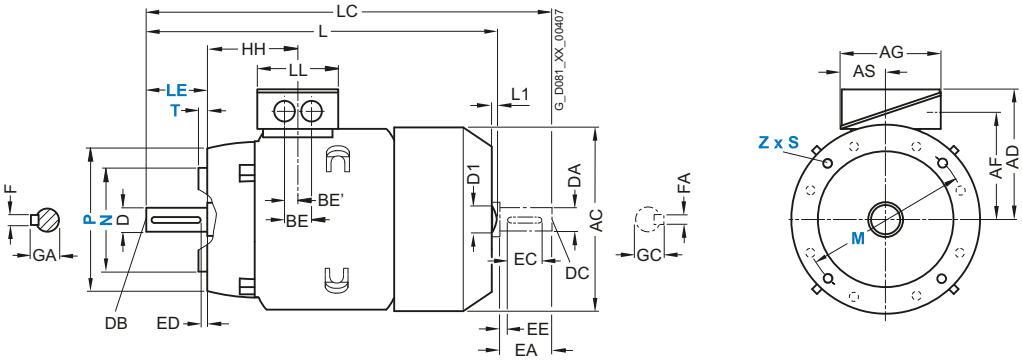
Type of construction IM B35

For flange dimensions, see Page 2/92 (Z = the number of retaining holes)



Type of construction IM B14

For flange dimensions, see Page 2/92 (Z = the number of retaining holes)



For motor			Dimension designation acc. to **IEC**																				
Frame size	No. of poles	Motor type	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	2, 4, 6	1LE1003-0DA2, -0DB2, -0DC2, -0DA3, -0DB3, -0DC3	73	9.5	13.5	292 327	–	–	–	79	19	M6	40	32	4	6	21.5	19	M6	40	32	4	6	21.5
	2, 4, 6	1LE1023-0DA2, -0DB2, -0DC2, -0DA3, -0DB3, -0DC3								123														
90 S	2, 4, 6	1LE1003-0EA0, -0EB0, -0EC0	78.5	10	14	347	–	–	–	79	24	M8	50	40	5	8	27	19	M6	40	32	4	6	21.5
	2, 4, 6	1LE1023-0EA0, -0EB0, -0EC0								123														
90 L	2, 4, 6	1LE1003-0EA4, -0EB4, -0EC4	78.5	10	14	387	–	–	–	79	24	M8	50	40	5	8	27	19	M6	40	32	4	6	21.5
	2, 4, 6	1LE1023-0EA4, -0EB4, -0EC4								123														

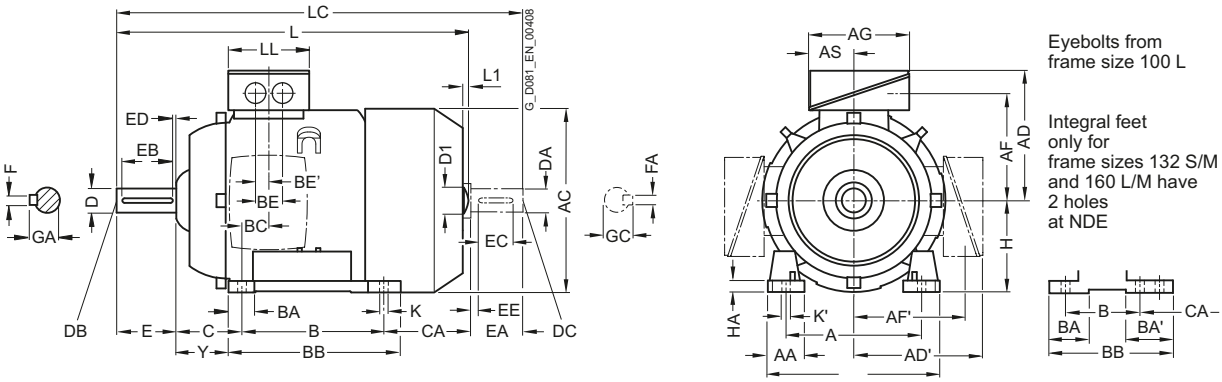
[1] The length is specified as far as the tip of the fan cover.

Dimensions

Aluminum series 1LE1003, 1LE1023
Self-ventilated, frame sizes 100 L to 160 L

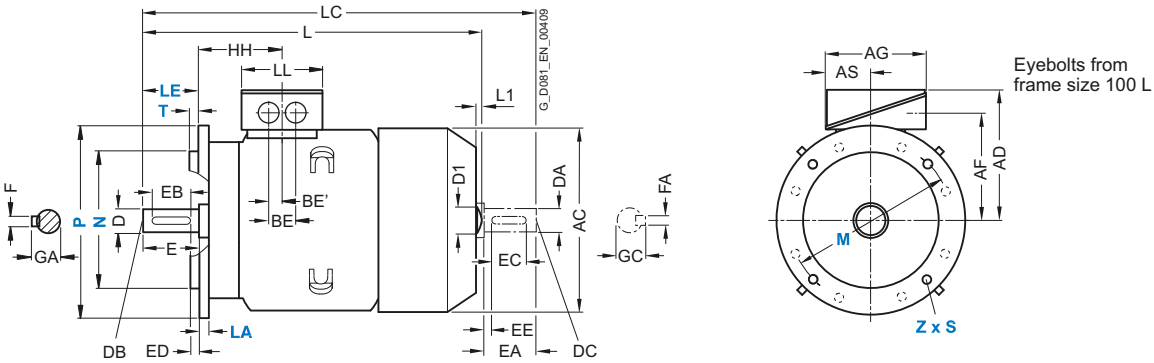
Dimensional drawings

Type of construction IM B3



Types of construction IM B5, IM V1

For flange dimensions, see Page 2/92 (Z = the number of retaining holes)



For motor			Dimension designation acc. to **IEC**																				
Frame size	No. of poles	Motor type 1LE1003 1LE1023	A	AA	AB	AC	AD	AD'	AF	AF'	AG	AS	B*	BA	BA'	BB	BC	BE	BE'	C[1]	CA*	H	HA	Y[1]
100 L	2, 4	1AA4, 1AB4, 1AB5	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	2, 4	1BA2, 1BB2	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	2, 6	1CA0, 1CC0	216	53	256	262	202	202	159.5	159.5	155	70.5	140	38	76[2]	218[3]	26.5	48	24	89	128.5[4]	132	15	69
	2, 4	1CA1, 1CB0													–						178.5			
132 M	6	1CC2	216	53	256	262	202	202	159.5	159.5	155	70.5	178	38	76	218	26.5	48	24	89	128.5[4]	132	15	69
	4, 6, 8	1CB2, 1CC3													–						178.5			
160 M	2, 4, 6	1DA2, 1DA3, 1DB2, 1DC2	254	60	300	314	236.5	236.5	190	190	175	77.5	210	44	89[5]	300[6]	47	57	28.5	108	148[7]	160	18	85
160 L	2, 4, 6	1DA4, 1DB4, 1DC4	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) Additional information – not a standard dimension according to DIN EN 50347.

2) With screwed-on feet, dimension BA' is 38 mm.

3) With screwed-on feet, dimension BB is 180 mm.

4) With screwed-on feet, dimension CA is 166.5 mm.

5) With screwed-on feet, dimension BA' is 44 mm.

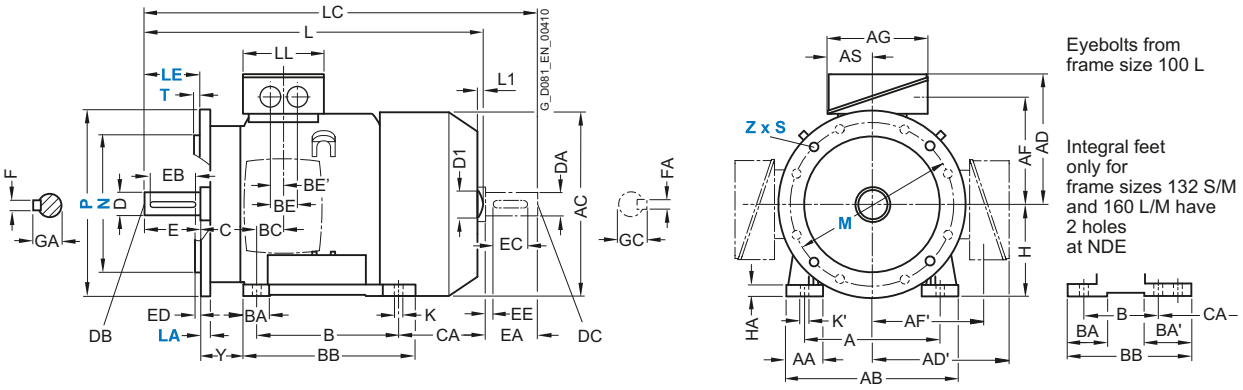
6) With screwed-on feet, dimension BB is 256 mm.

7) With screwed-on feet, dimension CA is 192 mm.

Dimensional drawings (continued)

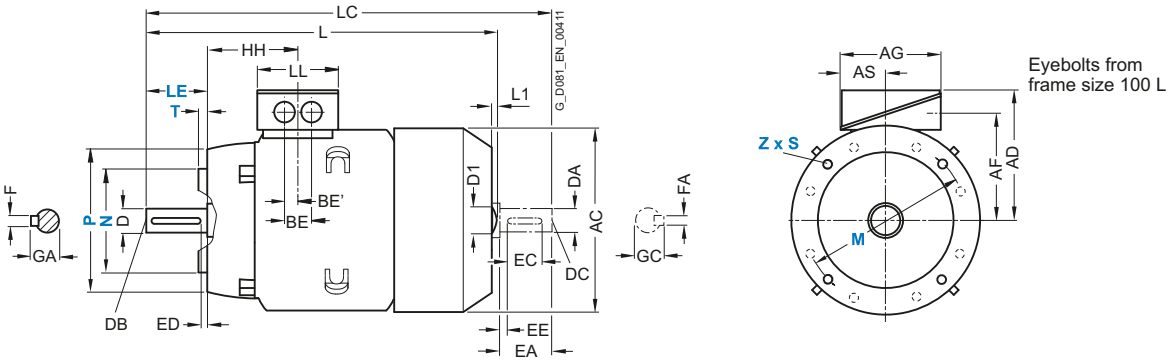
Type of construction IM B35

For flange dimensions, see Page 2/92 (Z = the number of retaining holes)



Type of construction IM B14

For flange dimensions, see Page 2/92 (Z = the number of retaining holes)



For motor			Dimension designation acc. to **IEC**								DE shaft extension							NDE shaft extension						
Frame size	No. of poles	Motor type 1LE1003 1LE1023	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	2, 4	1AA4, 1AB4, 1AB5	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	2, 4	1BA2, 1BB2	96	12	16	414	7	32	475	112	28	M10	60	50	5	8	31	24	M8	50	40	5	8	27
132 S	2, 6	1CA0, 1CC0	115.5	12	16	465	8.5	39	535.5	130	38	M12	80	70	5	10	41	28	M10	60	50	5	8	31
	2, 4	1CA1, 1CB0				515			585.5															
132 M	6	1CC2	115.5	12	16	465	8.5	39	535.5	130	38	M12	80	70	5	10	41	28	M10	60	50	5	8	31
	4, 6	1CB2, 1CC3				515			585.5															
160 M	2, 4, 6	1DA2, 1DA3, 1DB2, 1DC2	155	15	19	604	10	45	730	145	42	M16	110	90	10	12	45	42	M16	110	90	10	12	45
160 L	2, 4, 6	1DA4, 1DB4, 1DC4	155	15	19	664	10	45	790	145	42	M16	110	90	10	12	45	42	M16	110	90	10	12	45

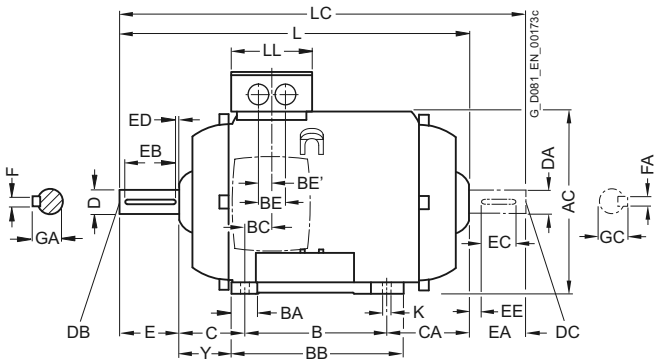
[1)] The length is specified as far as the tip of the fan cover.

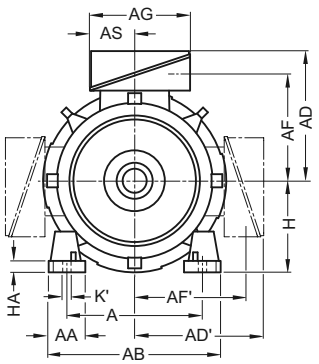
Dimensions

Aluminum series 1LE1023
Forced-air cooled, frame sizes 80 M to 90 L

Dimensional drawings

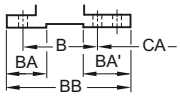
Type of construction IM B3





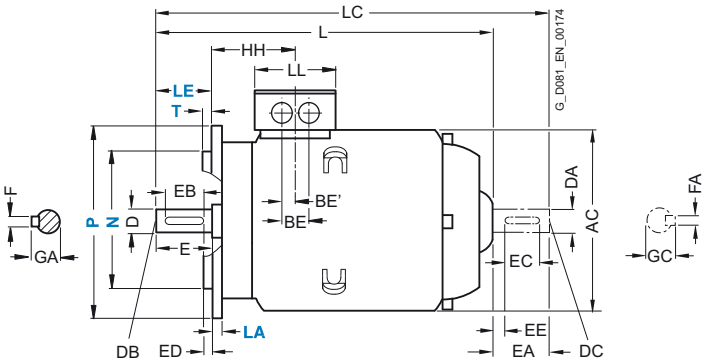
Eyebolts from frame size 100 L

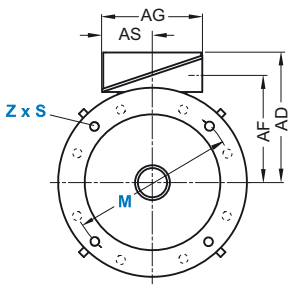
Integral feet only for frame sizes 132 S/M and 160 L/M have 2 holes at NDE



Types of construction IM B5, IM V1

For flange dimensions, see Page 2/92 (Z = the number of retaining holes)





Eyebolts from frame size 100 L

For motor			Dimension designation acc. to **IEC**																				
Frame size	No. of poles	Motor type 1LE1023	A	AA	AB	AC	AD	AD'	AF	AF'	AG	AS	B*	BA	BA'	BB	BC	BE	BE'	C[1]	CA*	H	HA	Y[1]
80 M	2, 4, 6	0DA2, 0DB2, 0DC2	125	30.5	150	159	121	–	96.5	–	93	43	100	32	–	118	23	–	18	50	–	80	8	41
	2, 4, 6	0DA3, 0DB3, 0DC3																						
90 S	2, 4, 6	0EA0, 0EB0, 0EC0	140	30.5	165	178	126	–	101.5	–	93	43	100	33	–	143	22.5	–	18	56	–	90	10	47
90 L	2, 4, 6	0EA4, 0EB4, 0EC4	140	30.5	165	178	126	–	101.5	–	93	43	100	33	–	143	22.5	–	18	56	–	90	10	47

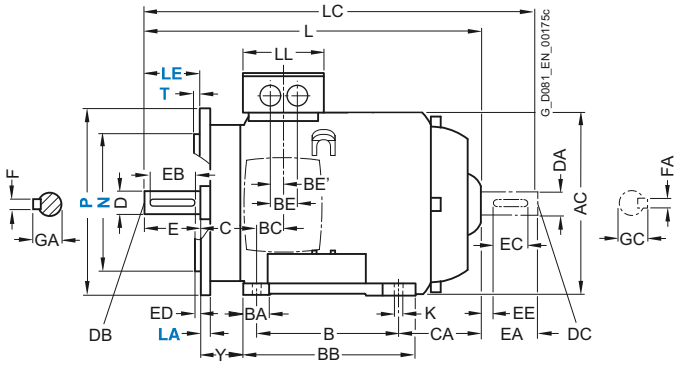
* This dimension is assigned in DIN EN 50347 to the frame size listed.

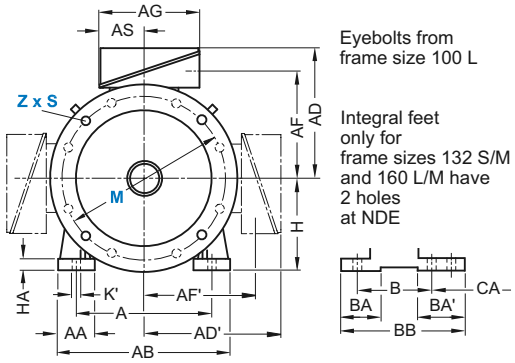
[1] Additional information – not a standard dimension according to DIN EN 50347.

Dimensional drawings (continued)

Type of construction IM B35

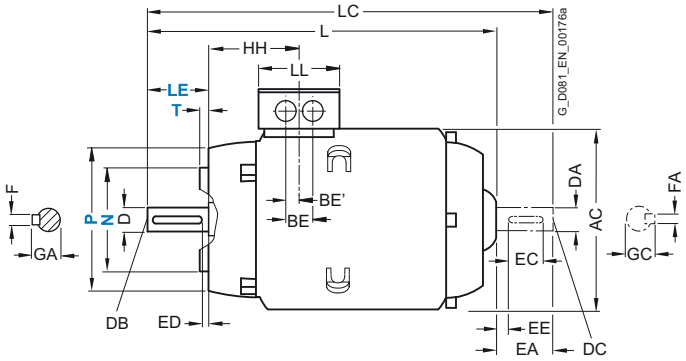
For flange dimensions, see Page 2/92 (Z = the number of retaining holes)

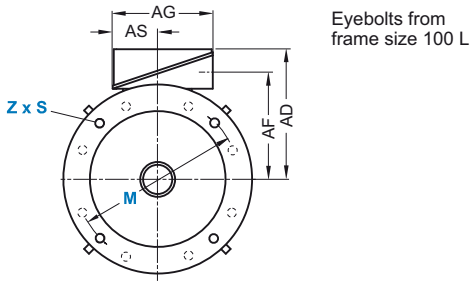




Type of construction IM B14

For flange dimensions, see Page 2/92 (Z = the number of retaining holes)





For motor			Dimension designation acc. to **IEC**						DE shaft extension							NDE shaft extension						
Frame size	No. of poles	Motor type 1LE1023	HH	K	K'	L[1)]	LC	LL	D	DB	E	EB	ED	F	GA	DA	DC	EA	EC	EE	FA	GC
80 M	2, 4, 6	0DA2, 0DB2, 0DC2	73	9.5	13.5	292	–	–	–	79	–	19	M6	40	32	–	–	–	–	–	–	–
	2, 4, 6	0DA3, 0DB3, 0DC3				327																
90 S	2, 4, 6	0EA0, 0EB0, 0EC0	78.5	10	14	347	–	–	–	79	–	24	M8	50	40	–	–	–	–	–	–	–
90 L	2, 4, 6	0EA4, 0EB4, 0EC4	78.5	10	14	387	–	–	–	79	–	24	M8	50	40	–	–	–	–	–	–	–

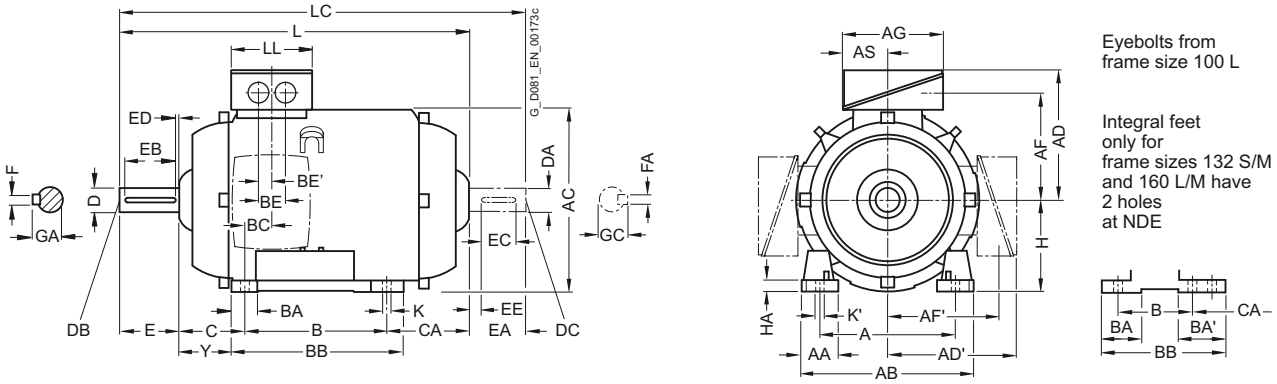
[1)] The length is specified as far as the tip of the fan cover.

