Overview (continued)

Mechanical limit speeds n_{max} at maximum supply frequency f_{max} (standard values) for motors 1LE1, 1PC1 – basic version and 1LE15 and 1LE16 motors – basic version with order codes L22, L25, L28 – 1MB10/5/6 motors with order codes L22 and L25

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
1LE10 motors, basic version									
80 M	**0D...**	6000	100	4200	140	3600	180	3000	200
90 S/L	**0E...**	6000	100	4200	140	3600	180	3000	200
	1LE15..-								
1LE15 Basic Line motors – bearing for increased cantilever forces – order code L22 1LE15 Basic Line motors – bearings reinforced at both ends – order code L25									
71 M	**0C...**	6000	100	4200	140	3600	180	3000	200
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...-								
1LE10, 1PC1 motors, basic version 1LE15 Basic Line and 1LE16 Performance Line – bearing for increased cantilever forces – order code L22 1LE15 Basic Line and 1LE16 Performance Line – 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
180 M/L	**1E...**	4600	76	4200	140	3600	180	3000	200
200 L	**2A...**	4500	75	4200	140	3600	180	3000	200
	1LE15..- 1LE16..-								
1LE15 Basic Line and 1LE16 Performance Line – basic version 1LE15 Basic Line and 1LE16 Performance Line – bearing for increased cantilever forces – order code L22 1LE15 Basic Line and 1LE16 Performance Line – bearings reinforced at both ends – order code L25 1LE15 Basic Line and 1LE16 Performance Line – DE cylindrical roller bearing and NDE reinforced bearing – order code L28									
180 M/L	**1E...**	4600	76	4200	140	3600	180	3000	200
200 L	**2A...**	4500	75	4200	140	3600	180	3000	200
225 S/M	**2B...**	4500	75	4500	150	4400	220	4400	293
250 M	**2C...**	3900	65	3700	123	3700	185	3700	247
280 S/M	**2D...**	3600	60	3000	100	3000	150	3000	200
315 S/M/L	**3A...**	3600	60	2600	87	2600	130	2600	173

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

Grease lifetime and regreasing intervals for horizontal installation

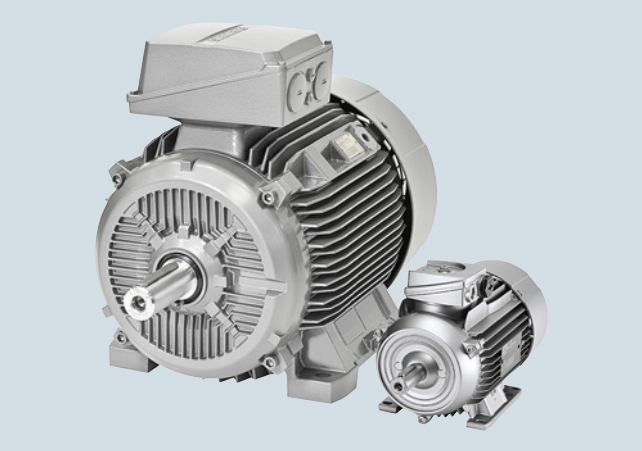
Motor series	Frame size	No. of poles				
Permanent lubrication [1]						
			Grease lifetime up to CT 40 °C [2]			
1LE1/1MB1/1PC1	71 … 250	2 ... 8	20 000 h or 40 000 h [3]			
Regreasing [1]						
			Lubrication interval ISO Cl F 155 °C		Lubrication interval ISO Cl H 180 °C	
			CT ≤ 60 °C	60 °C < CT ≤ 80 °C	40 °C < CT ≤ 60 °C	60 °C < CT ≤ 80 °C
1LE1/1MB1/1PC1	100 … 160	2 ... 8	8000 h	4000 h [2]	4000 h	2000 h [2]
	180 … 280	2	4000 h	2000 h [2]	1000 h	1000 h [2]
		4 ... 8	8000 h	4000 h [2]	2000 h	2000 h [2]
	315	2	3000 h	1500 h [2]	1000 h	1000 h [2]
		4 ... 8	6000 h	3000 h [2]	1500 h	1500 h [2]

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

[2] For every 10 K the coolant temperature is increased above 80 °C, 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



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 power have the same dimensions. The new motors for IE2, IE3 and IE4 offer considerable energy savings and protect our environment. We also consider environmental compatibility and sustainable use of resources during production. 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 according to the most advanced ecological standards.

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

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

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

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

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

Brief overview	
Power and voltage range:	0.3 … 45 kW All commonly used voltages
Frame sizes and types of construction:	80 ... 200 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) • IE4 (Super Premium Efficiency) • NEE (NEMA Energy Efficient acc. to NEMA MG Table 12-11) • NPE (NEMA Premium Efficient acc. 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.

