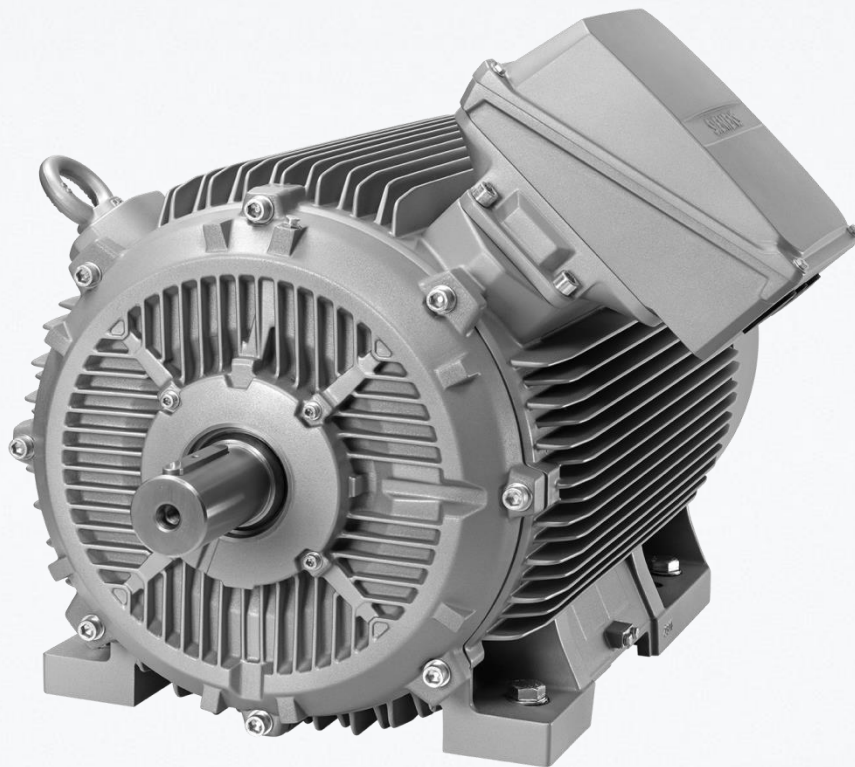


SIEMENS



Motors

Low-voltage motors

SIMOTICS SD - 1LE5

SIMOTICS XP - 1MB5

Frame sizes 400 and 450

Power 355 – 1000 kW

Catalog
Add-on
D 81.1 AO

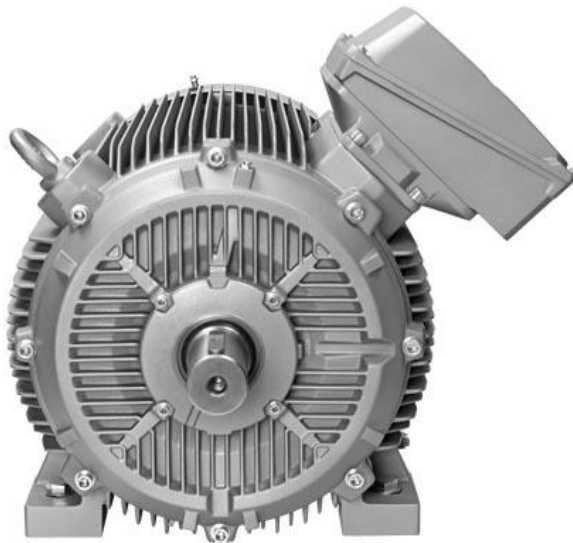
Edition
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www.siemens.com/simotics

SIMOTICS SD 1LE5 Low-Voltage Motors

SIMOTICS XP 1MB5 Explosion-Protected Motors

Motors



Introduction

General information regarding efficiency in accordance with International Efficiency
Guidelines for selecting and ordering motors, general technical specifications

1

Standard SIMOTICS SD next generation 1LE5 motors

2

SIMOTICS XP 1MB5 explosion-protected motors

3

Catalog D 81.1 AO · 09/2018

To ensure good readability, in Chapter Introduction, only the motors in general are discussed and the main MLFB is not mentioned. In this Catalog Add-on D81.1 AO, the term motors refers to SIMOTICS SD next generation, 1LE5 series as well as the SIMOTICS XP, 1MB5 series in frame sizes 400 and 450.



The products and systems described in this catalog are manufactured and marketed based on a certified quality management system in accordance with DIN EN ISO 9001 (Certificate 04-31-1267 Registration No. DE-000357 QM). The certificate is recognized by all IQNet countries.



1/2	Guidelines for selecting and ordering motors
1/3	Catalog orientation and drive selection
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Overview

Steps when selecting a drive

Step 1	Orientation and general technical information		
Technical requirements for the motor	Rated frequency and Rated voltage	3 AC 50/60 Hz, 380 ... 690 V	
	Operating mode	Standard duty (continuous duty S1 according to EN 60034-1)	
	Degree of protection	IP..	
	Rated speed	$n = \dots\dots\dots$ rpm	
	Rated power	$P = \dots\dots\dots$ kW	
	Rated torque	$T = P \cdot 9550/n = \dots\dots\dots$ Nm	
	Type of construction	IM..	
Step 2	Preselection in accordance with the application		
Determination of the installation conditions and definition of the application, if necessary	Ambient temperature	≤ 40 °C	> 40 °C
	Installation altitude	≤ 1000 m	> 1000 m
	Factors for derating	None	Determine the factor for derating (for reduction factor, see "Coolant temperature and installation altitude" on Page 1/11)
Cross-reference to other motors	Motors for special requirements in explosion protection and applications or motors according 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 power, 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

Power, frame size, temperature class			Operating values at rated power													Article No., add. data				
Table header – meaning																				
Prated, 50 Hz	Prated, 60 Hz	Prated, 60 Hz	Frame size	n _{rated} , 50 Hz	T _{rated} , 50 Hz	IE-Class	CC CC032A	η_{ra} 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	TLR/ T _{rated}	LR/ I _{rated}	T _B / T _{rated}	L _p fA, 50 Hz	LWA, 50 Hz	Article N	m IM B3	J
kW	kW	hp	FS	rpm	Nm			%	%			A				dB (A)	dB (A)	kg		kgm ²
Rated power at 50 Hz	Rated power at 60 Hz	Rated power at 60 Hz	Frame size	Rated speed at 50 Hz	Rated torque at 50 Hz	Efficiency class according to IEC 60034-30-1	CC No. CC032A	Efficiency at 50 Hz, 4/4 load	Efficiency at 50 Hz, 3/4 load	Efficiency at 50 Hz, 2/4 load	Power factor at 50 Hz, 4/4 load	Rated current at 400 V, 50 Hz	Locked rotor torque when directly switched on as a multiple of the rated torque	Locked rotor current when directly switched on as a multiple of the rated	Breakdown torque when directly switched on as a multiple of the rated torque	Measuring-surface sound pressure level at 50 Hz	Sound power level at 50 Hz	Article number	Weight for IM B3 type of construction, approx.	Moment of inertia

Legend:

Primary key
Standard values for all motors
Specifically for NEMA Energy Efficient MG1 motors, Table 12-11 or NEMA Premium Efficient MG1 motors, Table 12-12

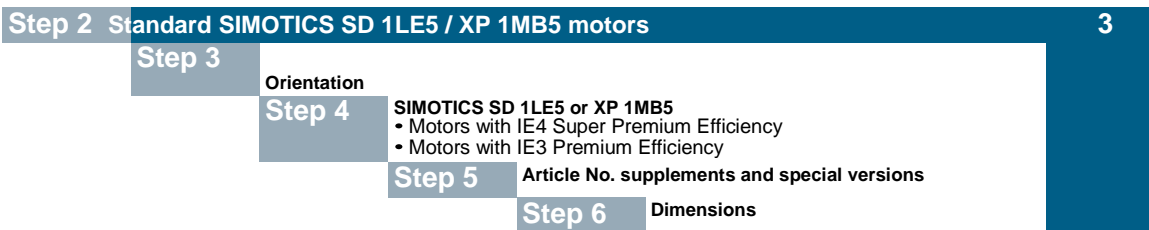
Note for pole-changing motors:

The operating values are specified here for the rated power for the two different pole numbers.

Step 4	Detailed selection of the motor in the selection and ordering data tables		
Determination of the basic motor Article No.	Determine the motor Article No. according to the following parameters: rated power, 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 dimensions	The dimensions are specified in each catalog section in the "Dimensions" section.		
Selection of the frequency converter, if required	Article No. of the converter as well as its selection, see Catalogs D 11, D 18.1, D 21.3, D 31, and DA 51.2.		

Overview (continued)

Steps for selecting drives in the catalog



Standard 1LE5 / 1MB5 motors

Motor Efficiency class version		Rated power at	Frame size – motor type									Page
SIMOTICS SD Add cast iron housing												
IEC	IE4 Super Premium Efficiency	355 ... 1000 kW	1LE5534									2/9
	IE3 Premium Efficiency	355 ... 1000 kW	1LE5533									2/11
SIMOTICS SD Pro cast iron housing												
IEC	IE3 Premium Efficiency	335 ... 980 kW	1LE5583									2/13
SIMOTICS XP cast iron housing												
IEC	IE4 Super Premium Efficiency	355 ... 1000 kW	1MB55.4									3/10
	IE3 Premium Efficiency	355 ... 1000 kW	1MB55.3									3/12

Overview (continued)

To protect the drives against corrosion and external influences, high-quality paint systems are available in various colors.

Standard version	Additional identification code –Z with order code						
	S00	S01	S02	S03	S04	S05	S06
Paint finish, suitability of the paint finish according to corrosivity category to DIN EN ISO 12944-2:1998							
Standard paint finish C2	Unpainted, unfinished cast iron surfaces are primed	Unpainted, motor primed	Special paint finish C3	Special paint finish system "sea air resistant" C4	Special paint finish system "offshore" C5	Internal paint finish, all bare internal components primed with rust inhibitor ¹⁾	Polyurethane-based top coat, standard version
Application							
Moderate (extended) for indoor and outdoor installation under a roof not directly exposed to the weather.	The motors can be supplied unpainted on request.	The motors can be supplied with just a primer coat on request.	Worldwide (global) for outdoor installation in direct sunlight and/or exposed to the weather.	Recommended for indoor or outdoor installation directly exposed to the weather, industrial climates with moderate SO ₂ exposure, VIK requirements, coastal climates - however, not offshore sea/ocean climates, e.g. for crane drives and for the paper industry.	Recommended for outdoor installation directly exposed to weather conditions, industrial climate with moderate SO ₂ exposure and offshore ocean climate, e.g. for crane drives.	The motors can be supplied with internal paint finish on request. Recommended when there is a risk of high levels of condensation.	Direct sunlight (ultraviolet light) can change the color of the paint. When color stability is a requirement, a polyurethane-based paint system is recommended for the top coat (RAL 7030). Other paint colors are available on request.
Test requirements according to DIN EN ISO 12944-5:2008 corrosivity Category							
C2	–	–	C3	C4	C5	–	–
Total film thickness – nominal film thickness in µm ^{2) 3)}							
Motors in cast iron version							
Water-b. 2-C-polyurethane	Resin primer	Water-b. 2-C-polyurethane primer	Water-b. 2-C-polyurethane	Water-b. 2-C-polyurethane	Water-b. 2-C-polyurethane	2-C- epoxy resin/ 2-C-polyurethane primer	Water-b. 2-C-polyurethane
120	60	120	180	240	320	60	Film thickness analogous to S03/S04
Resistance							
			For corrosive atmospheres up to 1 % acid and alkali concentration or permanent moisture in sheltered rooms.	Exposure to chemicals - up to 5 % acid and alkali concentration.	Exposure to chemicals - up to 5 % acid and alkali concentration.		Sunlight
Temperature range							
Briefly up to 120 °C Continuously up to 100 °C	–	–	Briefly up to 140 °C Continuously up to 120 °C	–40 ... 140 °C	–40 ... 140 °C		
Rel. humidity at (temperature)							
60 % (40 °C)	–	–	100 % (40 °C)	75 % (50 °C)	75 % (60 °C)		

Table continues on the next page.

Colors and paint finish

Overview (continued)

Standard version	Additional identification code -Z with order code						
	S00	S01	S02	S03	S04	S05	S06
Can be coated over ⁷⁾	Can be easily coated over within 1 week						
Pre-treatment of parts	All parts cleaned and degreased, steel and cast-iron parts sand-blasted						
Drying	All layers oven-dried						
Top coat colors	RAL 7030 (stone gray)						
Standard version	RAL 7030 (stone gray)						
Available colors	Alternative standard and special RAL colors must be ordered with order code Y53 or Y56 and the required RAL number specified in plain text (see tables for order codes Y53 and Y56 on the following page for the available RAL numbers/RAL colors). S06 is available only in standard RAL 7030						
Treatment of bare metal areas of shaft extensions and flanges	Coated with anti-corrosion agent that repels water and sweat						

Note:

For transport, the bare parts are coated with anti-corrosion protection that will last for a limited length of time.

Extended corrosion protection for external components (H90)

The corrosion protection of the motor can be extended with option H90 for external components. In conjunction with options for special paints (S00-S06) or other materials such as bolts manufactured out of stainless steel (H07), the corrosion protection can be adapted to special environmental conditions.

When the H90 option is ordered, the motor is implemented as follows:

- Surfaces not visible from the outside are painted with the film thickness ordered (S01-S04)
- Bearing sealing with increased corrosion resistance
- Stainless steel air inlet grille
- For optional mounted components: Cables are routed in protective tubes with increased corrosion resistance

Depending on the level of salinity at the installation location, the following options may have to be ordered:

1. Locations with high salinity or areas with almost continuous condensation (corrosivity category C5-M / C5-I)
 - H90 Increased corrosion protection for external components
 - R53 Undrilled removable entry plate
 - H07 Rust-resistant screws (external)
 - S04 Special paint for use offshore
 - S05 Internal coating
2. Locations with moderate salinity (corrosivity category C4):
 - H90 Increased corrosion protection for external components
 - H07 Rust-resistant screws (external)
 - S03 Special paint finish sea air resistant
 - S05 Internal coating
3. Locations with low salinity (corrosivity category C3):
 - H90 Increased corrosion protection for external components
 - H07 Rust-resistant screws (external)
 - S02 Special paint finish C3
 - S05 Internal coating

1) Machined laminated rotor core, shaft, inner diameter of cast iron housing, internal surfaces of cast iron bearing plates.

2) Total film thickness:

- The film thicknesses represent the average values of the external motor surfaces
- Unpainted or one layer of paint (60 µm) less beneath the fan cover
- Film thicknesses may differ at inaccessible locations (pockets/recesses or bases of ribs)

The film thickness specified for aluminum/cast iron versions not only refers to motors, but also to components such as the bearing plate and enclosure. Motors in a mixed aluminum/cast iron design are also available.

3) n.a.

4) n.a.

5) n.a.

6) n.a.

7) Primers, water-based 2-component epoxy resin paints and polyurethane-based paints can be painted over with paints of the same type if the motors are in the original packaging and are still covered by the warranty. A suitability test should be conducted before any recoating work is undertaken if the customer intends to use a different type of coating to overpaint the motor. Alternatively, a test in accordance with EN ISO 16927 "Testing the overcoatability and recoatability of a coating" can be requested and ordered.

Introduction

General information

Colors and paint finish

Overview (continued)

*Finish in other standard RAL colors -
Order code Y53
(RAL number must be specified in plain text)*

RAL No.	Color name	RAL No.	Color name
3007	Black red	7000	Squirrel gray
5002	Ultramarine blue	7001	Silver gray
5007	Brilliant blue	7004	Signal gray
5009	Azure blue	7011	Iron gray
5010	Gentian blue	7016	Anthracite gray
5015	Sky blue	7022	Umbra gray
5017	Traffic blue	7031	Blue gray
5018	Turquoise blue	7032	Pebble gray
5019	Capri blue	7033	Cement gray
6011	Reseda green	7035	Light gray
6021	Pale green	9005	Jet black

The following low-coverage paints must be applied at least twice owing to their poor opacity. The standard paint finish for these colors is not possible, and must be ordered with **S02**, **S03** or **S04**.

RAL No.	Color name
1002	Sand yellow
1013	Oyster white
1015	Light ivory
1019	Grey beige
2003	Pastel orange
2004	Pure orange
3000	Flame red
5012	Light blue
6019	Pastel green
9001	Cream
9002	Grey white

*Paint finish in special RAL colors –
Order code Y56
(RAL number must be specified in plain text)*

RAL No.	Color name	RAL No.	Color name
3004	Purple red	6034	Pastel turquoise
3011	Brown red	6034	Pastel turquoise
3015	Light pink	7005	Mouse gray
3020	Traffic red	7009	Green gray
4005	Blue lilac	7012	Basalt gray
5000	Violet blue	7015	Slate gray
5001	Green blue	7023	Concrete gray
5003	Sapphire blue	7036	Platinum gray
5005	Signal blue	7037	Dusty gray
5011	Steel blue	7038	Agate gray
5013	Cobalt blue	7039	Quartz gray
5014	Pigeon blue	7040	Window gray
5020	Ocean blue	7042	Traffic gray A
5021	Water blue	7044	Silk gray
5022	Night blue	7045	Telegray 1
5023	Distant blue	7046	Telegray 2
6000	Patina green	7047	Telegray 4
6001	Emerald green	8012	Red brown
6002	Leaf green	8025	Pale brown
6005	Moss green	8028	Terra brown
6009	Fir green	9003	Signal white
6010	Grass green	9004	Signal black
6016	Turquoise green	9006	White aluminum
6017	May green	9007	Gray aluminum
6018	Yellow green	9010	Pure white
6024	Traffic green	9011	Graphite black
6026	Opal green	9016	Traffic white
6029	Mint green	9017	Traffic black
6032	Signal green		

The following low-coverage paints must be applied at least twice owing to their poor opacity. The standard paint finish for these colors is not possible, and must be ordered with **S02**, **S03** or **S04**.

RAL No.	Color name
1003	Signal yellow
1004	Golden yellow
1006	Maize yellow
1007	Daffodil yellow
1012	Lemon yellow
1014	Ivory
1018	Zinc yellow
1021	Colza yellow
1023	Traffic yellow
1028	Melon yellow
1032	Broom yellow
1033	Dahlia yellow
2008	Bright red orange
2009	Traffic orange
2010	Signal orange
3002	Carmin red
5024	Pastel blue
6027	Light green

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

Overview (continued)

EN 60034-1 specifies that the approximate total weight for all motors be indicated on the rating plate.

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

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

An additional rating plate with deviating rating plate data can also be ordered (only for rated data such as voltage, power, speed), order code **Y80**.

An "additional plate for voltage tolerance" can also be ordered. Can be ordered for 400 VΔ/690 VY (voltage code "34").
Order code **B07**

The number of rating plates and/or the material quality of the rating plate including additional plates can be optionally ordered using order codes Y82, Y84 and Y80. This does not apply to order code B07, arrows showing the direction of rotation, PTC thermistor plates and other labels.

- Additional (rating) plate(s),
Order code **M10**.
- Plate(s) resistant to scratching, heat, cold and acid,
Order code **M11** (standard version).

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

Overview of languages on the rating plate

Motor type	Frame size	Rating plate in	
		English (en)	German (de)
1LE5 / 1MB5	400 ... 450	<input checked="" type="checkbox"/>	<input type="checkbox"/>

- Standard version
- No additional price

Other languages on request

The image shows a Siemens motor rating plate with 34 numbered callouts. The plate contains the following information:

- 1** Made in Germany, D-90441 Nürnberg
- 2** 3-Mot. 1AV3164A, 1LE10231DA434AA0-Z, E 1701/1410842 001 001
- 3** IEC/EN 60034 160L 1MB3 IP55
- 4** Th.Cl. 155(F), -20°C <= TAMB <= 45°C, 2000M
- 5** Brake: 2LM8040-5NA10
- 6** RINA, Bearing UNIREX-N3, 230V AC 50/60Hz 1.25A
- 7** DE/ 6209-2ZC3, 20g INTERVAL: 2000h, TH.Cl. 155(F) 40Nm
- 8** NE/ 6209-2ZC3, 20g
- 9** Vibration B 60Hz: SF 1.1 CONT, NEMA MG1 12-12, TEFC DES A 25.0 HP
- 10** Table with columns: V, Hz, A, kW, PF, NOM.EFF, rpm, IE-CL, CL
- 11** KD No. 1234567899111, MAT No. 12345678, Space Heater 230V
- 12** G_D081_DE_00891
- 13** 6, 7, 8, 9, 10, 11, 12, 13
- 14** Maschinenart: Drehstrom-Niederspannungsmotor
- 15** Artikel-Nr.
- 16** Fabriknummer (Ident.-Nr., Seriennummer)
- 17** Bauform
- 18** Schutzart
- 19** Bemessungsspannung [V] und Wicklungsschaltung
- 20** Aufstellhöhe (nur wenn größer als 1000 m)
- 21** Kundendaten (optional)
- 22** Herstelldatum JJMM
- 23** Halbkeilwuchtung
- 24** Code Letter „CL“
- 25** Motor Type Number (MT)
- 26** IEC-Normreihe Leistung 50 Hz (P50/50 Hz) 400 Δ
- 27** IEC-Normreihe Leistung 50 Hz (P50/50 Hz) 690 Δ
- 28** Äquivalente Leistung 60 Hz bei gleicher Ausnutzung wie IEC-Normreihe 50 Hz
- 29** IEC-Normreihe Leistung 60 Hz (P50/60 Hz)
- 30** Herstelleradresse
- 31** Schiffszertifikate
- 32** Angaben optional
- 33** Lagergröße
- 34** Nachschmierdaten optional

Overview (continued)

All SIMOTICS generation motors are equipped with innovative insulating systems, consisting of high-quality enamel wires and insulating sheet materials in conjunction with an impregnation that has a high temperature resistance.

The motors can be operated with SINAMICS G and SINAMICS S converters (controlled and uncontrolled infeed), complying with the permissible voltage peaks as listed in the following table.

Continuous operation while fully utilizing the permissible voltage tolerances must be avoided and is not recommended in accordance with IEC 60034-1 2011 Chapter 7.3.

The preferred supply system configurations are TT systems and TN systems with grounded neutral point. We do not recommend operation on TN systems with transition-point grounding because of the higher voltage stress involved.

Devices can also be operated on ungrounded IT systems. However, when a ground fault occurs, the insulation is excessively stressed. In the case of a ground fault, the process should be terminated as quickly as possible ($t < 2$ h) and the ground fault resolved.

For motors where the connecting cables are brought out (order codes **R21**, **R23** and **R24**) an inquiry is first required regarding converter operation.

Impulse Voltage Insulation Class (IVIC) – category C (high stress)

The insulation system of SIMOTICS motors significantly exceeds the requirements of stress category C (IVIC C = high stress). If voltage peaks higher than those specified according to IVIC C can occur, carefully observe the data in the following table.

- For line voltages (converter input voltage) up to max. 500 V and when controlled from a SINAMICS G/SINAMICS S converter with uncontrolled infeed (BLM, SLM), the relevant guidelines for the motor and converter configuration must be observed.
- For line voltages (converter input voltage) up to max. 480 V and when controlled from a SINAMICS S converter with controlled infeed (ALM), the relevant guidelines for the motor and converter configuration must be observed.
- For line voltages (converter input voltages) higher than those stated above (max. 690 V), motors that are ordered for converter operation must have a suitable insulation system.
- When controlled from a third party converter, the permissible voltage peaks according to IEC 60034-18-41 in accordance with stress category C (see table below) must be complied with, depending on the particular line voltage (converter input voltage) and the motor insulation system.

		Line voltage U_{rated}					
		400 V		480 V		500 V	
Standard		IVIC C Siemens		IVIC C Siemens		IVIC C Siemens	
$U_{\text{phase-ground}}$	$V_{\text{pk/pk}}$	1680	2200	2016	2200	2100	2200
$\hat{U}_{\text{phase-ground}}$	V_{pk}	840	1100	1008	1100	1050	1100
$U_{\text{phase-phase}}$	$V_{\text{pk/pk}}$	2360	3000	2832	3000	2950	3000
$\hat{U}_{\text{phase-phase}}$	V_{pk}	1180	1500	1416	1500	1475	1500

The following applies for the voltage rise time: $T_a > 0.3 \mu\text{s}$

The voltages according to DIN EN 60034-18-41/IVIC-C are specified as peak-to-peak values ($V_{\text{pk/pk}}$). The conventional peak values (V_{pk}) are also specified for information.

Insulation systems for converter operation > 480 V/500 V

Standard SIMOTICS motors can be operated with SINAMICS converters without an additional filter up to a maximum converter input voltage of 3 AC 500 V on uncontrolled infeed units (SINAMICS G/S/V, BLM/SLM) and up to 3 AC 480 V on controlled infeed units (SINAMICS S, ALM). The specific engineering guidelines for motors and converters must be observed.

For higher converter input voltages > 3 AC 480 V/500 V, a special motor insulation system (PREMIUM) is required. This is available for converter motors, such as SIMOTICS GP/SD VSD10, SIMOTICS DP crane motors, SIMOTICS FD and converter-capable SIMOTICS SD Pro motors.

Bearing insulation/shaft grounding brushes for converter operation

For converter operation, bearing insulation at the non-drive end (NDE) must always be used (order code **L51**).

When rotary encoders are used, it must be ensured that these do not bypass the bearing insulation. The rotary encoders in this catalog comply with this requirement except for type 1XP8.

In most cases, NDE bearing insulation provides sufficient protection against damage to bearings due to bearing currents.

In rare cases, depending on the application and system, it may be necessary to take further measures relating to the converter or motor. On the motor side, bearing insulation is available at the drive end (DE) (order code **L50**) and shaft grounding brushes (order code **L52**).

When NDE bearing insulation is used together with DE bearing insulation, the shaft grounding brush option (order code **L52**) must also be selected to maintain the shaft at a defined potential. For this constellation, to avoid damage to the bearings of the driven machine due to bearing currents, it is also necessary to insulate the coupling between the motor and the driven machine.

The EMC guidelines must always be complied with when the drive system is being installed.

Thermal motor utilization

When motors are operated with a converter, additional losses occur due to the harmonics in the motor currents, which, depending on the permissible winding temperature, can make it necessary to reduce the torque. When operated with SINAMICS converters, the permissible torque values can be obtained from the SIZER engineering tool.

When operated with SINAMICS converters with the power ratings specified in the catalog, the motors are utilized 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 **N02** and **N03** cannot be ordered).

Overview (continued)

DURIGNIT IR 2000 insulation

The DURIGNIT IR 2000 insulating system consists of high-quality enamel wires and insulating sheet materials in conjunction with temperature-resistant resin impregnation.

This ensures that these motors have a high mechanical and electrical strength, high utilization value and a long service life. The insulation system protects the winding to a large extent against aggressive gases, vapors, dust, oil and increased air humidity. It can withstand the usual vibration levels. The insulation is suitable up to an absolute humidity of 30 g water per m³ of air. Moisture condensation should be prevented from forming on the winding.

For higher values, options **N30** and **N31** are available – see page 1/10.

An inquiry is required for extreme applications.

Winding and insulation version with regard to temperature class

At rated power and for line operation, the motors can be utilized as follows:

- For Simotics SD Add¹⁾: temperature class 130 (B)
- For Simotics XP¹⁾: temperature class 130 (B)
- For Simotics SD Pro: temperature class 155 (F)

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

For the line operation, all motors with frame sizes 400 and 450 have a service factor of 1.05 at rated power.

Order code **N01**

Temperature class 155 (F), utilized acc. to 155 (F), for higher power

For line operation, when utilized according to temperature class 155 (F), the rated power listed in the selection and ordering data can be increased by 5 %. In this case, the service factor is 1.0.

Order code **N02**

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

For line operation, with the power defined in the catalog, the coolant temperature is permitted to rise to 45 °C. In this case, the service factor is 1.0.

Order code **N03**

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

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

Simotics SD Add¹⁾ / XP¹⁾ motors can be ordered in a version for temperature class 155 (F) for utilization according to temperature class 130 (B) and a maximum coolant temperature of 45 °C with a reduction of the rated power of 4 %. Order code **N05**

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

Simotics SD Add¹⁾ / XP¹⁾ motors can be ordered in a version for temperature class 155 (F) for utilization according to temperature class 130 (B) and a maximum coolant temperature of 50 °C with a reduction of the rated power of 8 %. Order code **N06**

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

Simotics SD Add¹⁾ / XP¹⁾ motors can be ordered in a version for temperature class 155 (F) for utilization according to temperature class 130 (B) and a maximum coolant temperature of 55 °C with a reduction of the rated power of 13 %. Order code **N07**

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

Simotics SD Add¹⁾ / XP¹⁾ motors can be ordered in a version for temperature class 155 (F) for utilization according to temperature class 130 (B) and a maximum coolant temperature of 60 °C with a reduction of the rated power of 18 %. Order code **N08**

Temperature class 180 (H)

For Simotics SD Add / SD Pro motors, utilization according to temperature class 180 (H) is permissible. The rated power is increased by 5 %.

Rating plate data for

- Line operation (DOL): $P_N \cdot 1.05 + SF 1.05$
- Converter operation (VSD): $P_N \cdot 1.05$

Order code **N10**²⁾

Temperature class 180 (H) at rated power and max. CT 60 °C

For Simotics SD Add / SD Pro motors, utilization according to temperature class 180 (H) at rated power and a maximum coolant temperature of 60 °C is possible on request.

Order code **N11**²⁾

Temperature class 155 (F), utilized acc. to 130 (B) with higher coolant temperature and/or installation altitude

The motors can be ordered in a version for temperature class 155 (F) for utilization according to temperature class 130 (B) with other customer-specific requirements if they are specified in plain text when ordering.

Order code **Y50**

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 customer-specific requirements if they are specified in plain text when ordering.

Order code **Y52**

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

Simotics SD Add / SD Pro motors can be ordered in a version for temperature class 180 (H) for utilization according to temperature class 155 (F) with other customer-specific requirements if they are specified in plain text in the order.