Dimensions

Aluminum series 1LE1023
Forced-air cooled, frame sizes 100 L to 160 L

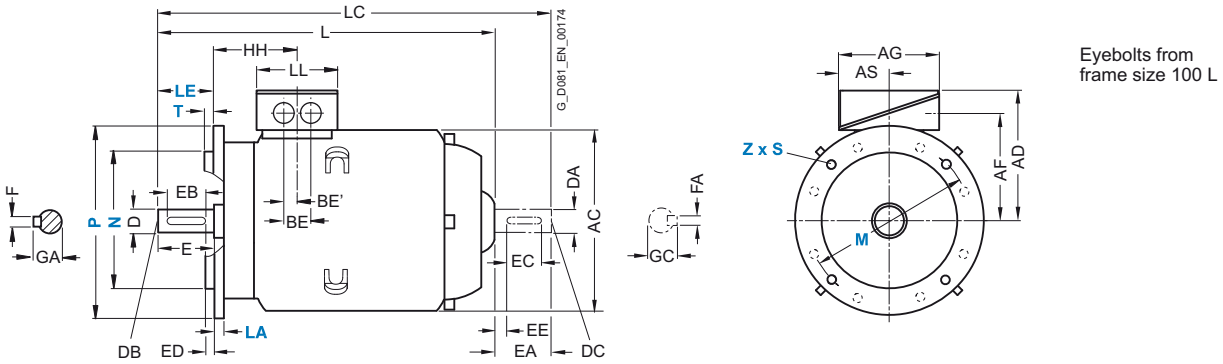
Dimensional drawings

Type of construction IM B3



Types of construction IM B5, IM V1

For flange dimensions, see Page 2/92 (Z = the number of retaining holes)



For motor			Dimension designation acc. to **IEC**																					
Frame size	No. of poles	Motor type 1LE1023	A	AA	AB	AC	AD	AD'	AF	AF'	AG	AQ	AS	B*	BA	BA'	BB	BC	BE	BE'	C[1]	CA*	H	HA	Y[1]
100 L	2, 4	1AA4, 1AB4, 1AB5	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	2, 4	1BA2, 1BB2	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	2, 6	1CA0, 1CC0	216	53	256	262	202	202	159.5	159.5	155	260	70.5	140	38	76[2]	218[3]	26.5	48	24	89	–	132	15	69
	2, 4	1CA1, 1CB0														–									
132 M	6	1CC2	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
	4, 6, 8	1CB2, 1CC3														–									
160 M	2, 4, 6	1DA2, 1DA3, 1DB2, 1DC2	254	60	300	314	236.5	236.5	190	190	175	260	77.5	210	44	89[4]	300[5]	47	57	28.5	108	–	160	18	85
160 L	2, 4, 6	1DA4, 1DB4, 1DC4	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) Additional information – not a standard dimension according to DIN EN 50347.

2) With screwed-on feet, dimension BA' is 38 mm.

3) With screwed-on feet, dimension BB is 180 mm.

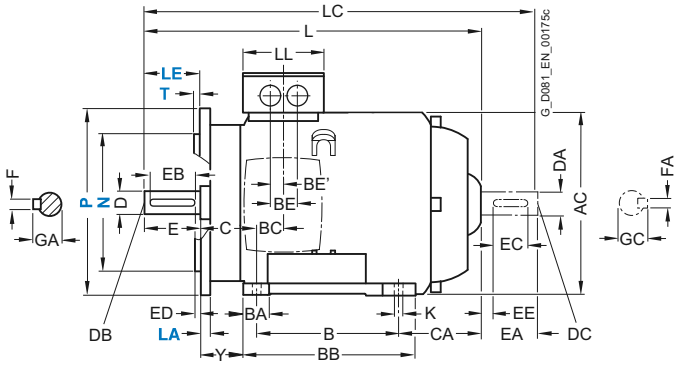
4) With screwed-on feet, dimension BA' is 44 mm.

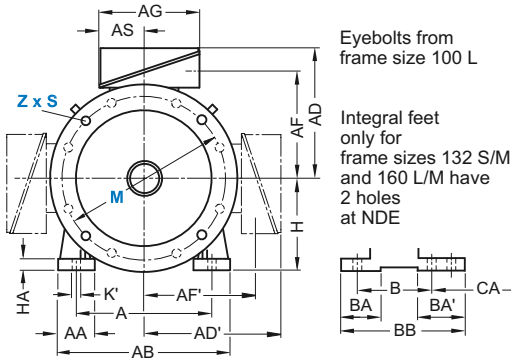
5) With screwed-on feet, dimension BB is 256 mm.

Dimensional drawings (continued)

Type of construction IM B35

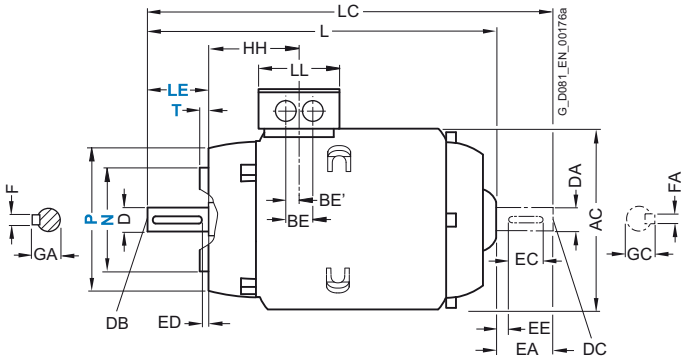
For flange dimensions, see Page 2/92 (Z = the number of retaining holes)

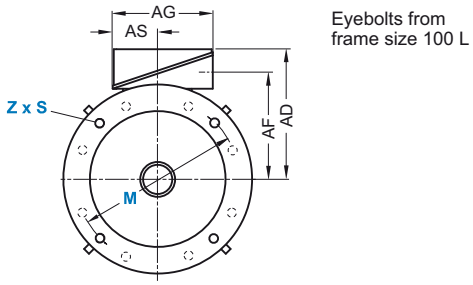




Type of construction IM B14

For flange dimensions, see Page 2/92 (Z = the number of retaining holes)





For motor			Dimension designation acc. to **IEC**						DE shaft extension							NDE shaft extension						
Frame size	No. of poles	Motor type 1LE1023	HH	K	K'	L[1)]	LC	LL	D	DB	E	EB	ED	F	GA	DA	DC	EA	EC	EE	FA	GC
100 L	2, 4	1AA4, 1AB4, 1AB5	96.5	12	16	356.5	–	112	28	M10	60	50	5	8	31	–	–	–	–	–	–	–
112 M	2, 4	1BA2, 1BB2	96	12	16	336	–	112	28	M10	60	50	5	8	31	–	–	–	–	–	–	–
132 S	2, 6	1CA0, 1CC0	115.5	12	16	380.5	–	130	38	M12	80	70	5	10	41	–	–	–	–	–	–	–
	2, 4	1CA1, 1CB0				430.5	–									–	–	–	–	–	–	–
132 M	6	1CC2	115.5	12	16	380.5	–	130	38	M12	80	70	5	10	41	–	–	–	–	–	–	–
	4, 6	1CB2, 1CC3				430.5	–									–	–	–	–	–	–	–
160 M	2, 4, 6	1DA2, 1DA3, 1DB2, 1DC2	155	15	19	510	–	145	42	M16	110	90	10	12	45	–	–	–	–	–	–	–
160 L	2, 4, 6	1DA4, 1DB4, 1DC4	155	15	19	570	–	145	42	M16	110	90	10	12	45	–	–	–	–	–	–	–

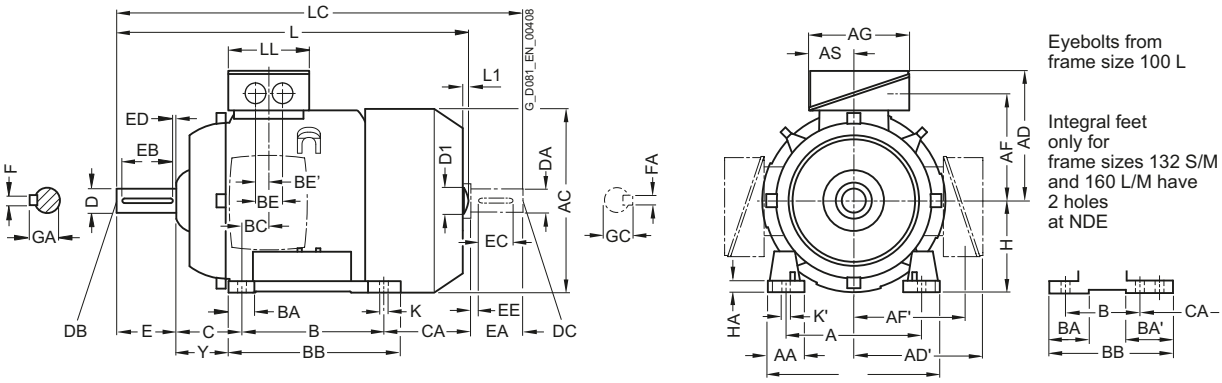
[1)] The length is specified as far as the tip of the fan cover.

Dimensions

Cast-iron series 1LE1501, 1LE1503, 1LE1521, 1LE1601, 1LE1603, 1LE1621 – Self-ventilated, frame sizes 100 L to 160 L

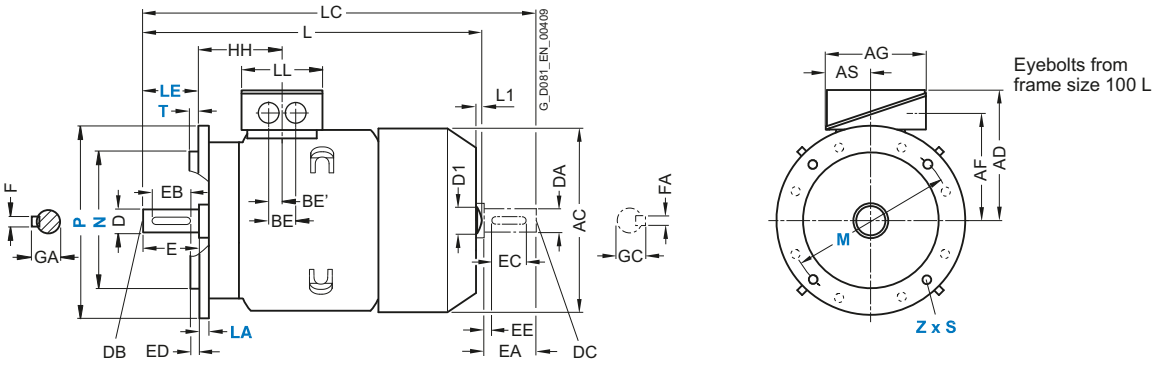
Dimensional drawings

Type of construction IM B3



Types of construction IM B5, IM V1

For flange dimensions, see Page 2/92 (Z = the number of retaining holes)



For motor		Dimension designation acc. to **IEC**																				
Frame size	No. of poles	A	AA	AB	AC	AD	AD'	AF	AF'	AG	AS	B*	BA	BA'	BB	BC	BE	BE'	C[1]	CA*	H	HA	Y[1]
100 L	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	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	2, 4, 6, 8	216	53	256	262	214.5	214.5	169	169	163	80.5	140	44	81[2]	218[4]	26.5	48	24	89	–	132	15	69
132 M	2, 4, 6, 8	216	53	256	262	214.5	214.5	169	169	163	80.5	178	44	81[2]	218	26.5	48	24	89	–	132	15	69
160 M	2, 4, 6, 8	254	60	300	314	265	265	213	213	190	92	210	51	95[3]	300[5]	37	60	30	108	–	160	18	85
160 L	2, 4, 6, 8	254	60	300	314	265	265	213	213	190	92	254	51	95[3]	300	37	60	30	108	–	160	18	85

* This dimension is assigned in DIN EN 50347 to the frame size listed.

1) Additional information – not a standard dimension according to DIN EN 50347.

2) With screwed-on feet, dimension BA' is 43 mm.

3) With screwed-on feet, dimension BA' is 51 mm.

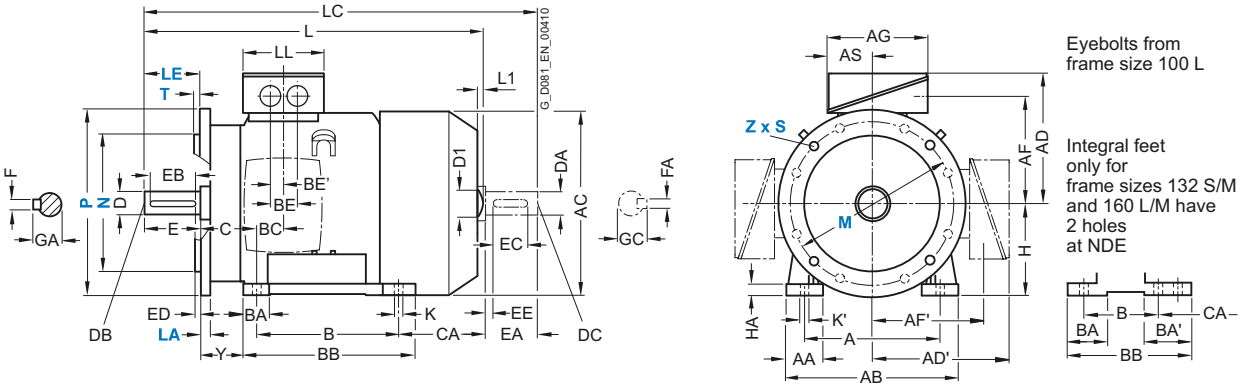
4) With screwed-on feet, dimension BB is 180 mm.

5) With screwed-on feet, dimension BB is 256 mm.

Dimensional drawings (continued)

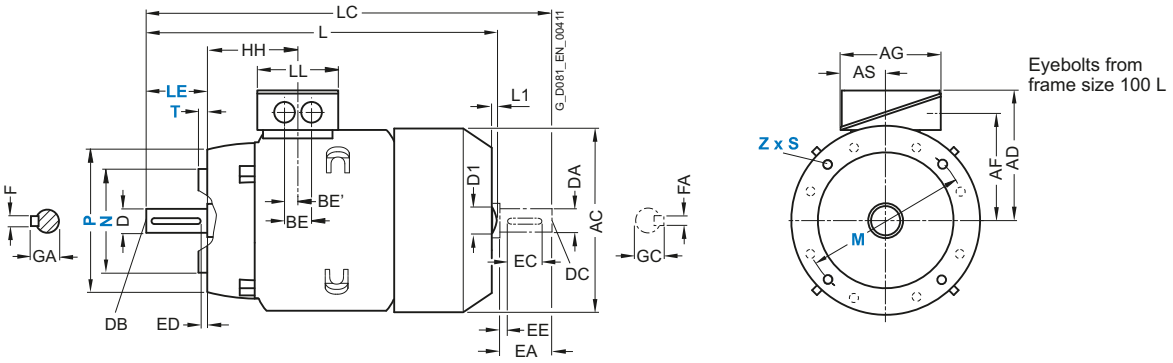
Type of construction IM B35

For flange dimensions, see Page 2/92 (Z = the number of retaining holes)



Type of construction IM B14

For flange dimensions, see Page 2/92 (Z = the number of retaining holes)



For motor		Dimension designation acc. to **IEC**								DE shaft extension							NDE shaft extension						
Frame size	No. of poles	HH	K	K'	L[1]	L1[2]	D1	LC	LL	D	DB	E	EB	ED	F	GA	DA	DC	EA	EC	EE	FA	GC
100 L	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	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	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	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	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	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.

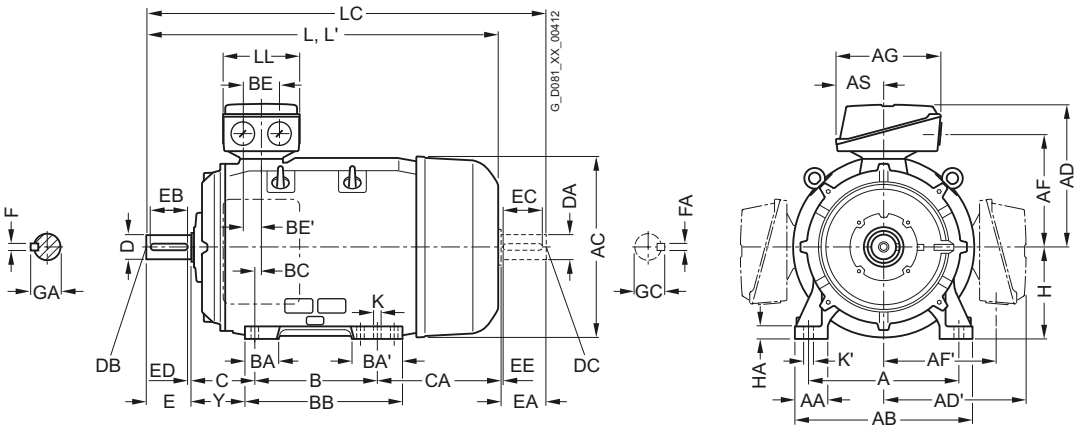
[2] Only for 1LE15 motors.

Dimensions

Cast-iron series 1LE1501, 1LE1521, 1LE1601, 1LE1621 Self-ventilated, frame sizes 180 M to 250 M

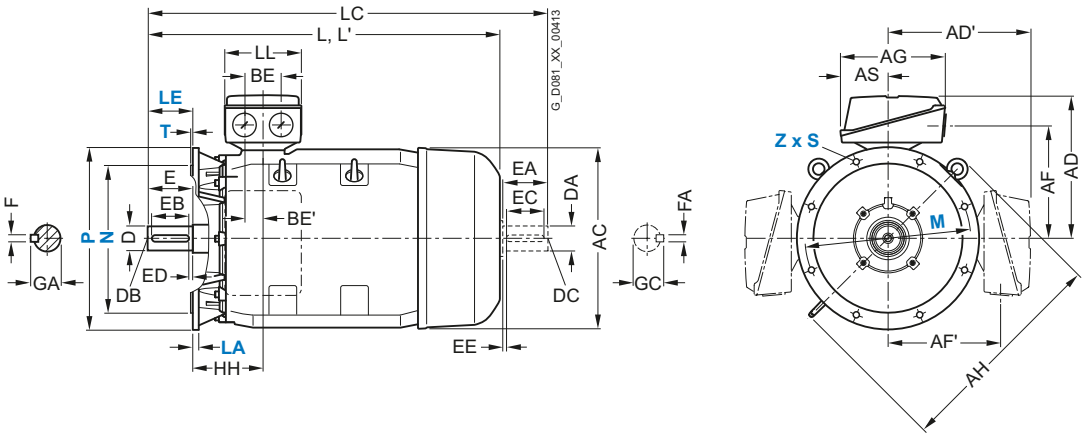
Dimensional drawings

Type of construction IM B3



Types of construction IM B5, IM V1

For flange dimensions, see Page 2/92 (Z = the number of retaining holes)



For motor	Type		Dimension designation acc. to **IEC**																		
Frame size	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[1]	CA*
180 M/ 180 L	1EA2, 1EB2, 1EC6	2, 4, 6	279	65	339	356	286	286	234	234	190	468	92	241	85	120	328	34	60	30	121	202
	1EB4, 1EC4, 1EA6, 1EB6	2, 4, 6												279								
200 L	2AA4.2AA5. 2AB5. 2AC4.2AC5	2, 4, 6	318	60	378	396	315	315	259	259	266	533	112	305	104	104	355	31	85	42.5	133	177
	2AA6, 2AB6, 2AC6	2, 4, 6																				
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, 2BB6, 2BC6, 2BD6	4, 6, 8																				
	2BA2, 2BA6	2																				
250 M	2CA2, 2CA6	2	406	100	490	497	410	410	322	322	319	620	145	349	102	102	409	24	110	55	168	230
	2CB2, 2CC2, 2CD2, 2CC6, 2CD6,	4, 6, 8																				
	2CB6	4																				300

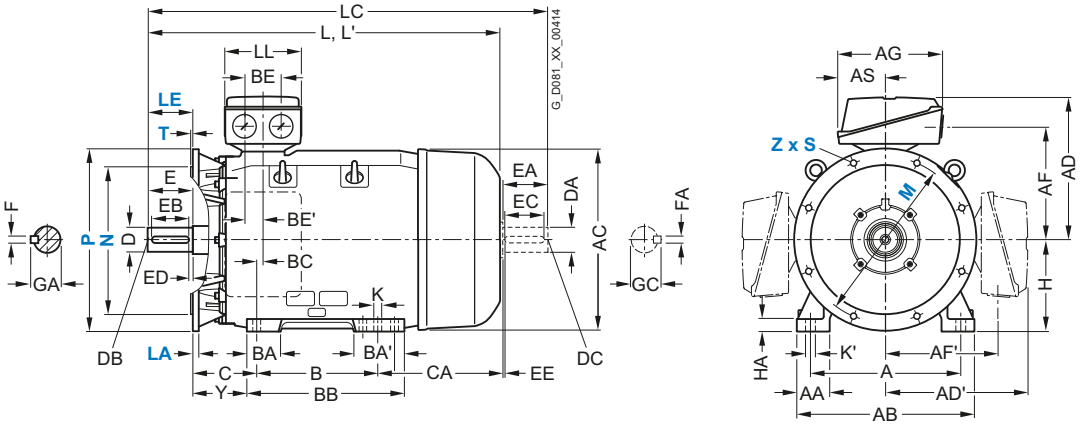
* This dimension is assigned in DIN EN 50347 to the frame size listed.

[1] Additional information – not a standard dimension according to DIN EN 50347.

Dimensional drawings (continued)

Type of construction IM B35

For flange dimensions, see Page 2/92 (Z = the number of retaining holes)



Type											DE shaft extension							NDE shaft extension						
1LE1501, 1LE1521 1LE1601, 1LE1621	H	HA	Y[1]	HH	K	K´	L	L´[2]	LC[3]	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] Additional information – not a standard dimension according to DIN EN 50347.

[2] For version with low-noise fan for 2-pole motors.