Brief overview	
Power and voltage range:	0.09 … 200 kW All commonly used voltages
Frame sizes and types of construction:	71 ... 315 in all common types of construction
Rated speed:	750 … 3600 rpm
Number of poles:	2, 4, 6, 8
Efficiency classes:	• IE1 (Standard Efficiency) • IE2 (High Efficiency) • IE3 (Premium Efficiency) • IE4 (Super Premium Efficiency) • NEE (NEMA Energy Efficient acc. to NEMA MG Table 12-11) • NPE (NEMA Premium Efficient acc. to NEMA MG Table 12-12)

Overview (continued)

High efficiency energy-saving motors for a positive energy balance

Depending on requirements, energy-saving motors for a positive energy balance are available that are compliant with the legal requirements applicable in the European economic area in accordance with EU Directive 640/2009 as well as for the North American market in accordance with US federal law EISA (Energy Independence Security Act).

Motors with increased power and compact construction (1LE1)

Motors with increased power and compact construction can be used to advantage in confined spaces. For a slightly longer overall length, the power is at least as high as that of the next largest frame size. These compact motors are also optimized for efficiency. They are offered in IE2 and IE3 and therefore reduce operating costs.

Motors without fan cover and without external fan. (1LE1 with order code F90)

Forced-air cooled motors with surface cooling without fan cover and without external fan are mainly used for driving fans.

Motors with reduced power without fan cover and without external fan (1PC1 motors on request)

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 motors

The most popular basic versions of motor series 1LE1 are available under special terms as so-called "Preferred motors".

The complete range is covered by Price List D 81.1 P Part 1 "Preferred motors". The price list also contains further information regarding the new delivery concept.

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 IE3 and IE4 high efficiency motor variants. The energy-efficient motors are therefore considerably more compact.

The SinaSave Webtool can be used to calculate the energy saving potential and life cycle costs of all motors. SinaSave can be downloaded free of charge from the following website: 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 rugged housing in modern EMC design has an attractive appearance and enhances functionality. The rotatable, accessible terminal boxes, integral lifting eyes, screw-on feet and reinforced bearing plates ensure this.

Greater power

For the same frame size, the high-performance motors offer one complete rated power level more. We are also consistently implementing energy efficiency improvements here, too. The motors are offered (based on the categories of IEC 60034-30-1) in various efficiency classes.

More flexibility

The optimized design of the motors makes installation easier in general. Encoders, brakes and separately driven fans can be retrofitted easily. Terminal boxes and feet for flexible mounting can be selected. Smaller inventories make stockkeeping easier and motor suppliers can respond to customer requirements more quickly. Optimized manufacturing processes support fast availability. All motors up to 500 V can be operated either directly on the line or converter.

For general purpose applications: SIMOTICS GP motors with an aluminum housing

Particularly user friendly

The previously introduced, well-proven, obliquely partitioned terminal box is being implemented consistently throughout the entire motor series.

Special export line

For exporting to NAFTA, the Eagle Line is available. The motors are supplied with the electrical values stamped on the rating plate in accordance with EISA requirements.

1) Canadian Standard Association
2) Underwriters Laboratories Inc.
3) China Quality Certification

Benefits (continued)

For severe duty applications:
SIMOTICS SD motors with a cast-iron housing

The right motor for various challenges

The following lines are available for severe duty applications:

- Basic Line (1LE15): rugged, reliable motors for machine construction
- Performance Line (1LE16): Motors for the process industry with reinforced bearings and a more rugged coating – for requirements that extend beyond the Basic Line
- "Eagle Line": Motors for export to the NAFTA zone; they fulfill the requirements of UL and CSA and are supplied with the electrical values stamped on the rating plate in accordance with EISA requirements

Comparison: Basic Line versus Performance Line

Function	Basic Line	Performance Line
Bearing size	62 (63 from frame size 280 upwards)	63
Relubrication	Optional (Standard from frame size 280 upwards)	Standard from frame size 160 upwards (optional for frame size 100 to 132)
Paint system	Standard paint finish, corrosivity category C2 [1)]	Special paint finish, corrosivity category 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 power

In severe duty applications, motors with increased power can also be the right solution if sufficient space is not available for a standard motor. Because these motors offer the same power rating 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)] See also Chapter 1, pages 1/18 and 1/19.