Order code **Y75**²⁾

1) Not applicable for 8-pole motors, frame size 450. Utilization acc. to temperature class 130 (B) only possible on request and when specifying order code Y50.

2) Order code for Simotics XP explosion-protected motors not available.

Overview (continued)

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

A motor version for increased humidity in the range between 30 and 60 g water per m³ air depending on the temperature, as shown in the following table, can be ordered.

Order code **N30** (includes order code **H03**, closed condensation drain holes, **M11**, stainless steel rating plate and **S02** standard/special paint finish for Performance Line cast iron motors). The use of non-rusting screws is recommended.

An inquiry is required if order code **N30** is to be combined with mounted components (e.g. rotary pulse encoders or brakes).

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

The motors are available in a version designed for increased air humidity of over 60 to 100 g water per m³ of air, depending on the temperature, as shown in the table below. This version contains condensation drain holes (closed) order code **N31** (includes order code **H03**, closed condensation drain holes, **M11**, stainless steel rating plate and **S02** standard/special paint finish or **S03** "special paint sea air resistant" for Performance Line cast iron motors). The use of non-rusting screws is recommended.

An inquiry is required if order code **N31** is to be combined with mounted components (e.g. rotary pulse encoders or brakes).

Converting between absolute and relative humidity

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

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

The values in the table with a light gray background are covered by order code **N30** (30 to < 60 g of water per m³ of air).

The values in the table with a dark gray background are covered by order code **N31** (60 to < 100 g of water per m³ of air).

Please inquire about requirements exceeding 100 g water per m³ of air.

Note:

- Information about the coolant temperature and installation altitude can be found from Page 1/11 and higher!
- For Simotics 1LE5 / 1MB5 motors in frame sizes 400 / 450, a metal fan cover is always used as standard.
- In case of increased thermal stress, please combine with order codes **N05** to **N08**.
- In conjunction with more stringent requirements for the paint finish and/or corrosion protection (offshore, sea air, etc.), the corresponding order codes **S02**, **S03**, **S04**, and possibly **H07**, must be combined!
- Order code **N31** requires additional data relating to the ambient temperature CT 50 °C to CT 90 °C.

Overview (continued)

The specified rated power is applicable for continuous duty in accordance with IEC 60034-1 at a frequency of 50 Hz, a coolant temperature (CT) or ambient temperature of 40 °C and an installation altitude (IA) up to 1000 m above sea level. The motors for ambient temperatures exceeding > 40 °C are equipped with various types of seal. Mounted components such as brake, terminal box at the 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 installation altitudes greater than 1000 m above sea level, the specified motor power must be reduced using the factor k_{HT} .

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

The permissible power of the motor is obtained as follows:

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

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

Code	Description	Unit
P_{adm}	Admissible motor power	kW
P_{rated}	Rated power	kW
k_{HT}	Factor for abnormal coolant temperature and/or installation altitude	

The motors are designed for temperature class 155 (F) and utilized according to temperature class 130 (B). If this utilization is to be kept, for different conditions, the permissible power must be determined based on the following table.

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

Installation altitude above sea level	Coolant temperature					
	< 30 °C	30 ... 40 °C	45 °C	50 °C	55 °C	60 °C
1000	1.07	1.00	0.96	0.92	0.87	0.82
1500	1.04	0.97	0.93	0.89	0.84	0.79
2000	1.00	0.94	0.90	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 installation altitude are rounded to 5 °C and 500 m respectively.

For derating for utilization according to temperature class 155 (F), see "DURIGNIT IR 2000 insulation system".

Motors for coolant temperatures other than 40 °C or installation 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 higher derating levels, the operating data for the motors, i.e. efficiency and power factor, will also be less favorable as a result of the partial utilization.

The following special versions are possible for motors:

- Motors for coolant temperatures from -50 to +40 °C, order code **D02**
- 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 mounted components, the respective technical specifications have to be observed and an inquiry is necessary.

For order codes for utilization according to temperature class 155 (F), see "DURIGNIT IR 2000 insulation system" under "Windings and insulation" on p 1/9.

Ambient temperature:

All standard motors can be operated in ambient temperatures between -20 and +40 °C. Exposure to direct sunlight can result in an uncontrollable rise in the motor temperature. To prevent this, we recommend the appropriate shielding, for example a canopy to protect against the sun.

Utilization according to temperature class 155 (F) up to 40 °C is realized using a service factor of 1.05, i.e. the motor can be continuously overloaded with 5% of the rated power.

When motors are used according to temperature class 130 (B) and higher ambient temperatures and/or installation altitudes, derating is applied in accordance with the Table "Reduction factor k_{HT} for different installation altitudes and/or coolant temperatures".

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

For other temperatures, special measures are necessary. An inquiry is required when brakes are to be mounted on motors intended for operation at temperatures below freezing.

Overview (continued)

Anti-condensation heating

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

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

Supply voltage 400 V (1 AC)
Order code **Q06**

Anti-condensation heaters must be used for motors with windings where there is a risk of condensation due to the climatic conditions, e.g. non-operational motors in humid atmospheres or motors that are subject to widely fluctuating temperatures. An additional cable entry is provided for the connecting cable in the terminal box.

Motor series	Frame size	Cable entry
Cast iron motors (SD)	400 ... 450	2 × M20 × 1.5

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

Frame size	Heat output of the anti-condensation heating		
	Supply voltage at 230 V	115 V (110 V)	400 V
	Order code Q02	Order code Q03	Order code Q04
	W	W	W
Motors 1LE5			
400 ... 450	240	240	370

Instead of an anti-condensation heater, another alternative 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 the rated motor current is normally sufficient to provide an adequate temperature rise.

Fans/separately driven fans

All motors with 4 or more poles have radial-flow fans in the standard version (with the exception of option **F90** – version "Force-ventilated motors without external fan and fan cover") that cool regardless of the direction of rotation of the

motor (cooling method IC411 acc. to EN 60034-6). Standard 1LE5 motors with 2 poles are cooled with unidirectional axial fans. For all motors, the air flows from the non-drive end (NDE) to the drive end (DE).

Supply voltage for separately driven fan for motors:
The supply voltage tolerance of the separately driven fan is ±5%. In confined spaces, it must be ensured that a minimum space is maintained between the fan cover and the wall. This also applies to adjacent parts, such as large handwheels and flywheels on the second shaft extension.

Clearance between the wall and fan grilles

Frame size	mm
400 ... 450	150

See the table below for fan and fan cover versions.

Motor series poles	Frame size	Number of poles	Fan material	Fan cover material
1LE55 / 1MB55	400 ... 450	4, 6, 8	Plastic	Metal
		2	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 motors (with the exception of motors with option **F90** – version "Force-ventilated motors without external fan and fan cover"). A metal external fan is always used for the low-noise version. For 2-pole versions with frame sizes 400 and 450, the metal external fan impeller is made of aluminum. Order code **F76**

Sheet metal fan cover

For 1LE5 / 1MB5 motors (with the exception of 1LE5 / 1MB5 with option **F90** – version "Force-ventilated motors without external fan and fan cover"), a sheet metal fan cover is used as standard.

Minimum cooling air flow required for force-ventilated motors in standard duty

The cooling air flow specified in the selection table applies for continuous duty according to EN 60034-1 at a coolant temperature (CT) or ambient temperature of 40 °C respectively and an installation altitude (IA) up to 1000 m above sea level. For motors without an external fan and without

fan cover, order code **F90**, the motor is located in the air flow of the driven fan, which must drive the minimum cooling air flow over the motor housing. The minimum air flow must be routed closely over the motor frame (comparable to self-ventilation of the motor). Otherwise, higher air flows are required to comply with permissible motor temperature rise levels!

Frame size	Required cooling air flow for number of poles							
	2		4		6		8	
	IE3/IE4							
	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz
	m ³ /min	m ³ /min	m ³ /min	m ³ /min	m ³ /min	m ³ /min	m ³ /min	m ³ /min
400	1.2	1.4	1.3	1.6	1.7	2.0	1.3	1.6
450	1.5	1.8	2.1	2.5	1.5	1.8	1.2	1.4

Overview (continued)

Position of the terminal box

The motor terminal box can be mounted in four different locations or positions (see from Page 2/5). The position of the terminal box is coded using the 16th position of the motor Article No.

The following must be observed when defining the position of the terminal box:

- Motors with mounting feet must always be viewed looking onto the drive end (DE) with the shaft in the horizontal position. The feet are then always at "6 o'clock". This is especially important for types of construction IM B6, IM B7 and IM B8, and also applies to combined types of construction such as IM B35.
- Flange-mounted motors (e.g. IM B5) whose drive end (DE) flange has a condensation drain hole must always be viewed looking onto the drive end (DE) with the shaft in the horizontal position. The condensation drainage hole is then always at "6 o'clock".

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 operating connection must match the phase conductor voltages of the line supply.

When the three phases are operating in phase sequence and are connected to the terminals of the motor in alphabetical order U1, V1 and W1, the motor shaft rotates clockwise when viewing the drive end. The direction of rotation of the motor can be changed to counterclockwise if two connecting cables are interchanged.

Labeled terminals are provided to connect the protective conductor.

A protective conductor terminal is provided in the terminal box for grounding.

External grounding terminal/external grounding is standard for 1LE5 / 1MB5 motors with frame sizes 400 to 450.

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

If a brake control system or thermal protection is being used, the connections are also provided in the terminal box. The motors are suitable for direct connection to the line supply.

Design of the terminal box

The number of terminals and the size of the terminal box are designed to address standard requirements.

For special requirements - or when requested by customers - the largest terminal box 1XB7750 can be supplied.

Larger terminal box: Order code **R50**

When the terminal box is located on the left or right-hand side in conjunction with a cable entry that is not aligned toward the enclosure feet, it must be noted that the motor connecting cables can collide with the foundation. This must be taken into account during the configuration.

If, as a result of the overall design, the motor mounting position would cause machine components to collide with the terminal box, the terminal box can be moved from the drive end (DE) to the non-drive end (NDE). Dimension drawings can be called up via the DT Configurator. Order code **H08**

Connecting motors

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:

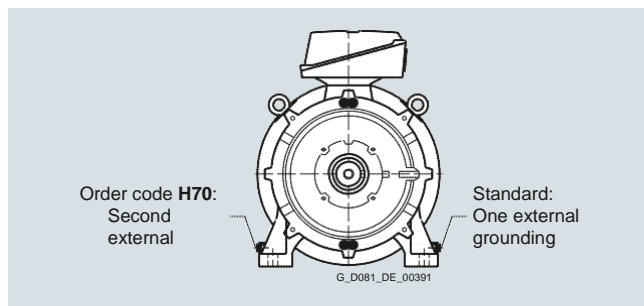
- The max. cable cross-section which can be connected
- The cable type
- The cable routing
- The ambient temperature and the corresponding admissible current in accordance with DIN VDE 0298.

For motors with auxiliary terminals (e.g. 15th position of the Article No. letter B), additional cable entry holes are provided (M16 x 1.5 or M20 x 1.5 depending on frame size). For additional details, see the data sheet function in the DT Configurator.

The terminal box is screwed onto the motor enclosure. The terminal box can optionally be subsequently rotated.

Order code **R09**

Information on rotating the terminal box is provided in the Operating Instructions.



Overview (continued)

Parallel feeder cables

Some motors must be equipped with parallel feeder cables due to the maximum permissible current per terminal. These motors are appropriately marked in the selection and ordering data in the respective chapter.

Temperature rises in the terminal box must be taken into account when selecting the connecting cable or individual connections.

These are approximately:

- Range of ambient temperature (T_{amb}) +50 K for motors with temperature Class 155 (F).
- Range of ambient temperature (T_{amb}) +60 K for motors with temperature Class 180 (H).
- If there is no data in field 19 (T_{amb}) on the rating plate, T_{amb} is equal to 40 °C.

The terminal box can be rotated on the base of the motor enclosure such that the cable entry is located at the positions listed below:

- Toward the drive end (DE) (rotation of terminal box through 90°, entry from DE) for flange-mounted motors (IM B5, IM B35, and IM V1) only possible with order code **H08!**
- Toward the cooling end (NDE) (rotation of terminal box through 90°, entry from NDE)
Order code **R11**
- Opposite the standard position 0° (rotation of terminal box through 180°, entry opposite the standard position 0°) Order code **R12**

The dimensions of the terminal box are listed in the section "Dimensions" on Pages 2/32 and 2/33 in accordance with the frame size and the "Dimension drawings".

If the position of the terminal box (right-hand side, left-hand side, or top) is changed, the position of the cable entry must be checked and, if necessary, ordered with the corresponding order codes (**R10**, **R11**, and **R12**).

Restrictions may apply depending on the terminal box type, type of construction, terminal box position and direction of cable entry. More detailed information is provided on Page 1/17.

Position of the cable entries with the corresponding order codes

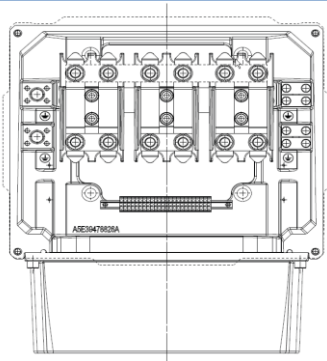
Motor	Frame size	Terminal box	Terminal box position											can be subsequently changed over
			top left	top right	45° left	45° right	90° right	90° left	bottom	-90°	+90°	180°		
			16th position of Article No. and with order code, Article No. with -Z						Article No. with -Z and Order code					
			0	1	2	3	5	6	9	R10 ²⁾	R11	R12		
T _{v06} 1LE5 / 1MB5	400	T _{v06} TB3R61	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	no ¹⁾	
	450	TB3R61	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	no ¹⁾	

¹⁾ Only possible with order code R09

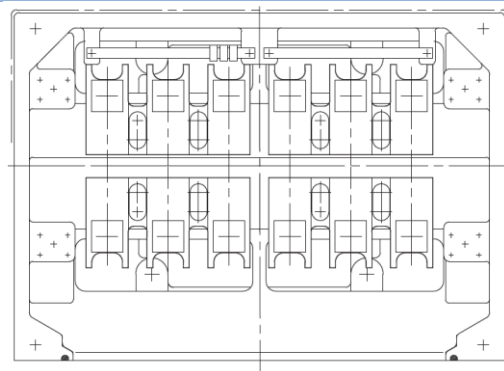
²⁾ Only possible for flange with order code H08

Overview (continued)

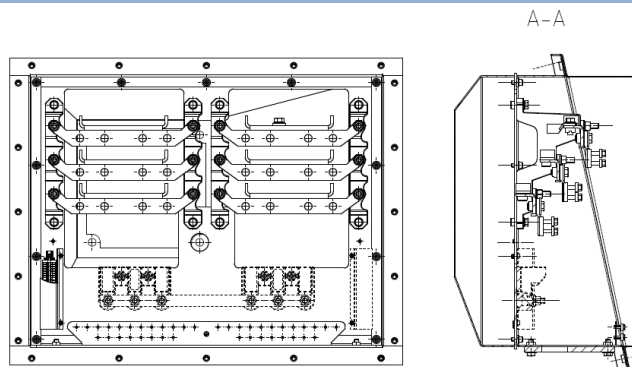
Terminal box type TB3R61



Terminal box type 1XB1631



Terminal box type 1XB7750



Technical data for motor terminal boxes

Frame size	Terminal box 1)	Number of terminals	Contact screw thread	Max. connectable cross-section mm ²	Outer cable diameter (sealing range) mm	Cable entry 2)
	Standard/larger (order code R50)					
1LE55 / 1MB55						
400 ... 450	TB3R61/1XB7750	12	M16	240	56 ... 64.5	4 × M80 × 2
400 ... 450	1XB1631/1XB7750	12	M16	300	56 ... 64.5	4 × M80 × 2
400 ... 450	-/1XB7750	48	M12	300	41 ... 57	8 × M72 × 2

Terminal connection

The terminal board supports the terminals that are connected with the cables to the motor windings.

The terminals are designed so that the external (line supply connection) can be established with cable lugs, or optionally without cable lugs.
Order code **R19**.

1) When ordering spare parts and repair parts, in addition to the exact part designation, always specify the motor type and the serial number.

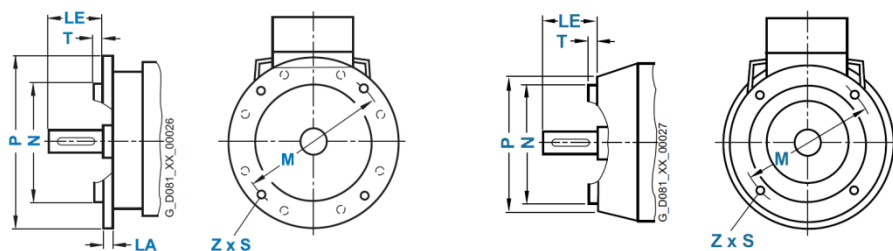
2) Designed for cable glands with O-ring.

Overview (continued)

Standard types of construction and special types of construction

Type of construction acc. to EN 60034-7	Frame size	Letter 14th position of the Article No.	Additional identification code –Z with order code
Without flange			
IM B3/IM 1001	400 to 450	A	–
IM V5/IM1011 without protective cover	400 to 450 On request	C	–
IM V6/IM 1031	400 to 450 On request	D	–
IM V5/IM 1011 with protective cover	400 to 450 On request	C	+ H00 1)
With flange			
IM B5/IM 3001 with support foot	400 to 450	F	–
IM V1/IM 3011 without protective cover	400 to 450	G	–
IM V1/IM 3011 with protective cover	400 to 450	G	+ H00 1)
IM B35/IM 2001	400 to 450	J	

1) Standard cylindrical shaft extension (second shaft extension) **L05** is not possible.



In IEC 60072-2, flange FF and, in DIN 42948, flange A with through holes are assigned to frame sizes. The dimensions of the flanges conform to DIN 42948. Difference with respect to IEC 60072-2: Dimension S is 28 mm in each case. See the assignment table below (Z = the number of mounting holes)

Frame size	Type of construction	Flange type	Flange with through holes (FF/A)		Dimension designation acc. to IEC									
			acc. to IEC 60072-2	acc. to DIN 42948	LA	LE	M	N	P	S	T	Z		
400 for 1LE5 / 1MB5	2-pole 4-pole 6-pole 8-pole	Flange	FF940	A 1000	28	170	940	880	1000	22	6	8		
						210								
450 for 1LE5 / 1MB5	2-pole 4-pole 6-pole 8-pole	Flange	FF1080	A 1150	30	170	1080	1000	1150	26	6	8		
						210								

Overview (continued)**Bearing lifetime (nominal lifetime)**

The nominal bearing lifetime is defined according to standardized calculation procedures (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.

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 operation at higher frequencies.

To achieve the calculated lifetime in continuous duty, for the admissible vibration values measured at the bearing plate, evaluation zones A and B specified in ISO 10816 apply. B. If higher vibration velocities occur under the operating conditions, then special measures must be applied (please inquire).

Due to their physical characteristics, variable-speed motors have a different bearing lifetime under the same load conditions. This relationship is linear, i.e. if the frequency increases by 20 % from 50 Hz to 60 Hz, the lifetime decreases by 20 % from 20,000 to 16,000 hours under the load conditions specified in the catalog. If the frequency decreases by 20 % from 50 Hz to 40 Hz, under the load conditions specified in the catalog, the lifetime increases by 20 % from 20,000 to 24,000 hours.

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

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

The bearing system is axially preloaded with a spring element at the non-drive end (NDE) to ensure smooth running of the motor without any play (see Fig. 1 under the bearing diagrams Page 1/19).

If required, the locating bearing can be fitted at the non-drive end (NDE).

Order code **L21**

For increased cantilever forces (e.g. belt drives), reinforced bearings can be used at the drive end (DE). Versions with cylindrical roller bearings are not axially preloaded, and must always operate under adequate radial loads (it is not permissible that motors are operated on a test stand without additional radial loads). The locating bearing is at the the non-drive end (NDE).
Order code **L22**

1LE5 motors can be supplied with reinforced bearings (size range 03) at both ends.

In this case, the bearing plates are made of cast iron.

Order code **L25**

A measuring nipple for SPM shock pulse measurement can be mounted to check bearing vibration levels. The motors have an M8 tapped hole for each bearing plate and a measuring nipple with a protective cap. If a second tapped hole is provided, then it is fitted with a sealing cap.

Order code **Q01**

Bearing insulation

To prevent damage caused by bearing currents, for converter operation, insulated bearings are absolutely necessary for frame sizes 400 ... 450.

- **L50** (bearing insulation DE)
- **L51** (bearing insulation NDE)
- **L50 + L51** (DE and NDE bearings insulated)
- Combination of order codes **L50** or **L51** or **L50 + L51** with **L22** (bearing version for increased cantilever forces)

In the case of DE bearing insulation (order code **L50**) + NDE bearing insulation (order code **L51**), the user is responsible for ensuring that the rotor is grounded.

The rotor can be grounded either on the system side via the coupled driven machine - or on the motor side using a grounding brush.

A grounding brush (order code **L52**) must always be provided when the driven machine is connected to the motor via an insulating coupling or an insulating belt output shaft.

Relubrication

For motors that can be regreased, using 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.

For frame sizes 400 to 450, a regreasing device with a flat lubricating nipple DIN3404-AM10x1-5.8-A is provided as standard.

For frame sizes 400 to 450, a regreasing device with a tapered lubricating nipple DIN71412-AM10x1-5.8 can be optionally ordered.
Order code **L19**

For 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".

Mechanical stress and grease service life

High speeds that exceed the rated speed with converter operation and the resulting increased vibration levels impact the mechanical running smoothness and the bearings are subject 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 operation in particular, compliance with the mechanical limit speeds n_{max} at the maximum supply frequency f_{max} is essential, see the following table "Mechanical limit speeds n_{max} at the maximum supply frequency f_{max} ".

Overview (continued)

Mechanical limit speeds n_{max} at maximum supply frequency f_{max} (standard values) for motors - basic version

Frame size	Type	2-pole		4-pole		6-pole		8-pole	
		n_{max} rpm	f_{max} Hz	n_{max} rpm	f_{max} Hz	n_{max} rpm	f_{max} Hz	n_{max} rpm	f_{max} Hz
1LE5 / 1MB5 – basic version									
1LE55... / 1MB55...-									
400	4A... IM B3	3600	60	2200	74	2200	110	2200	147
450	4B... IM B3	3000 / 3600 ²⁾	50	2100	70	2100	105	2100	140
400	4A... IM V1	-	52	2100	70	2100	105	2100	140
450	4B... IM V1	-	-	1800	60	1800	90	1800	120

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

Grease lifetime and regreasing intervals for horizontal installation

Motor series	Frame size	No. of poles	
Regreasing 1)			
CT≤40°C			
1LE5 / 1MB5	400	2	4000 h
		4 ... 8	6000 h
	450	2	3000 h
		4 ... 8	6000 h

Bearing assignment table for motors – basic version

The bearing assignment table is only intended for planning purposes. Binding information on the actual type of bearings fitted in motors already supplied can be obtained from the factory by quoting the serial number or can be taken from the rating plate.

Bearing assignment table for motors (basic version)

Frame size	No. of poles	Drive end (DE) bearing		Non-drive end (NDE) bearing		Fig. No. on page 1/19
		Horizontal and vertical type of construction		Horizontal and vertical type of construction		
1LE5 / 1MB5						
400	2	6218 C3	7218 B + 6218 C3	6218 C3	6218 C3	Fig. 6 and Fig. 7
	4, 6, 8	6224 C3	7224 B + 6224 C3	6224 C3	6224 C3	Fig. 6 and Fig. 7
450	2	6220 C3	-	6220 C3	-	Fig. 6
	4, 6, 8	6226 C3	7226 B + 6226 C3	6226 C3	6226 C3	Fig. 6 and Fig. 7

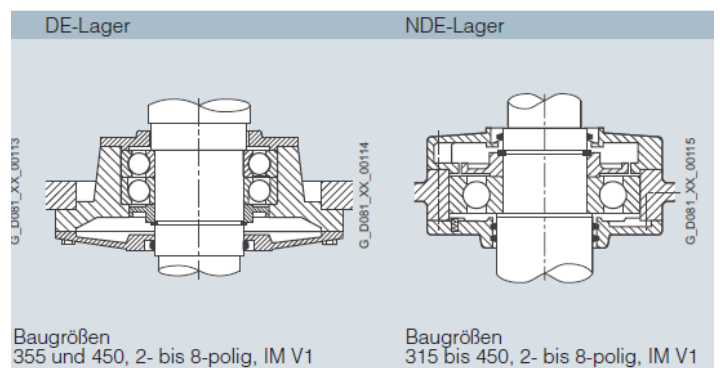
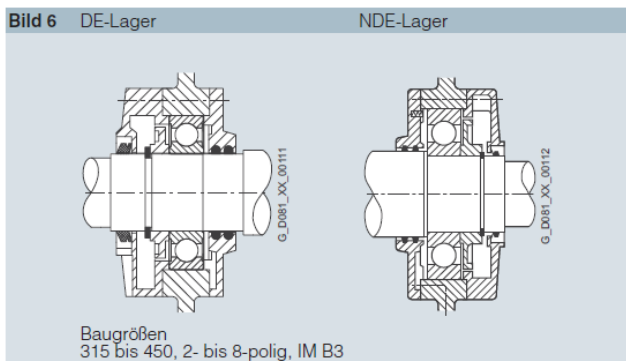
Bearing assignment table for motors (bearings reinforced at both ends – order code L25)

Frame size	No. of poles	Drive end (DE) bearing		Non-drive end (NDE) bearing		Fig. No. on page 1/19
		Horizontal and vertical type of construction		Horizontal and vertical type of construction		
1LE5 / 1MB5						
400	2	O.R.	O.R.	O.R.	O.R.	Fig. 6 and Fig. 7
	4, 6, 8	6326 C3	O.R.	6326 C3	O.R.	Fig. 6 and Fig. 7
450	2	O.R.	-	O.R.	-	Fig. 6
	4, 6, 8	6326 C3	O.R.	6326 C3	O.R.	Fig. 6 and Fig. 7

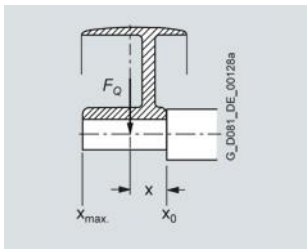
- 1) If the coolant temperature is increased by 10 K, the grease lifetime and regreasing interval are halved.
- 2) Ordered with additional price.

Overview (continued)

Bearing diagrams



Admissible cantilever forces



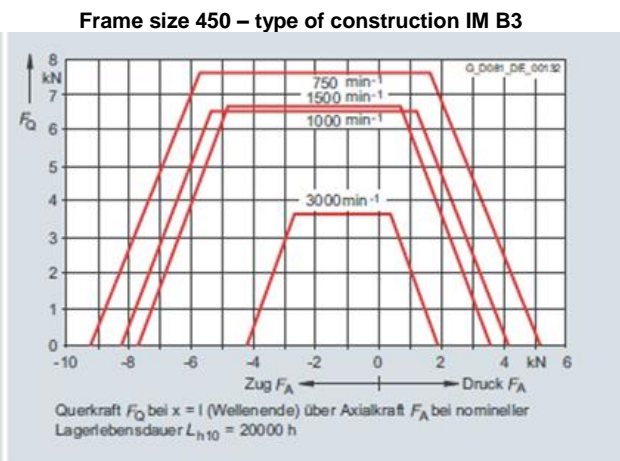
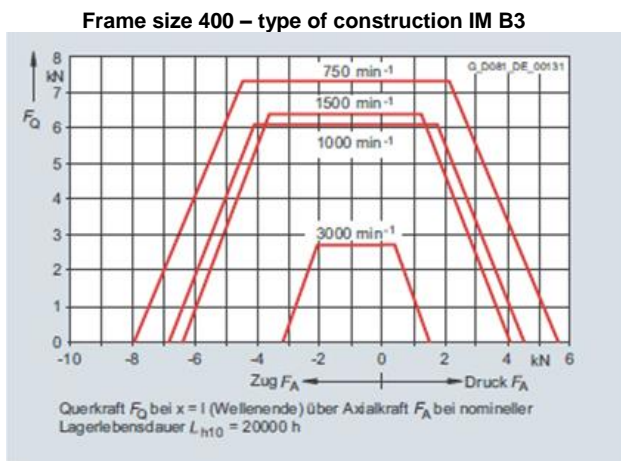
In order to calculate the admissible cantilever forces for a radial load, the line of force (i.e. the centerline of the pulley) of the cantilever force F_Q (N) must be within the free shaft extension (dimension x).

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

Total cantilever force $F_Q = c \cdot F_u$

Permissible cantilever forces at 50 Hz – basic version

For motors in a horizontal type of construction, the maximum cantilever forces are specified as a function of the axial forces. See diagrams.



Permissible cantilever forces at 50 Hz – bearings for increased cantilever forces – Order code L22

For all motors of frame size 400 and 450 in the horizontal and vertical types of construction, on request. Please specify cantilever force and lever arm.

Preload 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 power (transmitted power) in kW

n rated motor speed in rpm

D pulley diameter in mm

Overview (continued)

Admissible axial load

Motors in a vertical type of construction - basic version

For motors in a horizontal type of construction, the maximum cantilever forces are specified as a function of the axial forces, see Page 1/20. The values shown do not assume a cantilever force applied to the shaft extension. The admissible loads are valid for operation at 50 Hz; please inquire for 60 Hz.

The calculation of the admissible axial load was based on a drive with commercially available couplings. For suppliers, see Section "Accessories" in the respective part of the catalog.

Please inquire if the load direction alternates.