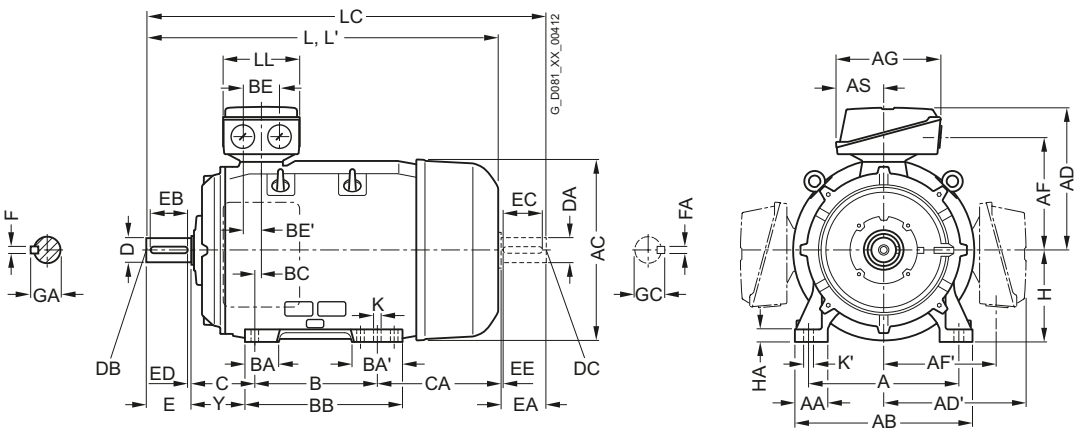
[3] In the low-noise version, a second shaft extension and/or mounted encoder is not possible.

Dimensions

Cast-iron series 1LE1501, 1LE1521, 1LE1601, 1LE1621 Self-ventilated, frame sizes 280 S to 315 L

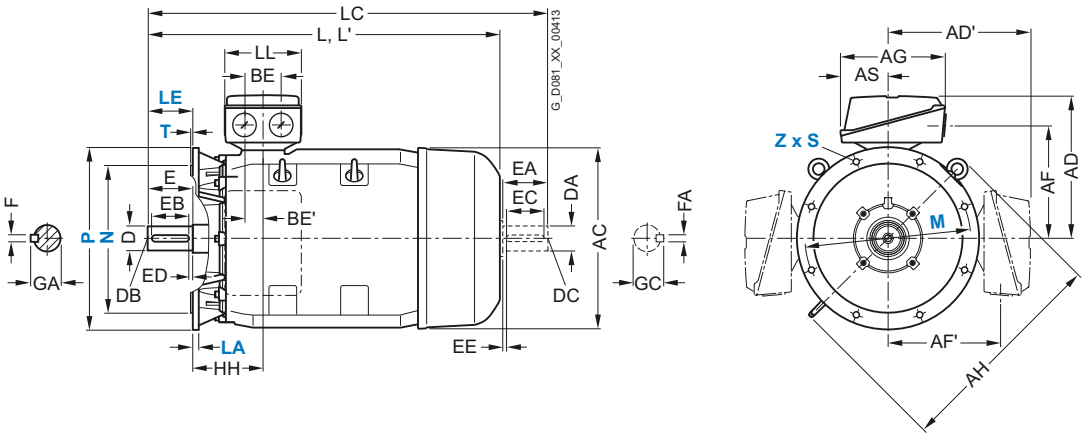
Dimensional drawings

Type of construction IM B3



Types of construction IM B5, IM V1

For flange dimensions, see Page 2/92 (Z = the number of retaining holes)



For motor	Type		Dimension designation acc. to **IEC**																		
Frame size	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[1]	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[2]	2												457			578					409
	3AB2[2]	4																				
	3AC2, 3AD2[2]	6															327					244
315 L[2]	3AA4	2												508			578					358
	3AB4, 3AC4, 3AD4, 3AC5, 3AD5, 3AD6	4, 6, 8																				
	3AA5, 3AA6	2													176	227	648					513
	3AB5, 3AB6, 3AC6	4, 6																				

* This dimension is assigned in DIN EN 50347 to the frame size listed.

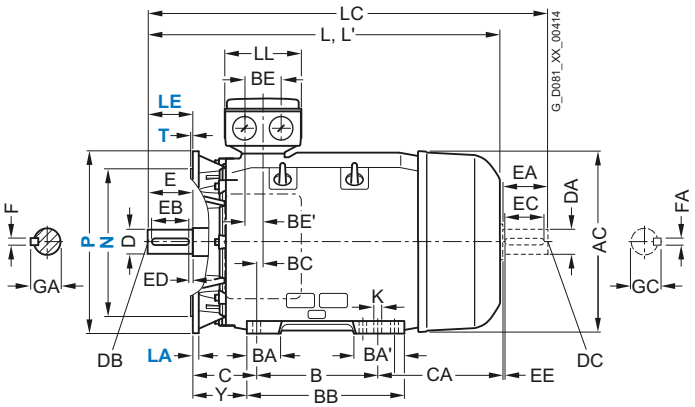
[1] Additional information – not a standard dimension according to DIN EN 50347.

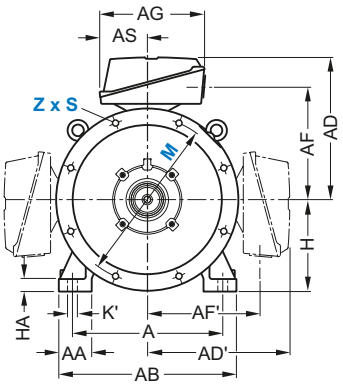
[2] With order codes for connection box positions (**K05**, **K06**, **H01**) only screwed-on feet with 3 drilled holes with dimension "B" (406, 457 and 506 mm). The dimension "BB" will then be 666 mm.

Dimensional drawings (continued)

Type of construction IM B35

For flange dimensions, see Page 2/92 (Z = the number of retaining holes)





Type											DE shaft extension							NDE shaft extension						
1LE1501, 1LE1521 1LE1601, 1LE1621	H	HA	Y[1]	HH	K	K´	L	L´[2]	LC[3]	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	64
3AB2							1247	–	1392		80		170	140	25	22	85	70					20	74.5
3AC2, 3AD2							1082		1227															
3AA4							1217	1287	1362		65		140	125	10	18	69	60					18	64
3AB4, 3AC4, 3AD4, 3AC5, 3AD5, 3AD6							1247	–	1392		80		170	140	25	22	85	70					20	74.5
3AA5, 3AA6			146				1372	1442	1517		65		140	125	10	18	69	60					18	64
3AB5, 3AB6, 3AC6							1402	–	1547		80		170	140	25	22	85	70					20	74.5

[1] Additional information – not a standard dimension according to DIN EN 50347.

[2] For version with low-noise fan for 2-pole motors.

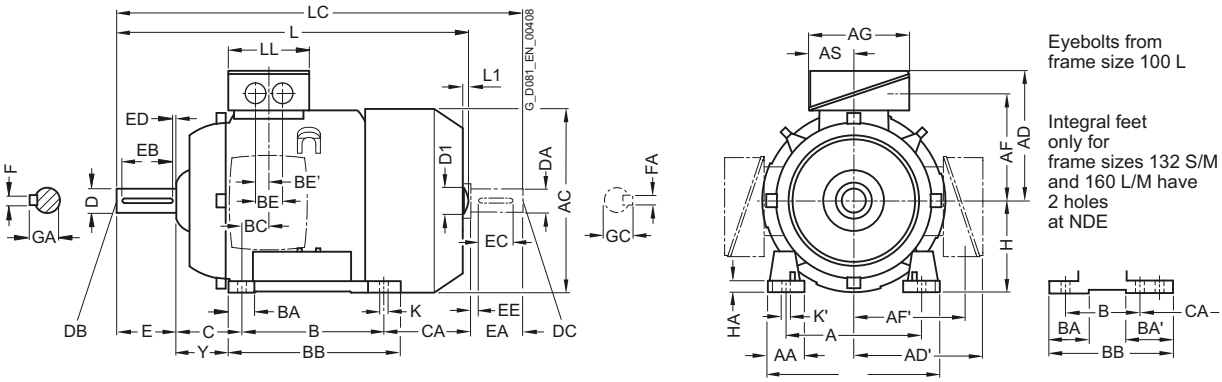
[3] In the low-noise version, a second shaft extension and/or mounted encoder is not possible.

Dimensions

Cast-iron series 1LE1523, 1LE1623
Self-ventilated, frame sizes 100 L to 160 L

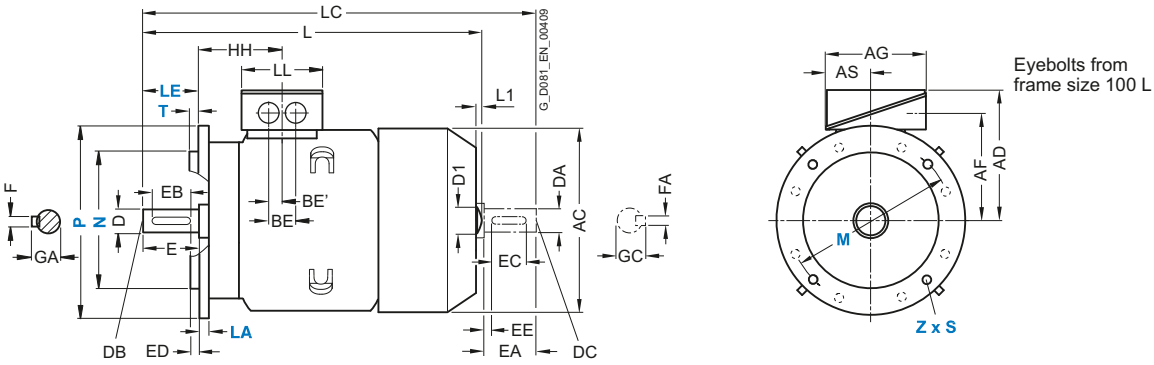
Dimensional drawings

Type of construction IM B3



Types of construction IM B5, IM V1

For flange dimensions, see Page 2/92 (Z = the number of retaining holes)



For motor			Dimension designation acc. to **IEC**																				
Frame size	No. of poles	Motor type 1LE1523 1LE1623	A	AA	AB	AC	AD	AD'	AF	AF'	AG	AS	B*	BA	BA'	BB	BC	BE	BE'	C[1]	CA*	H	HA	Y[1]
100 L	2, 4	1AA4, 1AB4, 1AB5	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	2, 4	1BA2, 1BB2	190	46	226	222	195	195	150	150	163	80.5	140	40	–	176	30	48	24	70	155	112	12	52
132 S	2, 6	1CA0, 1CC0	216	53	256	262	214.5	214.5	169	169	163	80.5	140	44	81[2]	218[3]	26.5	48	24	89	128.5	132	15	69
	2, 4	1CA1, 1CB0													–						178.5			
132 M	6	1CC2	216	53	256	262	214.5	214.5	169	169	163	80.5	178	44	81[2]	218	26.5	48	24	89	128.5	132	15	69
	4, 6, 8	1CB2, 1CC3													–						178.5			
160 M	2, 4, 6	1DA2, 1DA3, 1DB2, 1DC2	254	60	300	314	261	261	213	213	190	92	210	51	95[4]	300[5]	37	60	30	108	148	160	18	85
160 L	2, 4, 6	1DA4, 1DB4, 1DC4	254	60	300	314	261	261	213	213	190	92	254	51	95[4]	300	37	60	30	108	208	160	18	85

* This dimension is assigned in DIN EN 50347 to the frame size listed.

1) Additional information – not a standard dimension according to DIN EN 50347.

2) With screwed-on feet, dimension BA' is 43 mm.

3) With screwed-on feet, dimension BB is 180 mm.

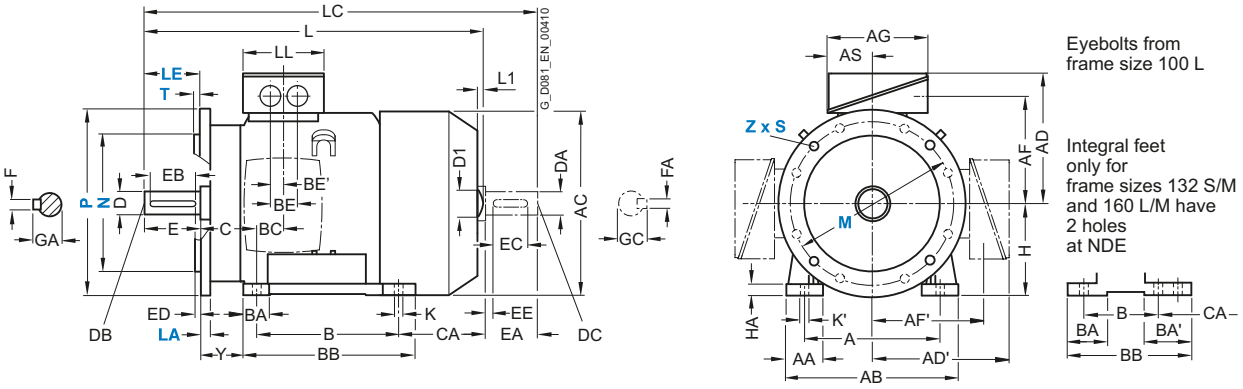
4) With screwed-on feet, dimension BA' is 51 mm.

5) With screwed-on feet, dimension BB is 256 mm.

Dimensional drawings (continued)

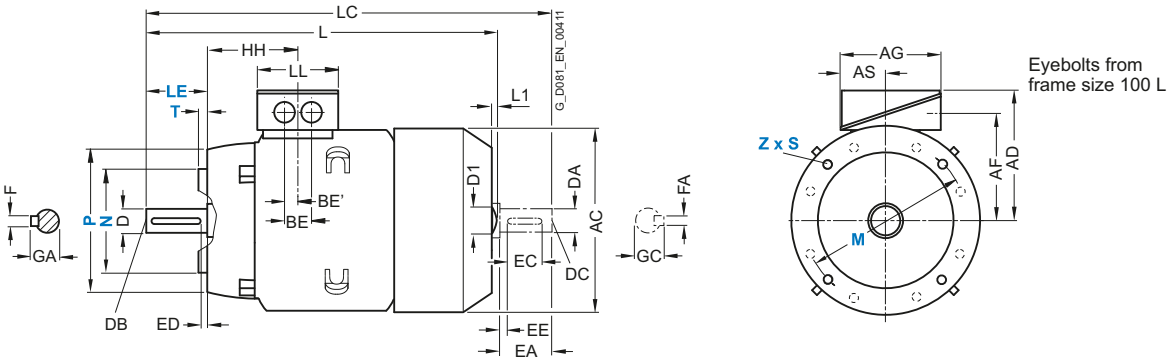
Type of construction IM B35

For flange dimensions, see Page 2/92 (Z = the number of retaining holes)



Type of construction IM B14

For flange dimensions, see Page 2/92 (Z = the number of retaining holes)



For motor			Dimension designation acc. to **IEC**								DE shaft extension							NDE shaft extension						
Frame size	No. of poles	Motor type 1LE1523 1LE1623	HH	K	K'	L[1)]	L1[2)]	D1	LC	LL	D	DB	E	EB	ED	F	GA	DA	DC	EA	EC	EE	FA	GC
100 L	2, 4	1AA4, 1AB4, 1AB5	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	2, 4	1BA2, 1BB2	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	2, 6	1CA0, 1CC0	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
	2, 4	1CA1, 1CB0				508			585.5															
132 M	6	1CC2	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
	4, 6	1CB2, 1CC3				508			585.5															
160 M	2, 4, 6	1DA2, 1DA3, 1DB2, 1DC2	145	15	19	596	10	45	730	165	42	M16	110	90	10	12	45	42	M16	110	90	10	12	45
160 L	2, 4, 6	1DA4, 1DB4, 1DC4	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.

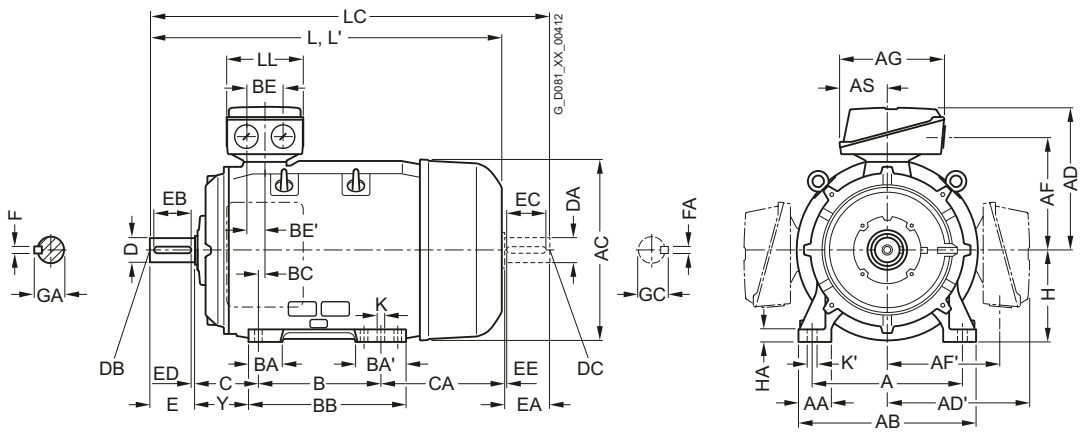
[2)] Only for 1LE15 motors.

Dimensions

Cast-iron series 1LE1503, 1LE1523, 1LE1603, 1LE1623 Self-ventilated, frame sizes 180 M to 315 L

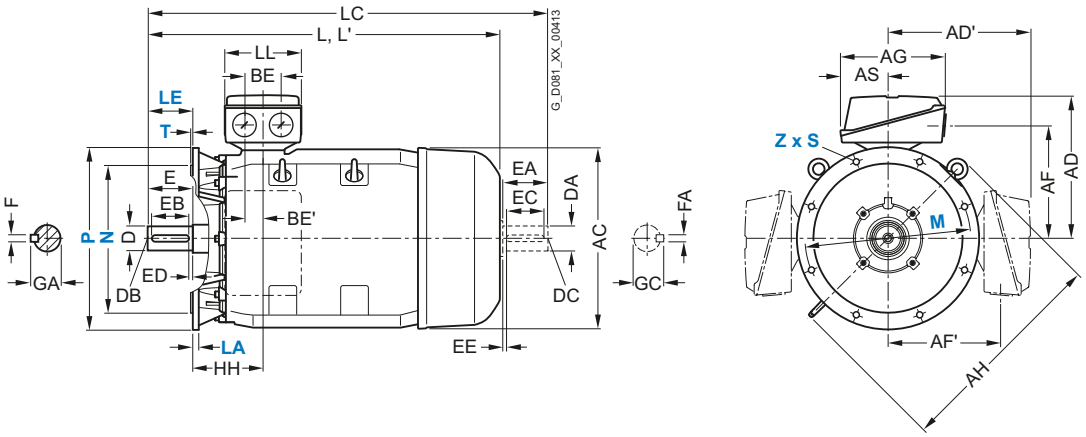
Dimensional drawings

Type of construction IM B3



Types of construction IM B5, IM V1

For flange dimensions, see Page 2/92 (Z = the number of retaining holes)



For motor	Type		Dimension designation acc. to **IEC**																			
Frame size	1LE1503, 1LE1523 1LE1603, 1LE1623	No. of poles	A	AA	AB	AC	AD	AD´	AF	AF´	AG	AH	AS	B*	BA	BA´	BB	BC	BE	BE´	C[1]	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	60	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	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	2DC2	6	457	100	540	551	433	433	345	345	319	672	145	419	101	152	479	20	110	55	190	216
	2DA2	2																				326
	2DB2	4																				
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[2]	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[2]	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.

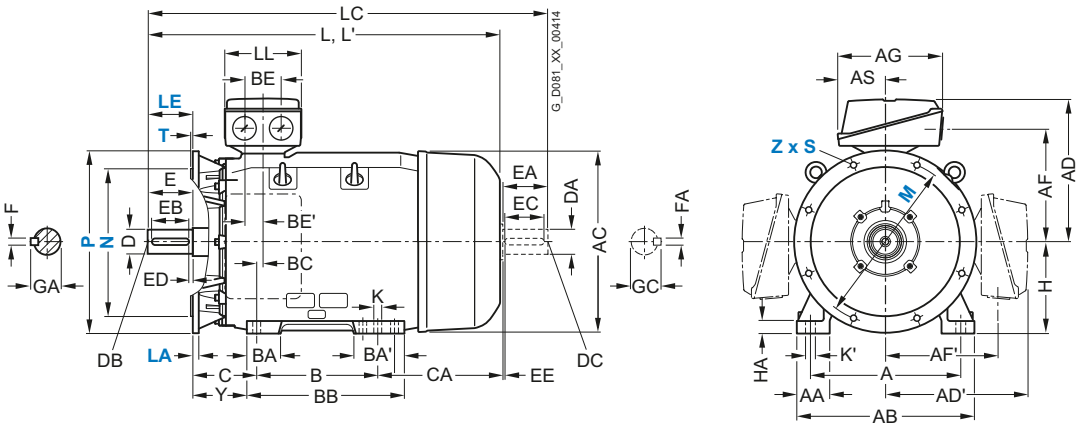
[1] Additional information – not a standard dimension according to DIN EN 50347.

[2] With order codes for connection 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 2/92 (Z = the number of retaining holes)



Type											DE shaft extension							NDE shaft extension						
1LE1503, 1LE1523 1LE1603, 1LE1623	H	HA	Y[1]	HH	K	K´	L	L´[2]	LC[3]	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	668 698	668 698	784 814	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	721 746	755 780	835 860	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] Additional information – not a standard dimension according to DIN EN 50347.