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/delta connection The connection type to be used can be established from the Article No. supplements for the required motor.
Number of poles	2, 4, 6, 8
Frame sizes	71 M ... 315 L
Rated power	0.09 ... 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) • IE4 (Super 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 power and: • IE1 (Standard Efficiency) • IE2 (High Efficiency) • IE3 (Premium Efficiency) Forced-air cooled 1LE1 motors without external fan and fan cover with: • IE1 (Standard Efficiency) • IE2 (High Efficiency) • IE3 (Premium Efficiency) • IE4 (Super Premium Efficiency) Naturally cooled 1PC1 motors without external fan and fan cover with: • IE1 (Standard Efficiency) • IE2 (High Efficiency) • IE3 (Premium Efficiency) • IE4 (Super Premium Efficiency)
Marking	IEC 60034-30-1 IE1, IE2, IE3, IE4: 2, 4, 6 and 8-pole US EISA legislation: 2, 4, 6 and 8-pole
Rated speed (synchronous speed)	750 … 3000 rpm
Rated torque	1.0 ... 1703 Nm (1LE1 motor series)
Stator winding insulation 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 power) DURIGNIT IR 2000 insulating system
Degree of protection according to EN 60034-5 (IEC 60034-5)	IP55 as standard
Cooling in accordance with EN 60034-6 (IEC 60034-6)	• Self-ventilated (IC 411) (1LE1 motor series) frame size 80 M to 315 L • Forced-air cooled (IC 418) (1LE1 motor series with order code **F90**), frame size 80 M to 200 L • Naturally cooled (IC 410) (1PC1 motor series) frame size 100 L to 160 L
Permissible coolant temperature and installation altitude	–20 ... +40 °C as standard, installation altitude up to 1000 m above sea level. See "Coolant temperature and installation 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 quantity level according to EN 60034-14 (IEC 60034-14)	Level A (normal – without special vibration requirements) Optional: 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 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 • Terminal box obliquely partitioned and rotatable through 4 x 90° • Bearings at DE and NDE are of identical design, reinforced bearings available as an option
Options	See "Article No. supplements 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.

Converter operation

Overview

Converter operation up to 500 V +10 % line voltage

See Chapter 1, page 1/32.

During installation, the EMC guidelines must be complied with

Note:

When motors are operated on SINAMICS converters additional losses occur which, depending on the admissible winding temperature, can make it necessary to reduce the torque. The admissible torque values can be obtained from the SIZER configuring tool. The lowest frequency specified there is 5 Hz. For stationary converter operation at lower frequencies, particularly in the case of frame sizes < 100, it is necessary to inquire at the Quotation Center.

Benefits

Motors operating with frequency converters offer the user numerous advantages.

The motors feature the future-oriented insulation system DURIGNIT IR 2000 (IR = Inverter Resistant).
The DURIGNIT IR 2000 insulating system consists of high-quality enamel wires and insulating sheet materials in conjunction with temperature-resistant resin impregnation.

Application

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 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 above its rated frequency, it is important to note that the maximum speeds are limited by the limits for the roller bearings, critical rotor speed and rigidity of the rotating parts (see page 1/58).

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 1LE motors is designed such that converter operation is possible at voltages up to 500 V[1)]. $\hat{U}_{\text{phase-to-phase}} \leq 1500$ V, $\hat{U}_{\text{phase-to-ground}} \leq 1100$ V, voltage rise times of $t_s > 0.1$ µs.

All motors with voltage codes 22 and 34 must be operated on a converter under these conditions. For converter operation with the power ratings 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).

1) See also EN 60034-1: 2011.

Selection and ordering data

The article number consists of a combination of digits and letters and is divided into three hyphenated blocks to provide a better overview, e.g.:
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/power; and in the third block (positions 13 to 16), the frequency/power, type of construction and other design features are encoded.

For deviations in the second and third block from the catalog codes, either **Z** or **90** should be used as alphanumeric values.

Ordering data:

- Complete Article No. and order code(s) or plain text
- If a quotation has been requested, please specify the quotation number in addition to the Article No.
- When ordering a complete motor as a spare part, please specify the works serial No. for the previously supplied motor as well as the Article No.