	2-pole 6-pole		4-pole 8-pole	
	Load downward downward N	upward upward N	downward downward N	upward upward N
1LE5 / 1MB5				
403	8200	11600	5500	15900
	3200	19200	4100	20400
405	7800	12000	5200	16300
	2600	20000	3300	21200
407	7400	12400	4700	17100
	2300	20900	2400	22100
453	6500	13300	7400	20100
	5200	23300	6200	24600
455	6200	13700	7000	20800
	4800	24300	5300	25500
457	5700	14200	6200	21600
	4100	25400	4300	26600

External fan

The use of a separately driven fan is recommended to increase motor utilization at low speeds or to limit noise levels at speeds significantly higher than the synchronous speed. Both of these can only be achieved with converter operation. An inquiry is required for traction drives and drives with high vibration levels.

The separately driven fan can be supplied already fitted, order code **F70**. There is no automatic adjustment of the voltage for the separately driven fan when ordering a "special voltage" for the motor. This must be additionally specified using option **Y81**.

It can also be ordered separately and retrofitted. For assignment and article numbers, see Section "Accessories" (available soon). A rating plate listing all the important data is attached to the separately driven fan. Please note the direction of rotation of the separately driven fan (axial-flow fan) when connecting it. Admissible coolant temperatures $CT_{min} -25\text{ °C}$, $CT_{max} +40\text{ °C}$, lower/higher coolant temperatures are available on request.

When the separately driven fan is mounted, the length of the motor increases by Δl .

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

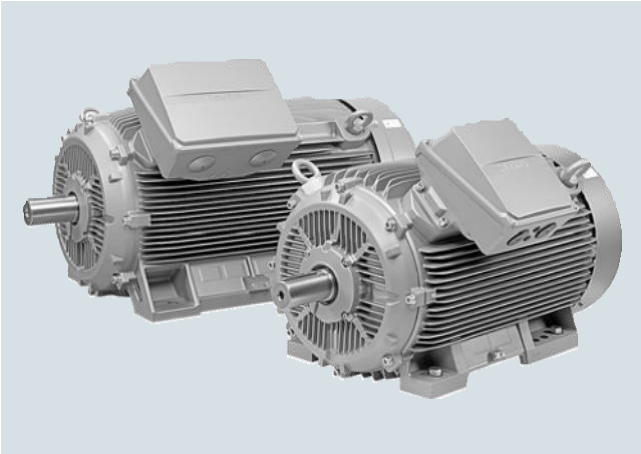
Technical data of separately driven fans (according to tolerance EN 60034-1)					
Frame size	Rated voltage range		Frequency	P_{max}	I_{max}
400	3 AC	200 to 240 Δ	50	2.2	7.70
2, 4, 6, 8	3 AC	380 to 420 Y	50	2.2	4.45
	3 AC	440 to 480 Y	60	2.54	4.35
-pole	3 AC	200 to 240 Δ	50	4.0	14.0
	3 AC	380 to 420 Y	50	4.0	8.0
	3 AC	440 to 480 Y	60	4.55	7.9

SIMOTICS SD standard motors next generation



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	• 1LE5583

Overview



The SIMOTICS SD next generation is a new scalable generation of low-voltage motors. With their impressive performance and the additional versatility in their range of applications, this new motor series is the beginning of future-proof drive technology.

In addition to the future topics of digitalization and energy efficiency, this motor generation was developed with the focus on design optimization, which has resulted in a very compact motor with a high power density. A standardized range of options and the variable terminal box concept also enable flexible use of the motors in different system configurations and applications. The fact that the motors can either be operated on the line supply or with a converter is part of their versatility.

The following versions are available in the new 1LE5 motor series, differentiated by their performance features and functionality:

- **SIMOTICS SD Add**

The characteristic product feature of the SIMOTICS SD Add are the low starting currents. These not only meet industry-specific specifications, above all, in process industries, but also have a positive impact on the operating quality (higher power system stability, lower thermal load, increased motor lifetime). With the availability of country-specific certificates, these motors can be operated in all the important global regions and markets.

- **SIMOTICS SD Pro**

The SIMOTICS SD Pro range is characterized by its extremely flexible concept, which makes it universally deployable, in any plant, in any country in the world. Line and converter operation are generally possible up to 690 V; all important global, country and sector-specific certificates are available. In addition, - depending on the frame size - additional combinations of features further increase the flexibility. For SIMOTICS SD Pro frame sizes 315 – 355, which are above all used in the series business and are characterized by high starting and breakaway torques, this flexibility is manifested particularly through multi-voltage capability and efficiency stability irrespective of the line frequency 50Hz/60Hz. SIMOTICS SD Pro, frame sizes 400 – 450, have low starting currents. This version is focused more on project business and is primarily used in this power range for converter operation up to 690V.

A decisive advantage of the motors of the SIMOTICS SD next generation series is the possibility of digital communication. This results in many advantages not just for engineering but over the product lifecycle.

SIMOTICS Digital Data App – access to motor data at any time

The freely available SIMOTICS Digital Data App with frame sizes 315 and 355 already enables access to all motor-specific data and documents (electrical and mechanical data, dimension drawings, operating instructions, spare part information, etc.) by reading in the data matrix codes provided on every motor as standard. This increases transparency and makes commissioning and service easier.

SIMOTICS SD Next Generation – the first motors to have an interface with the digital world

SIMOTICS SD next generation motors with frame sizes 315 and 355 will be the first low-voltage motors to support Cloud-based condition data analysis via MindSphere and MindApp with SIMOTICS CONNECT in the near future. The motors have the basis for preventive maintenance and fast service, which further increases the availability and productivity of your plant or system.

■ Benefits

- Rugged design with a cast iron enclosure increases reliability and availability.
- Compact dimensions/high power density mean that these motors can even be used in confined spaces.
- High energy efficiency when connected directly to the line supply (IE3, IE4) and when controlled from a converter (IES2) enable energy-saving operation.
- A standardized range of options and a variable terminal box concept mean that the motors can be more flexibly adapted to address the requirements of the application.
- The number of different versions is reduced as these motors are suitable for line and converter operation.
- Provision of comprehensive CAD data simplifies the design and engineering phase.

Range of applications

SIMOTICS SD next generation motors are ideal for use in a large number of standard applications, such as

- Pumps, fans, compressors
- Conveyors
- Winders
- Mixers
- Extruders
- Cranes

They are predestined for use in industries such as

- Mining, cement
- Chemical industry
- Oil and gas
- Steel industry
- Water, waste water
- Heating, ventilation and air conditioning (HVAC)
- Pulp and paper industry
- Marine engineering

Technical specifications

Converter operation

The motors are suitable for line operation and optionally for converter operation (bearing insulation NDE, order code **L51**). The values specified in the selection tables apply for pure sinusoidal supplies.

Rated voltage

For the rated voltage, the tolerance according to DIN EN 60034-1 always applies and a rated voltage range is not specified.

Motor protection

A motor protection function can be implemented using the I²t sensing implemented in the converter software.

If required, more precise motor protection can be provided by directly measuring the temperature using KTY84 sensors, PT100 / PT1000 resistance thermometers or PTC thermistors in the motor winding. Some Siemens converters determine the motor temperature by means of the temperature sensor resistance. They can be set to a specified temperature for alarm and tripping.

Bearings

To avoid damage caused by bearing currents, insulated bearings (L51) must be ordered.

When operating multiphase induction motors with a converter, the bearings are electrically stressed as a result of a capacitively induced voltage across the bearing lubricating film (as a result of the inherent principle of operation). The physical cause of this is the common-mode voltage at the converter output that is inherent to the control principle generally used for converters: the sum of the 3 phase voltages is

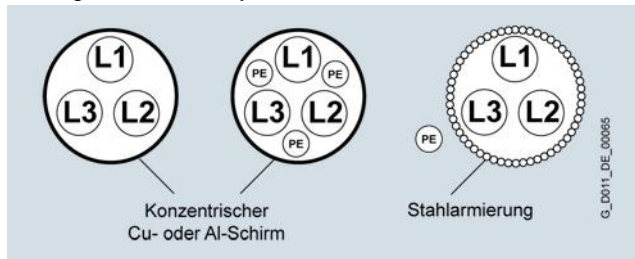
– contrary to pure line operation – not equal to zero at every point in time. The high-frequency, pulsed common-mode voltage results in a residual current that flows back to the converter DC link via the internal capacitances of the motor, the motor enclosure and the grounding circuit. The internal capacitances of the motor include the main insulation winding capacitance, the geometric capacitance between the rotor and stator, the lubricating film capacitance and the capacitance of any bearing insulation that may be present. The current flowing through the internal capacitances is proportional to the gradient, i.e. the voltage change of the common-mode voltage ($i(t) = C \cdot du/dt$).

A high clock frequency of the converter output voltage is required to supply the motor with currents that are as sinusoidal as possible (smooth running, oscillating torques, stray losses). The associated (very steep) switching edges of the converter output voltage (and also, therefore, of the common-mode voltage) cause correspondingly high capacitive currents and voltages at the internal capacitances of the motor.

In the worst-case scenario, the capacitive voltage induced via the bearing can lead to random arcing through the bearing lubricating film, thus causing premature bearing aging or damage. (The current pulses caused by the arcing across the lubricating film are referred to as EDM (Electrostatic Discharge Machining) currents in the literature.)

This physical effect, which occurs in isolated cases, has mostly been observed in connection with larger motors. EMC-compliant installation of the drive system is a basic prerequisite for preventing premature bearing damage as a result of bearing currents. The most important measures for reducing bearing damage.

- Insulated bearing at the non-drive end (NDE) (order code L51)
- Using cables with a symmetrical cable cross-section.

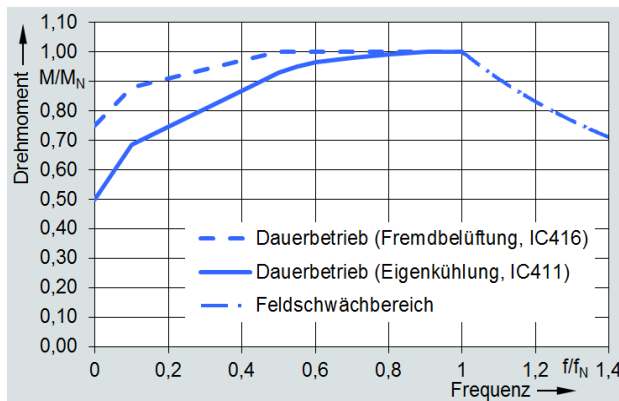


- Connecting to a line supply with isolated neutral point (IT system) as the preferred line system
- Using grounding cables with low impedance over a wide frequency range (DC up to approximately 70 MHz): for example, flat braided copper straps, HF finely stranded wires
- Separate HF equipotential bonding cable between the motor enclosure and driven machine
- Separate HF equipotential bonding cable between the motor enclosure and converter PE busbar
- 360° HF contact of the cable shield at the motor enclosure and converter PE busbar. This can be achieved using EMC glands at the motor and EMC shield clips at the converter, for example
- Using motor reactors at the converter
- Common-mode filters at the converter output

Thermal torque limits

In the case of self-ventilated motors, the thermally admissible load torques are reduced for continuous operation for speeds below the rated speed. This must be taken into account for applications, especially those that do not have a square law load torque. Also in the case of force-ventilated motors (order code F70), the maximum load torques are reduced slightly for high speed ranges.

When motors are operated at speeds above their rated speed (in the field-weakening range), the maximum load torque is also reduced.



Standard SIMOTICS SD next generation motors

Orientation

Configuration

Terminal box positions

Standard DE, all positions optional, also at NDE; order code **H08**

Standard

rotated 180°

rotated 90°, cable entry DE

rotated 90°, cable entry NDE

1LE5...-.....-... ■

1LE5...-.....-... ■ -Z ■ ■ ■

1LE5...-.....-... ■ -Z ■ ■ ■

1LE5...-.....-... ■ -Z ■ ■ ■



6¹⁾

6 R 12

6 R 10³⁾

6 R 11



2

2 R 12

2 R 10³⁾

2 R 11



0^{2) 4)}

0 R 12⁴⁾

0 R 10^{3) 4)}

0 R 11⁴⁾



1⁴⁾

1 R 12^{2) 4)}

1 R 10^{3) 4)}

1 R 11⁴⁾



3

3 R 12

3 R 10³⁾

3 R 11



5¹⁾

5 R 12

5 R 10

5 R 11

For footnotes, see next page.

Configuration (continued)

Terminal box positions

Standard

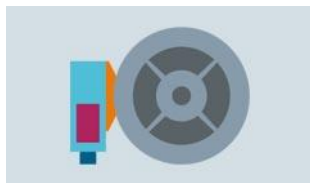
rotated 180°

1LE5...-.....-... ■

1LE5...-.....-... ■ -Z ■ ■ ■ ■

1LE5...-.....-... ■ -Z ■ ■ ■ ■

1LE5...-.....-... ■ -Z ■ ■ ■ ■



Terminal box left

6

Terminal box right

9

R 6 R

Terminal box left

9

R 7 L

Terminal box right

9

R 7 R



Terminal box right

5

Terminal box left

9

R 5 L

Types of construction

IM B3 / IM B35 / IM V5 / IM V6

IM B5 / IM V1



Legend



Auxiliary terminal box 1 (3) ⁵⁾

Auxiliary terminal box 2 (4) ⁵⁾

Terminal box

Adapter

Cable entry

1) Note the bending radius of the connecting cables.

2) The motor must be lifted using a crossbar.

3) Only possible for flange motors (IM B35, IM B5, IM V1) in conjunction with order code **H08**.

4) Not possible for motors with vertical shaft position (IM V1, IM V5, IM V6).

5) Mounting applies to auxiliary terminal box with order code **R62**. The auxiliary terminal boxes with order codes **R63** and **R65** are mounted on the enclosure. See the DT Configurator for details.

Standard SIMOTICS SD next generation motors

Orientation

Technical specifications

Overview of technical specifications

This table lists the most important technical specifications. For more information and details, see Catalog Part 1 "Introduction".

Type of motor	SIMOTICS SD 1LE5 IEC Low-Voltage Motors
Connection types	Star/delta connection The connection type to be used can be taken from the Article No. supplements for the required motor.
Number of poles	2, 4, 6, 8
Frame sizes	400 ... 450
Rated power	355 ... 1000 kW
Frequencies	50 Hz and 60 Hz
Versions	<ul style="list-style-type: none">• IE3 (Premium Efficiency)• IE4 (Super Premium Efficiency)
Marking	IEC 60034-30-1 IE3, IE4: 2, 4, 6 and 8-pole
Rated speed (synchronous speed)	750 ... 3600 rpm
Rated torque	1600 ... 8100 Nm
Stator winding insulation in accordance with EN 60034-1 (IEC 60034-1)	SD Add: Temperature class 155 (F), utilized to temperature class 130 (B) DURIGNIT IR 2000 insulation system SD Pro: Temperature class 155 (F), utilized to temperature class 155 (F) DURIGNIT IR 2000 insulation system
Degree of protection according to EN 60034-5 (IEC 60034-5)	IP55 as standard
Cooling according to EN 60034-6 (IEC 60034-6)	<ul style="list-style-type: none">• Self ventilated (IC 411)• Force ventilated w/o ext. fan/fan cover (IC418)• Force ventilated (IC 416)
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: 400 V, 500 V, 690 V The voltage that can be used can be found in the "Selection and ordering data" for the required motor.
Type of construction according to EN 60034-7 (IEC 60034-7)	<ul style="list-style-type: none">• Without flange: IM B3, IM V5 (on request), IM V6 (on request)• With flange: IM B5 with support foot, IM V1, IM B35
Paint finish Suitability of paint finish for climate group according to IEC 60721, Part 2-1	As standard: Color RAL 7030 stone gray See "Paint finish" in Catalog Section 1 "Introduction".
Vibration severity grade according to EN 60034-14 (IEC 60034-14)	Grade A (standard – without special vibration requirements) Optionally: Grade B (with special vibration requirements) See "Balance and vibration quantity" in Catalog Part 1 "Introduction".
Shaft extension according to DIN 748 (IEC 60072)	Balancing type: Half-key balancing as standard See "Balance and vibration severity" in Catalog Part 1 "Introduction".
Sound pressure level according to DIN EN ISO 1680 (tolerance +3 dB)	The corresponding 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 mounted components
Seamless series concept	<ul style="list-style-type: none">• Terminal box diagonally split - and can be optionally rotated 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

Additional information

For additional information, please contact your Siemens partner in the regions or use the DT Configurator.

Contacts: www.siemens.com/automation/partner

DT Configurator: www.siemens.com/dt-configurator

You can find out about certain technologies through Siemens contact partners worldwide.

Wherever possible, you will be able to find a local contact for:

- Technical support
- Spare parts/repairs
- Service
- Training
- Sales
- Technical support/engineering

You start by selecting a:

- country
- product or
- sector

Standard SIMOTICS SD next generation motors

SIMOTICS SD Add motors

IE4 Super Premium Efficiency

Self-ventilated or force-ventilated motors, cast iron series 1LE5534

Selection and ordering data

Operating values at rated power														Cast iron series 1LE5534 IE4 version acc. to IEC 60034-30-1 Article No.		m_{MB3} J		Torque class
P_{rated} 50 Hz	Frame size	n_{rated}	T_{rated}	$\eta_{rated, 4/4}$	$\eta_{rated, 3/4}$	$\eta_{rated, 2/4}$	$\cos\phi_{rated, ed, 4/4}$	$I_{rated\Delta}$	$\frac{T_{LR}}{T_{rated}}$	$\frac{I_{LR}}{I_{rated}}$	$\frac{T_B}{T_{rated}}$	L_{ptA}	L_{WA}	m_{MB3}	J	Torque class		
kW	FS	rpm	Nm	%	%	%	A					dB(A)	dB(A)	▲ New	kg	kgm ²	CL	
<ul style="list-style-type: none"> • Cooling: self ventilated (IC411) • Efficiency: IE4 Super Premium Efficiency, service factor for sinusoidal supply (SF) 1.05 • Insulation: Thermal class 155 (temperature class F), IP55 degree of protection, utilization for sinusoidal supply according to thermal class 130 (temperature class B) • Optionally suitable for converter operation with insulated bearing (L51) for $U_{line} \leq 480$ V; $U_{motor} \leq 500$ V; $U_{DC} \leq 720$ V - IVC-C advanced insulation system 																		
2-pole: 3000 rpm at 50 Hz																		
560	3) 4)	400	2988	1790	97.0	96.9	96.5	0.89	940	1.6	7.3	3.1	74	90	▲ 1LE5 534-4AA3	2850	8.9	10
630	3) 4)	400	2988	2000	97.0	97.1	96.8	0.90	1040	1.6	7.3	3.0	74	90	▲ 1LE5 534-4AA5	3000	9.8	10
710	5)	400	2988	2250	97.1	97.2	96.9	0.90	680	1.7	7.3	2.9	74	90	▲ 1LE5 534-4AA7	3200	10.8	10
800	3) 4) 5) 6)	450	2990	2550	97.4	97.4	97.1	0.87	790	1.2	7.7	3.3	75	91	▲ 1LE5 534-4BA3	4000	12.3	7
900	3) 4) 5) 6)	450	2988	2900	97.4	97.5	97.4	0.89	870	1.2	7.2	3.0	75	91	▲ 1LE5 534-4BA5	4250	13.5	7
1000	3) 4) 5) 6)	450	2988	3200	97.4	97.6	97.6	0.90	950	1.2	7.0	2.7	75	91	▲ 1LE5 534-4BA7	4450	14.7	7
4-pole: 1500 rpm at 50 Hz																		
560	3) 4)	400	1493	3600	96.9	97.0	96.6	0.86	970	2.2	7.5	3.1	72	88	▲ 1LE5 534-4AB3	3050	14.9	13
630	3) 4)	400	1492	4050	96.8	96.9	96.6	0.87	1080	2.2	6.9	2.8	74	90	▲ 1LE5 534-4AB5	3150	15.6	13
710	5)	400	1492	4550	97.0	97.0	96.8	0.87	700	2.2	7.2	2.9	74	90	▲ 1LE5 534-4AB7	3250	16.9	13
800	5)	450	1492	5100	96.9	97.1	96.9	0.87	790	1.4	6.5	2.4	79	95	▲ 1LE5 534-4BB3	4000	24.0	10
900	5)	450	1492	5800	97.0	97.2	97.0	0.88	880	1.4	6.5	2.5	79	95	▲ 1LE5 534-4BB5	4150	25.4	10
1000	3) 5)	450	1492	6400	97.1	97.2	97.1	0.88	980	1.5	6.8	2.6	79	95	▲ 1LE5 534-4BB7	4350	28.0	10
6-pole: 1000 rpm at 50 Hz																		
400		400	994	4300	96.6	96.8	96.4	0.85	790	2.2	7.2	2.7	70	86	▲ 1LE5 534-4AC3	3100	25.5	16
500	3)	400	994	4800	96.7	96.8	96.5	0.85	880	2.3	7.3	2.8	70	86	▲ 1LE5 534-4AC5	3250	27.4	16
560		400	994	5400	96.7	96.8	96.4	0.84	1000	2.4	7.5	2.9	70	86	▲ 1LE5 534-4AC7	3300	28.6	16
630	3) 4)	450	995	6000	96.8	97.0	96.7	0.83	1130	2.0	7.0	2.8	72	88	▲ 1LE5 534-4BC3	4050	38.6	13
710	5)	450	994	6800	96.8	97.0	96.9	0.84	730	1.8	6.6	2.5	72	88	▲ 1LE5 534-4BC5	4200	41.0	13
800	3) 5)	450	994	7700	96.8	97.0	96.8	0.84	820	1.8	6.6	2.4	74	90	▲ 1LE5 534-4BC7	4300	43.3	13
8-pole: 750 rpm at 50 Hz																		
355		400	744	4550	95.8	96.1	95.8	0.80	670	2.0	6.5	2.6	64	80	▲ 1LE5 534-4AD3	2850	21.9	13
400		400	744	5100	96.0	96.2	95.9	0.80	750	2.1	6.8	2.7	64	80	▲ 1LE5 534-4AD5	3050	24.5	13
450		400	744	5800	96.0	96.3	96.0	0.80	850	2.1	6.8	2.7	64	80	▲ 1LE5 534-4AD7	3250	27.5	13
500	7)	450	745	6400	96.2	96.4	96.1	0.79	950	2.0	6.8	2.5	67	83	▲ 1LE5 534-4BD3	3800	34.0	13
560	7)	450	745	7200	96.3	96.5	96.1	0.79	1060	2.0	6.9	2.6	67	83	▲ 1LE5 534-4BD5	4000	38.0	13
630	3) 7)	450	745	8100	96.4	96.6	96.3	0.80	1180	2.0	6.9	2.5	67	83	▲ 1LE5 534-4BD7	4250	42.5	13
Voltages														Version		Order code(s)		
50 Hz	400 VΔ/690 VY		60 Hz	460 VΔ		Standard		3 4		-								
50 Hz	500 VΔ		60 Hz	575 VΔ		No additional price		4 0		-								
50 Hz	690 VΔ				No additional price		4 7		-									
For other voltages and more information, see from Page 2/15																		
Types of construction														Version		Order code(s)		
Without flange		IM B3 ²⁾		Standard		A		-										
With flange		IM B5 ²⁾		With additional		F		-										
For other types of construction and more information, see from Page 2/16																		
Motor protection														Version		Order code(s)		
Without		Standard		A		-												
PTC thermistor with 3 temperature sensors		With additional		B		-												
For other motor protection and more information, see from Page 2/18																		
Terminal box position														Version		Order code(s)		
Terminal box base left with terminal box 45°		No additional price		2		-												
Terminal box base right with terminal box 45°		Standard		3		-												
For other terminal box positions and more information, see from Page 2/19																		
Special versions														Order code(s)				
Force ventilated w/o ext. fan/fan cover (IC418)		1LE5534-		■ ■		-Z		F90+ . . . + . . . + . . .										
Force ventilated (IC416)		1LE5534-		■ ■		-Z		F70+ . . . + . . . + . . .										
Options, see from Page 2/20		1LE5534-		■ ■		-Z		. . . + . . . + . . . + . . .										

- 1) n.a.
- 2) n.a.
- 3) Terminal box 1XB1631.
- 4) Terminal box position NDE can only be ordered using order code H09 (2 x TB3R61 terminal box). Order code H08 not available.

- 5) Standard version is 50 Hz / 690 V (voltage code 4-7) or 60 Hz / 575 V (voltage code 4-0).
- 6) As standard, the maximum speed $n_{max}=3000$ rpm. Converter operation at higher speeds on request for an additional charge.
- 7) Utilization for sinusoidal supply according to thermal class 155 (Temperature class F).

Standard SIMOTICS SD next generation motors

SIMOTICS SD Add motors

IE4 Super Premium Efficiency

Self-ventilated or force-ventilated motors, cast iron series 1LE5534

Selection and ordering data

Operating values at rated power														Cast iron series 1LE5534 IE4 version acc. to IEC 60034-30-1 Article No.			
P_{rated} 60Hz	Frame size	n_{rated}	T_{rated}	$\eta_{rated, 4/4}$	$\eta_{rated, 3/4}$	$\eta_{rated, 2/4}$	$\cos\phi_{rat, ed, 4/4}$	$I_{rated\Delta}$	T_{LR}/T_{rated}	I_{LR}/I_{rated}	T_B/T_{rated}	L_{pFA}	L_{WA}	m_{MB3}	J	Torque class	
kW	FS	rpm	Nm	%	%	%	A							kg	kgm ²	CL	
<ul style="list-style-type: none"> • Cooling: self ventilated (IC411) • Efficiency: IE4 Super Premium Efficiency, service factor for sinusoidal supply (SF) 1.05 • Insulation: Thermal class 155 (temperature class F), IP55 degree of protection, utilization for sinusoidal supply according to thermal class 130 (temperature class B) • Optionally suitable for converter operation with insulated bearing (L51) for $U_{line} \leq 480$ V; $U_{motor} \leq 500$ V; $U_{DC} \leq 720$ V - IVC-C advanced insulation system 																	
2-pole: 3600 rpm at 60 Hz																	
616	3) 4)	400	3588	1640	96.8	96.7	96.2	0.89	900	1.6	7.4	3.1	78	94	▲ 1LE5 534-4AA3	2850 8.9	10
693	3) 4)	400	3588	1840	97.0	96.9	96.4	0.90	1000	1.6	7.4	3.0	78	94	▲ 1LE5 534-4AA5	3000 9.8	10
781	3) 4) 5)	400	3590	2100	97.1	97.0	96.5	0.89	910	1.8	7.5	3.2	78	94	▲ 1LE5 534-4AA7	3200 10.8	10
920	3) 4) 5) 6)	450	3590	2450	97.3	97.3	96.8	0.88	1080	1.1	7.6	3.2	79	95	▲ 1LE5 534-4BA3	4000 12.3	7
1040	3) 4) 5) 6)	450	3588	2750	97.4	97.4	97.0	0.89	1200	1.2	7.2	3.0	79	95	▲ 1LE5 534-4BA5	4250 13.5	7
1120	3) 4) 5) 6)	450	3586	3000	97.4	97.6	97.3	0.90	1280	1.2	6.9	2.6	79	95	▲ 1LE5 534-4BA7	4450 14.7	7
4-pole: 1800 rpm at 60 Hz																	
644	3) 4)	400	1793	3450	96.9	96.9	96.4	0.87	960	2.1	7.5	3.0	76	92	▲ 1LE5 534-4AB3	3050 14.9	13
725	3) 4)	400	1792	3850	96.8	96.8	96.4	0.87	1080	2.1	6.9	2.7	78	94	▲ 1LE5 534-4AB5	3150 15.6	13
817	5)	400	1791	4350	96.9	97.0	96.7	0.88	960	1.9	6.8	2.5	78	94	▲ 1LE5 534-4AB7	3250 16.9	13
920	3) 4) 5)	450	1792	4900	96.9	97.0	96.6	0.87	1100	1.3	6.3	2.3	83	99	▲ 1LE5 534-4BB3	4000 24.0	10
1040	3) 4) 5)	450	1793	5500	97.1	97.1	96.7	0.87	1240	1.4	6.8	2.6	83	99	▲ 1LE5 534-4BB5	4150 25.4	10
1150	3) 4) 5)	450	1792	6100	97.1	97.2	96.9	0.88	1350	1.4	6.7	2.4	83	99	▲ 1LE5 534-4BB7	4350 28.0	10
6-pole: 1200 rpm at 60 Hz																	
518		400	1194	4150	96.7	96.8	96.4	0.86	780	2.1	7.3	2.6	73	89	▲ 1LE5 534-4AC3	3100 25.5	16
575	3)	400	1194	4600	96.8	96.9	96.5	0.86	870	2.2	7.4	2.7	73	89	▲ 1LE5 534-4AC5	3250 27.4	16
644		400	1194	5200	96.8	96.8	96.4	0.85	980	2.3	7.6	2.8	73	89	▲ 1LE5 534-4AC7	3300 28.6	16
725	3) 4)	450	1195	5800	96.9	97.0	96.7	0.84	1120	1.9	7.0	2.6	75	91	▲ 1LE5 534-4BC3	4050 38.6	13
817	5)	450	1194	6500	96.9	97.1	96.9	0.84	1010	1.7	6.6	2.3	75	91	▲ 1LE5 534-4BC5	4200 41.0	13
920	3) 5)	450	1194	7400	96.9	97.0	96.7	0.84	1130	1.8	6.6	2.4	77	93	▲ 1LE5 534-4BC7	4300 43.3	13
8-pole: 900 rpm at 60 Hz																	
408		400	894	4350	95.9	96.1	95.8	0.81	660	1.9	6.5	2.5	67	83	▲ 1LE5 534-4AD3	2850 21.9	13
460		400	894	4900	96.1	96.2	95.8	0.81	740	1.9	6.8	2.6	67	83	▲ 1LE5 534-4AD5	3050 24.5	13
518		400	894	5500	96.2	96.3	96.0	0.81	830	2.0	6.8	2.7	67	83	▲ 1LE5 534-4AD7	3250 27.5	13
575	7)	450	895	6100	96.3	96.4	96.0	0.80	940	1.9	6.8	2.4	70	86	▲ 1LE5 534-4BD3	3800 34.0	13
644	7)	450	895	6900	96.4	96.5	96.1	0.80	1050	1.9	6.9	2.5	70	86	▲ 1LE5 534-4BD5	4000 38.0	13
725	3) 7)	450	895	7700	96.5	96.6	96.3	0.81	1160	1.9	6.9	2.4	70	86	▲ 1LE5 534-4BD7	4250 42.5	13
Voltages														Version		Order code(s)	
50 Hz	400 VΔ/690 VY			60 Hz	460 VΔ			Standard		3 4	-						
50 Hz	500 VΔ			60 Hz	575 VΔ			No additional price		4 0	-						
50 Hz	690 VΔ							No additional price		4 7	-						
For other voltages and more information, see from Page 2/15																	
Types of construction														Version		Order code(s)	
Without flange		IM B3 ²⁾			Standard		A		-								
With flange		IM B5 ²⁾			With additional		F		-								
For other types of construction and more information, see from Page 2/16																	
Motor protection														Version		Order code(s)	
Without		Standard			A		-										
PTC thermistor with 3 temperature sensors		With additional			B		-										
For other motor protection and more information, see from Page 2/18																	
Terminal box position														Version		Order code(s)	
Terminal box base left with terminal box 45°		No additional price			2		-										
Terminal box base right with terminal box 45°		Standard			3		-										
For other terminal box positions and more information, see from Page 2/19																	
Special versions														Order code(s)			
Force ventilated w/o ext. fan/fan cover (IC418)		1LE5534-....			-Z		F90+...+...+...										
Force ventilated (IC416)		1LE5534-....			-Z		F70+...+...+...										
Options, see from Page 2/20																	
1LE5534-.... -Z ..+...+...+...																	