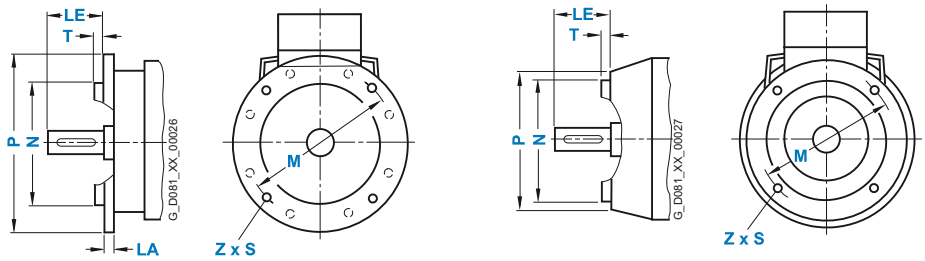
[2] For version with low-noise fan for 2-pole motors.

[3] In the low-noise version, a second shaft extension and/or mounted encoder is not possible.

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)		Dimension designation acc. to **IEC**							
			acc. to EN 50347	acc. to DIN 42948	**LA**	**LE**	**M**	**N**	**P**	**S**	**T**	**Z**
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	60	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
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
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
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
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 2-pole 4-pole to 8-pole	IM B5, IM B35, IM V1, IM V3	Standard flange	**FF400**	A450	16	110 140	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	140 170	600	550	660	24	6	8

SIMOTICS XP 1MB1
Explosion-Proof Motors

3

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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.

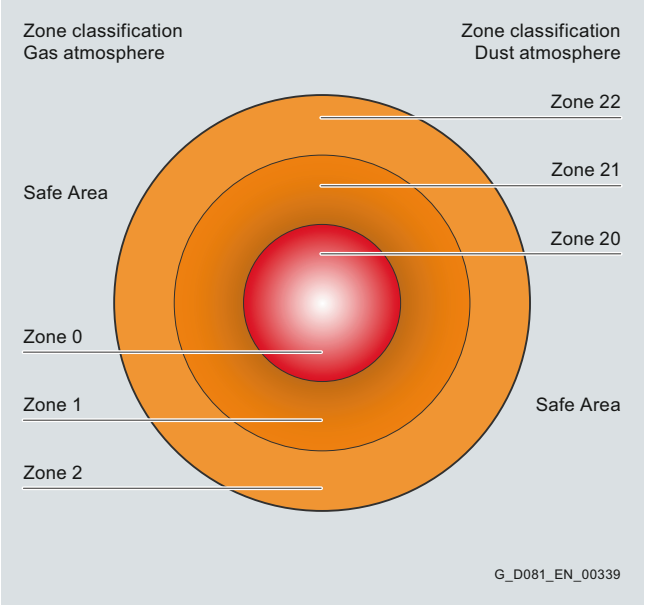
The local conditions must be subdivided into specified zones by the user with the assistance of the responsible authorities in accordance with the frequency of occurrence of an explosion hazard. Device (equipment) categories are assigned to these zones. The zones are then subdivided into possible types 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			
Gas 1) 2)	Dust 1) 2)	IEC/EN 60079-10-1 for gas atmospheres IEC/EN 60079-10-2 for dust atmospheres	Assigned types of protection	Category according to 94/9/EC	Equipment protection level acc. to IEC/EN 60079-0
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.

Motors of the 1MB103 series are available in **Ex nA** design. For motors of the 1LA7/9, 1LA6 and 1LG series, see Catalog D 81.1 · January 2012.

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**	**⟨Ex⟩**	**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 connection 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, T2 = 300 °C, T3 = 200 °C, T4 = 135 °C, T5 = 100 °C, T6 = 85 °C											
Equipment protection level (G = Gas; D = Dust): Ga = Very high protection, Gb = High protection, Gc = Increased protection, Da = Very high protection, Db = High 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*".

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.

Motors of the 1MB101 and 1MB102 series are available in **Ex t** design. 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

Overview (continued)

Overview of SIMOTICS XP 1MA/1MB1/1MJ/1LA/1LG 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 (Pos. 1-4 of Article No.)	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 IEC/EN 60079-1
									Converter	A15 A16	155 (F)	
				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	130 (B)	IEC/EN 60079-0 IEC/EN 60079-15
									Converter	M73		
								1MB103	Mains			
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 T 125 °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		
									Converter	M39		
								1MB101/2	Mains			
Gases and vapors (G) and dusts (D) [5]	2G 2D	1/21	occasionally	Ex de IIC [1] (explosion-proof enclosure)/ Ex tb IIIC [1]: conductive and non-conductive dust	T1 – T4/ Max. enclosure temperature T 135 °C	Gb Db	IP65	1MJ6 1MJ7	Mains	M76	130 (B)	IEC/EN 60079-0 IEC/EN 60079-1 IEC/EN 60079-31
									Converter	M77	155 (F)	
	3G 3D	2 or 22	rarely or briefly	Ex nA IIC [1] (non-sparking)/ Ex tc IIIB: non-conductive dust	T1 – T3/ Max. enclosure temperature T 125 °C [6]	Gc Dc	IP55	1LA6, 1LA7, 1LA9, 1LG4/6	Mains	M74	130 (B)	IEC/EN 60079-0 IEC/EN 60079-15 IEC/EN 60079-31
									Converter	M75		
								1MB103 +B30	Mains			

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.

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

1) Highest explosion group IIC includes IIB and IIA. Optionally with Ex d connection 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) 1MB1.1/2: IE1: T140 °C
IE2: T120 °C (exceptions: 1MB1.11-1AD5; 1MB1.21-1AD5) T130 °C
IE3: T120 °C

Technical specifications

General information

Ex motors in vertical type of construction with shaft extension pointing down must have a protective cover.

Extensive 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

- Design for Zone 2 for mains-fed operation
- 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 connection 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:

Ⓔx 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)
- Ex tc IIIB acc. to IEC/EN 60079-31 [1] for Zone 22
  - Design for Zone 22 for non-conductive dust (IP55) for mains-fed operation (1MB102)
- For design for Zone 21/22 for converter-fed operation, see Catalog D 81.1 · January 2012

The 1MB10 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 (extra rating plate for SIMOTICS N-compact motors):

- Zone 21: Ⓔx II 2D Ex tb IIIC T125 °C Db
- Zone 22: Ⓔx II 3D Ex tc IIIB T125 °C Dc

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 (IP55) for mains-fed operation – Order code **B30**

Zone 2/22: Ⓔx II 3D Ex nA IIC T3 Gc

Ⓔx II 3D Ex tc IIIB IP55 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: 1MB1.1-1AD5 and 1MB1.21-1AD5 T130 °C
IE3: T120 °C

Technical specifications (continued)

VIK version

- **VIK standard version** – 1LE10 + order code **C02**
  "VIK" identification on rating plate.
- **VIK Ex n version** – 1MB103 + order code **C02**
  "VIK" and "Ex nA IIC T3 Gc" identification on the rating plate according to Directive 94/9/EC (ATEX)
  "Ex nA II T3" identification will only be included on the rating plate on request as recommended by VIK.

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 1LE1002 (IE1) and 1MB1032 (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 motors < 0.75 kW in the 1MB1/1LE1 series are still possible, because 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 Edition.

Coolant temperature

Coolant temperature –40 to +40 °C for explosion-proof motor

For all 1MB10 motors, frame sizes 100 to 160, 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".

Selection and ordering data

P_{rated}, 50 Hz	P_{rated}, 60 Hz	Frame size	Operating values at rated output: 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}/T_{rated}	I_{LR}/I_{rated}	T_B/T_{rated}	L_{pfA}, 50 Hz	L_{WA}, 50 Hz	**Aluminum series 1MB1** – *IE1 version in accordance with IEC 60034-30* Article No.	$m_{IM\ B3}$	J	Torque class
kW	kW	FS	rpm	Nm		%	%	%		A				dB(A)	dB(A)		kg	kgm²	CL
• 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**	**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	0.0034	16
4	**4**	**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	0.0067	16
5.5	**5.5**	**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	0.013	16
7.5	**7.5**	**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	0.016	16
11	**11**	**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	0.030	16
15	**15**	**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	0.036	16
18.5	**18.5**	**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	0.044	16
4-pole: 1500 rpm at 50 Hz, 1800 rpm at 60 Hz [1]																			
2.2	**2.2**	**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	0.0059	16
3	**3**	**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	0.0078	16
4	**4**	**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	0.010	16
5.5	**5.5**	**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	0.019	16
7.5	**7.5**	**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	0.024	16
11	**11**	**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	0.044	16
15	**15**	**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	0.056	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				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	1MB10 . 2-1A ... -1D	**Standard**	**2**	**2**	–
50 Hz	400 VΔ/690 VY	60 Hz [1]	460 VΔ	2, 4, 6, 8	100 L ... 160 L	1MB10 . 2-1A ... -1D	**Standard**	**3**	**4**	–
50 Hz	500 VY			2, 4, 6, 8	100 L ... 160 L	1MB10 . 2-1A ... -1D	Without add. charge	**2**	**7**	–
50 Hz	500 VΔ			2, 4, 6, 8	100 L ... 160 L	1MB10 . 2-1A ... -1D	Without add. charge	**4**	**0**	–
Further voltages [1]			For additional charges, code numbers, order codes and descriptions, see from Page 3/12					**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	1MB10 . 2-1A ... -1D	**Standard**	**A**	–
With flange	IM B5 [2]	2, 4, 6, 8	100 L ... 160 L	1MB10 . 2-1A ... -1D	With additional charge	**F**	–
With standard flange	IM B14 [2]	2, 4, 6, 8	100 L ... 160 L	1MB10 . 2-1A ... -1D	With additional charge	**K**	–
Further types of construction	For additional charges, code letters and descriptions, see from Page 3/13					**■**	. . .

Motor protection	No. of poles	Frame size	Motor type	Version		Order code(s)
Without	2, 4, 6, 8	100 L ... 160 L	1MB10 . 2-1A ... -1D	**Standard**	**A**	–
PTC thermistor with 3 temperature sensors	2, 4, 6, 8	100 L ... 160 L	1MB10 . 2-1A ... -1D	With additional charge	**B**	–
Further motor protection	For additional charges, code letters and descriptions, see from Page 3/15				**■**	. . .

Connection box position	No. of poles	Frame size	Motor type	Version		Order code(s)
Connection box at top	2, 4, 6, 8	100 L ... 160 L	1MB10 . 2-1A ... -1D	**Standard**	**4**	–
Further connection box positions	For additional charges, code numbers and descriptions, see from Page 3/16					

Special versions	No. of poles	Frame size	Motor type		Order code(s)
Options	For additional charges, order codes and descriptions, see from Page 3/17			**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.

Selection and ordering data (continued)

P_{rated}, 50 Hz	P_{rated}, 60 Hz	Frame size	Operating values at rated output: 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}/T_{rated}	I_{LR}/I_{rated}	T_B/T_{rated}	L_{pfA}, 50 Hz	L_{WA}, 50 Hz	Aluminum series 1MB1 – IE1 version in accordance with IEC 60034-30 Article No.	$m_{IM\ B3}$	J	Torque class
kW	kW	FS	rpm	Nm		%	%	%		A				dB(A)	dB(A)		kg	kgm²	CL
• 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	1.5	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	2.2	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	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	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	5.5	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	7.5	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	11	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	0.75	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	1.1	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	1.5	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	2.2	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	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	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	5.5	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	7.5	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 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				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	1MB10 . 2-1A ... -1D	**Standard**	2	2	–
50 Hz	400 VΔ/690 VY	60 Hz [1]	460 VΔ	2, 4, 6, 8	100 L ... 160 L	1MB10 . 2-1A ... -1D	**Standard**	3	4	–
50 Hz	500 VY			2, 4, 6, 8	100 L ... 160 L	1MB10 . 2-1A ... -1D	Without add. charge	2	7	–
50 Hz	500 VΔ			2, 4, 6, 8	100 L ... 160 L	1MB10 . 2-1A ... -1D	Without add. charge	4	0	–
Further voltages [1]			For additional charges, code numbers, order codes and descriptions, see from Page 3/12					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	1MB10 . 2-1A ... -1D	**Standard**	A	–
With flange	IM B5 [2]	2, 4, 6, 8	100 L ... 160 L	1MB10 . 2-1A ... -1D	With additional charge	F	–
With standard flange	IM B14 [2]	2, 4, 6, 8	100 L ... 160 L	1MB10 . 2-1A ... -1D	With additional charge	K	–
Further types of construction	For additional charges, code letters and descriptions, see from Page 3/13					■	. . .

Motor protection	No. of poles	Frame size	Motor type	Version		Order code(s)
Without	2, 4, 6, 8	100 L ... 160 L	1MB10 . 2-1A ... -1D	**Standard**	A	–
PTC thermistor with 3 temperature sensors	2, 4, 6, 8	100 L ... 160 L	1MB10 . 2-1A ... -1D	With additional charge	B	–
Further motor protection	For additional charges, code letters and descriptions, see from Page 3/15				■	. . .

Connection box position	No. of poles	Frame size	Motor type	Version		Order code(s)
Connection box at top	2, 4, 6, 8	100 L ... 160 L	1MB10 . 2-1A ... -1D	**Standard**	4	–
Further connection box positions	For additional charges, code numbers and descriptions, see from Page 3/16					

Special versions	No. of poles	Frame size	Motor type		Order code(s)
Options	For additional charges, order codes and descriptions, see from Page 3/17			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.

Selection and ordering data (continued)

P_{rated}, 50 Hz	P_{rated}, 60 Hz	Frame size	Operating values at rated output: 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}/T_{rated}	I_{LR}/I_{rated}	T_B/T_{rated}	L_{pfA}, 50 Hz	L_{WA}, 50 Hz	Aluminum series 1MB1 – *IE2 version in accordance with IEC 60034-30* Article No.	$m_{IM\ B3}$	J	Torque class
kW	kW	FS	rpm	Nm		%	%	%		A				dB(A)	dB(A)		kg	kgm²	CL
• 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	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	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	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	1MB10■1-1CA0■-■■■■	39	0.020	16
7.5	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	1MB10■1-1CA1■-■■■■	43	0.024	16
11	11	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	15	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	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	1MB10■1-1DA4■-■■■■	84	0.061	16
4-pole: 1500 rpm at 50 Hz, 1800 rpm at 60 Hz [1]																			
2.2	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	1MB10■1-1AB4■-■■■■	21	0.0086	16
3	3	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	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	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	1MB10■1-1CB0■-■■■■	42	0.027	16
7.5	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	1MB10■1-1CB2■-■■■■	49	0.034	16
11	11	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	15	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				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	1MB10 . 2-1A ... -1D	**Standard**	2	2	–
50 Hz	400 VΔ/690 VY	60 Hz [1]	460 VΔ	2, 4, 6, 8	100 L ... 160 L	1MB10 . 2-1A ... -1D	**Standard**	3	4	–
50 Hz	500 VY			2, 4, 6, 8	100 L ... 160 L	1MB10 . 2-1A ... -1D	Without add. charge	2	7	–
50 Hz	500 VΔ			2, 4, 6, 8	100 L ... 160 L	1MB10 . 2-1A ... -1D	Without add. charge	4	0	–
Further voltages [1]			For additional charges, code numbers, order codes and descriptions, see from Page 3/12					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	1MB10 . 2-1A ... -1D	**Standard**	A		–
With flange		IM B5 [2]	2, 4, 6, 8	100 L ... 160 L	1MB10 . 2-1A ... -1D	With additional charge	F		–
With standard flange		IM B14 [2]	2, 4, 6, 8	100 L ... 160 L	1MB10 . 2-1A ... -1D	With additional charge	K		–
Further types of construction			For additional charges, code letters and descriptions, see from Page 3/13				■		. . .

Motor protection	No. of poles	Frame size	Motor type	Version		Order code(s)
Without	2, 4, 6, 8	100 L ... 160 L	1MB10 . 2-1A ... -1D	**Standard**	A	–
PTC thermistor with 3 temperature sensors	2, 4, 6, 8	100 L ... 160 L	1MB10 . 2-1A ... -1D	With additional charge	B	–
Further motor protection	For additional charges, code letters and descriptions, see from Page 3/15				■	. . .

Connection box position	No. of poles	Frame size	Motor type	Version		Order code(s)
Connection box at top	2, 4, 6, 8	100 L ... 160 L	1MB10 . 2-1A ... -1D	**Standard**	4	–
Further connection box positions	For additional charges, code numbers and descriptions, see from Page 3/16					

Special versions	No. of poles	Frame size	Motor type		Order code(s)
Options	For additional charges, order codes and descriptions, see from Page 3/17			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.

Selection and ordering data (continued)

P_{rated}, 50 Hz	P_{rated}, 60 Hz	Frame size	Operating values at rated output: 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	$\cos\varphi_{rated}$, 50 Hz, 4/4	I_{rated}, 50 Hz, 400 V	T_{LR}/T_{rated}	I_{LR}/I_{rated}	T_B/T_{rated}	L_{pfA}, 50 Hz	L_{WA}, 50 Hz	Aluminum series 1MB1 – *IE2 version in accordance with IEC 60034-30* Article No.	$m_{IM B3}$	J	Torque class
kW	kW	FS	rpm	Nm		%	%	%		A				dB(A)	dB(A)		kg	kgm²	CL
• 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	**1.5**	**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	**2.2**	**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**	**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**	**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	**5.5**	**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	**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	**1MB10■1-1DC2■-■■■■**	77	0.075	16
11	**11**	**160 L**	975	108	IE2	88.7	89.5	89.4	0.80	22.5	1.7	6.2	2.7	67	79	**1MB10■1-1DC4■-■■■■**	93	0.098	16
8-pole: 750 rpm at 50 Hz, 900 rpm at 60 Hz [1]																			
0.75	**0.75**	**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	**1.1**	**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	**1.5**	**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	**2.2**	**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**	**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**	**160 M**	730	52	–	86.2	86.9	86.0	0.69	9.7	1.8	4.3	2.0	63	75	**1MB10■1-1DD2■-■■■■**	69	0.065	13
5.5	**5.5**	**160 M**	730	72	–	86.7	87.5	86.5	0.69	13.3	2.1	4.4	2.1	63	75	**1MB10■1-1DD3■-■■■■**	82	0.083	13
7.5	**7.5**	**160 L**	730	98	–	86.9	88.2	88.1	0.72	17.3	1.9	4.5	2.1	63	75	**1MB10■1-1DD4■-■■■■**	94	0.098	13

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				No. of poles	Frame size	Motor type	Version	Code	Order code(s)
50 Hz	230 VΔ/400 VY	60 Hz [1]	460 VY	2, 4, 6, 8	100 L ... 160 L	1MB10 . 2-1A ... -1D	**Standard**	2 2	–
50 Hz	400 VΔ/690 VY	60 Hz [1]	460 VΔ	2, 4, 6, 8	100 L ... 160 L	1MB10 . 2-1A ... -1D	**Standard**	3 4	–
50 Hz	500 VY			2, 4, 6, 8	100 L ... 160 L	1MB10 . 2-1A ... -1D	Without add. charge	2 7	–
50 Hz	500 VΔ			2, 4, 6, 8	100 L ... 160 L	1MB10 . 2-1A ... -1D	Without add. charge	4 0	–
Further voltages [1]	For additional charges, code numbers, order codes and descriptions, see from Page 3/12							9 0	. . .

Types of construction		No. of poles	Frame size	Motor type	Version	Code	Order code(s)
Without flange	IM B3 [2]	2, 4, 6, 8	100 L ... 160 L	1MB10 . 2-1A ... -1D	**Standard**	A	–
With flange	IM B5 [2]	2, 4, 6, 8	100 L ... 160 L	1MB10 . 2-1A ... -1D	With additional charge	F	–
With standard flange	IM B14 [2]	2, 4, 6, 8	100 L ... 160 L	1MB10 . 2-1A ... -1D	With additional charge	K	–
Further types of construction	For additional charges, code letters and descriptions, see from Page 3/13					■	. . .

Motor protection	No. of poles	Frame size	Motor type	Version	Code	Order code(s)
Without	2, 4, 6, 8	100 L ... 160 L	1MB10 . 2-1A ... -1D	**Standard**	A	–
PTC thermistor with 3 temperature sensors	2, 4, 6, 8	100 L ... 160 L	1MB10 . 2-1A ... -1D	With additional charge	B	–
Further motor protection	For additional charges, code letters and descriptions, see from Page 3/15				■	. . .

Connection box position	No. of poles	Frame size	Motor type	Version	Code	Order code(s)
Connection box at top	2, 4, 6, 8	100 L ... 160 L	1MB10 . 2-1A ... -1D	**Standard**	4	–
Further connection box positions	For additional charges, code numbers and descriptions, see from Page 3/16					

Special versions	No. of poles Frame size Motor type		Order code(s)
Options	For additional charges, order codes and descriptions, see from Page 3/17	**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.