Structure of the Article No.:	Position:	1	2	3	4	5	6	7	-	8	9	10	11	12	-	13	14	15	16	
Positions 1 to 4 Digit, letter, letter, digit	• 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**															
	• 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**												
	APAC Line motors with IE2 High Efficiency						**4**	**1**												
	Motors with IE1 Standard Efficiency						**0**	**2**												
	Motors with IE3 Premium Efficiency						**0**	**3**												
	APAC Line motors with IE3 Premium Efficiency						**4**	**3**												
	Motors with IE4 Super Premium Efficiency						**0**	**4**												
	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 as a combination of shaft height and overall length, encoded)									**0** **...** **3**	**A** **...** **E**		**0** **...** **6**							
Position 10: Letter	**No. of poles** A: 2-pole, B: 4-pole, C: 6-pole, D: 8-pole, 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** **...** **R**								
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 ... Z; Z requires order code Q.. (e.g. H00))																**A** **...** **V**			
Position 15: Letter	**Motor protection** (encoded with A ... Z; Z requires order code Q.. (e.g. Q2A))																	**A** **...** **Z**		
Position 16: Digit	**Terminal box position** 4: Terminal box top, 5: Terminal box right, 6: Terminal box left, 7: Terminal box below																		**4** **...** **7**	
	Special order versions: encoded – additional order code required not encoded – additional plain text required																			**- Z**

Ordering example

Selection criteria	Requirement	Structure of the Article No.
Motor type 1LE1	Standard motor with High Efficiency IE3, IP55 degree of protection, aluminum version	**1LE1003-■■■■■-■■■■**
Motor frame size/No. of poles/Speed	160 M/4-pole/1500 rpm	**1LE1003-1DB2■-■■■■**
Rated power	11 kW	
Voltage and frequency	230 VΔ/400 VY, 50 Hz	**1LE1003-1DB22-2■■■**
Type of construction with special version	IM V5 with protective cover [1]	**1LE1003-1DB22-2C■■-Z** **H00**
Motor protection	1 or 3 PTC thermistors – for tripping (2 terminals)	**1LE1003-1DB22-2CB■-Z** **H00**
Terminal box position	Terminal box right (viewed from DE)	**1LE1003-1DB22-2CB5-Z** **H00**

[1] Without protective cover as standard – the protective cover is defined with order code **H00** and must be ordered in addition to the Article No. with **-Z** and this order code.