1) n.a.
 2) n.a.
 3) Terminal box 1XB1631.
 4) Terminal box position NDE can only be ordered using order code H09 (2 x TB3R61 terminal box). Order code H08 not available.

5) Standard version is 50 Hz / 690 V (voltage code 4-7) or 60 Hz / 575 V (voltage code 4-0).
 6) Ordered for an additional price. Converter operation on request.
 7) Utilization for sinusoidal supply according to thermal class 155 (Temperature class F).

Standard SIMOTICS SD next generation motors

SIMOTICS SD ADD motors

IE3 Premium Efficiency

Self-ventilated or force-ventilated motors, cast iron series 1LE5533

Selection and ordering data														Cast iron series 1LE5533 IE3 version acc. to IEC 60034-30-1 Article No.				
Operating values at rated power														m_{MB3}	J	Torque class		
P_{rated} 50 Hz	Frame size	n_{rated}	T_{rated}	$\eta_{rated, 4/4}$	$\eta_{rated, 3/4}$	$\eta_{rated, 2/4}$	$\cos\phi_{rat, ed, 4/4}$	$I_{rated\Delta}$	T_{LR}/T_{rated}	I_{LR}/I_{rated}	T_B/T_{rated}	L_{ptA}	L_{WA}	▲ New	kg	kgm ²	CL	
kW	FS	rpm	Nm	%	%	%		A										
• Cooling: self ventilated (IC411)																		
• Efficiency: IE3 Premium Efficiency, service factor with sinusoidal supply (SF) 1.05																		
• Insulation: Thermal class 155 (temperature class F), IP55 degree of protection, utilization for sinusoidal supply according to thermal class 130 (temperature class B)																		
• Optionally suitable for converter operation with insulated bearing (L51) for $U_{line} \leq 480$ V; $U_{motor} \leq 500$ V; $U_{DC} \leq 720$ V - IVIC-C advanced insulation system																		
2-pole: 3000 rpm at 50 Hz																		
560	3) 4)	400	2986	1790	96.6	96.7	96.3	0.90	930	1.6	7.0	2.8	74	90	▲ 1LE5 533-4AA3	2850	8.9	10
630	3) 4)	400	2986	2000	96.6	96.7	96.6	0.91	1030	1.6	7.0	2.8	74	90	▲ 1LE5 533-4AA5	3000	9.8	10
710	5)	400	2986	2250	96.8	96.9	96.7	0.91	670	1.7	7.0	2.8	74	90	▲ 1LE5 533-4AA7	3200	10.8	10
800	3) 4) 5) 6)	450	2988	2550	97.0	97.0	96.6	0.88	780	1.1	7.5	3.1	75	91	▲ 1LE5 533-4BA3	4000	12.3	7
900	3) 4) 5) 6)	450	2986	2900	97.0	97.1	96.9	0.90	860	1.1	7.0	2.8	75	91	▲ 1LE5 533-4BA5	4250	13.5	7
1000	3) 4) 5) 6)	450	2984	3200	97.0	97.1	97.0	0.91	950	1.1	6.8	2.6	75	91	▲ 1LE5 533-4BA7	4450	14.7	7
4-pole: 1500 rpm at 50 Hz																		
560		400	1492	3600	96.2	96.3	95.8	0.87	970	1.8	6.5	2.7	78	94	▲ 1LE5 533-4AB3	2800	12.8	13
630	3) 4)	400	1492	4050	96.4	96.5	95.9	0.87	1080	1.9	6.8	2.7	78	94	▲ 1LE5 533-4AB5	3000	14.4	13
710	5)	400	1492	4550	96.5	96.6	96.2	0.88	700	1.9	6.8	2.7	78	94	▲ 1LE5 533-4AB7	3200	16.5	13
800	5)	450	1492	5100	96.5	96.6	96.1	0.88	790	1.6	7.0	2.6	81	97	▲ 1LE5 533-4BB3	3850	22.2	10
900	5)	450	1492	5800	96.6	96.7	96.2	0.87	900	1.5	7.0	2.6	81	97	▲ 1LE5 533-4BB5	4100	24.8	10
1000	3) 5)	450	1492	6400	96.6	96.7	96.3	0.89	970	1.7	7.0	2.6	81	97	▲ 1LE5 533-4BB7	4300	27.4	10
6-pole: 1000 rpm at 50 Hz																		
450		400	992	4350	96.0	96.1	95.8	0.86	790	2.1	6.5	2.7	72	88	▲ 1LE5 533-4AC3	2900	22.0	13
500		400	992	4800	96.0	96.1	95.8	0.86	870	2.2	6.5	2.7	72	88	▲ 1LE5 533-4AC5	3050	24.7	13
560	3)	400	992	5400	96.2	96.3	96.0	0.86	980	2.2	6.5	2.7	72	88	▲ 1LE5 533-4AC7	3250	27.8	13
630	3)	450	993	6100	96.3	96.4	96.2	0.85	1110	2.0	6.5	2.6	74	90	▲ 1LE5 533-4BC3	3800	34.4	13
710	5)	450	993	6800	96.3	96.4	96.4	0.85	730	2.0	6.5	2.5	74	90	▲ 1LE5 533-4BC5	4050	38.5	13
800	3) 5)	450	993	7700	96.5	96.7	96.5	0.85	820	2.0	6.5	2.5	74	90	▲ 1LE5 533-4BC7	4300	43.1	13
8-pole: 750 rpm at 50 Hz																		
355		400	742	4550	95.6	95.7	95.5	0.81	660	1.9	6.2	2.5	64	80	▲ 1LE5 533-4AD3	2850	21.9	13
400		400	742	5100	95.7	95.8	95.5	0.81	740	2.0	6.5	2.6	64	80	▲ 1LE5 533-4AD5	3050	24.5	13
450		400	742	5800	95.8	95.9	95.8	0.81	840	2.0	6.5	2.6	64	80	▲ 1LE5 533-4AD7	3250	27.5	13
500	7)	450	744	6400	95.9	96.0	95.7	0.80	940	1.9	6.5	2.4	67	83	▲ 1LE5 533-4BD3	3800	34.0	13
560	7)	450	744	7200	96.0	96.1	95.8	0.80	1050	1.9	6.5	2.4	67	83	▲ 1LE5 533-4BD5	4000	38.0	13
630	3) 7)	450	744	8100	96.1	96.2	95.9	0.81	1170	1.9	6.5	2.4	67	83	▲ 1LE5 533-4BD7	4250	42.5	13
Voltages														Version		Order code(s)		
50 Hz	400 VΔ/690 VY			60 Hz	460 VΔ			Standard		3	4	-						
50 Hz	500 VΔ			60 Hz	575 VΔ			No additional price		4	0	-						
50 Hz	690 VΔ							No additional price		4	7	-						
For other voltages and more information, see from Page 2/15																...		
Types of construction														Version		Order code(s)		
Without flange			IM B3 ²⁾			Standard				A	-							
With flange			IM B5 ²⁾			With additional				F	-							
For other types of construction and more information, see from Page 2/16																...		
Motor protection														Version		Order code(s)		
Without						Standard				A	-							
PTC thermistor with 3 temperature sensors						With additional				B	-							
For other motor protection and more information, see from Page 2/18																...		
Terminal box position														Version		Order code(s)		
Terminal box base left with terminal box 45°						No additional price				2	-							
Terminal box base right with terminal box 45°						Standard				3	-							
For other terminal box positions and more information, see from Page 2/19																-		
Special versions														Order code(s)				
Force ventilated w/o ext. fan/fan cover (IC418)						1LE5533-....		-Z F90+...+...+...										
Force ventilated (IC416)						1LE5533-....		-Z F70+...+...+...										
Options, see from Page 2/20														1LE5533-....		-Z ...+...+...+...		

1) n.a.
 2) n.a.
 3) Terminal box 1XB1631.
 4) Terminal box position NDE can only be ordered using order code H09 (2 x TB3R61 terminal box). Order code H08 not available.

5) Standard version is 50 Hz / 690 V (voltage code 4-7) or 60 Hz / 575 V (voltage code 4-0).
 6) As standard, the maximum speed $n_{max}=3000$ rpm. Converter operation at higher speeds on request for an additional charge.
 7) Utilization for sinusoidal supply according to thermal class 155 (Temperature class F).

Standard SIMOTICS SD next generation motors

SIMOTICS SD ADD motors

IE3 Premium Efficiency

Self-ventilated or force-ventilated motors, cast iron series 1LE5533

Selection and ordering data

Operating values at rated power														Cast iron series 1LE5533 IE3 version acc. to IEC 60034-30-1 Article No.		m _M B3 J		Torque class
P _{rated} 60Hz	Frame size	n _{rated}	T _{rated}	η _{rated} , 4/4	η _{rated} , 3/4	η _{rated} , 2/4	COSφ _{rat} ed, 4/4	I _{rated} Δ	T _{LR} / T _{rated}	I _{LR} / I _{rated}	T _B / T _{rated}	L _{pA}	L _{WA}	▲ New	kg	kgm ²	CL	
kW	FS	rpm	Nm	%	%	%		A										
• Cooling: self ventilated (IC411) • Efficiency: IE3 Premium Efficiency, service factor with sinusoidal supply (SF) 1.05 • Insulation: Thermal class 155 (temperature class F), IP55 degree of protection, utilization for sinusoidal supply according to thermal class 130 (temperature class B) • Optionally suitable for converter operation with insulated bearing (L51) for U _{line} ≤480 V; U _{motor} ≤500 V; U _{DC} ≤720 V - IVC-C advanced insulation system																		
2-pole: 3600 rpm at 60 Hz																		
616	3) 4)	400	3586	1640	96.5	96.4	95.8	0.90	890	1.6	7.2	2.8	78	94	▲ 1LE5 533-4AA3	2850	8.9	10
693	3) 4)	400	3586	1850	96.5	96.5	96.2	0.91	990	1.6	7.1	2.8	78	94	▲ 1LE5 533-4AA5	3000	9.8	10
781	3) 4) 5)	400	3588	2100	96.8	96.8	96.3	0.90	900	1.8	7.3	3.1	78	94	▲ 1LE5 533-4AA7	3200	10.8	10
920	3) 4) 5) 6)	450	3588	2450	96.9	96.9	96.5	0.89	1070	1.0	7.5	3.0	79	95	▲ 1LE5 533-4BA3	4000	12.3	7
1040	3) 4) 5) 6)	450	3586	2750	97.0	97.0	96.6	0.90	1200	1.1	7.0	2.8	79	95	▲ 1LE5 533-4BA5	4250	13.5	7
1120	3) 4) 5) 6)	450	3584	3000	97.0	97.1	96.9	0.91	1270	1.1	6.8	2.5	79	95	▲ 1LE5 533-4BA7	4450	14.7	7
4-pole: 1800 rpm at 60 Hz																		
644		400	1791	3450	96.2	96.3	95.5	0.88	950	1.7	6.4	2.5	82	98	▲ 1LE5 533-4AB3	2800	12.8	13
725	3) 4)	400	1792	3850	96.4	96.3	95.7	0.88	1070	1.8	6.8	2.7	82	98	▲ 1LE5 533-4AB5	3000	14.4	13
817	5)	400	1792	4350	96.5	96.4	95.9	0.89	960	1.8	6.8	2.5	82	98	▲ 1LE5 533-4AB7	3200	16.5	13
920	3) 4) 5)	450	1791	4900	96.3	96.3	95.8	0.89	1080	1.3	6.5	2.3	85	101	▲ 1LE5 533-4BB3	3850	22.2	10
1040	3) 4) 5)	450	1791	5500	96.5	96.5	95.9	0.88	1230	1.4	6.8	2.5	85	101	▲ 1LE5 533-4BB5	4100	24.8	10
1150	3) 4) 5)	450	1791	6100	96.6	96.6	96.1	0.90	1330	1.6	6.8	2.5	85	101	▲ 1LE5 533-4BB7	4300	27.4	10
6-pole: 1200 rpm at 60 Hz																		
518		400	1193	4150	96.0	96.1	95.7	0.86	790	2.0	6.4	2.6	75	91	▲ 1LE5 533-4AC3	2900	22.0	13
575		400	1193	4600	96.0	96.1	95.8	0.86	870	2.1	6.5	2.6	75	91	▲ 1LE5 533-4AC5	3050	24.7	13
644	3)	400	1193	5200	96.2	96.4	96.0	0.86	980	2.1	6.5	2.6	75	91	▲ 1LE5 533-4AC7	3250	27.8	13
725	3)	450	1194	5800	96.3	96.3	96.1	0.85	1110	1.9	6.4	2.4	77	93	▲ 1LE5 533-4BC3	3800	34.4	13
817	3) 5)	450	1193	6500	96.3	96.4	96.4	0.85	1000	2.0	6.6	2.6	77	93	▲ 1LE5 533-4BC5	4050	38.5	13
920	3) 5)	450	1193	7400	96.5	96.7	96.4	0.85	1130	1.9	6.6	2.4	77	93	▲ 1LE5 533-4BC7	4300	43.1	13
8-pole: 900 rpm at 60 Hz																		
408		400	892	4350	95.7	95.8	95.5	0.82	650	1.8	6.2	2.4	67	83	▲ 1LE5 533-4AD3	2850	21.9	13
460		400	892	4900	95.8	95.9	95.6	0.82	730	1.9	6.5	2.5	67	83	▲ 1LE5 533-4AD5	3050	24.5	13
518		400	892	5500	95.9	96.0	95.8	0.82	830	1.9	6.5	2.6	67	83	▲ 1LE5 533-4AD7	3250	27.5	13
575	7)	450	894	6100	96.0	96.1	95.7	0.81	930	1.8	6.5	2.3	70	86	▲ 1LE5 533-4BD3	3800	34.0	13
644	7)	450	894	6900	96.1	96.2	95.8	0.81	1040	1.8	6.5	2.4	70	86	▲ 1LE5 533-4BD5	4000	38.0	13
725	3) 7)	450	894	7700	96.2	96.4	96.0	0.82	1150	1.8	6.5	2.4	70	86	▲ 1LE5 533-4BD7	4250	42.5	13
Voltages														Version		Order code(s)		
50 Hz	400 VΔ/690 VY			60 Hz	460 VΔ			Standard		3	4	-						
50 Hz	500 VΔ			60 Hz	575 VΔ			No additional price		4	0	-						
50 Hz	690 VΔ							No additional price		4	7	-						
For other voltages and more information, see from Page 2/15																		
Types of construction														Version		Order code(s)		
Without flange			IM B3 ²⁾					Standard		A		-						
With flange			IM B5 ²⁾					With additional		F		-						
For other types of construction and more information, see from Page 2/16																		
Motor protection														Version		Order code(s)		
Without								Standard		A		-						
PTC thermistor with 3 temperature sensors								With additional		B		-						
For other motor protection and more information, see from Page 2/18																		
Terminal box position														Version		Order code(s)		
Terminal box base left with terminal box 45°								No additional price		2		-						
Terminal box base right with terminal box 45°								Standard		3		-						
For other terminal box positions and more information, see from Page 2/19																		
Special versions														Order code(s)				
Force ventilated w/o ext. fan/fan cover (IC418)								1LE5533-....		-Z		F90+...+...+...						
Force ventilated (IC416)								1LE5533-....		-Z		F70+...+...+...						
Options, see from Page 2/20																		

- n.a.
- n.a.
- Terminal box 1XB1631.
- Terminal box position NDE can only be ordered using order code H09 (2 x TB3R61 terminal box). Order code H08 not available.

- Standard version is 50 Hz / 690 V (voltage code 4-7) or 60 Hz / 575 V (voltage code 4-0).
- Ordered for an additional price. Converter operation on request.
- Utilization for sinusoidal supply according to thermal class 155 (Temperature class F).

Standard SIMOTICS SD next generation motors

SIMOTICS SD Pro motors

IE3 Premium Efficiency

Self-ventilated or force-ventilated motors, cast iron series 1LE5583

Selection and ordering data

Operating values at rated power														Cast iron series 1LE5583 IE3 version acc. to IEC 60034-30-1 Article No.		m _{M B3} J		Torque class
P _{rated} 50 Hz	Frame size	n _{rated}	T _{rated}	η _{rated} , 4/4	η _{rated} , 3/4	η _{rated} , 2/4	cos φ _{rat} , ed, 4/4	I _{rated} Δ	T _{LR} /T _{rated}	I _{LR} /I _{rated}	T _B /T _{rated}	L _{pFA}	L _{WA}	▲ New	kg	kgm ²	CL	
kW	FS	rpm	Nm	%	%	%		A										
2-pole: 3000 rpm at 50 Hz																		
545 ³⁾	400	2988	1740	96.9	96.9	96.4	0.90	900	1.6	7.3	3.1	74	90	▲	1LE5 5 83-4AA3	2850	8.9	10
610 ³⁾	400	2988	1950	97.0	97.0	96.7	0.91	1000	1.6	7.3	3.1	74	90	▲	1LE5 5 83-4AA5	3000	9.8	10
680 ⁵⁾	400	2988	2150	97.0	97.1	96.8	0.91	640	1.7	7.3	3	74	90	▲	1LE5 5 83-4AA7	3200	10.8	10
775 ^{3) 5) 6)}	450	2990	2500	97.4	97.4	97.0	0.88	760	1.2	7.7	3.4	75	91	▲	1LE5 5 83-4BA3	4000	12.3	7
875 ^{3) 5) 6)}	450	2988	2800	97.4	97.5	97.3	0.90	840	1.2	7.2	3	75	91	▲	1LE5 5 83-4BA5	4250	13.5	7
970 ^{3) 5) 6)}	450	2986	3100	97.4	97.5	97.4	0.91	920	1.2	7.0	2.8	75	91	▲	1LE5 5 83-4BA7	4450	14.7	7
4-pole: 1500 rpm at 50 Hz																		
545	400	1492	3500	96.4	96.4	96.0	0.87	940	1.8	6.7	2.7	78	94	▲	1LE5 5 83-4AB3	2800	12.8	13
615	400	1492	3950	96.6	96.6	96.2	0.87	1060	1.9	6.9	2.8	78	94	▲	1LE5 5 83-4AB5	3000	14.4	13
690 ⁵⁾	400	1492	4400	96.6	96.7	96.4	0.88	680	2.0	7.0	2.7	78	94	▲	1LE5 5 83-4AB7	3200	16.5	13
785 ⁵⁾	450	1492	5000	96.6	96.6	96.1	0.88	770	1.6	7.2	2.7	81	97	▲	1LE5 5 83-4BB3	3850	22.2	10
875 ⁵⁾	450	1492	5600	96.8	96.8	96.3	0.87	870	1.5	7.2	2.6	81	97	▲	1LE5 5 83-4BB5	4100	24.8	10
980 ⁵⁾	450	1492	6300	96.9	96.9	96.5	0.89	950	1.7	7.1	2.6	81	97	▲	1LE5 5 83-4BB7	4300	27.4	10
6-pole: 1000 rpm at 50 Hz																		
435	400	993	4200	96.2	96.3	96.0	0.85	770	2.1	6.7	2.8	72	88	▲	1LE5 5 83-4AC3	2900	22.0	13
485	400	993	4650	96.2	96.4	96.1	0.86	850	2.2	6.7	2.8	72	88	▲	1LE5 5 83-4AC5	3050	24.7	13
545	400	993	5200	96.3	96.5	96.2	0.86	950	2.2	6.7	2.7	72	88	▲	1LE5 5 83-4AC7	3250	27.8	13
615 ³⁾	450	993	5900	96.5	96.7	96.4	0.84	1100	2.1	6.6	2.7	74	90	▲	1LE5 5 83-4BC3	3800	34.4	13
690 ⁵⁾	450	993	6600	96.6	96.6	96.6	0.85	700	2.0	6.8	2.5	74	90	▲	1LE5 5 83-4BC5	4050	38.5	13
780 ⁵⁾	450	993	7500	96.7	96.9	96.7	0.85	790	2.0	6.7	2.6	74	90	▲	1LE5 5 83-4BC7	4300	43.1	13
8-pole: 750 rpm at 50 Hz																		
335	400	744	4300	95.8	96.0	95.6	0.80	630	2.0	6.9	2.6	64	80	▲	1LE5 5 83-4AD3	2850	21.9	13
375	400	744	4800	95.9	96.1	95.7	0.80	710	2.1	7.2	2.8	64	80	▲	1LE5 5 83-4AD5	3050	24.5	13
425	400	744	5500	96.1	96.2	95.8	0.80	800	2.1	7.2	2.7	64	80	▲	1LE5 5 83-4AD7	3250	27.5	13
485	450	745	6200	96.1	96.2	95.9	0.79	920	2.0	7.0	2.6	67	83	▲	1LE5 5 83-4BD3	3800	34.0	13
545	450	745	7000	96.2	96.4	96.0	0.79	1040	2.0	7.0	2.6	67	83	▲	1LE5 5 83-4BD5	4000	38.0	13
600 ³⁾	450	745	7700	96.3	96.5	96.1	0.80	1120	2.1	7.3	2.6	67	83	▲	1LE5 5 83-4BD7	4250	42.5	13
Voltages														Version		Order code(s)		
50 Hz	400 VΔ/690 VY			60 Hz	460 VΔ			Standard		3	4	-						
50 Hz	500 VΔ			60 Hz	575 VΔ			No additional price		4	0	-						
50 Hz	690 VΔ							No additional price		4	7	-						
For other voltages and more information, see from Page 2/15																		
Types of construction														Version		Order code(s)		
Without flange		IM B3 ²⁾		Standard		A		-										
With flange		IM B5 ²⁾		With additional		F		-										
For other types of construction and more information, see from Page 2/16																		
Motor protection														Version		Order code(s)		
Without		Standard		A		-												
PTC thermistor with 3 temperature sensors		With additional		B		-												
For other motor protection and more information, see from Page 2/18																		
Terminal box position														Version		Order code(s)		
Terminal box base left with terminal box 45°		No additional price		2		-												
Terminal box base right with terminal box 45°		Standard		3		-												
For other terminal box positions and more information, see from Page 2/19																		
Special versions														Order code(s)				
Force ventilated w/o ext. fan/fan cover (IC418)		1LE5583-....		-Z		F90+...+...+...												
Force ventilated (IC416)		1LE5583-....		-Z		F70+...+...+...												
Options, see from Page 2/20																		

- 1) n.a.
- 2) n.a.
- 3) Terminal box 1XB1631.
- 4) Terminal box position NDE can only be ordered using order code H09 (2 x TB3R61 terminal box). Order code H08 not available.

- 5) Standard version is 50 Hz / 690 V (voltage code 4-7) or 60 Hz / 575 V (voltage code 4-0).
- 6) As standard, the maximum speed n_{max}=3000 rpm. Converter operation at higher speeds on request for an additional charge.

Standard SIMOTICS SD next generation motors

SIMOTICS SD Pro motors

IE3 Premium Efficiency

Self-ventilated or force-ventilated motors, cast iron series 1LE5583

Selection and ordering data

Operating values at rated power														Cast iron series 1LE5583 IE3 version acc. to IEC 60034-30-1 Article No.		mM B3 J		Torque class
P_{rated} 60 Hz	Frame size	n_{rated}	T_{rated}	$\eta_{rated, 4/4}$	$\eta_{rated, 3/4}$	$\eta_{rated, 2/4}$	$\cos\phi_{rat, ed, 4/4}$	$I_{rated, \Delta}$	T_{LR}/T_{rated}	I_{LR}/I_{rated}	T_B/T_{rated}	L_{pFA}	LWA	▲ New	kg	J	CL	
kW	FS	rpm	Nm	%	%	%		A								kgm ²		
2-pole: 3600 rpm at 60 Hz																		
600	3)	400	3588	1600	96.8	96.6	95.9	0.90	860	1.6	7.5	3.1	78	94	▲ 1LE5 5 83-4AA3	2850	8.9	10
670	3)	400	3588	1780	96.9	96.8	96.2	0.91	950	1.6	7.4	3.1	78	94	▲ 1LE5 5 83-4AA5	3000	9.8	10
750	3) 5)	400	3590	1990	97.0	96.9	96.4	0.90	860	1.8	7.5	3.2	78	94	▲ 1LE5 5 83-4AA7	3200	10.8	10
900	3) 4) 5) 6)	450	3590	2400	97.3	97.3	96.8	0.89	1040	1.1	7.7	3.2	79	95	▲ 1LE5 5 83-4BA3	4000	12.3	7
1005	3) 4) 5) 6)	450	3588	2650	97.3	97.4	97.1	0.91	1140	1.2	7.3	3.0	79	95	▲ 1LE5 5 83-4BA5	4250	13.5	7
1085	3) 4) 5) 6)	450	3586	2900	97.3	97.4	97.3	0.91	1230	1.2	7.0	2.7	79	95	▲ 1LE5 5 83-4BA7	4450	14.7	7
4-pole: 1800 rpm at 60 Hz																		
625		400	1791	3350	96.3	96.3	95.6	0.88	930	1.7	6.5	2.6	82	98	▲ 1LE5 5 83-4AB3	2800	12.8	13
710		400	1792	3800	96.6	96.5	95.9	0.88	1050	1.8	6.9	2.7	82	98	▲ 1LE5 5 83-4AB5	3000	14.4	13
795	5)	400	1792	4250	96.7	96.7	96.2	0.89	930	1.9	7.0	2.6	82	98	▲ 1LE5 5 83-4AB7	3200	16.5	13
905	3) 4) 5)	450	1791	4850	96.5	96.4	95.7	0.89	1060	1.3	6.6	2.4	85	101	▲ 1LE5 5 83-4BB3	3850	22.2	10
1010	3) 4) 5)	450	1791	5400	96.7	96.6	95.9	0.88	1190	1.4	7.0	2.5	85	101	▲ 1LE5 5 83-4BB5	4100	24.8	10
1125	3) 4) 5)	450	1791	6000	96.8	96.7	96.2	0.90	1300	1.6	7.0	2.6	85	101	▲ 1LE5 5 83-4BB7	4300	27.4	10
6-pole: 1200 rpm at 60 Hz																		
500		400	1193	4000	96.2	96.3	95.8	0.85	770	2.0	6.6	2.7	75	91	▲ 1LE5 5 83-4AC3	2900	22.0	13
560		400	1193	4500	96.2	96.4	96.0	0.86	850	2.1	6.7	2.7	75	91	▲ 1LE5 5 83-4AC5	3050	24.7	13
625	3)	400	1193	5000	96.4	96.5	96.1	0.86	950	2.1	6.7	2.6	75	91	▲ 1LE5 5 83-4AC7	3250	27.8	13
705	3)	450	1194	5600	96.6	96.7	96.2	0.84	1090	2.0	6.5	2.5	77	93	▲ 1LE5 5 83-4BC3	3800	34.4	13
795	3) 5)	450	1193	6400	96.6	96.7	96.5	0.85	970	2.0	6.8	2.6	77	93	▲ 1LE5 5 83-4BC5	4050	38.5	13
895	3) 5)	450	1193	7200	96.8	96.9	96.6	0.85	1090	1.9	6.8	2.5	77	93	▲ 1LE5 5 83-4BC7	4300	43.1	13
8-pole: 900 rpm at 60 Hz																		
385		400	894	4100	95.9	96.0	95.5	0.81	620	1.9	6.9	2.5	67	83	▲ 1LE5 5 83-4AD3	2850	21.9	13
430		400	894	4600	96.0	96.1	95.6	0.81	690	2.0	7.3	2.7	67	83	▲ 1LE5 5 83-4AD5	3050	24.5	13
490		400	894	5200	96.2	96.2	95.8	0.81	790	2.0	7.1	2.7	67	83	▲ 1LE5 5 83-4AD7	3250	27.5	13
560		450	895	6000	96.3	96.4	95.9	0.80	910	1.9	7.0	2.5	70	86	▲ 1LE5 5 83-4BD3	3800	34.0	13
625		450	895	6700	96.3	96.4	96.0	0.80	1020	1.9	7.1	2.5	70	86	▲ 1LE5 5 83-4BD5	4000	38.0	13
690	3)	450	895	7400	96.4	96.5	96.1	0.81	1110	1.9	7.2	2.5	70	86	▲ 1LE5 5 83-4BD7	4250	42.5	13
Voltages														Version		Order code(s)		
50 Hz	400 VΔ/690 VY			60 Hz	460 VΔ			Standard		3	4	-						
50 Hz	500 VΔ			60 Hz	575 VΔ			No additional price		4	0	-						
50 Hz	690 VΔ							No additional price		4	7	-						
For other voltages and more information, see from Page 2/15																...		
Types of construction														Version		Order code(s)		
Without flange		IM B3 ²⁾						Standard		A		-						
With flange		IM B5 ²⁾						With		F		-						
For other types of construction and more information, see from Page 2/16																...		
Motor protection														Version		Order code(s)		
Without								Standard		A		-						
PTC thermistor with 3 temperature sensors								With additional		B		-						
For other motor protection and more information, see from Page 2/18																...		
Terminal box position														Version		Order code(s)		
Terminal box base left with terminal box 45°								No additional price		2		-						
Terminal box base right with terminal box 45°								Standard		3		-						
For other terminal box positions and more information, see from Page 2/19																		
Special versions														Order code(s)				
Force ventilated w/o ext. fan/fan cover (IC418)								1LE5583-....		-Z		F90+...+...+...						
Force ventilated (IC416)								1LE5583-....		-Z		F70+...+...+...						
Options, see from Page 2/20																1LE5583-.... -Z ...+...+...+...		