Selection and ordering data (continued)

P_{rated}, 50 Hz	P_{rated}, 60 Hz	Frame size	Operating values at rated output: 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}/T_{rated}	I_{LR}/I_{rated}	T_B/T_{rated}	L_{pfA}, 50 Hz	L_{WA}, 50 Hz	**Aluminum series 1MB1** – *IE3 version in accordance with IEC 60034-30* Article No.	$m_{IM\ B3}$	J	Torque class
kW	kW	FS	rpm	Nm		%	%	%		A				dB(A)	dB(A)		kg	kgm^2	CL
• 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]																			
3	**3**	**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**	**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	**5.5**	**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	**7.5**	**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	**11**	**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	**15**	**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	**18.5**	**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]																			
2.2	**2.2**	**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**	**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**	**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	**5.5**	**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	**7.5**	**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	**11**	**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	**15**	**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]																			
3	**3**	**132 S**	970	30.0	IE3	85.6	85.6	84.6	0.78	6.5	1.8	6.5	3.0	63	75	**1MB10■3-1CC0■-■■■■**	52	0.037	13
4	**4**	**132 M**	970	39.0	IE3	86.8	86.8	85.8	0.79	8.4	1.9	6.6	3.0	63	75	**1MB10■3-1CC2■-■■■■**	52	0.037	13
5.5	**5.5**	**132 M**	970	54.0	IE3	88.0	88.0	87.0	0.78	11.6	2.0	6.6	3.1	63	75	**1MB10■3-1CC3■-■■■■**	52	0.037	13
7.5	**7.5**	**160 M**	975	73.0	IE3	89.1	89.1	88.1	0.80	15.2	1.6	6.3	2.8	67	79	**1MB10■3-1DC2■-■■■■**	93	0.098	13
11	**11**	**160 L**	975	108.0	IE3	90.3	90.3	89.3	0.80	22.0	1.8	6.6	3.0	67	79	**1MB10■3-1DC4■-■■■■**	115	0.12	13

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				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	1MB10 . 3-1A ... -1D	**Standard**	2	2	–
50 Hz	400 VΔ/690 VY	60 Hz [1]	460 VΔ	2, 4, 6	100 L ... 160 L	1MB10 . 3-1A ... -1D	**Standard**	3	4	–
50 Hz	500 VY			2, 4, 6	100 L ... 160 L	1MB10 . 3-1A ... -1D	Without add. charge	2	7	–
50 Hz	500 VΔ			2, 4, 6	100 L ... 160 L	1MB10 . 3-1A ... -1D	Without add. charge	4	0	–
Further voltages [1]			For additional charges, code numbers, order codes and descriptions, see from Page 3/12					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	1MB10 . 3-1A ... -1D	**Standard**	A	–
With flange	IM B5 [2]	2, 4, 6	100 L ... 160 L	1MB10 . 3-1A ... -1D	With additional charge	F	–
With standard flange	IM B14 [2]	2, 4, 6	100 L ... 160 L	1MB10 . 3-1A ... -1D	With additional charge	K	–
Further types of construction	For additional charges, code letters and descriptions, see from Page 3/13					■	. . .

Motor protection	No. of poles	Frame size	Motor type	Version		Order code(s)
Without	2, 4, 6	100 L ... 160 L	1MB10 . 3-1A ... -1D	**Standard**	A	–
PTC thermistor with 3 temperature sensors	2, 4, 6	100 L ... 160 L	1MB10 . 3-1A ... -1D	With additional charge	B	–
Further motor protection	For additional charges, code letters and descriptions, see from Page 3/15				■	. . .

Connection box position	No. of poles	Frame size	Motor type	Version		Order code(s)
Connection box at top	2, 4, 6	100 L ... 160 L	1MB10 . 3-1A ... -1D	**Standard**	4	–
Further connection box positions	For additional charges, code numbers and descriptions, see from Page 3/16					

Special versions	No. of poles	Frame size	Motor type		Order code(s)
Options	For additional charges, order codes and descriptions, see from Page 3/17			**1MB10 . 3- . . . . ■-■■■■-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.

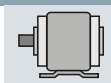
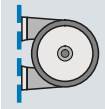
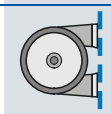
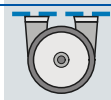
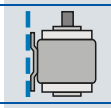
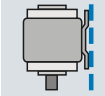
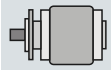
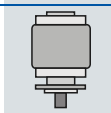
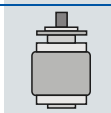
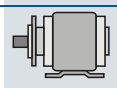
Voltages
Aluminum series 1MB10

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**			
						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. . . - . . . . ■ - ■ . . .				Motor version	Motor type	Frame size 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	**2**	**1**	–	All	All	✓	✓	✓	✓
50 Hz 380 VΔ/660 VY	**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	✓	✓	✓	✓
400 VY	**0**	**2**		All	All	□	□	□	□
400 VΔ	**0**	**4**		All	All	□	□	□	□
Voltage at 60 Hz (50 Hz output)									
220 VΔ/380 VY; 50 Hz output	**9**	**0**	**M2A**	All	All	✓	✓	✓	✓
380 VΔ/660 VY; 50 Hz output	**9**	**0**	**M2B**	All	All	✓	✓	✓	✓
440 VY; 50 Hz output	**9**	**0**	**M2C**	All	All	✓	✓	✓	✓
440 VΔ; 50 Hz output	**9**	**0**	**M2D**	All	All	✓	✓	✓	✓
460 VY; 50 Hz output	**9**	**0**	**M2E**	All	All	✓	✓	✓	✓
460 VΔ; 50 Hz output	**9**	**0**	**M2F**	All	All	✓	✓	✓	✓
575 VY; 50 Hz output	**9**	**0**	**M2G**	All	All	✓	✓	✓	✓
575 VΔ; 50 Hz output	**9**	**0**	**M2H**	All	All	✓	✓	✓	✓
Non-standard voltage and/or frequencies									
Non-standard winding	**9**	**0**	**M1Y** • and identification code	All	All	✓	✓	✓	✓

□ Standard version
• This order code only determines the price of the version – additional plain text is required.
✓ With additional charge
– Not possible

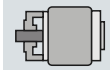
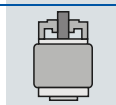
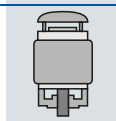
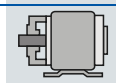
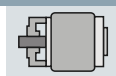
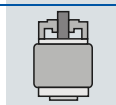
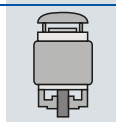
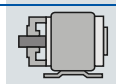
Selection and ordering data

Types of construction		Type identification 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 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. . . - . . . . . - . ■ . .				Motor version	Motor type	Frame size 100	112	132	160
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**	**-Z 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**
IM B5		**F**	–	All	All	✓	✓	✓	✓
IM V1 with protective cover [1] [2]		**G**	**-Z H00**	All	All	✓	✓	✓	✓
IM V3 [1]		**H**	–	All	All	✓	✓	✓	✓
IM B35		**J**	–	All	All	✓	✓	✓	✓

For legends and footnotes, see Page 3/14.

Supplements to article numbers and special versions

Types of construction
Aluminum series 1MB10

Types of construction		Type identification 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 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. . . -. . . . . -. ■ . .				Motor version	Motor type	Frame size 100	112	132	160
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]		**M**	**-Z H00**	All	All	✓	✓	✓	✓
IM B34		**N**	**–**	All	All	✓	✓	✓	✓
With special flange		**acc. to DIN EN 50347 acc. to DIN 42 948**				**FT165 C 200**	**FT165 C 200**	**FT215 C 250**	**FT265 C 300**
IM B14 [1]		**K**	**-Z P01**	All	All	✓	✓	✓	–
IM V19 [1]		**L**	**-Z P01**	All	All	✓	✓	✓	–
IM V18 with protective cover [1]		**M**	**-Z P01+H00**	All	All	✓	✓	✓	–
IM B34		**N**	**-Z P01**	All	All	✓	✓	✓	–

□ Standard version
✓ With additional charge

[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.

Selection and ordering data

Motor protection	Motor protection identification code 15th 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**
			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. . . - . . . . . - . . ■ .			Motor version	Motor type	Frame size 100	112	132	160
Motor protection (winding protection)								
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 [2]	**H**	–	All	All	✓	✓	✓	✓

□ Standard version
✓ With additional charge

[1] Evaluation with appropriate tripping unit (see Catalog IC 10) is recommended. For pole-changing motors with separate windings, double the number of temperature sensors or temperature detectors is required and will be installed at the factory. This also results in a double additional charge.

[2] For frame sizes 100 to 160, order codes **Q02** and **Q03** are not possible in combination with the "**H**" in the 15th position of the article number. It can only be supplied with a star or delta winding for direct switch-on (3 terminals).

Connection box
Aluminum series 1MB10

Selection and ordering data

Connection box	Connection box 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**			
					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. . . - . . . . - . . . ■			Motor version	Motor type	Frame size 100	112	132	160
Connection box								
Connection box top [1]	**4**	–	All	All	□	□	□	□
Connection box on RHS [2]	**5**	–	All	All	✓	✓	✓	✓
Connection box on LHS [2]	**6**	–	All	All	✓	✓	✓	✓
Connection box bottom [2] [3]	**7**	–	All	All	✓	✓	✓	✓

□ Standard version
✓ With additional charge

[1] For types of construction with feet, cast feet are standard. Screwed-on feet are available with order code **H01**.
[2] For types of construction with feet, screwed-on feet are standard.
[3] Not generally possible for motors with feet.

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** **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. . . - . . . . . - . . . . -Z		Motor version	Motor type	Frame size 100	112	132	160
Design for Zones according to ATEX							
Design (IP55) for Zone 2 and 22, for non-conductive dust, for mains-fed operation [1]	**B30**	Zone 2 Ex n	1MB103	✓	✓	✓	✓
Design for Zone 2 in Ex nA IIB T3 Gc	**B31**	Zone 2 Ex n	1MB103	○	○	○	○
VIK design marked with Ex nA II on rating plate	**C02** (for 1MB103, because of Ex n marking)	Zone 2 Ex n IE2 High Efficiency IE3 Premium Efficiency	1MB1031 1MB1033	✓	✓	✓	✓
Motor connection and connection box							
Cable gland, maximum configuration, certified according to ATEX	**R18**	All	All	✓	✓	✓	✓
Rotation of the connection box through 90°, entry from DE	**R10**	All	All	○	○	○	○
Rotation of the connection box through 90°, entry from NDE	**R11**	All	All	○	○	○	○
Rotation of the connection box through 180°	**R12**	All	All	○	○	○	○
Next larger connection box	**R50**	All	All	–	–	–	–
External grounding		All	All	□	□	□	□
Windings and insulation							
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), 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	✓	✓	✓	✓
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	□	□	□	□
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	✓	✓	✓	✓
Special finish in special RAL colors: For RAL colors, see "Special finish in special RAL colors" (Catalog Section 1 "Introduction")	**Y51 •** and special finish RAL ….	All	All	✓	✓	✓	✓
Special finish sea air resistant	**S03**	All	All	✓	✓	✓	✓
Unpainted (only cast-iron parts primed)	**S00**	All	All	○	○	○	○
Unpainted, only primed	**S01**	All	All	✓	✓	✓	✓

For legends and footnotes, see Page 3/19.

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** **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. . . - . . . . . - . . . . -Z		Motor version	Motor type	Frame size 100	112	132	160
Mechanical design and degrees of protection							
Drive-end seal for flange-mounting motors, oil-tight to 0.1 bar [3]	**H23**	All	All	✓	✓	✓	✓
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	–	–	✓	✓
IP65 degree of protection [4]	**H20**	All	All	✓	✓	✓	✓
IP56 degree of protection [5]	**H22**	All	All	✓	✓	✓	✓
Vibration-proof version	**H02**	All	All	✓	✓	✓	✓
Condensation drainage holes sealed [6]	**H03**	All	All	✓	✓	✓	✓
Rust-resistant screws (externally)	**H07**	All	All	✓	✓	✓	✓
Coolant temperature							
Coolant temperature –40 °C to +40 °C [8]	**D03**	All	All	✓	✓	✓	✓
Designs in accordance with standards and specifications							
Electrical according to NEMA MG1-12	**D30**	All	All	✓	✓	✓	✓
Bearings and lubrication							
Measuring nipple for SPM shock pulse measurement for bearing inspection	**Q01**	All	All	✓	✓	✓	✓
Bearing design for increased cantilever forces	**L22**	All	All	✓	✓	✓	✓
Regreasing device	**L23**	All	All	✓	✓	✓	✓
Located bearing DE	**L20**	All	All	✓	✓	✓	✓
Located bearing NDE	**L21**	All	All	✓	✓	✓	✓
Balance and vibration quantity							
Vibration quantity level A		All	All	□	□	□	□
Vibration quantity level B	**L00**	All	All	✓	✓	✓	✓
Full-key balancing	**L02**	All	All	✓	✓	✓	✓
Balancing without feather key, feather key is supplied	**L01**	All	All	✓	✓	✓	✓
Shaft and rotor							
Concentricity of shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors	**L08**	All	All	✓	✓	✓	✓
Second standard shaft extension	**L05**	All	All	✓	✓	✓	✓
Shaft extension with standard dimensions, without feather keyway	**L04**	All	All	✓	✓	✓	✓
Concentricity of shaft extension in accordance with DIN 42955 Tolerance R	**L07**	All	All	✓	✓	✓	✓
Standard shaft made of stainless steel	**L06**	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**	All	All	✓	✓	✓	✓
Anti-condensation heating, Ex. 230 V [9]	**Q02**	All	All	✓	✓	✓	✓
Anti-condensation heating, Ex. 115 V [9]	**Q03**	All	All	✓	✓	✓	✓
Rating plate and extra rating plates							
Second lubrication plate, loose	**B06**	All	All	✓	✓	✓	✓
Second rating plate, loose	**M10**	All	All	✓	✓	✓	✓
Rating plate, stainless steel	**M11**	All	All	✓	✓	✓	✓

For legends and footnotes, see Page 3/19.

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** **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. . . - . . . . . - . . . . -Z		Motor version	Motor type	Frame size 100	112	132	160
Rating plate and extra rating plates (continued)							
Extra rating plate or rating plate with deviating rating plate data (rated data only, e.g. voltage, output, speed)	**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 [10]	**B02**	All	All	✓	✓	✓	✓
Printed Operating Instructions (compact) for explosion-proof motors enclosed in English and German [11]		All	All	□	□	□	□
Printed Operating Instructions (compact) for explosion-proof motors enclosed in other official EU languages [11]	**Y98** • and identification code	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	✓	✓	✓	✓

□ 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 code **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) 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.

5) Order code **H22** IP56 degree of protection is only possible for Zone 2. 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 for IP55, IP56 and IP65 degrees of protection. If condensation drainage holes are required in motors of the IM B6, IM B7 or IM B8 type of construction (feet located on side or top), it is necessary to relocate the bearing plates at the drive end (DE) and non-drive end (NDE) so that the condensation drainage holes situated between the feet on delivery are underneath.

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 standard for these motors in the version for Zone 21/22. The metal external fan is not possible in combination with the low-noise version – order code **F77** or **F78**.

9) For frame sizes 100 to 160, order codes **Q02** and **Q03** are not possible in combination with the "**H**" in the 15th position of the article number. It can only be supplied with a star or delta winding for direct switch-on (3 terminals).

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/WW/view/en/10803948/133300

More information

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).

Source of supply:

Lütgert & Co. GmbH
Postfach 42 51
33276 Gütersloh, Germany
Tel. +49 (0)5241-74 07-0
Fax +49 (0)5241-74 07-90

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. The machine is set 2 to 3 mm deeper in this case. 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.

Source of supply:

Lütgert & Co. GmbH
Postfach 42 51
33276 Gütersloh, Germany
Tel. +49 (0)5241-74 07-0
Fax +49 (0)5241-74 07-90

www.luetgert-antriebe.de
E-mail: info@luetgert-antriebe.de

Taper pins according 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.

Source of supply, for example:

Otto Roth GmbH & Co. KG
Rutesheimer Straße 22
70499 Stuttgart, Germany
Tel. +49 (0)711-13 88-0
Fax. +49 (0)711-13 88-233

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.

Source of supply:

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 (0)2871-92 21 85
Fax +49 (0)2871-92 25 79

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.
  - After 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 as "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 (0)1 80/5 05 04 48

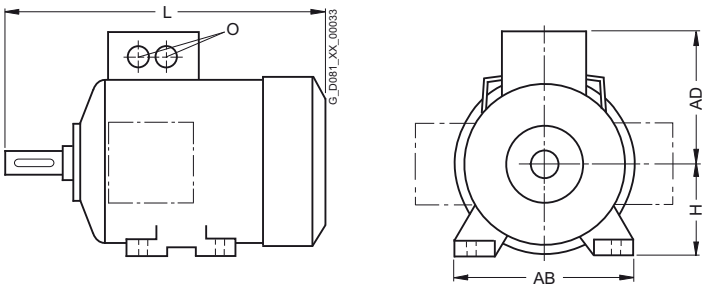
You will find telephone numbers for other countries on our Internet site:
www.siemens.com/automation/service&support

Dimensions

Overall dimensions
Notes on the dimensions

Overview

Overall dimensions



Frame size	Type	Dimension L [1]	AD	H	AB	O
100 L	Aluminum series self-ventilated 1MB1011, 1MB1012, 1MB1021, 1MB1022, 1MB1031, 1MB1032	395.5	166	100	196	2 × M32 × 1.5
	1MB1013, 1MB1023, 1MB1033	430.5	166	100	196	2 × M32 × 1.5
112 M	Aluminum series self-ventilated 1MB1011, 1MB1012, 1MB1021, 1MB1022, 1MB1031, 1MB1032	389	177	112	226	2 × M32 × 1.5
	1MB1013, 1MB1023, 1MB1033	414	177	112	226	2 × M32 × 1.5

Frame size	Type	Dimension L [1]	AD	H	AB	O
132 S/ 132 M	Aluminum series self-ventilated 1MB1011, 1MB1012, 1MB1021, 1MB1022, 1MB1031, 1MB1032	465	202	132	256	2 × M32 × 1.5
	1MB1013, 1MB1023, 1MB1033					
	1CA0, 1CC0, 1CC2	465	202	132	256	2 × M32 × 1.5
	1CA1, 1CB0, 1CB2, 1CC3	515	202	132	256	2 × M32 × 1.5
160 M/ 160 L	Aluminum series self-ventilated 1MB1011, 1MB1012, 1MB1021, 1MB1022, 1MB1031, 1MB1032	604	236.5	160	300	2 × M40 × 1.5
	1MB1013, 1MB1023, 1MB1033					
	1DA2, 1DA3, 1DB2, 1DC2	604	236.5	160	300	2 × M40 × 1.5
	1CA4, 1DB4, 1DC4	664	236.5	160	300	2 × M40 × 1.5

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.

[1] The length is specified as far as the tip of the fan cover.

Overview (continued)

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 CA01

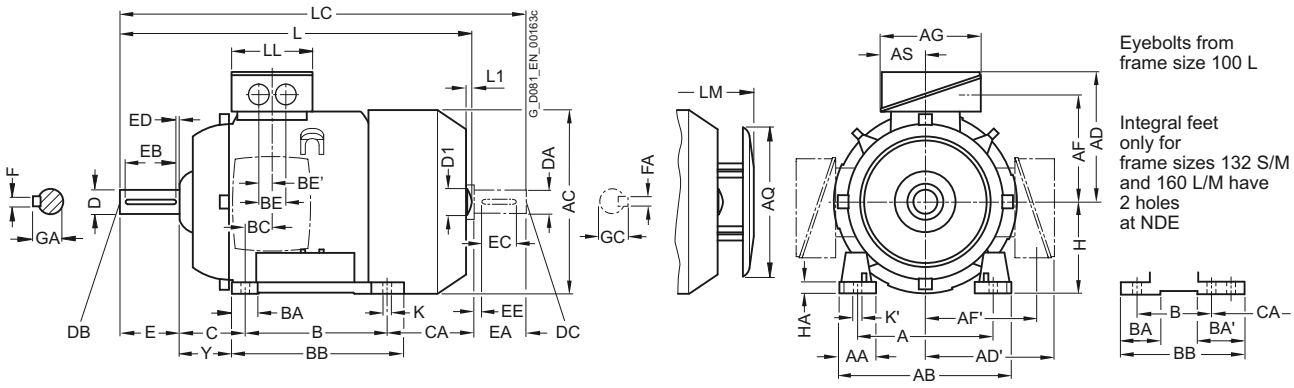
The DT Configurator is also part of the Interactive Catalog CA01 on DVD – the offline version of Siemens Industry Mall. CA 01 can be ordered from the relevant Siemens sales office or via the Internet: www.siemens.com/automation/CA01

Dimensions

Aluminum series 1MB1011, 1MB1012, 1MB1021, 1MB1022, 1MB1031, 1MB1032 – self-ventilated, frame sizes 100 L to 160 L

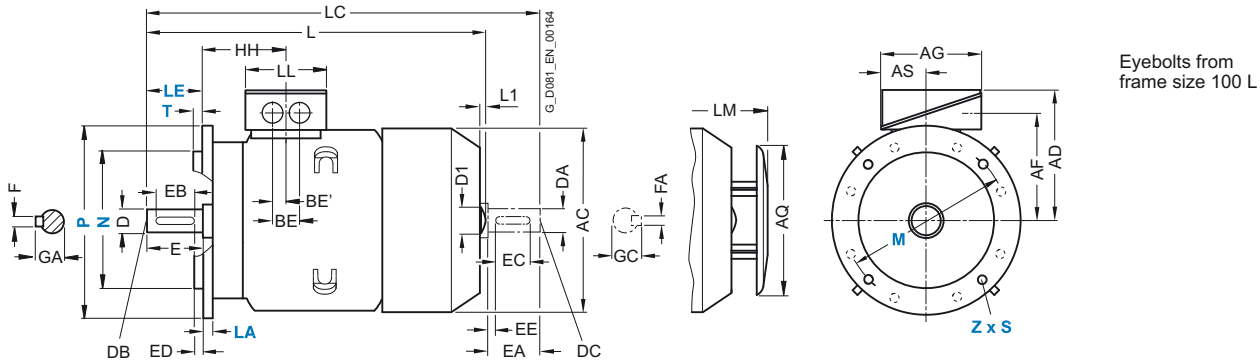
Dimensional drawings

Type of construction IM B3



Types of construction IM B5 and IM V1

For flange dimensions, see Page 3/28 (Z = the number of retaining holes)



For motor			Dimension designation acc. to **IEC**																						
Frame size	No. of poles	Motor type	A	AA	AB	AC	AD	AD'	AF	AF'	AG	AQ	AS	B*	BA	BA'	BB	BC	BE	BE'	C [1]	CA*	H	HA	Y [1]
100 L	2, 4, 6, 8	All	160	42	196	198	166	166	125.5	125.5	135	195	63.5	140	37.5	–	176	33.5	50	25	63	141	100	12	45
112 M	2, 4, 6, 8	All	190	46	226	222	177	177	136.5	136.5	135	195	63.5	140	35.4	–	176	26	50	25	70	129.7	112	12	52
132 S	2, 4, 6, 8	All	216	53	256	262	202	202	159.5	159.5	155	260	70.5	140	38	76 [2]	218 [3]	26.5	48	24	89	128.5 [4]	132	15	69
132 M	2, 4, 6, 8	All	216	53	256	262	202	202	159.5	159.5	155	260	70.5	178	38	76	218	26.5	48	24	89	128.5 [4]	132	15	69
160 M	2, 4, 6, 8	All	254	60	300	314	236.5	236.5	190	190	175	260	77.5	210	44	89 [5]	300 [6]	47	57	28.5	108	148 [7]	160	18	85
160 L	2, 4, 6, 8	All	254	60	300	314	236.5	236.5	190	190	175	260	77.5	254	44	89	300	47	57	28.5	108	148 [8]	160	18	85

* This dimension is assigned in DIN EN 50347 to the frame size listed.