Selection and ordering data

P_{rated}, 60 Hz/ P50	P_{rated}, 60 Hz/ P60	Frame size	Operating values at rated power: 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)				CL
• Cooling: Self-ventilated (IC 411) or with order code F90 forced-air cooled without external fan and fan cover (IC 418)																			
• 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	77.2	75.7	0.84	1.45	3	7.1	3.6	64	75	**1LE1023-0DA2■-■■■■**	11	0.0011	16
1.1	**1.5**	**80 M**	3500	3	✓	84	84	82	0.83	1.98	3.3	8.4	4	64	75	**1LE1023-0DA3■-■■■■**	12	0.0013	16
1.5	**2**	**90 S**	3525	4.1	✓	85.5	84.8	82.3	0.84	2.6	3.1	9.8	4.9	69	81	**1LE1023-0EA0■-■■■■**	15	0.0021	16
2.2	**3**	**90 L**	3530	6	✓	86.5	86.4	84.5	0.87	3.65	3	9.6	4.9	69	81	**1LE1023-0EA4■-■■■■**	19	0.0031	16
3	**4**	**100 L**	3525	8.1	✓	88.5	88.7	87.2	0.87	4.9	3.8	9.7	5.5	71	83	**1LE1023-1AA4■-■■■■**	26	0.0054	16
3.7	**5**	**112 M**	3560	10	✓	88.5	88	86.2	0.88	6	3.2	10.8	5.1	73	85	**1LE1023-1BA2■-■■■■**	34	0.012	16
5.5	**7.5**	**132 S**	3555	15	✓	89.5	89.4	88.2	0.9	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	90.5	90	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	90.4	88.4	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	90.5	88.9	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	91.5	90.3	0.9	28	3.1	9.4	4.4	77	89	**1LE1023-1DA4■-■■■■**	94	0.068	16
22	**30**	**180 M**	3560	59	✓	91.7	91.4	90	0.89	34	2.8	8.2	3.9	77	89	**1LE1023-1EA2■-■■■■**	129	0.08	16
30	**40**	**200 L**	3560	80	✓	92.4	92.2	91.4	0.87	47	2.9	7.6	3.6	77	84	**1LE1023-2AA4■-■■■■**	173	0.134	16
37	**50**	**200 L**	3560	99	✓	93	92.8	91.6	0.88	57	2.8	7.5	3.6	77	84	**1LE1023-2AA5■-■■■■**	194	0.158	16
4-pole: 1500 rpm at 50 Hz, 1800 rpm at 60 Hz																			
0.55	**0.75**	**80 M**	1750	3	–	81.1	80.8	78.2	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	✓	83.5	82.6	79.3	0.71	1.59	3.1	8.3	4.7	55	66	**1LE1023-0DB3■-■■■■**	14	0.0029	16
1.1	**1.5**	**90 S**	1750	6	✓	86.5	86.4	84.2	0.75	2.15	3.4	8.2	4.4	58	70	**1LE1023-0EB0■-■■■■**	16	0.0036	16
1.5	**2**	**90 L**	1755	8.2	✓	86.5	86.4	84.6	0.77	2.85	3	8.4	4.3	58	70	**1LE1023-0EB4■-■■■■**	19	0.0049	16
2.2	**3**	**100 L**	1770	11.9	✓	89.5	89.2	87.2	0.81	3.8	3.5	9.6	5.1	62	74	**1LE1023-1AB4■-■■■■**	30	0.014	16
3	**4**	**100 L**	1760	16.3	✓	89.5	89.5	88.3	0.82	5.1	3.1	9.5	4.6	62	74	**1LE1023-1AB5■-■■■■**	30	0.014	16
3.7	**5**	**112 M**	1770	19	✓	89.5	89.4	87.7	0.8	6.5	2.9	8.2	4.3	62	74	**1LE1023-1BB2■-■■■■**	34	0.017	16
5.5	**7.5**	**132 S**	1775	30	✓	91.7	91.6	90.5	0.81	9.3	3.9	9.7	4.5	68	80	**1LE1023-1CB0■-■■■■**	64	0.046	16
7.5	**10**	**132 M**	1770	40	✓	91.7	91.8	91	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	92.3	91.1	0.83	18	3	8.9	3.8	69	81	**1LE1023-1DB2■-■■■■**	83	0.083	16
15	**20**	**160 L**	1780	80	✓	93	92.8	91.4	0.81	25	2.9	9.5	4.3	69	81	**1LE1023-1DB4■-■■■■**	100	0.099	16
18.5	**25**	**180 M**	1775	100	✓	93.6	93.7	93.1	0.81	30.5	2.7	7.8	3.6	68	75	**1LE1023-1EB2■-■■■■**	134	0.13	16
22	**30**	**180 L**	1775	118	✓	93.6	93.8	93.3	0.81	36.5	2.8	7.7	3.7	70	77	**1LE1023-1EB4■-■■■■**	142	0.14	16
30	**40**	**200 L**	1778	161	✓	94.1	94.3	93.8	0.83	48	3	8.1	3.5	70	77	**1LE1023-2AB5■-■■■■**	189	0.22	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 ... 200 L	1LE1023-0D ... -2A	**Standard**	**2**	**2**		–
50 Hz	400 VΔ	60 Hz	460 VΔ	2, 4	80 M ... 200 L	1LE1023-0D ... -2A	**Standard**	**3**	**4**		–
50 Hz	500 VY			2, 4	80 M ... 200 L	1LE1023-0D ... -2A	W/o add. charge	**2**	**7**		–
50 Hz	500 VΔ			2, 4	80 M ... 200 L	1LE1023-0D ... -2A	W/o add. charge	**4**	**0**		–
Further voltages			For price information, code numbers, order codes, and descriptions, see from page 2/63					**9**	**0**		. . .
Types of construction				No. of poles	Frame size	Motor type	Version				Order code(s)
Without flange		IM B3 [2]		2, 4	80 M ... 200 L	1LE1023-0D ... -2A	**Standard**			**A**	–
With flange		IM B5 [2]		2, 4	80 M ... 200 L	1LE1023-0D ... -2A	With add. charge			**F**	–
With standard flange		IM B14 [2]		2, 4	80 M ... 160 L	1LE1023-0D ... -2A	With add. charge			**K**	–
Further types of construction			For price information, code letters, and descriptions, see from page 2/68							■	. . .
Motor protection				No. of poles	Frame size	Motor type	Version				Order code(s)
Without				2, 4	80 M ... 200 L	1LE1023-0D ... -2A	**Standard**				**A** –
PTC thermistor with 3 temperature sensors				2, 4	80 M ... 200 L	1LE1023-0D ... -2A	With add. charge				**B** –
Further motor protection			For price information, code letters, and descriptions, see from page 2/76								■ . . .
Terminal box position				No. of poles	Frame size	Motor type	Version				Order code(s)
Terminal box at top				2, 4	80 M ... 200 L	1LE1023-0D ... -2A	**Standard**				**4** –
Further terminal box positions			For price information, code numbers, and descriptions, see from page 2/78								
Special versions				No. of poles	Frame size	Motor type					Order code(s)
Forced-air cooled motors w/o ext. fan/fan cover (IC 418)				2, 4	80 M ... 200 L	1LE1023-0D ... -2A	**1LE1023-. . . . ■–■■■■**				**-Z F90 +. . .+. . .+. . .**
Options			For price information, order codes, and descriptions, see from page 2/80				**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.