1) n.a.
 2) n.a.
 3) Terminal box 1XB1631.
 4) Terminal box position NDE can only be ordered using order code H09 (2 x TB3R61 terminal box). Order code H08 not available.

5) Standard version is 50 Hz / 690 V (voltage code 4-7) or 60 Hz / 575 V (voltage code 4-0).
 6) Ordered for an additional price. Converter operation on request.

Article No. supplements and special versions

Standard SIMOTICS SD next generation motors

Voltages

Selection and ordering data

Voltages Cast-iron series 1LE55

Voltages	Artikel-Nr.-Ergänzung			P50Hz ≤630 kW	P50Hz > 630 kW	IEC	IE4 IE3
	Voltage code 12th and 13th position of the Article No.	Additional identification code with order code and plain text if required		1LE5534 ADD	1LE5533 ADD		
1LE5.	■	-	■	1LE5583 PRO		
Voltage at 50 Hz or 60 Hz							
50 Hz 400 VΔ/690 VY, 60 Hz 460 VΔ	3	4	-	□	O.R.		
50 Hz 500 VΔ	4	0		○	○		
60 Hz 575 VΔ				○	□ ²⁾		
50 Hz 690 VΔ	4	7	-	✓	□		
50 Hz 380 VΔ/660 VY, 60 Hz 440 VΔ	3	3	-	✓	O.R.		
50 Hz 415 VΔ, 60 Hz 480 VΔ	3	5	-	✓	O.R.		
50 Hz 600 VΔ, 60 Hz 690 VΔ	4	4	-	✓	✓		
50 Hz 660 VΔ	4	6	-	✓	✓ ²⁾		
Voltage at 60 Hz and required power							
440 VΔ; 60-Hz-Leistung	9	0	M 1D	✓	O.R.		
460 VΔ; 60-Hz-Leistung	9	0	M 1F	✓	O.R.		
575 VΔ; 60-Hz-Leistung	9	0	M 1H	✓	✓ ²⁾		
400 VΔ/690 VY; 60-Hz-Leistung	9	0	M 1J	O.R.	O.R.		
480 VΔ; 60-Hz-Leistung	9	0	M 1L	✓	O.R.		
440 VΔ; 50-Hz-power	9	0	M 2D	✓	O.R.		
460 VΔ; 50-Hz-power	9	0	M 2F	✓	O.R.		
575 VΔ; 50-Hz-power	9	0	M 2H	✓	✓ ²⁾		
400 VΔ/690 VY; 50-Hz-power	9	0	M 2J	O.R.	O.R.		
480 VΔ; 50-Hz-power	9	0	M 2L	✓	O.R.		
Non-standard voltage and/or frequencies							
Non-standard winding ¹⁾	9	0	M 1Y	• and customer specifications	✓	✓ ²⁾	

□ Standard version

○ No additional price

• This order code only determines the version from a pricing perspective – additional plain text is required.

1) Plain text must be specified in the order: Voltage between 380 and 690 V (voltages outside this range are available on request), frequency, circuit, for 60 Hz additionally required rated power in kW.

2) 2-pole version, frame size 450 for 60 Hz operation on request.


Article No. supplements and special versions

Standard SIMOTICS SD next generation motors

Types of construction

Selection and ordering data

Types of construction Cast-iron series 1LE55

Types of construction	Artikel-Nr.-Ergänzung		Frame size		IEC	IE4 IE3
	Type of construction letter 14th position of the Article No..	Article No. with additional identification code -Z	400	450		
1LE5.....			400	450		
Without flange						
IM B3 1)2)		A	-	□	□	
IM V6 2)		D	-	O.R.	O.R. 7)	
IM V5 without protective cover 2)		C	-	O.R.	O.R. 7)	
IM V5 with protective cover 2) 3) 4)		C	H00	O.R.	O.R. 7)	
With flange Acc. to EN 50347 Acc. to DIN 42948						
IM B5 2) 5)		F	-	✓	✓	
IM V1 without protective cover 2)		G	-	✓	✓	
IM V1 with protective cover 2) 3) 4)		G	H00	✓	✓	
IM B35 ³⁾		J	-	✓	✓	

- Standard version
- no additional price
- O.R. on request
- 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) In combination with an encoder it is not necessary to order the protective cover (order code H00), as this is delivered as a protection for the encoder as standard. In this case the protective cover is standard design (without additional charge).
- 4) The "Standard cylindrical shaft extension (second shaft extension)" option (order code L05) is not possible.
- 5) 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.
- 6) For IM B5 design, additionally support the machine with a support foot on the NDE side. Support foot is not part of the scope of delivery. Support foot with appropriate rigidity must be sufficiently dimensioned. Support foot must be able to carry total motor weight.
- 7) Not possible for 2-pole motor 1LE55...-4BA.

Article No. supplements and special versions

Standard SIMOTICS SD next generation motors

Motor protection

Selection and ordering data

Motor protection Cast-iron series 1LE55

Motor protection	Artikel-Nr.-Ergänzung		Frame size		IEC	IE4 ----- IE3
	Motor protection letter 15th position of the Article No.	Additional identification code with order code and plain text if required	400	450		
			1LE5534 Add			
			1LE5533 Add			
			1LE5583 Pro			
1LE5.			400	450		

Motor protection						
Without	A	-	<input type="checkbox"/>	<input type="checkbox"/>		
1 or 3 PTC thermistors – for tripping (2 terminals) ¹⁾	B	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
2 or 6 PTC thermistors – for warning and tripping (4 terminals) ¹⁾	C	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
1 temperature sensor KTY84-130 (2 terminals) ¹⁾	F	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
KTY84-130 (4 terminals) ¹⁾	G	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
3 Pt100 resistance (6 terminals)	H	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
6 Pt100 resistance thermometers – 2-wire input (12 terminals)	J	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
1 Pt1000 resistance thermometer (2 terminals)	K	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
2 Pt1000 resistance thermometers (4 terminals)	L	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
1 Pt100 resistance (2 terminals)	P	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
3 Pt100 resistance (9 terminals)	Q	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
6 Pt100 resistance thermometers – 3-wire input (18 terminals)	R	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
3 bimetal sensors (2 terminals) ¹⁾	Z	Q3A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
6 bimetal sensors (NC contact) for warning and tripping (4 terminals) ¹⁾	Z	Q9A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		

- Standard version
- with additional price

Note:
Options are available specifically for bearing protection – for order codes and descriptions, see from Page 2/20.

1) Evaluation with the associated tripping unit (see Catalog IC 10) is recommended.

Article No. supplements and special versions

Standard SIMOTICS SD next generation motors

Terminal box position

Selection and ordering data

Terminal box position Cast-iron series 1LE55

Terminal box position	Artikel-Nr.-Ergänzung Terminal box position code 16th position of the Article No.	Additional identification code with order code and plain text if required	Frame size		IEC	IE4 IE3
			400	450		
			1LE5534 Add			
			1LE5533 Add			
			1LE5583 Pro			
1LE5			400	450		

Terminal box position						
Terminal box socket left-hand side with terminal box top ³⁾	0	-	✓	✓		
Terminal box socket right-hand side with terminal box top ³⁾	1	-	✓	✓		
Terminal box socket left with terminal box 45°	2	-	○	○		
Terminal box socket right with terminal box 45°	3	-	◻	◻		
Anschlusskasten seitlich rechts ¹⁾	5	-	✓	✓		
Anschlusskasten seitlich links ¹⁾	6	-	✓	✓		
Anschlusskasten seitlich links (socket bottom) ²⁾	9	R5L	✓	✓		
Anschlusskasten seitlich rechts (socket bottom) ²⁾	9	R6R	✓	✓		
Terminal box bottom left ²⁾	9	R7L	✓	✓		
Terminal box bottom right ²⁾	9	R7R	✓	✓		

- Standard version
- no additional price
- with additional price

1) For types of construction with feet and flange-mounted with feet, cast feet are standard.
 2) Only possible in combination with type of construction IM B5.
 3) Not possible for motors with vertical drive shaft (IM V1, IM V5, IM V6).

Selection and ordering data

Options

Cast-iron series 1LE55

Special versions	Additional identification code -Z with order code and plain text if required	Frame size		IEC	IE4 IE3
		1LE5534 Add	1LE5533 Add		
		1LE5583 Pro			
1LE5.		400	450		
Motor protection					
1 or 3 PTC thermistors – for tripping (2 terminals) ¹⁾	Q11	✓	✓		
2 or 6 PTC thermistors – for warning and tripping (4 terminals)	Q12	✓	✓		
3 Heissleiter NTC - für Abschaltung (6 Klemmen)	Q21	O.R.	O.R.		
1 KTY84-130 temperature sensor (2 terminals) ¹⁾	Q23	✓	✓		
2 KTY84-130 temperature sensors (4 terminals) ¹⁾	Q25	✓	✓		
3 bimetal sensors (NC contacts) for tripping (2 terminals)	Q31	✓	✓		
6 bimetal sensors (NC contacts) for warning and tripping (4)	Q32	✓	✓		
3 bimetal sensors (NC contacts) for tripping (6 terminals)	Q33	✓	✓		
6 bimetal sensors (NC contacts) for warning and tripping (12)	Q34	✓	✓		
1 Pt1000 resistance thermometer (2 terminals)	Q35	✓	✓		
2 Pt1000 resistance thermometers (4 terminals)	Q36	✓	✓		
6 Temperatursensor PT 1000 (12 Klemmen)	Q37	✓	✓		
3 Pt100 resistance thermometers –2-wire input (6 terminals) ¹⁾	Q60	✓	✓		
6 Pt100 resistance thermometers – 2-wire input (12 terminals) ¹⁾	Q61	✓	✓		
1 Pt100 resistance thermometer – 2-wire input (2 terminals)	Q62	✓	✓		
3 Pt100 resistance thermometers – 3-wire input (9 terminals)	Q63	✓	✓		
6 Pt100 resistance thermometers – 3-wire input (18 terminals)	Q64	✓	✓		
2 Pt100 screw-in thermometers in basic configuration for bearings (2 terminals)	Q72	✓	✓		
2 Pt100 screw-in thermometers, 3-wire input, for bearings (6)	Q78	✓	✓		
2 Pt100 double screw-in thermometers, 3-wire input, for bearings (12 terminals)	Q79	✓	✓		

Selection and ordering data

Options

Cast-iron series 1LE55

Special versions	Additional identification code -Z with order code and plain text if required	Frame size	IEC	IE4 IE3
1LE5.		400 450		
Temperature class 155 (F), utilized acc. to 130 (B), coolant temperature 50 °C, derating approx. 8 % ⁴⁰⁾	N06	✓	✓	
Temperature class 155 (F), utilized acc. to 130 (B), coolant temperature 55 °C, derating approx. 13 % ⁴⁰⁾	N07	✓	✓	
Temperature class 155 (F), utilized acc. to 130 (B), coolant temperature 60 °C, derating approx. 18 % ⁴⁰⁾	N08	✓	✓	
Temperature class 180 (H) ⁴¹⁾	N10	✓	✓	
Temperature class 180 (H) at rated power and max. CT 60 °C ⁴⁾	N11	O.R.	O.R.	
Increased air humidity/temperature with 30 to 60	N30	✓	✓	
Increased air humidity/temperature with 60 to	N31	✓	✓	
Temperature class 155 (F), utilized acc. to 130 (B), with higher coolant temperature and/or installation altitude ³³⁾	Y50 • and spec. power, CT .. °C or IA ... m above sea level	✓	✓	
Temperature class 155 (F), utilized according to 155 (F), other requirements ^{4) 33)}	Y52 • and spec. power, CT .. °C or IA ... m above sea level	✓	✓	
Temperature class 180 (H), utilized according to 155 (F) ³³⁾	Y75 • and spec. power, CT .. °C or IA ... m above sea level	O.R.	O.R.	
Colors and paint finish				
Standard paint finish C2 in RAL 7030 stone gray		□	□	
Unpainted (only cast-iron parts primed)	S00	○	○	
Unpainted, only primed	S01	✓	✓	
Special paint finish	S02	✓	✓	
Special paint finish sea air	S03	✓	✓	
Special paint finish for use	S04	✓	✓	
Internal coating	S05	✓	✓	
Top coat polyurethane ²⁷⁾	S06	□	□	

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Standard SIMOTICS SD next generation motors

Options

Selection and ordering data

Options

Cast-iron series 1LE55

Special versions	Additional identification code -Z with order code and plain text if required	Frame size	IEC	IE4 IE3
1LE5.		1LE5534 Add 1LE5533 Add 1LE5583 Pro		
		400	450	
Paint 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 paint finish RAL....	✓	✓	
Paint finish in special RAL colors: For RAL colors, see "Special paint finish in special RAL colors" (see Catalog Section 1 "Introduction")	Y56 paint finish RAL....	✓	✓	
Modular technology – Basic versions ⁵⁾				
Mounting of holding brake (standard assignment) ^{6) 25) 26) 30)}	F01	O.R.	O.R.	
Mounting of separately driven fan ³⁴⁾	F70	✓	✓	
Modular technology – Additional versions				
Brake supply voltage 230 V AC, 50/60 Hz	F11	O.R.	O.R.	
Brake supply voltage 400 V AC, 50/60 Hz	F12	O.R.	O.R.	
Special technology ⁵⁾				
Mounting of LL 861900 220 rotary pulse encoder ⁹⁾	G04	✓	✓	
Mounting of HOG 9 D 1024 I rotary pulse encoder ⁹⁾	G05	✓	✓	
Mounting of HOG 10 D 1024 I rotary pulse encoder ⁹⁾	G06	✓	✓	
Mounting of HOG 10 DN 1024 I rotary pulse encoder, terminal box moisture protection	G15	✓	✓	
Mounting of HOG 10 DN 1024 I rotary pulse encoder, terminal box dust protection ⁵⁾	G16	✓	✓	
Mounting of rotary pulse encoder HOG 10 DN 1024 I + FSL (integrated centrifugal switch, speed ... rpm), terminal box moisture protection	Y74 • and spec. Rpm	O.R.	O.R.	
Mounting of rotary pulse encoder HOG 10 DN 1024 I + FSL, (integrated centrifugal switch, speed ... rpm), terminal box dust protection	Y76 • and spec. Rpm	✓	✓	
Mounting of rotary pulse encoder HOG 10 DN 1024 I + ESL 93 (integrated electronic speed switch, speed rpm), terminal box dust protection	Y79 • and spec. Rpm	✓	✓	

Selection and ordering data

Options

Cast-iron series 1LE55

Special versions	Additional identification code -Z with order code and plain text if required	Frame size	IEC	IE4
		1LE5534 Add		IE4
		1LE5533 Add		IE3
		1LE5583 Pro		
1LE5... - - - - -		400		450
Mechanical version and degrees of protection				
Low-noise version for 2-pole motors with clockwise direction of	F77	<input type="checkbox"/>	<input type="checkbox"/>	
Low-noise version for 2-pole motors with counter-clockwise direction of rotation	F78	<input type="radio"/>	<input type="radio"/>	
Prepared for mountings, center hole only	G40	<input type="checkbox"/>	<input type="checkbox"/>	
Prepared for mountings with D16 shaft	G42	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Protective cover for encoder	G43	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Protective cover ^{7) 9) 11)}	H00	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Condensation drainage holes	H03	<input type="checkbox"/>	<input type="checkbox"/>	
Rust-resistant screws (externally)	H07	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
IP65 degree of protection ¹³⁾	H20	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
IP56 degree of protection ¹⁴⁾	H22	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Sealing ring made of fluororubber	H25	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Extended corrosion protection of external components	H90	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Grounding brush for converter operation ³²⁾	L52	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Coolant temperature and installation altitude				
Coolant temperature -50 to +40 °C ^{15) 35)}	D02	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Coolant temperature -40 to +40 °C ¹⁵⁾	D03	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Coolant temperature -30 to +40 °C ¹⁵⁾	D04	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Versions in accordance with standards and specifications				
Electrical according to NEMA MG1-12 ¹⁷⁾	D30	<input type="checkbox"/>	<input type="checkbox"/>	
Version according to UL with "Recognition Mark" ¹⁷⁾	D31	<input type="checkbox"/>	<input type="checkbox"/>	
Canadian regulations (CSA) ¹⁶⁾	D40	<input type="checkbox"/>	<input type="checkbox"/>	
TR CU product safety certificate EAC for Eurasian customs union	D47	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Bearings and lubrication				
Regreasing device with M10 × 1 grease nipple according to DIN 7142-A	L19	<input type="radio"/>	<input type="radio"/>	
Located bearing DE	L20	<input type="checkbox"/>	<input type="checkbox"/>	
Located bearing NDE ³⁷⁾	L21	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Bearing design for increased cantilever forces ^{28) 29)}	L22	O.R.	O.R.	
Regreasing device	L23	<input type="checkbox"/>	<input type="checkbox"/>	
Outlet for old grease	L30	O.R.	O.R.	

Article No. supplements and special versions

Standard SIMOTICS SD next generation motors

Options

Selection and ordering data

Options

Cast-iron series 1LE55

Special versions	Additional identification code -Z with order code and plain text if required	Frame size		IEC	IE4 IE3
		1LE5534 Add	1LE5533 Add		
1LE5.		400	450		
Increased maximal speed	L37	O.R.	O.R.		
Bearing insulation DE ^{31) 32)}	L50	✓	✓		
Bearing insulation NDE ³²⁾	L51	✓	✓		
Measuring nipple for SPM shock pulse measurement for bearing inspection	Q01	✓	✓		
Balance and vibration quantity					
Vibration quantity level A		<input type="checkbox"/>	<input type="checkbox"/>		
Vibration quantity level B ¹⁸⁾	L00	✓	✓		
Half-key balancing		<input type="checkbox"/>	<input type="checkbox"/>		
Balancing without feather key, feather key is supplied	L01	✓	✓		
Full-key balancing	L02	✓	✓		
Shaft and rotor					
Shaft extension with standard dimensions, without feather	L04	✓	✓		
Standard cylindrical shaft extension (second shaft end) NDE acc. to EN 50347	L05	✓	✓		
Concentricity of shaft extension in accordance with DIN 42955 Tolerance R	L07	✓	✓		
Concentricity of shaft extension, coaxiality, and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting motors	L08	✓	✓		
Non-standard cylindrical shaft extension, DE ¹⁹⁾	Y58 • and customer specifications	✓	✓		
Non-standard cylindrical shaft extension, NDE ¹⁹⁾	Y59 • and customer specifications	✓	✓		
Special shaft steel as requested by customer	Y60 • and customer specifications	O.R.	O.R.		
Heating and ventilation					
Sheet metal fan cover	F74	<input type="checkbox"/>	<input type="checkbox"/>		
Metal external fan	F76	✓	✓		
Without external fan and without fan cover	F90	✓	✓		
Anti-condensation heating for 230 V (2 terminals)	Q02	✓	✓		
Anti-condensation heating for 115 V (2 terminals)	Q03	✓	✓		

Selection and ordering data

Options

Cast-iron series 1LE55

Special versions	Additional identification code -Z with order code and plain text if required	Frame size		IEC	IE4 IE3
		1LE5534 Add			
		1LE5533 Add			
		1LE5583 Pro			
1LE5.		400	450		
Anti-condensation heating for 400 V (2 terminals)	Q06	✓	✓		
Separately driven fan with non-standard voltage and/or frequency	Y81 • and customer specifications	✓	✓		
Rating plate and additional rating plates					
Additional rating plate for voltage tolerance ²⁰⁾	B07	✓	✓		
Second rating plate, loose	M10	✓	✓		
Rating plate, stainless steel	M11	□	□		
Additional rating plate with deviating rating plate data	Y80 • and customer specifications	✓	✓		
Additional rating plate with customer specifications	Y82 • and customer specifications	✓	✓		
Additional information on rating plate and on package label (max. 20 characters)	Y84 • and customer specifications	✓	✓		
Extension of the liability for defects					
Extension of the liability for defects period by 12 months to a total of 24 months (2 years) from delivery ²¹⁾	Q80	✓	✓		
Extension of the liability for defects by 18 months to a total of 30 months (2.5 years) from delivery ²¹⁾	Q81	✓	✓		
Extension of the liability for defects period by 24 months to a total of 36 months (3 years) from delivery ²¹⁾	Q82	✓	✓		
Extension of the liability for defects by 30 months to a total of 42 months (3.5 years) from delivery ²¹⁾	Q83	✓	✓		
Extension of the liability for defects by 36 months to a total of 48 months (4 years) from delivery ²¹⁾	Q84	✓	✓		
Extension of the liability for defects by 42 months to a total of 60 months (5 years) from delivery ²¹⁾	Q85	✓	✓		
Packaging, safety notes, documentation, and test certificates					
Acceptance test certificate 3.1 in accordance with EN 10204 ²¹⁾	B02	✓	✓		
Printed German/English operating instructions enclosed ²²⁾	B04	✓	✓		
Equivalent circuit diagram	B51	✓	✓		

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Standard SIMOTICS SD next generation motors

Options

Selection and ordering data

Options

Cast-iron series 1LE55

Special versions	Additional identification code -Z with order code and plain text if required	Frame size		IEC	IE4 IE3
		1LE5534 Add	1LE5533 Add		
1LE5.		400	450		
Starting curve (torque-speed and current-speed curve)	B52	✓	✓		
Document - Electrical data sheet	B60	✓	✓		
Document - Order dimensional drawing	B61	✓	✓		
Standard test (routine test) with acceptance	B65	✓	✓		
Temperature rise test without acceptance	B67	✓	✓		
Temperature rise test with acceptance	B68	✓	✓		
Type test with heat run for vertical motors, without acceptance	B80	✓	✓		
Type test with heat run for vertical motors, with acceptance	B81	✓	✓		
Type test with heat run for horizontal motors, without acceptance	B82	✓	✓		
Type test with heat run for horizontal motors, with acceptance	B83	✓	✓		
Documentation Package "Basic"	B90	✓	✓		
Documentation Package "Advanced"	B91	✓	✓		
Documentation Package "Projects"	B92	✓	✓		

Standard version

Without additional charge

• This order code only determines the price of the version – Additional plain text is required.

O. R. Possible on request

- 1) Evaluation with appropriate tripping unit (see Catalog IC 10) is recommended.
- 2) 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.
- 3) The grease lifetime specified in Catalog Section 1 "Introduction" refers to CT 40 °C. If the coolant temperature is increased by 10 K, the grease lifetime and regreasing interval are halved.
- 4) Not possible for 1LE5 motors with increased power rating.
- 5) A second shaft extension is not possible in shaft height 315 - 355. Please inquire for mounted brakes.
- 6) For order codes F11, and F12, the brake supply voltage must be specified or ordered.
- 7) 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.
- 8) n.a.
- 9) The LL and HOG 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 (order code G43).
- 10) Option (encoder mounting) is only possible for motors with a mounted separately driven fan or for naturally cooled motors (without a forceventilated fan). This option can be used in combination with brakes of type KFB and SFB! This option cannot be used in combination with brakes of type 2LM8.
- 11) Protective cover air inlet at vertical type of construction.
- 12) Not possible for type of construction IM V3.
- 13) n.a.
- 14) Not possible in combination with brake 2LM8 – order code F01.
- 15) In connection with mountings, the respective technical specifications must be observed, for SH 315 and 355 please inquire before ordering.
- 16) The rated voltage is indicated on the rating plate without voltage range. Order code D40 does not authorize importing into Canada.
- 17) 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.

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Standard SIMOTICS SD next generation motors

Options

Selection and ordering data

Options Cast-iron series 1LE55

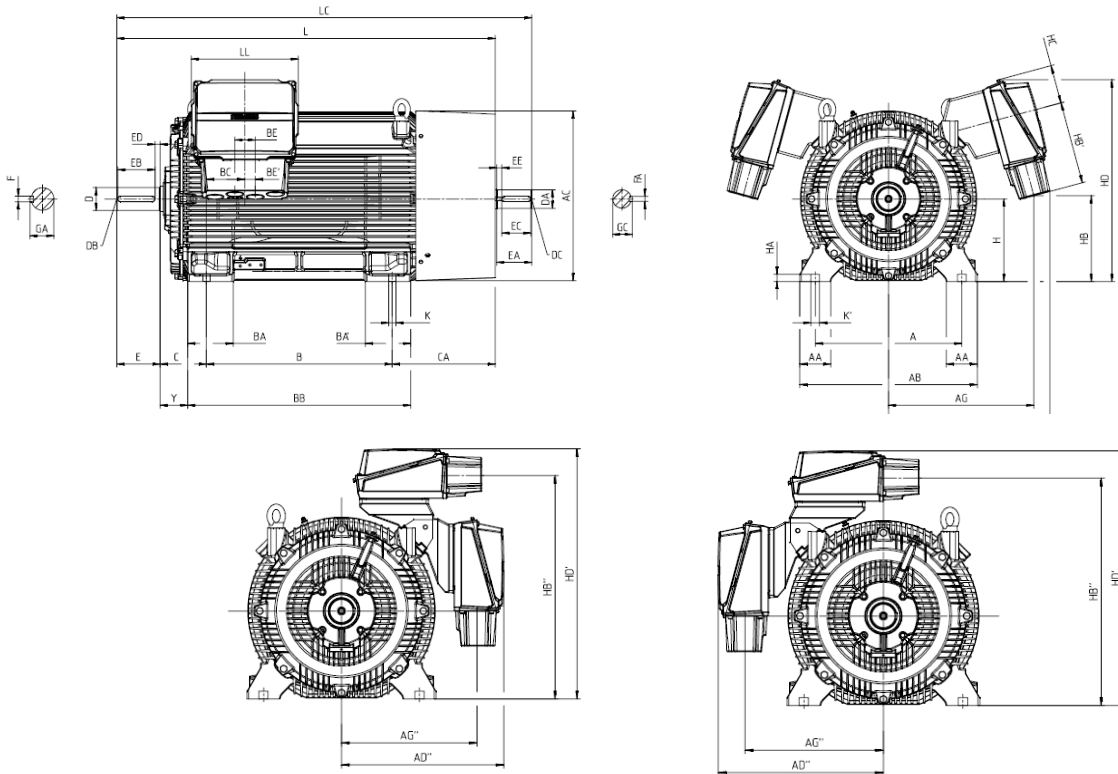
Special versions	Additional identification code -Z with order code and plain text if required	Frame size	IEC	IE4
	1LE5534 Add			IE4
	1LE5533 Add			IE3
	1LE5583 Pro			
1LE5.		400		450

- 18) n.a.
- 19) 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 EN 50347, Form A are used. The feather keyway is positioned centrally on the shaft extension. The length is defined by the manufacturer in accordance with the appropriate standard. 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 nonstandard shaft extensions DE or NDE. The feather key is always supplied.
For order codes Y58, Y59, and L05 the following applies:
- 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.
- 20) Can be ordered for 400 VΔ/690 VY (voltage code "34").
- 21) The delivery time for the factory test certificate may differ from the delivery time for the motor.
- 22) The Operating Instructions (compact) are available in PDF format for all official EU languages at <http://support.automation.siemens.com/WW/view/en/40761976>.
- 23) n.a.
- 24) Not possible in combination with order codes Q72 and Q78.
- 25) Not possible in combination with order codes N05, N06, N07, N08, and N11.
- 26) In combining order codes F01 and F12, the rectifier for the brake will be supplied separately as a single part..
- 27) Order code S06 cannot be combined with order codes S00 and S01. It can be combined with Y53 on request.
- 28) A minimum cantilever force Fmin of 0.5·Fmax is required for NU bearings (cylindrical roller bearings) in contrast to ball bearings. Cylindrical roller bearings are not suitable for coupling output or for brief periods of no-load operation without cantilever force.
- 29) Admissible cantilever forces with reinforced bearings for shaft height 400 - 450 on request. Please indicate cantilever force and lever arm.
- 30) UL- / CSA-approval not applicable for Shaft height 400 - 450.
- 31) For insulated bearing DE and not insulated bearing NDE motor coupling must be insulated.
- 32) Grounding brush (L52) is mandatory at insulated bearing DE and NDE if there is no grounding for drive train available. Otherwise it should not be used..
- 33) Only possible with motors for mains-fed operation.
- 34) Separately driven fan motor is carried out with voltage code 3-4 (400 V / 50 Hz; 460 V / 60 Hz).
- 35) Type of protection is changing to IP54 for shaft height 400 - 450.
- 36) Not possible for 2-pole motors and shaft height 400 - 450.
- 37) Not possible at vertical type of construction for shaft height 400 - 450..
- 38) Only possible in combination with option H08 for motors with flange (IM B5, IM B35, IM V1).
- 39) Restrictions are possible when terminal box mounted.
- 40) Only possible in combination for SIMOTICS SD Add motors (6th position of the Article No.: 3).
- 41) Increased power by 5 % compared to temperature class 155 (F).