1) Additional information – not a standard dimension according to DIN EN 50347.

2) With screwed-on feet, dimension BA' is 38 mm.

3) With screwed-on feet, dimension BB is 180 mm.

4) With screwed-on feet, dimension CA is 166.5 mm.

5) With screwed-on feet, dimension BA' is 44 mm.

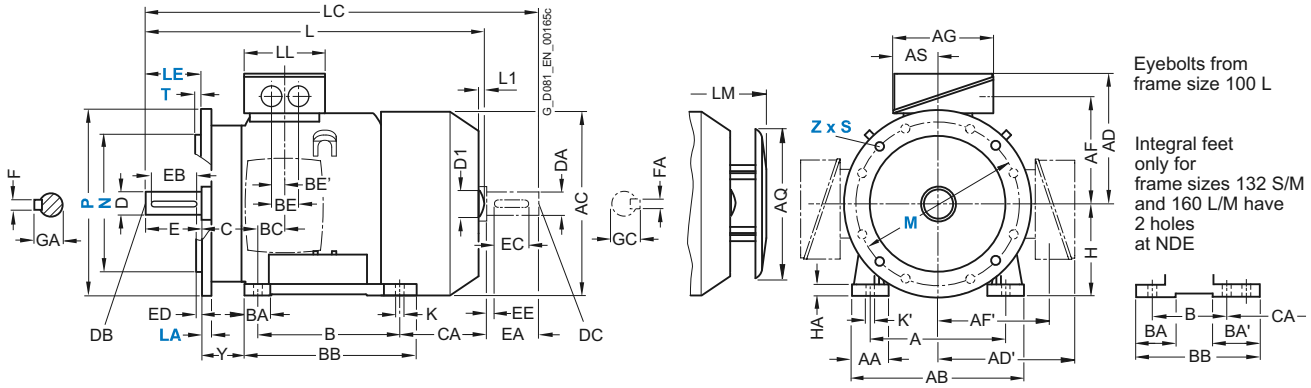
6) With screwed-on feet, dimension BB is 256 mm.

7) With screwed-on feet, dimension CA is 192 mm.

Dimensional drawings (continued)

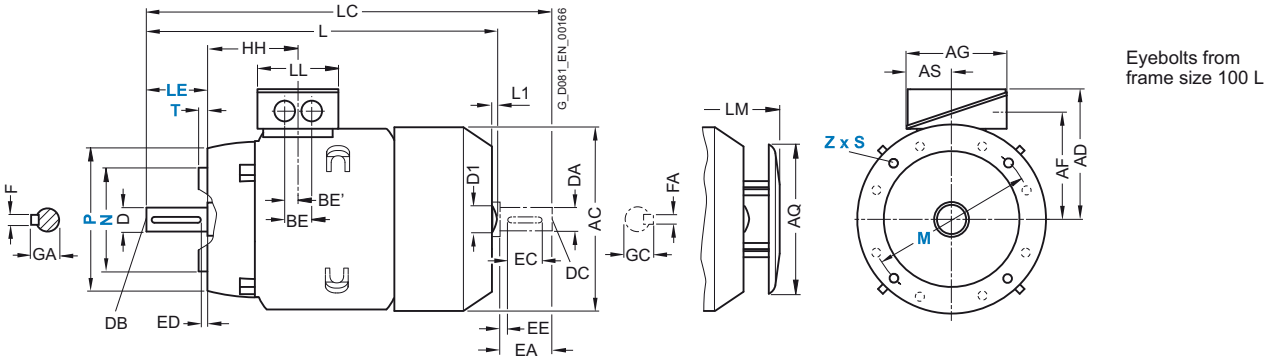
Type of construction IM B35

For flange dimensions, see Page 3/28 (Z = the number of retaining holes)



Type of construction IM B14

For flange dimensions, see Page 3/28 (Z = the number of retaining holes)



For motor			Dimension designation acc. to **IEC**									DE shaft extension							NDE shaft extension						
Frame size	No. of poles	Motor type	HH	K	K'	L	L1	D1	LC	LL	LM	D	DB	E	EB	ED	F	GA	DA	DC	EA	EC	EE	FA	GC
100 L	2, 4, 6, 8	All	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	2, 4, 6, 8	All	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	2, 4, 6, 8	All	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	2, 4, 6, 8	All	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	2, 4, 6, 8	All	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	2, 4, 6, 8	All	155	15	19	604 [1]	10	45	730	145	654	42	M16	110	90	10	12	45	42	M16	110	90	10	12	45

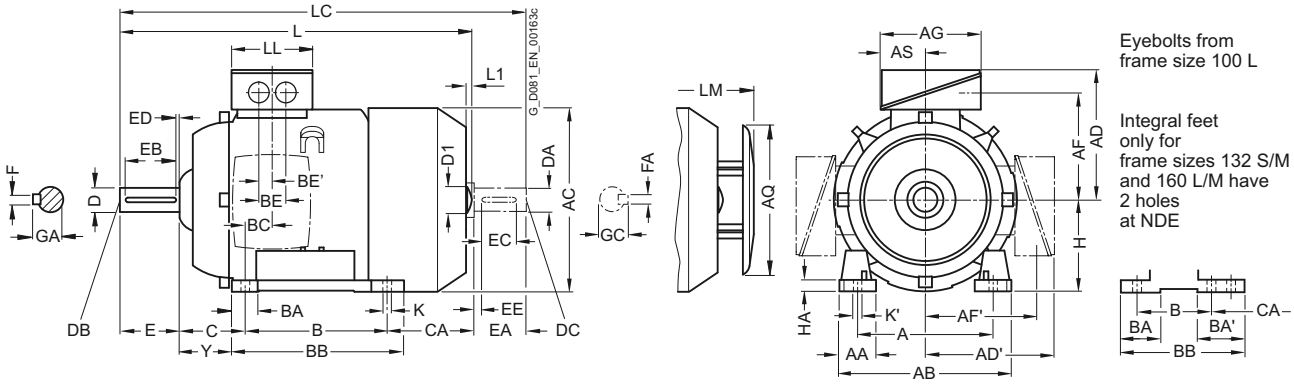
[1] The length is specified as far as the tip of the fan cover.

Dimensions

Aluminum series 1MB1013, 1MB1023, 1MB1033 self-ventilated, frame sizes 100 L to 160 L

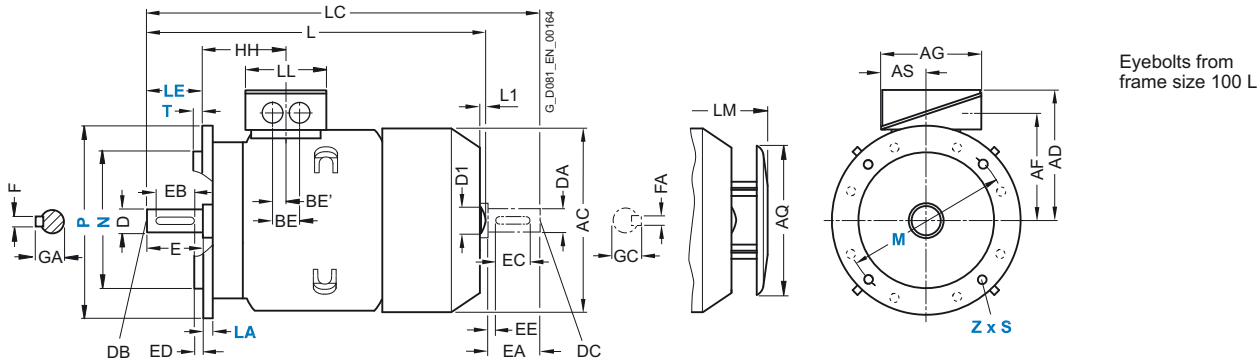
Dimensional drawings

Type of construction IM B3



Types of construction IM B5 and IM V1

For flange dimensions, see Page 3/28 (Z = the number of retaining holes)



For motor			Dimension designation acc. to **IEC**																						
Frame size	No. of poles	Motor type 1MB1013 1MB1023 1MB1033	A	AA	AB	AC	AD	AD'	AF	AF'	AG	AQ	AS	B*	BA	BA'	BB	BC	BE	BE'	C [1]	CA*	H	HA	Y [1]
100 L	2, 4	1AA4, 1AB4, 1AB5	160	42	196	198	166	166	125.5	125.5	135	195	63.5	140	37.5	–	176	33.5	50	25	63	176	100	12	45
112 M	2, 4	1BA2, 1BB2	190	46	226	222	177	177	136.5	136.5	135	195	63.5	140	35.4	–	176	26	50	25	70	155	112	12	52
132 S	2, 6	1CA0, 1CC0	216	53	256	262	202	202	159.5	159.5	155	260	70.5	140	38	76 [2]	218 [3]	26.5	48	24	89	128.5 [4]	132	15	69
	2, 4	1CA1, 1CB0														–						178.5			
132 M	6	1CC2	216	53	256	262	202	202	159.5	159.5	155	260	70.5	178	38	76	218	26.5	48	24	89	128.5 [4]	132	15	69
	4, 6	1CB2, 1CC3														–						178.5			
160 M	2, 4, 6	1DA2, 1DA3, 1DB2, 1DC2	254	60	300	314	236.5	236.5	190	190	175	260	77.5	210	44	89 [5]	300 [6]	47	57	28.5	108	148 [7]	160	18	85
160 L	2, 4, 6	1DA4, 1DB4, 1DC4	254	60	300	314	236.5	236.5	190	190	175	260	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) Additional information – not a standard dimension according to DIN EN 50347.

2) With screwed-on feet, dimension BA' is 38 mm.

3) With screwed-on feet, dimension BB is 180 mm.

4) With screwed-on feet, dimension CA is 166.5 mm.

5) With screwed-on feet, dimension BA' is 44 mm.

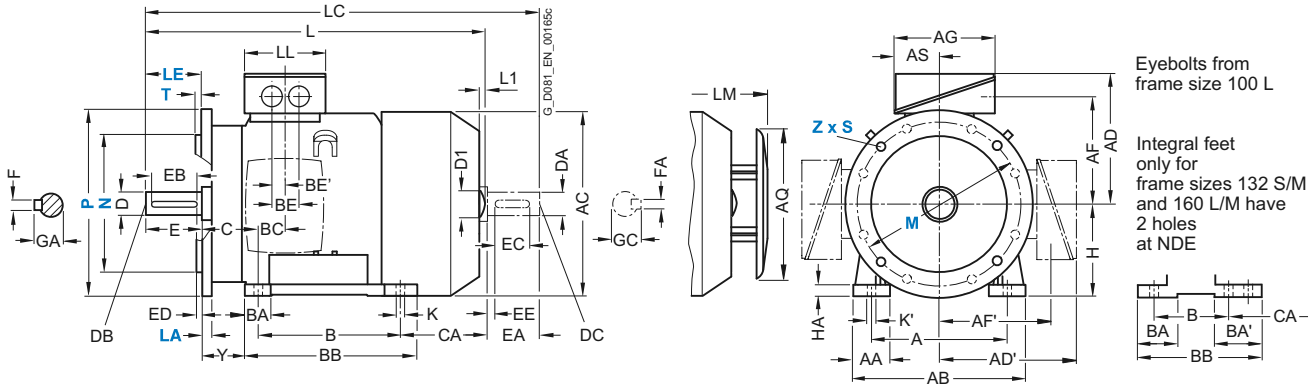
6) With screwed-on feet, dimension BB is 256 mm.

7) With screwed-on feet, dimension CA is 192 mm.

Dimensional drawings (continued)

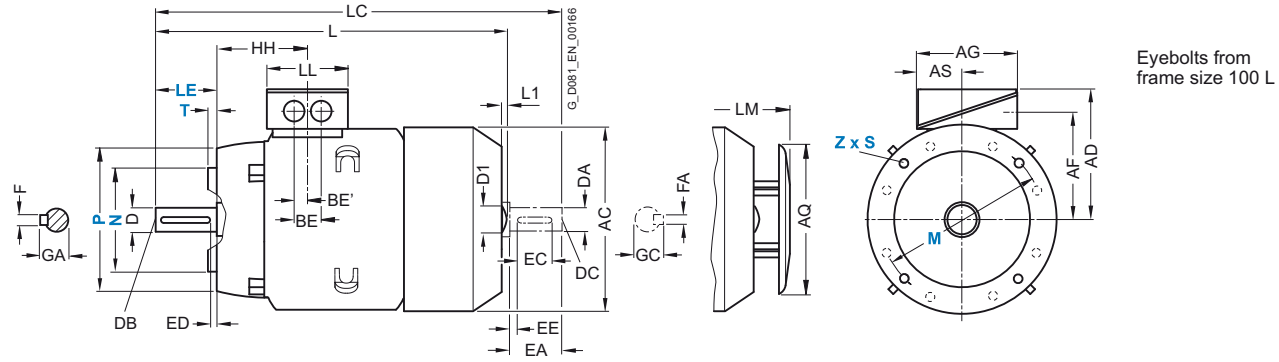
Type of construction IM B35

For flange dimensions, see Page 3/28 (Z = the number of retaining holes)



Type of construction IM B14

For flange dimensions, see Page 3/28 (Z = the number of retaining holes)



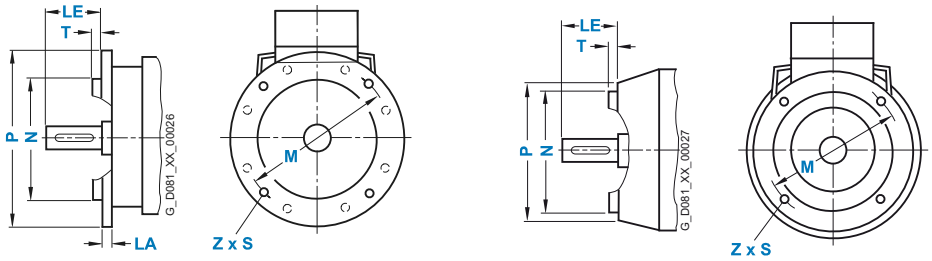
For motor			Dimension designation acc. to **IEC**									DE shaft extension							NDE shaft extension						
Frame size	No. of poles	Motor type 1MB1013 1MB1023 1MB1033	HH	K	K'	L [1]	L1	D1	LC	LL	LM	D	DB	E	EB	ED	F	GA	DA	DC	EA	EC	EE	FA	GC
100 L	2, 4	1AA4, 1AB4, 1AB5	96.5	12	16	430.5	7	32	489	112	463.5	28	M10	60	50	5	8	31	24	M8	50	40	5	8	27
112 M	2, 4	1BA2, 1BB2	96	12	16	414	7	32	475	112	447	28	M10	60	50	5	8	31	24	M8	50	40	5	8	27
132 S	2, 6	1CA0, 1CC0	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
	2, 4	1CA1, 1CB0				515			585.5		550.5														
132 M	6	1CC2	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
	4, 6	1CB2, 1CC3				515			585.5		550.5														
160 M	2, 4, 6	1DA2, 1DA3, 1DB2, 1DC2	155	15	19	604	10	45	730	145	654	42	M16	110	90	10	12	45	42	M16	110	90	10	12	45
160 L	2, 4, 6	1DA4, 1DB4, 1DC4	155	15	19	664	10	45	790	145	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.

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)		Dimension designation acc. to **IEC**							
			acc. to EN 50347	acc. to DIN 42948	**LA**	**LE**	**M**	**N**	**P**	**S**	**T**	**Z**
100 L	IM B5, IM B35, IM V1, IM V3	Flange	**FF 215**	A 250	11	60	215	180	250	14.5	4	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	Special flange	**FT 165**	C 200	–	60	165	130	200	M10	3.5	4
112 M	IM B5, IM B35, IM V1, IM V3	Flange	**FF 215**	A 250	11	60	215	180	250	14.5	4	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	Special flange	**FT 165**	C 200	–	60	165	130	200	M10	3.5	4
132 S, 132 M	IM B5, IM B35, IM V1, IM V3	Flange	**FF 265**	A 300	12	80	265	230	300	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	Special flange	**FT 215**	C 250	–	80	215	180	250	M12	4	4
160 M, 160 L	IM B5, IM B35, IM V1, IM V3	Flange	**FF 300**	A 350	13	110	300	250	350	18.5	5	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	Special flange	**FT 265**	C 300	–	110	265	230	300	M12	4	4

Appendix

4/2 NEMA motors
4/2 Motors according to NEMA standard

4/5 Service & Support
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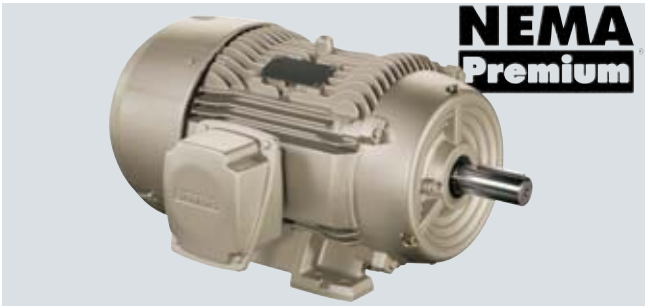
Motors according to NEMA standard



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	6-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 30
Utilization	Class B at 1.0 SF, Class F at 1.15 SF	Sinusoidal
Connection 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	6-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 30	Class F	NEMA MG1 Part 30	Class F	NEMA MG1 Part 30
	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)	VT 20:1 CT 4:1 CT 10:1	FS 140 ... 440 FS 140 ... 440 FS 140 ... 250 (Cu)	VT 20:1 CT 4:1 CT 10:1	FS 140 ... 440 FS 140 ... 440 FS 140 ... 250 (Cu)
	D 81.2, US/Canada		**D 81.2, US/Canada**		**D 81.2, US/Canada**	

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 ... 250 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	CL I Gr, C&D Div. 2	Optional
Insulation	Class F	NEMA MG1 Part 30	Class F	NEMA MG1 Part 30	Class F	NEMA MG1 Part 30
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
Connection 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	Not specified	(lead seal)	Not specified	(lead seal)	Neoprene	
Rotor material	Die-cast aluminum		Die-cast aluminum		Die-cast aluminum	FS 140 ... 440
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	FS 140 ... 440	Cast iron		Cast iron	FS 140 ... 440
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	FS 140 ... 440	Cast iron	FS 140 ... 440	Cast iron	FS 140 ... 440
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	Equipment included	FS 140 ... 180 FS 250 ... 440	Equipment included	FS 140 ... 180 FS 250 ... 440	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**	

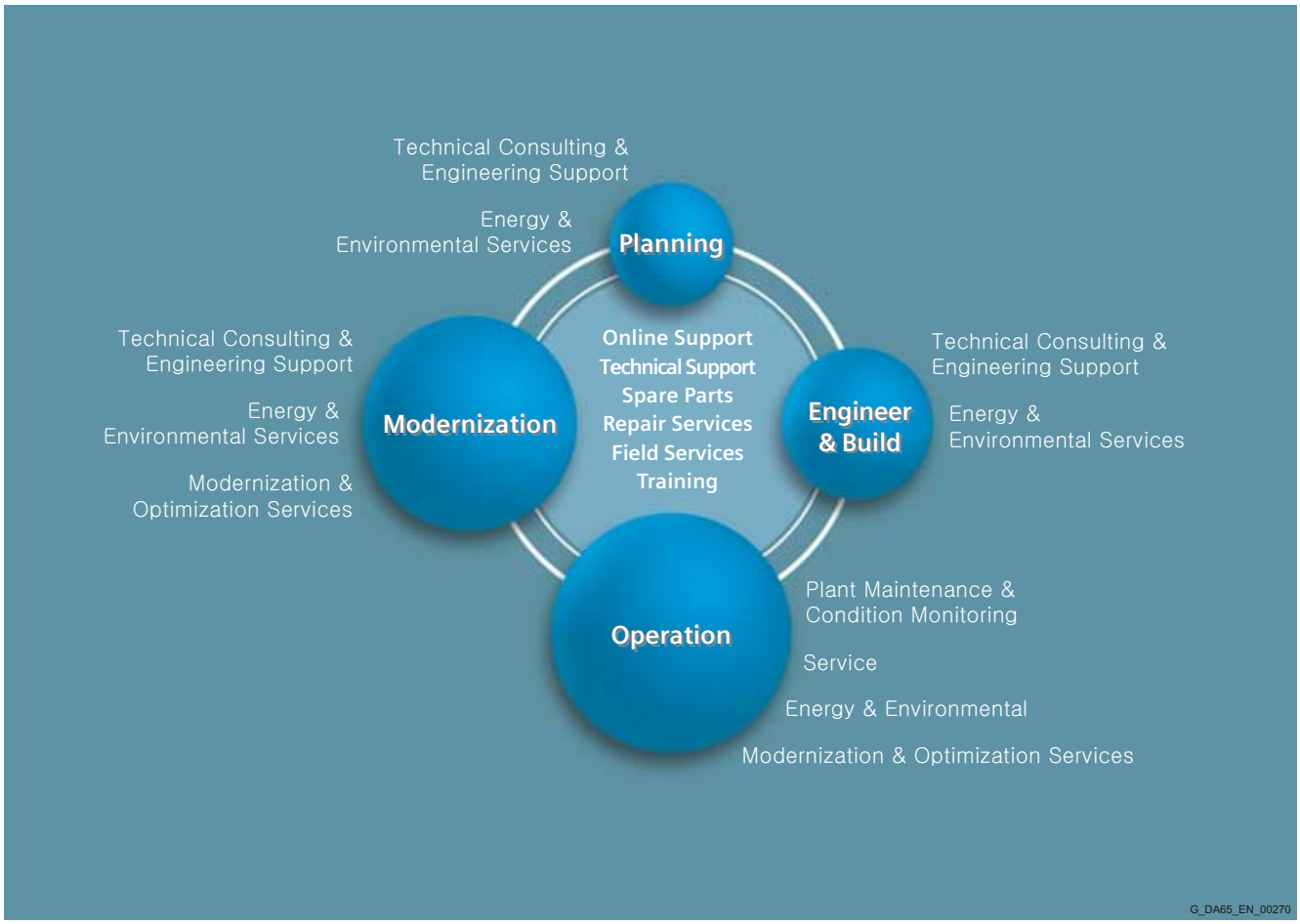
Your machines and plant can do more – with Industry Services.

Whether it is production or process industry – in view of rising cost pressure, growing energy costs, and increasingly stringent environmental regulations, services for industry become 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 the entire life cycle of machines and plants

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.

The content, in six languages, is increasingly multimediabased – and now also available as a mobile app. Online support's "Technical Forum" offers users the opportunity to share information with each other. The "Support Request" option can be used to contact Siemens' technical support experts. The latest content, software updates, and news via newsletters and Twitter ensure that industry users are always up to date.

www.siemens.com/industry/onlinesupport

Online Support App

Using the Online Support app, you can access over 300,000 documents covering all Siemens industrial products – anywhere, any time. Regardless of whether you need help implementing your project, fault-finding, expanding your system or are planning a new machine.

You have access to FAQs, manuals, certificates, characteristic curves, application examples, product notices (e.g. announcements of new products) and information on successor products in the event that a product is discontinued.

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 "mySupport". You also receive selected news on new functions, important articles or events in the News section.

Scan the QR code for information on our Online Support app.

The app is available free of charge from the Apple App Store (iOS) or from Google Play (Android).

www.siemens.com/industry/onlinesupportapp

Technical Support

Technical queries regarding products and systems can arise at any time – ranging from optimizing use to rectifying faults. The Technical Support specialists provide the relevant support round-the-clock and will answer questions about the functionality and operation of products and systems.

Spare Parts

A missing spare part can adversely affect the plant availability and cause production failures. It is good that the Siemens experts ensure a fast and smooth exchange process.

Spare parts and spare parts packages for electric motors and converters

The global Siemens service organization and the maintenance-friendly design of Siemens machines permit a short response time and immediate replacement of faulty individual components. Siemens Industry Services ensures fast availability of standard spare parts. Delivery times for individual manufacturing vary according to the production overhead. Siemens Industry Services process all inquiries as quickly as possible to the satisfaction of customers. Delivery times cannot always be precisely planned due, for example, to country-specific customs regulations, and some parts need to be specially manufactured, so it is recommended that important spare parts and core components are stocked on site to ensure a fast response. Any costs associated with failures can also be minimized by stocking a spare parts package on site.

Spare parts packages for electric motors

To simplify stockkeeping as far as possible, for general industrial machines and especially for machine tools (e.g. 1PH7, 1PH8 and 1PL6), Siemens offers spare parts packages that have been assembled specifically for the respective motors. Spare parts packages are also available that are individually tailored to the plant, as well as individual spare parts for special purposes.

Spare parts packages for converters

In the medium-voltage range in particular, converters are often an essential component of the main plant drive. Their functional capability is the prerequisite for reliable plant operation. Optimum availability of spare parts is also important to minimize downtimes. Apart from individual spare parts, Siemens also offers complete spare parts packages. These are based on the extensive service experience of the company and have been put together on the basis of device-specific spare part lists. Siemens provides various versions of spare parts packages for low-voltage and medium-voltage units:

- Basic Spare Package: contains the most important electronic components, e.g. for commissioning and the running-in period.
- Advanced Spare Package: contains additional electronic power components to ensure the availability of the drive over the first few years in operation.
- Premium Spare Package: contains all the spare parts required to rectify almost every fault scenario as quickly as possible over the entire product life cycle. In the context of annual maintenance, the spare parts stocks can be checked and individually restocked.

Spares On Web – the information tool for spare parts and spare parts packages

Siemens offers comprehensive spare part information for almost all current converters and motors in an online database. The Siemens article number and the corresponding serial number are all that are required to call up this information.

www.siemens.com/sow

Industry Services for the entire life cycle

Repair Services

Reliably operating motors and converters have highest importance in every plant. To allow you to always work with maximum efficiency, the Siemens specialists throughout the world provide a comprehensive maintenance service and handle any necessary repairs.

All-round service for electric motors and converters

With tailor-made services for electric motors and converters, Siemens Industry Services enables you to achieve high levels of efficiency and smooth production processes. The services comprise all the measures required for maintenance, but also provide support with planning, installation and commissioning. Thanks to extensive consultation, the services will match your individual requirements perfectly. Siemens Industry Services performs all work exclusively in its own workshops or through certified partners. The all-round service for electric motors and converters comprises:

- Three-phase machines
- Three-phase servo machines
- High-voltage machines
- Direct-current machines
- DC servo machines
- Emergency power units
- Generators
- Customized machines
- Circuit breakers
- Frequency converters
- Lubrication and cooling systems
- Mechanical components (couplings, gear units)

The service portfolio of Siemens Industry Services:

- Inspection, measurement, monitoring, evaluation, documentation, consultation
- Maintenance on site or in the service workshop including the exchange of wear parts, mechanical and electrical diagnosis
- Removal and installation of machines, laser-optic alignment and commissioning
- Special cleaning and drying procedures
- Corrective maintenance of stator and rotor cores, including new windings
- Measurements for partial discharge, loss factor and vibration, thermography, frequency analysis, oil analysis, assessment reports, diagnostics and special examinations
- Mounting of diagnostic devices for the continuous acquisition of operating and status data or trends, and causes of faults at constant and variable speed
- Mechanical and electrical load tests and simulations
- Spare parts packages, supply of spare parts and stock management
- Reproduction under license and upgrades for electric machines and components
- Collection, delivery and the supply of tools

As an experienced, reliable partner for the maintenance of electric machines, Siemens offers a full range of services from a single source. This simplifies processes and makes it easy to access services and spare parts. Repair times are shortened and optimized, and the availability of the plant is permanently enhanced.

Field Services

Downtimes must be avoided wherever possible. Field Services from Siemens ensures smooth commissioning and maintenance, and, if necessary, ensures the fast troubleshooting of industrial plants.

Field services for reliable drives

Commissioning and maintenance on site range from simple fault rectification to comprehensive, tailor-made service contracts. Specialists from Siemens Industry Services are available round-the-clock at strategic locations worldwide to provide fast and reliable support with fault rectification in plants as well as with normal operation of the products and systems from Siemens. All service calls are scheduled and coordinated by the responsible regional service coordination center in accordance with customer requirements. This responsibility also extends to an emergency service outside normal working hours.

The service portfolio for commissioning machines, converters and complete plants comprises, for example:

- Check of the installation
- Function tests
- Parameterization
- Integration tests for machines and machine parts
- Trial operation
- Final acceptance
- Training of personnel

Siemens Industry Services also offers periodic inspections, preventative maintenance schedules and predictive maintenance measures in close cooperation with the customers tailored to their own specific criteria.

Commissioning by specialists

The experienced, qualified service staff of Siemens Industry Services have specialized in commissioning state-of-the-art, complex drive systems and also have access to expert knowledge of cross-industry applications and projects within the global service network. This creates the required flexibility for a wide variety of different application cases. The central focus is on solutions for fixed-speed and variable-speed low-voltage and medium-voltage drives/motors up to 100 MW, as well as auxiliary systems of all types in the oil & gas, chemical, energy, steel, paper, shipbuilding, mining, cement, water & wastewater and wind power industries.

Winding testing by means of diagnostic measuring and test methods

Qualified tests of the motor winding for polarization, insulation resistance, loss factor and partial discharge play an important role in ensuring fault-free operation and the availability of high-voltage machines over the entire life cycle of the plant. With modern portable measuring equipment and qualified evaluations, these tests and diagnostics can now also be performed on site. In the case of Siemens machines, archived measured values obtained from production and quality assurance are also available for this purpose.

Industry Services for the entire life cycle

Training

Against the background of rapid technological progress, up-to-date know-how is increasingly becoming a decisive factor for success. The technical seminars and training courses that Siemens offers with SITRAIN – Training for Industry impart expert know-how and practical knowledge directly from the manufacturer. Nobody knows more about this subject than us.

Customer-specific training for electric motors and converters

A competent, qualified team of operating and maintenance personnel can be established and trained if the right systems are in place. Siemens Industry Services supports its customers with tailored courses and training measures. This is where specialist know-how is passed on.

Course content

The course content is adapted to the prevailing knowledge of the customer's personnel and the drive technology implemented.

1. Basic technical training
   - Fundamentals of drive technology
   - Basic functionality of electric motors and converters
   - Structure and main components of electric motors and converters
2. User and operator training
   - Efficient operation and monitoring of electric motors and converters
   - Limit value monitoring taking into account alarm and fault messages, and fault rectification measures
3. Instruction on site
   - Planning and performing on-site maintenance tasks
   - The correct response in the event of faults or if alarm messages are output
   - Initial investigation and determination of the causes of faults
   - Removal and rectification of faults
   - Contacting the Siemens service organization with a precise description of the fault
   - Appropriate selection and stocking of spare parts

Procedure

Modern learning aids and practical training units ensure that learning targets are achieved efficiently. Course tutors with many years of own experience in the implementation of efficient drive technology in various industries are able to communicate this know-how with in-depth, background information. In close cooperation with the customers, all measures are adapted to their specific requirements and wishes.

1. On-site training at customer's premises in the form of a workshop
   - The training will take place on the original drive or equipment
   - It can also be conducted for products that are no longer in the current product range
2. Training in the Siemens factory
   - The training takes place in the relevant Siemens production facility
   - Practical training on demonstration models
   - Optional factory tour with demonstration of the Siemens product range
   - Opportunity to meet the contact partners at Siemens Industry Services and exchange personal experiences
3. Course duration
   - Depending on requirements 1 to 5 days

Technical Consulting & Engineering Support

The foundations for efficient processes in industry are laid at the plant planning and design stages. Systematic solutions are required here that take the complete life cycle into consideration. Technical Consulting & Engineering Support from Siemens offers industry exactly the right instruments – from the initial configuration steps through to plant operation.

Energy & Environmental Services

Constant energy-saving and environmentally aware action pays off for every company. Energy efficiency, energy management and saving resources are hot topics in industry today. The integrated solutions from Siemens open up all the technical and organizational potential for efficient and successful environmental management.

Saving energy in drive technology

The decisive factor in achieving the most energy-efficient solution is to reduce energy consumption to that actually required by the application. The plan will involve a comprehensive bundle of measures. The costs and benefits of possible savings are weighed against each other, the drive components are configured according to the requirements, and the ideal plan to ensure sustainable implementation of the overall concept is formulated. Siemens Industry Services offers full support for this process, including qualified consulting, engineering and project management from drive specialists with many years of experience in almost all branches of industry. This saves time and minimizes the overhead for binding personnel in the company to specific projects. The scope of these energy optimization measures covers three phases:

1. Identification of potential savings

   The energy requirement is determined and potentials for energy savings are highlighted.
   - Identification of the existing energy consumption of the plants
   - Presentation of the energy flow and potential savings
   - Output measurement and assessment of the quality of the line supply
   - Analysis of electric motors in terms of their utilization and energy efficiency
   - Recording energy costs to determine the potential energy savings

2. Evaluation of the data obtained

   The savings potentials identified are evaluated using various methods, so that a stable basis for decision-making is created.
   - Inclusion of experience gained from comparable plants through comparison with known application cases
   - Calculation of the potential savings using the energy efficiency software SinaSave
   - Determining the investment costs taking into account the service life, amortization and feasibility
   - Specification of measures and suggested solutions

3. Implementation of the energy optimization measures

   The right products and targeted implementation measures are determined and implemented.
   - Selection of the right components
   - Retrofitting and modernization of plant sections
   - Assistance with ordering
   - Project management and processing
   - Engineering, configuration, setting up, modifications, assembly, installation, commissioning, acceptance and training
   - Assessment of results after a specified period

Industry Services for the entire life cycle

Plant Maintenance & Condition Monitoring

Plant efficiency and problem-free processes are decisive factors for success in industry. Proactive maintenance concepts and individually tailored service contracts that are based on the wide-ranging experience built up by Siemens experts ensure maximum productivity.

Service Contracts

A service contract ensures the high level of reliability that you simply need today in industry. Tailored service packages for the maintenance ensure minimal downtimes and reduce the maintenance budget. The possibilities of remote maintenance ensure an additional valuable reliability plus.

Modular service contracts for electric motors and converters

Individually agreed service contracts make the maintenance, optimization and modernization of automation and drive technology in industry more efficient and dynamic coupled with reduced costs. Flexible options, such as extended service periods, defined arrival times and special maintenance intervals or remote maintenance can be defined to meet your specific requirements. In combination with the extensive experience and know-how of maintenance and service specialists from Siemens Industry Services, you can achieve reduced downtime, plannable operating costs and a high availability of all machines and equipment.

Maintenance contracts for motors and converters

Reliable motors and converters are the core of every industrial plant. With uninterrupted duty and poor environmental conditions (dirt, dust and aggressive atmosphere), individual components such as pulse encoders, roller bearings and fans are subject to greater wear: whereby small-scale local damage, such as a reduction in insulation resistance, can cause considerable secondary damage. To prevent this, maintenance contracts from Siemens offer fixed maintenance and service intervals in which the status of all components can be checked by specialists and critical components can be replaced. The corresponding documentation and product-specific checklists help to perform all the relevant investigations at the right time and achieve optimum availability.

The maintenance contract also includes a comprehensive consultation with a view to maximizing plant availability and assessing the contribution that could be made by conversion and refitting in the area of drives. In parallel with this, Siemens ensures with plant-specific instructions during on-site service that plant operators are able to master all operations and simple maintenance tasks. Siemens also offers more advanced training courses with the objective of preventative maintenance. When the maintenance contract is drawn up, the customer profits from comprehensive advice and numerous, optional services:

- Defined product support/maintenance
- Training (basic and advanced)
- Remote services and condition monitoring
- Plant support remotely by telephone
- Specified support times (response, arrival and service times)
- Customized spare parts packages on site
- Defined costs

Remote Services – expert knowledge within your grasp

Remote Services can be integrated into service contracts as an optional service. The Remote Service platform from Siemens (cRSP) has set new standards in IT security, traceability and flexibility. This also enables complex drive systems to be monitored, analyzed and optimized if required by means of remote access from Siemens drive specialists efficiently and reliably. The breadth of supported services ranges from reading the archived log and analyzing stored data through online condition monitoring for motors and software updates as far as video support with service work on site.

Condition Monitoring – for condition-based maintenance

With Siemens service contracts, it is possible to select condition monitoring for central drive components and those subject to wear as an optional service. This means that irregularities in operation can be detected at an early stage so that countermeasures can be initiated and service work can be planned more efficiently. In the case of motors, the emphasis is on the monitoring of vibration, winding and bearing temperatures as well as speed. In the case of frequency converters, monitoring is concentrated on current, voltage and power, cabinet temperature, water temperature and heatsink temperature, fault pattern and communication.

Modernization & Optimization Services

Enhancements, modernizations and optimizations of production are on industry's agenda. They are the most economical keys to achieving optimum productivity in industrial manufacture and to assuring long-term investment protection. It is good to know that Siemens also offers competent service in these areas.

Modernizing and optimizing electric motors and converters

The modernization of electric motors and converters – also known as retrofitting – constitutes a major part of their product life cycle. Retrofits serve to protect investments. They optimize the availability, reliability and energy efficiency of installed drives. The latter also has a beneficial effect on the environmental impact of the company. Retrofits often lower the original noise level and thus improve the working environment. Siemens Industry Services offers an extensive retrofit program for both Siemens and non-Siemens products. This program ranges from simple conversions and upgrades through replacement of individual components as far as project management for complex retrofits. Once all the upgrade options have been exhausted, old technologies can be replaced with state-of-the-art drives and motors from the current product range. Under normal circumstances, neither method requires the functional scope of the plant to be expanded or a change in the basic drive concept.

Modernization and optimization of electric motors:

- Replacement of constant-speed motors with variable-speed drives
  - Energy saving
  - Increased productivity and profitability
- Functional replacement using new products
  - Adaptation to existing equipment at low cost
  - Energy saving through improved efficiency
- Reproduction of older motors under license
  - No complex requalification necessary
  - 1:1 replacement possible

Modernization and optimization of converters:

- Replacement of older converters with innovative models in the low-voltage and medium-voltage range
- Service benefits:
  - Assured supply of spare parts worldwide
  - Access to the latest know-how
  - State-of-the-art diagnostics
  - Easier software updates
- Renewal of the control electronics
- Retrofitting of water-cooled heat exchanger units

Partners at Industry Automation and Drive Technologies

At Siemens Industry Automation and Drive Technologies, more than 85 000 people 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.

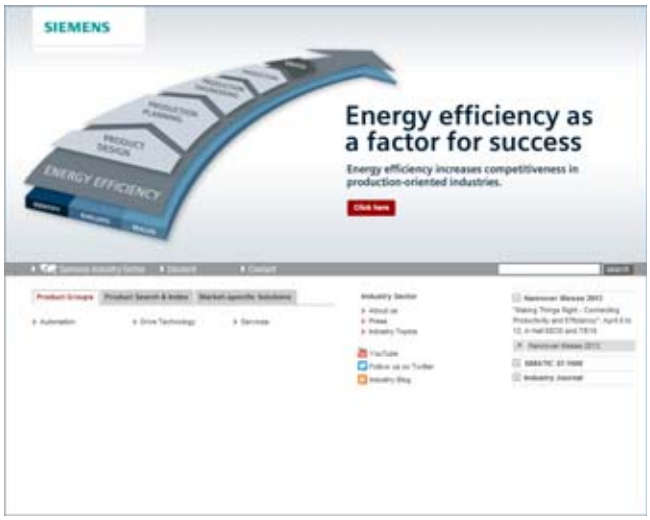
At your service locally, around the globe for consulting, sales, training, service, support, spare parts ... on the entire Industry Automation and Drive Technologies range.

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.

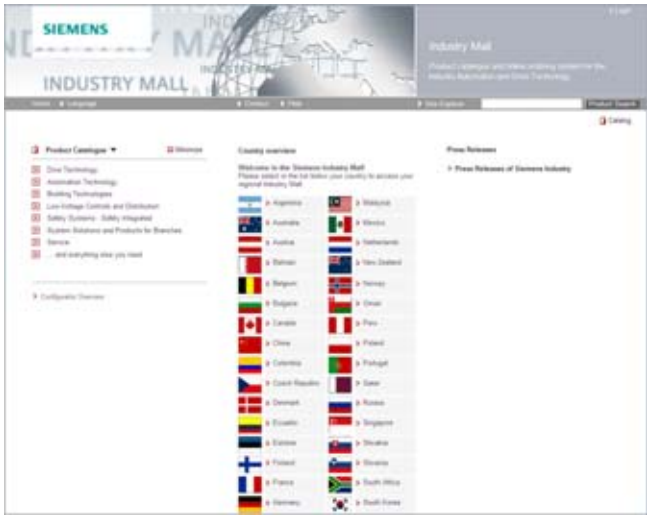
After selecting the product of your choice, you can order at the press of a button, by fax or by online link.

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 virtual department store of Siemens AG on the Internet. Here you have access to a huge range of products presented in electronic catalogs in an informative and attractive way.

Data transfer via EDIFACT allows the whole procedure from selection through ordering to tracking of the order to be carried out online via the Internet.

Numerous functions are available to support you.

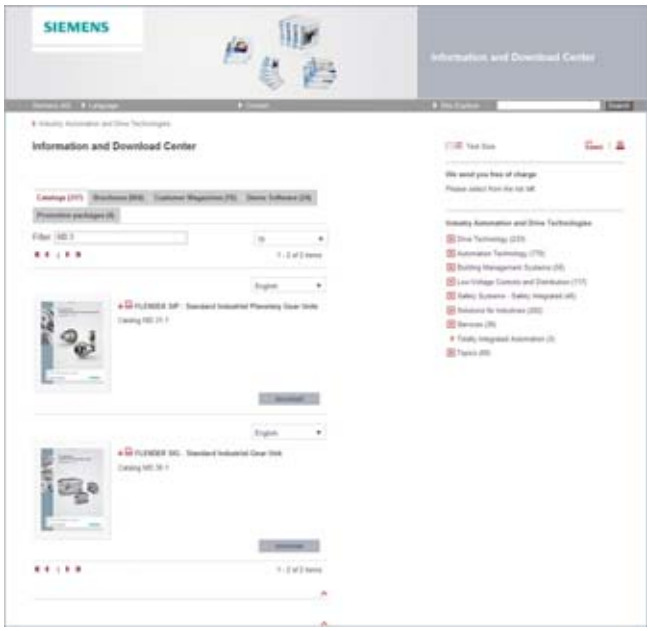
For example, powerful search functions make it easy to find the required products, which can be immediately checked for availability. Customer-specific discounts and preparation of quotes can be carried out online as well as order tracking and tracing.