Dimension drawings

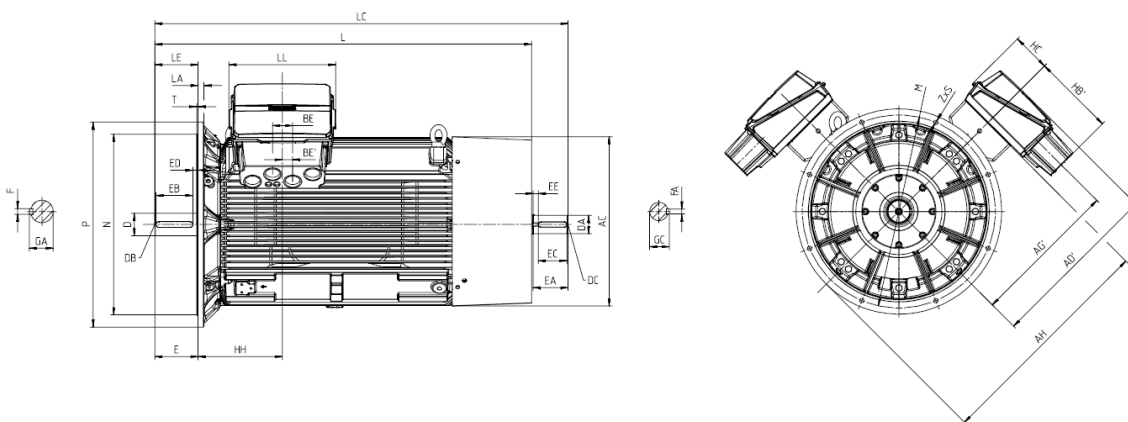
Type of construction IM B3

For flange dimensions, see Page 1/16 (Z = number of mounting holes)



Types of construction IM B5 and IM V1

For flange dimensions, see Page 1/16 (Z = number of mounting holes)



Dimensions

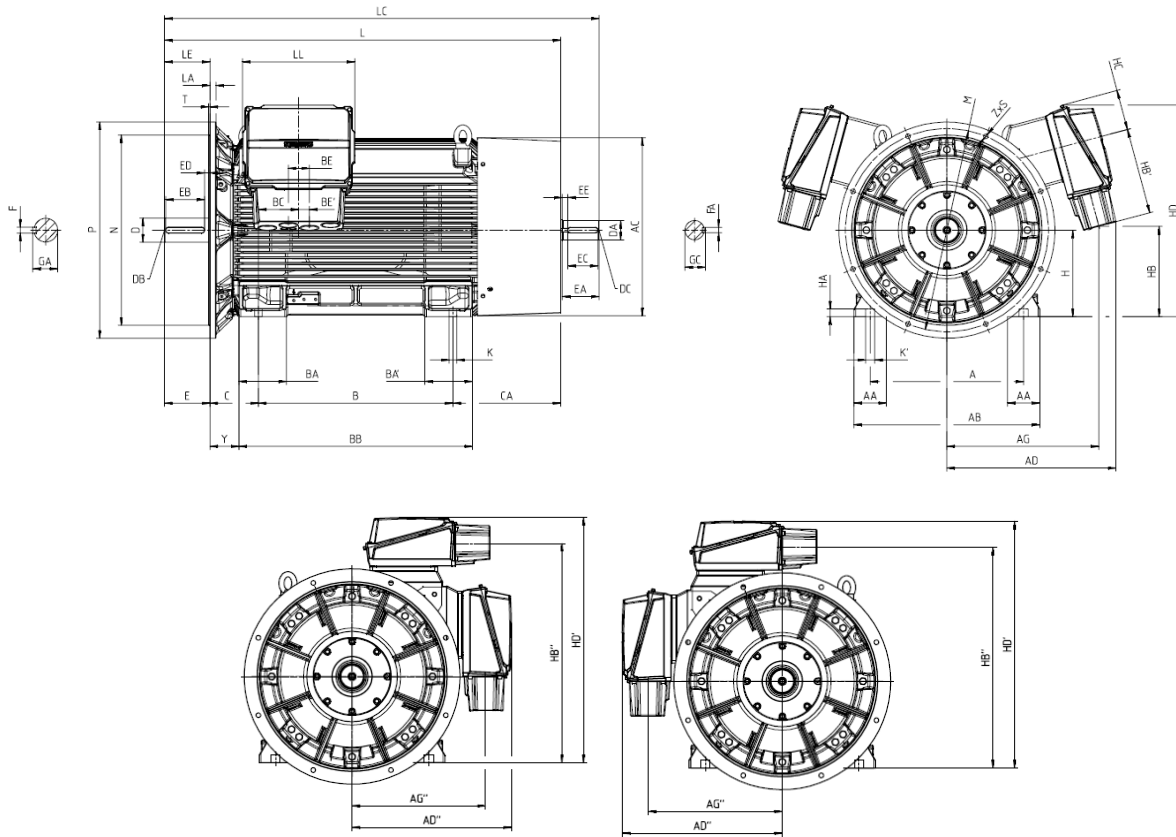
Standard SIMOTICS SD next generation motors

Cast iron series

Dimension drawings

Type of construction IM B35

For flange dimensions, see Page 1/16 (Z = number of mounting holes)



For motor	Dimension designation acc. to IEC																												
Frame size	Motor type	No. of poles	A	AA	AB	AC	AD	AD'	AD''	AG	AG'	AG''	AH	B	B'	B''	BA	BA'	BB	BC	BE	BE'	C	CA	CA'	CA''	H	HA	HB
400	4AA	2	710	150	860	880	785	845	740	705	720	620	1110	900	-	-	220	220	1080	186	87.5	43.5	224	501	-	-	400	35	420
	4AB	4																											
	4AC	6																											
	4AD	8																											
450	4BA	2	800	180	980	970	820	895	775	740	770	655	1235	1000	-	-	260	260	1220	170	87.5	43.5	250	535	-	-	450	42	505
	4BB	4																											
	4BC	6																											
	4BD	8																											

For motor	Dimension designation acc. to IEC		DE shaft extension											NDE shaft extension														
Frame size	Motor type	No. of poles	HB'	HB''	HC	HD	HD'	HH	Y	K	K'	L	LC ¹⁾	LL	D	DB	E	EB	ED	F	GA	DA	DC	EA	EC	EE	FA	GC
400	4AA	2	400	1020	190	980	1140	410	134	35	42	1795	1940	519	80	M20	170	140	25	22	85	70	M20	140	125	10	20	74.5
	4AB	4										1835	2010		110	M24	210	180		28	116	90	M24	170	140	25	25	95
	4AC	6																										
	4AD	8																										
450	4BA	2	400	1105	190	1065	1225	420	140	42	50	1955	2100	519	90	M24	170	140	25	25	95	75	M20	140	125	10	20	79.5
	4BB	4										1995	2210		120		210	180		32	127	100	M24	210	180	25	28	106
	4BC	6																										
	4BD	8																										

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Orientation

Self-ventilated motors, cast iron series 1MB5

Overview

In many industrial and public domains, explosion protection or explosion hazards are ever-present, e.g. in the chemicals industry, in refineries, on drilling platforms, at gas stations, in animal feed manufacturing and in water treatment plants. Based on standard SIMOTICS SD Add motors, in addition to the well-proven features and the wide range of options of the SIMOTICS next generation industrial motors, explosion-protected SIMOTICS XP 1MB5 motors have the necessary technical features for safe and reliable use in hazardous zones and environments.

The risk of explosion is always present when gases, vapors, mist or dust are mixed with oxygen in the air in a ratio that can be ignited, and if sources of ignition are present 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 regulations in the form of laws and legislation 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.

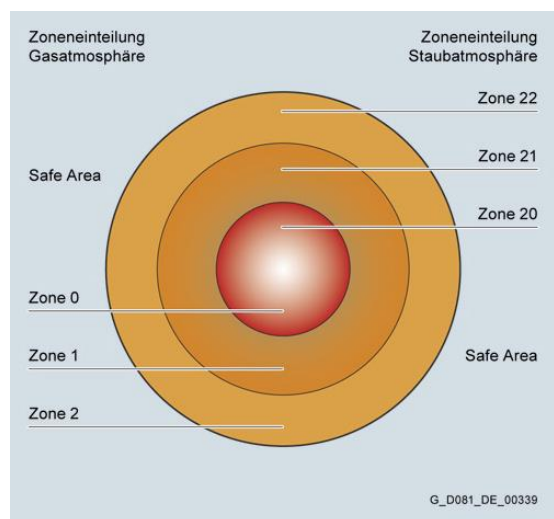
The local conditions must be subdivided into specified zones by the user with the assistance of the responsible authorities in accordance with the frequency of occurrence of an explosion hazard. Device (equipment) categories are assigned to these zones. The zones are then subdivided into possible types of protection and therefore into possible equipment (product) types.

Zone classification

Areas subject to explosion hazard are classified according to zones. Classification according to zones depends on the probability (with respect to time and 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 the appropriate measures to prevent ignition that should be implemented at the motor in order to prevent a surrounding explosive atmosphere from being ignited.

Overview

Gas	Dust	Zone definition acc. to	Assigned types of protection	Category according to RL 2014/34/EU	Equipment protection level acc. to IEC/EN 60079-0
1) 2)	1) 2)	IEC/EN 60079-10-1 for gas atmospheres IEC/EN 60079-10-2 for dust atmospheres			
0	-	An area in which there is an explosive gas atmosphere constantly, over a long period or frequently .	Low-voltage motors Not permitted	1	Ga
1	-	An area in which it is expected that an explosive gas atmosphere will occur occasionally during normal operation.	Ex eb, Ex deb eb, Ex db	2	Gb
2	-	An area in which it is expected that an explosive gas atmosphere will occur only rarely and then only briefly during normal operation.	Ex ec	3	Gc
-	20	A zone in which there is an explosive gas atmosphere comprising dust-air mixtures that occur 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 it can be expected that in normal operation an explosive gas atmosphere in the form of a cloud of combustible dust in the air will occur only rarely and then, only briefly .	Ex tc ³⁾	3	Dc

1) Motors of

- Zone 1 may also be used in Zone 2.
- Zone 21 may also be used in Zone 22.

2) Motors that 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) Ex tc IIIB motors are not approved for operation in environments containing conductive dust.

Types of protection

Type of protection "increased safety" **Ex eb** acc. to IEC/EN 60079-7

Type of protection **Ex ec** ensures that a motor in normal operation as well as when operated under deviating conditions as specified in the standard is not able to ignite a surrounding explosive gas atmosphere.

1MB5 motors are available in an **Ex ec** version.

Type of protection "Dust explosion protection" **Ex tc** acc. to IEC/EN 60079-31

This type of protection applies for electrical equipment protected using a housing 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.

1MB5 motors are available in an **Ex tc** version.

SIMOTICS XP 1MB5 explosion-protected motors

Orientation

Self-ventilated motors, cast iron series 1MB5

Overview

Certification

IEC motors for use in hazardous zones are certified according to the EU Directive 2014/34/EU (ATEX), and are marked according to the following schematic:

Example "Increased safety equipment protection level c"

CE



II

3

G

Ex

ec

IIC

T3

Gc

CE marking

Number of the certifying "notified body" (not applicable for Zone 2/22)

Explosion protection marking

Equipment group: I = Underground
II = all other areas

Category: 3 (Zone 2/22)

Ex atmosphere G = Gas
D = Dust

Explosion protected equipment

Type of protection (ec, db, db eb, eb, tb or tc (db eb = motor enclosure Ex db with Ex eb terminal box))

Explosion group and explosion subgroup II = Gas (IIA, IIB or IIC)
III = Dust (IIIA, IIIB or IIIC)

Temperature class with max. surface temperature

T1 = 450 °C T4 = 135 °C
T2 = 300 °C T5 = 100 °C
T3 = 200 °C T6 = 85 °C

Equipment protection level (G = Gas; D = Dust):

Ga = Very high protection, Da = Very high protection,
Gb = High protection, Db = High protection,
Gc = Increased protection, Dc = Increased protection

Overview of SIMOTICS XP 1MB5 explosion-protected motors

The table below contains an 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 operation or line operation, different order codes are necessary to clearly select the required product.

Area	Cate- gory	Zone	Frequency of the Ex atmosphere	Type of pro- tection	Temperature class	Equip- ment protec- tion level	Degree of protec- tion	Motor type and possible Order code	Operation	Order code	Utilization according to temperature class	Standard
Gases (G)	3G	2	Rarely or briefly	Ex ec IIC ¹⁾	T1 – T3	Gc	IP55	1MB5	Line supply	-	130 (B)	IEC/EN 60079-0 IEC/EN 60079-7
Dusts (D)	3D	22	Rarely or briefly	Ex tc IIIB ¹⁾ : Non-conductive dusts	Max. enclosure temperature T 125 °C	Dc	IP55	1MB5	Line supply	-	130 (B)	IEC/EN 60079-0 IEC/EN 60079-31 ¹⁾
Gases and vapors (G) and dusts (D) ⁵⁾	3G or 3D	2 or 22	Rarely or briefly	Ex ec IIC / Ex tc IIIB ¹⁾ : Non-conductive dusts	T1 – T3/ Max. enclosure temperature T 125 °C	Gc Dc	IP55	1MB5 + B30	Line supply	-	130 (B)	IEC/EN 60079-0 IEC/EN 60079-31 ¹⁾ IEC/EN 60079-7

1) Highest explosion group IIC includes IIB and IIA.

IIIA stands for lint, IIIB for non-conductive dusts and IIIC for conductive dusts.

5) The Ex motor is not admissible in an explosive atmosphere of dust and air (hybrid). There is no standard yet that describes the product requirements for a hybrid mixture.

Benefits

Explosion-protected motors from Siemens offer users numerous advantages:

- The motors are designed and constructed in accordance with Directive 2014/34/EU. 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 motor versions are possible thanks to the wide range of catalog options.
- Additional special versions are possible on request.
- The Operating Instructions are available in all 23 official EU languages as well as Russian and Chinese.

For applications in harsh environments: SIMOTICS XP motors with a cast iron housing

The optimum motor to address various demands

The following motor series are available with cast iron enclosure's for applications in harsh, hazardous environments:

	1MB55
Bearing size	62
Relubrication	Standard
Paint system	Standard paint finish, Corrosion class C2
Motor protection	optional
Warranty	12 months

Range of applications

The explosion-protected 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 utility companies
- Gas stations
- Coking plants
- Mills (e.g. grain, solids)
- Sewage and water treatment plants
- Wood processing industry (e.g. sawdust, wood resin)
- Other industries subject to explosion hazards

Orientation

Self-ventilated motors, cast iron series 1MB5

Technical specifications

General information

Ex motors are suitable for operation on line supplies with a voltage tolerance according to range B acc. to EN 60034-1¹⁾.

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

Operating Instructions 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, versions according to UL and CSA are not possible.

Motor connection

The motors are supplied with an undrilled cable entry plate (order option R53 is the standard version).

The certificates for the motors for hazardous areas are stored with the documentation in the "DT Configurator".

Certified motor circuit breakers/tripping units must always be used for motor protection, see Catalog IC 10.

Type of protection Ex ec for use in Zone 2

- Standard version for paint film thicknesses < 200 µm Ex ec IIC T3 Gc. For additional information about paint finishes and paint film thicknesses, see Chapter 1 from Page 1/4 onwards.
- Optional version for paint film thicknesses > 200 µm to < 2 mm Ex ec IIB T3 Gc (order code **B31**). Additional information about paint and paint film thicknesses, see Chapter 1, from Page 1/4 onwards.

For this purpose, the motors are modified in version "Increased safety, equipment protection level ec" and are suitable for use in hazardous Zone 2 for temperature classes T1 to T3. The maximum surface temperature that can occur during operation must lie below the temperature limit of the respective temperature class. The ventilation system must be in accordance with IEC/EN 60079-0. The motors are equipped with an external grounding terminal. The terminal box is similar to the Ex eb design.

The motors are equipped with an external grounding terminal – and as standard, a plastic external fan. A metal external fan (cast iron) can be optionally ordered by specifying order code **F76**.

Certifications:

- Zone 2: EU declaration of conformity


Ambient temperature

- Standard: -20 to +40 °C
- Optional: -40 to +40 °C (order code **D03**)
- Optional: -20 to +60 °C (order codes **N05, N06, N07, N08**)

Above 40 °C, the power is reduced.

Other temperatures are available on request.

The rating plate or the additional rating plate contains the text:

 II 3G Ex ec IIC T3 Gc

Type of protection Ex tc IIIB for use in Zone 22

Type of protection Ex tc IIIB according to IEC/EN 60079-31 for Zone 22 for non-conductive dust (IP55) and line operation (1MB552)


The motors are modified for this purpose for use in zones subject to dust explosion hazards. For rated operation, the surface temperature is ≤ 125 °C

The motors have an external grounding terminal and a metal external fan (cast iron).

Certifications:

- Zone 22: EU declaration of conformity

Identification on the rating plate:

- Zone 22:  II 3D Ex tc IIIB T125 °C Dc
- Ambient temperature
- Standard: -20 to +40 °C
- Optional: -40 to +40 °C (order code **D03**)
- Optional: -20 to +60 °C (order codes **N05, N06, N07, N08**)

The power is reduced for temperatures > 40 °C.

Other temperatures are available on request.

1) Eight-pole Ex motors in frame size 450 are only suitable for operation on line supplies with a voltage and frequency tolerance according to range A to EN 60034-1.

■ Technical specifications


Type of protection Ex ec/Ex tc for use in Zone 2/22 ⁴⁾

The motors must be ordered with:

- version for Zone 2 or 22 for non-conductive dust for line operation – order code **B30**

The Ex motor is not admissible in an explosive atmosphere of dust and air (hybrid). There is no standard yet that describes the product requirements for a hybrid mixture.

Zone 2/22:  II 3G Ex ec IIC T3 Gc

 II 3D Ex tc IIIB T125 °C Dc

VIK version

VIK = Verband der Industriellen Energie- und Kraftwirtschaft e.V. (German Association of the Energy and Power Supply Industry)

- **VIK standard version** –
1LE5+ order code **C02**
"VIK" marking on the rating plate.
Implemented the same as Ex ec IIC T3 Gc, however without the type of protection being marked
→ Product range, Catalog Part 2.
- **VIK-Ex ec version for line operation** –
1MB5.3 + order code **C02**
"VIK" and "Ex ec IIC T3 Gc" markings on the rating plate according to Directive 2014/34/EU (ATEX).
→ Product range in this catalog part.

Both versions include technology for Zone 2 to type of protection Ex ec IIC T3 Gc. Motors can be supplied in accordance with the technical requirements of the VIK recommendation.

Minimum efficiency class:

- Standard VIK version:
IE3 from 0.75 kW in accordance with legal requirements.
- VIK-Ex ec version:
As a minimum, IE3 according to the VIK recommendation issued in January 2018.

Coolant temperature

Coolant temperature –20 to +40 °C for explosion-proof motor

Orientation

Self-ventilated motors, cast iron series 1MB5

Technical specifications (continued)

This table lists the most important technical specifications. For more information and details, see Catalog Part 1 "Introduction".

Type of motor	IEC SIMOTICS XP 1MB5 low-voltage motors
Connection types	Star/delta connection The connection type to be used can be taken from the Article No. supplements for the required motor.
Number of poles	2, 4, 6, 8
Frame sizes	400 ... 450
Rated power	355 ... 1000 kW
Frequencies	50 Hz and 60 Hz
Versions	<ul style="list-style-type: none"> • IE3 (Premium Efficiency) • IE4 (Super Premium Efficiency)
Marking	IEC 60034-30-1 IE3, IE4: 2, 4, 6 and 8-pole
Rated speed (synchronous speed)	750 ... 3600 rpm
Rated torque	1600 ... 8100 Nm
Stator winding insulation in accordance with EN 60034-1 (IEC 60034-1)	Temperature class 155 (F), utilized to temperature class 130 (B) 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 (IC 411)
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: 400 V, 500 V, 690 V The voltage that can be used can be found in the "Selection and ordering data" for the required motor.
Type of construction according to EN 60034-7 (IEC 60034-7)	<ul style="list-style-type: none"> • Without flange: IM B3, IM V5 (on request), IM V6 (on request) • With flange: IM B5 with support foot, IM V1, IM B35
Paint finish Suitability of paint finish for climate group according to IEC 60721, Part 2-1	As standard: Color RAL 7030 stone gray See "Paint finish" in Catalog Section 1 "Introduction".
Vibration severity grade according to EN 60034-14 (IEC 60034-14)	Grade A (standard – without special vibration requirements) Optionally: Grade B (with special vibration requirements) See "Balance and vibration quantity" in Catalog Part 1 "Introduction".
Shaft extension according to DIN 748 (IEC 60072)	Balancing type: Half-key balancing as standard See "Balance and vibration severity" in Catalog Part 1 "Introduction".
Sound pressure level according to DIN EN ISO 1680 (tolerance +3 dB)	The corresponding 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 mounted components
Seamless series concept	<ul style="list-style-type: none"> • Terminal box diagonally split – and can be optionally rotated 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

Additional information

For additional information, please contact your Siemens partner in the regions or use the DT Configurator.

Contacts: www.siemens.com/automation/partner
DT Configurator: www.siemens.com/dt-configurator

You can find out about certain technologies through Siemens contact partners worldwide.

Wherever possible, you will be able to find a local contact for:

- Technical support
- Spare parts/repairs
- Service
- Training
- Sales
- Technical support/engineering

You start by selecting a:

- country
- product or
- sector

Motors, type of protection Ex ec and Ex tc for use in Zones 2 and 22

SIMOTICS XP 1MB5 explosion-protected motors IE4 Super Premium Efficiency

Self-ventilated motors, cast iron series 1MB55 . 4

Selection and ordering data																				
P _{rated} 50 Hz	Frame size	Operating values at rated power										Cast iron series 1MB55 . 4 IE4 version acc. to IEC 60034-30-1 Article No.	m _M B3	J	Torque class					
		n _{rated}	T _{rated}	η _{rated} , 4/4	η _{rated} , 3/4	η _{rated} , 2/4	COSφ _{rat} , ed, 4/4	I _{rated} Δ	T _{LFL} / T _{rated}	I _{LFL} / I _{rated}	T _β / T _{rated}					L _{pFA}	LWA			
kW	FS	rpm	Nm	%	%	%	A						dB(A)	dB(A)	▲ New	kg	kgm ²	CL		
• Cooling: self ventilated (IC411) • Efficiency: IE4 Super Premium Efficiency, service factor for sinusoidal supply (SF) 1.05 • Insulation: Thermal class 155 (temperature class F), IP55 degree of protection, utilization for sinusoidal supply according to thermal class 130 (temperature class B)																				
2-pole: 3000 rpm at 50 Hz																				
560	3) 4)	400	2988	1790	97.0	96.9	96.5	0.89	940	1.6	7.3	3.1	74	90	▲	1MB55	4-4AA3	2850	8.9	10
630	3) 4)	400	2988	2000	97.0	97.1	96.8	0.90	1040	1.6	7.3	3.0	74	90	▲	1MB55	4-4AA5	3000	9.8	10
710	5)	400	2988	2250	97.1	97.2	96.9	0.90	680	1.7	7.3	2.9	74	90	▲	1MB55	4-4AA7	3200	10.8	10
800	3) 4) 5)	450	2990	2550	97.4	97.4	97.1	0.87	790	1.2	7.7	3.3	75	91	▲	1MB55	4-4BA3	4000	12.3	7
900	3) 4) 5)	450	2988	2900	97.4	97.5	97.4	0.89	870	1.2	7.2	3.0	75	91	▲	1MB55	4-4BA5	4250	13.5	7
1000	3) 4) 5)	450	2988	3200	97.4	97.6	97.6	0.90	950	1.2	7.0	2.7	75	91	▲	1MB55	4-4BA7	4450	14.7	7
4-pole: 1500 rpm at 50 Hz																				
560	3) 4)	400	1493	3600	96.9	97.0	96.6	0.86	970	2.2	7.5	3.1	72	88	▲	1MB55	4-4AB3	3050	14.9	13
630	3) 4)	400	1492	4050	96.8	96.9	96.6	0.87	1080	2.2	6.9	2.8	74	90	▲	1MB55	4-4AB5	3150	15.6	13
710	5)	400	1492	4550	97.0	97.0	96.8	0.87	700	2.2	7.2	2.9	74	90	▲	1MB55	4-4AB7	3250	16.9	13
800	5)	450	1492	5100	96.9	97.1	96.9	0.87	790	1.4	6.5	2.4	79	95	▲	1MB55	4-4BB3	4000	24.0	10
900	5)	450	1492	5800	97.0	97.2	97.0	0.88	880	1.4	6.5	2.5	79	95	▲	1MB55	4-4BB5	4150	25.4	10
1000	3) 5)	450	1492	6400	97.1	97.2	97.1	0.88	980	1.5	6.8	2.6	79	95	▲	1MB55	4-4BB7	4350	28.0	10
6-pole: 1000 rpm at 50 Hz																				
450		400	994	4300	96.6	96.8	96.4	0.85	790	2.2	7.2	2.7	70	86	▲	1MB55	4-4AC3	3100	25.5	16
500	3)	400	994	4800	96.7	96.8	96.5	0.85	880	2.3	7.3	2.8	70	86	▲	1MB55	4-4AC5	3250	27.4	16
560		400	994	5400	96.7	96.8	96.4	0.84	1000	2.4	7.5	2.9	70	86	▲	1MB55	4-4AC7	3300	28.6	16
630	3) 4)	450	995	6000	96.8	97.0	96.7	0.83	1130	2.0	7.0	2.8	72	88	▲	1MB55	4-4BC3	4050	38.6	13
710	5)	450	994	6800	96.8	97.0	96.9	0.84	730	1.8	6.6	2.5	72	88	▲	1MB55	4-4BC5	4200	41.0	13
800	3) 5)	450	994	7700	96.8	97.0	96.8	0.84	820	1.8	6.6	2.4	74	90	▲	1MB55	4-4BC7	4300	43.3	13
8-pole: 750 rpm at 50 Hz																				
355		400	744	4550	95.8	96.1	95.8	0.80	670	2.0	6.5	2.6	64	80	▲	1MB55	4-4AD3	2850	21.9	13
400		400	744	5100	96.0	96.2	95.9	0.80	750	2.1	6.8	2.7	64	80	▲	1MB55	4-4AD5	3050	24.5	13
450		400	744	5800	96.0	96.3	96.0	0.80	850	2.1	6.8	2.7	64	80	▲	1MB55	4-4AD7	3250	27.5	13
500	7)	450	745	6400	96.2	96.4	96.1	0.79	950	2.0	6.8	2.5	67	83	▲	1MB55	4-4BD3	3800	34.0	13
560	7)	450	745	7200	96.3	96.5	96.1	0.79	1060	2.0	6.9	2.6	67	83	▲	1MB55	4-4BD5	4000	38.0	13
630	3) 7)	450	745	8100	96.4	96.6	96.3	0.80	1180	2.0	6.9	2.5	67	83	▲	1MB55	4-4BD7	4250	42.5	13
Zones																				
Zone 22 (rarely or temporarily non-conductive dusts) Ex tc III B																2			Order code(s)	
Zone 2 (rarely explosive or temporarily explosive gases) Ex ec IIC																3			Order code(s)	
Voltages																				
50 Hz	400 VΔ/690 VY	60 Hz	460 VΔ													Standard	3 4		Order code(s)	
50 Hz	500 VΔ	60 Hz	575 VΔ													No additional price	4 0		Order code(s)	
50 Hz	690 VΔ													No additional price	4 7		Order code(s)			
For other voltages and more information, see from Page 2/15																				
Types of construction																				
Without flange																IM B3 ²⁾	Standard	A	Order code(s)	
With flange																IM B5 ²⁾	With additional	F	Order code(s)	
For other types of construction and more information, see from Page 2/16																				
Motor protection																				
Without																Standard	A	Order code(s)		
PTC thermistor with 3 temperature sensors																With additional	B	Order code(s)		
For other motor protection and more information, see from Page 2/18																				
Terminal box position																				
Terminal box base left with terminal box 45°																No additional price	2	Order code(s)		
Terminal box base right with terminal box 45°																Standard	3	Order code(s)		
For other terminal box positions and more information, see from Page 2/19																				
Special versions																				
Force ventilated w/o ext. fan/fan cover (IC418)																1MB55 . 4-	■ . ■ ■ ■ ■	-Z	F90+ +	
Options, see from Page 2/20																				
																1MB55 . 4-	■ . ■ ■ ■ ■	-Z	. . . + . . . + . . . + . . .	

3) Terminal box 1XB1631.
 4) Terminal box position NDE can only be ordered using order code H09 (2 x TB3R61 terminal box). Order code H08 not available.
 5) Standard version is 50 Hz / 690 V (voltage code 4-7) or 60 Hz / 575 V (voltage code 4-0).

6) n.a.
 7) Utilization for sinusoidal supply according to thermal class 155 (Temperature class F).