Please visit the Industry Mall on the Internet under:

www.siemens.com/industrymall

Information and Download Center
Social Media, Mobile Media

Downloading Catalogs



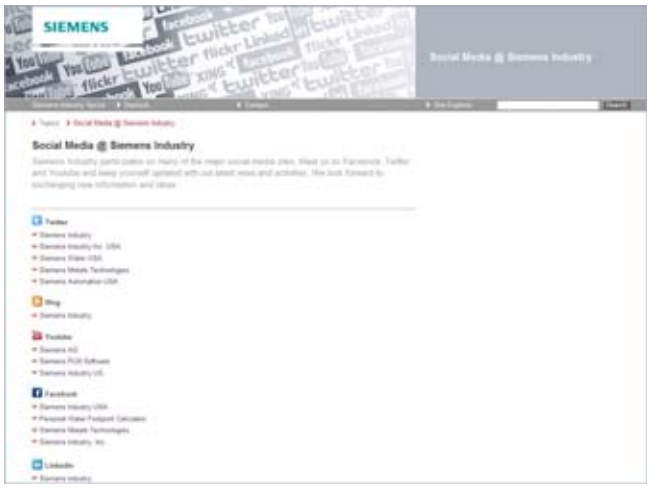
In addition to numerous other useful documents, you can also find the catalogs listed on the back inside cover of this catalog in the Information and Download Center. Without having to register, you can download these catalogs in PDF format or increasingly as digital page-turning e-books.

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

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-we

DT 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 V7.0 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 DVD-ROM including DT Configurator selection guide, German	**E86060-D4001-A510-D2-7600**

More information

Online access to DT Configurator

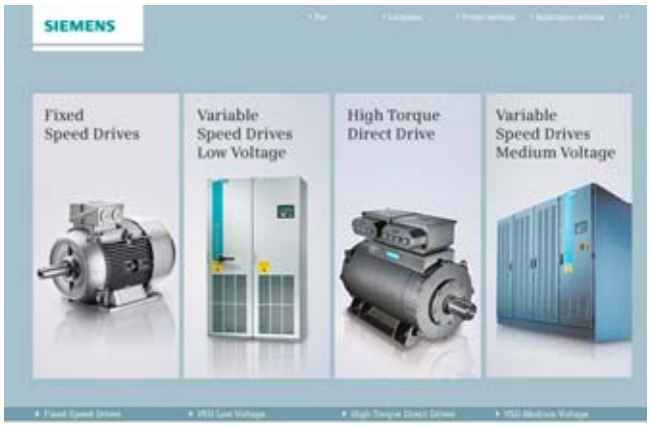
For more information about the DT Configurator selection tool, visit:
www.siemens.com/dtconfigurator

Offline access to the DT Configurator in the Interactive Catalog CA 01

The DT Configurator is also integrated on the DVD of the 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

Energy-saving program SinaSave

Overview



SinaSave is a web-based tool for calculating potential energy savings and for estimating amortization time that will be achieved by using the energy-efficient products and technologies of industrial drive systems.

Function

If two alternative drives with different energy efficiencies are compared, the energy requirement and energy costs can be determined for each alternative based on the load profile and operating time of each. The difference between the values gives the potential savings in energy and energy costs that can be achieved by using the more efficient solution.

Whether the energy efficient solution is commercially viable can be determined by comparing the necessary investment cost with the achievable saving (amortization analysis).

SinaSave provides these calculation functions for the following areas:

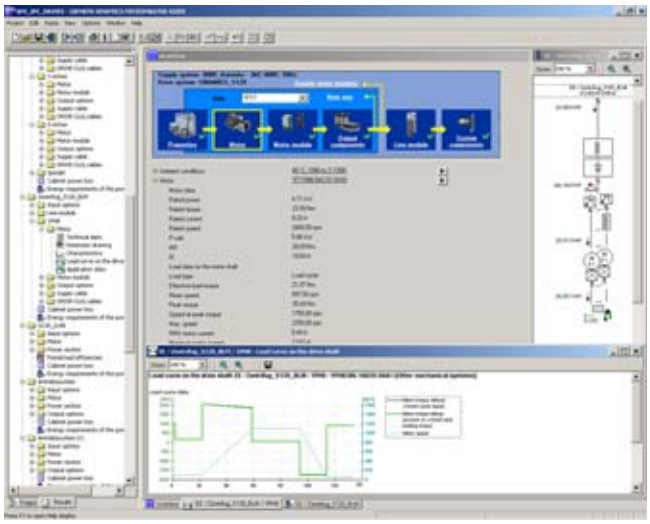
- **Energy saving motors** ("Fixed Speed" module)
  Savings by using motors of a higher efficiency class (e.g. IE3 instead of IE2) for mains-fed operation
- **Variable speed drives for pump/fan applications**
  ("Variable Speed Drives Low Voltage/Medium Voltage" modules) Savings due to demand-related control of pump or fan speed by means of a frequency converter, e.g. instead of reactor control
- **Direct drives** ("High Torque Direct Drive" module)
  Savings due to direct operation of the machine omitting a gear unit and the associated losses
  SinaSave calculates:
- Potential savings in:
  - Energy
  - Energy costs
  - CO2 emissions
- Estimation of:
  - Investment payback
  - Amortization time

More information

You will find information about registration, further information about SinaSave, FAQs, and the program call at:

www.siemens.com/sinasave

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 Chinese, English, French, German, Italian 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

	Article No.
Configuration tool SIZER for Siemens Drives DVD-ROM English, French, German, Italian	**6SL3070-0AA00-0AG0**

More information

The SIZER for Siemens Drives configuration tool is available free on the Internet at:
www.siemens.com/sizer

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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	2/54
B02	Acceptance test certificate 3.1 in accordance with EN 10204		2/54, 2/61, 3/19
B04	Printed German/English Operating Instructions (compact) enclosed		2/54, 2/61, 3/19
B06	Second lubrication plate, supplied loose	Rating plate and extra rating plates	3/18
B07	Extra rating plate for voltage tolerance		2/54, 2/61
B30	Design (IP55) for Zone 2 and 22, for non-conductive dust, for mains-fed operation	Design for Zones according to ATEX	3/17
B31	Design for Zone 2 in Ex nA IIB T3 Gc		3/17
B60	Document – Electrical data sheet	Packaging, safety notes, documentation and test certificates	2/54, 2/61
B61	Document – Order dimensional drawing		2/54, 2/61
B65	Standard test (routine test) with acceptance		2/61
B83	Type test with heat run for horizontal motors, with acceptance		2/54, 2/61, 3/19
B99	Wire-lattice pallet packaging		2/54, 3/19
C02	VIK version	Designs in accordance with standards and specifications	2/53
	VIK design marked with Ex nA II on rating plate	Design for Zones according to ATEX	3/17
D01	CCC China Compulsory Certification	Designs in accordance with standards and specifications	2/53
D02	Coolant temperature -50 to +40 °C	Coolant temperature	2/59
D03	Coolant temperature –40 to +40 °C		2/53, 2/59, 3/18
D04	Coolant temperature –30 to +40 °C		2/53, 2/59
D22	IE1 motor without CE marking for export outside EEA (see EU Directive 640/2009)	Designs in accordance with standards and specifications	2/53
D30	Electrical according to NEMA MG1-12		2/53, 2/60, 3/18
D31	Design according to UL with "Recognition Mark"		2/53, 2/60
D34	China Energy Efficiency Label		2/53, 2/60
D40	Canadian regulations (CSA)		2/60
F01	Mounting of brake [7)]	Modular technology – Basic versions	2/52, 2/58
F02	Mounting of brake for higher switching frequency	Modular technology – Basic versions	2/52
F10	Brake supply voltage 24 V DC	Modular technology – Additional versions	2/52, 2/58
F11	Brake supply voltage 230 V AC, 50/60 Hz		2/52, 2/58
F12	Brake supply voltage 400 V AC, 50/60 Hz		2/52, 2/58
F40	Backstop, counter-clockwise motion blocked, clockwise direction	Modular technology – Basic versions	2/58
F41	Backstop, clockwise motion blocked, counter-clockwise direction		2/58
F50	Mechanical manual brake release with lever (no locking)	Modular technology – Additional versions	2/52, 2/58
F70	Mounting of separately driven fan	Modular technology – Basic versions	2/53, 2/58
F74	Sheet metal fan cover	Heating and ventilation	2/53, 2/61
F75	Fan cover for textile industry		2/53
F76	Metal external fan		2/53, 2/61, 3/18
F77	Low-noise version for 2-pole motors with clockwise direction of rotation	Mechanical design and degrees of protection	2/53, 2/59, 3/18
F78	Low-noise version for 2-pole motors with counter-clockwise direction of rotation		2/53, 2/59, 2/18
F90	Without external fan and without fan cover	Heating and ventilation	2/53
G01	Mounting of 1XP8012-10 (HTL) rotary pulse encoder	Modular technology – Basic versions	2/52, 2/58
G02	Mounting of 1XP8012-20 (TTL) rotary pulse encoder		2/52, 2/58
G04	Mounting of LL 861 900 220 rotary pulse encoder	Special technology	2/52, 2/59
G05	Mounting of HOG 9 D 1024 I rotary pulse encoder		2/52, 2/59
G06	Mounting of HOG 10 D 1024 I rotary pulse encoder		2/52, 2/59
G07	Mounting of POG10D rotary pulse encoder		2/59

Order code	Special versions	Category	For further information, see Page
G08	Mounting of POG9 rotary pulse encoder		2/59
G40	Prepared for mountings, center hole only	Mechanical design and degrees of protection	2/52, 2/59
G41	Prepared for mountings with D12 shaft		2/53, 2/59
G42	Prepared for mountings with D16 shaft		2/52, 2/59
G43	Protective cover for encoder (supplied loose – only for mountings with order codes G40, G41 and G42)		2/52, 2/59
H00	Protective cover		2/53, 2/59
H01	Screwed-on (instead of cast) feet		2/53, 2/59
H02	Vibration-proof version		2/53, 2/59, 3/18
H03	Condensation drainage holes sealed		2/53, 2/59, 3/18
H04	External grounding	Motor connection and connection box	2/53, 2/57
H07	Rust-resistant screws (externally)	Mechanical design and degrees of protection	2/53, 2/59, 3/18
H08	Connection box on NDE	Motor connection and connection box	2/51, 2/57
H10	Enclosure with screw mounting	Mechanical design and degrees of protection	2/54
H20	IP65 degree of protection		2/53, 2/59, 3/18
H21	IP54 degree of protection		2/59
H22	IP56 degree of protection		2/53, 2/59, 3/18
H23	Drive-end seal for flange-mounting motors, oil-tight to 0.1 bar		2/53, 2/59, 3/18
H70	Second external grounding	Special technology	2/59
L00	Vibration quantity level B	Balance and vibration quantity	2/54, 2/60, 3/18
L01	Balancing without feather key, feather key is supplied		2/54, 2/60, 3/18
L02	Full-key balancing		2/54, 2/60, 3/18
L04	Shaft extension with standard dimensions, without feather keyway	Shaft and rotor	2/54, 2/60, 3/18
L05	Second standard shaft extension		2/54, 2/60, 3/18
L06	Standard shaft made of stainless steel		2/54, 2/60, 3/18
L07	Concentricity of shaft extension in accordance with DIN 42955 Tolerance R		2/54, 2/60, 3/18
L08	Concentricity of shaft extension, coaxiality and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors		2/54, 2/60, 3/18
L20	Located bearing DE	Bearings and lubrication	2/53, 2/60, 3/18
L21	Located bearing NDE		2/53, 2/60, 3/18
L22	Bearing design for increased cantilever forces		2/53, 2/60, 3/18
L23	Regreasing device		2/53, 2/60, 3/18
L24	Hot bearing grease		2/60
L25	Special bearing for DE and NDE, bearing size 63		2/53, 2/60
L28	Bearing for DE and NDE of type 63XX		2/60
L50	Bearing insulation DE		2/60
L51	Bearing insulation NDE		2/60
L52	Grounding brush for converter-fed operation	Mechanical design and degrees of protection	2/59
L82	Train-compatible version	Designs in accordance with standards and specifications	2/53
M01	Connected in star for dispatch	Packaging, safety notes, documentation and test certificates	2/51, 2/61, 3/19
M02	Connected in delta for dispatch		2/51, 2/61, 3/19
M10	Second rating plate, loose	Rating plate and extra rating plates	2/54, 2/61, 3/18
M11	Rating plate, stainless steel		2/54, 2/61, 3/18
N01	Temperature class 155 (F), utilized acc. to 155 (F), with service factor (SF)	Windings and insulation	2/51, 2/57
N02	Temperature class 155 (F), utilized acc. to 155 (F), with increased output		2/51, 2/57
N03	Temperature class 155 (F), utilized acc. to 155 (F), with increased coolant temperature		2/51, 2/57
N05	Temperature class 155 (F), utilized acc. to 130 (B), coolant temperature 45 °C, derating approx. 4 %		2/51, 2/57, 3/17
N06	Temperature class 155 (F), utilized acc. to 130 (B), coolant temperature 50 °C, derating approx. 8 %		2/51, 2/57, 3/17
N07	Temperature class 155 (F), utilized acc. to 130 (B), coolant temperature 55 °C, derating approx. 13 %		2/51, 2/57, 3/17
N08	Temperature class 155 (F), utilized acc. to 130 (B), coolant temperature 60 °C, derating approx. 18 %		2/51, 2/57, 3/17

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Order code	Special versions	Category	For further information, see Page
N11	Temperature class 180 (H) at rated output and max. CT 60 °C		2/51, 2/57
N20	Increased air humidity/temperature with 30 to 60 g water per m^3 of air		2/51, 2/57, 3/17
N21	Increased air humidity/temperature with 60 to 100 g water per m^3 of air		2/51, 2/57, 3/17
P01	Next larger standard flange	Mechanical design and degrees of protection	2/53, 2/59
P02	Next smaller standard flange		2/53, 2/59
P10	Cast-iron bearing plate on DE		2/53
Q01	Measuring nipple for SPM shock pulse measurement for bearing inspection	Bearings and lubrication	2/53, 2/60, 3/18
Q02	Anti-condensation heating for 230 V	Heating and ventilation	2/54, 2/61, 3/18
Q03	Anti-condensation heating for 115 V		2/54, 2/61, 3/18
Q05	Prepared for mounting a SIPLUS CMS 1000 vibration sensor	Motor protection (bearing protection)	2/56
Q32	2 x 3 temperature detectors for alarm and tripping		2/56
Q62	Installation of 1 PT100 resistance thermometer in stator winding, two-wire circuit		2/56
Q63	Installation of 3 PT100 resistance thermometers in stator winding, three-wire circuit		2/56
Q64	Installation of 6 PT100 resistance thermometers in stator winding, three-wire circuit		2/56
Q72	Installation of 2 PT100 screw-in resistance thermometers in basic circuit for rolling-contact bearings		2/56
Q78	Installation of 2 PT100 screw-in resistance thermometers in 3-wire circuit for rolling-contact bearings		2/56
Q79	Installation of 2 PT100 double screw-in resistance thermometers in 3-wire circuit for rolling-contact bearings		2/56
Q80	Extension of the liability for defects by 12 months to a total of 24 months (2 years) from delivery	Rating plate and extra rating plates	2/61
Q82	Extension of the liability for defects by 24 months to a total of 36 months (3 years) from delivery		2/61
R10	Rotation of the connection box through 90°, entry from DE	Motor connection and connection box	2/51, 2/56, 3/17
R11	Rotation of the connection box through 90°, entry from NDE		2/51, 2/56, 3/17
R12	Rotation of the connection box through 180°		2/51, 2/56, 3/17
R14	One EMC cable gland		2/56
R15	One metal cable gland		2/51, 2/56
R16	EMC cable gland, maximum configuration		2/56
R17	Stud terminal for cable connection, accessories pack (3 items)		2/57
R18	Cable gland, maximum configuration		2/56, 3/17
R19	Saddle terminal for connection without cable lug, accessories pack		2/56
R20	3 cables protruding, 0.5 m long		2/51
R21	3 cables protruding, 1.5 m long		2/51, 2/56
R22	6 cables protruding, 0.5 m long		2/51
R23	6 cables protruding, 1.5 m long		2/51, 2/56
R24	6 cables protruding, 3 m long		2/51, 2/56
R30	Reduction piece for M cable gland in accordance with British Standard, both cable entries mounted		2/51
R50	Larger connection box		2/51, 2/56, 3/17
R51	Terminal box without cable entry opening		2/56
R52	Drilled removable entry plate		2/56
R53	Undrilled removable entry plate		2/56
R62	Cast-iron auxiliary terminal box (small)		2/57
R70	Motor connector Han-Drive 10e for 230 VΔ/400 VY		2/51
R71	Motor connector EMC Han-Drive 10e for 230 VΔ/400 VY		2/51
R72	Small motor connector CQ12 with EMC		2/51
R73	Small motor connector CQ12 without EMC		2/51
R74	Silicon-free version		2/57
S00	Unpainted (only cast-iron parts primed)	Colors and paint finish	2/52, 2/58, 3/17
S01	Unpainted, only primed		2/52, 2/58, 3/17
S03	Special finish sea air resistant		2/52, 2/58, 3/17
S04	Special paint for use offshore		2/52, 2/58
S05	Internal coatings (metal parts; rotor and stator)		2/58
S10	Special finish in RAL 7030 stone gray		2/58
Y50	Temperature class 155 (F), utilized acc. to 130 (B) with higher coolant temperature and/or site altitude	Windings and insulation	2/52, 2/57, 3/17
Y51	Special finish in special RAL colors	Colors and paint finish	2/52, 2/58, 3/17
Y52	Temperature class 155 (F), utilized according to 155 (F), other requirements	Windings and insulation	2/52, 2/57

Order code	Special versions	Category	For further information, see Page
Y53	Standard finish in other standard RAL colors	Colors and paint finish	2/58
Y54	Special finish in other standard RAL colors		2/52, 2/58, 3/17
Y58	Non-standard cylindrical shaft extension, DE	Shaft and rotor	2/54, 2/60, 3/18
Y59	Non-standard cylindrical shaft extension, NDE		2/54, 2/60, 3/18
Y60	Special shaft steel		2/60
Y61	Non-standard threaded through hole (NPT or G thread)	Motor connection and connection box	2/57
Y70	Mounting of a special type of rotary pulse encoder	Special technology	2/59
Y75	Temperature class 180 (H), utilized according to 155 (F)	Windings and insulation	2/57
Y80	Extra rating plate or rating plate with deviating rating plate data (rated data only, e.g. voltage, output, speed)	Rating plate and extra rating plates	2/54, 2/61, 3/18
Y81	Separately driven fan with non-standard voltage and/or frequency	Heating and ventilation	2/61
Y82	Extra rating plate with identification codes	Rating plate and extra rating plates	2/54, 2/61, 3/18
Y84	Additional information on rating plate and on package label (1 line, max. 20 characters)		2/54, 2/61, 3/18
Y85	Adhesive label, supplied loose (printed with: Article No., serial number; 2 lines of text)		2/54, 2/61
Y98	Printed Operating Instructions (compact) for explosion-proof motors enclosed in other official EU languages	Packaging, safety notes, documentation and test certificates	3/19

Notes

Explanation of the raw material/metal surcharges [1)]

Surcharge calculation

To compensate for variations in the price of the raw materials silver, copper, aluminum, lead, gold, dysprosium [2)] and/or neodym [2)], 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) for [3)]
  - Silver (sales price, processed),
  - Gold (sales price, processed)

  and for [4)]
  - Copper (lower DEL notation + 1 %),
  - Aluminum (aluminum in cables) and
  - Lead (lead in cables)
- Metal factor of the products
  Certain products are displayed with a metal factor. The metal factor determines the basic 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).

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 silver [1], copper [1], aluminum [1], lead [1], gold [1], 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 material [2]
  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.

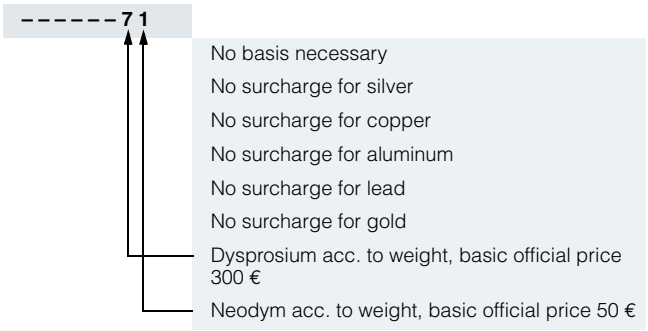
1st digit	List or customer net price using the percentage method
2nd digit	for silver (AG) [1]
3rd digit	for copper (CU) [1]
4th digit	for aluminum (AL) [1]
5th digit	for lead (PB) [1]
6th digit	for gold (AU) [1]
7th digit	for dysprosium (Dy)
8th digit	for neodym (Nd)

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



[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 Price in €	% surcharge 2nd step Price in €	% surcharge 3rd step Price in €	% surcharge 4th step Price in €	% surcharge per additional step
			150.01 – 200.00	200.01 – 250.00	250.01 – 300.00	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						

Conditions of sale and delivery, Export regulations

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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).

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