Motors, type of protection Ex ec and Ex tc for use in Zones 2 and 22

SIMOTICS XP 1MB5 explosion-protected motors IE4 Super Premium Efficiency

Self-ventilated motors, cast iron series 1MB55 . 4

Selection and ordering data														Cast iron series 1MB55 . 4		Torque class			
P _{rated} 60 Hz	Frame size	Operating values at rated power											m _{M B3}	J	CL				
		n _{rated}	T _{rated}	η _{rated, 4/4}	η _{rated, 3/4}	η _{rated, 2/4}	cos φ _{rat, ed, 4/4}	I _{ratedΔ}	T _{Lr} /T _{rated}	I _{Lr} /I _{rated}	T _B /T _{rated}	L _{pFA}				L _{WA}			
KW	FS	rpm	Nm	%	%	%	A							▲ New	kg	kgm ²	CL		
• Cooling: self ventilated (IC411) • Efficiency: IE4 Super Premium Efficiency, service factor for sinusoidal supply (SF) 1.05 • Insulation: Thermal class 155 (temperature class F), IP55 degree of protection, utilization for sinusoidal supply according to thermal class 130 (temperature class B)																			
2-pole: 3600 rpm at 60 Hz																			
616	3) 4)	400	3588	1640	96.8	96.7	96.2	0.89	900	1.6	7.4	3.1	78	94	▲ 1MB55	■ 4-4AA3	■ - - - - -	2850 8.9 10	
693	3) 4)	400	3588	1840	97.0	96.9	96.4	0.90	1000	1.6	7.4	3.0	78	94	▲ 1MB55	■ 4-4AA5	■ - - - - -	3000 9.8 10	
781	3) 4) 5)	400	3590	2100	97.1	97.0	96.5	0.89	910	1.8	7.5	3.2	78	94	▲ 1MB55	■ 4-4AA7	■ - - - - -	3200 10.8 10	
920	3) 4) 5) 6)	450	3590	2450	97.3	97.3	96.8	0.88	1080	1.1	7.6	3.2	79	95	▲ 1MB55	■ 4-4BA3	■ - - - - -	4000 12.3 7	
1040	3) 4) 5) 6)	450	3588	2750	97.4	97.4	97.0	0.89	1200	1.2	7.2	3.0	79	95	▲ 1MB55	■ 4-4BA5	■ - - - - -	4250 13.5 7	
1120	3) 4) 5) 6)	450	3586	3000	97.4	97.6	97.3	0.90	1280	1.2	6.9	2.6	79	95	▲ 1MB55	■ 4-4BA7	■ - - - - -	4450 14.7 7	
4-pole: 1800 rpm at 60 Hz																			
644	3) 4)	400	1793	3450	96.9	96.9	96.4	0.87	960	2.1	7.5	3.0	76	92	▲ 1MB55	■ 4-4AB3	■ - - - - -	3050 14.9 13	
725	3) 4)	400	1792	3850	96.8	96.8	96.4	0.87	1080	2.1	6.9	2.7	78	94	▲ 1MB55	■ 4-4AB5	■ - - - - -	3150 15.6 13	
817	5)	400	1791	4350	96.9	97.0	96.7	0.88	960	1.9	6.8	2.5	78	94	▲ 1MB55	■ 4-4AB7	■ - - - - -	3250 16.9 13	
920	3) 4) 5)	450	1792	4900	96.9	97.0	96.6	0.87	1100	1.3	62.3	2.3	83	99	▲ 1MB55	■ 4-4BB3	■ - - - - -	4000 24.0 10	
1040	3) 4) 5)	450	1793	5500	97.1	97.1	96.7	0.87	1240	1.4	6.8	2.6	83	99	▲ 1MB55	■ 4-4BB5	■ - - - - -	4150 25.4 10	
1150	3) 4) 5) 6)	450	1792	6100	97.1	97.2	96.9	0.88	1350	1.4	6.7	2.4	83	99	▲ 1MB55	■ 4-4BB7	■ - - - - -	4350 28.0 10	
6-pole: 1200 rpm at 60 Hz																			
518	3) 4)	400	1194	4150	96.7	96.8	96.4	0.86	780	2.1	7.3	2.6	73	89	▲ 1MB55	■ 4-4AC3	■ - - - - -	3100 25.5 16	
575	3)	400	1194	4600	96.8	96.9	96.5	0.86	870	2.2	7.4	2.7	73	89	▲ 1MB55	■ 4-4AC5	■ - - - - -	3250 27.4 16	
644	3) 4)	400	1194	5200	96.8	96.8	96.4	0.85	980	2.3	7.6	2.8	73	89	▲ 1MB55	■ 4-4AC7	■ - - - - -	3300 28.6 16	
725	3) 4)	450	1195	5800	96.9	97.0	96.7	0.84	1120	1.9	7.0	2.6	75	91	▲ 1MB55	■ 4-4BC3	■ - - - - -	4050 38.6 13	
817	5)	450	1194	6500	96.9	97.1	96.9	0.84	1010	1.7	6.6	2.3	75	91	▲ 1MB55	■ 4-4BC5	■ - - - - -	4200 41.0 13	
920	3) 5)	450	1194	7400	96.9	97.0	96.7	0.84	1130	1.8	6.6	2.4	77	93	▲ 1MB55	■ 4-4BC7	■ - - - - -	4300 43.3 13	
8-pole: 900 rpm at 60 Hz																			
408	3) 4)	400	894	4350	95.9	96.1	95.8	0.81	660	1.9	6.5	2.5	67	83	▲ 1MB55	■ 4-4AD3	■ - - - - -	2850 21.9 13	
460	3) 4)	400	894	4900	96.1	96.2	95.8	0.81	740	1.9	6.8	2.6	67	83	▲ 1MB55	■ 4-4AD5	■ - - - - -	3050 24.5 13	
518	3) 4)	400	894	5500	96.2	96.3	96.0	0.81	830	2.0	6.8	2.7	67	83	▲ 1MB55	■ 4-4AD7	■ - - - - -	3250 27.5 13	
575	7)	450	895	6100	96.3	96.4	96.0	0.80	940	1.9	6.8	2.4	70	86	▲ 1MB55	■ 4-4BD3	■ - - - - -	3800 34.0 13	
644	7)	450	895	6900	96.4	96.5	96.1	0.80	1050	1.9	6.9	2.5	70	86	▲ 1MB55	■ 4-4BD5	■ - - - - -	4000 38.0 13	
725	3) 7)	450	895	7700	96.5	96.6	96.3	0.81	1160	1.9	6.9	2.4	70	86	▲ 1MB55	■ 4-4BD7	■ - - - - -	4250 42.5 13	
Zones																			
Zone 22 (rarely or temporarily non-conductive dusts) Ex tc IIIB														2					Order code(s)
Zone 2 (rarely explosive or temporarily explosive gases) Ex ec IIC														3					
Voltages																			
50 Hz 400 VΔ/690 VY														60 Hz 460 VΔ		Version		Order code(s)	
50 Hz 500 VΔ														60 Hz 575 VΔ		Standard		3 4	
50 Hz 690 VΔ																No additional price		4 0	
																No additional price		4 7	
For other voltages and more information, see from Page 2/15																			
Types of construction																			
Without flange IM B3 ²⁾														Version		Standard		A	Order code(s)
With flange IM B5 ²⁾														With additional		F			
For other types of construction and more information, see from Page 2/16																			
Motor protection																			
Without														Version		Standard		A	Order code(s)
PTC thermistor with 3 temperature sensors														With additional		B			
For other motor protection and more information, see from Page 2/18																			
Terminal box position																			
Terminal box base left with terminal box 45°														Version		No additional price		2	Order code(s)
Terminal box base right with terminal box 45°														Standard				3	
For other terminal box positions and more information, see from Page 2/19																			
Special versions																			
Force ventilated w/o ext. fan/fan cover (IC418)														1MB55 . 4-		■ ■		-Z	F90+ . . . + . . . + . . .
Options, see from Page 2/20																			
														1MB55 . 4-		■ ■		-Z	. . . + . . . + . . . + . . .

3) Terminal box 1XB1631.

4) Terminal box position NDE can only be ordered using order code H09 (2 x TB3R61 terminal box). Order code H08 not available.

5) Standard version is 50 Hz / 690 V (voltage code 4-7) or 60 Hz / 575 V (voltage code 4-0).

6) Ordered for an additional price.

7) Utilization for sinusoidal supply according to thermal class 155 (Temperature class F).

Motors, type of protection Ex ec and Ex tc for use in Zones 2 and 22

SIMOTICS XP 1MB5 explosion-protected motors

IE3 Premium Efficiency

Self-ventilated motors, cast iron series 1MB5 . 3

Selection and ordering data															Cast iron series 1MB5 . 3 IE3 version acc. to IEC 60034-30-1 Article No.			
P _{Rated} 50 Hz	Frame size	Operating values at rated power										m _{M B3}	J	Torque class				
		n _{Rated}	T _{Rated}	η _{Rated} , 4/4	η _{Rated} , 3/4	η _{Rated} , 2/4	COSφ _{rat} , ed, 4/4	I _{rated} Δ	T _{Lr/I} T _{Rated}	I _{Lr/I} I _{Rated}	T _β T _{Rated}				L _p fA	LWA		
kW	FS	rpm	Nm	%	%	%	A					dB(A)	dB(A)	▲ New	kg	kgm ²	CL	
2-pole: 3000 rpm at 50 Hz																		
560 ^{3) 4)}	400	2986	1790	96.6	96.7	96.3	0.90	930	1.6	7.0	2.8	74	90	▲	1MB55	■3-4AA3	■-■■■■■	2850 8.9 10
630 ^{3) 4)}	400	2986	2000	96.6	96.7	96.6	0.91	1030	1.6	7.0	2.8	74	90	▲	1MB55	■3-4AA5	■-■■■■■	3000 9.8 10
710 ⁵⁾	400	2986	2250	96.8	96.9	96.7	0.91	670	1.7	7.0	2.8	74	90	▲	1MB55	■3-4AA7	■-■■■■■	3200 10.8 10
800 ^{3) 4) 5)}	450	2988	2550	97.0	97.0	96.6	0.88	780	1.1	7.5	3.1	75	91	▲	1MB55	■3-4BA3	■-■■■■■	4000 12.3 7
900 ^{3) 4) 5)}	450	2986	2900	97.0	97.1	96.9	0.90	860	1.1	7.0	2.8	75	91	▲	1MB55	■3-4BA5	■-■■■■■	4250 13.5 7
1000 ^{3) 4) 5)}	450	2984	3200	97.0	97.1	97.0	0.91	950	1.1	6.8	2.6	75	91	▲	1MB55	■3-4BA7	■-■■■■■	4450 14.7 7
4-pole: 1500 rpm at 50 Hz																		
560	400	1492	3600	96.2	96.3	95.8	0.87	970	1.8	6.5	2.7	78	94	▲	1MB55	■3-4AB3	■-■■■■■	2800 12.8 13
630 ^{3) 4)}	400	1492	4050	96.4	96.5	95.9	0.87	1080	1.9	6.8	2.7	78	94	▲	1MB55	■3-4AB5	■-■■■■■	3000 14.4 13
710 ⁵⁾	400	1492	4550	96.5	96.6	96.2	0.88	700	1.9	6.8	2.7	78	94	▲	1MB55	■3-4AB7	■-■■■■■	3200 16.5 13
800 ⁵⁾	450	1492	5100	96.5	96.6	96.1	0.88	790	1.6	7.0	2.6	81	97	▲	1MB55	■3-4BB3	■-■■■■■	3850 22.2 10
900 ⁵⁾	450	1492	5800	96.6	96.7	96.2	0.87	900	1.5	7.0	2.6	81	97	▲	1MB55	■3-4BB5	■-■■■■■	4100 24.8 10
1000 ^{3) 5)}	450	1492	6400	96.6	96.7	96.3	0.89	970	1.7	7.0	2.6	81	97	▲	1MB55	■3-4BB7	■-■■■■■	4300 27.4 10
6-pole: 1000 rpm at 50 Hz																		
450	400	992	4350	96.0	96.1	95.8	0.86	790	2.1	6.5	2.7	72	88	▲	1MB55	■3-4AC3	■-■■■■■	2900 22.0 13
500	400	992	4800	96.0	96.1	95.8	0.86	870	2.2	6.5	2.7	72	88	▲	1MB55	■3-4AC5	■-■■■■■	3050 24.7 13
560 ³⁾	400	992	5400	96.2	96.3	96.0	0.86	980	2.2	6.5	2.7	72	88	▲	1MB55	■3-4AC7	■-■■■■■	3250 27.8 13
630 ³⁾	450	993	6100	96.3	96.4	96.2	0.85	1110	2.0	6.5	2.6	74	90	▲	1MB55	■3-4BC3	■-■■■■■	3800 34.4 13
710 ⁵⁾	450	993	6800	96.3	96.4	96.4	0.85	730	2.0	6.5	2.5	74	90	▲	1MB55	■3-4BC5	■-■■■■■	4050 38.5 13
800 ^{3) 5)}	450	993	7700	96.5	96.7	96.5	0.85	820	2.0	6.5	2.5	74	90	▲	1MB55	■3-4BC7	■-■■■■■	4300 43.1 13
8-pole: 750 rpm at 50 Hz																		
355	400	742	4550	95.6	95.7	95.5	0.81	660	1.9	6.2	2.5	64	80	▲	1MB55	■3-4AD3	■-■■■■■	2850 21.9 13
400	400	742	5100	95.7	95.8	95.5	0.81	740	2.0	6.5	2.6	64	80	▲	1MB55	■3-4AD5	■-■■■■■	3050 24.5 13
450	400	742	5800	95.8	95.9	95.8	0.81	840	2.0	6.5	2.6	64	80	▲	1MB55	■3-4AD7	■-■■■■■	3250 27.5 13
500 ⁷⁾	450	744	6400	95.9	96.0	95.7	0.80	940	1.9	6.5	2.4	67	83	▲	1MB55	■3-4BD3	■-■■■■■	3800 34.0 13
560 ⁷⁾	450	744	7200	96.0	96.1	95.8	0.80	1050	1.9	6.5	2.4	67	83	▲	1MB55	■3-4BD5	■-■■■■■	4000 38.0 13
630 ^{3) 7)}	450	744	8100	96.1	96.2	95.9	0.81	1170	1.9	6.5	2.4	67	83	▲	1MB55	■3-4BD7	■-■■■■■	4250 42.5 13
Zones															Order code(s)			
Zone 22 (rarely or temporarily non-conductive dusts) Ex tc IIIB															2	-		
Zone 2 (rarely explosive or temporarily explosive gases) Ex ec IIC															3	-		
Voltages															Order code(s)			
Version															Standard			
50 Hz 400 VΔ/690 VY 60 Hz 460 VΔ															3	4		
50 Hz 500 VΔ 60 Hz 575 VΔ															4	0		
50 Hz 690 VΔ															4	7		
For other voltages and more information, see from Page 2/15															...			
Types of construction															Order code(s)			
Version															Standard			
Without flange IM B3 ²⁾															A	-		
With flange IM B5 ²⁾															F	-		
For other types of construction and more information, see from Page 2/16															...			
Motor protection															Order code(s)			
Version															Standard			
Without															A	-		
PTC thermistor with 3 temperature sensors															B	-		
For other motor protection and more information, see from Page 2/18															...			
Terminal box position															Order code(s)			
Version															Standard			
Terminal box base left with terminal box 45°															2	-		
Terminal box base right with terminal box 45°															3	-		
For other terminal box positions and more information, see from Page 2/19															...			
Special versions															Order code(s)			
Force ventilated w/o ext. fan/fan cover (IC418)															1MB55 . 3-	■-■■■■■ -Z F90+		
Options, see from Page 2/20															1MB55 . 3-	■-■■■■■ -Z		

3) Terminal box 1XB1631.

4) Terminal box position NDE can only be ordered using order code H09 (2 x TB3R61 terminal box). Order code H08 not available.

5) Standard version is 50 Hz / 690 V (voltage code 4-7) or 60 Hz / 575 V (voltage code 4-0).

6) n.a.

7) Utilization for sinusoidal supply according to thermal class 155 (Temperature class F).

Motors, type of protection Ex ec and Ex tc for use in Zones 2 and 22

SIMOTICS XP 1MB5 explosion-protected motors

IE3 Premium Efficiency

Self-ventilated motors, cast iron series 1MB55 . 3

Selection and ordering data

P _{Rated} 60 Hz	Frame size	Operating values at rated power											Cast iron series 1MB55 . 3 IE3 version acc. to IEC 60034-30-1 Article No.	m _M B3	J	Torque class						
		n _{rated}	T _{rated}	η _{rated} , 4/4	η _{rated} , 3/4	η _{rated} , 2/4	COSφ _{rat} ed, 4/4	I _{rated} Δ	T _{LR} /T _{rated}	I _{LL} /I _{rated}	T _{pl} /T _{rated}	L _{plA}					LWA					
KW	FS	rpm	Nm	%	%	%	A								▲ New	kg	kgm ²	CL				
2-pole: 3600 rpm at 60 Hz																						
616	400	3586	1640	96.5	96.4	95.8	0.90	890	1.6	7.2	2.8	78	94	▲ 1LE5 5 33-4AA3	2850	8.9	10					
693	400	3586	1850	96.5	96.5	96.2	0.91	990	1.6	7.1	2.8	78	94	▲ 1LE5 5 33-4AA5	3000	9.8	10					
781	400	3588	2100	96.8	96.8	96.3	0.90	900	1.8	7.3	3.1	78	94	▲ 1LE5 5 33-4AA7	3200	10.8	10					
920	450	3588	2450	96.9	96.9	96.5	0.89	1070	1.0	7.5	3.0	79	95	▲ 1LE5 5 33-4BA3	4000	12.3	7					
1040	450	3586	2750	97.0	97.0	96.6	0.90	1200	1.1	7.0	2.8	79	95	▲ 1LE5 5 33-4BA5	4250	13.5	7					
1120	450	3584	3000	97.0	97.1	96.9	0.91	1270	1.1	6.8	2.5	79	95	▲ 1LE5 5 33-4BA7	4450	14.7	7					
4-pole: 1800 rpm at 60 Hz																						
644	400	1791	3450	96.2	96.3	95.5	0.88	950	1.7	6.4	2.5	82	98	▲ 1LE5 5 33-4AB3	2800	12.8	13					
725	400	1792	3850	96.4	96.3	95.7	0.88	1070	1.8	6.8	2.7	82	98	▲ 1LE5 5 33-4AB5	3000	14.4	13					
817	400	1792	4350	96.5	96.4	95.9	0.89	960	1.8	6.8	2.5	82	98	▲ 1LE5 5 33-4AB7	3200	16.5	13					
920	450	1791	4900	96.3	96.3	95.8	0.89	1080	1.3	6.5	2.3	85	101	▲ 1LE5 5 33-4BB3	3850	22.2	10					
1040	450	1791	5500	96.5	96.5	95.9	0.88	1230	1.4	6.8	2.5	85	101	▲ 1LE5 5 33-4BB5	4100	24.8	10					
1150	450	1791	6100	96.6	96.6	96.1	0.90	1330	1.6	6.8	2.5	85	101	▲ 1LE5 5 33-4BB7	4300	27.4	10					
6-pole: 1200 rpm at 60 Hz																						
518	400	1193	4150	96.0	96.1	95.7	0.86	790	2.0	6.4	2.6	75	91	▲ 1LE5 5 33-4AC3	2900	22.0	13					
575	400	1193	4600	96.0	96.1	95.8	0.86	870	2.1	6.5	2.6	75	91	▲ 1LE5 5 33-4AC5	3050	24.7	13					
644	400	1193	5200	96.2	96.4	96.0	0.86	980	2.1	6.5	2.6	75	91	▲ 1LE5 5 33-4AC7	3250	27.8	13					
725	450	1194	5800	96.3	96.3	96.1	0.85	1110	1.9	6.4	2.4	77	93	▲ 1LE5 5 33-4BC3	3800	34.4	13					
817	450	1193	6500	96.3	96.4	96.4	0.85	1000	2.0	6.6	2.6	77	93	▲ 1LE5 5 33-4BC5	4050	38.5	13					
920	450	1193	7400	96.5	96.7	96.4	0.85	1130	1.9	6.6	2.4	77	93	▲ 1LE5 5 33-4BC7	4300	43.1	13					
8-pole: 900 rpm at 60 Hz																						
408	400	892	4350	95.7	95.8	95.5	0.82	650	1.8	6.2	2.4	67	83	▲ 1LE5 5 33-4AD3	2850	21.9	13					
460	400	892	4900	95.8	95.9	95.6	0.82	730	1.9	6.5	2.5	67	83	▲ 1LE5 5 33-4AD5	3050	24.5	13					
518	400	892	5500	95.9	96.0	95.8	0.82	830	1.9	6.5	2.6	67	83	▲ 1LE5 5 33-4AD7	3250	27.5	13					
575	450	894	6100	96.0	96.1	95.7	0.81	930	1.8	6.5	2.3	70	86	▲ 1LE5 5 33-4BD3	3800	34.0	13					
644	450	894	6900	96.1	96.2	95.8	0.81	1040	1.8	6.5	2.4	70	86	▲ 1LE5 5 33-4BD5	4000	38.0	13					
725	450	894	7700	96.2	96.4	96.0	0.82	1150	1.8	6.5	2.4	70	86	▲ 1LE5 5 33-4BD7	4250	42.5	13					
Zones																						
Zone 22 (rarely or temporarily non-conductive dusts) Ex tc IIIB															2	-						
Zone 2 (rarely explosive or temporarily explosive gases) Ex ec IIC															3	-						
Voltages																						
50 Hz		400 VΔ/690 VY		60 Hz		460 VΔ		Version		Standard		3	4	-								
50 Hz		500 VΔ		60 Hz		575 VΔ		No additional price		4		0	-									
50 Hz		690 VΔ						No additional price		4		7	-									
For other voltages and more information, see from Page 2/15																						
Types of construction																						
Without flange															IM B3 ²⁾		Version		Standard		-	
With flange															IM B5 ²⁾		With additional		A		-	
For other types of construction and more information, see from Page 2/16																						
Motor protection																						
Without															Standard		A		-			
PTC thermistor with 3 temperature sensors															With additional		B		-			
For other motor protection and more information, see from Page 2/18																						
Terminal box position																						
Terminal box base left with terminal box 45°															No additional price		2		-			
Terminal box base right with terminal box 45°															Standard		3		-			
For other terminal box positions and more information, see from Page 2/19																						
Special versions																						
Force ventilated w/o ext. fan/fan cover (IC418)															1MB55 . 4-		-Z		F90+ +			
Options, see from Page 2/20																						
															1MB55 . 4-		-Z	 + +			

3) Terminal box 1XB1631.

4) Terminal box position NDE can only be ordered using order code H09 (2 x TB3R61 terminal box). Order code H08 not available.

5) Standard version is 50 Hz / 690 V (voltage code 4-7) or 60 Hz / 575 V (voltage code 4-0).

6) Ordered for an additional price.

7) Utilization for sinusoidal supply according to thermal class 155 (Temperature class F).

Article No. supplements and special versions

SIMOTICS XP 1MB5 explosion-protected motors

Voltages

Selection and ordering data

Voltages

Cast-iron series 1MB5

Voltages	Article No. Supplements			Rated power		IEC	IE4 IE3
	Voltage code 12th and 13th position of the Article No.	Additional identifi- cation code with order code and plain text if required		P50Hz ≤630 kW	P50Hz > 630 kW		
1MB5	4 - 3			1MB55 4			
				1MB55 3			
Voltage at 50 Hz or 60 Hz							
50 Hz 400 VΔ/690 VY, 60 Hz 460 VΔ	3	4	–	□	O.R.		
50 Hz 500 VΔ	4	0		○	○		
60 Hz 575 VΔ				○	□ ²⁾		
50 Hz 690 VΔ	4	7	–	✓	□		
50 Hz 380 VΔ/660 VY, 60 Hz 440 VΔ	3	3	–	✓	O.R.		
50 Hz 415 VΔ, 60 Hz 480 VΔ	3	5	–	✓	O.R.		
50 Hz 600 VΔ, 60 Hz 690 VΔ	4	4	–	✓	✓		
50 Hz 660 VΔ	4	6	–	✓	✓		
Voltage at 60 Hz and required power							
440 VΔ; 60-Hz-power	9	0	M1D	✓	O.R.		
460 VΔ; 60-Hz-power	9	0	M1F	✓	O.R.		
575 VΔ; 60-Hz-power	9	0	M1H	✓	✓ ²⁾		
400 VΔ/690 VY; 60-Hz-power	9	0	M1J	O.R.	O.R.		
480 VΔ; 60-Hz-power	9	0	M1L	✓	O.R.		
440 VΔ; 50-Hz-power	9	0	M2D	✓	O.R.		
460 VΔ; 50-Hz-power	9	0	M2F	✓	O.R.		
575 VΔ; 50-Hz-power	9	0	M2H	✓	✓ ²⁾		
400 VΔ/690 VY; 50-Hz-power	9	0	M2J	O.R.	O.R.		
480 VΔ; 50-Hz-power	9	0	M2L	✓	O.R.		
Non-standard voltage and/or frequencies							
Non-standard winding ¹⁾	9	0	M1Y • and customer specifica- tions	✓	✓		

- Standard version
- No additional price
- This order code only determines the version from a pricing perspective – additional plain text is required.

1) Plain text must be specified in the order:
Voltage between 380 and 690 V (voltages outside this range are available on request), frequency, circuit, for 60 Hz additionally required rated power in kW.
2) 2-pole execution in shaft height 450 for 60 Hz operation on inquiry.

Motors, type of protection Ex ec and Ex tc for use in Zones 2 and 22

SIMOTICS XP 1MB5 explosion-protected motors









IE3 Premium Efficiency

Types of construction

Selection and ordering data

Types of construction

Cast-iron series 1MB5

Types of construction	Article No. supplement	Type of construction code letter 14th position of the Article No.	For types of construction with order code(s) Article No. with additional identification	Frame size		IEC	IE4	IE3
				400	450			
1MB5.....	■ ..			1MB5 ■ 4				
				1MB5 ■ 3				
Without flange								
IM B3		A	–	□	□			
1) 2)								
IM V6		D	–	O.R.	O.R. 7)			
2)								
IM V5		C	–	O.R.	O.R. 7)			
without protective cover								
2)								
IM V5		C	H00	O.R.	O.R. 7)			
with protective cover								
2) 3) 4)								
With flange								
		EN 50347						
		DIN 42948						
IM B5		F	–	√6)	√6)			
2) 5)								
IM V1		G	–	✓	√7)			
without protective cover								
2)								
IM V1		G	H00	✓	√7)			
with protective cover								
2) 3) 4)								
IM B35 ³⁾		J	–	✓	✓			

- Standard version
- no additional price
- O.R. on request
- Not possible

Article No. supplements and special versions

SIMOTICS XP 1MB5 explosion-protected motors

Voltages

■ Selection and ordering data

- 1) Types of construction IM B6/7/8, IM V6 and IM V5 without protective cover/with protective cover possible if it is not necessary that these types of construction are stamped on the rating plate. As standard, 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. For a different mounting position, the mounting position must be specified regarding the correct position of the condensation drain holes.
- 3) In combination with an encoder, it is not necessary to order the protective cover (order code H00) as this is included as standard to protect the encoder. In this case the protective cover is included as standard (without additional charge).
- 4) Option "Standard cylindrical shaft extension (second shaft extension)" (order code L05) is not possible.
- 5) Types of construction IM V3 and IM V1 without protective cover/with protective cover possible if it is not necessary that these types of construction are stamped on the rating plate. As standard, type of construction IM B5 is then stamped on the rating plate. For 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.
- 6) For machines, type of construction IM B5, provide an additional support foot at the NDE. The support foot is not included in the scope of supply. Use an appropriately sized support foot with the appropriate rigidity. The support foot must be able to carry the complete motor weight.
- 7) Not possible for 2-pole 1MB55..-4BA motors.

Article No. supplements and special versions

SIMOTICS XP 1MB5 explosion-protected motors

Motor protection

Selection and ordering data

Motor protection

Cast-iron series 1MB55

Motor protection	Article No. supplement		Frame size		IEC	IE4 IE3
	Motor protection code letter	Additional identification code with 15th position of the Article No.	400	450		
			1MB55 ■ 4			
			1MB55 ■ 3			

1MB55 ■ .

Motor protection	Motor protection code letter	Additional identification code with 15th position of the Article No.	400	450
Without (standard)	A	–	□	□
1 or 3 PTC thermistors – for tripping (2 terminals) ¹⁾	B	–	✓	✓
2 or 6 PTC thermistors – for alarm and tripping (4 terminals) ¹⁾	C	–	✓	✓
1 KTY84-130 temperature sensor (2 terminals) ¹⁾	F	–	✓	✓
2 KTY84-130 temperature sensor (4 terminals) ¹⁾	G	–	✓	✓
3 Pt100 resistance thermometers – 2-wire input (6 terminals)	H	–	✓	✓
6 Pt100 resistance thermometers – 2-wire input (12 terminals)	J	–	✓	✓
1 Pt1000 resistance thermometer (2 terminals)	K	–	✓	✓
2 Pt1000 resistance thermometer (4 terminals)	L	–	✓	✓
1 Pt100 resistance thermometers – 2-wire input (2 terminals)	P	–	✓	✓
3 Pt100 resistance thermometers – 3-wire input (9 terminals)	Q	–	✓	✓
6 Pt100 resistance thermometers – 3-wire input (18 terminals)	R	–	✓	✓
3 NTC thermistors – for tripping (6 terminals)	Z	Q2A		

Note:

Options are available specifically for bearing protection – for order codes and descriptions, see from Page 2/20.

1) Evaluation with the associated tripping unit (see Catalog IC 10) is recommended.

Article No. supplements and special versions

SIMOTICS XP 1MB5 explosion-protected motors

Terminal box position

Selection and ordering data

Terminal box position Cast-iron series 1MB5

Terminal box position	Article No. supplement	Frame size			IEC	IE4
			400	450		
	Terminal box position code 16th position of the Article No.	Additional identification code with order code and plain text, if required	1MB55 ■ 4			
1MB5.	■		1MB55 ■ 3			IE3

Terminal box position

Terminal box position			400	450
Terminal box base left with terminal box at the top	0	-	✓	✓
Terminal box base right with terminal box at the top	1	-	✓	✓
Terminal box base left with oblique terminal box 45°	2	-	○	○
Terminal box base right with oblique terminal box 45°	3	-	◻	◻
Terminal box right-hand side ¹⁾	5	-	✓	✓
Terminal box left-hand side ¹⁾	6	-	✓	✓
Terminal box left-hand side (base below) ²⁾	9	R5L	✓	✓
Terminal box right-hand side (base below) ²⁾	9	R6R	✓	✓
Terminal box bottom left ²⁾	9	R7L	-	-
Terminal box bottom right ²⁾	9	R7R	-	-

- ◻ Standard version
- no additional price
- ✓ with additional price

1) For types of construction with feet and flange-mounted with feet, cast feet are standard. Bolted on feet, only possible on request.
 2) Only possible in combination with type of construction IM V1.

Selection and ordering data

Options

Cast-iron series 1MB5

Special versions	Additional identification code -Z with order code and plain text if required	Frame size		IEC	IE4
		400	450		
		1MB55 ■ 4			
		1MB55 ■ 3			
1MB5. - Z					
Motor protection					
3 PTC thermistors – for tripping (2 terminals) ¹⁾	Q11	✓	✓		
2 PTC thermistors – for warning and tripping (4 terminals) ¹⁾	Q12	✓	✓		
3 NTC thermistors – for tripping (6 terminals)	Q21	✓	✓		
1 KTY84-130 temperature sensor (2 terminals) ¹⁾	Q23	✓	✓		
2 KTY84-130 temperature sensors (4 terminals) ¹⁾	Q25	✓	✓		
1 Pt1000 resistance thermometer (2 terminals)	Q35	✓	✓		
2 Pt1000 resistance thermometers (4 terminals)	Q36	✓	✓		
6 Pt1000 resistance thermometers (12 terminals)	Q37	✓	✓		
3 Pt100 resistance thermometers – 2-wire input (6 terminals) ¹⁾	Q60	✓	✓		
6 Pt100 resistance thermometers – 2-wire input (12 terminals) ¹⁾	Q61	✓	✓		
1 Pt100 resistance thermometer – 2-wire input (2 terminals)	Q62	✓	✓		
3 Pt100 resistance thermometers – 3-wire input (9 terminals)	Q63	✓	✓		
6 Pt100 resistance thermometers – 3-wire input (18 terminals)	Q64	✓	✓		
2 Pt100 screw-in thermometers in basic configuration for bearings (2 terminals)	Q72	✓	✓		
2 Pt100 screw-in thermometers in 3-wire input for bearings (6 terminals)	Q78	✓	✓		
2 Pt100 double screw-in thermometers in 3-wire input for bearings (12 terminals)	Q79	✓	✓		

Article No. supplements and special versions

SIMOTICS XP 1MB5 explosion-protected motors

Options

Selection and ordering data

Options

Cast-iron series 1MB5

Special versions	Additional identification code -Z with order code and plain text if required	Frame size		IEC	IE4 IE3
		400	450		
		1MB55 ■ 4			
1MB5...-.....-Z		1MB55 ■ 3			
Motor connection and terminal box					
External grounding	H04	<input type="checkbox"/>	<input type="checkbox"/>		
Terminal box on NDE	H08	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Two terminal boxes on NDE	H09	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Second external ground	H70	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Subsequently rotatable main connection box	R09	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Rotation of the terminal box through 90°, entry from DE ³⁸⁾	R10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Rotation of the terminal box through 90°, entry from NDE	R11	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Rotation of the terminal box by 180°	R12	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Saddle terminal for connection without cable lug, accessories pack	R19	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Larger terminal box ³⁹⁾	R50	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Drilled removable entry plate	R52	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Undrilled removable entry plate	R53	<input type="checkbox"/>	<input type="checkbox"/>		
Cast-iron auxiliary terminal box (small)	R62	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Cast iron auxiliary terminal box (large)	R63	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Stainless steel auxiliary terminal box (big)	R65	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Non-standard threaded through hole (NPT or G thread) ²⁾	Y61 • und Bestellangabe	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Windings and insulation					
Temperature class 155 (F), utilized acc. to 155 (F), with service factor ³³⁾	N01	<input type="checkbox"/>	<input type="checkbox"/>		
Temperature class 155 (F), utilized acc. to 130 (B), coolant temperature 45 °C, derating approx. 4 % ⁴³⁾	N05	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		

Selection and ordering data

Options

Cast-iron series 1MB5

Special versions	Additional identification code -Z with order code and plain text if required	Frame size		IEC	IE4 ----- IE3
		400	450		
		1MB55 ■ 4			
1MB5. - Z		1MB55 ■ 3			
Temperature class 155 (F), utilized acc. to 130 (B), coolant temperature 50 °C, derating approx. 8 % ⁴³⁾	N06	✓	✓		
Temperature class 155 (F), utilized acc. to 130 (B), coolant temperature 55 °C, derating approx. 13 % ⁴³⁾	N07	✓	✓		
Temperature class 155 (F), utilized acc. to 130 (B), coolant temperature 60 °C, derating approx. 18 % ⁴³⁾	N08	✓	✓		
Increased air humidity/temperature with 30 to 60 g water per m ³ of air	N30	✓	✓		
Increased air humidity/temperature with 60 to 100 g water per m ³ of air	N31	✓	✓		
Temperature class 155 (F), utilized acc. to 130 (B), with higher coolant temperature and/or installation altitude ³³⁾	Y50 • und gew. Leistung, KT .. °C bzw. AH m über NN	✓	✓		
Colors and paint finish					
Standard paint finish C2 in RAL 7030 stone gray		□	□		
Unpainted (only cast-iron parts primed)	S00	○	○		
Unpainted, only primed	S01	✓	✓		
Special paint finish C3	S02	✓	✓		
Special paint finish sea air resistant ⁴²⁾	S03	✓	✓		
Special paint finish for use ⁴²⁾	S04	✓	✓		
Internal coating	S05	✓	✓		
Top coat polyurethane ²⁷⁾	S06	□	□		

Article No. supplements and special versions

SIMOTICS XP 1MB5 explosion-protected motors

Options

Selection and ordering data

Options

Cast-iron series 1MB5

Special versions	Additional identification code -Z with order code and plain text if required	Frame size		IEC	IE4 IE3
		400	450		
	1MB5...-.....-Z	1MB5 ■ 4			
		1MB5 ■ 3			
Paint 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 • und Anstrich RAL.....	✓	✓		
For RAL colors, see "Special paint finish in special RAL colors" (see Catalog Section 1 "Introduction")	Y56 • und Anstrich RAL.....	✓	✓		
Mechanical version and degrees of protection					
Low-noise version for 2-pole motors with clockwise direction	F77	□	□		
Low-noise version for 2-pole motors with counter-clockwise	F78	○	○		
Prepared for mountings, centering hole only	G40	□	□		
Prepared for mountings with D16 shaft	G42	✓	✓		
Protective cover ^{7) 9) 11)}	H00	✓	✓		
Condensation drainage holes	H03	□	□		
Rust-resistant screws (externally)	H07	✓	✓		
IP56 degree of protection ¹⁴⁾	H22	✓	✓		
Shaft sealing rings in viton	H25	✓	✓		
Extended corrosion protection of external components ³⁰⁾	H90	✓	✓		
Coolant temperature and installation altitude					
Coolant temperature -40 to +40 °C 15)	D03	✓	✓		

Selection and ordering data

Options

Cast-iron series 1MB5

Special versions	Additional identification code -Z with order code and plain text if required	Frame size		IEC	IE4
		400	450		
		1MB55 ■ 4			IE3
1MB5. - Z		1MB55 ■ 3			IE3
Versions in accordance with standards and specifications					
VIK version	C02	✓	✓		
Version (IP55) for Zones 2 or 22, for non-conductive dust	B30	✓	✓		
Design for Zone 2 in Ex ec IIB T3 Gc	B31	✓	✓		
Electrical according to NEMA MG1-12 ¹⁷⁾	D30	□	□		
Bearings and lubrication					
Regreasing device with M10 × 1 grease nipple according to DIN 71412-A	L19	○	○		
Fixed bearing DE	L20	□	□		
Located bearing NDE ³⁷⁾	L21	✓	✓		
Fixed bearing NDE ^{28) 29)}	L22	a. A.	a. A.		
Regreasing device	L23	□	□		
Outlet for old grease	L30	a. A.	a. A.		
Measuring nipple for SPM shock pulse measurement for bearing inspection	Q01	✓	✓		
Balance and vibration severity					
Vibration quantity level A		□	□		
Vibration quantity level B ¹⁸⁾	L00	✓	✓		
Half-key balancing (standard)		□	□		
Balancing without key	L01	✓	✓		
Full-key balancing	L02	✓	✓		
Shaft and rotor					
Shaft extension with standard dimensions, without feather	L04	✓	✓		
Standard cylindrical shaft extension (second shaft end) NDE acc. to EN 50347	L05	✓	✓		
Concentricity of shaft extension in accordance with DIN 42955 Tolerance R	L07	✓	✓		

Article No. supplements and special versions

SIMOTICS XP 1MB5 explosion-protected motors

Options

Selection and ordering data

Options

Cast-iron series 1MB5

Special versions	Additional identification code -Z with order code and plain text if required	Frame size		IEC	IE4 IE3
		400	450		
		1MB55 ■ 4			
1MB5. - Z		1MB55 ■ 3			
Concentricity of shaft extension, coaxiality, and linear movement in accordance with DIN 42955 Tolerance R for flange-mounting mot	L08	✓	✓		
Non-standard shaft extension, DE 19)	Y58 • und Besteller-angabe	✓	✓		
Non-standard shaft extension, NDE 19)	Y59 • und Besteller-angabe	✓	✓		
Special shaft steel as requested by customer	Y60 • und Besteller-angabe	a. A.	a. A.		
Heating and ventilation					
Sheet metal fan cover	F74	□	□		
Metal external fan	F76	✓	✓		
Without external fan and without fan cover	F90	✓	✓		
Anti-condensation heating for 230 V (2 terminals)	Q02	✓	✓		
Anti-condensation heating for 115 V (2 terminals)	Q03	✓	✓		
Anti-condensation heating for 400 V (2 terminals)	Q06	✓	✓		
Rating plate and additional					
Second rating plate, loose	M10	✓	✓		
Rating plate, stainless steel	M11	□	□		
Additional rating plate with deviating rating plate data	Y80 • und Besteller-angabe	✓	✓		
Additional rating plate with customer specifications	Y82 • und Besteller-angabe	✓	✓		
Additional information on rating plate and on package label (max. 20 characters)	Y84 • und Besteller-angabe	✓	✓		
Extension of the liability for					
Extension of the liability for defects by 12 months to a total of 24 months (2 years) from delivery ²¹⁾	Q80	✓	✓		

Article No. supplements and special versions

Standard SIMOTICS SD next generation motors

Terminal box position

Selection and ordering data

Options

Cast-iron series 1MB5

Special versions	Additional identification code -Z with order code and plain text if required	Frame size		IEC	IE4 ----- IE3
		400	450		
	1MB5. - Z	1MB55 ■ 4	1MB55 ■ 3		
Extension of the liability for defects by 18 months to a total of 30 months (2.5 years) from delivery ²¹⁾	Q81	✓	✓		
Extension of the liability for defects by 24 months to a total of 36 months (3 years) from delivery ²¹⁾	Q82	✓	✓		
Extension of the liability for defects by 30 months to a total of 42 months (3.5 years) from delivery ²¹⁾	Q83	✓	✓		
Extension of the liability for defects by 36 months to a total of 48 months (4 years) from delivery ²¹⁾	Q84	✓	✓		
Extension of the liability for defects by 42 months to a total of 60 months (5 years) from delivery ²¹⁾	Q85	✓	✓		
Packaging, safety notes,					
Inspection Certificate 3.1 acc. to EN 10204 ²¹⁾	B02	✓	✓		
Printed German/English Operating Instructions enclosed	B04	□	□		
Equivalent circuit diagram	B51	✓	✓		
Starting curve (torque-speed and current-speed curve)	B52	✓	✓		
Document - Electrical data sheet	B60	✓	✓		
Document - Order dimensional	B61	✓	✓		
Normal tests (routine test) with acceptance	B65	✓	✓		
Temperature rise test without acceptance	B67	✓	✓		
Temperature rise test with	B68	✓	✓		
Type test with heat run for vertical motors, without acceptance	B80	✓	✓		
Type test with heat run for vertical motors, with acceptance	B81	✓	✓		
Type test with heat run for horizontal motors, without acceptance	B82	✓	✓		

Article No. supplements and special versions

SIMOTICS XP 1MB5 explosion-protected motors

Options

Selection and ordering data

Options

Cast-iron series 1MB5

Special versions	Additional identification code -Z with order code and plain text if required	Frame size		IEC	IE4 IE3
		400	450		
1MB5. - Z		1MB55 ■ 4			
		1MB55 ■ 3			
Type test with heat run for horizontal motors, with	B83	✓	✓		
Documentation Package "Basic"	B90	✓	✓		
Documentation Package "Advanced"	B91	✓	✓		
Documentation Package "Projects"	B92	✓	✓		
Connected in star for dispatch	M01	✓	✓		
Connected in delta for dispatch	M02	✓	✓		

□ Standard version

○ No additional price

• This order code only determines the price of the version – additional plain text is required.

○ R. Possible on request

– Not possible

- 1) Evaluation with appropriate tripping unit (see Catalog IC 10) is recommended.
- 2) Parallel Whitworth pipe thread DIN ISO 228 (DIN 259) BSPP (British Standard Pipe Parallel) Pipe thread for connections that do not seal in the thread (cylindrical), outer = G.
- 3) n.a.
- 4) n.a.
- 5) n.a.
- 6) n.a.
- 7) n.a.
- 8) n.a.
- 9) n.a.
- 10) n.a.
- 11) Protective cover of the air intake for vertical types of construction.
- 12) n.a.
- 13) n.a.
- 14) n.a.
- 15) n.a.
- 16) n.a.
- 17) n.a.
- 18) n.a.
- 19) When motors are ordered that have longer or shorter shaft extension than normal, the required position and length of the feather keyway should be specified using a sketch. In particular, it must be noted that it is only permissible to use feather keys in accordance with EN 50347. The position of the feather keyway is positioned so that it is centered on the shaft extension. The length is defined by the manufacturer in accordance with the appropriate standard. Not valid for:
Tapered shafts, non-standard thread journals, non-standard shaft tolerances, friction-welded shaft journals, extremely "thin" shafts, special geometrical dimensions (e.g. square journals), hollow shafts. Valid for non-standard shaft extensions DE or NDE. The feather key is always supplied.
For order codes Y58, Y59 and L05, the following applies:
– Dimensions D and DA ≤ inner ball bearing diameter (see dimension tables for "dimensions")
– Dimensions E and EA ≤ 2 × length E (standard) of the shaft extension.
- 20) n.a.
- 21) The delivery time for the factory test certificate may differ from the delivery time for the motor.
- 22) The compact operating instructions are available as PDF for all official European languages in the Internet under <http://support.automation.siemens.com/WW/view/de/10803948/133300>

Article No. supplements and special versions

Standard SIMOTICS SD next generation motors

Terminal box position

- 23) n.a.
- 24) Not possible in combination with order codes Q72 and Q78
- 25) Not possible in combination with order codes N05, N06, N07, N08, and N11.
- 26) n.a.
- 27) Order code S06 cannot be combined with order codes S00 and S01. In conjunction with Y53, possible on request.
- 28) For NU bearings (cylindrical roller bearings), in contrast to ball bearings, a minimum cantilever force F_{min} of $0.5 \cdot F_{max}$ is required. Cylindrical roller bearings are not suitable for coupling output or for brief periods of no-load operation without cantilever force.
- 29) For frame sizes 400 - 450, permissible cantilever forces for motors with reinforced bearings on request. Please specify cantilever force and lever arm.
- 30) n.a.
- 31) n.a.
- 32) n.a.
- 33) Only possible for line operation.
- 34) The separately driven fan motor has the voltage specified with voltage code 2-2 (230 V Δ / 50 Hz; 400 V Y/ 60 Hz; 460 V Y).
- 35) n.a.
- 36) n.a.
- 37) For frame sizes 400 and 450, not possible for a vertical type of construction.
- 38) For motors with flange (IM B5, IM B35, IM V1), only possible in conjunction with order code H08.
- 39) Restrictions can apply when mounting the terminal box.
- 40) n.a.
- 41) n.a.
- 42) Only available for 1MB552 (Ex tc for Zone 22). Not available for 1MB553 (Ex ec for Zone 2).
- 43) Not available for 8-pole motors, frame size 450.

Overview

Couplings for use in hazardous zones

The motor from Siemens is connected to the driven 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 flexible N-EUPEX and RUPEX couplings or torsionally stiff ARPEX and ZAPEX couplings are used. For special applications, FLUDEX and ELPEX-S couplings are recommended. These coupling types are suitable for use in areas subject to explosion hazards and are offered with declaration of conformity and type test certificate according to Directive 94/9/EC.

Available from:

Siemens contact partner – ordering from the catalog
Siemens MD 10.1 "FLENDER Standard Couplings"

or

Siemens AG
Kupplungswerk Mussum
Bocholt industrial park
Schlavenhorst 100
46395 Bocholt, Germany
Phone: +49 2871 922185
Fax: +49 2871 922579

www.siemens.com

E-mail: flendercouplings@siemens.com

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 there is no belt-tensioning pulley. They are fixed to the foundation using stone bolts or foundation blocks.

The assignment of slide rails to motor size can be found in DIN 42923. For motors, frames sizes 355 up to 450, there are no standardized slide rails (an inquiry is required).

Available from:

Lütgert & Co. GmbH
P.O. Box 42 51
33276 Gütersloh, Germany
Phone: +49 5241 7407-0
Fax: +49 5241 7407-90

www.luetgert-antriebe.de

E-mail: info@luetgert-antriebe.de

Replacement motors and repair parts

- Commitment to provide replacement motors and repair parts following delivery of the motor:
- For up to 3 years after the delivery of the original motor, in the event of total motor failure, Siemens will supply a comparable replacement motor (regarding the mounting dimensions and function);
it is possible that a motor from a different series is supplied.
- If a replacement motor is supplied within the 3-year period, this does not mean that the warranty restarts.
- Replacement motors delivered after the active production of the motor series will also be marked as replacement motors on the rating plate.
- Only spare parts are offered for these replacement motors on request; repair and replacement are not possible.
- After a period of 3 years (after the delivery of the original motor), it is only possible to repair the motor (assuming that the spare parts required are available).
- After the delivery of the original motor, spare parts will be available for up to 5 years; Siemens will provide information about spare parts and will supply documents when required for an additional period of 5 years.
- 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 assignment, see Catalog Part 1 "Introduction".
- Repair parts are available for 1MB1 motors on request.
- A commitment to supply repair parts does not apply to standard components.
- Support hotline
 - In Germany
 - Tel. +49 911 895-7222

You will find telephone numbers for other countries on our website:

www.siemens.com/automation/service&support

Overview

Notes on the dimensions

- Dimension drawings according to EN 50347 and IEC 60072.

Fits

The shaft extensions (DIN 748) and centering edge diameters (EN 50347) specified in the dimension tables have 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	Permissible deviation
H	to 250	- 0.5
	over 250	- 1.0
E, EA		- 0.5

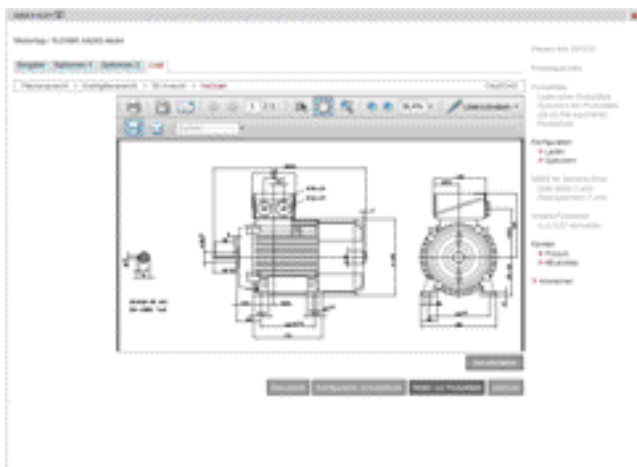
Keyways and feather keyways (dimensions GA, GC, F, and FA) are manufactured in compliance with DIN 6885 Part 1.

- All dimensions are specified in mm.

Dimension sheet generator

(within the "Drive Technology Configurator")

A dimension drawing can be created in the "Drive Technology (DT) Configurator" for every configurable motor. A dimension drawing can be requested for every other motor.



When a complete Article No. is entered – with or without order codes – a dimension drawing can be called up under the Documentation tab.

These dimension drawings can be presented in different views and sections and printed.

The corresponding dimension sheets can be exported, saved and processed in the DXF format (interchange/import format for CAD systems) or as bitmap graphic.

Online access in the Siemens Industry Mall

The DT Configurator is integrated in the Siemens Industry Mall and can be used on the Internet without installation.

German: www.siemens.de/dt-konfigurator

English: www.siemens.com/dt-configurator

Offline access in the Interactive Catalog CA 01

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

Article No. supplements and special versions

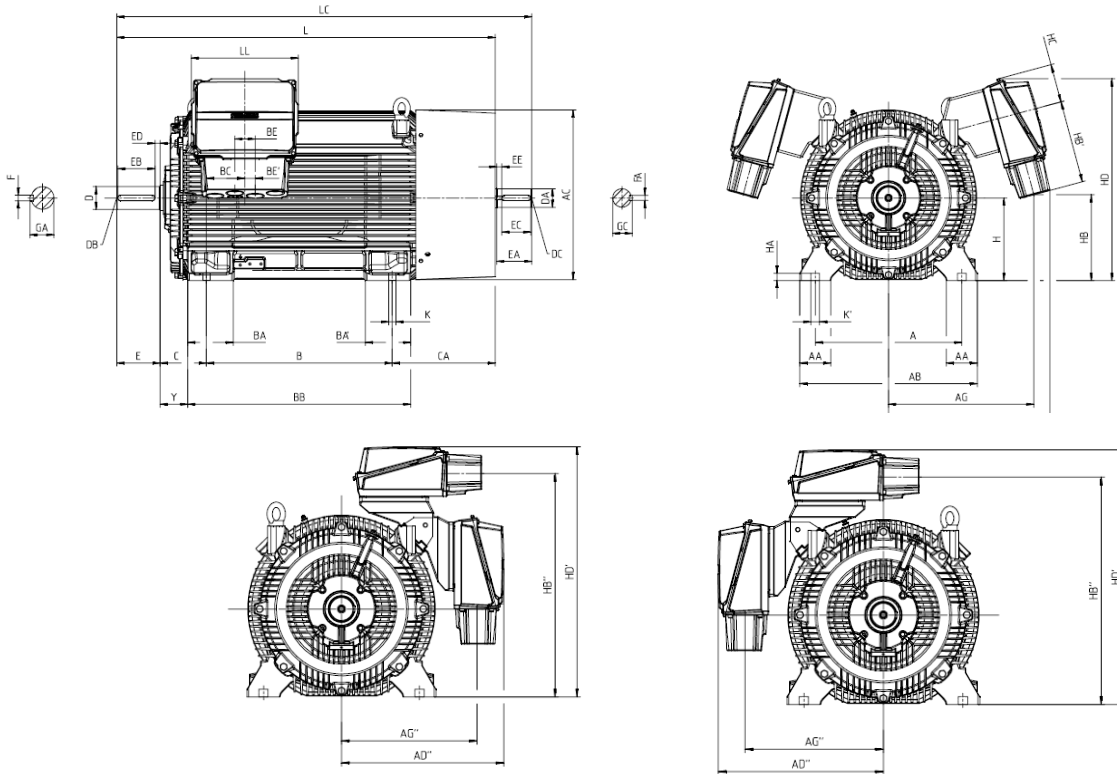
SIMOTICS XP 1MB5 explosion-protected motors

Notes on the dimensions

Dimension drawings

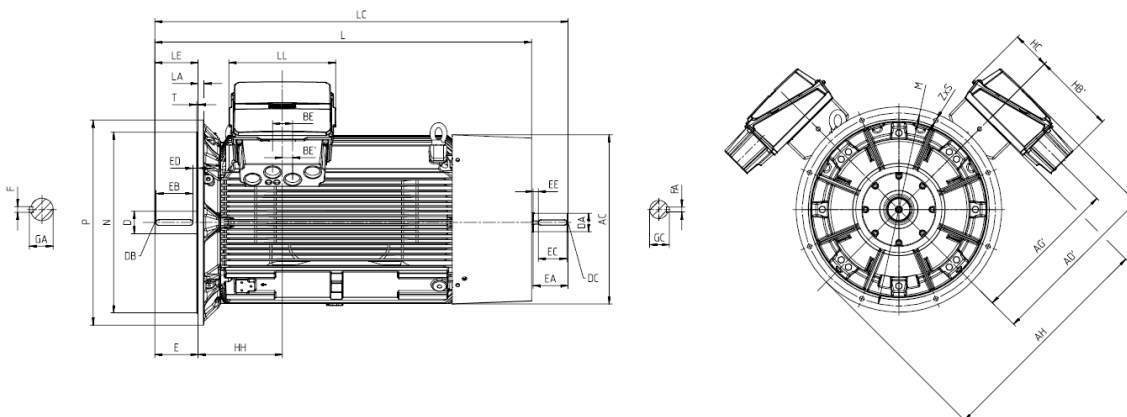
Type of construction IM B3

For flange dimensions, see Page 1/16 (Z = number of mounting holes)



Types of construction IM B5 and IM V1

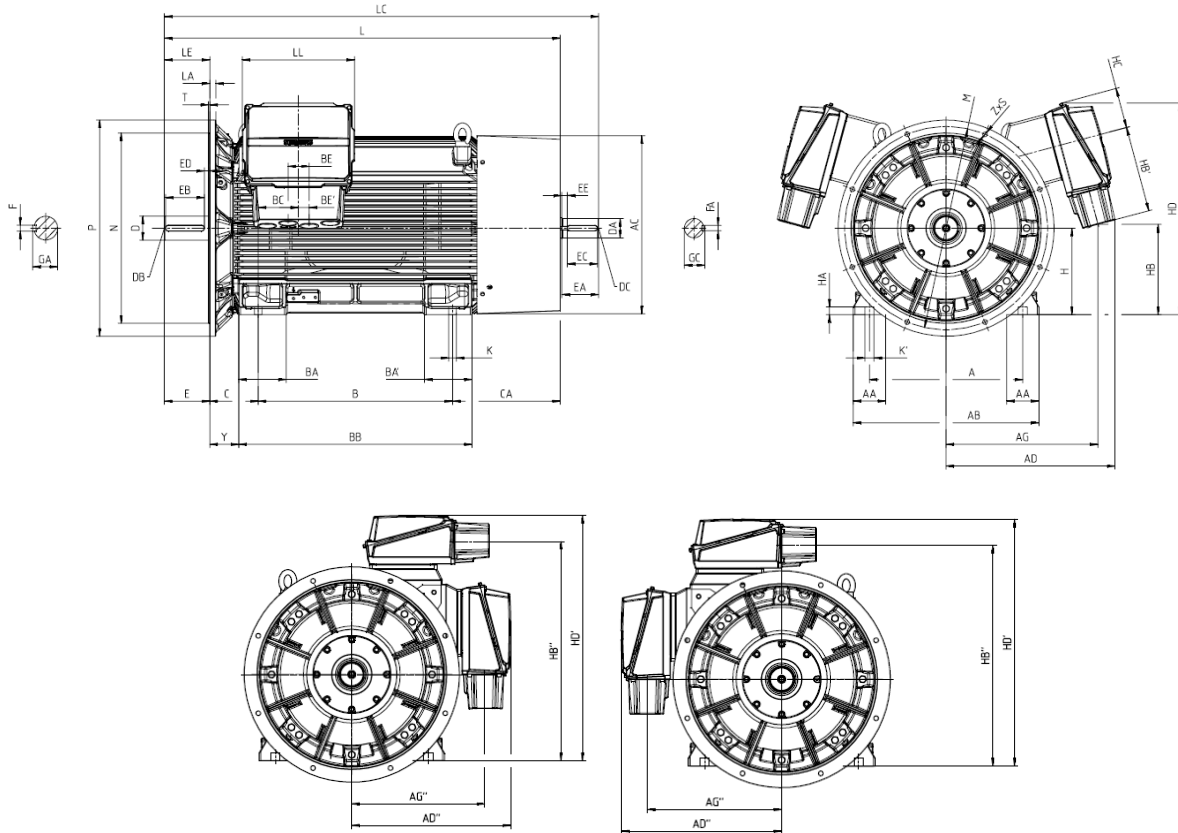
For flange dimensions, see Page 1/16 (Z = number of mounting holes)



Dimension drawings

Type of construction IM B35

For flange dimensions, see Page 1/16 (Z = number of mounting holes)



For motor		Dimension designation acc. to IEC																											
Frame size	Motor type 1MB55.-	No. of poles	A	AA	AB	AC	AD	AD'	AD''	AG	AG'	AG''	AH	B	B'	B''	BA	BA'	BB	BC	BE	BE'	C	CA	CA'	CA''	H	HA	HB
400	4AA	2	710	150	860	880	785	845	740	705	720	620	1110	900	-	-	220	220	1080	186	87.5	43.5	224	501	-	-	400	35	420
	4AB	4																											
	4AC	6																											
	4AD	8																											
450	4BA	2	800	180	980	970	820	895	775	740	770	655	1235	1000	-	-	260	260	1220	170	87.5	43.5	250	535	-	-	450	42	505
	4BB	4																											
	4BC	6																											
	4BD	8																											

For motor		Dimension designation acc. to IEC													DE shaft extension				NDE shaft extension									
Frame size	Motor type 1MB55.-	No. of poles	HB'	HB''	HC	HD	HD'	HH	Y	K	K'	L	LC ¹⁾	LL	D	DB	E	EB	ED	F	GA	DA	DC	EA	EC	EE	FA	GC
400	4AA	2	400	1020	190	980	1140	410	134	35	42	1795	1940	519	80	M20	170	140	25	22	85	70	M20	140	125	10	20	74.5
	4AB	4										1835	2010		110	M24	210	180		28	116	90	M24	170	140	25	25	95
	4AC	6																										
	4AD	8																										
450	4BA	2	400	1105	190	1065	1225	420	140	42	50	1955	2100	519	90	M24	170	140	25	25	95	75	M20	140	125	10	20	79.5
	4BB	4										1995	2210		120		210	180		32	127	100	M24	210	180	25	28	106
	4BC	6																										
	4BD	8																										

Get more information

Siemens Motors:

www.siemens.com/motors

Local partners worldwide:

www.siemens.com/automation-contact

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<http://www.siemens.com/industrialsecurity>.

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